Cobham Microwave
RF & Microwave Filters

The most important thing we build is trust


SPACE


DEFENCE

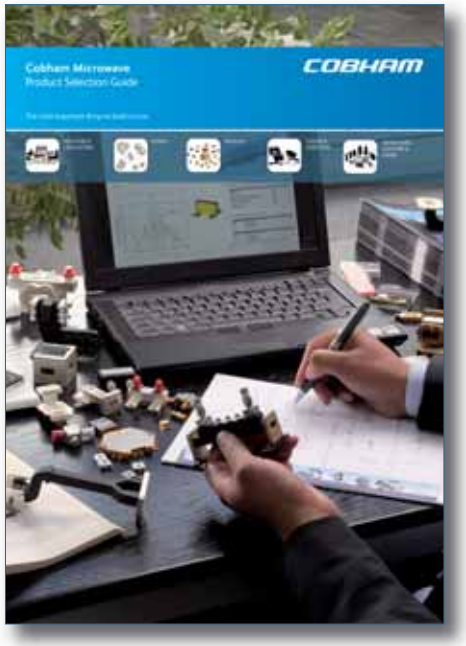

AVIONICS


COMMUNICATIONS & ISM


RAILWAYS

Cobham Microwave

Other literature



Contents

Cobham Microwave

Presentation

COBHAM PLC

Cobham plc's heritage goes back to 1934 when Sir Alan Cobham, an innovative aviation pioneer, worked tirelessly to make flying popular with his own personal dream that "one day there would be a landing ground in every major town". More than 70 years later, with airports commonplace, the pioneering spirit continues with Cobham producing world leading products and solutions for the aerospace and defence industry. The company has four divisions employing more than 12,000 people on five continents, with customers and partners in over 100 countries.

Our products and services have been at the heart of sophisticated military and civil systems for decades, keeping people safe, improving communications and enhancing the capability of land, sea, air and space platforms.

Cobham has three unique divisions: Aerospace & Security, Defence Systems and Mission Systems.

This presentation focuses on Cobham Microwave of Aerospace Communications Strategic Business Unit (SBU) of our Aerospace & Security Division.

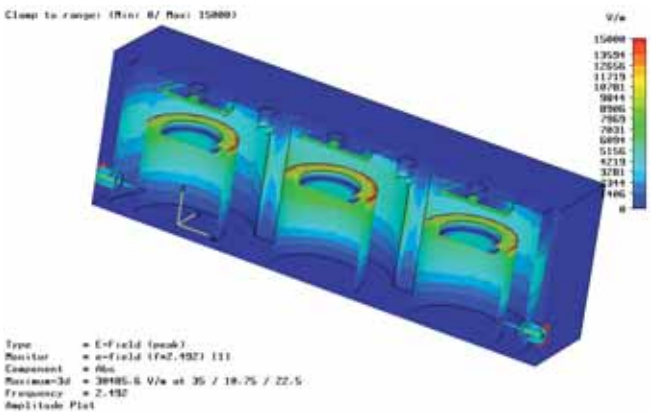
COBHAM MICROWAVE

Cobham Microwave designs and manufactures RF and Microwave Systems and Components: Diodes, Modules, RF Filters & Duplexers, Ferrites Devices, and Waveguides. It supplies Original Equipment Manufacturers in the Space, Defence, Communications and Medical industries throughout the world.

CAPABILITIES

DESIGN AND DEVELOPMENT

Cobham Microwave's design office develops world class RF and Microwave components and systems, based on international standards, requirements and specifications. Our engineers ensure best practice and close adherence to the customer specifications. The company has both human and technical capabilities to help customers solve architectural issues. Cobham Microwave engineers are well-experienced in Microwaves, Electronics, IT, Mechanics, Hydraulics and Thermal areas. CST, HFSS, Pro-Engineer, Catia, and AutoCAD are some of the tools used in the design of our systems & components.




DIODES


FILTERS & DUPLEXERS


ISOLATORS & CIRCULATORS


MODULES


WAVEGUIDES COUPLERS & LOADS


SYSTEMS & SUB-SYSTEMS

PRODUCTION

Six business units located on four production centres have the ability to manage customized and small quantity requests as well as low cost, mass production products:

- Systems - Villebon / Yvette, France
- Diodes - Villebon / Yvette, France
- Modules - Villebon / Yvette, France
- RF Filters & Duplexers - Gradignan, France
- Ferrite Devices - Villebon / Yvette, France
- Waveguides - Chichester, UK and Les Clayes-sous-Bois, France

TESTING

RF and Microwave equipment must work under severe conditions depending upon the different applications: space, marine, airborne... Cobham Microwave continuously develops quality control and qualification programmes to test product functionality under harmful conditions.
Our product certification indicates our suitability for a specific purpose, but customers' satisfaction is Cobham Microwave's best product certification.

Project management:
From the definition of customer needs to the maintenance of the systems and components designed by its engineers, Cobham Microwave fully covers each step of the project.

Its engineers will work hand in hand with customers through studies, simulation, provisioning, manufacture, characterization, tests, training and maintenance.

Working with Cobham Microwave, customers can really focus on their core activities.

QUALITY & ENVIRONMENTAL CERTIFICATION

Cobham Microwave's production centres meet requirements of the International Standard AFAQ AFNOR for the design, production and marketing of electronic components and sub-assemblies activities, based on **ISO 14001: 2004**, **ISO 9001: 2000 and in accordance with EN/AS/JISQ 9100 requirements**.

Cobham Microwave has developed **RoHS** and **Lead Free** products.

Cobham Microwave holds a number of customer specific approvals covering space, avionics, radar, telecommunication, railways and medical industries.

Cobham Microwave Filters

Presentation

Cobham Microwave designs and manufactures a complete line of filters and duplexers from DC to 40 GHz. Four main leading edge technologies are available: air cavity, ceramic, lumped element and waveguide.

Our products are suitable for Aerospace, Defence Electronics, and Commercial Systems.
The design, prototyping and manufacturing are done in France, mass production is performed in overseas factory.
The quality management system **is ISO 9001-2000** certified in accordance with **EN/AS/JISQ 9100** requirements.

Cobham Microwave works closely with customers from early requirements to after sale services in order to achieve best compromise between performance in harmful environment and price.

TECHNOLOGIES

AIR CAVITY FILTERS

- 30 MHz to 40 GHz
- Low loss
- High power
- Coaxial line resonators, combline, interdigital, helical

Cobham's cavity filter designs are available in the frequency range of 30 MHz to 40 GHz. Cavity filters offer very low insertion loss and high selectivity. Cavities are generally made of milled aluminum or brass. For specific application, kovar or invar cavity are used to reduce frequency drift.

CERAMIC FILTERS

- Frequency range : 300 MHz up to 5 GHz
- Bandwidth: 0.5 to 4%: high attenuation at high frequency / high-power
- Bandwidth from > 4% up to 20% : wide band / low ultimate attenuation
- 2 to 7 poles
- Resonator section (mm): 4x4 – 6x6 – 8x8 – 12x12
- Temperature stability better than 10ppm

Cobham's ceramic filters are manufactured for both defense and space applications.
Each filter is custom-designed to exact specification and Cobham can propose the best compromise between performances and losses. Various resonator sections and dielectric constants are available to give best performances versus size. SMD or connectorized version are available.


AIR CAVITY FILTERS


CERAMIC FILTERS


LUMPED ELEMENT FILTERS


WAVEGUIDE FILTERS

LUMPED ELEMENT FILTERS

- 10 MHz up to 2 GHz
- 3 dB bandwidth from 1% to 100%
- Transfer function: (Tcheb., Butt., Bessel, Elliptical,..)
- Low pass, high pass, band pass, band reject
- Low profile on request (< 5 mm)

Cobham's lumped element filters (discrete component filters) are designed to give optimal performance in low profile packages. Numerous electrical schematics are available to achieve the desired performance. Band pass, low pass, high pass or band reject filter can be designed.

To reach the best performances, our designers incorporate high quality factor ceramic capacitors and air or toroidal inductors. SMD version or connectorized version are available.

WAVEGUIDES FILTERS

- 2GHz to 40 GHz
- Waveguide size : WR340-WR22
- Low pass, high pass, band pass
- High power
- W/G flange or connectorized

Cobham offers waveguide filters that cover the frequency range of 2-40 GHz. Waveguide filter have typically very low losses (< 0.5dB) and high power handling even in vacuum conditions. Standard or customized flanges or connectorised (N, SMA or SMA2.9 connectors) version are available. Typical applications are defense and aerospace.

Cobham Microwave Filters

Presentation

TECHNOLOGIES VERSUS FREQUENCIES

Technology \ Frequency	0.01 - 0.3 GHZ	0.3 - 2 GHZ	2 - 5 GHZ	5 - 40 GHZ
Air cavity				
Ceramic				
Lumped element				
Wave Guide				

TECHNOLOGY STRENGTH AND WEAKNESS COMPARISON

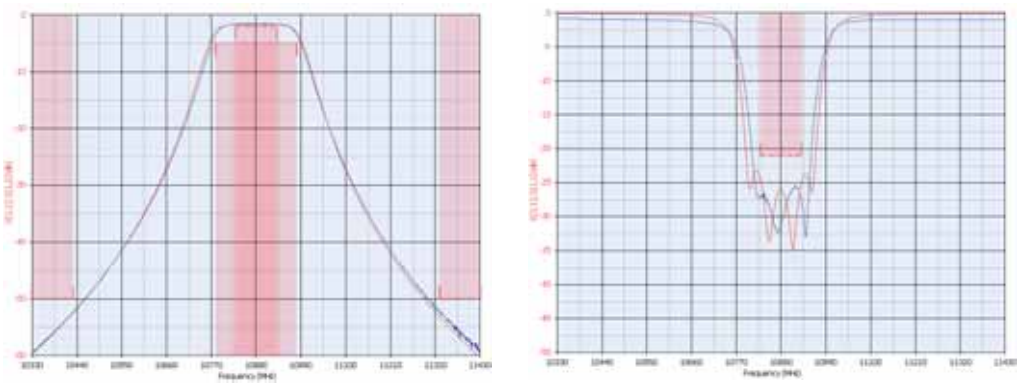
Technology	Air Cavity	Lumped Element	Ceramic resonator Bw < 3%	Ceramic resonator Bw > 3%	Waveguide
Strength	Low loss High attenuation Low IM3 Power	LP/HP/BP design Size Attenuation SMD	Size Temp.Stab (6 ppm) Power / size Attenuation SMD	Size Temp.stab (10 ppm) SMD	Very low losses Hight power Hight selectivity
Weakness	Size Weight	Loss Power	BP design	Low power Ultimate attenuation	Ultimate attenuation Size

R&D, MANUFACTURING AND SCREENING CAPABILITIES

R&D

Cobham engineers are using combination of softwares to achieve world class filter and duplexer designs. AGILENT GENESYS®, CST Microwave Studio®, Fest 3D® or MATHCAD® in house model are used to perform electrical performance simulations.
Very high accuracy between simulated and measured filter is achieved (see hereunder plots of X band filter).

Excellent correlation between simulation and measurement
See under plots of x band filter measured and simulated




AIR CAVITY FILTERS


CERAMIC FILTERS

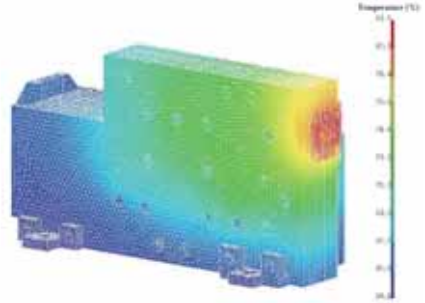

LUMPED ELEMENT FILTERS


WAVEGUIDE FILTERS

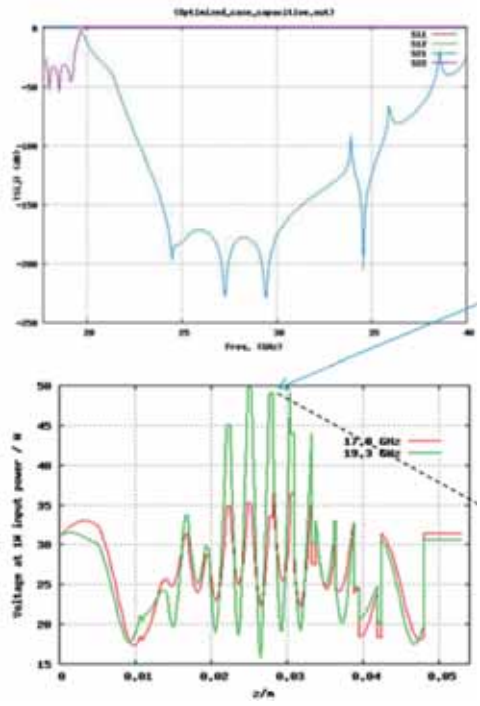
For mechanical design, thermal analysis and mechanical analysis, Solidworks is run. All CAD files are generated for CNC machining to avoid mistake and reduce lead time.

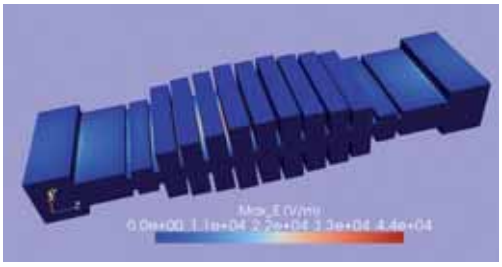

Mechanical design and analysis


Electromagnetic simulation


Thermal analysis

For space application, Corona and Multipactor effects are taken into account at design stage.





The multipactor analysis executed with FEST3D used the following input parameters:

Parameters:	
Material	Silver
Maximum SEY	2.22
Lower crossover electron energy (eV)	30.0
Electron energy at maximum SEY (eV)	165.0
Initial number of electrons	4000
Initial power (W)	1000.0
Precision (dB)	0.1

The results of the multipactor analysis are the Follonwing*:

Breakdown levels for frequency 17.8 GHz	
Elem	Breakdown (W)
9	No breakdown
23	No breakdown

Breakdown levels for frequency 19.3 GHz	
Elem	Breakdown (W)
9	No breakdown
23	No breakdown

*The rest of the elements have not been analyzed under multipactor.

Cobham Microwave Filters

Presentation

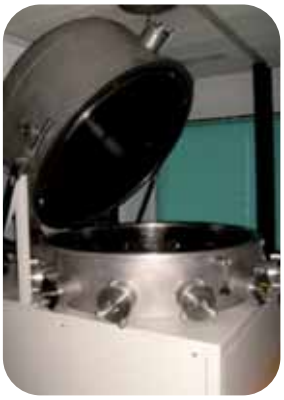
MANUFACTURING

Designs, pilot series are manufactured in Gradignan (France) as well as process documentations. Regardless of application, processes and procedures ensure that all products are fully compliant to specifications.
Manufacturing is done in a 4500 square meter factory including 150 square meter of clean room. This plant produces all type of filters technologies and is as well qualified for space product manufacturing and tuning.

SCREENING CAPABILITIES

Our network analysers cover the DC to 40 GHz range. For space application, space filters are manufactured into clean room. To perform vacuum test, 1 square meter volume totally remotable thermal chamber are available.

Power amplifier are used for filter testing. Mechanical testing : vibration and shock tests are managed by Cobham. Cobham performs EMC tests on each delivered filters if required.



Filters

Cavity filters
Ceramic filters


AIR CAVITY FILTERS


CERAMIC FILTERS


LUMPED ELEMENT FILTERS


WAVEGUIDE FILTERS

CAVITY FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB (MHz)	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
382	tetra	45	5	21	3	30 at 387 & 25 at 376	sma	cob-fcav-001	20
392	tetra	45	5	21	3	30 at 387 & 25 at 400	sma	cob-fcav-002	*
401	space	0	2	18	1	45 at 300 & 65 at 462	sma	cob-fcav-003	22
418	pmr	0	1	15	1.3	30 at ± 10	sma	cob-fcav-004	*
435	pmr	37	30	21	0.5	40 at 380 & 40 at 490	sma	cob-fcav-005	24
462	pmr	0	2	18	1	50 at 400	sma	cob-fcav-006	26
1090	iff	37	20	20	0.5	35 at 1058 & 1120	sma	cob-fcav-007	*
1090	iff	37	20	20	1	40 at 1058 & 1120	sma	cob-fcav-008	28
2350	wimax	37	100	21	1.5	60 at 2200 & 70 at 2500	sma	cob-fcav-009	*
3500	wimax	37	200	21	2	60 at 330 & 70 at 3700	sma	cob-fcav-010	*
4500	wimax	0	40	14	2	100 at ± 10%fc	sma	cob-fcav-011	30
5410	space	10	350	21	0.3	50 at 2300 & 800	sma	cob-fcav-012	32
5790	space	0	30	16	1.5	40 at ± 60	sma	cob-fcav-013	*
7500	updown converter	10	100	13	3	50 at 6500 & 20 at 7035	smd	cob-fcav-014	*
8328	space	0	500	14	3	60 at 6120 & 60 at 12240	sma	cob-fcav-015	*
9000	radar	0	600	16	1.5	50 at ± 500	sma	cob-fcav-016	34
9383	radar	10	361	15	2	24 at 9088 & 25 at 9737	sma	cob-fcav-017	*
10000	radar	0	200	14	3	60 at ± 650	sma	cob-fcav-018	*
11725	space	10	2050	21	1.5	20 at 10450 & 20 at 13000	sma	cob-fcav-019	*
11975	space	10	550	21	1.5	40 at 11000 & 13750	sma	cob-fcav-020	36

CERAMIC FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB (MHz)	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
403	intermediate frequency	20	15	14	1	40 at ± 60	smd	cob-fcer-001	*
420	intermediate frequency	10	16	14	5	50 at 360 & 480	smd	cob-fcer-002	*
575	intermediate frequency	10	5	14	6.5	50 at 510 & 40 at 640	smd	cob-fcer-003	*
576	intermediate frequency	10	2	10	3	20 at ± 40	smd	cob-fcer-004	*
610	intermediate frequency	10	20	14	3	50 at ± 122	smd	cob-fcer-005	*
662	intermediate frequency	10	15	14	4	80 at ± 40	smd	cob-fcer-006	*
822	intermediate frequency	10	20	14	2.5	20 at 846 & 55 at 850	smd	cob-fcer-007	98
836	intermediate frequency	10	24	12	4	50 at 796 & 45 at 876	smd	cob-fcer-008	*
860	intermediate frequency	10	10	12	4	50 at 820 & 800	smd	cob-fcer-009	*
872	intermediate frequency	10	8	14	6	30 at 846 & 30 at 898	smd	cob-fcer-010	*
885	intermediate frequency	10	33	14	5	50 at 810 & 960	smd	cob-fcer-011	*
890	intermediate frequency	10	10	15	1.7	30 at 840 & 25 at 930	smd	cob-fcer-012	*
900	intermediate frequency	10	5	14	9	40 at 870 & 50 at 960	smd	cob-fcer-013	*
908	intermediate frequency	10	55	14	2	60 at 670 & 20 at 1915	smd	cob-fcer-014	111
930	intermediate frequency	10	5	14	9.5	40 at 900 & 50 at 960	smd	cob-fcer-015	*
932	intermediate frequency	10	35	14	5	50 at 800 & 50 at 1005	smd	cob-fcer-016	38
944	intermediate frequency	10	4	14	2.5	30 at 896 & 40 at 992	smd	cob-fcer-017	*
990	intermediate frequency	10	5	14	9.5	50 at 960 & 40 at 1020	smd	cob-fcer-018	*
1007	intermediate frequency	10	8	14	6.5	50 at 960 & 40 at 1050	smd	cob-fcer-019	*
1015	intermediate frequency	10	36	14	3	15 at ± 65	smd	cob-fcer-020	*
1020	intermediate frequency	10	5	14	9.5	50 at 960 & 40 at 1050	smd	cob-fcer-021	40
1028	intermediate frequency	10	66	15	3	50 at 853 & 43 at 1203	smd	cob-fcer-022	*

*Please contact factory or download from website

Filters

Ceramic filters

CERAMIC FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB (MHz)	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
1030	iff	10	15	14	2.6	70 at 1090	smd	cob-fcer-023	*
1030	iff	10	20	14	2	25 at ± 60	smd	cob-fcer-024	*
1030	iff	20	16	14	3	60 at 970 & 60 at 1090	smd	cob-fcer-025	*
1030	iff	10	8	14	1.5	14 at =-20	smd	cob-fcer-026	42
1030	iff	20	20	14	4	25 at ± 60	smd	cob-fcer-027	*
1030	iff	20	30	14	4	40 at ± 120	smd	cob-fcer-028	44
1030	iff	20	19	14	4	60 at ± 60	smd	cob-fcer-029	*
1030	iff	10	16	14	3	60 at ±60	smd	cob-fcer-030	*
1030	iff	10	10	14	1.5	34 at ± 36	smd	cob-fcer-031	*
1030	iff	10	16	14	2.5	48 at ± 40	smd	cob-fcer-032	*
1030	iff	10	20	14	2.5	40 at ± 30	smd	cob-fcer-033	*
1030	iff	20	30	14	2	40 at ± 120	smd	cob-fcer-034	*
1030	iff	20	18	14	6	12 at ± 12	smd	cob-fcer-035	46
1030	iff	0	1.9	14	2	30 at ± 20	smd	cob-fcer-036	48
1030	iff	0	16	17	3	60 at 970 & 1090	smd	cob-fcer-037	*
1035	intermediate frequency	10	33	14	5	50 at 960 & 1110	smd	cob-fcer-038	*
1052	intermediate frequency	10	155	14	2	45 at 565 & 50 at 1570	smd	cob-fcer-039	*
1082	intermediate frequency	10	35	14	5	50 at 1010 & 30 at 1125	smd	cob-fcer-040	50
1090	iff	10	10	14	2.5	40 at 1030 & 40 at 1150	smd	cob-fcer-041	99
1090	iff	20	40	14	1	20dB at ± 110 MHz	smd	cob-fcer-042	52
1090	iff	20	25	14	2	40 at 1030 & 40 at 1150	smd	cob-fcer-043	*
1090	iff	20	10	14	3	70 at ± 25	smd	cob-fcer-044	54
1090	iff	20	20	14	4	25 at ± 60	smd	cob-fcer-045	*
1090	iff	20	30	14	4	40 at ± 120	smd	cob-fcer-046	*
1090	iff	20	19	14	4	60 at ± 60	smd	cob-fcer-047	*
1090	iff	10	16	14	3	60 at ±60	smd	cob-fcer-048	*
1090	iff	10	10	14	1.5	34 at ± 36	smd	cob-fcer-049	*
1090	iff	10	16	14	2.5	48 at ± 40	smd	cob-fcer-050	*
1090	iff	10	20	14	2.5	40 at ± 30	smd	cob-fcer-051	*
1090	iff	20	30	14	2	40 at ± 120	smd	cob-fcer-052	56
1090	iff	20	18	14	6	12 at ± 12	smd	cob-fcer-053	*
1090	iff	20	16	18	2.5	30 at ± 20	smd	cob-fcer-054	*
1090	iff	0	1.5	17	4	20 at ± 100	smd	cob-fcer-055	*
1090	notch	20	60	12	1	-	smd	cob-fcer-056	*
1090	iff	20	40	14	1.5	20 at ± 100	smd	cob-fcer-057	58
1090	iff	10	46	17	1	27 at ± 77	smd	cob-fcer-058	60
1152	intermediate frequency	10	2	10	3	40 at 1024 & 1280	smd	cob-fcer-059	*
1167	intermediate frequency	10	24	14	2.5	60 at 1000 & 1410	smd	cob-fcer-060	*
1176	gps	20	28	16	5	45 at ± 44	smd	cob-fcer-061	*
1176	gps	20	44	16	3	40 at ± 46	smd	cob-fcer-062	*
1176	gps	10	28	14	5	20 at ± 28	smd	cob-fcer-063	62
1176	gps	10	44	15	5	20 at ± 32	smd	cob-fcer-064	*
1177	gps	20	24	14	3	50 at ± 100	smd	cob-fcer-065	*
1177	gps	20	10	14	4	20 at 1157 & 20 at 1197	smd	cob-fcer-066	*
1195	gps	20	3	14	5	15 at 1080 & 40 at 2200	smd	cob-fcer-067	64
1206	gps	10	12	14	7	20 at 1190 & 44 at 1234	smd	cob-fcer-068	*
1207	gps	20	44	16	3	40 at ± 46	smd	cob-fcer-069	*
1207	gps	20	28	16	5	45 at ± 44	smd	cob-fcer-070	*

*Please contact factory or download from website


AIR CAVITY FILTERS


CERAMIC FILTERS


LUMPED ELEMENT FILTERS


WAVEGUIDE FILTERS

CERAMIC FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB (MHz)	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
1207	gps	10	28	14	5	20 at ± 28	smd	cob-fcer-071	*
1210	gps	20	70	16	2	60 at 880 & 50 at 1090	smd	cob-fcer-072	*
1220	gps	10	8	14	5	45 at 1184 & 1256	smd	cob-fcer-073	*
1227	gps	20	10	14	2.5	14 at +:50	smd	cob-fcer-074	*
1227	gps	20	28	16	5	45 at ± 44	smd	cob-fcer-075	*
1227	gps	10	66	14	0.8	20 at ± 100	smd	cob-fcer-076	*
1227	gps	0	39	14	2	21 at ± 50	smd	cob-fcer-077	*
1228	gps	10	25	12	1.5	35 at 1087 & 30 at 1367	smd	cob-fcer-078	*
1236	gps	20	39	14	3	20 at 1197 & 20 at 1277	smd	cob-fcer-079	*
1237	gps	20	20	14	3	12 at 1350	smd	cob-fcer-080	66
1237	gps	20	30	14	3	40 at 1150 & 40 at 1230	smd	cob-fcer-081	*
1237	gps	10	30	14	4	40 at 1150 & 1350	smd	cob-fcer-082	68
1260	gps	10	18	10	5	60 at 1224	smd	cob-fcer-083	*
1270	gps	10	15	14	3	75 at 1200 & 30 at 1300	smd	cob-fcer-084	*
1278	gps	10	44	16	5	40 at ± 46	smd	cob-fcer-085	*
1278	gps	10	28	16	5	45 at ± 44	smd	cob-fcer-086	*
1278	gps	10	44	14	5	20 at ± 32	smd	cob-fcer-087	*
1296	intermediate frequency	10	24	15	4	30 at 1180 & 50 at 1468	smd	cob-fcer-088	70
1297	gps	10	44	15	5	20 at ± 32	smd	cob-fcer-089	*
1364	gps	10	25	14	3.5	30 at 1450	smd	cob-fcer-090	*
1382	intermediate frequency	10	20	14	4.5	45 at 1324 & 1440	smd	cob-fcer-091	*
1440	gps	20	1	14	2	30 at 111 & 20 at 1329	smd	cob-fcer-092	*
1440	intermediate frequency	20	2	14	4.5	50 at 1380 & 1500	smd	cob-fcer-093	72
1450	gps	10	100	16	2	50 at 1574	smd	cob-fcer-094	*
1487	gps	10	116	14	2	25 at 1210 & 40 at 1975	smd	cob-fcer-095	100
1490	gps	10	140	14	1.5	35 at 1200 & 30 at 1600	smd	cob-fcer-096	*
1500	intermediate frequency	10	81	14	8	40 at 1460	smd	cob-fcer-097	*
1512	intermediate frequency	10	16	14	3.5	40 at 1400	smd	cob-fcer-098	*
1512	intermediate frequency	10	16	14	3.5	35 at 1450 & 30 at 1565	smd	cob-fcer-099	*
1517	gps	10	30	14	2.5	54 at 1404 & 1655	smd	cob-fcer-100	*
1530	intermediate frequency	20	75	14	3	38 at ± 6 72	smd	cob-fcer-101	*
1532	intermediate frequency	20	24	14	3	50 at ± 100	smd	cob-fcer-102	*
1532	intermediate frequency	20	10	14	4	20 at 1512 & 20 at 1552	smd	cob-fcer-103	*
1532	gps	20	10	14	4	20 at 1512 & 20 at 1552	sma	cob-fcer-104	74
1575	gps	20	10	14	2.5	14 at +:50	smd	cob-fcer-105	*
1575	gps	10	44	16	3	40 at ± 46	smd	cob-fcer-106	76
1575	gps	10	28	16	3	45 at ± 44	smd	cob-fcer-107	*
1575	gps	10	10	14	3	40 at 1698 & 15 at 1525	smd	cob-fcer-108	*
1575	gps	10	25	10	1.8	35 at 1435 & 30 at 1715	smd	cob-fcer-109	101
1575	gps	10	20	14	3.7	40 at ± 50	smd	cob-fcer-110	78
1575	gps space	0	25	14	2.5	40 at 1425 & 1725	smd	cob-fcer-111	80
1575	gps	10	44	14	5	40 at ± 46	smd	cob-fcer-112	*
1575	gps/space	10	10	15	0.7	20 at ± 140	smd	cob-fcer-113	*
1575	gps/space	10	10	15	1.5	32 at ± 140	smd	cob-fcer-114	82
1587	gps	20	45	14	2.5	30 at ± 300	smd	cob-fcer-115	84
1587	gps	10	55	14	2	45 at ± 100	smd	cob-fcer-116	*
1587	gps	10	55	14	2	50 at ± 50	smd	cob-fcer-117	*
1589	gps	10	25	14	3	10 at 1690	smd	cob-fcer-118	*

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Filters

Ceramic filters

CERAMIC FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB (MHz)	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
1589	gps	20	49	14	3	20 at 1545 & 20 at 1633	smd	cob-fcer-119	*
1590	gps	10	51	14	1	10 at ± 50	smd	cob-fcer-120	*
1600	intermediate frequency	10	2	14	12	50 at ± 650	smd	cob-fcer-121	*
1602	gps	10	15	14	4	40 at ± 50	smd	cob-fcer-122	86
1603	gps	20	14	14	2.5	25 at ± 100	smd	cob-fcer-123	88
1675	intermediate frequency	10	660	14	2.5	35 at 950 & 20 at 2580	smd	cob-fcer-124	*
1683	intermediate frequency	10	634	9	2.5	27 at 1316 & 27 at 2133	smd	cob-fcer-125	*
1687	intermediate frequency	20	24	14	4	40 at 1605 & 40 at 1800	smd	cob-fcer-126	*
1687	intermediate frequency	10	30	14	4	40 at 1605 & 1800	smd	cob-fcer-127	*
1690	intermediate frequency	10	50	10	2	35 at 1565	smd	cob-fcer-128	*
1700	dcs	10	600	9	2.5	30 at 1300 & 40 at 2250	smd	cob-fcer-129	*
1700	intermediate frequency	20	25	14	3.2	20 at ± 100	smd	cob-fcer-130	*
1710	dcs	10	15	14	3.5	25 at ± 40	smd	cob-fcer-131	*
1716	dcs	20	15	14	3.5	40 at ± 100	smd	cob-fcer-132	90
1717	intermediate frequency	10	20	15	4.2	20 at ± 30	smd	cob-fcer-133	*
1725	dcs	10	650	9	2.5	27 at 1325 & 35 at 2275	smd	cob-fcer-134	*
1732	dcs	10	45	14	3	20 at 1690 & 20 at 1775	smd	cob-fcer-135	102
1780	intermediate frequency	10	140	14	1.5	40 at 1500 & 30 at 1900	smd	cob-fcer-136	*
1780	pcs	10	140	14	2	35 at 1530 & 20 at 1930	smd	cob-fcer-137	*
1800	intermediate frequency	10	50	14	3	50 at 900 & 2700	smd	cob-fcer-138	*
1842	dcs	10	75	12	1.5	10 at 1775 & 5 at 1910	sma	cob-fcer-139	*
1880	pcs	10	60	14	3	40 at 1755 & 50 at 1930	smd	cob-fcer-140	*
1882.5	pcs	10	65	15	3	25 at 1770 & 2110	smd	cob-fcer-141	*
1900	umts	10	1000	9	2.5	25 at 1300 & 30 at 2600	smd	cob-fcer-142	*
1960	radiolink	10	60	10	3.5	50 at 1910 & 40 at 2100	smd	cob-fcer-143	*
1962.5	radiolink	10	65	15	3	25 at 1850 & 25 at 2110	smd	cob-fcer-144	*
2042	radiolink	10	35	14	5	65 at 1902 & 65 at 2220	smd	cob-fcer-145	*
2085	radiolink	10	50	14	4	65 at 1945 & 60 at 2290	smd	cob-fcer-146	*
2100	intermediate frequency	20	40	12	2.6	40 at ± 600	smd	cob-fcer-147	92
2220	radiolink	10	40	14	3.5	35 at 2110 & 35 at 2360	smd	cob-fcer-148	*
2245	radiolink	10	90	14	3.5	35 at 2110 &35 at 2360	smd	cob-fcer-149	103
2270	radiolink	10	40	14	3.5	35 at 2110 & 35 at 2360	smd	cob-fcer-150	*
2300	radiolink	10	200	14	1.5	20 at 2100	smd	cob-fcer-151	*
2332	radiolink	10	300	16	2	30 at 1485	smd	cob-fcer-152	*
2345	radiolink	10	702	14	2.5	40 at 1270	smd	cob-fcer-153	*
2360	radiolink	10	34	13	2.8	37 at 2360 & 32 at 4580	smd	cob-fcer-154	*
2400	radiolink	10	800	9	2.5	27 at 1900 & 30 at 3000	smd	cob-fcer-155	104
2419	radiolink	10	38	10	4	10 at 2445	smd	cob-fcer-156	*
2450	radiolink	10	100	10	1.5	30 at 5150	smd	cob-fcer-157	*
2450	radiolink	10	500	15	3	20 at 2920	smd	cob-fcer-158	105
2464	radiolink	10	38	10	4	12 at 2438	smd	cob-fcer-159	106
2464	radiolink	10	38	14	3.5	30 at 1500 & 25 at 3200	smd	cob-fcer-160	*
2464	radiolink	10	38	15	5	13 at 2438 & 20 at 3200	smd	cob-fcer-161	*
2500	radiolink	10	120	14	3	60 at 700	smd	cob-fcer-162	*
2500	radiolink	10	200	14	3	65 at ± 600	smd	cob-fcer-163	107
2510	radiolink	20	20	14	2	10 at ± 160	smd	cob-fcer-164	*
2510	radiolink	10	20	14	2	40 at ± 160	smd	cob-fcer-165	*
2545	radiolink	10	150	14	3	60 at 2170 & 50 at 2880	smd	cob-fcer-166	108

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AIR CAVITY FILTERS


CERAMIC FILTERS


LUMPED ELEMENT FILTERS


WAVEGUIDE FILTERS

CERAMIC FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB (MHz)	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
2550	radiolink	10	100	14	2.5	60 at 2460	smd	cob-fcer-167	*
2586	intermediate frequency	20	20	12	2	20 at 2350 & 2821	smd	cob-fcer-168	*
2645	radiolink	10	150	14	3	60 at 2170 & 50 at 2980	smd	cob-fcer-169	*
2650	radiolink	10	20	14	3	35 at 2775 & 20 at 2400	smd	cob-fcer-170	*
2650	radiolink	10	50	14	3	15 at 2535 & 60 at 2890	smd	cob-fcer-171	*
2650	radiolink	10	20	14	3	60 at 2775 & 20 at 2400	smd	cob-fcer-172	109
2680	radiolink	20	20	14	2	40 at ± 250	smd	cob-fcer-173	*
2702	intermediate frequency	20	20	12	2	20 at 25456 & 2948	smd	cob-fcer-174	94
2818	intermediate frequency	20	20	12	2	20 at 2561 & 3075	smd	cob-fcer-175	*
2934	intermediate frequency	20	20	12	2	20 at 2667 & 3201	smd	cob-fcer-176	*
3000	intermediate frequency	10	400	14	2	40 at 2060 & 4100	sma	cob-fcer-177	*
3042	radiolink	10	915	14	3.5	45 at 1750 & 35 at 3877	smd	cob-fcer-178	*
3208	intermediate frequency	10	210	12	3	50 at 2100 & 4300	smd	cob-fcer-179	*
3455	radiolink	10	155	14	2	20 at ± 225	smd	cob-fcer-180	110
3500	radiolink	10	220	15	3	28 at 3240 & 3760	smd	cob-fcer-181	*
3500	radiolink	10	220	14	2	20 at ± 260	smd	cob-fcer-182	*
3555	radiolink	10	155	14	2	20 at ± 225	smd	cob-fcer-183	*
3600	intermediate frequency	10	70	12	3	50 at 1800 & 35 at 5400	smd	cob-fcer-184	96
3695	radiolink	10	5	14	7	60 at 3439 & 3951	smd	cob-fcer-185	*
3750	radiolink	10	165	14	2	40 at 3410 &15 at 3570	smd	cob-fcer-186	*
3750	radiolink	10	400	14	3	35 at 3450 & 35 at 4050	smd	cob-fcer-187	*
3770	intermediate frequency	20	5	14	5	60 at ± 240	smd	cob-fcer-188	*
3800	radiolink	10	800	12	3	40 at ± 1000	smd	cob-fcer-189	*
3840	intermediate frequency	0	40	15	5.5	30 at ± 60	smd	cob-fcer-190	*
3935	intermediate frequency	10	24	14	7	70 at 3845 & 30 at 3977	smd	cob-fcer-191	*
5000	radiolink	10	150	14	2.5	15 at ± 300	smd	cob-fcer-192	*
5050	radiolink	10	1900	9	2	10 at 3950 & 15 at 6250	smd	cob-fcer-193	*
5375	radiolink	10	950	10	1.5	35 at 2500	smd	cob-fcer-194	*
5752.5	radiolink	10	55	14	3	30 at 1500 & 25 at 6000	smd	cob-fcer-195	*
5847.5	radiolink	10	55	14	3	30 at 1500 & 25 at 6500	smd	cob-fcer-196	*

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Filters

Lumped element filters
Waveguide filters

LUMPED ELEMENT FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB (MHz)	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
10	intermediate frequency	10	1.5	14	3	40 at ± 3	smd	cob-flc-001	*
12	intermediate frequency	10	1.5	14	3.5	20 at 10&50 at 15	smd	cob-flc-002	112
28	intermediate frequency	10	6	14	4	40 at 20&40 at 36	smd	cob-flc-003	*
28	intermediate frequency	10	12	14	5	25 at 25	smd	cob-flc-004	*
40	intermediate frequency	10	4	14	5	30 at ± 4	smd	cob-flc-005	*
43	intermediate frequency	10	4	14	2	40 at 33 & 40 at 53	smd	cob-flc-006	*
48	intermediate frequency	10	4.5	14	3	60 at 33 & 63	smd	cob-flc-007	114
49	intermediate frequency	10	21	14	3	40 at 10 & 40 at 100	smd	cob-flc-008	*
50	intermediate frequency	10	20	14	4	40 at 30 & 40 at 70	smd	cob-flc-009	*
50	intermediate frequency	20	20	14	4	40 at 30 & 70	sma	cob-flc-010	116
52	lowpass	10	0	14	0.8	35 at +18	smd	cob-flc-011	*
60	intermediate frequency	10	4	14	3.5	30 at ± 10	smd	cob-flc-012	*
60	intermediate frequency	10	6	14	3	60 at 42 & 50 at 78	smd	cob-flc-013	*
60	intermediate frequency	10	9	14	2.5	40 at 48 & 40 at 72	smd	cob-flc-014	*
60	intermediate frequency	0	10	15	4.5	40 at 48 & 40 at 72	smd	cob-flc-015	118
60	intermediate frequency	10	6	14	3	20 at 54 & 55 at 78	smd	cob-flc-016	*
62	intermediate frequency	10	5	14	3	40 at 42 & 82	smd	cob-flc-017	138
64	intermediate frequency	10	16	14	1.5	40 at 81 & 50 at 112	smd	cob-flc-018	*
70	intermediate frequency	10	12	14	5.5	42 t 58 & 42 at 82	smd	cob-flc-019	120
75	intermediate frequency	10	10	14	2	20 at ± 30	smd	cob-flc-020	*
86	intermediate frequency	10	24	14	1.5	50 at 42 & 40 at 150	smd	cob-flc-021	*
90	intermediate frequency	10	24	14	3	80 at 48 & 80 at 132	smd	cob-flc-022	*
90	lowpass	44	0	15	0.9	35 at 104	pin	cob-flc-023	*
116	intermediate frequency	10	2	14	7	15 at 110	smd	cob-flc-024	122
120	intermediate frequency	20	5	14	4	30 at 108 & 140	pin	cob-flc-025	*
121	intermediate frequency	20	13	14	5	70 at 75	pin	cob-flc-026	*
124	intermediate frequency	20	5	14	4	30 at 108 & 144	pin	cob-flc-027	*
129	intermediate frequency	20	5	14	4	30 at 108 & 149	pin	cob-flc-028	*
134	intermediate frequency	20	5.5	14	4	30 at 108 & 154	pin	cob-flc-029	*
140	intermediate frequency	10	280	14	0.5	20 at 10 & 40 at 400	smd	cob-flc-030	*
144	intermediate frequency	10	15	14	5	60 at 129 & 65 & 162	smd	cob-flc-031	*
156	intermediate frequency	20	15	14	5	70 at 109	pin	cob-flc-032	*
156	lowpass	45	0	14	0.8	35 at 270	pin	cob-flc-033	*
182	intermediate frequency	10	6	14	11	14 at ± 3	smd	cob-flc-034	*
192	intermediate frequency	10	10	14	7	50 at 214 & 70 at 236	smd	cob-flc-035	124
243	intermediate frequency	20	20	14	5	70 at 195	pin	cob-flc-036	*
270	intermediate frequency	10	500	14	1	20 at 10 & 45 at 650	smd	cob-flc-037	*
271	lowpass	45	0	14	0.8	29 at 312	pin	cob-flc-038	*
312	intermediate frequency	10	175	14	3	35 at 200 & 35 at 450	smd	cob-flc-039	*
400	intermediate frequency	10	50	14	2.2	45 at 350 & 40 at 450	smd	cob-flc-040	*
410	intermediate frequency	10	220	18	0.5	40 at 200 & 40 at 670	smd	cob-flc-041	*
450	intermediate frequency	10	10	14	5.5	50 at 400 & 50 at 500	smd	cob-flc-042	*
470	lowpass	45	0	14	0.8	25 at +570	smd	cob-flc-043	*
504	intermediate frequency	10	50	10	6	30 at 433 & 40 at 575	smd	cob-flc-044	*
520	intermediate frequency	10	200	14	0.8	35 at 100 & 60 at 1260	sma	cob-flc-045	126
655	intermediate frequency	10	25	14	2.5	30 at ± 100	smd	cob-flc-046	*
710	lowpass	10	0	15	2	30 at 850	smd	cob-flc-047	139
720	intermediate frequency	10	126	14	3	50 at 320 & 50 at 1310	smd	cob-flc-048	*

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AIR CAVITY FILTERS


CERAMIC FILTERS


LUMPED ELEMENT FILTERS


WAVEGUIDE FILTERS

LUMPED ELEMENT FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
731	intermediate frequency	10	30	14	5	45 at 658 & 806	smd	cob-flc-049	*
768	intermediate frequency	10	35	14	5	30 at 720 & 816	smd	cob-flc-050	*
816	intermediate frequency	10	30	14	5	30 at 768 & 864	smd	cob-flc-051	*
864	intermediate frequency	10	35	14	5	30 at 816 & 912	smd	cob-flc-052	128
912	intermediate frequency	10	35	15	5.5	50 at 864 & 960	smd	cob-flc-053	*
942	gsm	10	35	12	1.5	15 at 895 & 990	sma	cob-flc-054	*
960	intermediate frequency	10	5	15	6	50 at 840 & 50 at 1080	smd	cob-flc-055	*
1008	intermediate frequency	10	30	14	5.5	50 at 960 & 1056	smd	cob-flc-056	*
1056	intermediate frequency	10	25	14	6	35 at 1008 & 1104	smd	cob-flc-057	130
1080	intermediate frequency	10	50	14	4	35 at 996 & 50 at 1200	smd	cob-flc-058	*
1090	lowpass	10	0	14	0.5	40 at 2100	smd	cob-flc-059	132
1090	lowpass	55 peak	0	19	0.5	45 at 2060	smd	cob-flc-060	*
1191	intermediate frequency	10	92	16	5	50 at ± 144	smd	cob-flc-061	*
1235	intermediate frequency	10	36	14	4	50 at 1030 & 1440	smd	cob-flc-062	*
1237	intermediate frequency	10	80	14	2.2	35 at ± 200	smd	cob-flc-063	*
1280	intermediate frequency	10	64	14	4	50 at 720 & 1560	smd	cob-flc-064	*
1284	intermediate frequency	10	240	10	3	45 at ± 456	smd	cob-flc-065	*
1296	intermediate frequency	10	30	16	5	50 at 1025 & 20 at 1359	smd	cob-flc-066	134
1296	intermediate frequency	10	40	14	4	65 at 1152 & 70 at 1440	smd	cob-flc-067	*
1320	intermediate frequency	10	50	14	4	50 at 1212 & 35 at 1392	smd	cob-flc-068	*
1400	lowpass	10	0	15	2	28 at 1500	smd	cob-flc-069	*
1440	intermediate frequency	10	110	14	2.5	25 at 1320 & 1560	smd	cob-flc-070	*
1584	intermediate frequency	10	55	14	4	70 at 1440 & 65 at 1728	smd	cob-flc-071	*
1589	intermediate frequency	10	80	14	2.2	35 at ± 200	smd	cob-flc-072	*
1600	intermediate frequency	10	160	14	3	50 at 1200 & 45 at 3200	smd	cob-flc-073	*
1600	intermediate frequency	10	225	14	3	30 at 1400 & 1860	smd	cob-flc-074	136
1650	intermediate frequency	10	276	14	3	20 at 1425 & 22 at 2100	smd	cob-flc-075	*
1750	intermediate frequency	10	175	14	3	40 at 1250 & 40 at 2500	smd	cob-flc-076	*
2500	lowpass	10	0	14	0.5	30 at 3200	smd	cob-flc-077	*

WAVEGUIDE FILTERS

Center Frequency f0 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
6875	radiolink	47	300	21	0.3	30 at 6.4 & 25 at 7.4	-	cob-fwg-001	*
8112	space	37	375	21	0.3	80 at 5000	-	cob-fwg-002	*
9310	radar	47	16	21	1.5	43 at 9.2682 & 9.358	-	cob-fwg-003	*
9600	space	47	1000	21	0.3	25 at 19.3	-	cob-fwg-004	140
11000	space	47	2050	21	0.3	55 at 13.75	-	cob-fwg-005	*
20550	space	10	700	21	1	25 at 17200...17900	-	cob-fwg-006	*

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Filters

Cavity Duplexers
Ceramic Duplexers

CAVITY DUPLEXERS

Low Frequency f1 (MHz)	High Frequency f2 (MHz)	Description & Application	Power (dBm)	Bandwidth @ 3dB	Return Loss (dB)	Insertion Losses @ f0 (dB)	Attenuation @ f0 (dB)	Package	Part Number	Page
35	39.4	radiolink	45	1.15	14	0.9	75	sma	cob-dcav-001	*
150.8	160.2	marine	50w	6.5	14	1.6	60	sma	cob-dcav-002	*
380	390	tetra	45	5	14	2	80	sma	cob-dcav-003	142
412	422	tetra	45	5	21	2	80	sma	cob-dcav-004	*
413	423	tetra	25	5	21	2	80	sma	cob-dcav-005	*
414	458	railways	20	12	14	1	50	sma	cob-dcav-006	*
415	425	tetra	45	5	21	2	80	sma	cob-dcav-007	*
416	426	tetra	45	5	21	2	80	sma	cob-dcav-008	*
417	427	tetra	45	5	21	2	80	sma	cob-dcav-009	*
430	440	railways	25	1	14	1.5	70	sma	cob-dcav-010	*
450	460	tetra	45	5	21	2	80	sma	cob-dcav-011	144
455	455	tetra	45	5	21	2	80	sma	cob-dcav-012	*
457	467	railways	43	2	16	1.5	70	smd	cob-dcav-013	146
824	869	amps	47	25	21	1.5	50	sma	cob-dcav-014	*
880	925	gsm	45	1.5	67	20	47	sma	cob-dcav-015	148
1030	1090	iff	5kw pulse	1.2	18	15	60	sma	cob-dcav-016	*
1710	1805	dcs	47	75	20	1.5	70	sma	cob-dcav-017	*
1850	1930	pcs	47	60	14	1.5	50	sma	cob-dcav-018	*
1855	1935	pcs	47	10	20	1	70	sma	cob-dcav-019	150
1920	2110	umts	47	75	20	1.5	80	sma	cob-dcav-020	*
2033	2202	wimax	20	1	21	1.5	95	sma	cob-dcav-021	*
2500	2670	wimax	37	20	20	1	70	sma	cob-dcav-022	152
2560	2670	wimax	37	20	20	1	70	sma	cob-dcav-023	*

CERAMIC DUPLEXERS

382.5	392.5	tetra	34	5	14	4.5	40	smd	cob-dcer-001	154
387	397	tetra	34	5	14	4.5	40	smd	cob-dcer-002	*
412.5	422.5	tetra	34	5	14	4.5	40	smd	cob-dcer-003	*
442.5	452.5	tetra	34	5	14	4.5	40	smd	cob-dcer-004	*
447.5	457.5	tetra	34	5	14	4.5	40	smd	cob-dcer-005	155
452.5	462.5	tetra	34	5	14	4.5	40	smd	cob-dcer-006	*
457.5	467.5	tetra	34	5	14	4.5	40	smd	cob-dcer-007	*
822	868	repeater	10	20	14	3	20	smd	cob-dcer-008	*
876	921	repeater	10	4	14	5	60	smd	cob-dcer-009	*
1176	1207	gps	10	24	14	3	40 at ± 46	smd	cob-dcer-010	*
1227	1575	gps	10	44	14	3	40 at ± 46	smd	cob-dcer-011	156
1227	1575	gps	10	24	14	1.7	30	smd	cob-dcer-012	158
1227	1575	gps	10	24	11	3	40	smd	cob-dcer-013	159
1227	1575	gps	20	16	15	1	11 at ± 75	smd	cob-dcer-014	160
1227	1587	gps	20	98	15	0.8	30 at ± 200	smd	cob-dcer-015	*
1255	1575	repeater	20	40	14	1	30 at ± 250	sma	cob-dcer-016	*
1575	1603	gps	10	12	14	1.5	16 at ± 30	smd	cob-dcer-017	162
1732.5	1882.5	dcs	10	45	14	2.5	35	smd	cob-dcer-018	*
1882.5	1962.5	dcs	37	65	14	3	20	smd	cob-dcer-019	164
1882.5	1962.5	dcs	10	65	14	2.7	23	smd	cob-dcer-020	*
1950	2140	umts	10	60	14	3	25	smd	cob-dcer-021	165
1962.5	2132.5	wimax	10	0	14	2.5	45	smd	cob-dcer-022	*
2535	2655	wimax	10	70	14	3	45	smd	cob-dcer-023	*

*Please contact factory or download from website

Filters

Markets

Cob-fcav-001

Cavity Filters

FEATURES

- Center Frequency : 382 MHz
- Bandwidth : 379.5 MHz to 384.5 MHz
- Input Power (max) : 32 W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -20˚C to +50˚C

DESCRIPTION

The cob-fcav-001 is a cavity filter ideal for tetra applications. Low in bandwidth insertion losses (< 3 dB) and excellent attenuation out of bandwidth (30dB at 387MHz and 25dB at 376MHz) is achieved using state of the art design, assembly and tuning process.
This product is designed for 32 W input power.

APPLICATIONS

- Tetra

ELECTRICAL SPECIFICATIONS

	Value
Centre frequency	382.5 MHz
Bandwidth at 1dB	5 MHz
Insertion loss at 382.5 MHz	< 3dB
VSWR	< 1.2:1
Rejection at 387.5MHz	> 30dB
Rejection at 376MHz	> 20dB
Power	32W

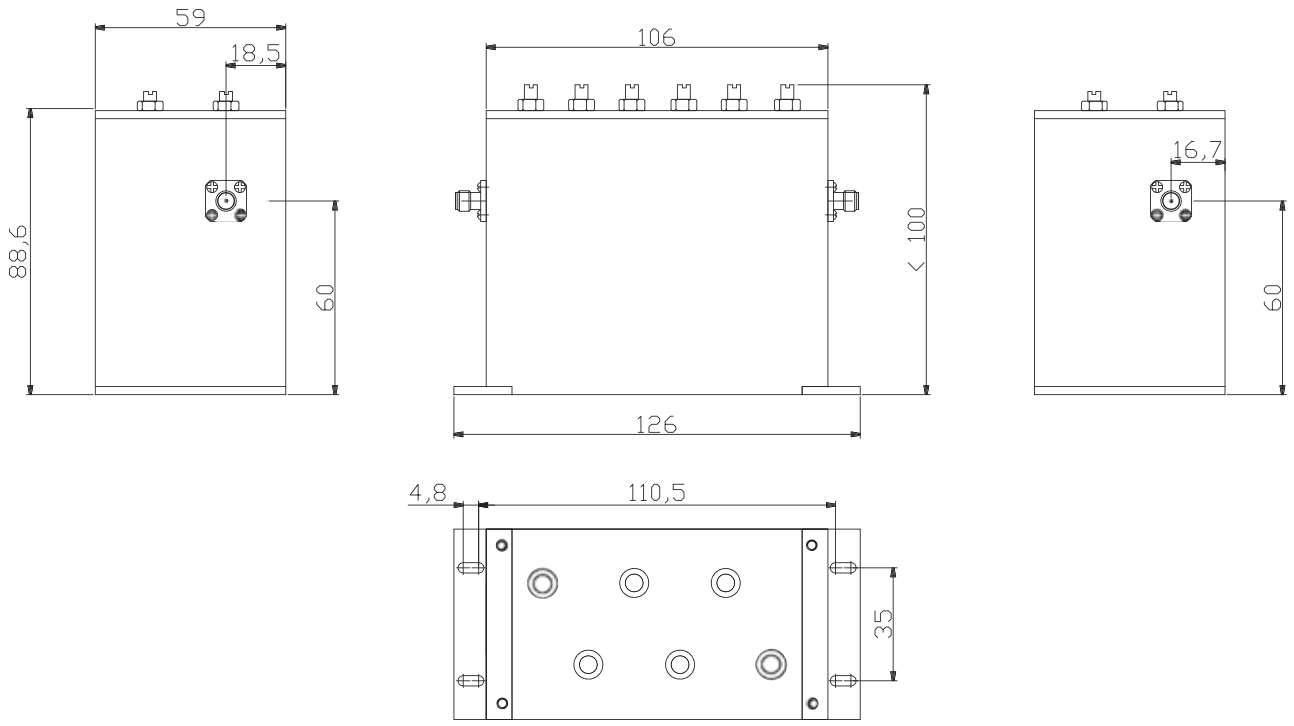
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	˚C	-20 →+50
Storage Temperature range	t	˚C	-30 →+60

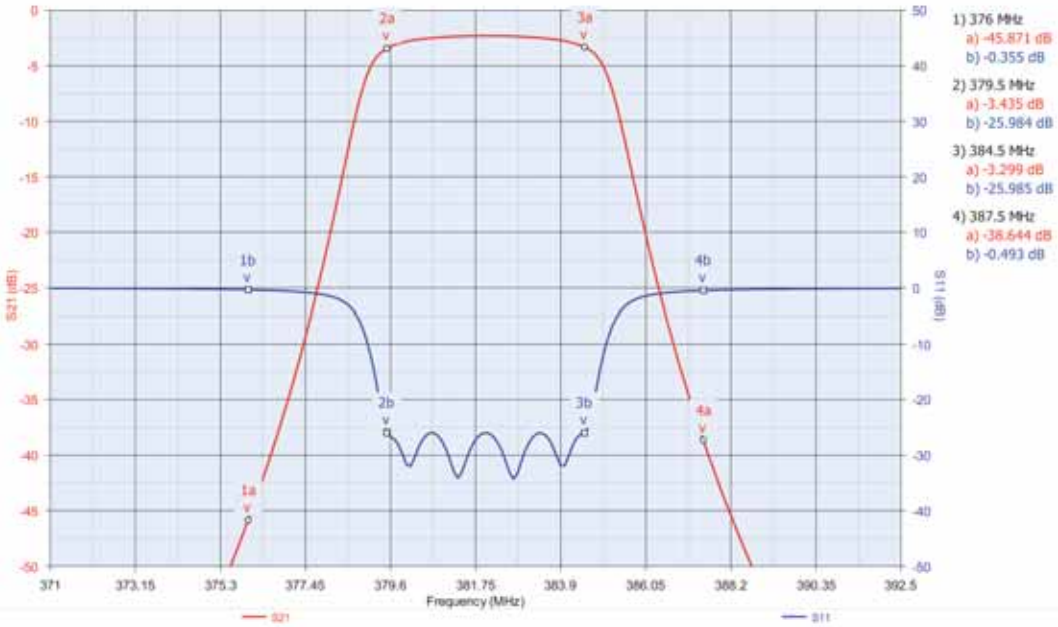
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	130 x 65 x 100
Connectors			SMA

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcav-003

Cavity Filters

FEATURES

- Center Frequency : 401 MHz
- Bandwidth : 400 MHz to 402 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 1 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcav-003 is a cavity filter ideal for space applications. Low in bandwidth insertion losses (< 1 dB) and excellent attenuation out of bandwidth (45dB at 300MHz and 65dB at 462MHz) is achieved using state of the art design, assembly and tuning process.
This product is designed for 1 mW input power.

APPLICATIONS

- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Value
Centre frequency	401.635 MHz
bandwidth	> 2 MHz
Insertion loss in Bandwidth	< 1 dB
Rejection 10MHz-300MHz	> 45 dB
Rejection at 354.2 MHz ± 30 kHz	> 25dB
Rejection at 462.5 MHz ± 0.6 MHz	> 65dB
Rejection at 480 MHz	> 50dB
Rejection at 500MHz up to >3rd harmonic	> 45dB
Input / Output return loss	> 18 dB
Pressure	1.33×10^{-3} TORR

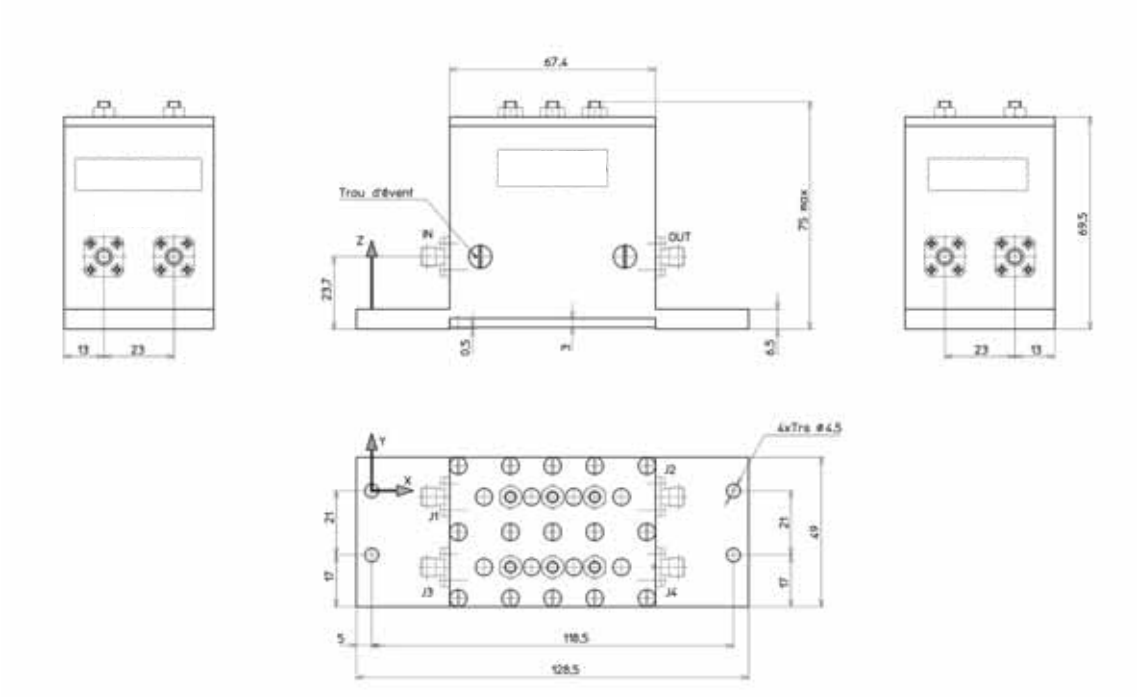
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	˚C	-40 →+85
Storage Temperature range	t	˚C	-45 →+90

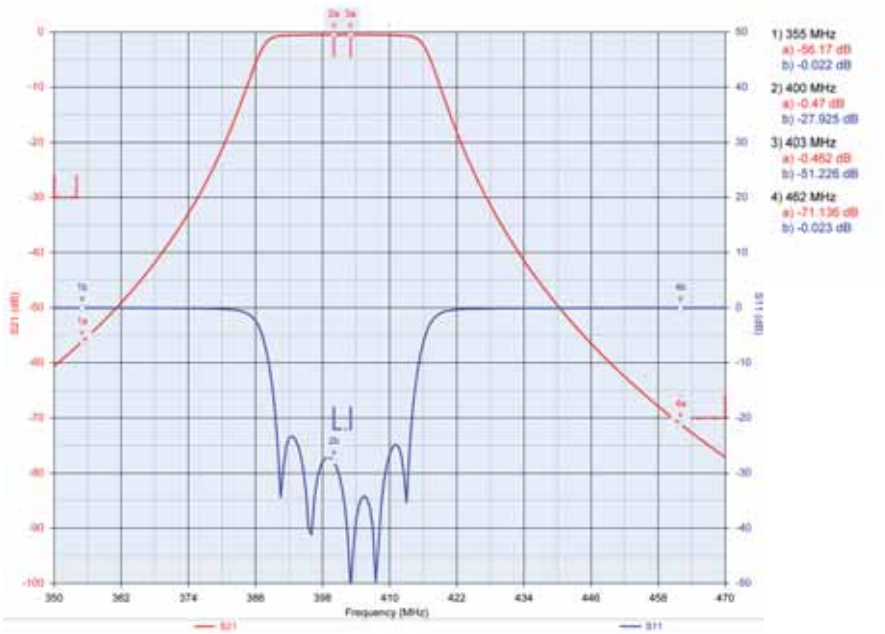
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	128 x 43 x 71
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcav-005

Cavity Filters

FEATURES

- Center Frequency : 435 MHz
- Bandwidth : 420 MHz to 450 MHz
- Input Power (max) : 5 W
- Insertion losses @ fo : < 0.5 dB
- Operating temperature : -20˚C to +50˚C

DESCRIPTION

The cob-fcav-005 is a cavity filter ideal for pmr applications. Low in bandwidth insertion losses (< 0.5 dB) and excellent attenuation out of bandwidth (40dB at 380MHz and 40dB at 490MHz) is achieved using state of the art design, assembly and tuning process.
This product is designed for 5 W input power.

APPLICATIONS

- Pmr

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Maximum Rating
Frequency Range	Freq.	MHz	420-450
Insertion Loss	IL	dB	< 0.5
Return Loss	RL	dB	> 21
Rejection at 380MHz	Att	dB	> 40
Rejection at 490 MHz	Att	dB	> 40

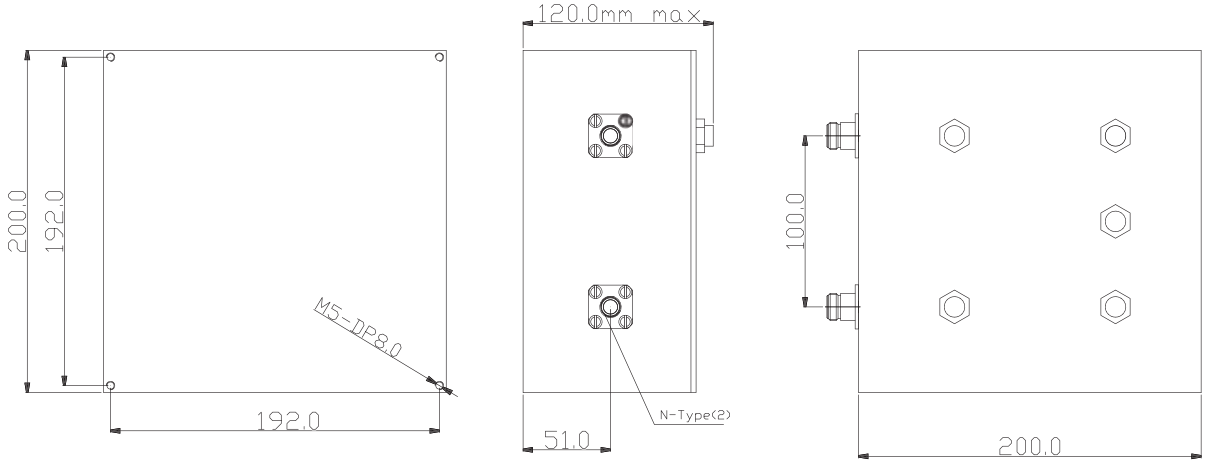
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	˚C	-20 →+50
Storage Temperature range	t	˚C	-30 →+60

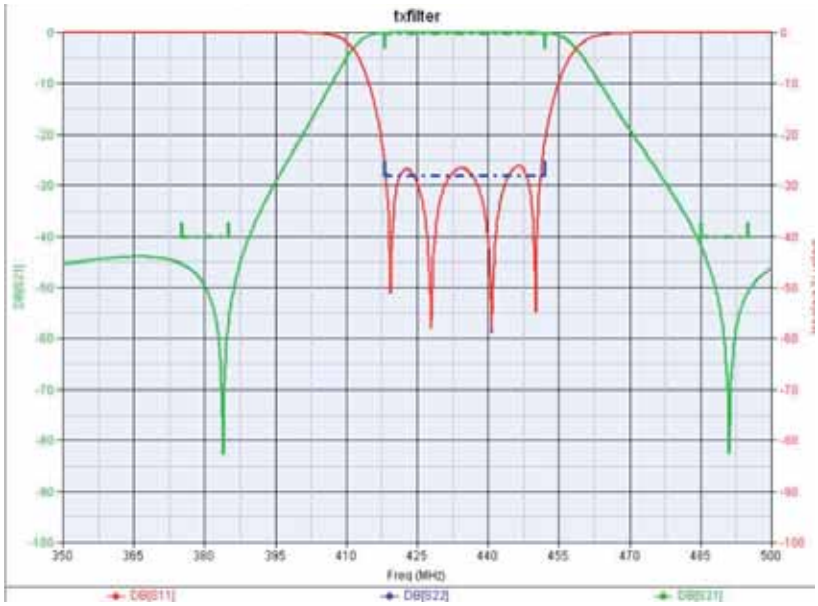
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	200 x 200 x 120
Connectors			N Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcav-006

Cavity Filters

FEATURES

- Center Frequency : 462 MHz
- Bandwidth : 461 MHz to 463 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 1 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcav-006 is a cavity filter ideal for pmr applications. Low in bandwidth insertion losses (< 1 dB) and excellent attenuation out of bandwidth (50dB at 400MHz) is achieved using state of the art design, assembly and tuning process. This product is designed for 1 mW input power.

APPLICATIONS

- Pmr

ELECTRICAL SPECIFICATIONS

	Value
Centre frequency	462.5 MHz
bandwidth	> 2 MHz
Insertion loss in Bandwidth	< 1 dB
Rejection at 401.635 MHz ± 30kHz	> 50 dB
Input / Output return loss	> 18 dB
Pressure	1.33 x 10^{-3} TORR

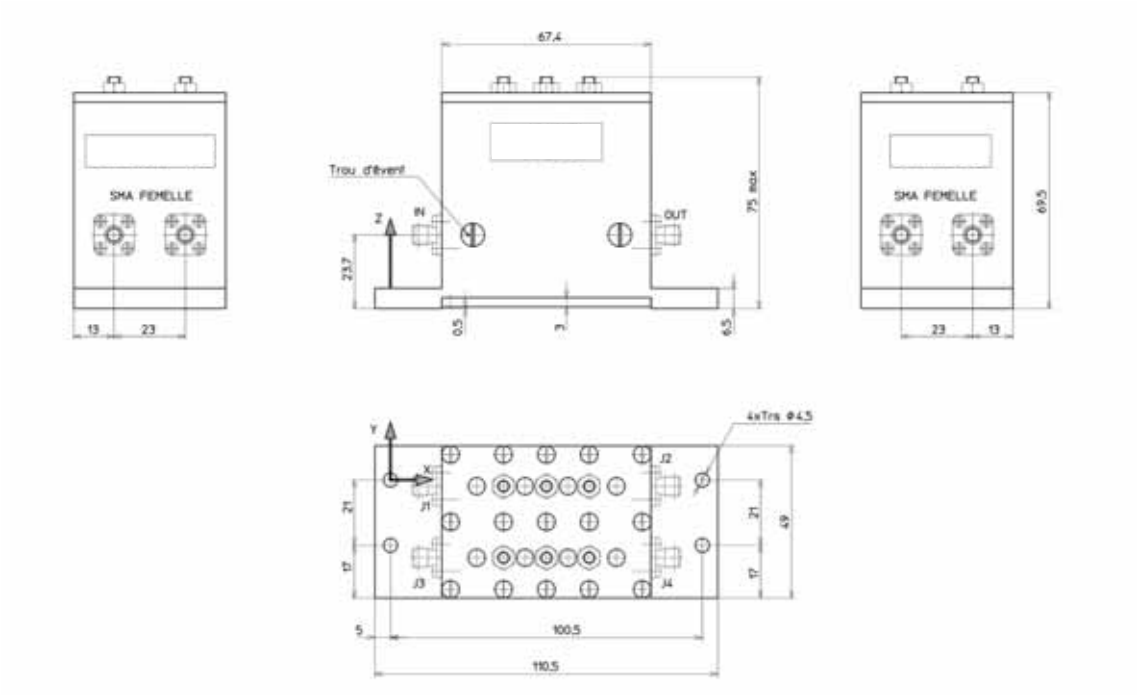
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	˚C	-40 → +85
Storage Temperature range	t	˚C	-45 → +90

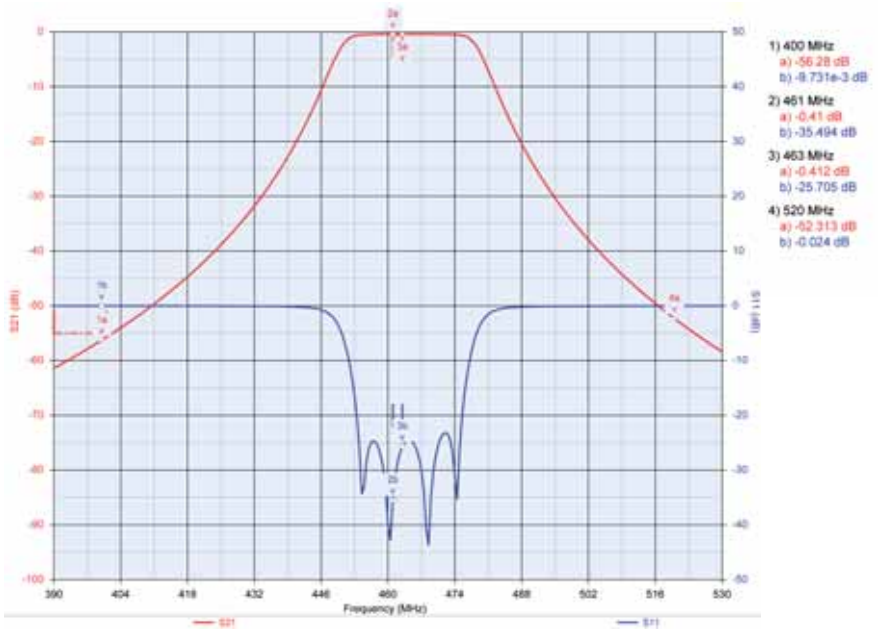
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	110 x 43 x 71
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcav-008

Cavity Filters

FEATURES

- Center Frequency : 1090 MHz
- Bandwidth : 1080 MHz to 1100 MHz
- Input Power (max) : 5 W
- Insertion losses @ fo : < 1 dB
- Operating temperature : -20˚C to +50˚C

DESCRIPTION

The cob-fcav-008 is a cavity filter ideal for iff applications. Low in bandwidth insertion losses (< 1 dB) and excellent attenuation out of bandwidth (40dB at 1058MHz and 1120MHz) is achieved using state of the art design, assembly and tuning process. This product is designed for 5 W input power.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Unit	Value
Centre frequency	MHz	1090
Insertion loss max.	dB	< 1
Bandwidth at 3dB	MHz	> 20
VSWR	ratio	< 1.5:1
Rejection at 1058 MHz and 1120 MHz	dB	> 40
Average power	W	5
Input impedance		50
Output impedance		50

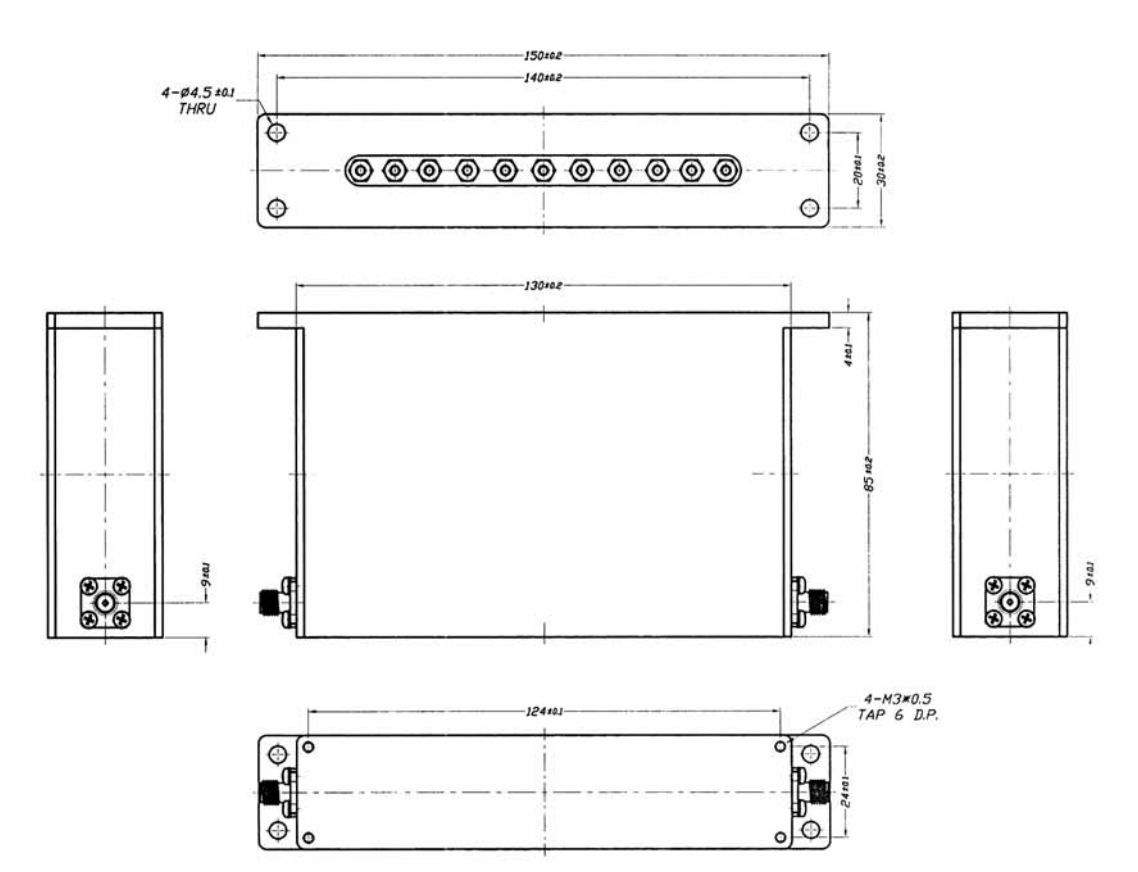
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	˚C	-20 →+50
Storage Temperature range	t	˚C	-30 →+60
Relative humidity		%	0-95%

OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	150 x 30 x 85
Connectors			SMA Female

OUTLINE DRAWING



Cob-fcav-011

Cavity Filters

FEATURES

- Center Frequency : 4500 MHz
- Bandwidth : 4480 MHz to 4520 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 2 dB
- Operating temperature : -20˚C to +50˚C

DESCRIPTION

The cob-fcav-011 is a cavity filter ideal for avionics applications. Low in bandwidth insertion losses (< 2 dB) and excellent attenuation out of bandwidth (100dB at ± 10% of fc) is achieved using state of the art design, assembly and tuning process. This product is designed for 1 W input power.

APPLICATIONS

- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Unit	Value
Center frequency	GHz	4.5
Power	W (cw)	1
Bandwidth	MHz	< 40
Insertion loss at fo	dB	< 2
Return loss	dB	> 14
Attenuation at 4.5 ± 0.5 GHz	dB	> 100

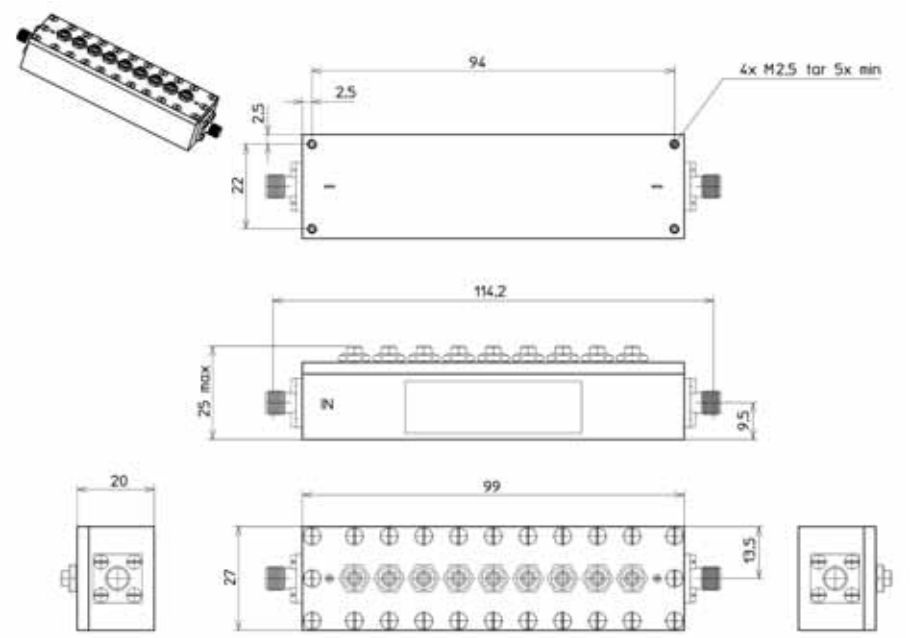
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	˚C	-20 →+50
Storage Temperature range	t	˚C	-30 →+60

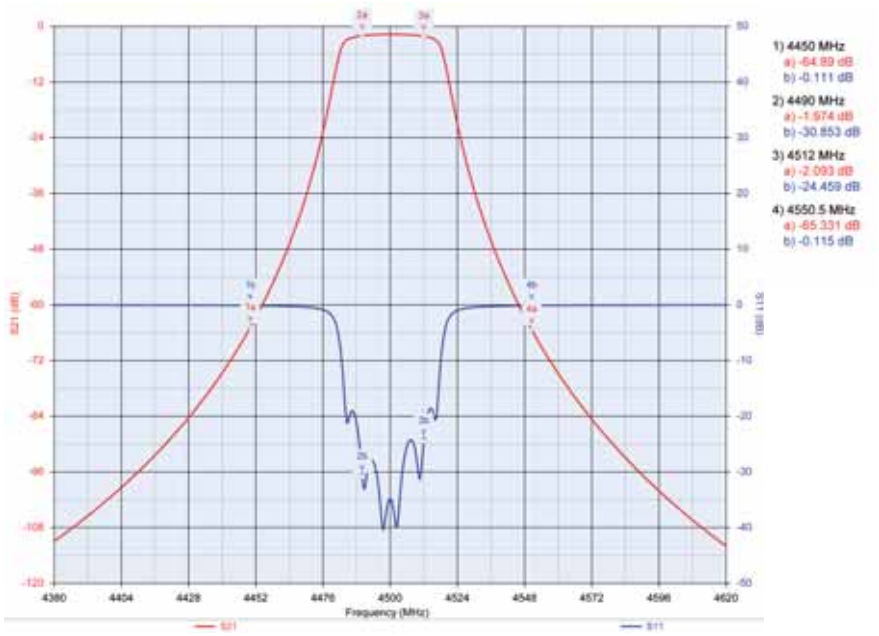
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	114 x 27 x 25
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcav-012

Cavity Filters

FEATURES

- Center Frequency : 5410 MHz
- Bandwidth : 5235 MHz to 5585 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 0.3 dB
- Operating temperature : -15˚C to +45˚C

DESCRIPTION

The cob-fcav-012 is a cavity filter ideal for space applications. Low in bandwidth insertion losses (< 0.3 dB) and excellent attenuation out of bandwidth (50dB at 2300MHz and 800MHz) is achieved using state of the art design, assembly and tuning process. This product is designed for 1 W input power.

APPLICATIONS

- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
RF Input Power (Average)		W	1
Reference Frequency Fo	Fo	MHz	5410
Useful Bandwidth		MHz	5235 – 5585
Insertion Loss in Bandwidth [5235 – 5585] MHz	I_L	dB	< 0.30
Insertion Loss FLatness in Bandwidth [5235 – 5585] MHz	IF_L	dBpp	< 0.15
Insertion Loss Ripple in Bandwidth [5235 – 5585] MHz	IR_L	dB/MHz	< 0.05
Insertion Loss Stability over Operating Temperature Range	I_{LS}	dB	< 0.1
Return Loss in Bandwidth [5235 – 5585] MHz	VSWR	dB	> 23 Ob. > 26
Attenuation From 2.2 GHz up to 2.3 GHz	R_J	dBc	> 50
Attenuation From 8.0 GHz up to 8.4 GHz	R_J	dBc	> 50
Group Delay Variation in Bandwidth [5235 – 5585] MHz	G_{DF}	pspp	< 70
Group Delay Stability over Operating Temperature Range	G_{DT}	ps/MHz	< 20
Phase Ripple in Bandwidth [5235 – 5585] MHz	P_R	˚p-p	< 1

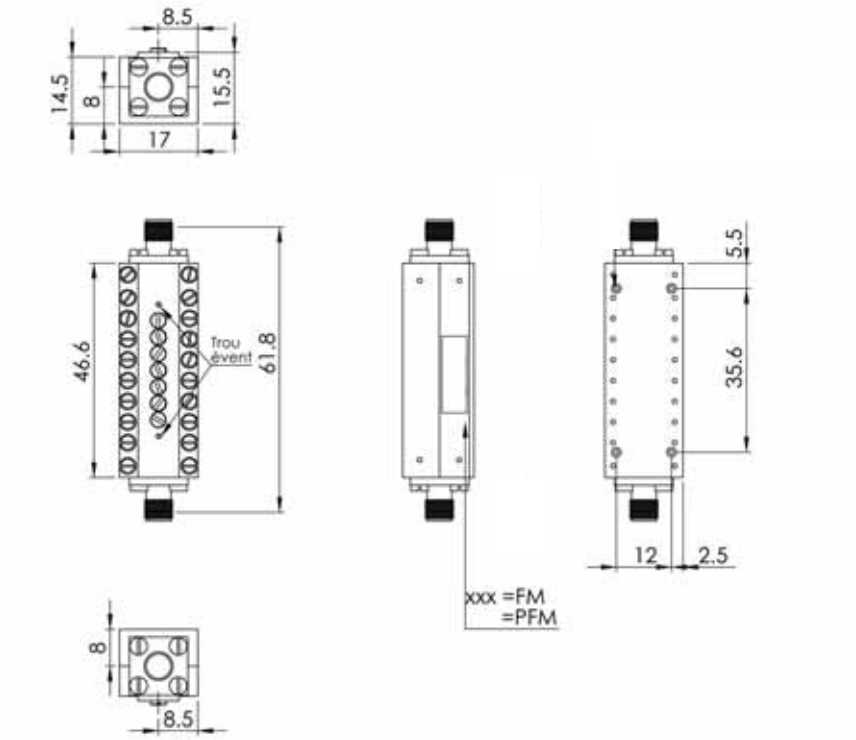
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range		˚C	-15 →+45
Storage Temperature range		˚C	-30 →+60

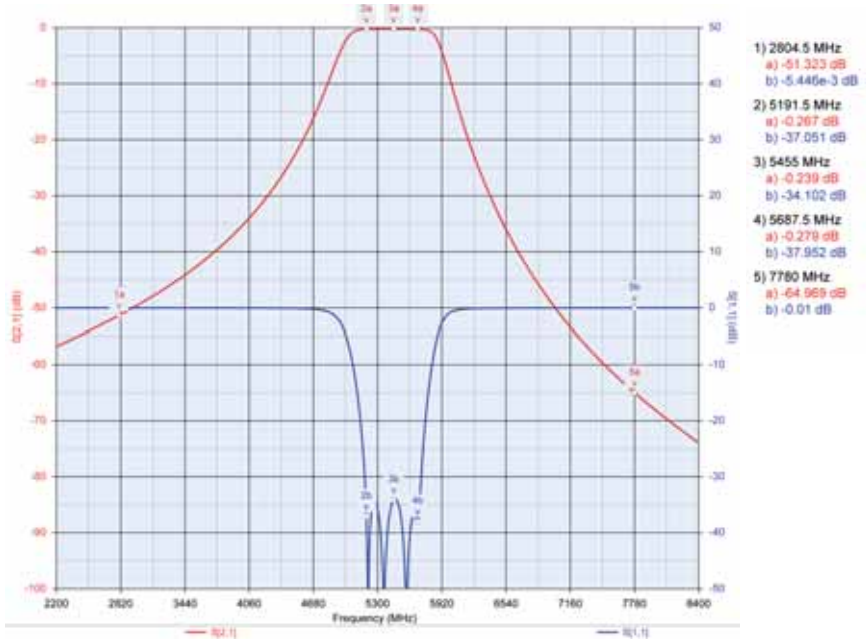
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	46.6 x 17 x 15.5
Weight		g	< 80
Connectors			Spatial SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcav-016

Cavity Filters

FEATURES

- Center Frequency : 9200 MHz
- Bandwidth : 8900 MHz to 9500 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2.2
- Operating temperature : -30˚C to +70˚C

DESCRIPTION

The cob-fcav-016 is a cavity filter ideal for radar applications. Low in bandwidth insertion losses (< 2.2) and excellent attenuation out of bandwidth (50dB at ± 500MHz) is achieved using state of the art design, assembly and tuning process. This product is designed for 1 mW input power.

APPLICATIONS

- Radar
- Avionics

ELECTRICAL SPECIFICATIONS

(20 ± 5)˚C	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc		MHz	9200
Insertion loss @ Fc		dB	< 2.2
-3dB Bandwidth		MHz	[8900 - 9500]
Ripple in Band Bw1 [8930 – 9470]MHz		dBpp	< 1.2
Ripple in Bw1 in 80MHz under band		dBpp	< 1.0
Return loss in Bw1 bandwith		dB	> 14
80MHz under Band Group delay variation, in Bw1		ns	< 4
Attenuation [DC - 8700] MHz		dBc	> 55
Attenuation @ 9600 MHz		dBc	> 50
Attenuation [9700 - 18000] MHz		dBc	> 55

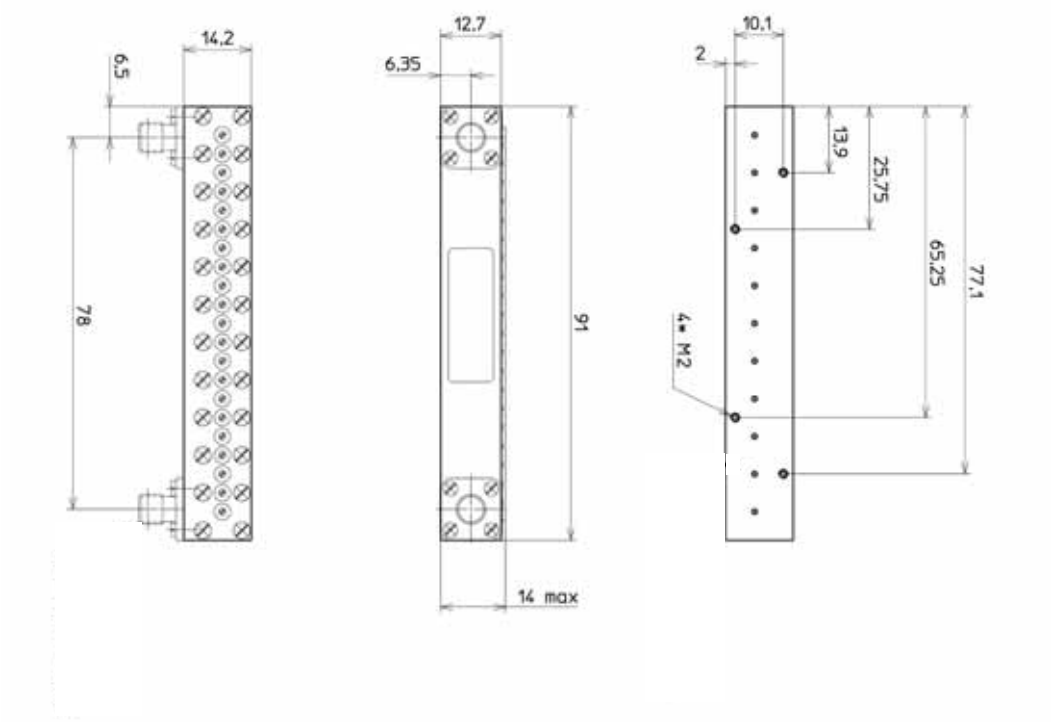
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	˚C	-30 →+70
Intermittent Operating T˚C range : 6H max	t	˚C	-40 →0 / +70 →+85
Storage Temperature range	t	˚C	-25 →+70
Altitude		m	1500

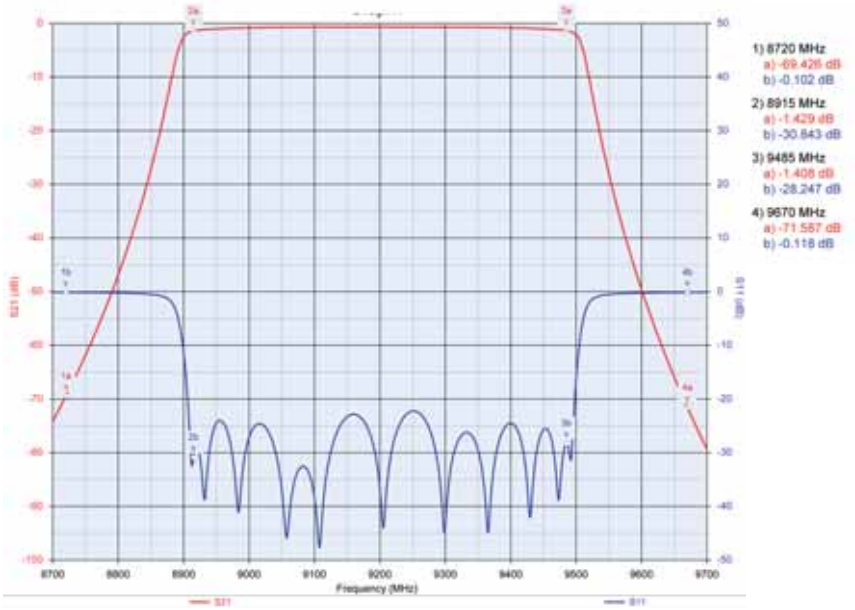
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	91x14.2x14
Weight		g	< 50
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcav-020

Cavity Filters

FEATURES

- Center Frequency : 11975 MHz
- Bandwidth : 11700 MHz to 12250 MHz
- Input Power (max) : 20 dBm
- Insertion losses @ fo : < 1.5 dB
- Operating temperature : -10°C to +90°C

DESCRIPTION

The cob-fcav-020 is a cavity filter ideal for space applications. Low in bandwidth insertion losses (< 1.5 dB) and excellent attenuation out of bandwidth (40dB at 11000MHz and 13750MHz) is achieved using state of the art design, assembly and tuning process. This product is designed for 100 mW input power.

APPLICATIONS

- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
RF Input Power		dBm	< 20
Reference Frequency Fo	Fo	GHz	11.975
Useful Bandwidth		GHz	11.70 – 12.25
Insertion Loss in Bandwidth [11.70 – 12.25] MHz		dB	< 1.50
Loss Stability over Operating Temperature Range		dB/MHz	< 0.25
Loss Stability over any 15°C Range		dB/MHz	< 0.03
Loss FLatness over any Band of 36 MHz, in Usefull Bandwidth		dBpp	< 0.20
Loss FLatness over any Band of 72 MHz, in Usefull Bandwidth		dBpp	< 0.35
Loss Slope over Usefull Bandwidth		dB/MHz	< 0.025
Group Delay Variation over any 36 MHz Band, in Usefull Bandwidth		nspp	< 1.0
Group Delay Variation over any 72 MHz Band, in Usefull Bandwidth		nspp	< 2.0
Group Delay Stability over Operating Temperature Range		ns/MHz	< 0.1
Group Delay Slope over Usefull Bandwidth		ns/MHz	< 0.05
Return Loss in Bandwidth [11.70 – 12.25] MHz		dB	> 21
Attenuation From 1.0 GHz up to 11.0 GHz		dBc	> 40
Attenuation From 12.75 GHz up to 13.5 GHz		dBc	> 35
Attenuation From 13.75 GHz up to 14.0 GHz		dBc	> 40
Attenuation From 17.3 GHz up to 18.4 GHz		dBc	> 70

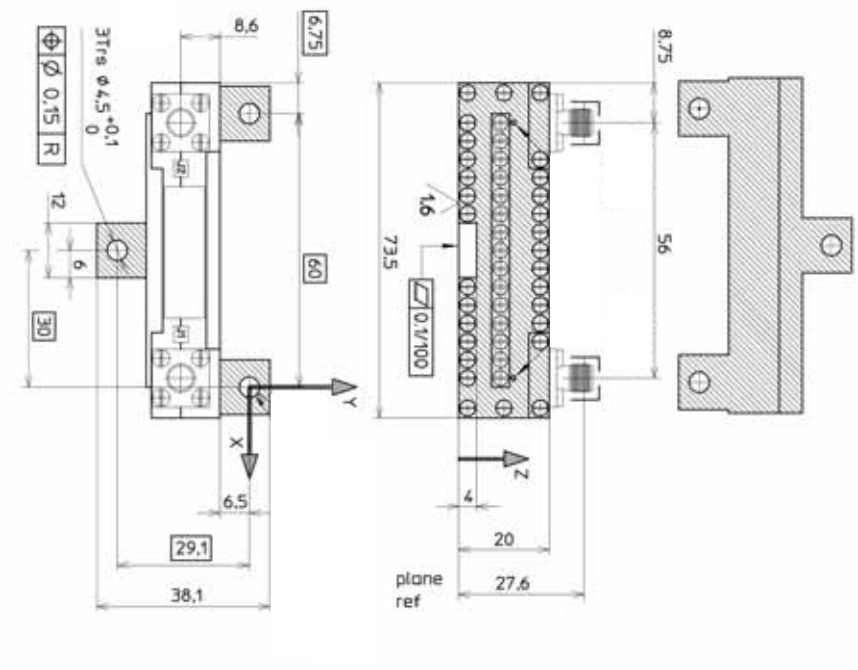
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range		°C	-10 → +90
Storage Temperature Range		°C	-35 → +95
Sine Vibrations (3 axis, 4 Oct./min.)			5 – 26 Hz : 11mm crête 26 – 100 Hz : 30 g
Random Vibrations (3 axis, 1 minute/axis)			10 – 50 Hz : 9dB/Oct. 50 Hz : 0.444g²/Hz 50 – 500 Hz : 0.9dB/Hz 500 – 1000 Hz : 0.89g²/Hz 1000 – 2000 Hz : -9dB/Hz
Shocks (3 Axes, 6 Directions)			100 Hz : 55g 1000 Hz : 500g 3000 Hz : 2000g 10000Hz : 2000g

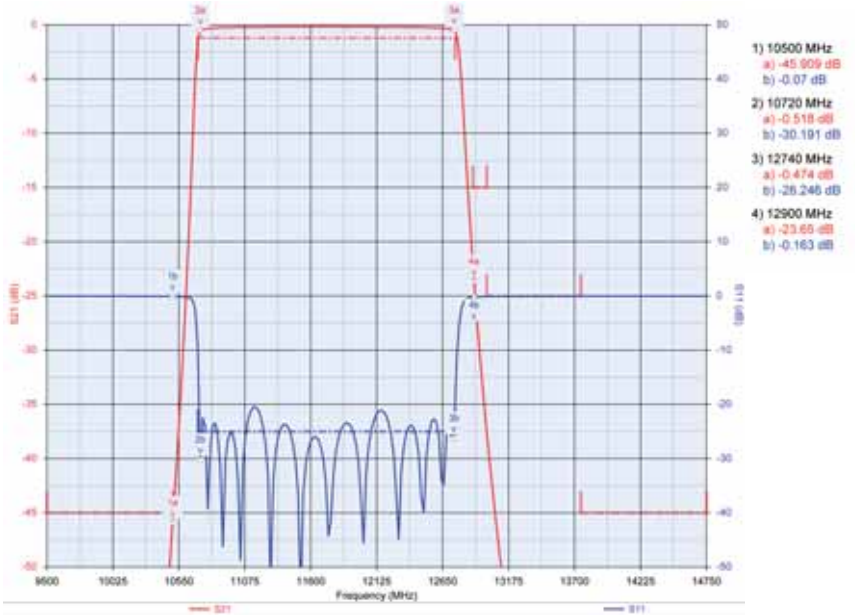
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	73.5 x 38.1 x 20
Weight		g	55 ± 5%
Connectors			Spatial SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-016

Ceramic Filters

FEATURES

- Center Frequency : 932 MHz
- Bandwidth : 914.5 MHz to 949.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 5 dB
- Operating temperature : -20°C to +80°C

DESCRIPTION

The cob-fcer-016 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	932.25
Insertion Loss @ Fo		dB	< 5.0
1dB Bandwidth		MHz	> 35
Return Loss in Bandwidth @ Fo ± 17.5 MHz		dB	> 14
Attenuation from 10 to 800 MHz		dB	> 50
Attenuation from 800 to 870 MHz		dBc	> 30 (> 40 Wished)
Attenuation from 1005 to 1864.5 MHz		dBc	> 50

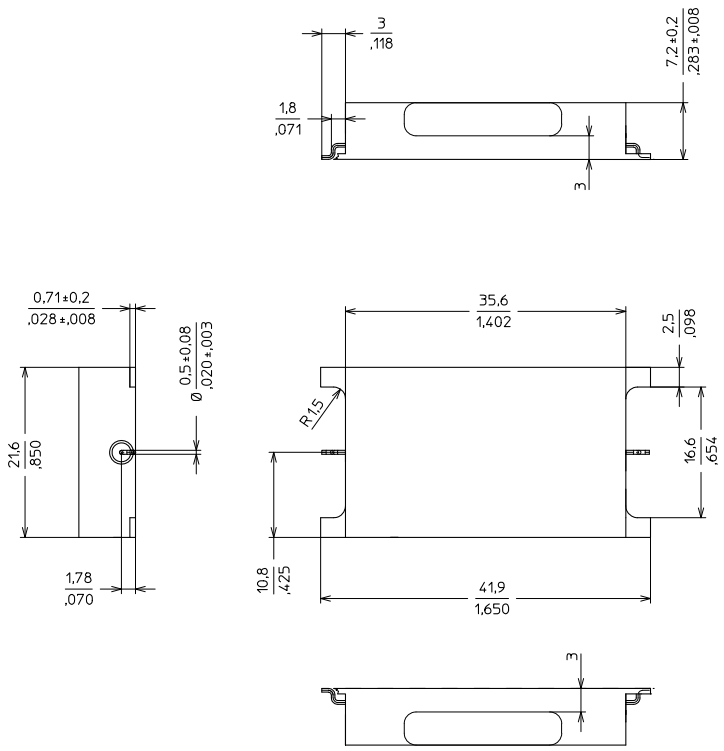
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	°C	-20 →+80
Storage Temperature range	t	°C	-40 →+85
Gross leak	Meth. 112E Cond. A	atm.cc/s	10^{-5}
Fine leak	Meth. 112E Cond. C	atm.cc/s	10^{-6}
Altitude	Meth. 105C Cond. D	m Feet	30480 100000
Humidity : 90%RH ; 40°C	Meth. 103B Cond. C	days	21
Sinus Vibrations : 10/2000Hz ; 3H/axe	Meth. 204D Cond. D	Gsin	20
Operating Random Vibrations : 10/2000Hz	Meth. 214 Cond. D	g^2/Hz	0.1
Shocks	Meth. 213B Cond. I		20g / 11ms
Solder Heat	Meth. 210 Cond. B		260°C / 10sec
Solderability	Meth. 208		95% @ 235°C
Terminale strength and fatigue	Meth. 211A Cond. A Cond. C		3 pounds Cond. A 1 pounds Cond. C
Solvent resistance	Meth. 215C		

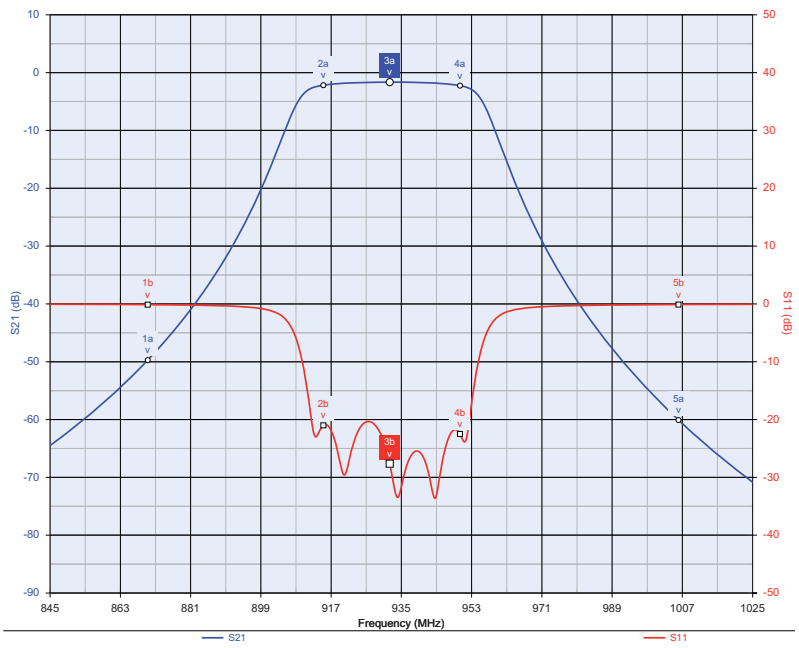
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	35.6x21.6x7.2
Weight		g	14.6 ± 1.5
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



1) 870 MHz
a) -49.714 dB
b) -0.119 dB

2) 915 MHz
a) -2.167 dB
b) -20.988 dB

3) 932 MHz
a) -1.634 dB
b) -27.62 dB

4) 950 MHz
a) -2.245 dB
b) -22.484 dB

5) 1006 MHz
a) -60.075 dB
b) -0.105 dB

Cob-fcer-021

Ceramic Filters

FEATURES

- Center Frequency : 1020 MHz
- Bandwidth : 1017.5 MHz to 1022.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 9.5 dB
- Operating temperature : -20°C to +80°C

DESCRIPTION

The cob-fcer-021 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1020
Insertion Loss @ Fo		dB	< 9.5
-1dB Bandwidth		MHz	> 5
Return Loss in Bandwidth @ Fo ± 2.5 MHz		dB	> 14
Attenuation from 10 to 960 MHz		dBc	> 50
Attenuation from 1050 to 2040 MHz		dBc	> 40

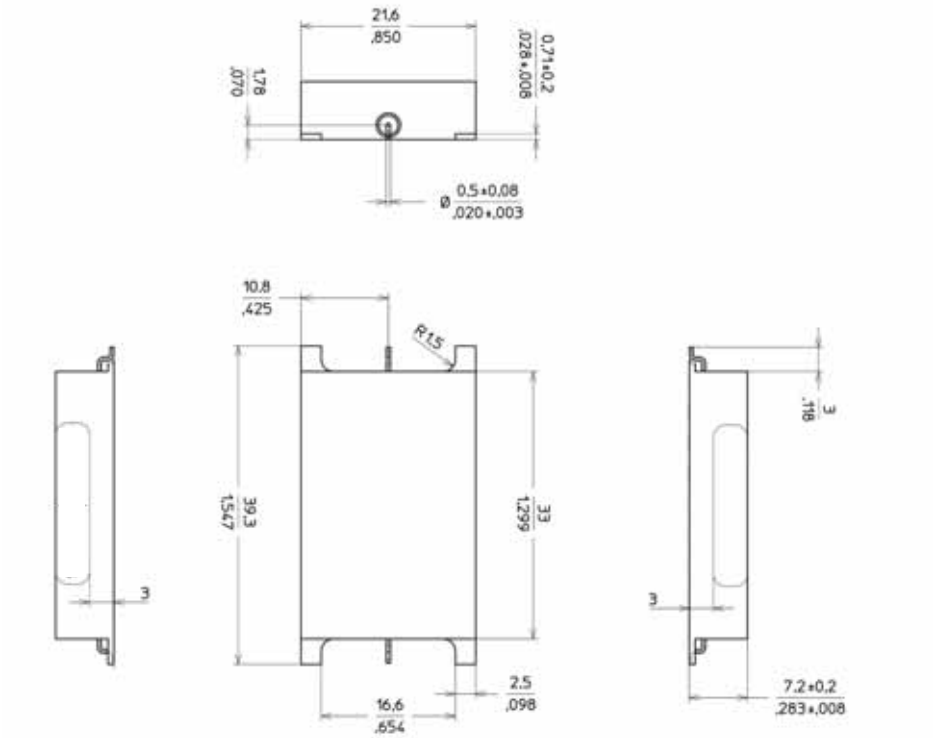
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	t	°C	-20 → +80
Storage Temperature range	t	°C	-40 → +85
Gross leak	Meth. 112E Cond. A	atm.cc/s	10^{-5}
Fine leak	Meth. 112E Cond. C	atm.cc/s	10^{-6}
Altitude	Meth. 105C Cond. D	m Feet	30480 100000
Humidity : 90%RH ; 40°C	Meth. 103B Cond. C	days	21
Sinus Vibrations : 10/2000Hz ; 3H/axe	Meth. 204D Cond. D	Gsin	20
Operating Random Vibrations : 10/2000Hz	Meth. 214 Cond. D	g^2/Hz	0.1
Shocks	Meth. 213B Cond. I		20g / 11ms
Solder Heat	Meth. 210 Cond. B		260°C / 10sec
Solderability	Meth. 208		95% @ 235°C
Terminale strength and fatigue	Meth. 211A Cond. A Cond. C		3 pounds Cond. A 1 pounds Cond. C
Solvent resistance	Meth. 215C		

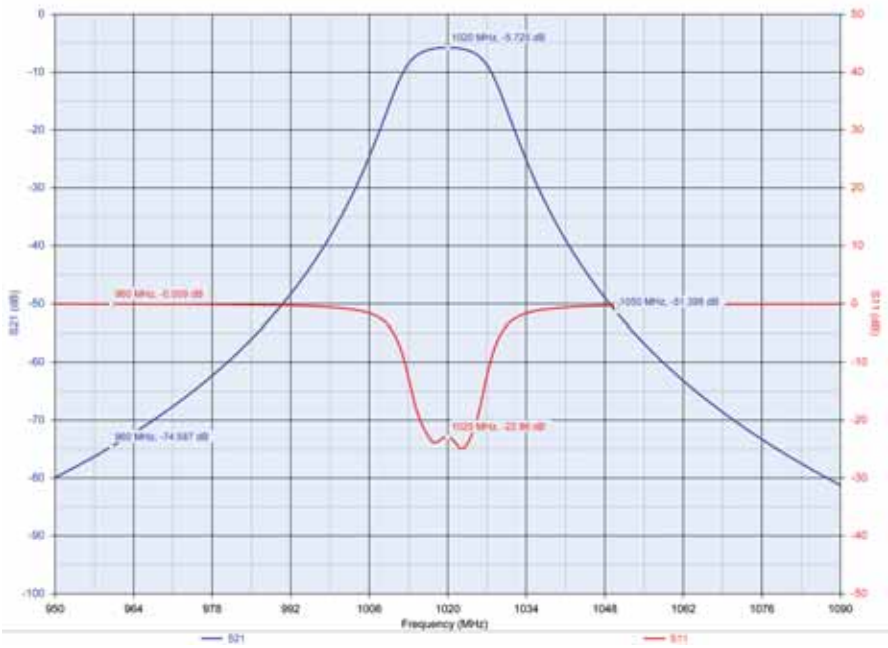
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	33x21.6x7.2
Weight		g	13.4 ± 1.4
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-026

Ceramic Filters

FEATURES

- Center Frequency : 1030 MHz
- Bandwidth : 1026 MHz to 1034 MHz
- Input Power (max) : 30 dBm
- Insertion losses @ fo : < 1.5 dB
- Operating temperature : -40˚C to +71˚C

DESCRIPTION

The cob-fcer-026 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc		MHz	1030
Bandwidth at 1 dB		MHz	≥ ± 4
Insertion loss at Fc		dB	≤ 1.5
Return Loss at Fc + 4 MHz		dB	> 16
Attenuation at Fc ± 20 MHz		dBc	≥ 14
Attenuation at Fc ± 40 MHz		dBc	≥ 25
Max peak power @ 1% duty cycle	Pmax	KW	1.5 (pulses :32*0.5µS)
Max CW Input Power		dBm	30

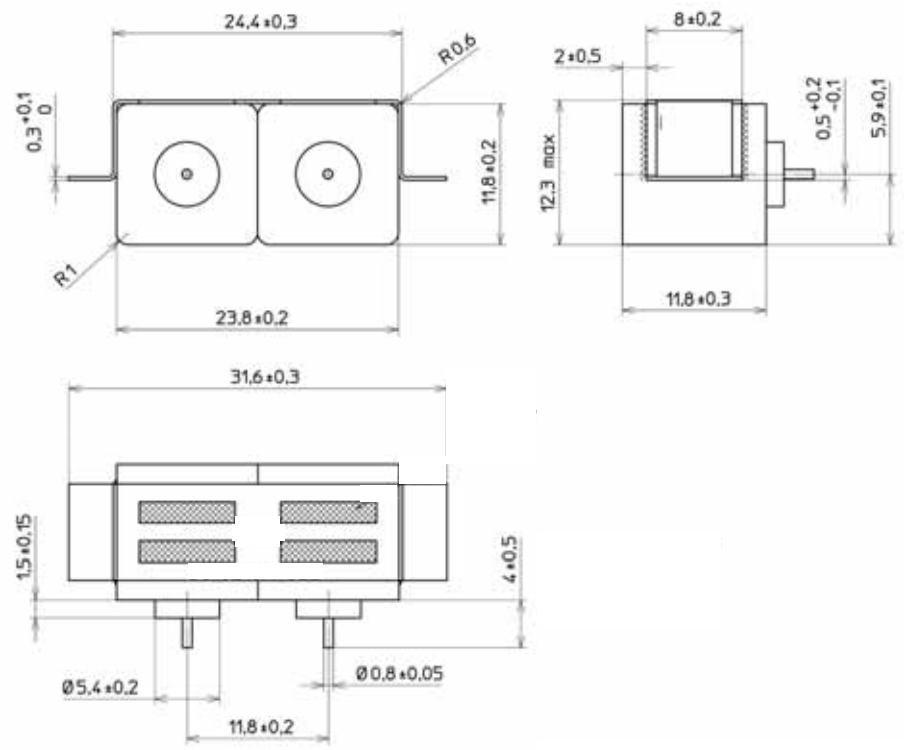
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+71
Storage Temperature Range	T	˚C	-50 →+100

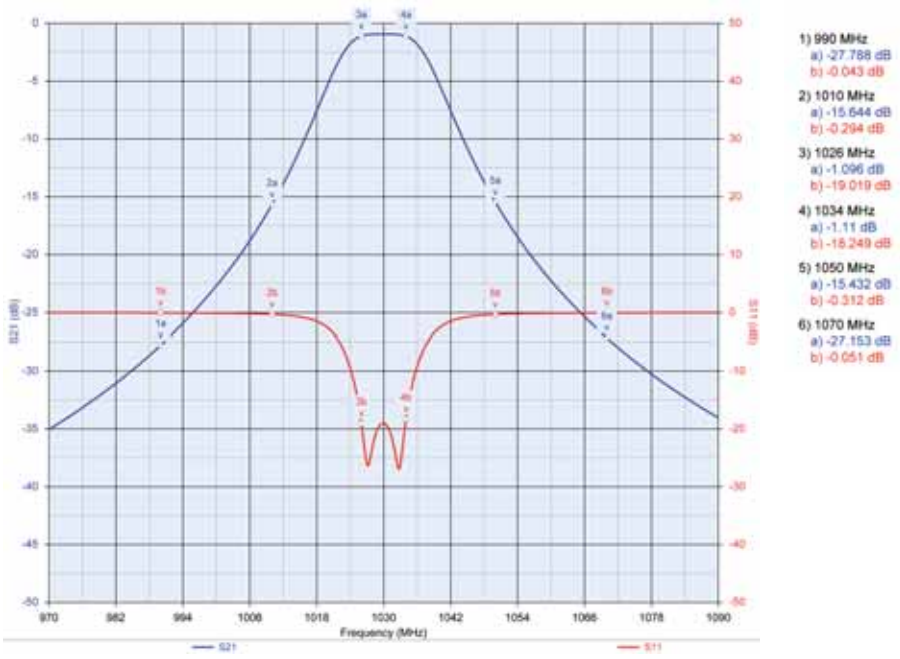
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions (without tab & ground tab)	L x l x h	mm	25x12.3x12.1
Weight		g	≈ 25
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-028

Ceramic Filters

FEATURES

- Center Frequency : 1030 MHz
- Bandwidth : 1015 MHz to 1045 MHz
- Input Power (max) : 2 W
- Insertion losses @ fo : < 4 dB
- Operating temperature : -40°C to +80°C

DESCRIPTION

The cob-fcer-028 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1030 ± 2
Insertion Loss @ Fo		dB	< 4
3dB Bandwidth		MHz	> 20
Ripple in Fo ± 1.5 MHz		dBpp	< 0.4
Ripple in Fo ± 3 MHz		dBpp	< 0.5
Return Loss in Fo ± 4 MHz		dB	> 16
Attenuation from DC to 960 MHz		dBc	> 35
Attenuation from 1100 to 1170 MHz	Pmax	dBc	> 35
Attenuation from 1170 to 2060 MHz		dBc	> 45
Cw Input Power		W	2 max
Input peak power, 2% duty cycle		W	20 max

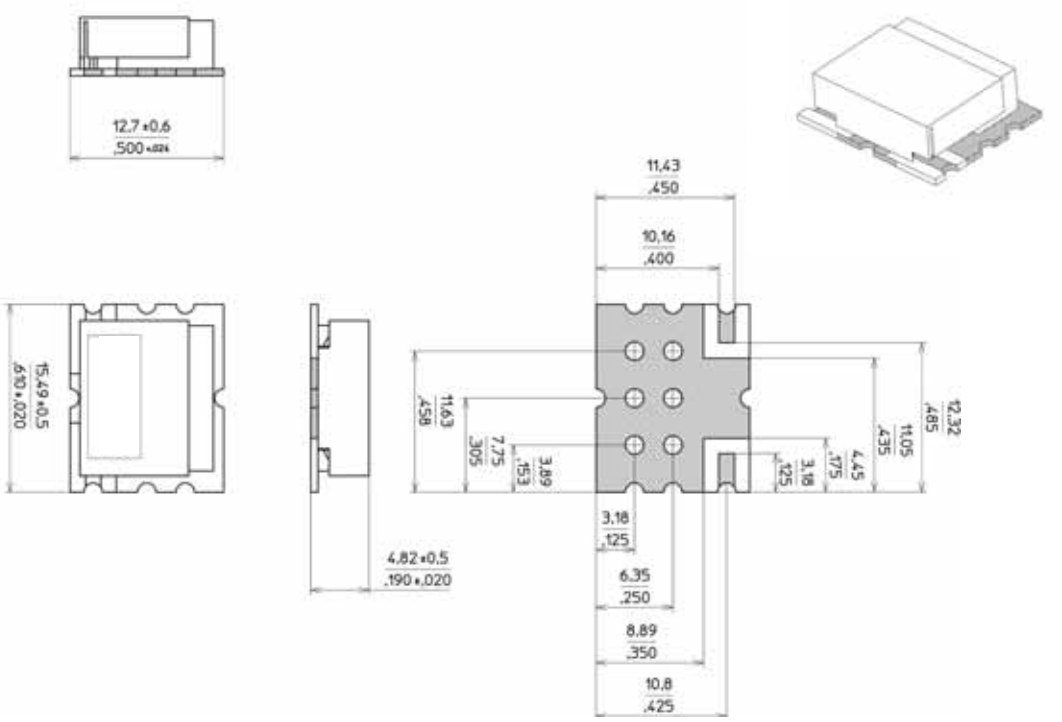
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-40 →+80
Storage Temperature Range	T	°C	-50 →+85
Humidity	95% @ 55°C duration 48 h		
Vibrations	10 G peak 5 - 2000 Hz		
Shocks	30 G		

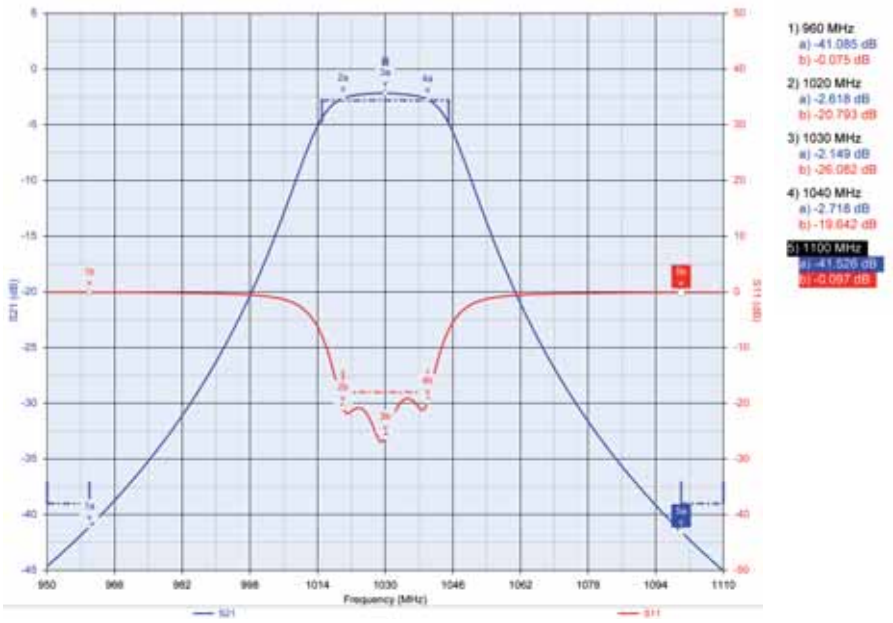
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	Inch	0.61x0.6x0.19
Weight		g	2.7 ± 0.5
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-035

Ceramic Filters

FEATURES

- Center Frequency : 1030 MHz
- Bandwidth : 1021 MHz to 1039 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 6.2 dB
- Operating temperature : -55˚C to +110˚C

DESCRIPTION

The cob-fcer-035 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fo		MHz	1030 ± 0.5
Insertion loss at Fo @ 25˚C		dB	≤ 6.2
Insertion loss at Fo @ (-40˚C / +85˚C)		dB	≤ 6.5
3dB Bandwidth		MHz	≥ 10
VSWR @ Fo ± 4 MHz		dB	≥ 15.6
Max amplitude shift @ Fo ± 1.5 MHz		dB	± 0.15
Max amplitude shift @ Fo ± 3 MHz		dB	± 0.15
Attenuation DC to 970 MHz		dB	≥ 60
Attenuation 970 to 1008 MHz		dB	≥ 60
Attenuation 1053 to 1090 MHz		dB	≥ 60
Attenuation 1090 to 1150 MHz		dB	≥ 60
Attenuation 1150 to 2060 MHz		dB	≥ 40
Max CW input power		W	5
Max input peak power, 2% duty cycle		W	50

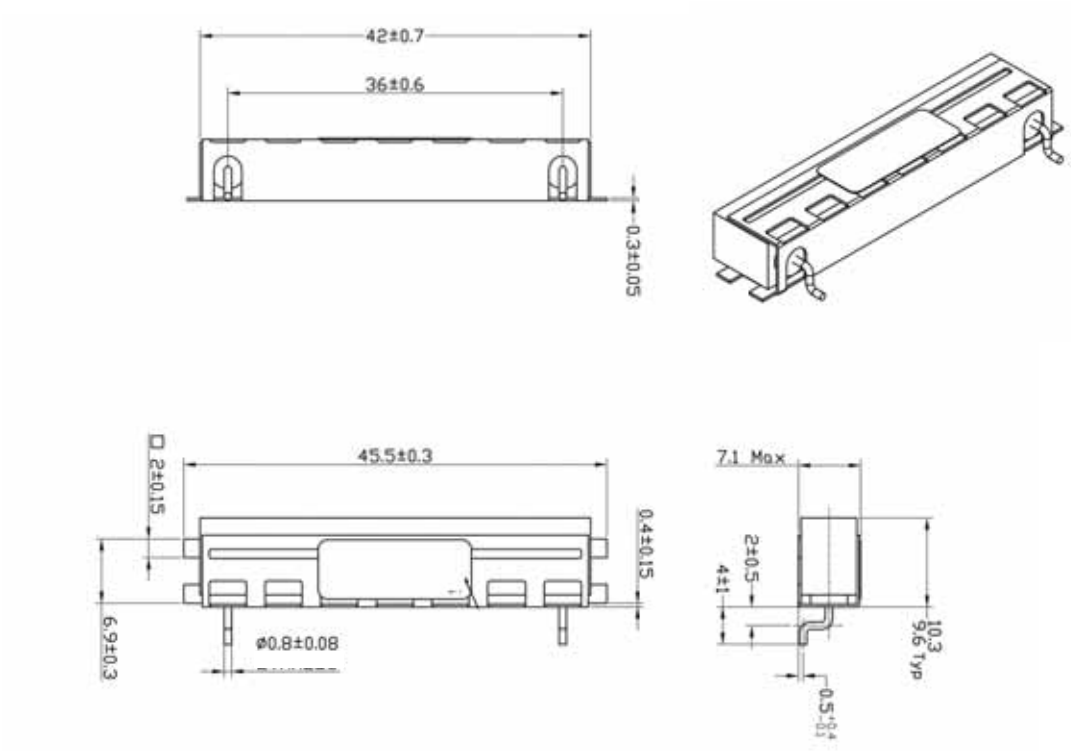
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-55 →+110
Storage Temperature Range	T	˚C	-60 →+100
Humidity		%	95% @ +55˚C 48H
Vibrations (3 axes , 2H / axes)		Hz	10 G CRETE 5 – 2000Hz
Shocks		G	30

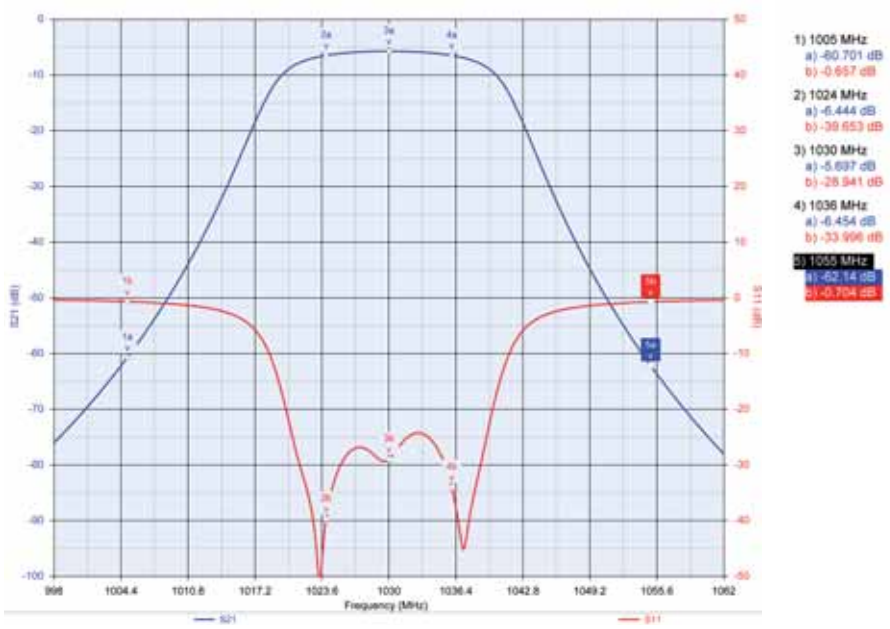
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions (without tab & ground tab)	L x l x h	mm	45.5x10.3x7.1
Weight		g	< 10
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-036

Ceramic Filters

FEATURES

- Center Frequency : 1030 MHz
- Bandwidth : 1029 MHz to 1031 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2 dB
- Operating temperature : -40°C to +85°C

DESCRIPTION

The cob-fcer-036 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fo		MHz	1030
-3dB Bandwidth Center Frequency		MHz	1030 ± 0.5
Insertion Loss @ Fo		dB	1.85 ± 0.15
Insertion Loss Unbalance between 2 filtering channels		dB	< 0.2
-3dB Bandwidth		MHz	20 ≤ Bw ≤ 24
Relative Insertion Loss @ Fo ± 5 MHz		dBc	< 0.25
Return Loss in Bandwidth Fo ± 4 MHz		dB	> 17.7
Return Loss in Bandwidth Fo ± 5 MHz		dB	> 16.8
Group Delay over Fo ± 5 MHz		ns	55 ± 10
Group delay Unbalance between each channel		ns	< 10
Attenuation from DC to Fo - 55 MHz		dB	> 55
Attenuation from Fo - 55 MHz to Fo - 22 MHz		dB	> 33
Attenuation from Fo - 22 MHz to Fo - 20 MHz		dB	> 30
Attenuation from Fo + 20 MHz to Fo + 22 MHz		dB	> 30
Attenuation from Fo + 22 MHz to Fo + 55 MHz		dB	> 33
Attenuation from Fo + 55 MHz to 1500 MHz		dB	> 55
Attenuation from 1500 MHz to 2150 MHz		dB	> 40

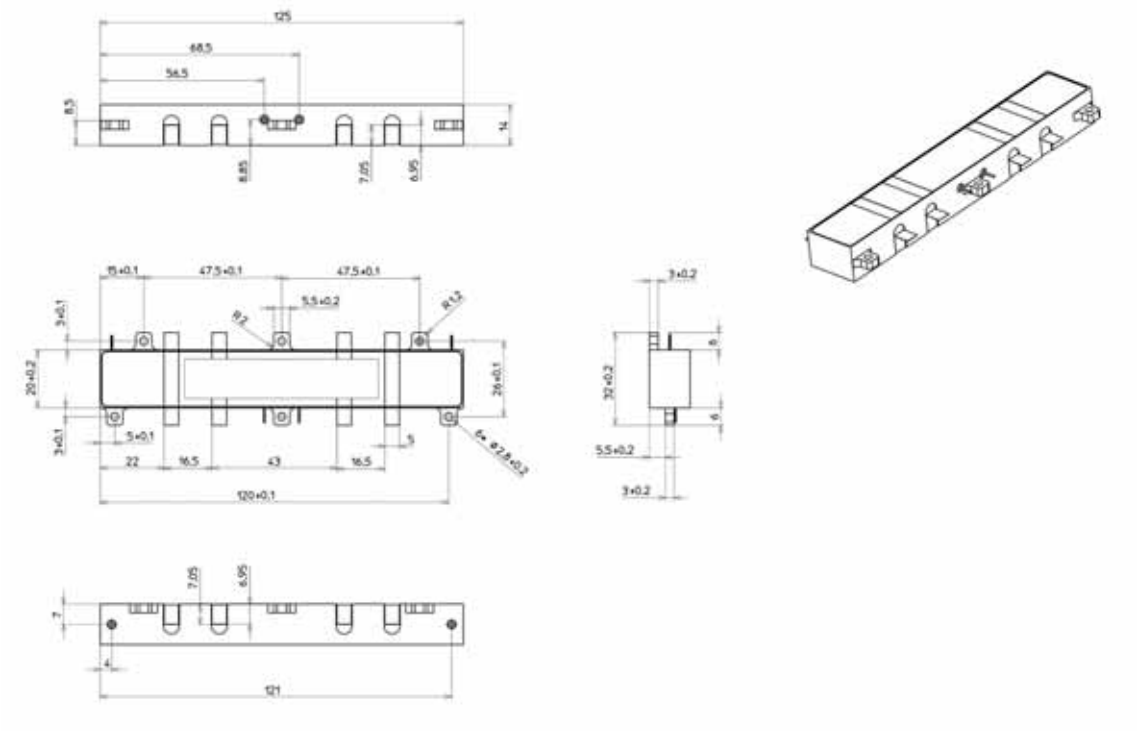
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-40 → +85
Storage Temperature Range	T	°C	-40 → +85

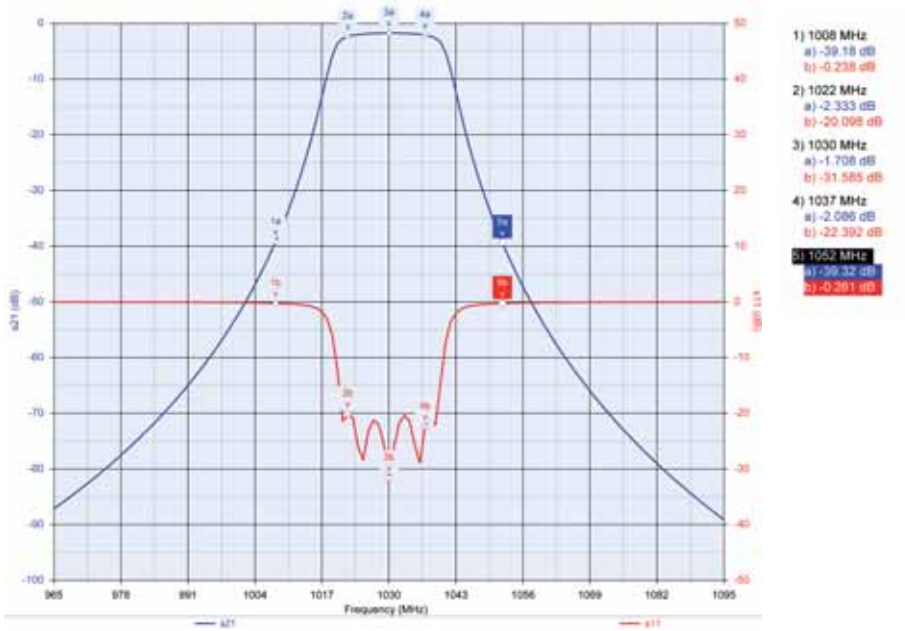
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	125 x 20 x 14
Weight		g	120 ± 10
Connectors			DROP IN

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-040

Ceramic Filters

FEATURES

- Center Frequency : 1082 MHz
- Bandwidth : 1064.5 MHz to 1099.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 5 dB
- Operating temperature : -20°C to +80°C

DESCRIPTION

The cob-fcer-040 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1082.25
Insertion Loss @ Fo		dB	< 5.0
-1dB Bandwidth		MHz	> 35
Return Loss in Bandwidth @ Fo ± 17.5 MHz		dB	> 14
Attenuation from 10 to 1010 MHz		dBc	> 50
Attenuation from 1125 to 1300 MHz		dBc	> 30
Attenuation from 1300 to 2164.5 MHz		dBc	> 50

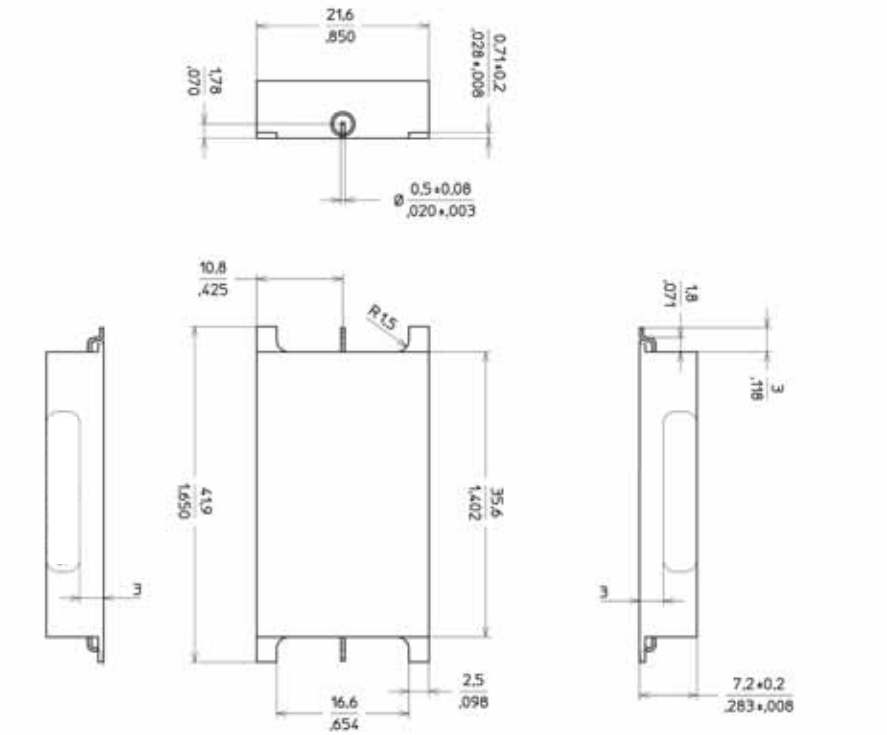
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-20 → +80
Storage Temperature Range	T	°C	-40 → +85
Gross leak	Meth. 112E Cond. A	atm.cc/s	10^{-5}
Fine leak	Meth. 112E Cond. C	atm.cc/s	10^{-6}
Altitude	Meth. 105C Cond. D	m Feet	30480 100000
Humidity : 90%RH ; 40°C	Meth. 103B Cond. C	Jours	21
Sinus Vibrations : 10/2000Hz ; 3H/axe	Meth. 204D Cond. D	Gsin	20
Operating Random Vibrations : 10/2000Hz	Meth. 214 Cond. D	g^2/Hz	0.1
Shocks	Meth. 213B Cond. I		20g / 11ms
Solder Heat	Meth. 210 Cond. B		260°C / 10sec
Solderability	Meth. 208		95% @ 235°C
Terminale strength and fatigue	Meth. 211A Cond. A Cond. C		3 pounds Cond. A 1 pounds Cond. C
Solvent resistance	Meth. 215C		

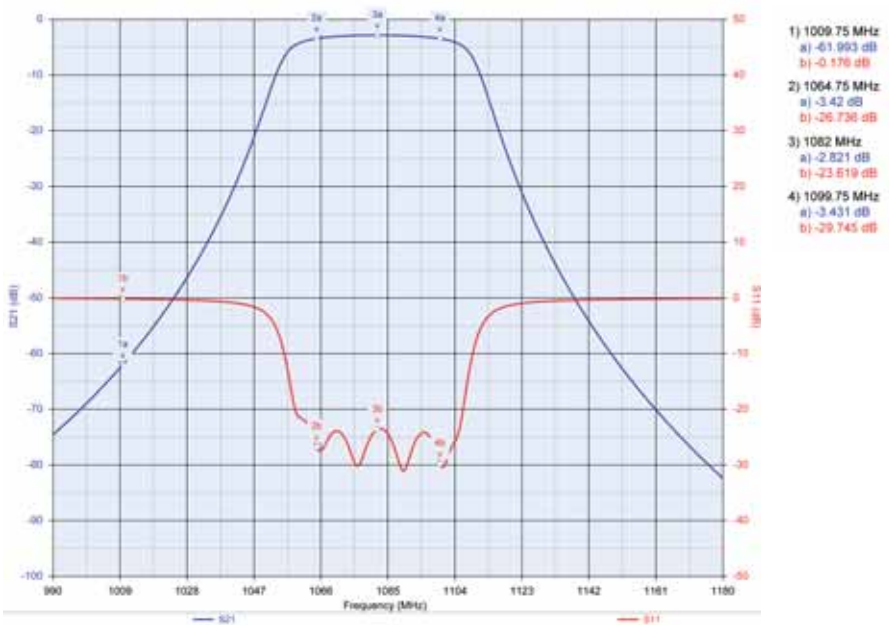
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	35.6x21.6x7.2
Weight		g	14.7 ± 1.5
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-042

Ceramic Filters

FEATURES

- Center Frequency : 1090 MHz
- Bandwidth : 1070 MHz to 1110 MHz
- Input Power (max) : 30 dBm
- Insertion losses @ fo : < 1 dB
- Operating temperature : -40˚C to +80˚C

DESCRIPTION

The cob-fcer-042 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Nominal centre frequency (fo)		MHz	1090
-3dB bandwidth		MHz	40 ± 4
Insertion loss @ fo in Ta=-10˚C to Ta=+70˚C		dB	< 1
Rejection @ F=960˜980 MHz		dBc	> 20
Rejection @ F=1200˜1220 MHz		dBc	> 20
Amplitude ripple @ F=1090 ± 6 MHz		dBpp	0.6
Deviation from linear phase @ F=1090 ± 6 MHz		o	6 p-p
In / Out return loss		dB	> 13
Nominal impedance In / Out			50
RF input power		dBm	+20
Max RF input power		dBm	+30

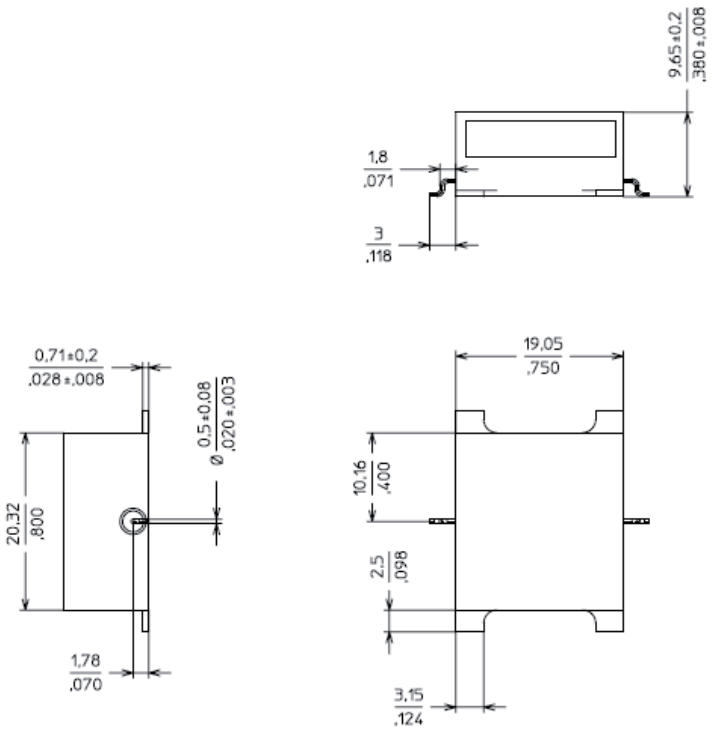
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+80
Storage Temperature Range	T	˚C	-50 →+85
Humidity	95% @ 55˚C duration 48 h		
Vibrations	10 G peak 5 - 2000 Hz		
Shocks	30 G		

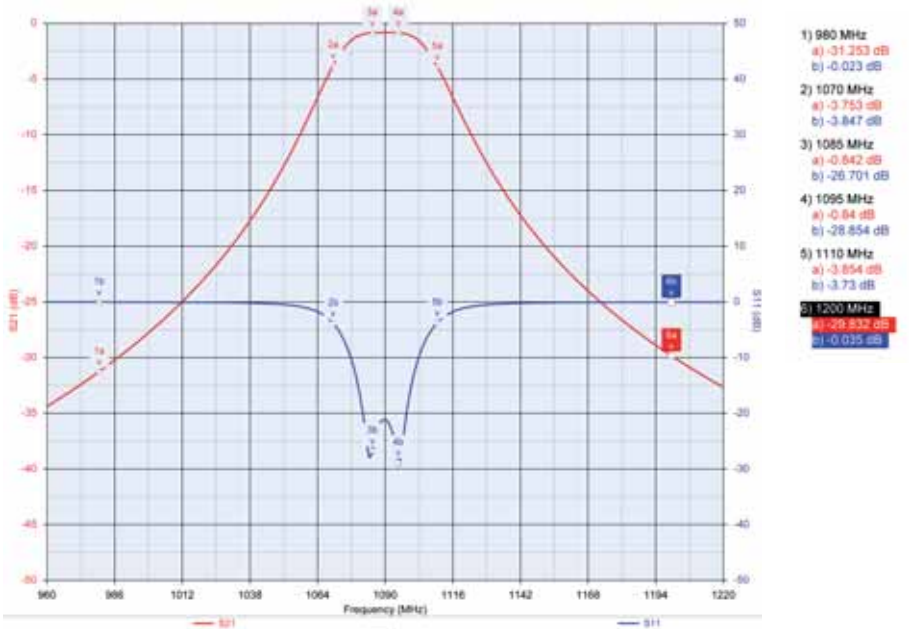
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	19 x 20.4 x 9.7
Weight		g	< 3
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-044

Ceramic Filters

FEATURES

- Center Frequency : 1090 MHz
- Bandwidth : 1085 MHz to 1095 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 4.8 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-044 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1090
Insertion Loss @ Fo		dB	< 4.8
Relative Insertion Loss @ Fo ± 5 MHz		dBc	< 3.0
Return Loss in Bandwidth @ Fo ± 5 MHz		dB	> 14
Attenuation @ Fo ± 12 MHz		dBc	> 40
Attenuation @ Fo ± 25 MHz		dBc	> 70

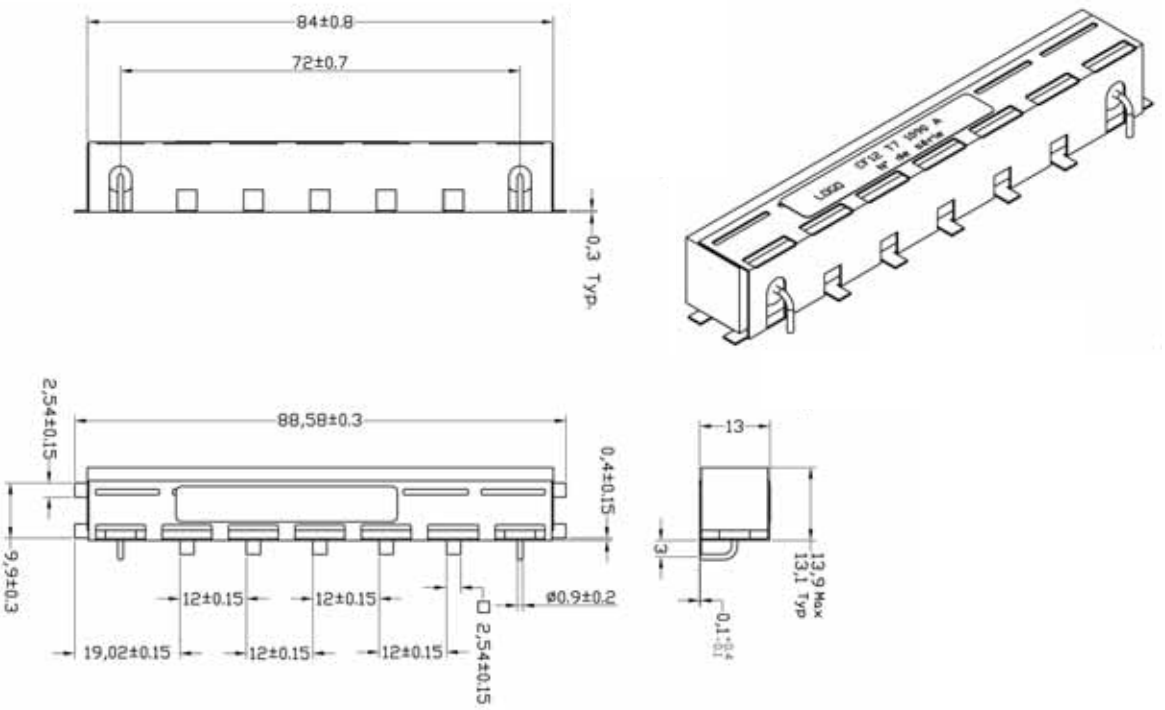
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature Range	T	˚C	-50 →+85

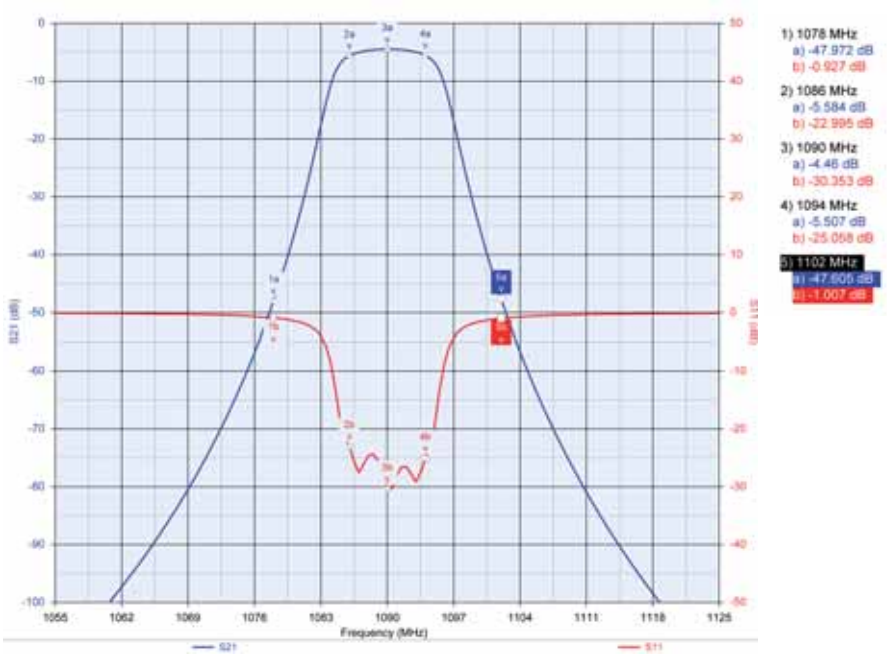
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	88x17.3x13
Weight		g	55 ± 5
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-052

Ceramic Filters

FEATURES

- Center Frequency : 1090 MHz
- Bandwidth : 1075 MHz to 1105 MHz
- Input Power (max) : 5 W
- Insertion losses @ fo : < 2 dB
- Operating temperature : -55°C to +110°C

DESCRIPTION

The cob-fcer-052 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1090 ± 0.5
Insertion Loss @ Fo		dB	≤ 2.0
-3B Bandwidth		MHz	≥ ± 15
Return Loss @ Fo ± 10 MHz (Input & Output)		dB	≥ 15.6
Ripple @ Fo ± 1.5 MHz		dBpp	< 0.2
Ripple @ Fo ± 3.0 MHz		dBpp	< 0.3
Attenuation from DC to 970 MHz		dBc	≥ 40
Attenuation from 970 to 1030 MHz		dBc	≥ 25
Attenuation from 1150 to 1210 MHz		dBc	≥ 25
Attenuation from 1210 to 2180 MHz		dBc	≥ 40
Max CW Input Power	Pmax	W	5
Max Input Peak Power	Pmax	W	50 (Duty cycle=2%)

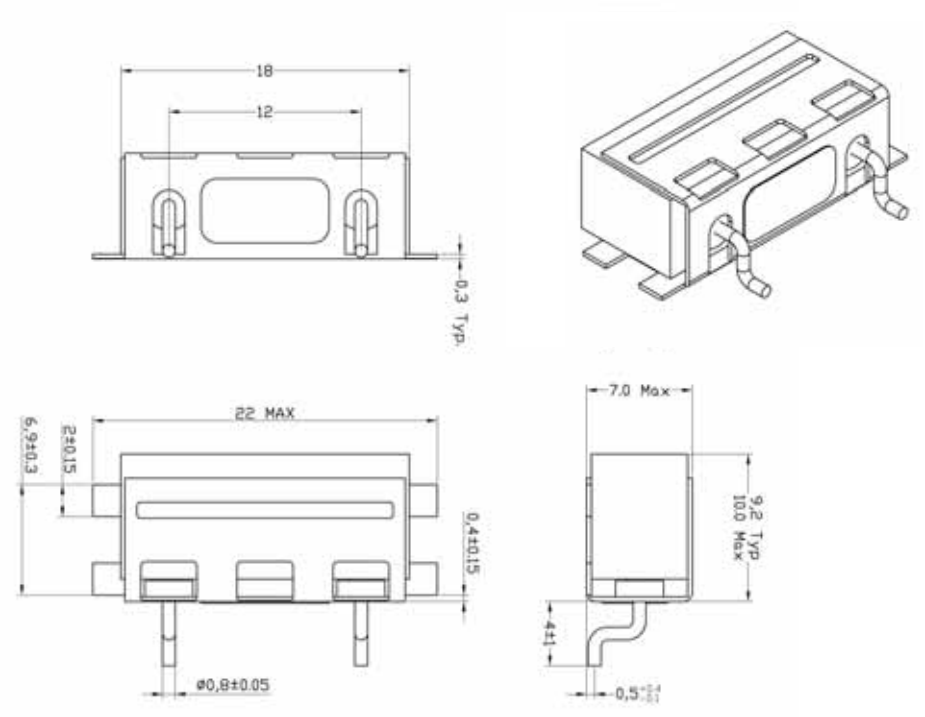
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-55 →+110
Storage Temperature Range	T	°C	-60 →+110
Humidity		%	95% @ +55°C
Vibrations		Hz	10 G peak 5-2000
Shocks		G	30
Solvent resistance	NFC 20-745 (CEI 68-2-45)		

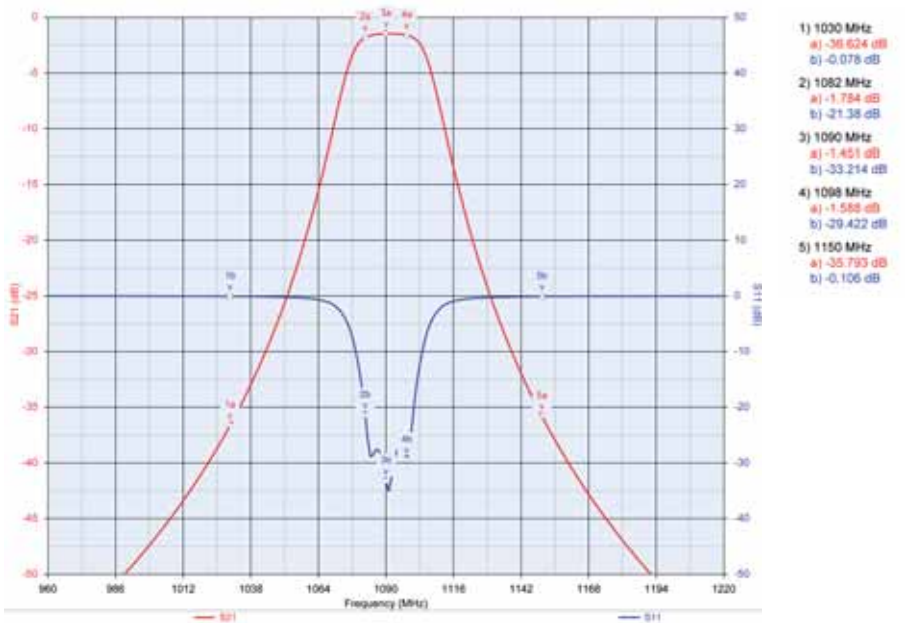
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	22x10x7
Weight		g	≈ 6
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-057

Ceramic Filters

FEATURES

- Center Frequency : 1090 MHz
- Bandwidth : 1070 MHz to 1110 MHz
- Input Power (max) : 5 W
- Insertion losses @ fo : < 2 dB
- Operating temperature : -55°C to +110°C

DESCRIPTION

The cob-fcer-057 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc		MHz	1090
3dB Bandwidth		MHz	≥ ± 15
Insertion loss @1090 MHz		dB	≤ 2.0
Max amplitude shift @ Fc ± 4 MHz		dB	± 0.15
Max amplitude shift @ Fc ± 10 MHz		dB	± 0.3
VSWR @ Fc ± 10 MHz		dB	≥ 15.6
Rejection 0 to 970 MHz		dBc	≥ 40
Rejection to 1210 MHz		dBc	≥ 25
Rejection 2° harmonic		dBc	≥ 40
Max CW input power	Pmax	W	5
Max PEAK input power	Pmax	W	50 (Duty cycle=2%)

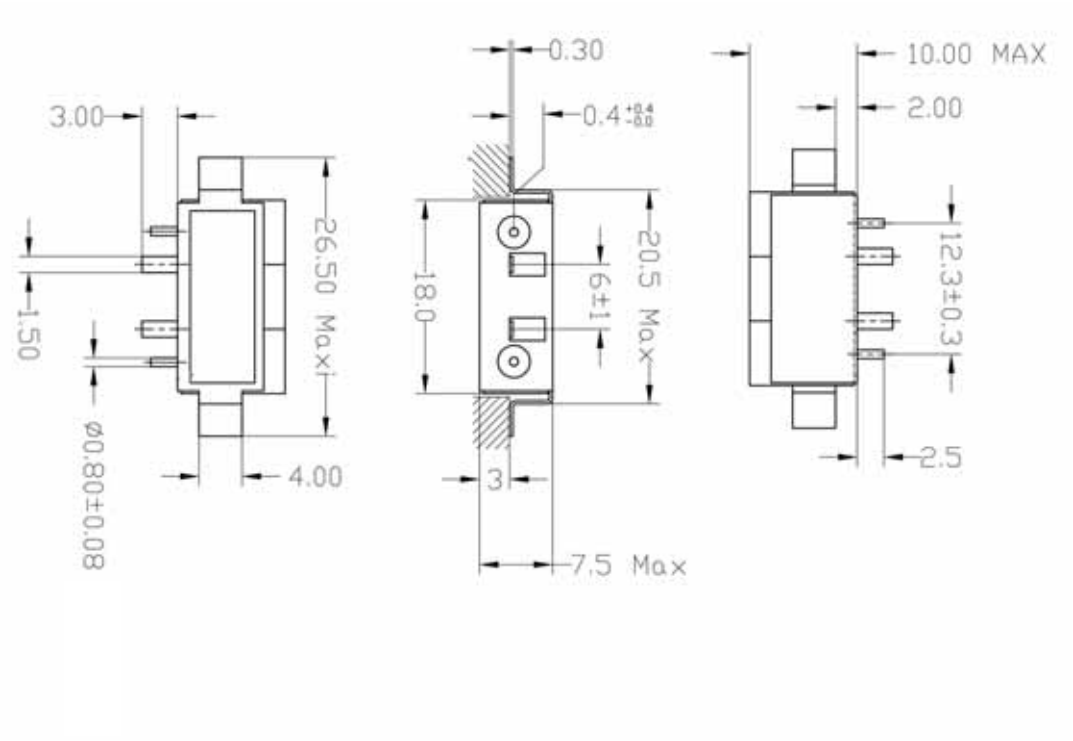
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Temperature range	T	°C	-55 →+110
Humidity		%	95% @ +55°C
Vibrations		Hz	10 G peak 5 - 2000
Shocks		G	30
Solvent resistance	NFC 20-745 (CEI 68-2-45)		

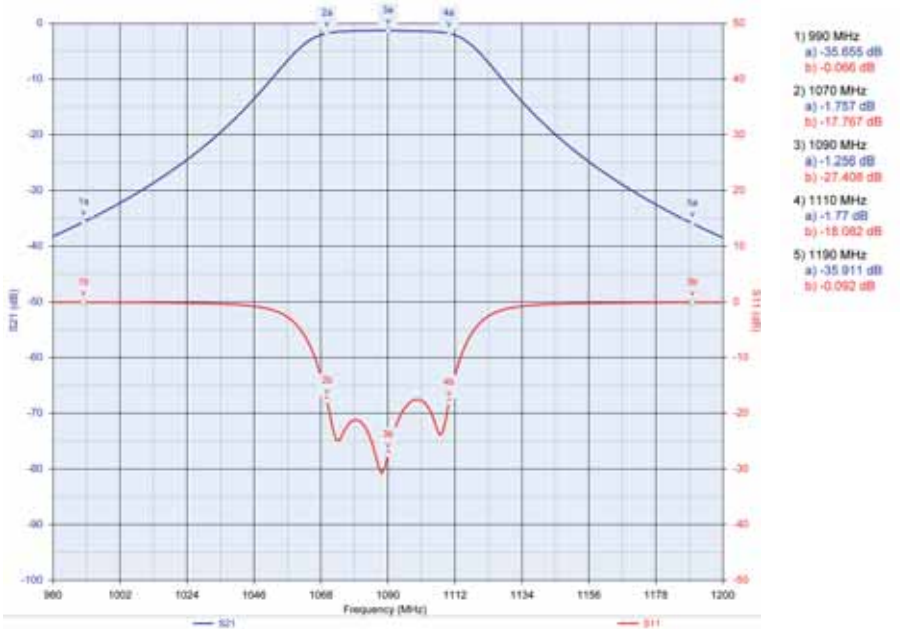
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	20.5x10x7.5
Weight		g	≈ 6
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-058

Ceramic Filters

FEATURES

- Center Frequency : 1090 MHz
- Bandwidth : 1067 MHz to 1113 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 1 dB
- Operating temperature : -40°C to +85°C

DESCRIPTION

The cob-fcer-058 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1090
-3dB Bandwidth Center Frequency		MHz	1090 ± 0.5
Insertion Loss @ Fo		dB	< 1.0 // Typ. < 0.8
-3dB Bandwidth Bw		MHz	46 < Bw < 50
Return Loss in Bandpass @ Fo ± 6 MHz		dB	> 17.7
Attenuation @ Fo ± 45 MHz		dB	> 15
Attenuation @ Fo ± 77 MHz		dB	> 27 // Typ. > 30
Attenuation @ Fo ± 110 MHz		dB	> 34 // Typ. > 37
Attenuation @ Fo ± 410 MHz		dB	> 45
Group delay Unbalance between each channel @ Fo ± 5 MHz	ΔGD_o	ns	< 10
Insertion Loss Unbalance between each channel @ Fo ± 5 MHz	ΔA_o	dB	< 0.2

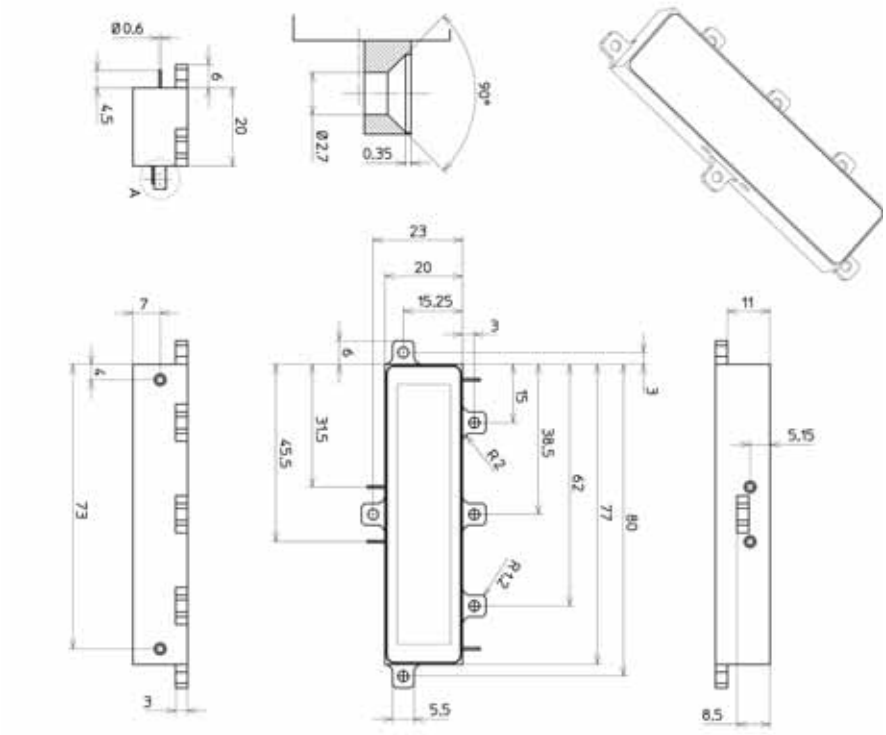
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-40 →+85
Storage Temperature Range	T	°C	-55 →+125

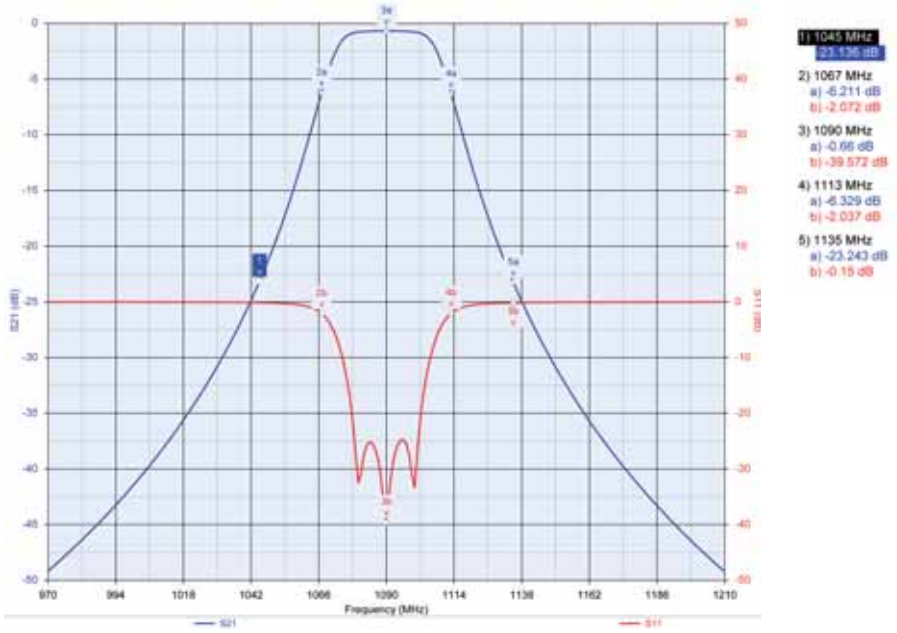
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	73x20x14
Weight		g	76 ± 8
Connectors			DROP IN

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-063

Ceramic Filters

FEATURES

- Center Frequency : 1176 MHz
- Bandwidth : 1162 MHz to 1190 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 5 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-063 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1176.45
Insertion Loss @ Fo		dB	< 5.0
-1.5dB Bandwidth		MHz	> 28
Return Loss in Bandwidth @ Fo ± 14 MHz		dB	> 14
Attenuation @ Fo ± 28 MHz		dBc	> 20
Attenuation @ Fo ± 44 MHz		dBc	> 50
Delay Stability in Frequency Bandwidth and Temperature		ns	< 2 ns
Absolute Delay Variation in Frequency Bandwidth and Temperature		ns	< 5 ns

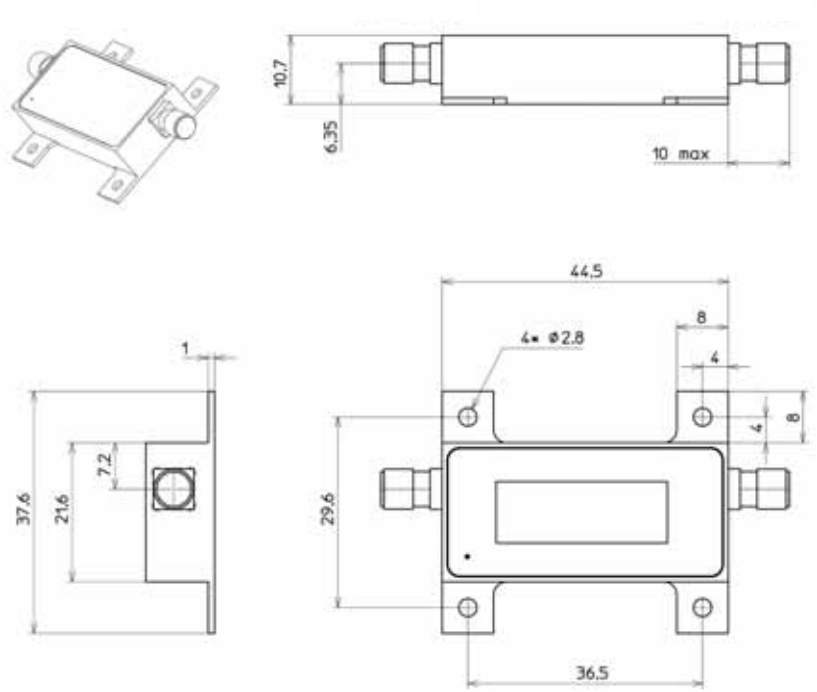
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature Range	T	˚C	-40 →+85

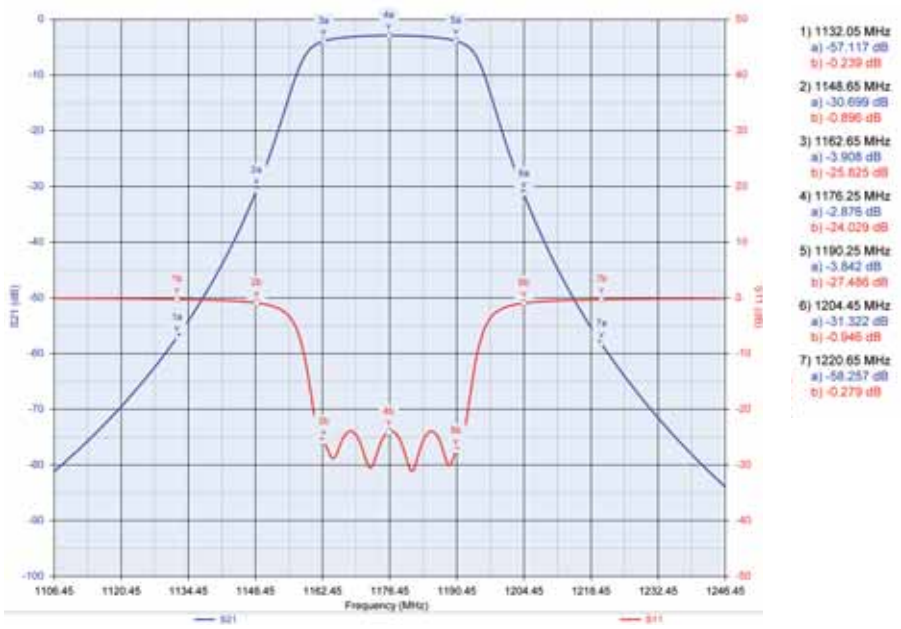
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	44.5x37.6x10.7
Weight		g	37 ± 10%
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-067

Ceramic Filters

FEATURES

- Center Frequency : 1195 MHz
- Bandwidth : 1193.5 MHz to 1196.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 5 dB
- Operating temperature : -45˚C to +125˚C

DESCRIPTION

The cob-fcer-067 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Max cw input power	Pmax	dBm	10
Center frequency fo		MHz	1194.5
Insertion loss at fo = 1194.5 mhz		dB	< 5.0
-0.5db bandwidth	Bw	MHz	> 3 Min [1193 – 1196]
Il flatness within bandpass [1193 – 1196] mhz		dBc	< 0.5
Return loss within bandpass [1193 – 1196] mhz		dB	> 14
Attenuation from dc up to 1079 mhz		dBc	> 50
Attenuation from 1079 up to 1180 mhz		dBc	> 16
Attenuation from 1209 up to 1310 mhz		dBc	> 16
Attenuation from 1310 up to 2200 mhz		dBc	> 50
Attenuation from 2200 up to 2700 mhz		dBc	> 40

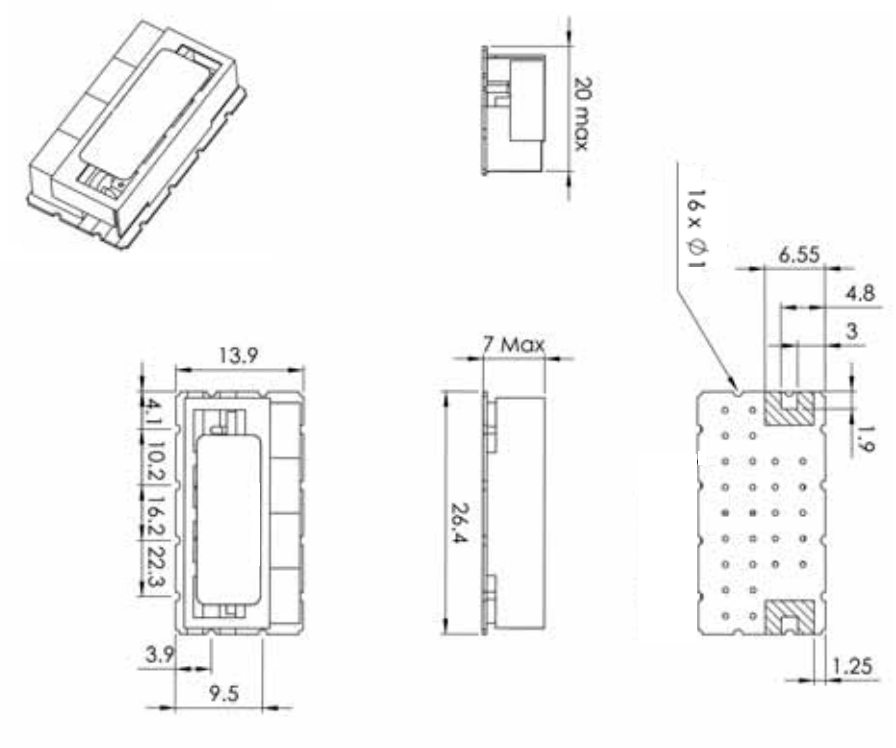
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-45 →+125
Storage Temperature Range	T	˚C	-45 →+125
Thermal shock (2 method chamber)			MIL-STD-202 Method 107, Test A
Humidity (steady state			MIL-STD-202 Method 103, Test D
Humidity (cyclic)			MIL-STD-202 Method 106
Barometric pressure (reduced)			MIL-STD-202 Method 105
Vibration (sinusoidal)			MIL-STD-202 Method 204, Test F
Vibration (random)			MIL-STD-202 Method 214, Tests II F & II J
Shock			MIL-STD-202 Method 213
Solder profile for re-flow soldering			≤ 245
Rohs compliant			Yes

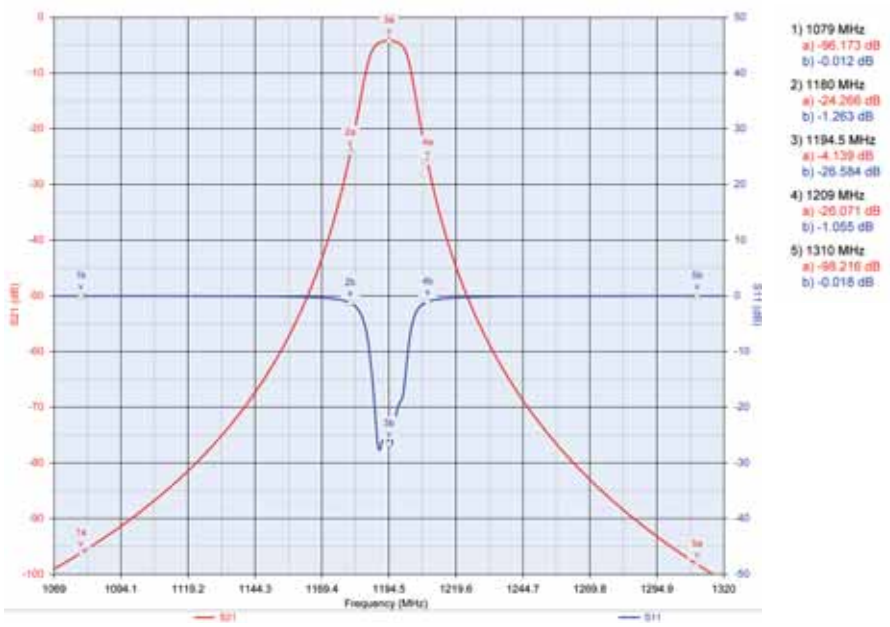
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	26.4 x 20.0 x 7.0
Weight		g	< 8
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-080

Ceramic Filters

FEATURES

- Center Frequency : 1237 MHz
- Bandwidth : 1227 MHz to 1247 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -30˚C to +70˚C

DESCRIPTION

The cob-fcer-080 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency	Fo	MHz	1237
Insertion loss @ Fo		dB	< 3.0
-1dB bandwidth	Bw	MHz	> 20
Ripple in bandwith [1227 – 1247] MHz		dBpp	< 0.3
Return loss in bandwith [1227 – 1247] MHz		dB	> 14
Attenuation [1350 – 2500] MHz		dBc	> 12
Group Delay Variation in Bandwidth [1227 – 1247] MHz		ns	< 0.5
Group Delay Stability [+15 / +35]˚C		ps	< 50
Average Power		W	1

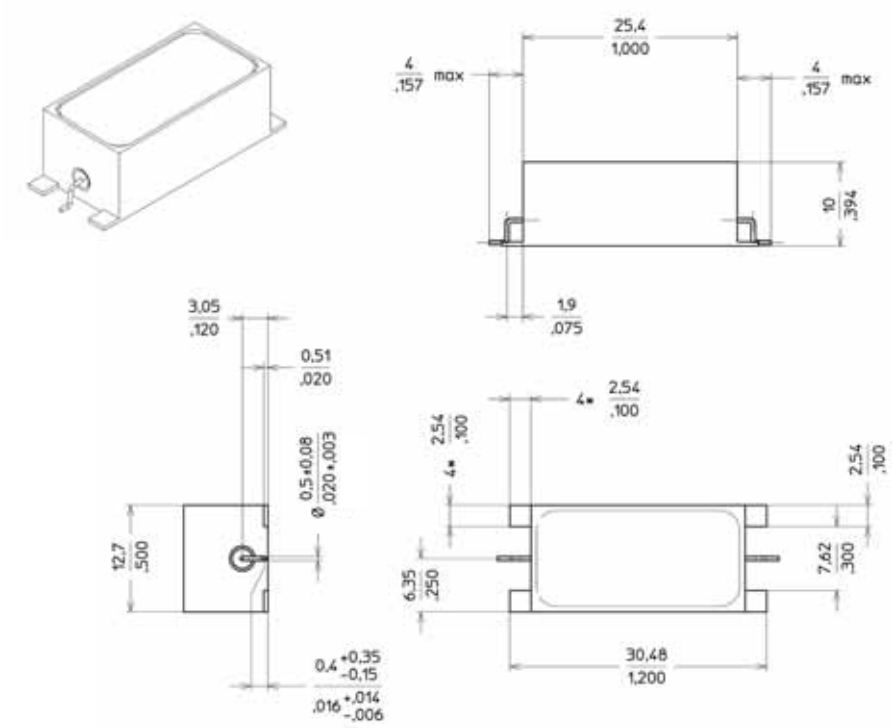
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-30 →+70
Storage Temperature Range	T	˚C	-40 →+85

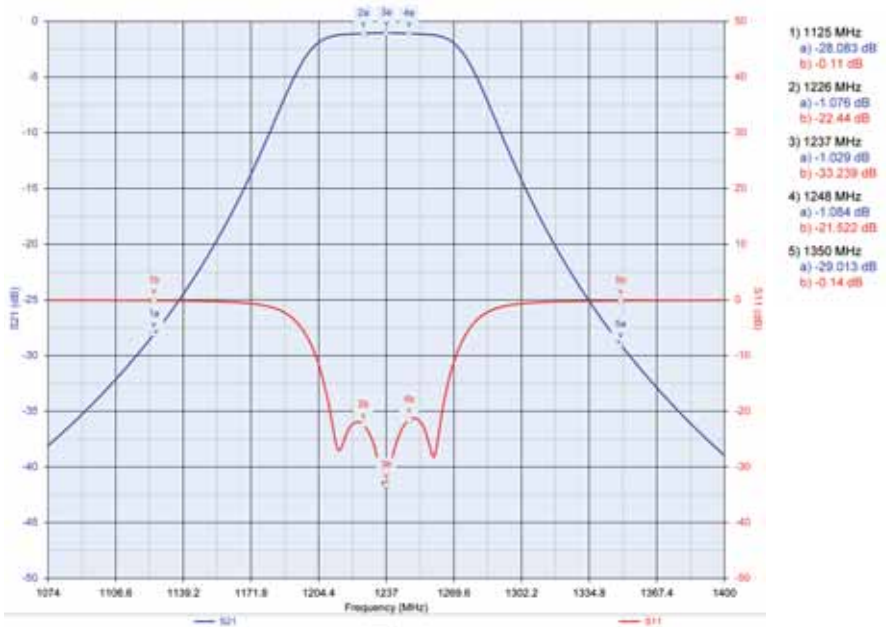
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	25.4x12.7x10
Weight		g	10 ± 1
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-082

Ceramic Filters

FEATURES

- Center Frequency : 1237 MHz
- Bandwidth : 1222 MHz to 1252 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 4 dB
- Operating temperature : -40˚C to +71˚C

DESCRIPTION

The cob-fcer-082 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Centre frequency		MHz	1237.5
Bandwidth		MHz	> 30
Group delay variation in ± 12MHz bw		ns	< 5 ns
Pass band loss variation in ± 12MHz bw		dBc	< 0.5
Pass band insertion loss in ± 12MHz bw		dB	< 4
Pass band return loss in ± 12MHz bw		ns	>14
Impedance in/out		Ω	50
Attenuation at f<1150MHz & f> 1350 MHz		dBc	> 40

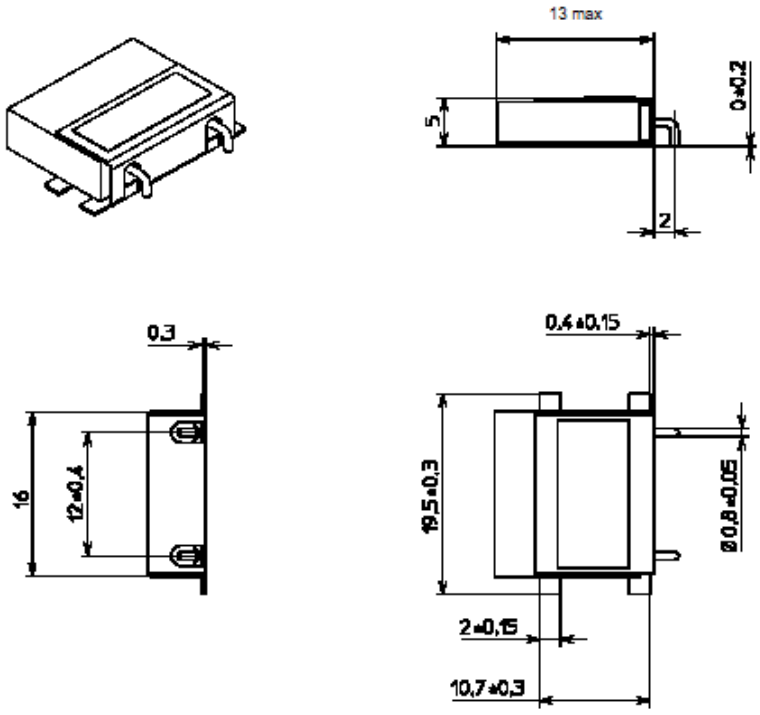
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Storage Temperature Range	T	˚C	-50 →+85
Operating Temperature Range	T	˚C	-40˚C / +71 ˚C
Humidity	95% @ 55˚C duration 48 h		
Vibrations	10 G peak 5 - 2000 Hz		
Shocks	30 G		

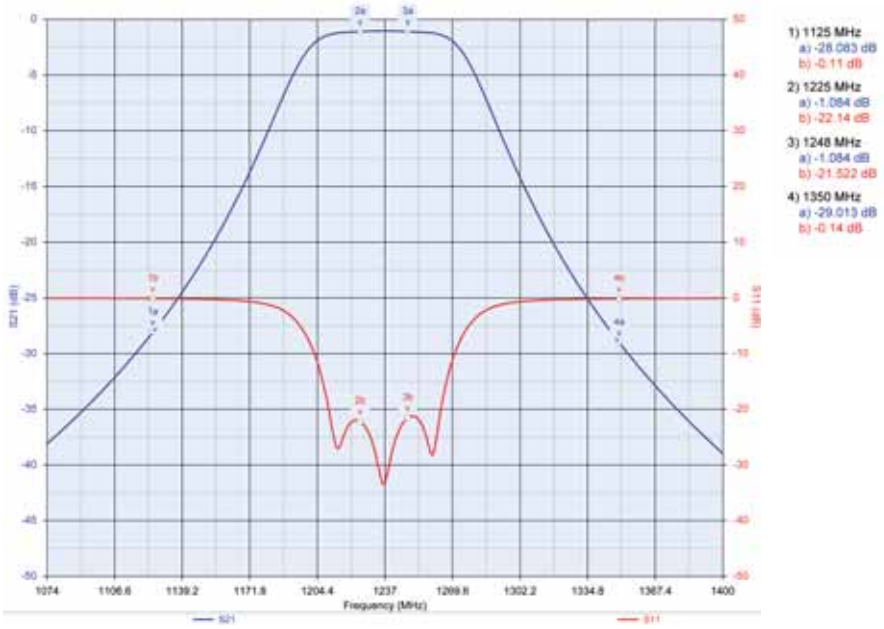
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	15 x 19.5 x 5
Weight		g	< 3
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-088

Ceramic Filters

FEATURES

- Center Frequency : 1296 MHz
- Bandwidth : 1284 MHz to 1308 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 4 dB
- Operating temperature : -40˚C to +80˚C

DESCRIPTION

The cob-fcer-088 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1296
Insertion Loss @ Fo		dB	< 4.0
-0.75dB Bandwidth		MHz	> 24
Return Loss in Fo ± 12 MHz		dB	> 14
Attenuation [10 – 1180] MHz		dBc	> 30
Attenuation [1180 – 1267] MHz		dBc	> 13
Attenuation [1324 – 1468] MHz		dBc	> 12
Attenuation [1468 – 2700] MHz		dBc	> 50

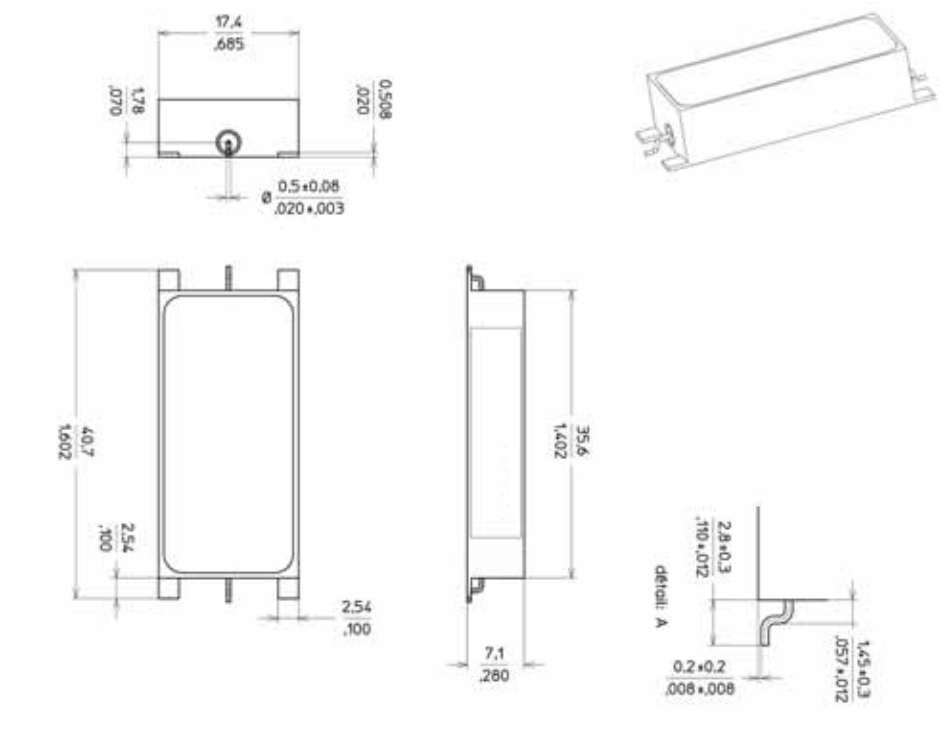
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+80
Storage Temperature Range	T	˚C	-40 →+85

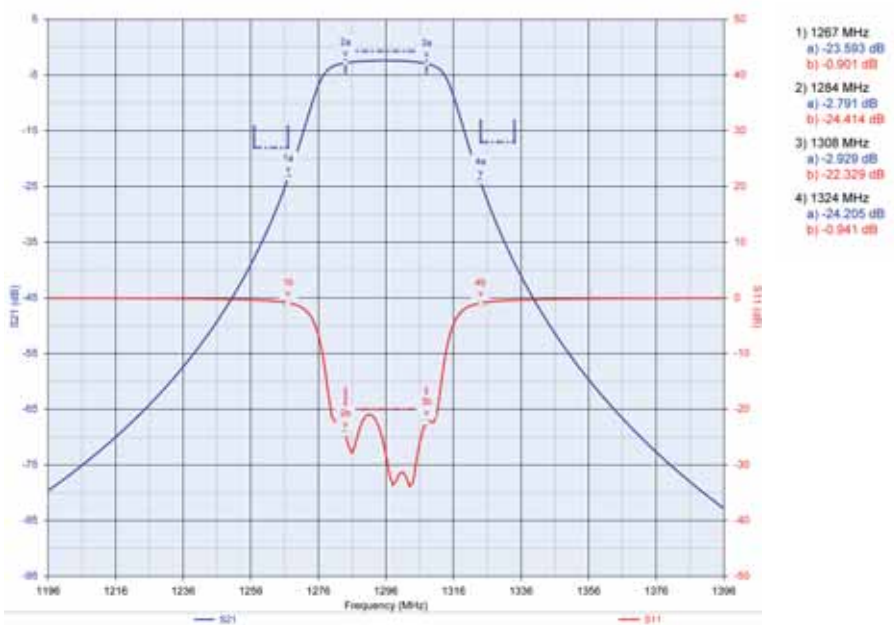
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.4x0.685x0.28
Weight		g	16 ± 2
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-093

Ceramic Filters

FEATURES

- Center Frequency : 1440 MHz
- Bandwidth : 1439 MHz to 1441 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 4.5 dB
- Operating temperature : -20˚C to +70˚C

DESCRIPTION

The cob-fcer-093 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc		MHz	1440
Insertion loss @Fc		dB	< 4.5
Bandwidth		MHz	1439-1441
Ripple in bandwidth		dBpp	< 0.5
3dB bandwidth		MHz	> 21 Typ. 22
Return loss in bandwith		dB	> 12
Attenuation @ 1380 MHz		dBc	> 53
Attenuation @ 1500 MHZ		dBc	> 53
Group Delay		ns	< 40

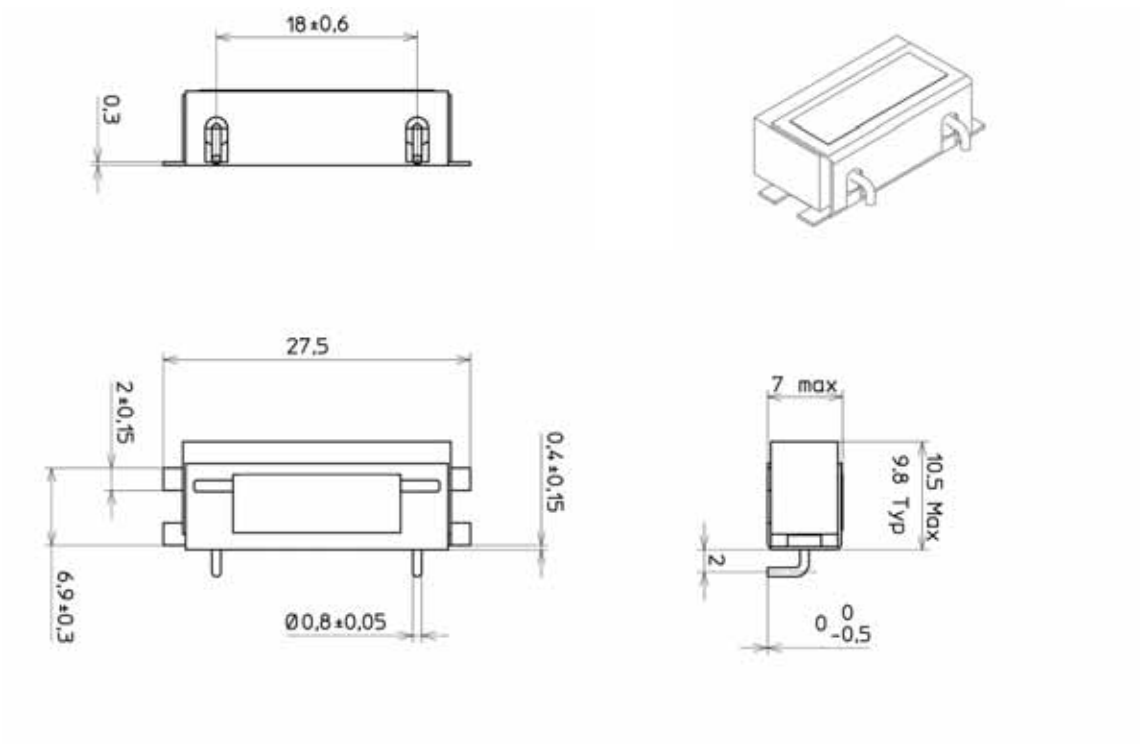
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-20 →+70
Storage Temperature Range	T	˚C	-40 →+85

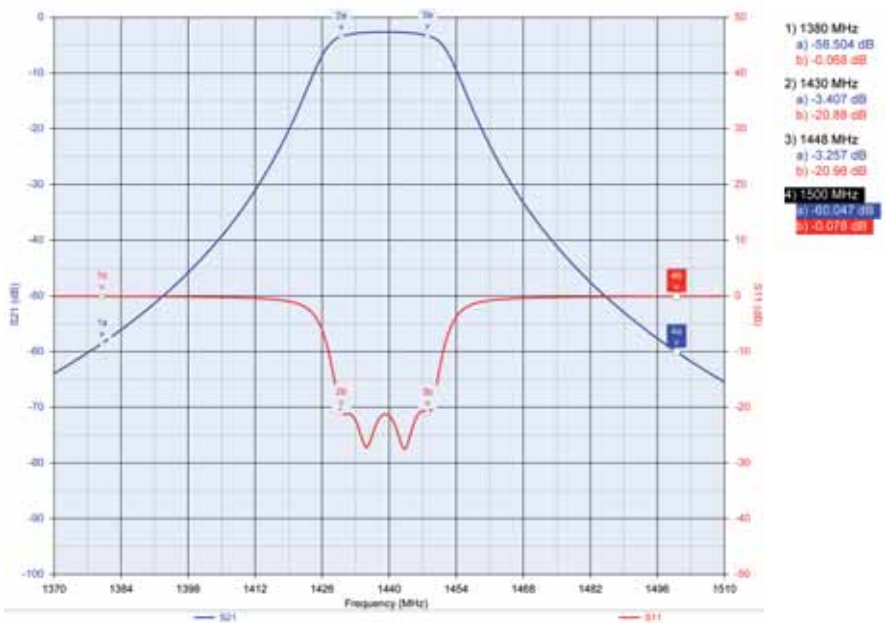
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	27.5 X 10.5 X 7
Weight		g	6 ± 0.6
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-104

Ceramic Filters

FEATURES

- Center Frequency : 1532 MHz
- Bandwidth : 1527 MHz to 1537 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 4 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-104 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1532
Insertion Loss @ Fo = 1532 MHz		dB	< 4.0
-3dB Bandwidth		MHz	> 10
Change of Gain in Overall Bandwidth vs Temperature Range		dB	< 1.0
Return Loss in 80% of -3dB Bandwidth [1528 – 1536] MHz		dB	> 14
Attenuation @ F_1 = 1512 MHz		dBc	> 20
Attenuation @ F_2 = 1552 MHz		dBc	> 20
Absolute Group Delay Stability in 80% Bandwidth ([1528 – 1536] MHz) and Temperature at Fo		ns	< 10

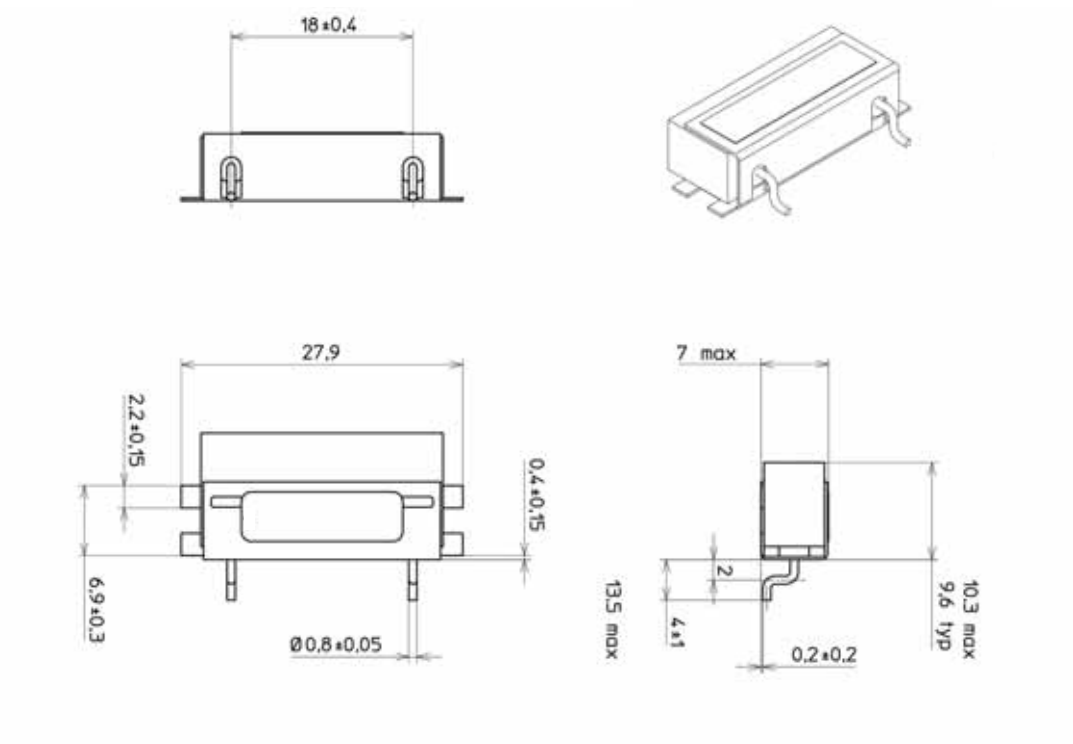
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature Range	T	˚C	-45 →+90

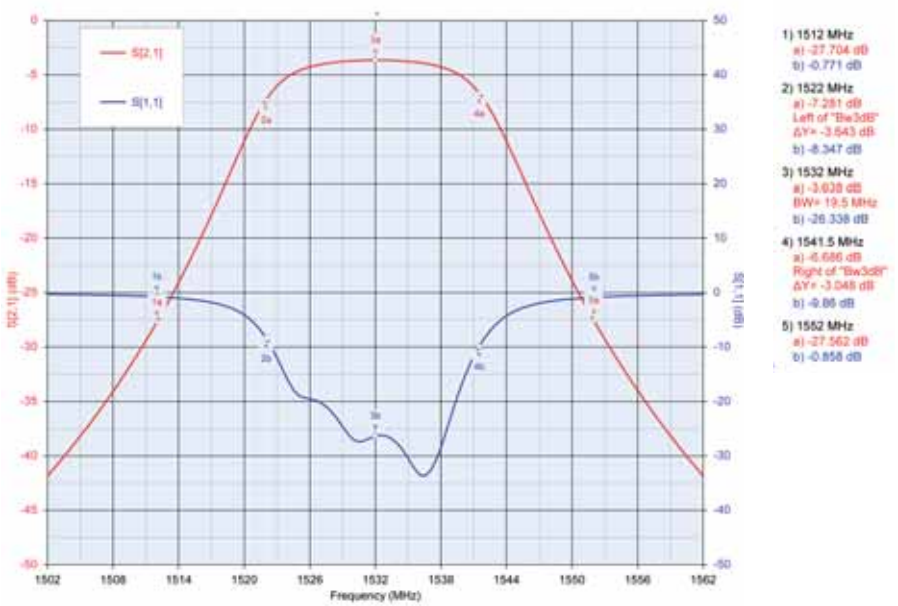
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	27.9x10.3x7.0
Weight		g	< 10
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-106

Ceramic Filters

FEATURES

- Center Frequency : 1575 MHz
- Bandwidth : 1553 MHz to 1597 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 5 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-106 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1575
Insertion Loss @ Fo		dB	< 5.0
-3dB Bandwidth		MHz	> 44
Return Loss in Bandwidth @ Fo ± 17.6 MHz		dB	> 14
Attenuation @ Fo ± 32 MHz		dBc	> 15
Attenuation @ Fo ± 46 MHz		dBc	> 40
Delay Stability in frequency Bandwidth and Temperature		ns	< 3
Absolute Delay Variation in frequency Bandwidth and Temperature		ns	< 5

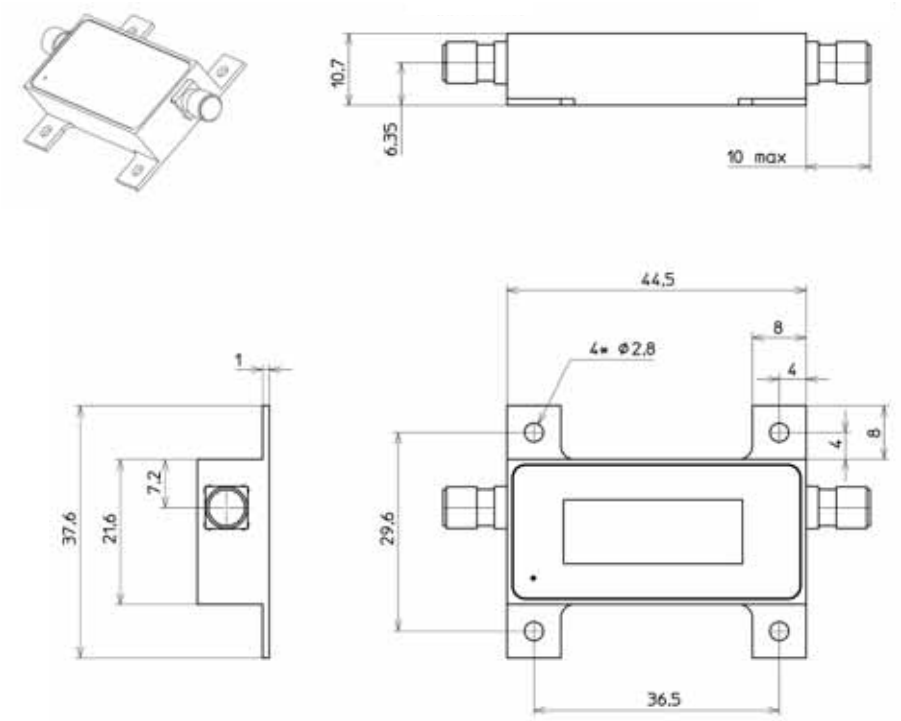
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature Range	T	˚C	-40 →+85

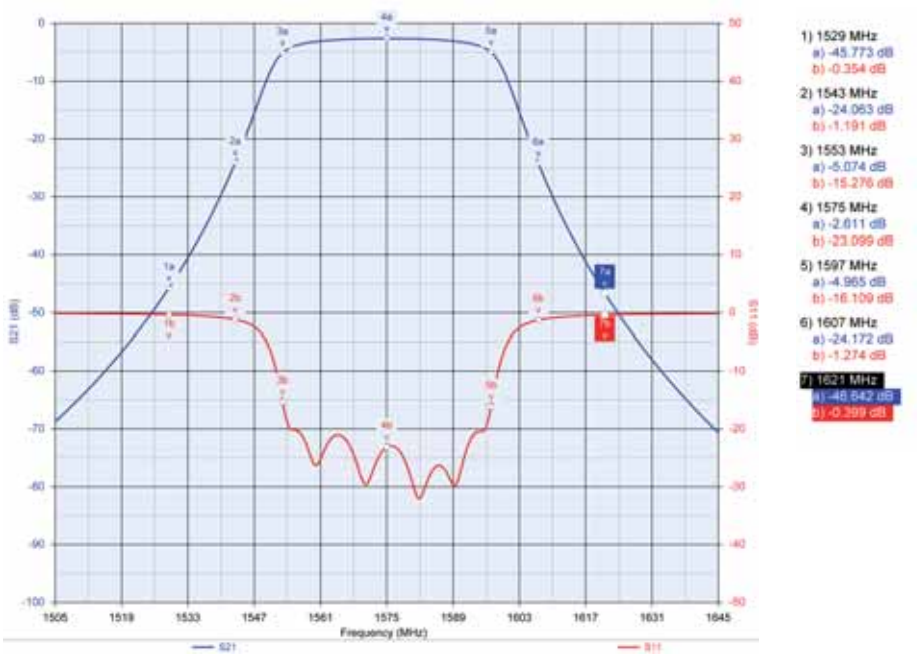
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	44.5x37.6x10.7
Weight		g	36 ± 10%
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-110

Ceramic Filters

FEATURES

- Center Frequency : 1575 MHz
- Bandwidth : 1565 MHz to 1585 MHz
- Input Power (max) : 30 dBm
- Insertion losses @ fo : < 3.7 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-110 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Max CW Input Power		dBm	30
Center Frequency Fo		MHz	1575.4
Insertion Loss @ Fo		dB	≤ 3.7
-1dB Bandwidth		MHz	≥ 20
Return Loss in Bandwidth @ Fo ± 8.5 MHz		dB	> 13
Return Loss in Bandwidth @ Fo ± 9.5 MHz		dB	> 11
Ripple in Bandwidth @ -0.5dB		dBpp	≤ 0.5
Attenuation @ Fo ± 15 MHz		dBc	≥ 4
Attenuation @ Fo ± 25 MHz		dBc	≥ 17
Attenuation @ Fo ± 50 MHz		dBc	≥ 40
Attenuation @ Fo ± 100 MHz		dBc	≥ 50
Attenuation @ F < Fo – 150 MHz		dBc	≥ 50
Attenuation @ F > Fo + 150 MHz		dBc	≥ 50
Group Delay @ Fo		ns	30.5 ± 2
Group Delay Variation @ Fo ± 5 MHz		ns	≤ 2.0
Group Delay Variation @ Fo ± 8 MHz		ns	≤ 6.0

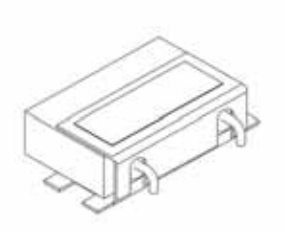
ENVIRONMENTAL SPECIFICATIONS

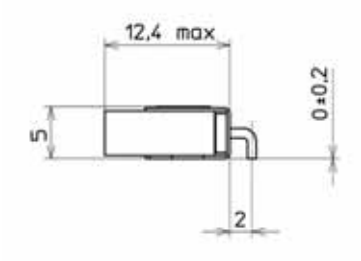
	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature Range	T	˚C	-55 →+85

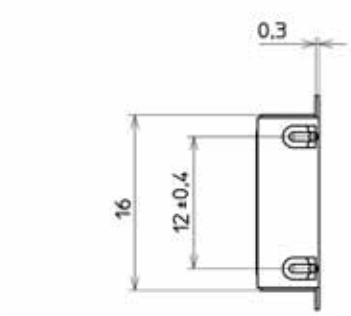
OTHER SPECIFICATIONS

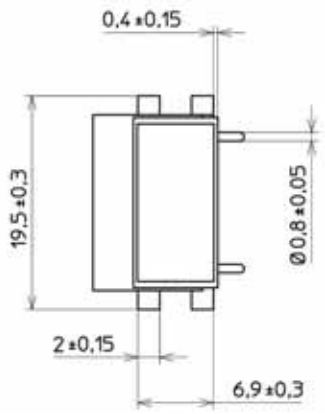
	Symbol	Unit	Value
Dimensions	L x l x h	mm	12.4x19.5x5
Weight		g	< 4
Connectors			SMD

OUTLINE DRAWING

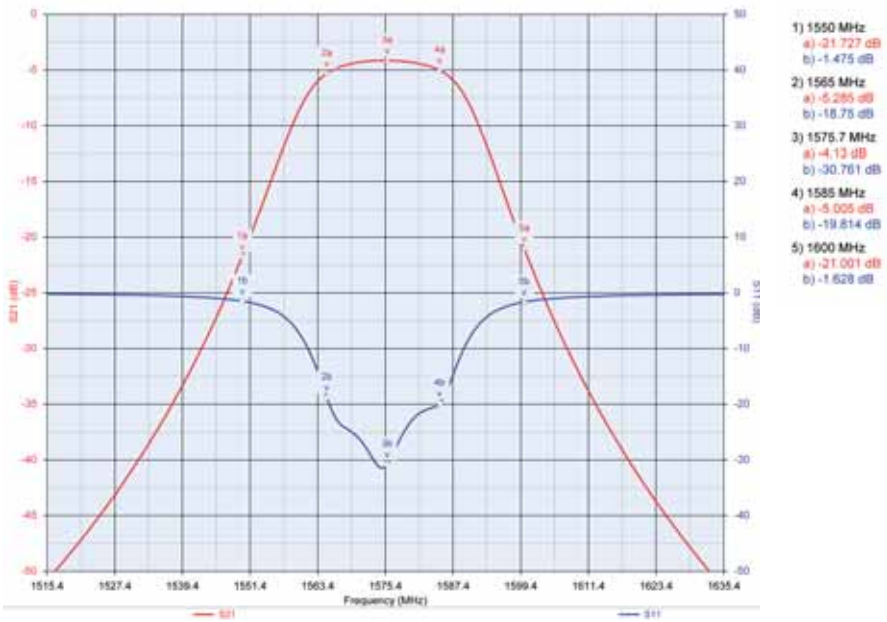








TYPICAL PERFORMANCES



Cob-fcer-111

Ceramic Filters

FEATURES

- Center Frequency : 1575 MHz
- Bandwidth : 1562.5 MHz to 1587.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2.5 dB
- Operating temperature : -30˚C to +105˚C

DESCRIPTION

The cob-fcer-111 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1575.42
-3dB Bandwidth		MHz	> 25
Insertion Loss @ Fo		dB	< 2.5
Insertion Loss in Bandwidth @ Fo ± 12.5 MHz		dB	< 3
Return Loss in Bandwidth @ Fo ± 12.5 MHz		dB	> 14
Attenuation @ F1 = 1425.42 MHz		dBc	> 40
Attenuation @ F2 = 1725.42 MHz		dBc	> 40
Group Delay Variation in Bandwidth @ Fo ± 12.5 MHz		ns	< 10
Phase Linearity in Bandwidth @ Fo ± 12.5 MHz		°	< ± 7.5

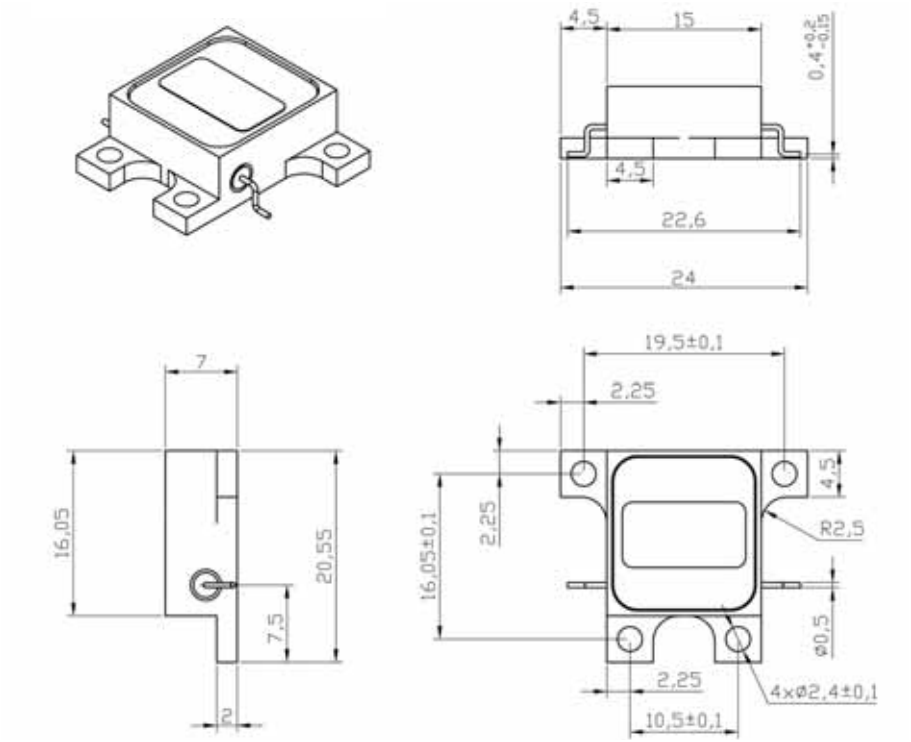
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-30 →+105
Storage Temperature Range	T	˚C	-55 →+125

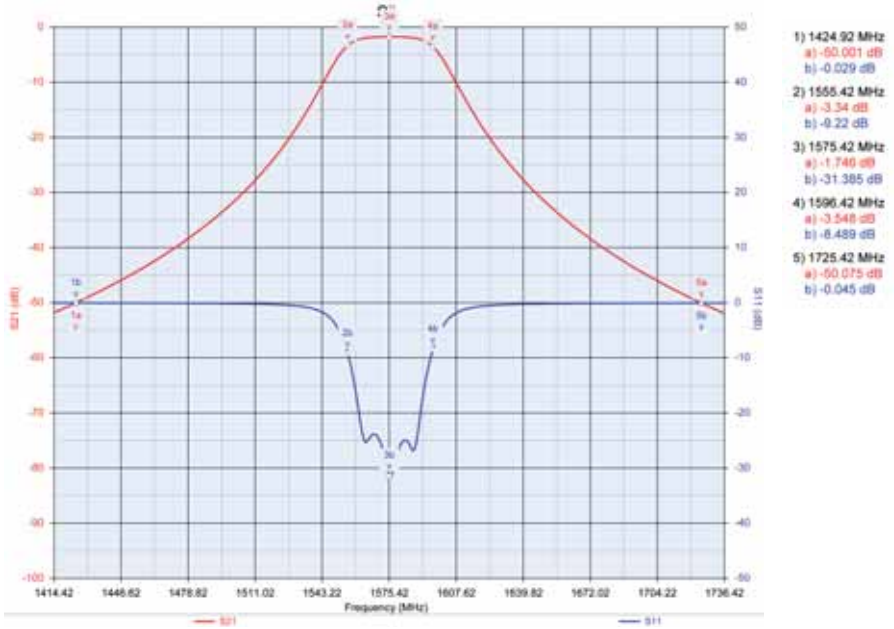
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	24.0x20.55x7.0
Weight		g	10 ± 1
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-114

Ceramic Filters

FEATURES

- Center Frequency : 1575 MHz
- Bandwidth : 1570 MHz to 1580 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 1.5 dB
- Operating temperature : -40°C to +85°C

DESCRIPTION

The cob-fcer-114 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1575
Usefull Bandwidth		MHz	> ± 5
Insertion Loss @ Fo ± 5 MHz		dB	< 1.5
Return Loss in Bandwidth @ Fo ± 5 MHz		dB	> 18
Ripple in Bandwidth @ Fo ± 5 MHz		dBpp	< 0.4
Attenuation @ Fo ± 35 MHz		dBc	> 7
Attenuation @ Fo ± 140 MHz		dBc	> 32
Group Delay @ Fo = 1575 MHz		ns	< 16
Group Delay Variation @ Fo ± 5 MHz		ns	< 2
Max CW Input Power		W	< 1

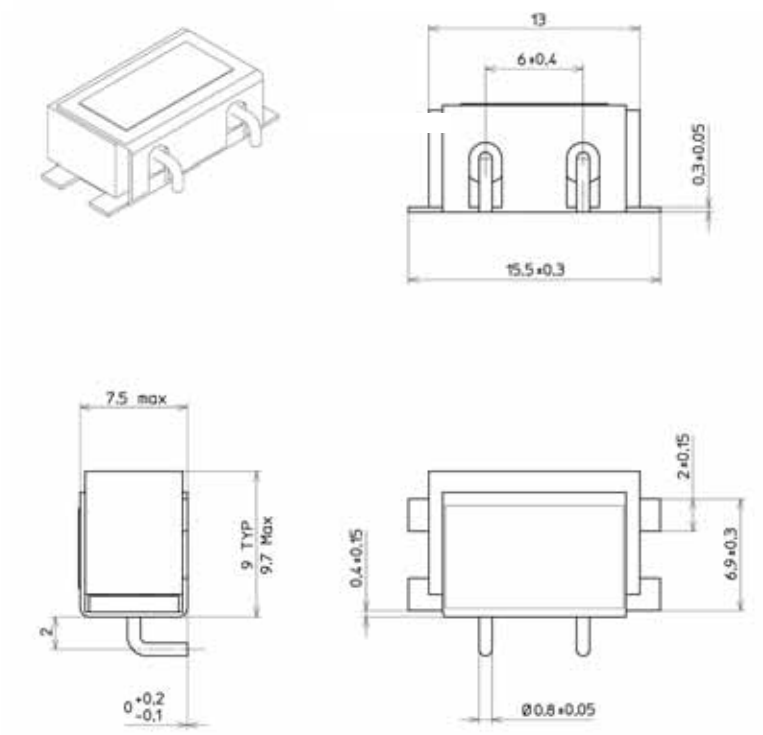
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-40 →+85
Storage Temperature Range	T	°C	-55 →+125
Vibrations			MIL STD 202 F Method 201 A
Shocks			MIL STD 202 F Method 202 D

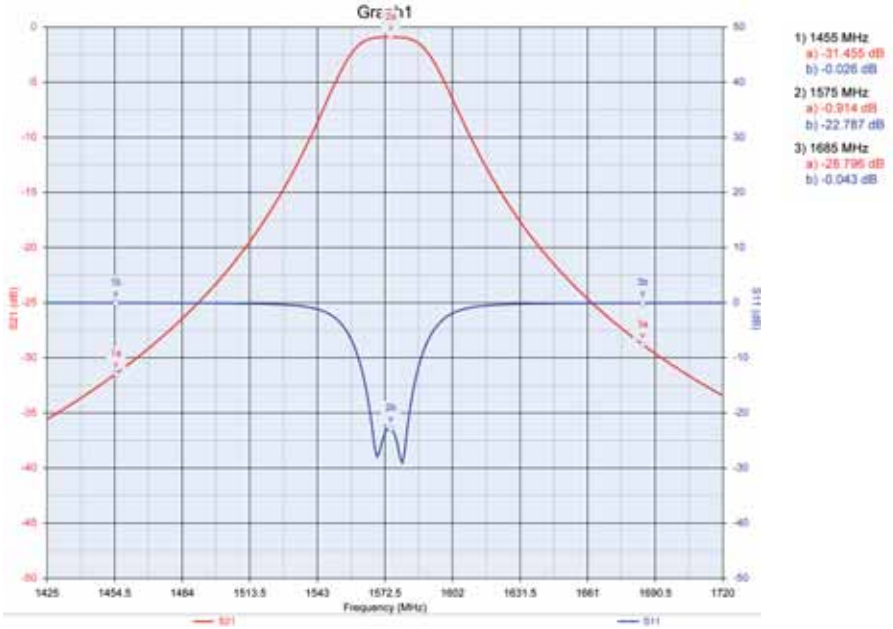
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	15.5x9.7x7
Weight		g	2.9 ± 1
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-115

Ceramic Filters

FEATURES

- Center Frequency : 1587 MHz
- Bandwidth : 1564.5 MHz to 1609.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 1 dB
- Operating temperature : -55˚C to +110˚C

DESCRIPTION

The cob-fcer-115 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency	Fo	MHz	1587.5
Minimum 0.5 db Bandwidth	BW	MHz	≥ 45
Insertion loss at Fo	IL	dB	≤ 1
Maximum ripple in 0.5 dB bandwidth	R	dBpp	≤ 0.6
Maximum VSWR within Fo ± 22.5 MHz		dB	> 9.6
Minimum out of band rejection at Fo ± 50 MHz		dBc	≥ 1
Minimum out of band rejection at Fo ± 100 MHz		dBc	≥ 13
Minimum out of band rejection at Fo ± 300 MHz		dBc	≥ 30
Group Delay Variation @ Fo		ns	5 ± 2
Maximum group delay variation at Fo ± 10 MHz		ns	≤ 1
Maximum group delay variation at Fo ± 15 MHz		ns	≤ 2
Maximum group delay variation at Fo ± 22.5 MHz		ns	≤ 2.5

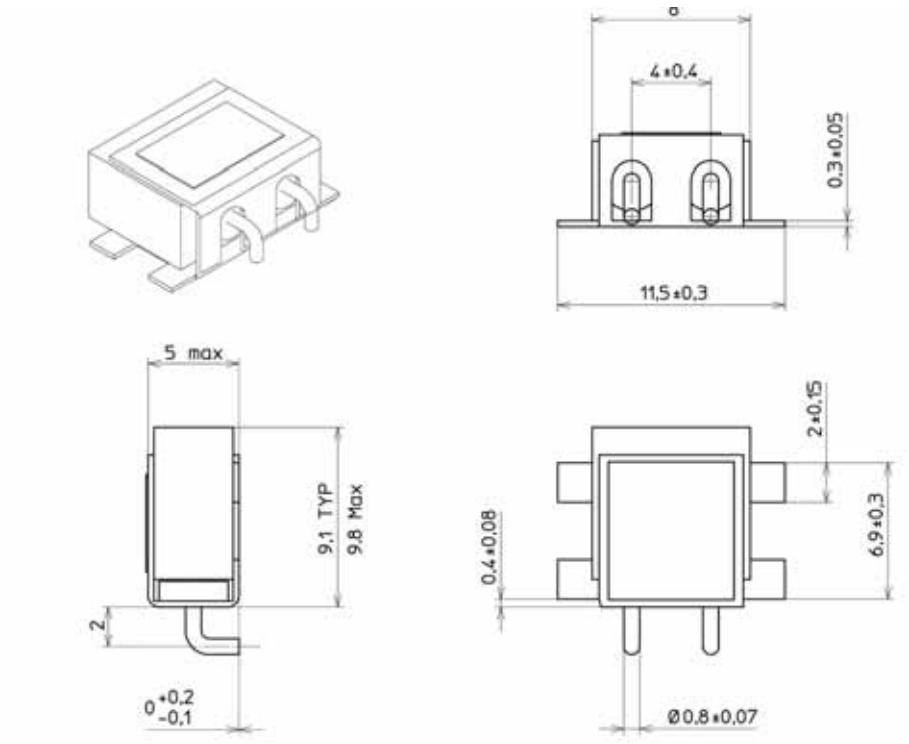
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-55 →+110
Storage Temperature Range	T	˚C	-60 →+110
Humidity		%	95% @ +55˚C 48H
Vibrations (3 axes , 2H / axes)		Hz	10 G peak 5 – 2000Hz
Shocks		G	30

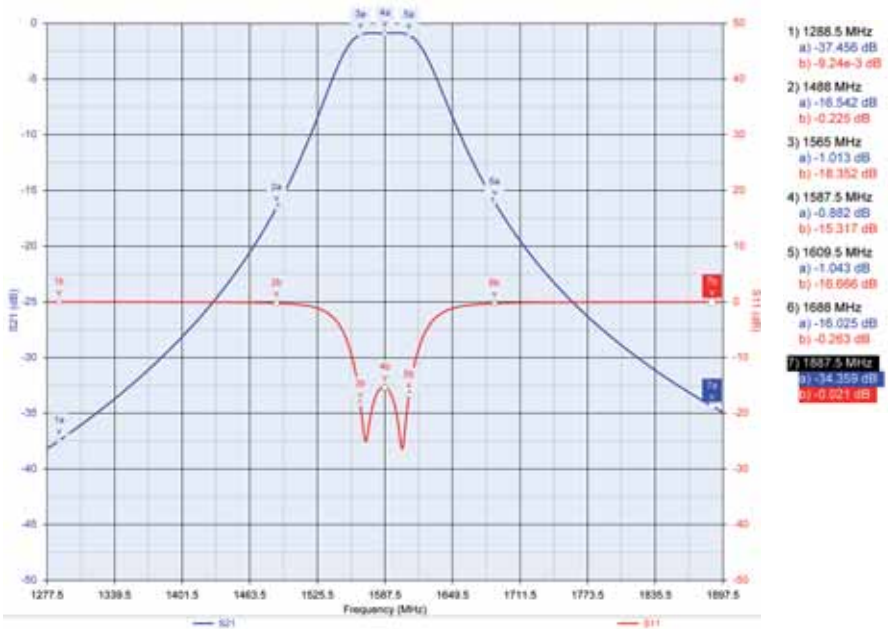
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	11.5x9.8x5
Weight		g	< 2
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-122

Ceramic Filters

FEATURES

- Center Frequency : 1602 MHz
- Bandwidth : 1594.5 MHz to 1609.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 4 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-122 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1602.5
Insertion Loss @ Fo		dB	≤ 4.0
-0.5dB Bandwidth		MHz	≥ 15
Return Loss in Bandwidth @ Fo ± 6.5 MHz		dB	> 14
Return Loss in Bandwidth @ Fo ± 7.5 MHz		dB	> 11
Ripple in Bandwidth @ -0.5dB		dBpp	≤ 0.5
Attenuation @ Fo ± 15 MHz		dBc	≥ 4.0
Attenuation @ Fo ± 25 MHz		dBc	≥ 18
Attenuation @ Fo ± 50 MHz		dBc	≥ 40
Attenuation @ F < Fo – 50 MHz		dBc	≥ 40
Group Delay @ Fo		ns	32.5 ± 2
Group Delay Variation @ Fo ± 4 MHz		ns	≤ 2.0
Group Delay Variation @ Fo ± 6 MHz		ns	≤ 4.0
Group Delay Variation @ Fo ± 8 MHz		ns	≤ 7.0

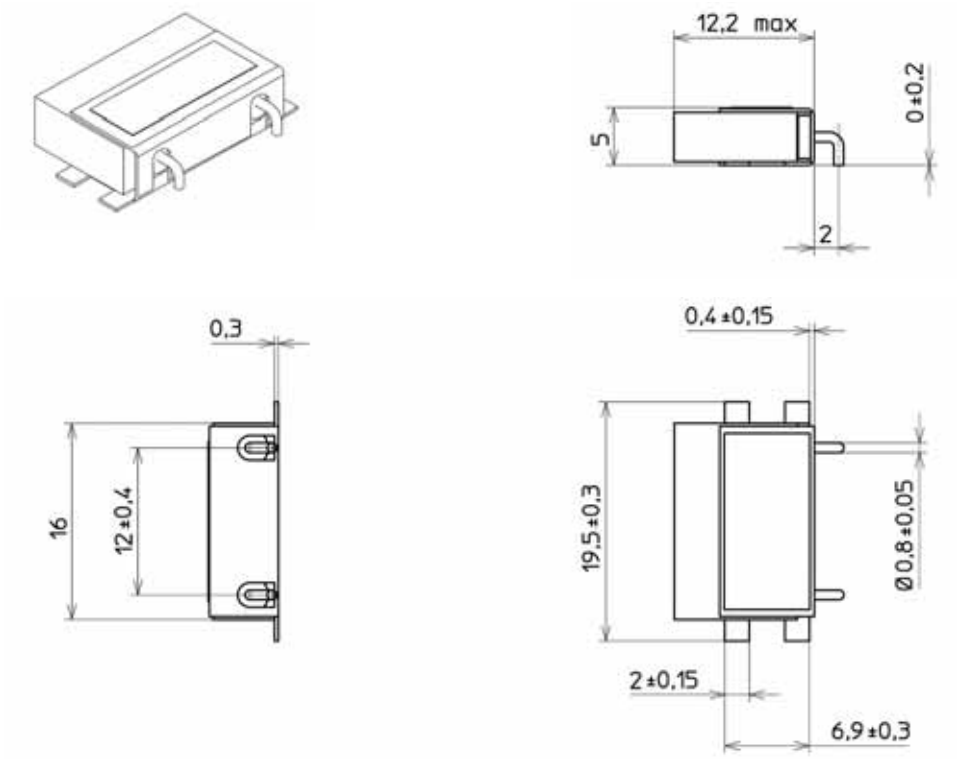
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature Range	T	˚C	-55 →+85

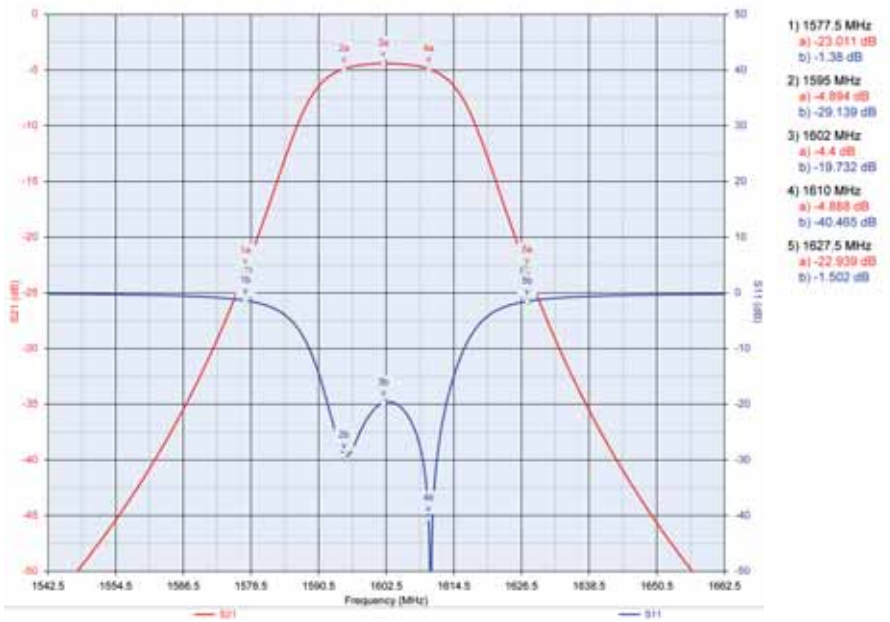
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	12.2x19.5x5
Weight		g	< 4
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-123

Ceramic Filters

FEATURES

- Center Frequency : 1603 MHz
- Bandwidth : 1596 MHz to 1610 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2.5 dB
- Operating temperature : -55°C to +110°C

DESCRIPTION

The cob-fcer-123 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency	Fo	MHz	1603
Minimum 0.5 db Bandwidth	BW	MHz	≥ 14
Insertion loss at Fo	IL	dB	≤ 2.5
Maximum ripple in 0.5 dB bandwidth	R	dBpp	≤ 0.5
Maximum VSWR within Fo ± 7 MHz		dB	> 9.6
Minimum out of band rejection at Fo ± 20 MHz		dBc	≥ 1
Minimum out of band rejection at Fo ± 50 MHz		dBc	≥ 15
Minimum out of band rejection at Fo ± 100 MHz		dBc	≥ 25
Minimum out of band rejection at Fo ± 300 MHz		dBc	≥ 40
Group delay at Fo		ns	12 ± 2
Maximum group delay variation at Fo ± 7 MHz		ns	≤ 4

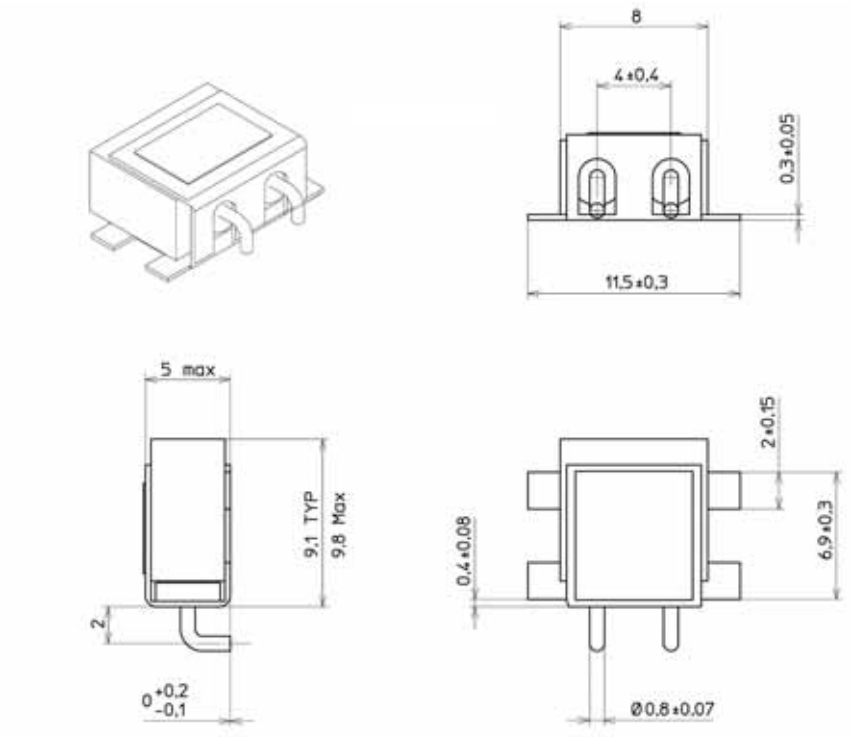
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-55 →+110
Storage Temperature Range	T	°C	-60 →+110
Humidity		%	95% @ +55°C 48H
Vibrations (3 axes , 2H / axes)		Hz	10 G peak 5 – 2000Hz
Shocks		G	30

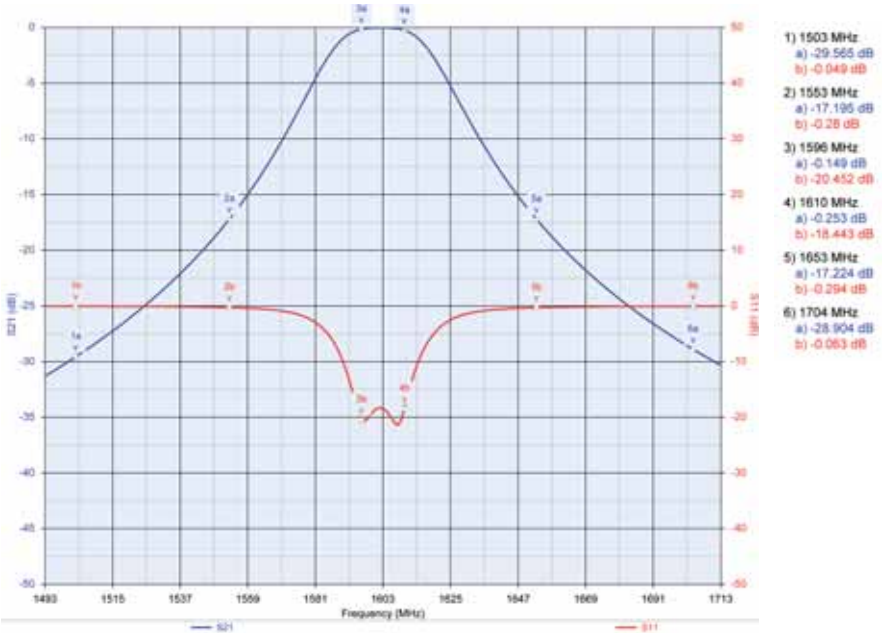
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	11.5x9.8x5
Weight		g	< 2
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-132

Ceramic Filters

FEATURES

- Center Frequency : 1716 MHz
- Bandwidth : 1708.5 MHz to 1723.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 3.5 dB
- Operating temperature : -40˚C to +80˚C

DESCRIPTION

The cob-fcer-132 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Dcs

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Centre frequency (fo)		MHz	1716.875
Insertion loss at fo		dB	< 3.5
0.5dB Bandwidth		MHz	> 15
Return loss in 0.5dB bandwidth		dB	> 14
Rejection at ± 40 MHz		dBc	> 25
Rejection at ± 100 MHz		dBc	> 40
Operating temperature		˚C	-40 / +85
Gain matching (at 25˚C *)		dB	< ± 0.25
Phase matching (at 25˚C *)		deg	< ± 5
Comment * : a filter at 25˚C is taken as reference			

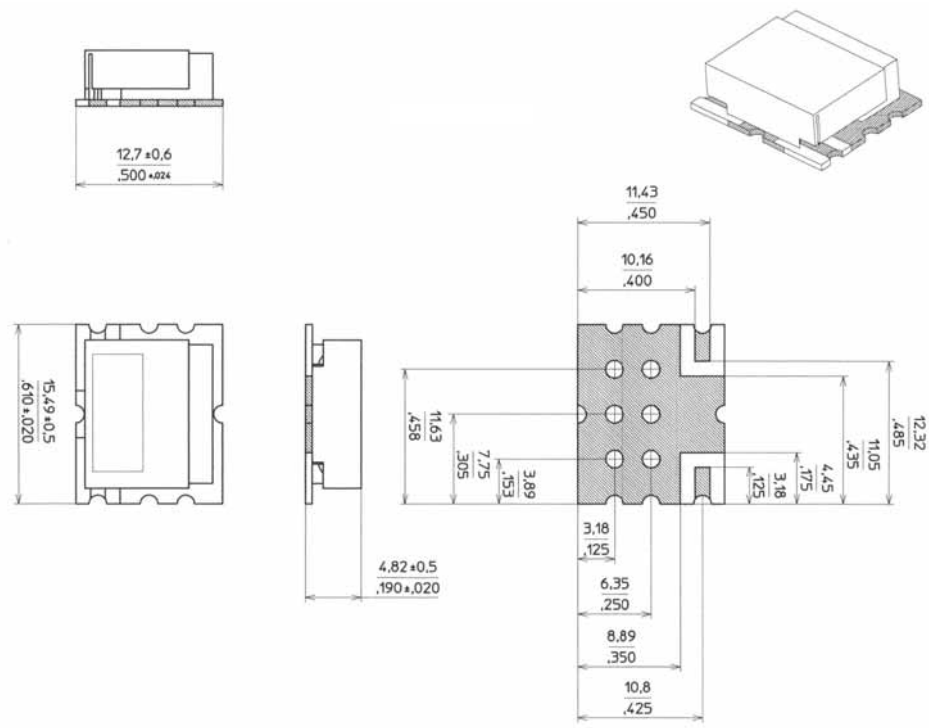
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+80
Storage Temperature Range	T	˚C	-50 →+85

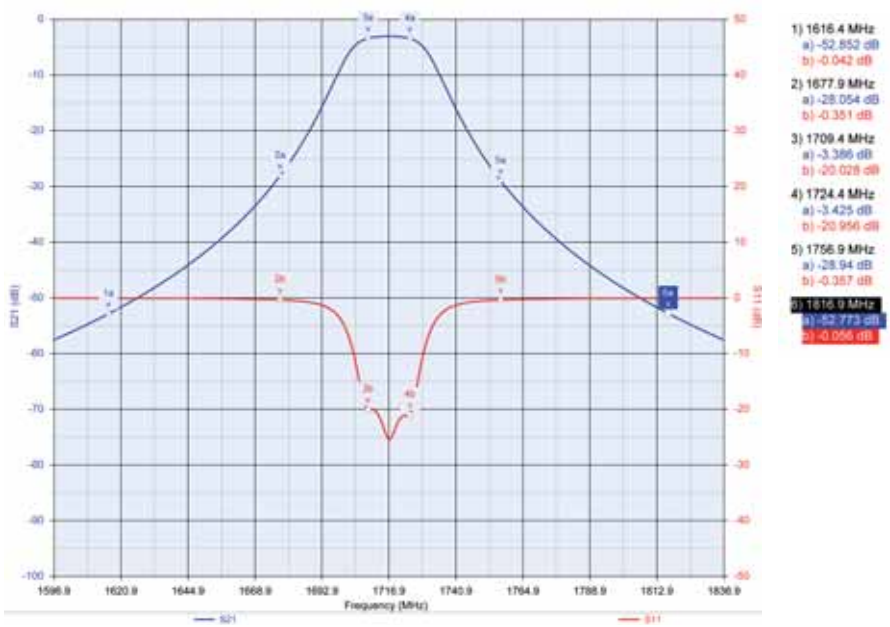
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	16 x 13 x 5
Weight		g	< 3
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-147

Ceramic Filters

FEATURES

- Center Frequency : 2100 MHz
- Bandwidth : 2080 MHz to 2120 MHz
- Input Power (max) : 20 dBm
- Insertion losses @ fo : < 2.6 dB
- Operating temperature : -20˚C to +70˚C

DESCRIPTION

The cob-fcer-147 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Max input power		dBm	< 20
Center Frequency Fo		MHz	2100
-3dB Bandwidth		MHz	< 40
Insertion Loss @ FO = 2100 MHz		dB	< 2.6
Return Loss @ FO = 2100 MHz		dB	> 12
Attenuation @ FO ± 600 MHz		dBc	> 40

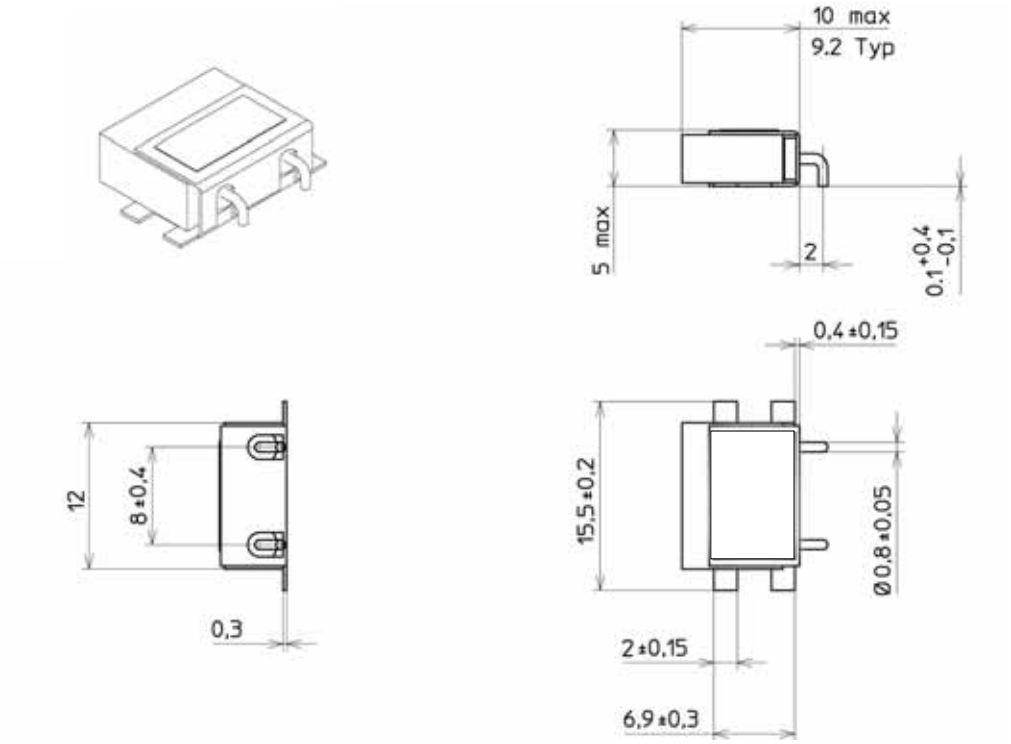
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-20 →+70
Storage Temperature Range	T	˚C	-40 →+85

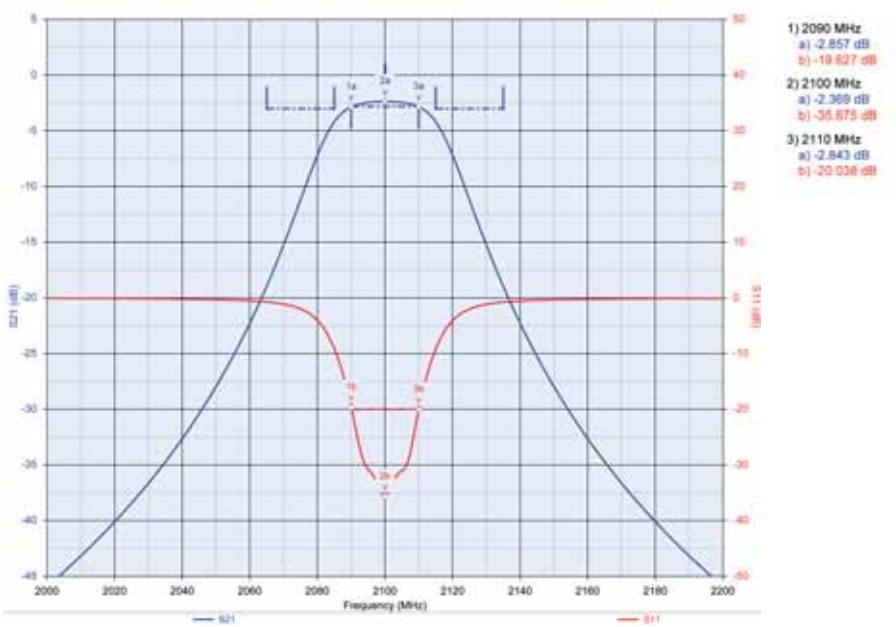
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	15.5 x 10.0 x 5.0
Weight		g	< 4
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-174

Ceramic Filters

FEATURES

- Center Frequency : 2702 MHz
- Bandwidth : 2692 MHz to 2712 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2 dB
- Operating temperature : -20˚C to +60˚C

DESCRIPTION

The cob-fcer-174 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	2701.72
Insertion Loss @ Fo		dB	≤ 2.0
Bandwidth		MHz	≥ 20
Return Loss in the Bandwidth		dB	> 12
Attenuation @ Fo – 245.61 MHz		dBc	≥ 20
Attenuation @ Fo + 245.61 MHz		dBc	≥ 20

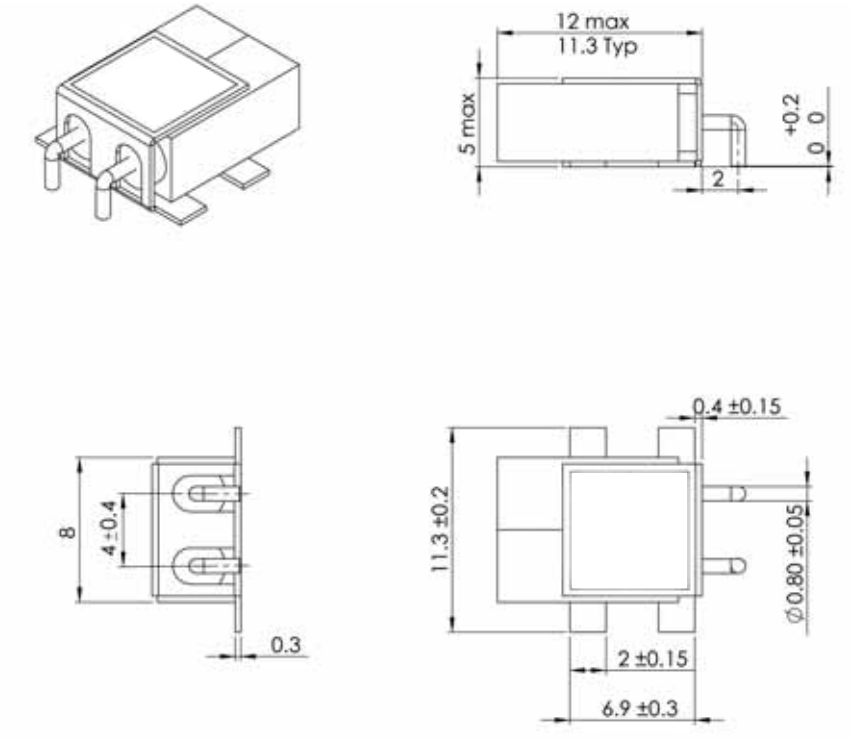
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-20 →+60
Storage Temperature Range	T	˚C	-40 →+85

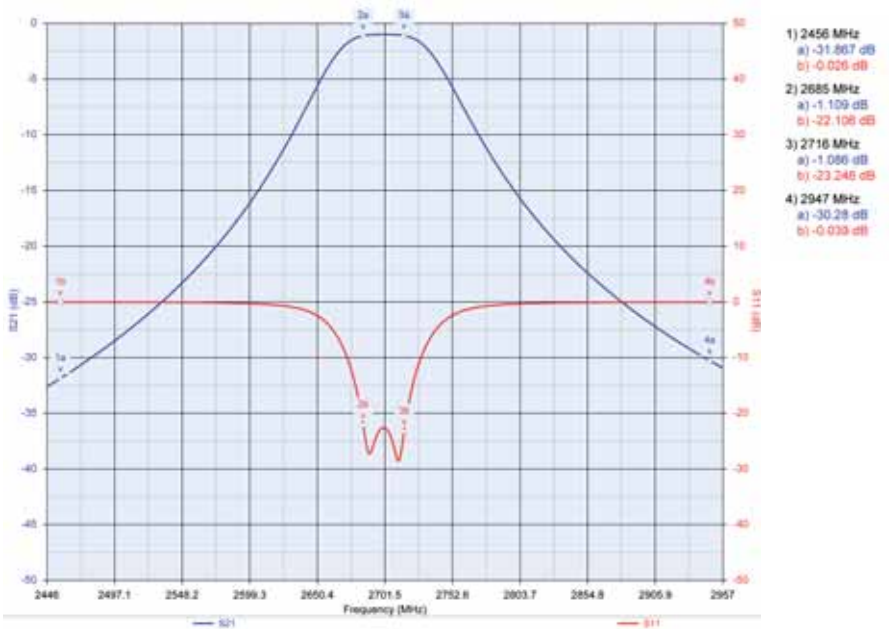
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	11.5 x 9.0 x 5.0
Weight		g	< 4
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-184

Ceramic Filters

FEATURES

- Center Frequency : 3600 MHz
- Bandwidth : 3565 MHz to 3635 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 3 dB
- Operating temperature : -20˚C to +70˚C

DESCRIPTION

The cob-fcer-184 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Intermediate frequency
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	3600
-3dB Bandwidth		MHz	> 70
Insertion Loss @ Fo		dB	< 3.0
Return Loss in Bandwidth @ Fo ± 28 MHz		dB	> 12
Attenuation @ F_1 = 1800 MHz		dBc	> 50
Attenuation @ F_2 = 5400 MHz		dBc	> 35

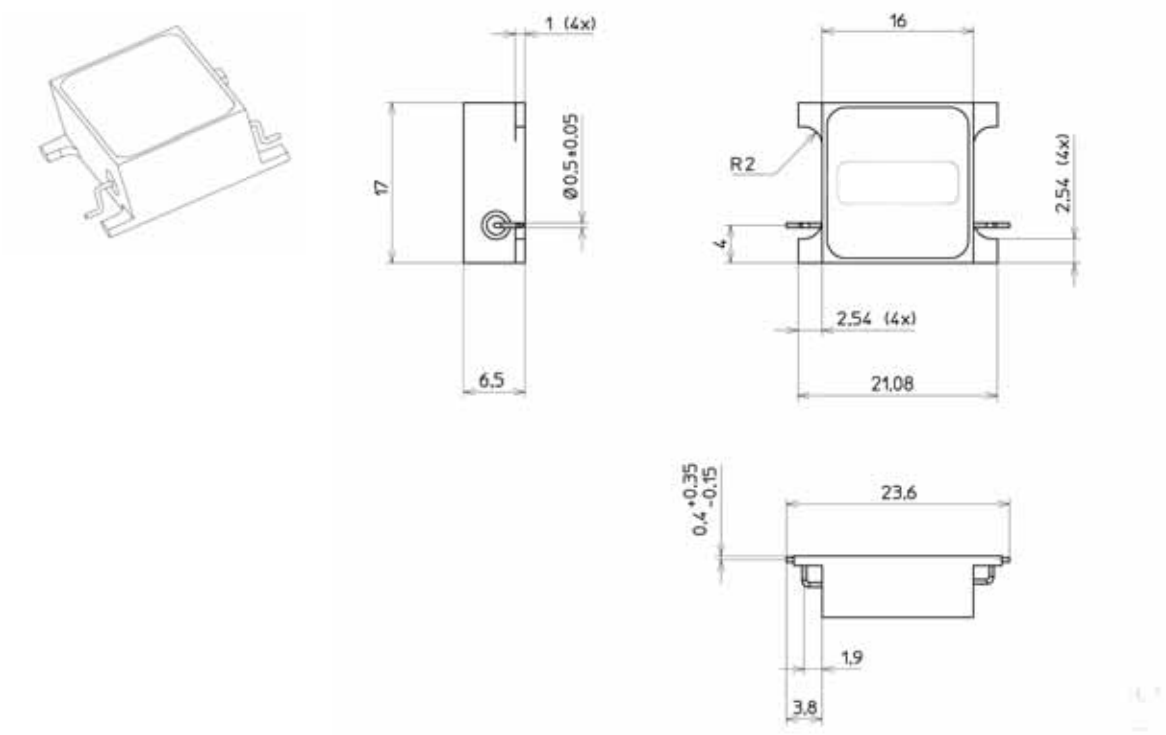
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-20 →+70
Storage Temperature Range	T	˚C	-40 →+85

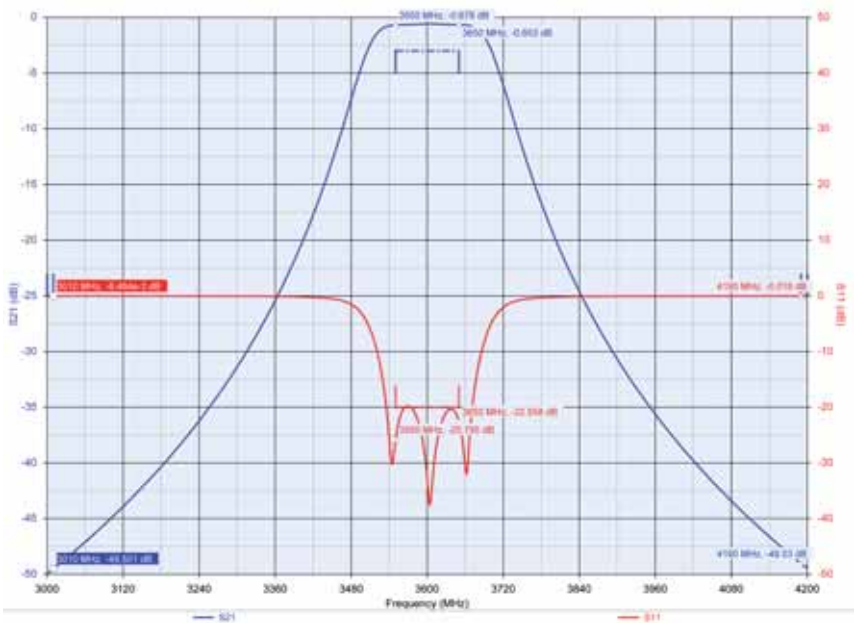
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	17x16x6.5
Weight		g	6.9 ± 10%
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-fcer-007

Ceramic Filters

FEATURES

- Center Frequency : 822 MHz
- Bandwidth : 812 MHz to 832 MHz
- Input Power (max) : 3 W
- Insertion losses @ fo : < 2.5 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-007 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

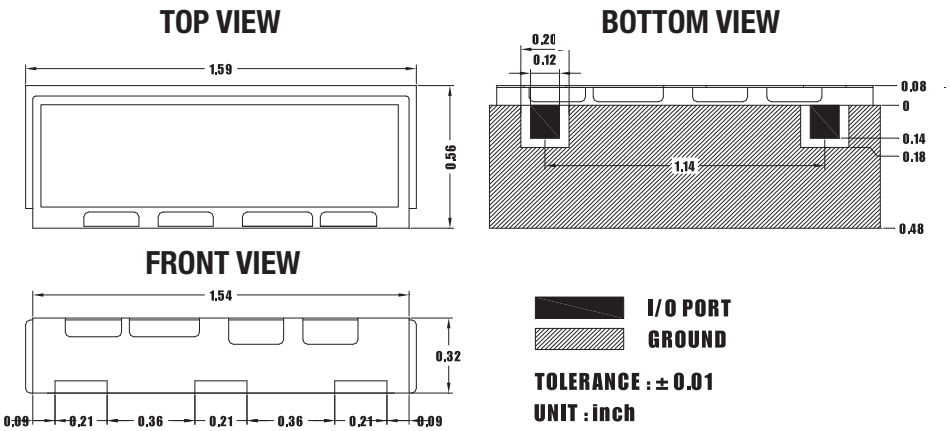
APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center frequency (Fo)	822	MHz
Bandwidth at 1dB	fo ± (812 ~ 832)	MHz
Insertion Loss at fo	2.5 max.	dB
Ripple in BW	1.50 max.	dBpp
Return Loss in BW	15.0 Min.	dB
Input Power	3.0 W max.	
In/Out Impedance	50 Ω	
Attenuation (Absolute Value)	25 dB min @ C ~ 803 MHz 20 dB min @ 843 ~ 846 MHz 55 dB min @ 850 ~ 860 MHz	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-fcer-041

Ceramic Filters

FEATURES

- Center Frequency : 1090 MHz
- Bandwidth : 1085 MHz to 1095 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 2.3 dB
- Operating temperature : -30˚C to +85˚C

DESCRIPTION

The cob-fcer-041 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

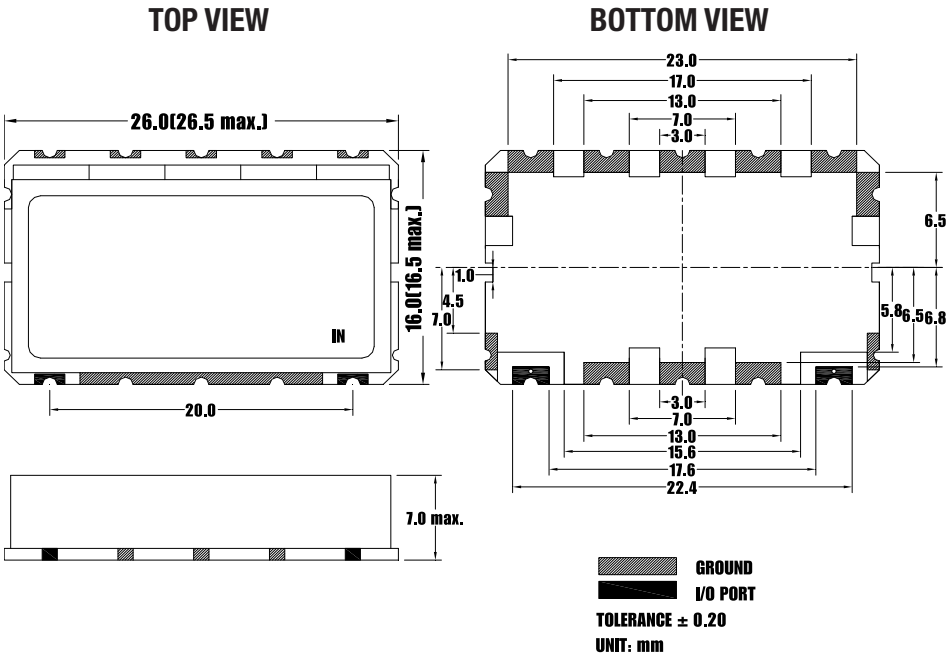
APPLICATIONS

- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center frequency (Fo)	1090.0	MHz
3dB Bandwidth	fo ± 5 (1085 ~ 1095)	MHz
Insertion loss in BW	2.3 max.	dB
Ripple in BW	0.5 max.	dBpp
VSWR in BW	1.5 : 1 max.	dB
Input Power	1 W max.	
In/Out Impedance	50 Ω	
Attenuation (Absolute Value)	40 dB min @ 1030 MHz 40 dB min @ 1150 MHz	
Operation Temperature Range	-30 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-fcer-095

Ceramic Filters

FEATURES

- Center Frequency : 1487 MHz
- Bandwidth : 1429 MHz to 1545 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-095 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

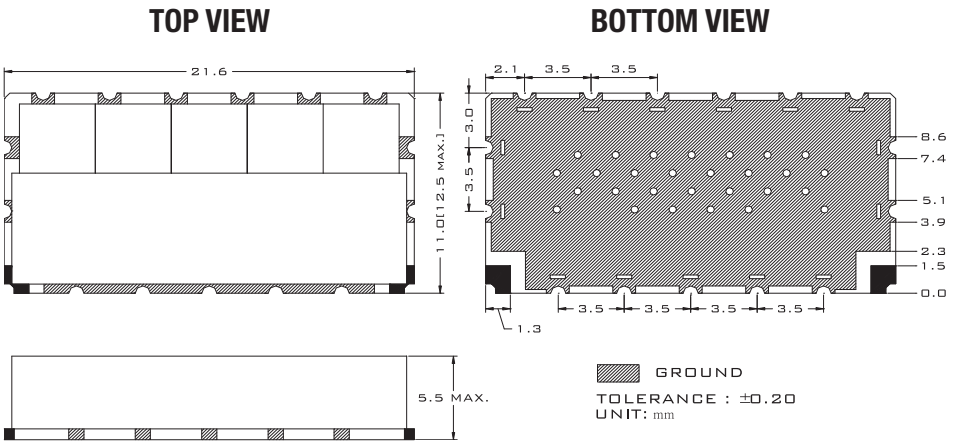
APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	1487.0	MHz
Bandwidth [BW]	fo ± 58 [1429 ~ 1545]	MHz
Insertion Loss in BW	2.0 max.	dB
Ripple in BW	1.0 max.	dBpp
V S W R in BW	1.5 : 1	Ratio
In/Out Impedance	50 Ω	
Attenuation (Absolute Value)	45.0 dB min. @ DC-330 MHz 25.0 dB min. @ 1210 MHz 10.0 dB min. @ 1285 MHz 15.0 dB min. @ 1595 MHz 40.0 dB min. @ 1975 MHz 45.0 dB min. @ 2310-2500 MHz	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-fcer-109

Ceramic Filters

FEATURES

- Center Frequency : 1575 MHz
- Bandwidth : 1562.5 MHz to 1587.5 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 1.8 dB
- Operating temperature : -54˚C to +71˚C

DESCRIPTION

The cob-fcer-109 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

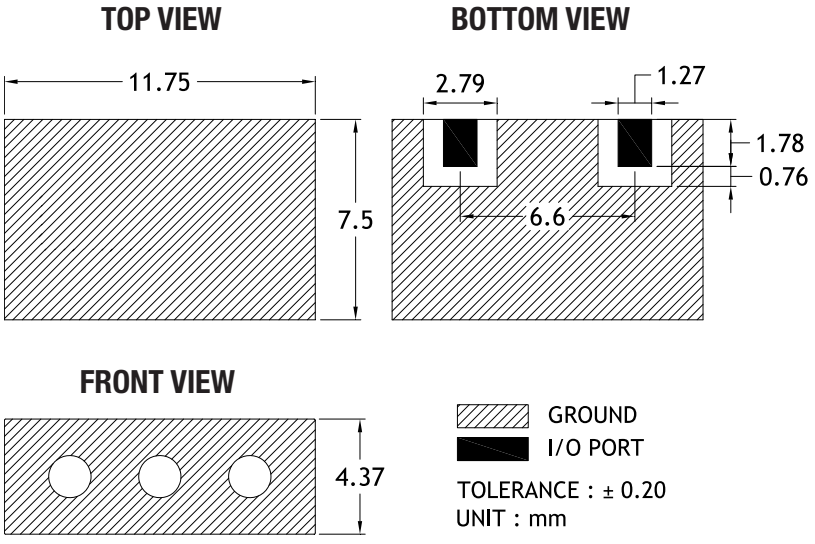
APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	1574.9	MHz
Bandwidth [BW]	fo ±12.5 [1562.4 - 1587.4]	MHz
Insertion Loss in BW	1.8 max.	dB
Ripple in BW	0.8 max.	dBpp
Return Loss in BW	10.0 min.	dB
In/Out Impedance	50 Ω	
Attenuation (Absolute Value)	35.0 dB min. @ 1435.4 MHz 7.0 dB min. @ 1540.4 MHz 7.0 dB min. @ 1610.4 MHz 30.0 dB min. @ 1715.4 MHz	
Power into any port	1 Watt max.	
Operating Temperature Range	-54 ˚C to + 71˚C	

OUTLINE DRAWING



Cob-fcer-135

Ceramic Filters

FEATURES

- Center Frequency : 1732 MHz
- Bandwidth : 1709.5 MHz to 1754.5 MHz
- Input Power (max) : 0.5 W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-135 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

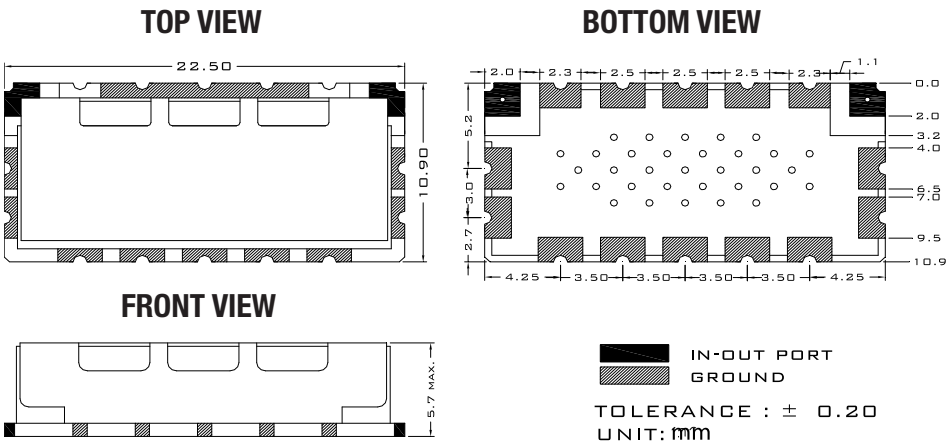
APPLICATIONS

- Dcs

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Centre frequency (fo)	1732.5	MHz
Bandwidth (BW)	fo ± 22.5 [1710-1755]	MHz
Insertion loss (Range : within working bandwidth)	3.0 max	dB
Ripple in BW	1.7 max	dBpp
VSWR in BW	1.5 : 1 max	Ratio
In/Out impedance	50	Ω
Attenuation @ 800 -1690 MHz	20 min	dB
Attenuation @ 1775 – 1850 MHz	20 min	dB
Attenuation @ 1850 – 1930 MHz	35 min	dB
Attenuation @ 1930 – 2170 MHz	50 min	dB
Operation temperature range	-40 / +85	˚C
Input power	0.5 max	W

OUTLINE DRAWING



Cob-fcer-149

Ceramic Filters

FEATURES

- Center Frequency : 2245 MHz
- Bandwidth : 2200 MHz to 2290 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 3.5 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-149 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

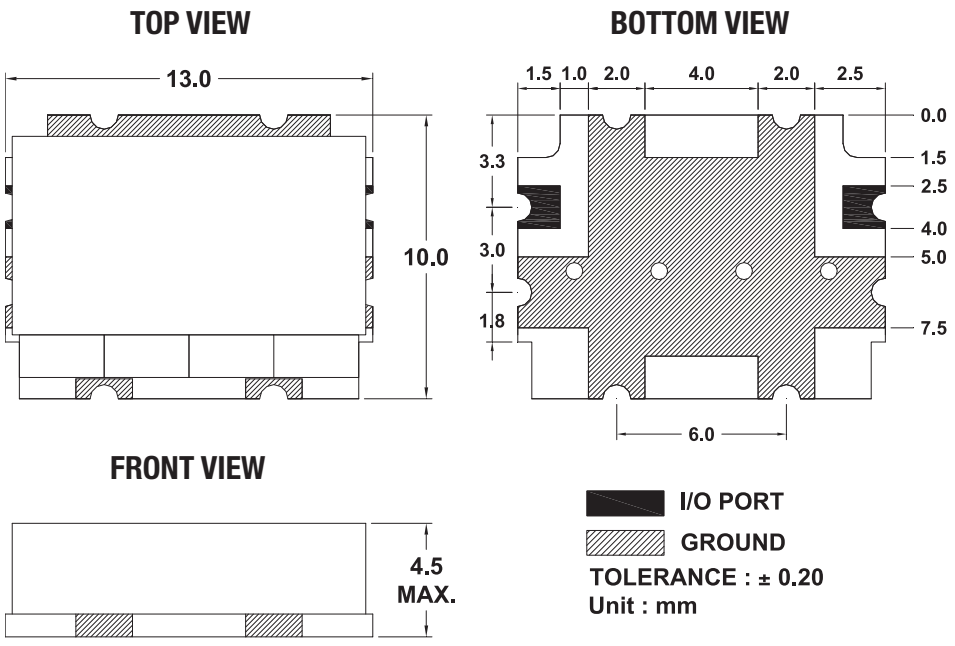
APPLICATIONS

- Radiolink

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	2245	MHz
1dB Bandwidth [BW]	fo ± 45 [2200 ~ 2290]	MHz
Insertion Loss in BW	3.5 max.	dB
Ripple in BW	1.0 max.	dBpp
VSWR in BW	1.5 : 1 max.	Ratio
Group Delay Variation in BW	10 max.	nSec
Attenuation [Absolute Value]	35dB min. @ 2025 ~ 2110 MHz 25dB min. @ 2360 ~ 2550 MHz	
Operating Temperature Range	-40 ˚C to + 85˚C	
Input Power	1.0 W max.	
In/Out Impedance	50 Ω	

OUTLINE DRAWING



Cob-fcer-155

Ceramic Filters

FEATURES

- Center Frequency : 2400 MHz
- Bandwidth : 2000 MHz to 2800 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2.5 dB
- Operating temperature : 0˚C to +70˚C

DESCRIPTION

The cob-fcer-155 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

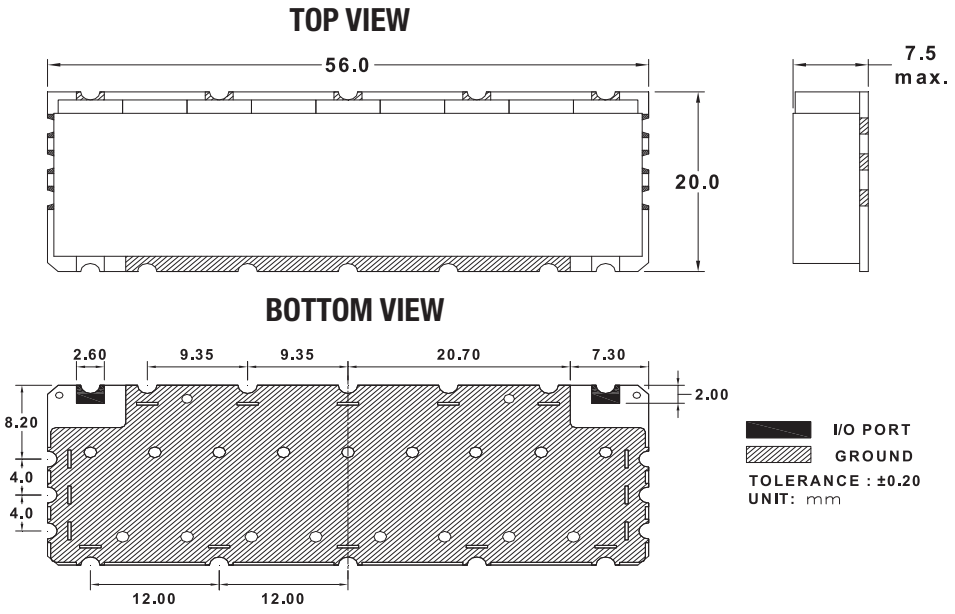
APPLICATIONS

- Radiolink
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	2400	MHz
Bandwidth [BW]	fo±400 [2000 - 2800]	MHz
Insertion Loss in BW	2.5 max.	dB
Ripple in BW	1.5 max.	dBpp
Return Loss in BW	9.0	dB
Attenuation [Absolute Value]	55 dB min. @ fo – 600 [1800] MHz 27 dB min. @ fo – 500 [1900] MHz 15 dB min. @ fo + 500 [2900] MHz 30 dB min. @ fo + 600 [3000] MHz	
Operating Temperature Range	0 ˚C to + 70˚C	
In/Out Impedance	50 Ω	

OUTLINE DRAWING



Cob-fcer-158

Ceramic Filters

FEATURES

- Center Frequency : 2450 MHz
- Bandwidth : 2200 MHz to 2700 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-158 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

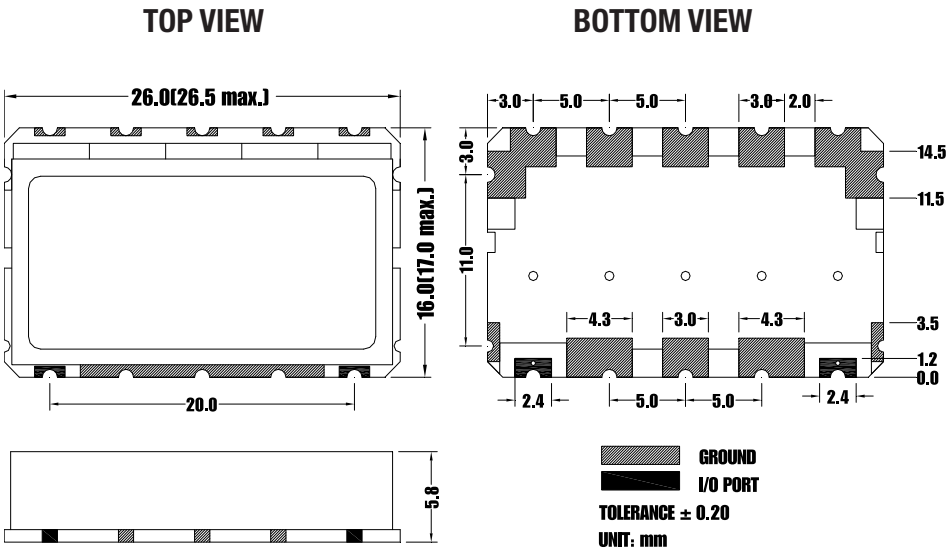
APPLICATIONS

- Radiolink
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	2450.0	MHz
Bandwidth [BW]	fo ± 250 [2200 - 2700]	MHz
Insertion Loss in BW	3.0 max.	dB
Ripple in BW	1.0 max.	dBpp
Return Loss in BW	15.0 min.	dB
Attenuation [Absolute Value]	20.0 dB min. @ fo + 470 [2920] MHz	
Operating Temperature Range	-40 ˚C to + 85˚C	
In/Out Impedance	50 Ω	

OUTLINE DRAWING



Cob-fcer-159

Ceramic Filters

FEATURES

- Center Frequency : 2464 MHz
- Bandwidth : 2445 MHz to 2483 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 4 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-159 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

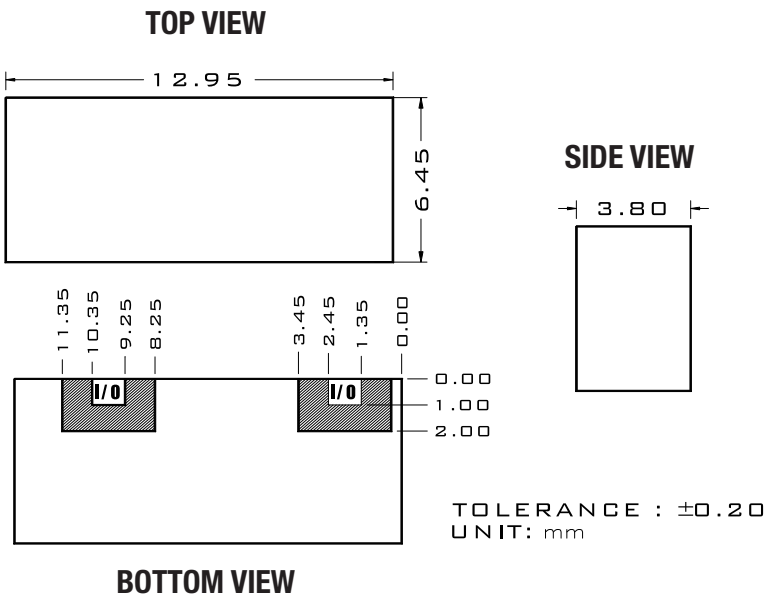
APPLICATIONS

- Radiolink
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	2464.0	MHz
Bandwidth [BW]	fo ± 19 [2445 ~ 2483]	MHz
Insertion Loss in BW	4.0 max.	dB
Ripple in BW	1.5 max.	dBpp
VSWR in BW	2.0 max.	Ratio
Attenuation [Absolute Value]	12.0 dB min. @ 2438 MHz	
Operating Temperature Range	- 40 ˚C to + 85˚C	
In/Out Impedance	50 Ω	

OUTLINE DRAWING



Cob-fcer-163

Ceramic Filters

FEATURES

- Center Frequency : 2500 MHz
- Bandwidth : 2400 MHz to 2600 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-163 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

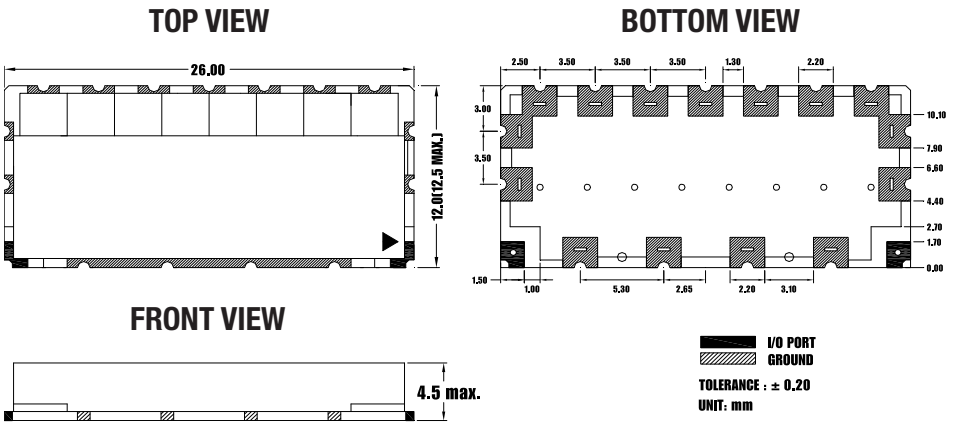
APPLICATIONS

- Radiolink
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	2500.0	MHz
Bandwidth [BW]	fo ± 100 [2400 - 2600]	MHz
Insertion Loss in BW	3.0 max.	dB
Ripple in BW	1.0 max.	dBpp
V.S.W.R. in BW	1.5 : 1 max.	Ratio
Attenuation [Absolute Value]	65.0 dB min. @ fo ± 600 MHz	
Operating Temperature Range	-40 ˚C to + 85˚C	
Input/Output Impedance	50 Ω	

OUTLINE DRAWING



Cob-fcer-166

Ceramic Filters

FEATURES

- Center Frequency : 2545 MHz
- Bandwidth : 2470 MHz to 2620 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-166 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

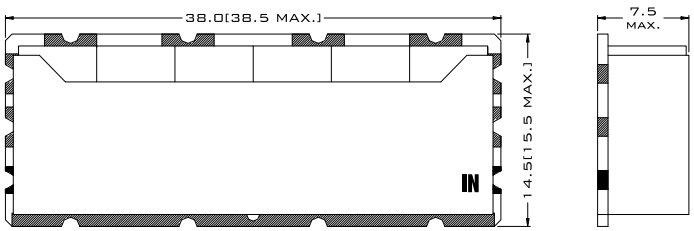
- Radiolink
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

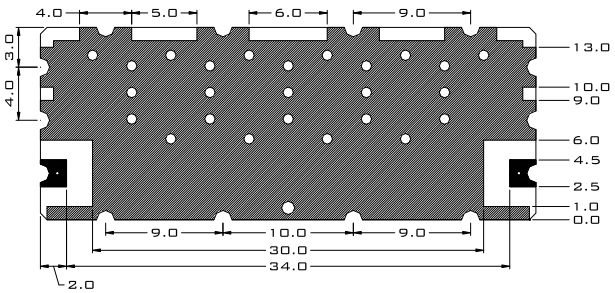
Item	Spec	Unit
Center Frequency [fo]	2545.0	MHz
Bandwidth [BW]	fo ± 75 [2470 ~ 2620]	MHz
Insertion Loss in BW	3.0 max.	dB
Ripple in BW	1.0 max.	dBpp
Return loss in BW	15.0 min.	dB
Attenuation [Absolute Value]	60.0 dB min. @ ~ 2170 MHz 50.0 dB min. @ 2880-3000 MHz 70.0 dB min. @ 3270-3390 MHz	
Operating Temperature Range	- 40 ˚C to + 85˚C	
In/Out Impedance	50 Ω	

OUTLINE DRAWING

TOP VIEW



BOTTOM VIEW



I/O PORT
GROUND
TOLERANCE : ±0.20
UNIT: mm

Cob-fcer-172

Ceramic Filters

FEATURES

- Center Frequency : 2650 MHz
- Bandwidth : 2640 MHz to 2660 MHz
- Input Power (max) : 2 W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -30˚C to +70˚C

DESCRIPTION

The cob-fcer-172 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

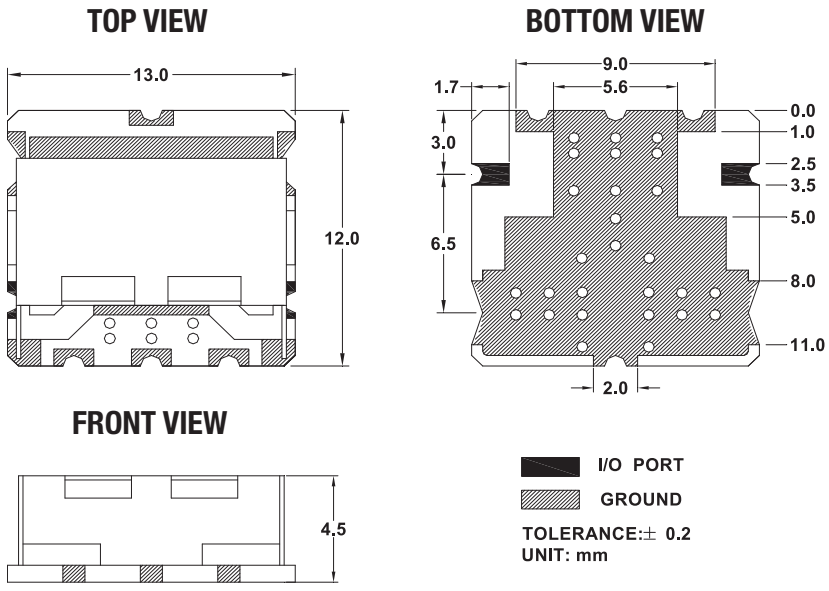
APPLICATIONS

- Radiolink
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	2650	MHz
Bandwidth [BW]	fo ± 10 [2640 ~ 2660]	MHz
Insertion Loss in BW	3.0 max.	dB
Ripple in BW	0.5 max.	dBpp
V.S.W.R. in BW	1.5 : 1 max.	Ratio
Attenuation [Absolute Value]	60dB min. @ fo + 125 [2775] MHz 20dB min. @ fo - 250 [2400] MHz	
In/Out Impedance	50 Ω	
Input Power	2 W max.	
Operating Temperature Range	-30℃ to +70℃	

OUTLINE DRAWING



Cob-fcer-180

Ceramic Filters

FEATURES

- Center Frequency : 3455 MHz
- Bandwidth : 3377.5 MHz to 3532.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-180 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

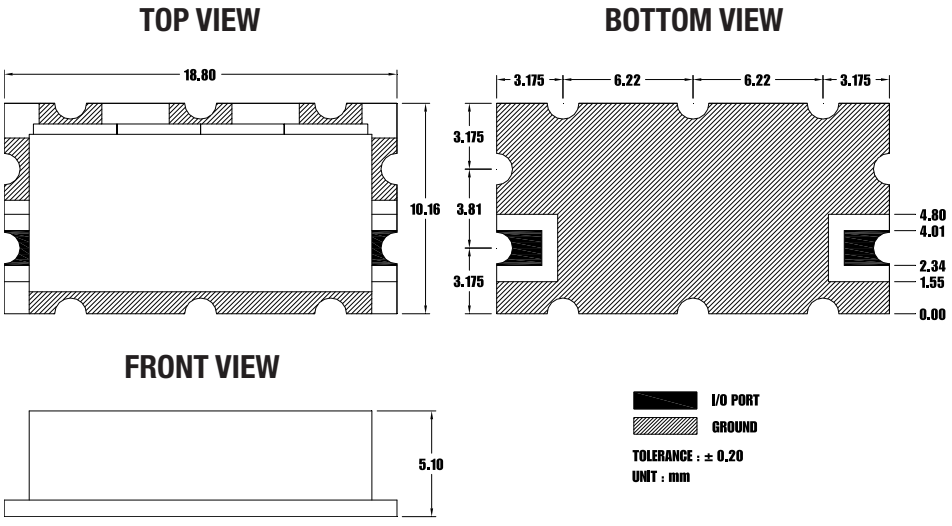
APPLICATIONS

- Radiolink
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	3555.0	MHz
0.5dB Bandwidth	155 min.	MHz
3dB Bandwidth	200	MHz
Insertion Loss at fo	2.0 max.	dB
Ripple in BW	0.5 max.	dBpp
V S W R in BW	1.5 : 1 max.	Ratio
Attenuation [Absolute Value]	30.0 dB min. @ fo – 225 MHz 20.0 dB min. @ fo + 225 MHz	
Operating Temperature Range	- 40 ˚C to + 85˚C	
In/Out Impedance	50 Ω	

OUTLINE DRAWING



Cob-fcer-014

Ceramic Filters

FEATURES

- Center Frequency : 908 MHz
- Bandwidth : 830.5 MHz to 985.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-fcer-014 is a dielectric resonator filter ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

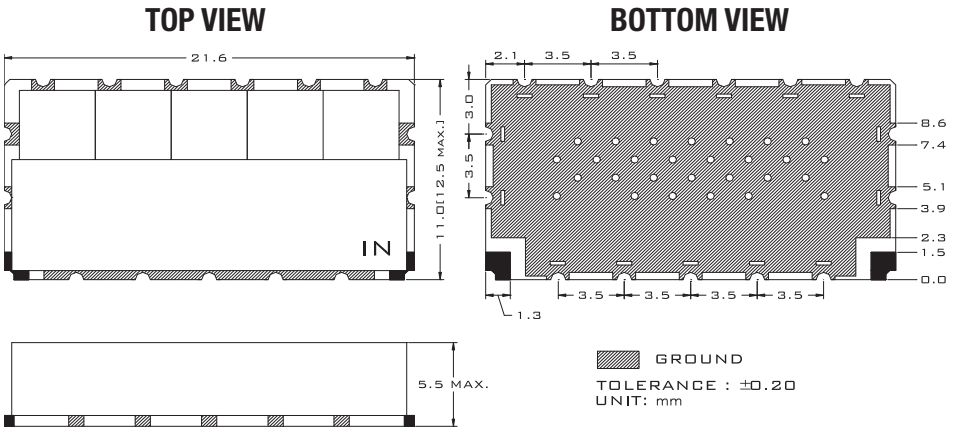
APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center Frequency [fo]	907.5	MHz
Bandwidth [BW]	fo ± 77.5 [830 - 985]	MHz
Insertion Loss in BW	2.0 max.	dB
Ripple in BW	1.0 max.	dBpp
V S W R in BW	1.5 : 1	ratio
Attenuation [Absolute Value]	45.0 dB min. @ DC~490 MHz 30.0 dB min. @ 670 MHz 20.0 dB min. @ 1915MHz 30.0 dB min. @ 2015 MHz	
In/Out Impedance	50 Ω	
Operating Temperature Range	-40˚C to +85˚C	

OUTLINE DRAWING



Cob-flc-002

Lumped Element Filters

FEATURES

- Center Frequency : 12 MHz
- BandWidth : 11.2 MHz to 12.8 MHz
- Input Power (max) : 20 dBm
- Insertion losses @ fo : < 3.5 dB
- Operating temperature : -40°C to +80°C

DESCRIPTION

The cob-flc-002 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc		MHz	12
Bandwidth @ Fc ± 0.6 MHz		dBc	< 3.5 Typ. < 3.2
Insertion loss @ Fc MHz		dB	< 3.5 Typ. < 3.2
Return loss @ Fc		dB	> 14
Attenuation from DC to 8.4 MHz		dBc	> 60
Attenuation from 8.4 to 10.8 MHz		dBc	> 20
Attenuation from 13.2 to 15.6 MHz		dBc	> 17 Typ. > 19
Attenuation from 15.6 to 250 MHz		dBc	> 53 Typ. > 56
Max CW input power		dBm	20

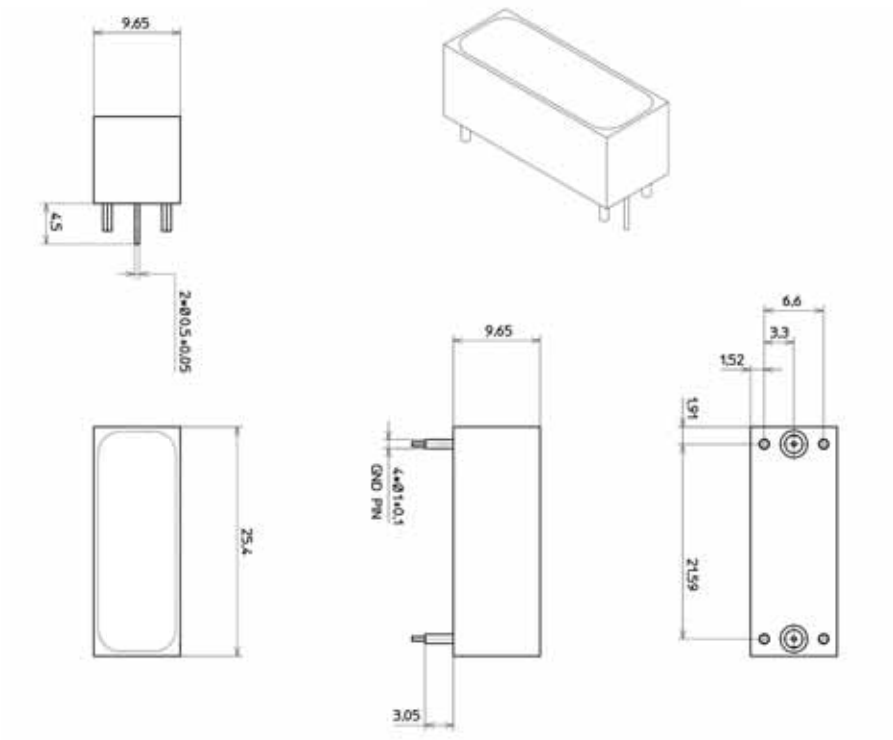
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-40 →+80
Non operating Temperature Range	T	°C	-45 →+95
Storage Temperature Range	T	°C	-45 →+85
Thermal shock	-40°C to +80°C in 5 mn for accumulation of 1000 cycles		
Humidity	95 %		
Shocks	30G peak at all 3 axes : operating 20G for 9 msec sawtooth : operating 40G for 9 msec sawtooth : non operating		
Vibrations	20 G, 20 to 2000 Hz in all 3 axes for 10mn operating		
Acoustic Noise	150 dB, 50 to 8000 Hz for 60 mn		

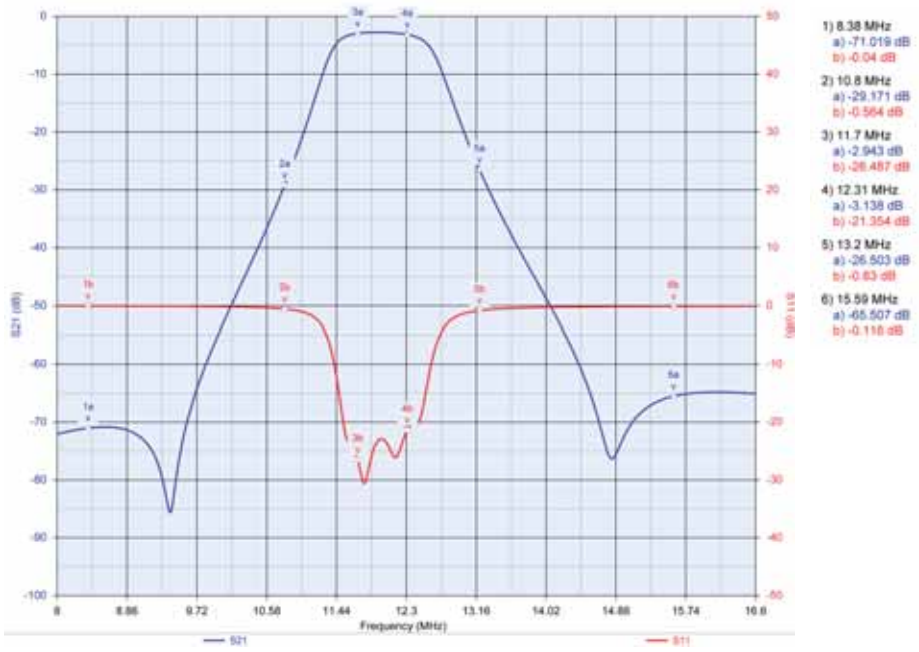
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	Inch	1.0x0.38x0.38
Weight		g	8.5 ± 1
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-007

Lumped Element Filters

FEATURES

- Center Frequency : 48 MHz
- BandWidth : 45.8 MHz to 50.2 MHz
- Input Power (max) : 20 dBm
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40°C to +80°C

DESCRIPTION

The cob-flc-007 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc		MHz	48
3dB Bandwidth		MHz	> 4.8
Insertion loss @ Fc MHz		dB	< 3.0
Return loss @ Fc		dB	> 14
Attenuation from DC to 33.6 MHz		dBc	> 60
Attenuation from 33.6 to 43.2 MHz		dBc	> 20
Attenuation from 52.8 to 62.4 MHz		dBc	> 20
Attenuation from 62.4 to 500 MHz		dBc	> 60
Max CW input power		dBm	20

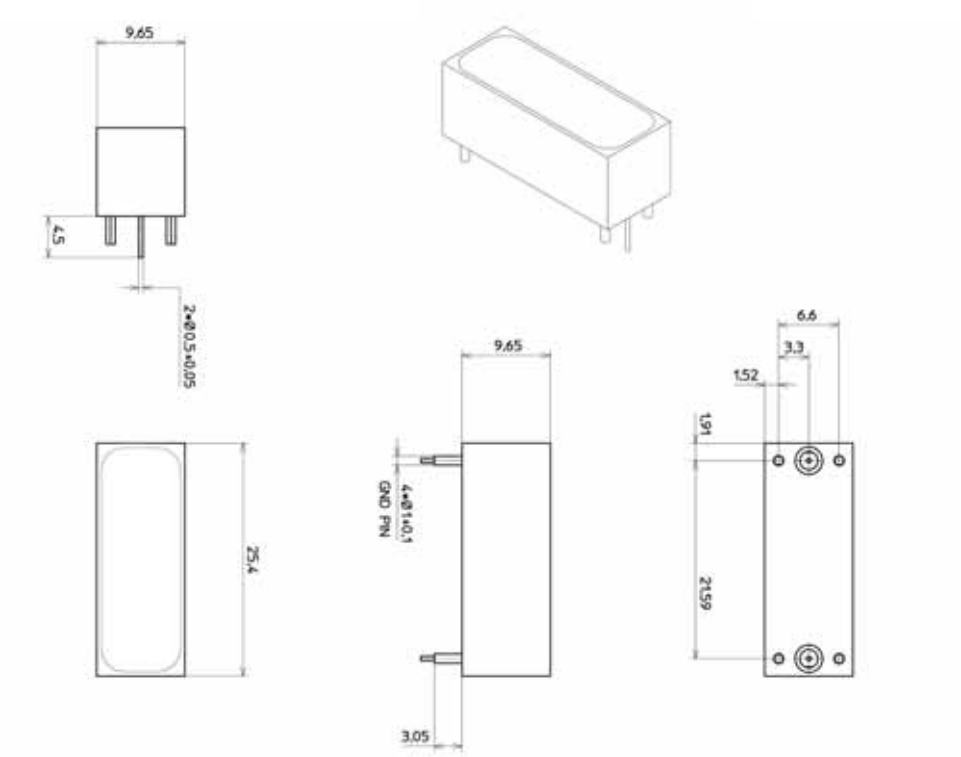
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-40 →+80
Non operating Temperature Range	T	°C	-45 →+95
Storage Temperature Range	T	°C	-45 →+85
Thermal shock	-40°C to +80°C in 5 mn for accumulation of 1000 cycles		
Humidity	95 %		
Shocks	30G peak at all 3 axes : operating 20G for 9 msec sawtooth : operating 40G for 9 msec sawtooth : non operating		
Vibrations	20 G, 20 to 2000 Hz in all 3 axes for 10mn operating		
Acoustic Noise	150 dB, 50 to 8000 Hz for 60 mn		

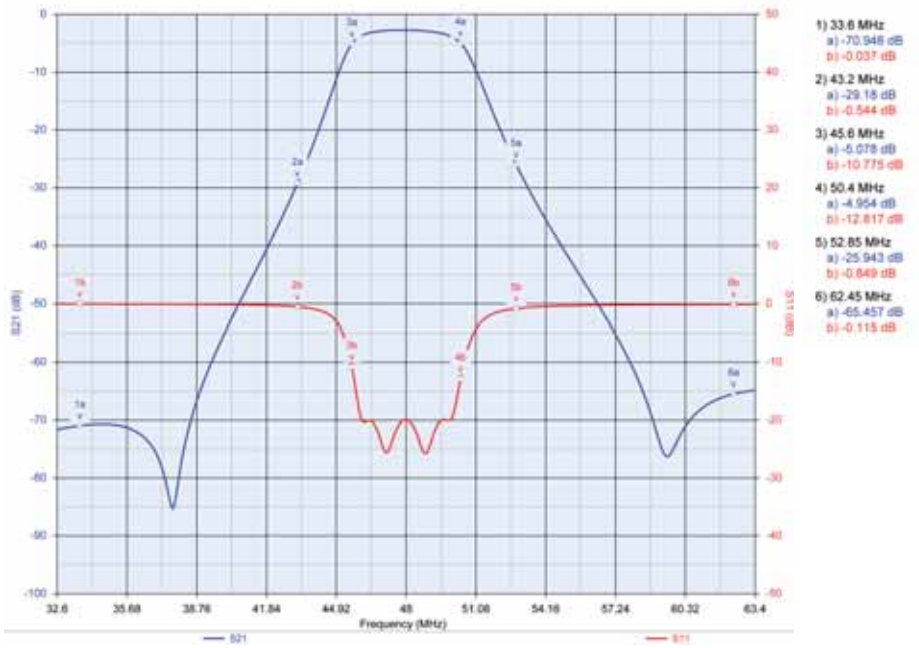
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	Inch	1.0x0.38x0.38
Weight		g	8.5 ± 1
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-010

Lumped Element Filters

FEATURES

- Center Frequency : 50 MHz
- BandWidth : 40 MHz to 60 MHz
- Input Power (max) : 20 dBm
- Insertion losses @ fo : < 4 dB
- Operating temperature : -40°C to +85°C

DESCRIPTION

The cob-flc-010 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	50.1
Insertion Loss at Fo		dB	< 4
IL Variation overall bandwidth vs T°C range		dB	< 1
-3dB Bandwidth	Bw	MHz	> 20.43
Absolute Gd stability in 80% of Bw over T°C range versus Fo		nspp	< 12
Return Loss in 80% Bandwidth		dB	> 14
Attenuation @ 30 MHz		dB	> 40
Attenuation @ 70 MHz		dB	> 40
Max CW input power	Pmax	dBm	20

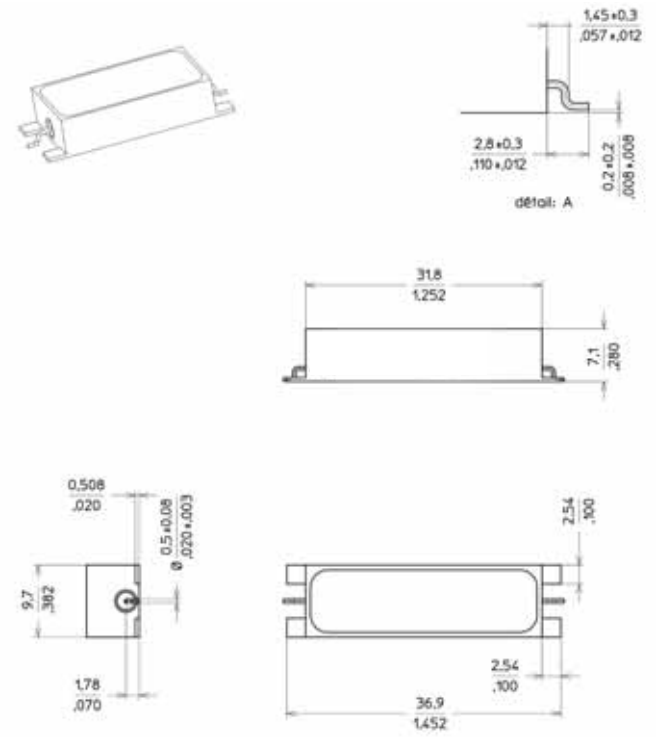
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-40 →+85
Storage Temperature Range	T	°C	-40 →+85
Humidity		%	95% @ +60°C
Sinusoidal Vibrations (3 axis, 2H / axis, 10 Sweeps, 1 Oct./min.)		Hz	5 – 15 Hz : 1mm peak 15 – 2000 Hz : 1.5g
Random Vibrations (3 axis, 60 minutes)		Hz	10 – 300 Hz : 0.02g²/Hz 15 – 2000 Hz : 0.05g²/Hz
Shocks (3 Axes, 6 Directions, 11msec., Saw-tooth)		g	20

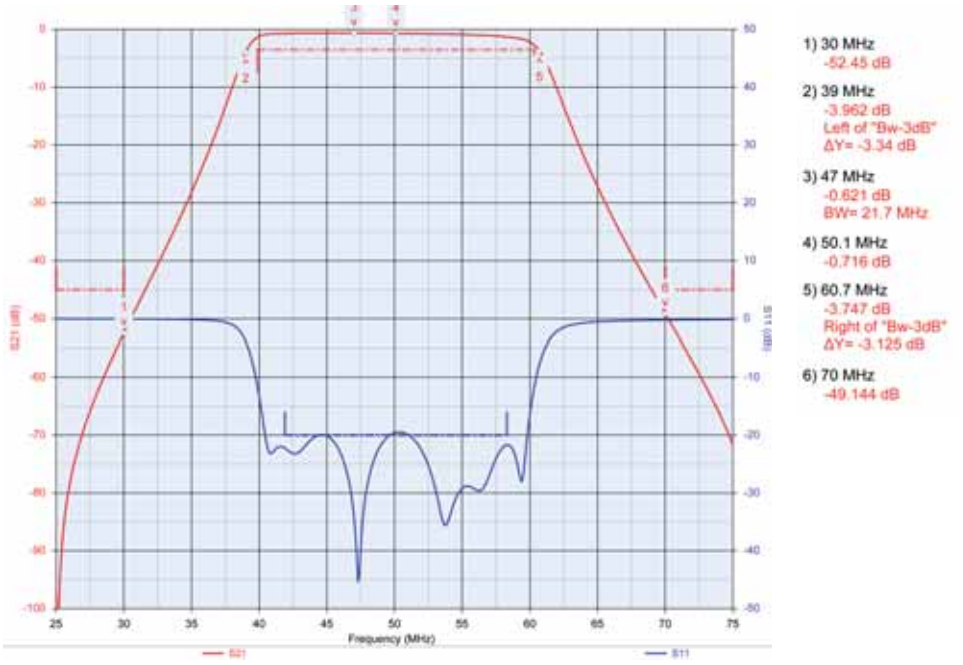
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.252 x 0.382 x 0.28
Weight		g	< 10
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-015

Lumped Element Filters

FEATURES

- Center Frequency : 60 MHz
- BandWidth : 55 MHz to 65 MHz
- Input Power (max) : 20 dBm
- Insertion losses @ fo : < 4.5 dB
- Operating temperature : -55°C to +110°C

DESCRIPTION

The cob-flc-015 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fo		MHz	60 ± 0.5
3dB Bandwith		MHz	10.5 -1.0/+1.1
Rejection from DC at 35 MHz		dBc	> 60
Rejection from 35 at 48 MHz		dBc	> 40
Rejection from 72 at 85 MHz		dBc	> 40
Rejection from 85 at 1000 MHz		dBc	> 60
Rejection from 1000 at 2500 MHz		dBc	> 40
Return loss @ Fo ± 4 MHz (input and output)		dB	> 15.6
Insertion loss @ Fo		dB	< 4.5
Ripple @ Fo ± 1.5 MHz		dBpp	< 0.5
Ripple @ Fo ± 3 MHz		dBpp	< 1.2
Max CW input power	Pmax	dBm	20

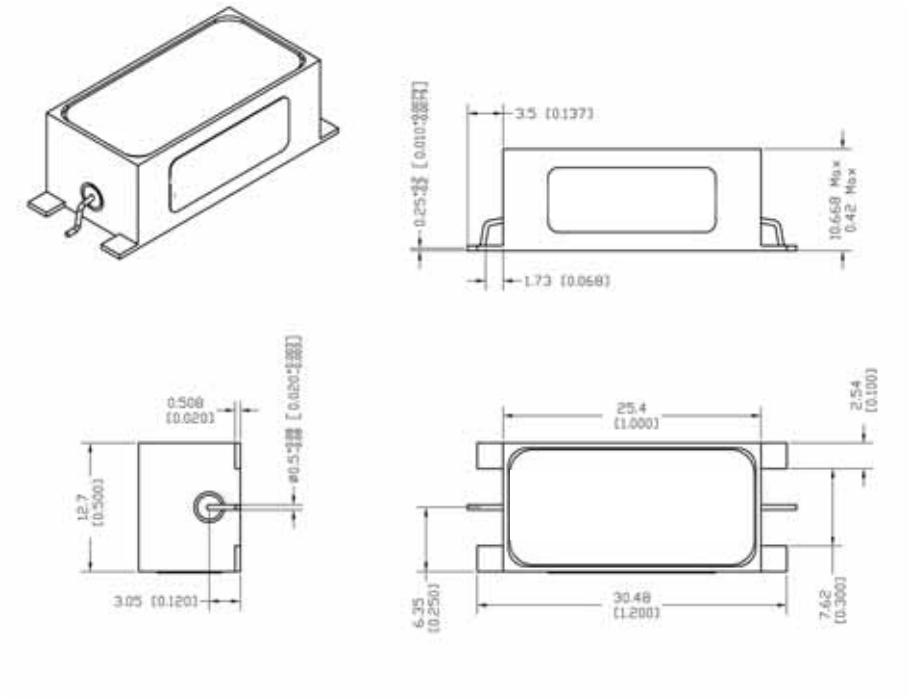
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Temperature range	T	°C	-55 →+110
Storage temperature range	T	°C	-60 →+110
Humidity		%	95% @ +55°C
Vibrations		Hz	10 G peak 5-2000
Shocks		G	30

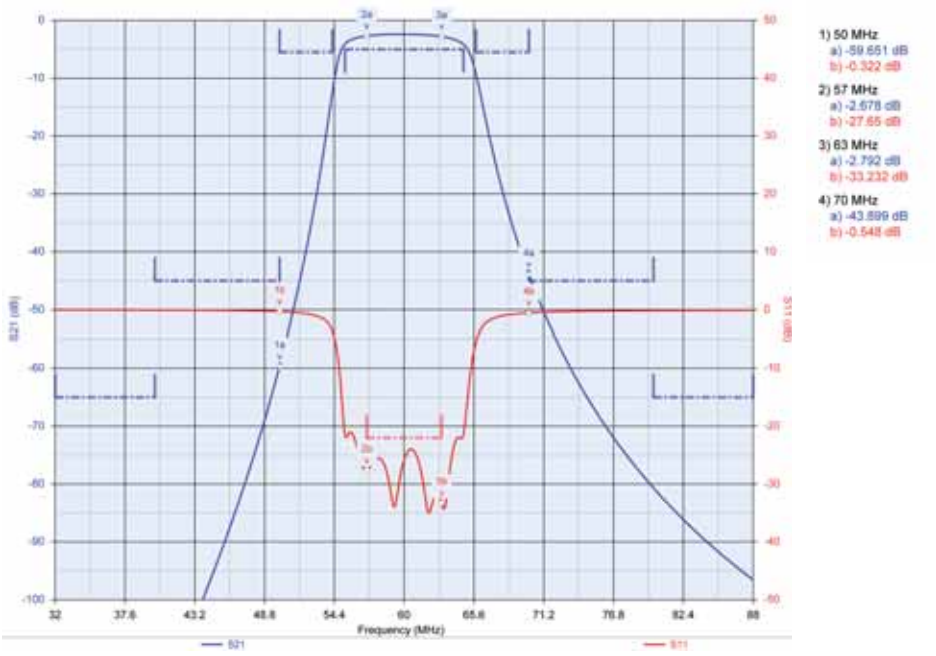
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.2x0.5x0.4
Weight		g	10 ± 1
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-019

Lumped Element Filters

FEATURES

- Center Frequency : 70 MHz
- BandWidth : 64 MHz to 76 MHz
- Input Power (max) : 20 dBm
- Insertion losses @ fo : < 5.5 dB
- Operating temperature : -40°C to +85°C

DESCRIPTION

The cob-flc-019 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fc (Bw_{-3dB})		MHz	70 ± 0.3
-3dB Bandwidth		MHz	[11 / 13.5]
Insertion Loss @ Fo = 70 MHz		dB	< 5.5
Ripple @ Fo ± 1.5 MHz		dBpp	< 0.5
Ripple @ Fo ± 4 MHz		dBpp	< 1.0
Return Loss in Bandwith Fo ± 4 MHz		dB	> 14
Absolute delay @ Fo		ns	100 ± 20
Group delay variation [Fc ± 4 MHz]		ns	< 40
Attenuation [DC - 45] MHz		dBc	> 62
Attenuation [45 - 58] MHz		dBc	> 42
Attenuation [82 - 95] MHz		dBc	> 42
Attenuation [95 - 1030] MHz		dBc	> 62
Attenuation [1030 - 2500] MHz		dBc	> 40
Max CW input power		dBm	20

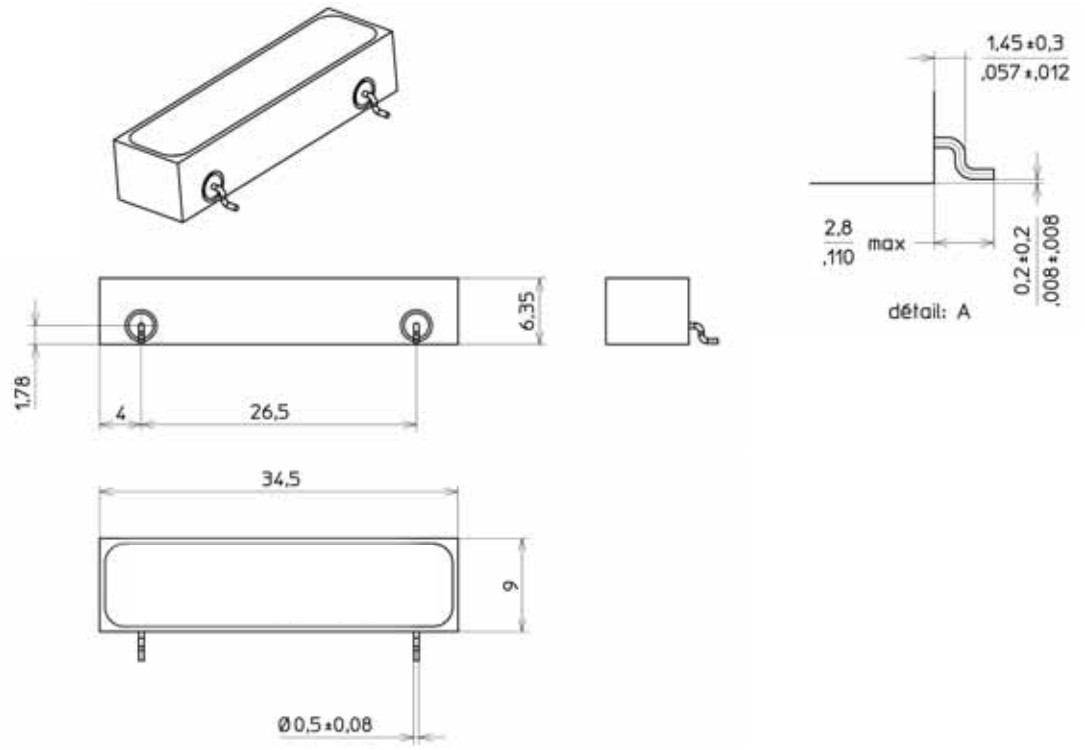
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	°C	-40 →+85
Storage Temperature range	T	°C	-55 →+95
Damp Heat			(93 ± 3)% @ (+40 ± 2)°C 21 days
Vibration (Sinusoïdal)			3 axes, 2 hours/axes, 10 sweeps, 1 octave/minute : * 3 mm peak-peak, 10- Ft Hz * 20G, Ft – 2000 Hz Ft = 60 Hz Typ
Shocks			3 axes, 6 direction 100G, 6ms, saw tooth
Solvent resistance			NF EN 60068-2-45 (CEI 68-2-45)

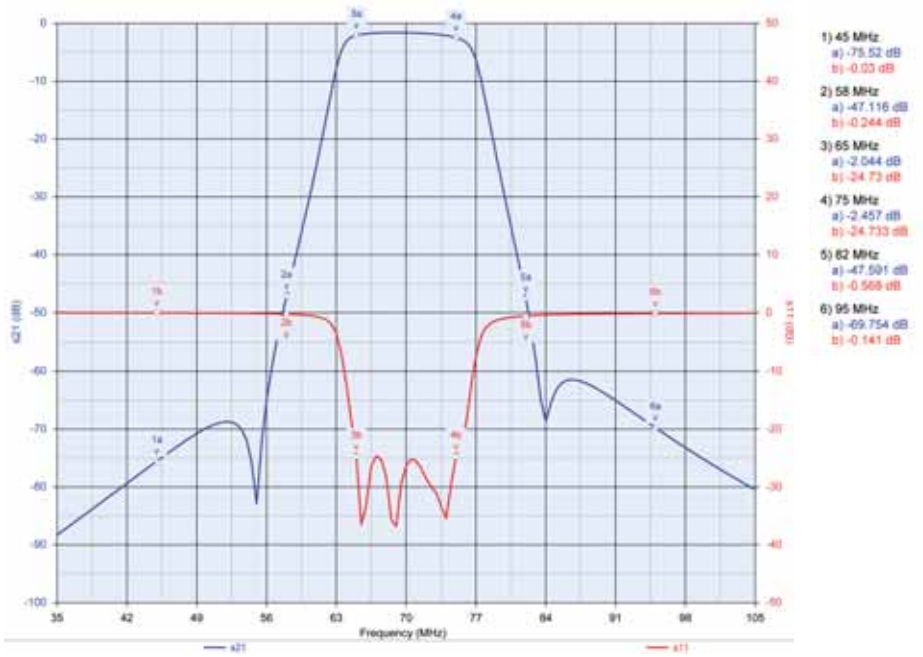
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	34.5 x 9 x 6.35
Weight		g	< 20
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-024

Lumped Element Filters

FEATURES

- Center Frequency : 116 MHz
- BandWidth : 115 MHz to 117 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 7 dB
- Operating temperature : -45°C to +125°C

DESCRIPTION

The cob-flc-024 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc	Fc	MHz	116
Insertion loss @ Fc		dB	< 7
Attenuation from 115 and 117 MHz		dBc	< 0.5
Return loss on 80% Fc +/- 1 MHz		dB	> 14
Attenuation from 101 to 110 MHz and from 122 to 131 MHz		dBc	> 15
Attenuation from DC to 101 MHz and from 131 to 300 MHz		dBc	> 55

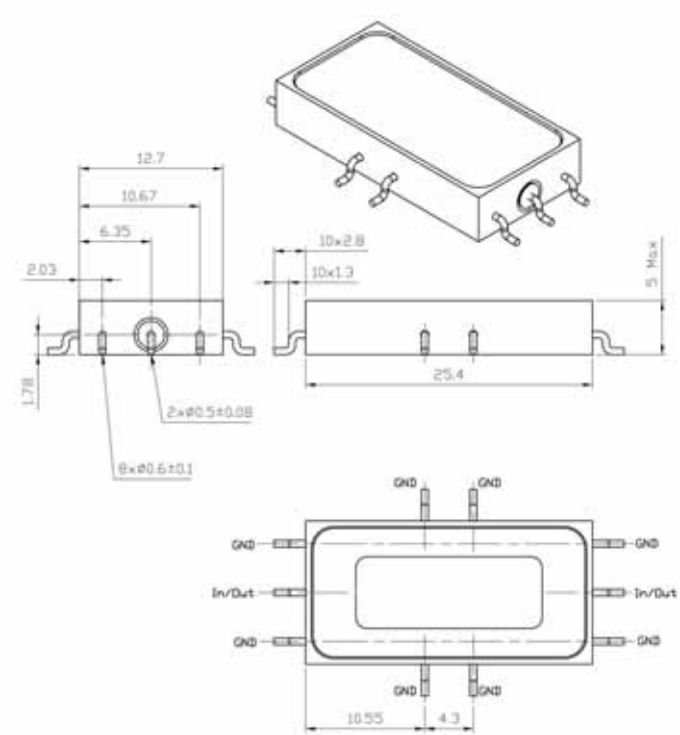
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	°C	-45 →+125
Storage Temperature range	T	°C	-55 →+125
MIL-STD-202 E			
Pression	mbar		29 (24 000 m)
Random Vibrations			100-2000 Hz 1g²/Hz, 10s

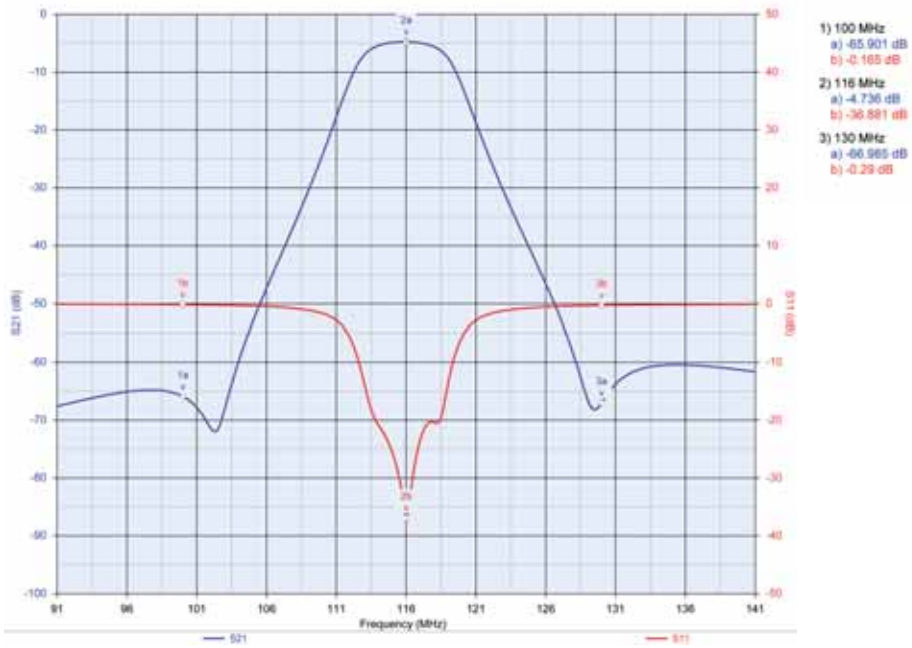
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	24.5x12.7x5
Weight		g	5.5 ± 0.5
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-035

Lumped Element Filters

FEATURES

- Center Frequency : 192 MHz
- BandWidth : 187 MHz to 197 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 7 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-flc-035 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center frequency Fc		MHz	192.7
3dB Bandwidth		MHz	> 10
Insertion loss @ Fc MHz		dB	< 7
Return loss in 80% bandwith at –3 dB		dB	> 14
Attenuation at 214 MHz		dBc	> 50
Attenuation at 235.5 MHz		dBc	> 70

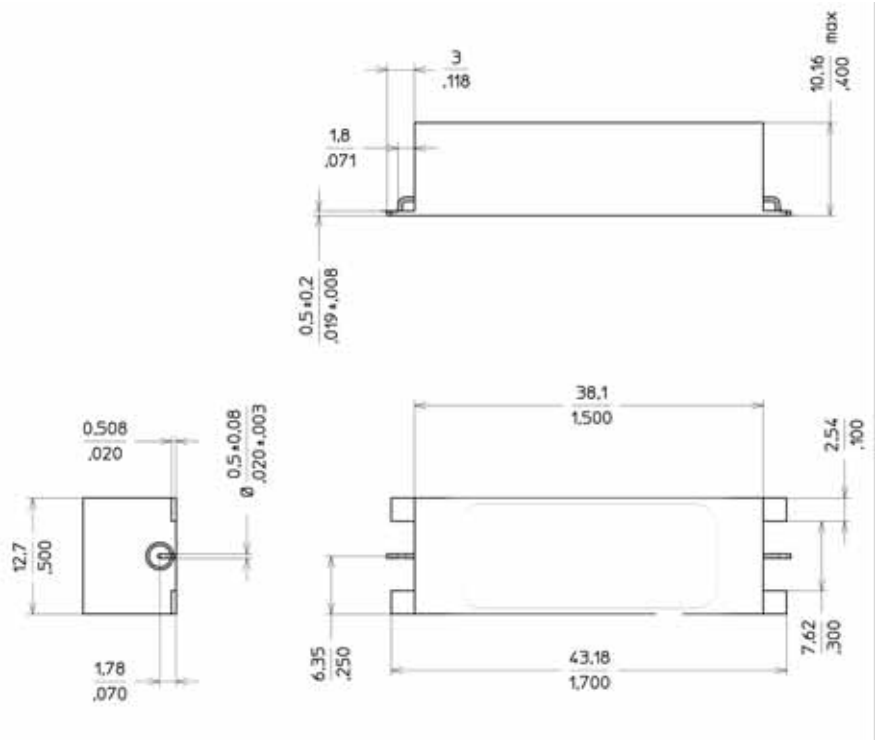
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-40 →+85
Storage Temperature range	T	˚C	-45 →+85

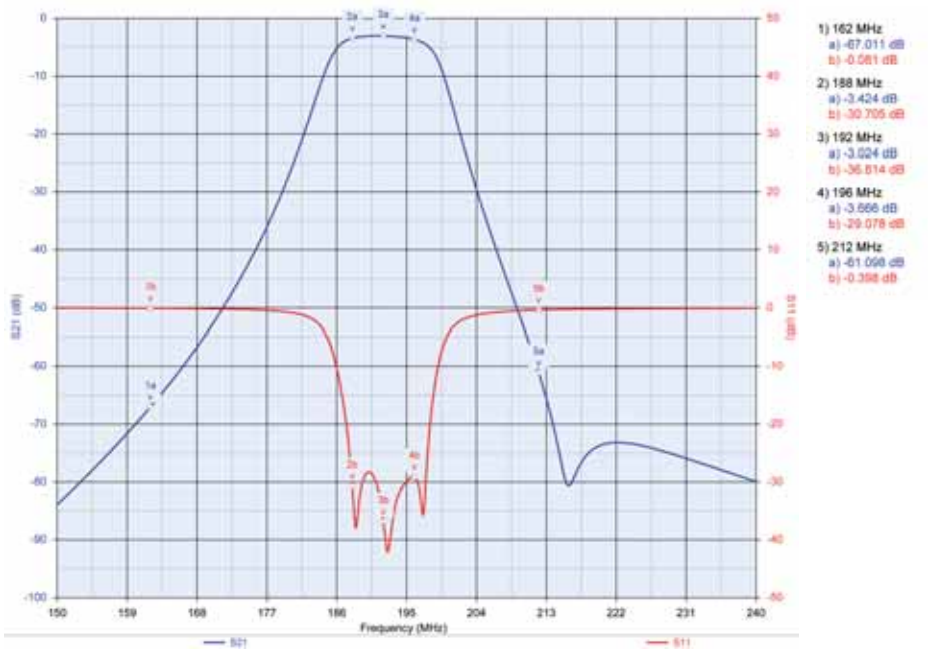
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.5x0.5x0.4
Weight		g	< 15
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-045

Lumped Element Filters

FEATURES

- Center Frequency : 520 MHz
- BandWidth : 420 MHz to 620 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 0.8 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-flc-045 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	520
Bandwidth Definition		MHz	420 – 620
Bandwidth Insertion Loss		dB	< 0.8
Bandwidth Return Loss		dB	> 20
Attenuation @ F1 = 840 MHz		dBc	> 20
Attenuation from DC to 100 MHz		dBc	> 35
Attenuation from 1260 to 1860 MHz		dBc	> 60
Attenuation from 1860 to 3000 MHz		dBc	> 50
Group Delay Variation in Bandwidth		ps	< 380 p-p max Typ. < 320 peak to peak

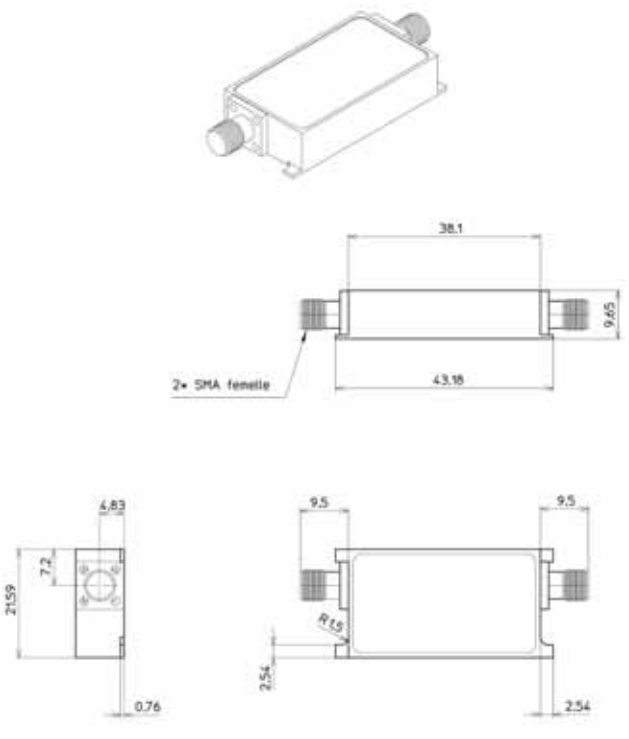
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-40 →+85
Storage Temperature range	T	˚C	-40 →+85

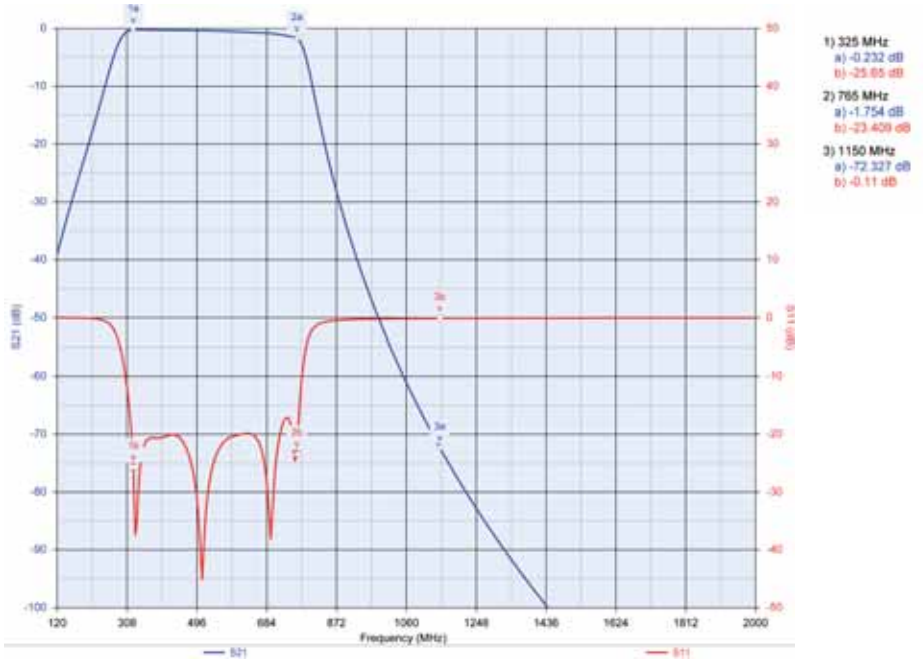
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.50x0.85x0.38
Weight		g	26 ± 3
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-052

Lumped Element Filters

FEATURES

- Center Frequency : 864 MHz
- BandWidth : 846.5 MHz to 881.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 5 dB
- Operating temperature : -40˚C to +80˚C

DESCRIPTION

The cob-flc-052 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	864
Insertion Loss @ Fo		dB	< 5
-3dB Bandwidth		MHz	> 35
Return Loss in Fo ± 15 MHz		dB	> 14
Attenuation from DC to 768 MHz		dBc	> 50
Attenuation @ 816 MHz		dBc	> 30
Attenuation @ 912 MHz		dBc	> 30
Attenuation from 960 to 3000 MHz		dBc	> 50

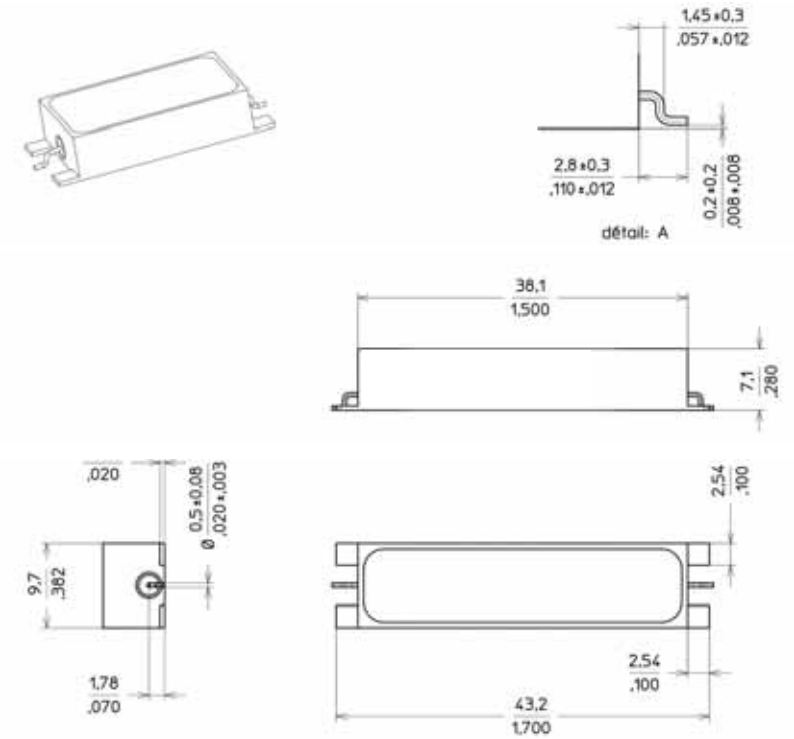
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-40 →+80
Storage Temperature range	T	˚C	-40 →+85

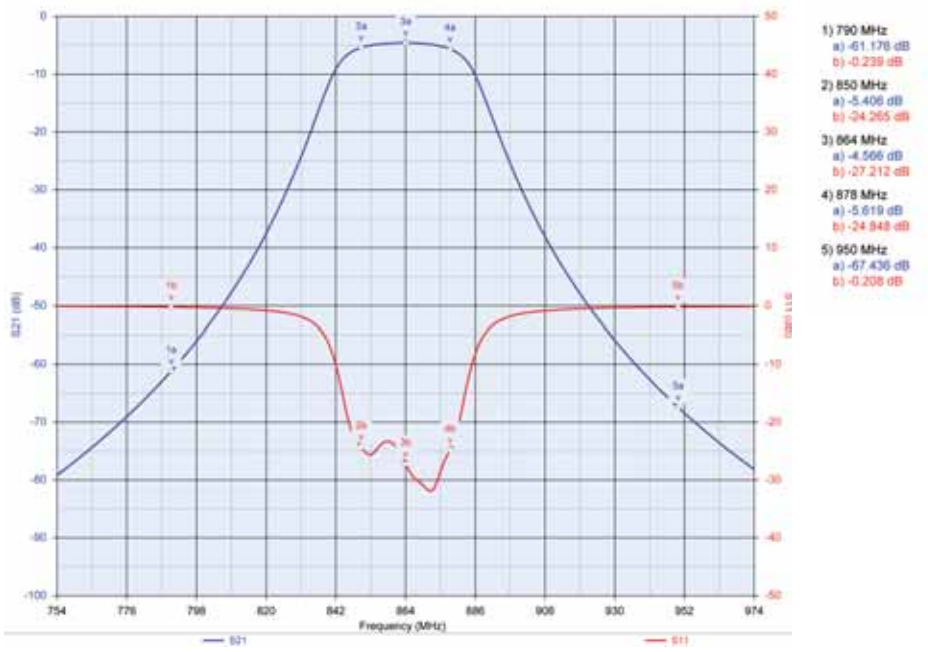
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.70x0.38x0.28
Weight		g	8 ± 0.5
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-057

Lumped Element Filters

FEATURES

- Center Frequency : 1056 MHz
- BandWidth : 1043.5 MHz to 1068.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 6 dB
- Operating temperature : -40˚C to +80˚C

DESCRIPTION

The cob-flc-057 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1056
Insertion Loss @ Fo		dB	< 6
-3dB Bandwidth		MHz	> 25
Return Loss in Fo ± 12.5 MHz		dB	> 14
Attenuation @ 1008 MHz		dBc	> 35
Attenuation @ 1104 MHz		dBc	> 35
Attenuation from DC to 960 MHz		dBc	> 50
Attenuation from 1152 to 3000 MHz		dBc	> 50

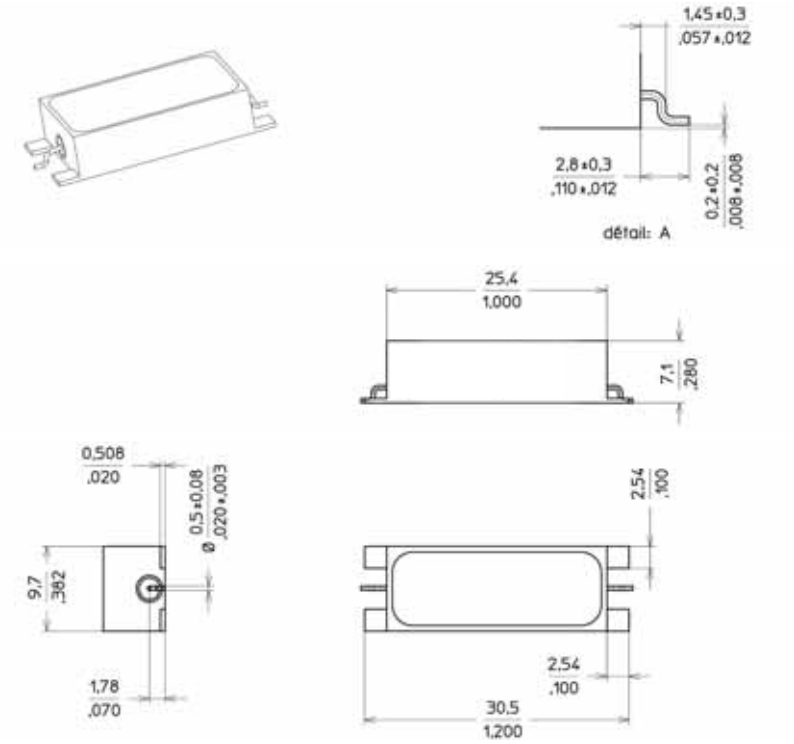
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-40 →+80
Storage Temperature range	T	˚C	-40 →+85

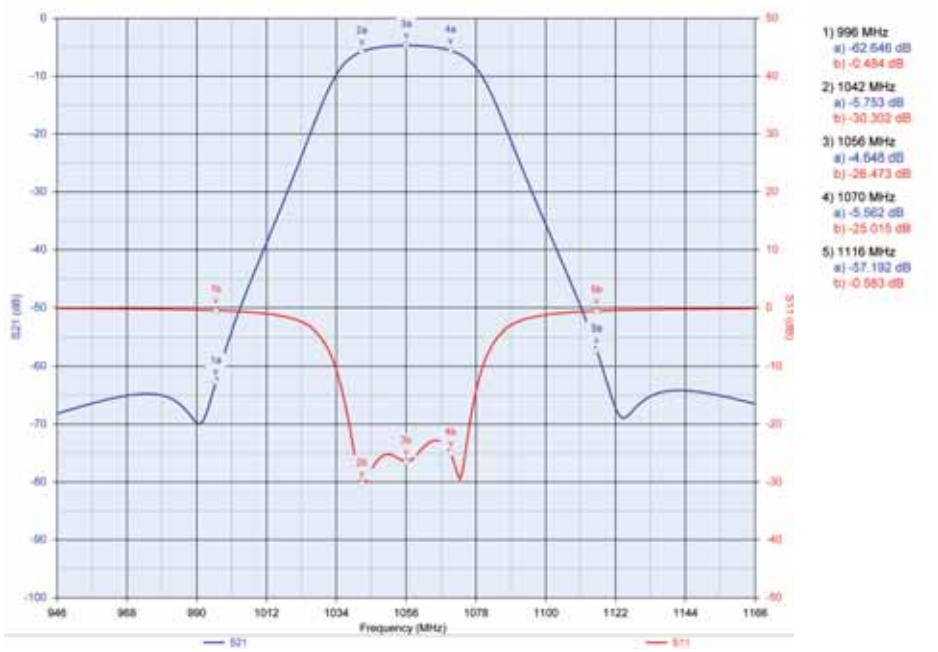
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.20x0.38x0.28
Weight		g	6 ± 0.5
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-059

Lumped Element Filters

FEATURES

- Center Frequency : 1090 MHz
- BandWidth : 1090 MHz to 1090 MHz
- Input Power (max) : 25 W
- Insertion losses @ fo : < 0.5 dB
- Operating temperature : -40°C to +85°C

DESCRIPTION

The cob-flc-059 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Lowpass
- Iff
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Emission mode @ 1030 MHz			
Frequency range		MHz	1020-1040
Return loss in bandwith		dB	> 20
Insertion loss in bandwith		dB	< 0.5
Attenuation @ 2060 MHz		dB	> 45
Attenuation @ 3.09/4.12/5.15/6.18/7.21 GHz		dB	> 60
Attenuation @ 8.24 GHz		dB	> 45
Attenuation @ 9.27/10.30 GHz		dB	> 25
Attenuation @ 11.33 GHz		dB	> 20
Max CW input power		W	25
Maximum peak power		W	3000(1µs)
Receiving mode @ 1090 MHz			
Frequency range		MHz	1080-1100
Return loss in bandwith		dB	> 20
Insertion loss in bandwith		dB	< 0.5

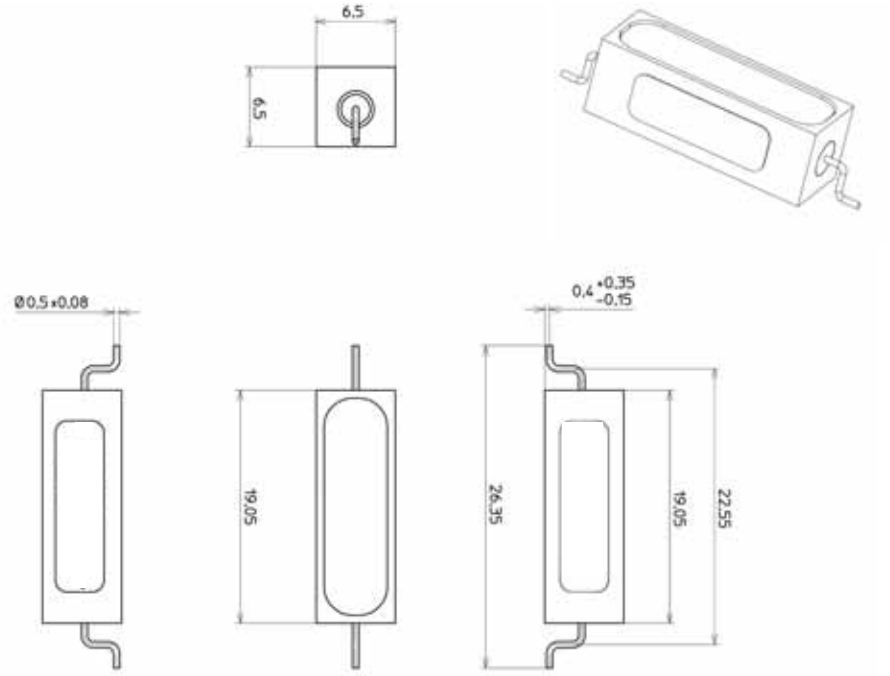
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	°C	-40 →+85
Storage Temperature range	T	°C	-50 →+90
Altitude		m	3000
Vibrations	2 Hours/axe In accordance with CEI68-2-6		
Shocks	30G, 11ms, half sinus		
Solvent resistance	NFC 20-745 (CEI 68-2-45)		

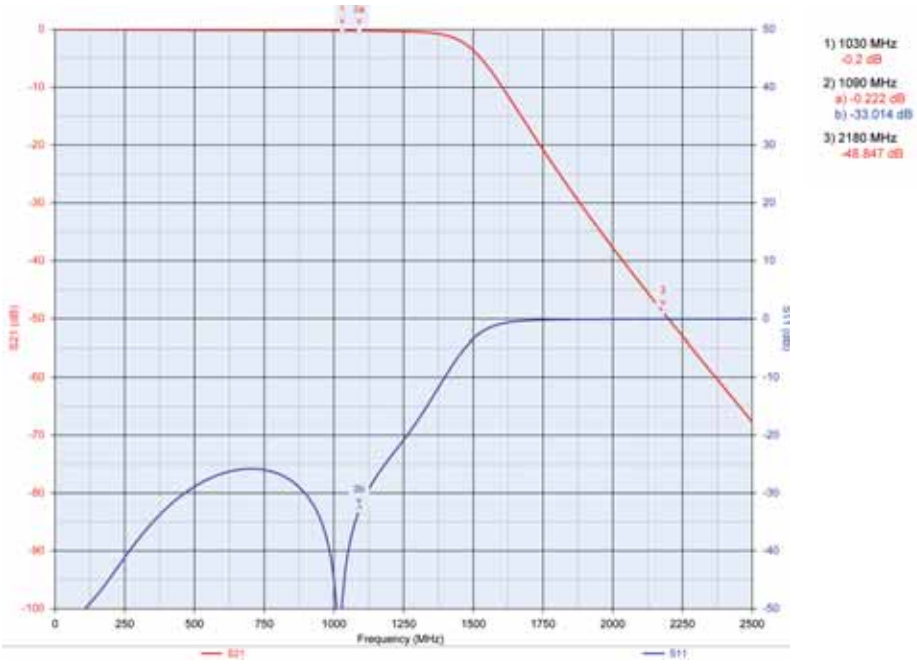
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	19.05x6.5x6.5
Weight		g	3.9 ± 0.4
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-066

Lumped Element Filters

FEATURES

- Center Frequency : 1296 MHz
- BandWidth : 1281 MHz to 1311 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 5 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-flc-066 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency Fo		MHz	1296
Insertion Loss @ Fo		dB	< 5
Relative Insertion Loss @ Fo ± 7.5 MHz		dBc	< 0.5
-3dB Bandwidth		MHz	> 30
Return Loss in Fo ± 7.5 MHz		dB	> 17.7
Attenuation from DC to 1025 MHz		dBc	> 50
Attenuation from 1359 to 1568 MHz		dBc	> 20
Attenuation from 1569 to 1600 MHz		dBc	> 70
Attenuation from 1600 to 3000 MHz		dBc	> 50
Group Delay Variation in Fo ± 7.5 MHz		ns	< 5
Group Delay Matching @ Fo		ns	< ± 10

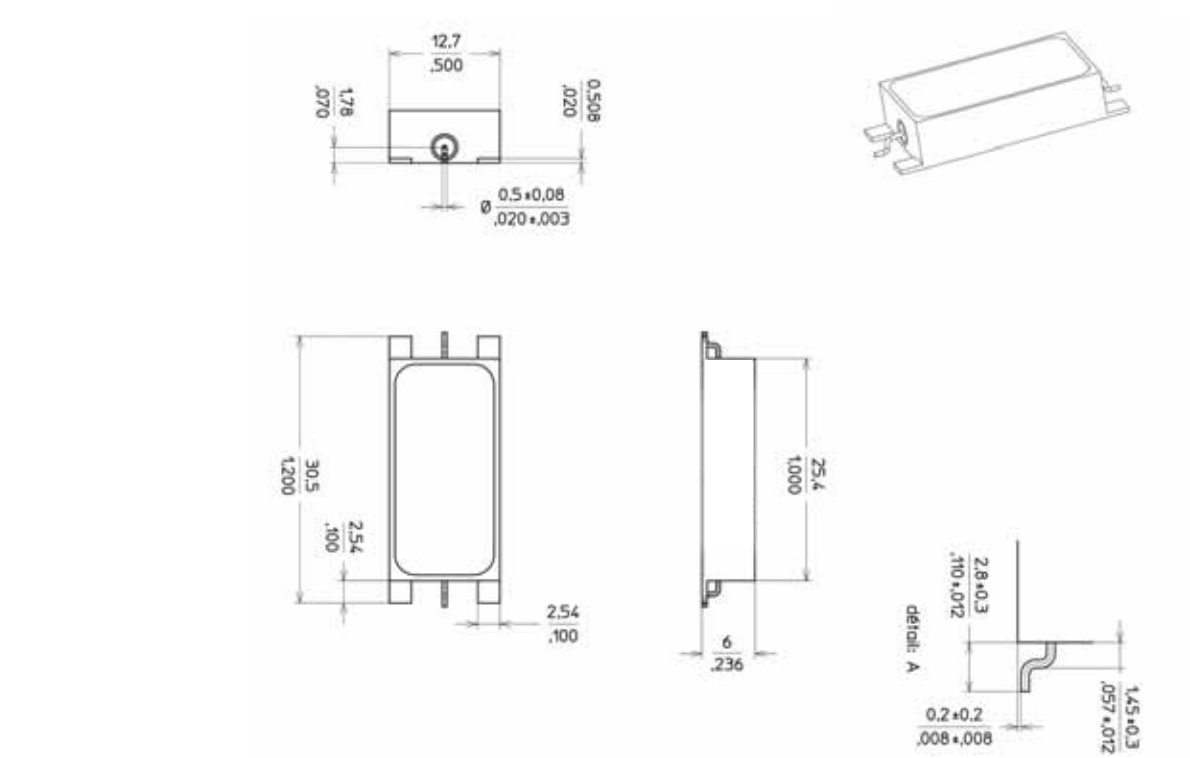
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-40 →+85
Storage Temperature range	T	˚C	-40 →+85

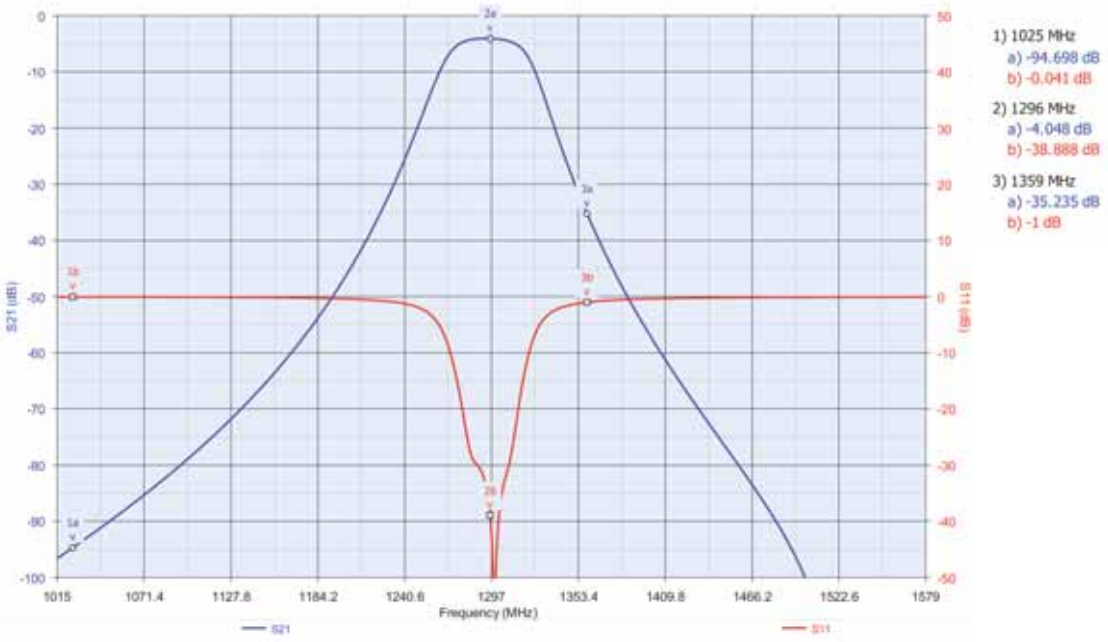
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.2x0.5x0.235
Weight		g	6 ± 0.6
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-074

Lumped Element Filters

FEATURES

- Center Frequency : 1600 MHz
- BandWidth : 1487.5 MHz to 1712.5 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-flc-074 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package or SMA version.

APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Center Frequency	Fc	MHz	1600
Insertion Loss @ Fc		dB	< 3
-1.2dB Bandwidth	Bw1	MHz	> 225
-3dB Bandwidth		MHz	> 260
Bw1 Return Loss		dB	> 14
Fc Group Delay		ns	< 5
Bw1 Group Delay Variation		ns	< 6
Attenuation from DC up to 1365 MHz		dB	> 50
Attenuation @ 160 MHz		dB	> 30
Attenuation @ 1860 MHz		dB	> 30
Attenuation from 2000 up to 4000 MHz		dB	> 50

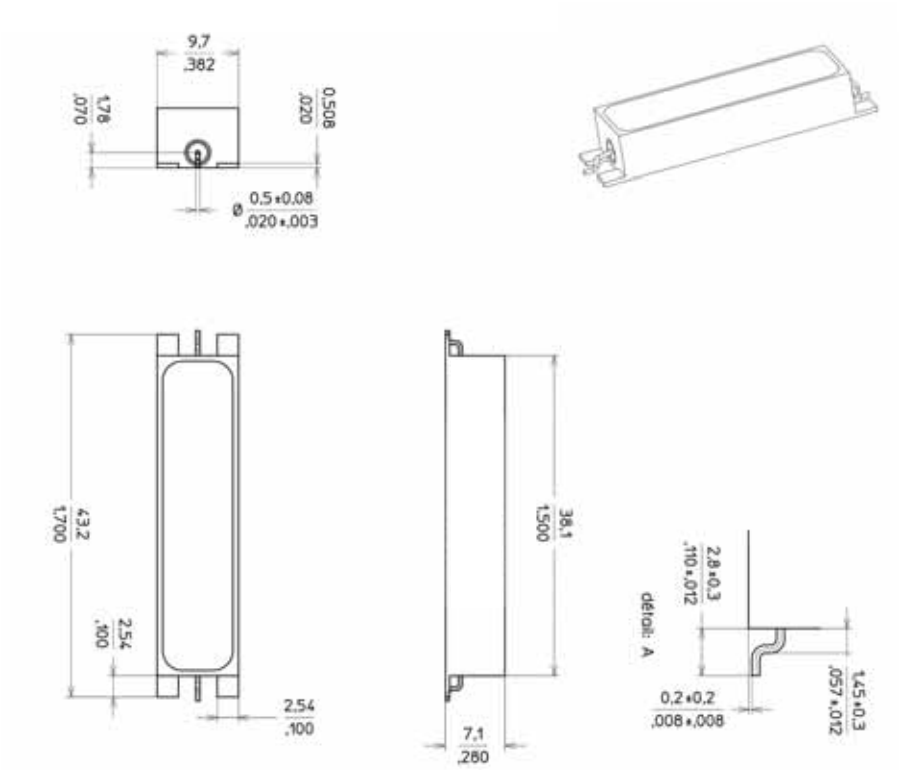
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-40 →+85
Storage Temperature range	T	˚C	-40 →+85

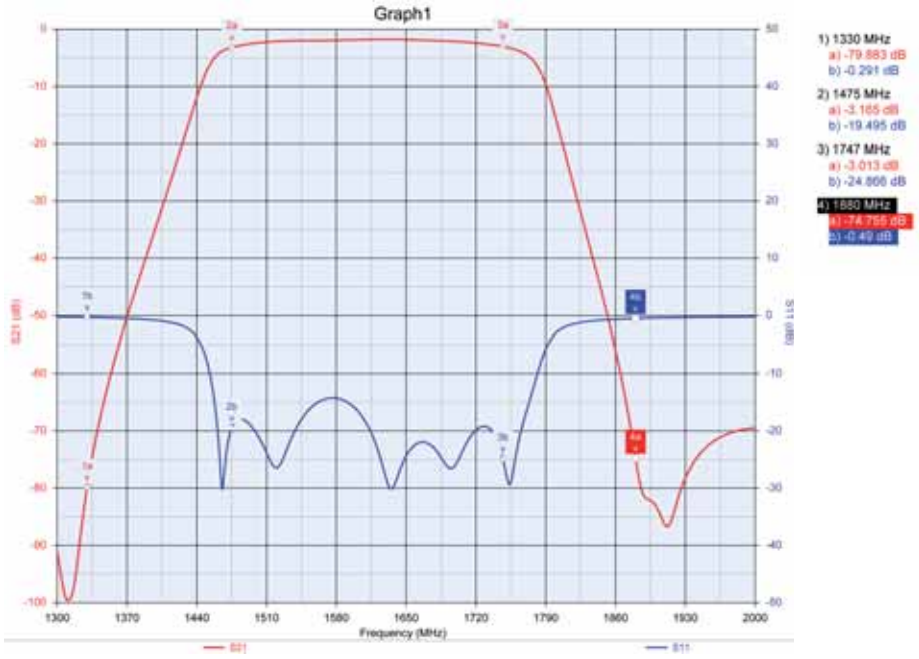
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	inch	1.5x0.382x0.28
Weight		g	< 9
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-flc-017

Lumped Element Filters

FEATURES

- Center Frequency : 62 MHz
- BandWidth : 59.5 MHz to 64.5 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-flc-017 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package.

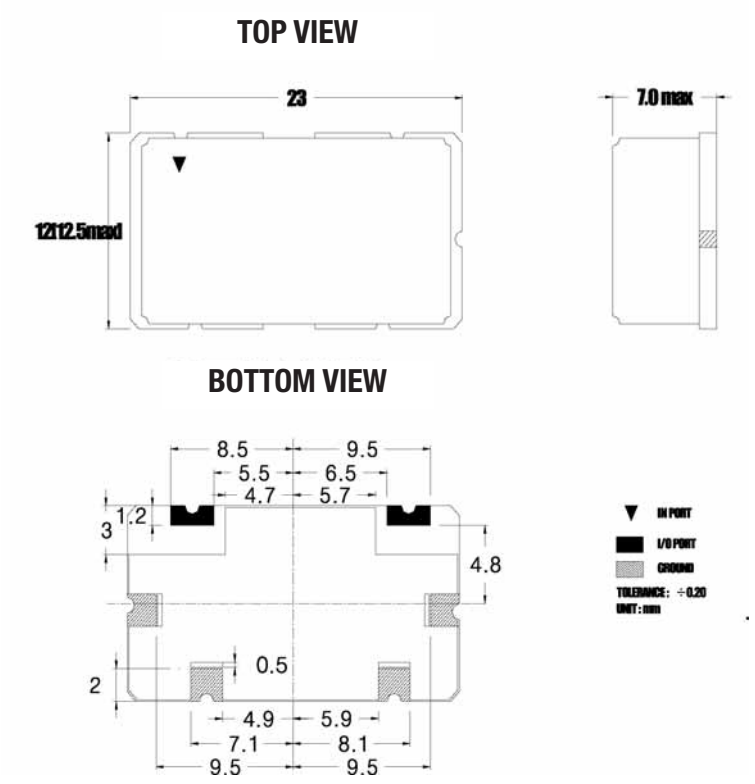
APPLICATIONS

- Intermediate frequency
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Center frequency (fo)	62.0	MHz
Bandwidth (3dB BW)	fo ± 2.5 (59.5 ~ 64.5)	MHz
Insertion Loss in BW	3.0 max.	dB
Ripple in BW	0.8 max.	dBpp
VSWR in BW	1.5: 1max.	Ratio
In/Out Impedance	50 Ω	
Attenuation (Absolute Value)	40 dB min @ 42 MHz 40 dB min @ 82 MHz	
Input Power	1 W max.	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-flc-047

Lumped Element Filters

FEATURES

- Center Frequency : 710 MHz
- BandWidth : 710 MHz to 710 MHz
- Input Power (max) : 0 dBm
- Insertion losses @ fo : < 2 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-flc-047 lumped element filters are designed to give the best performance versus size. High Q capacitors and toroidal inductors are used for low losses and very good out of band attenuations. These filters are low profile components and can be supplied in SMD package.

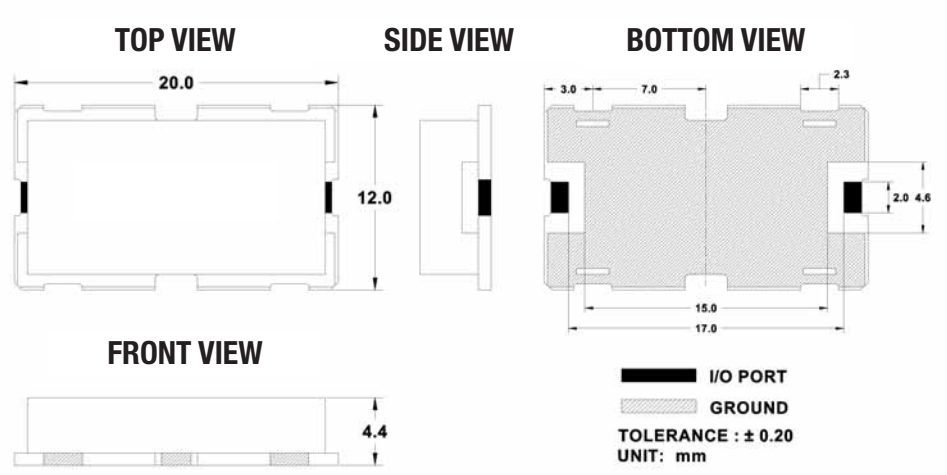
APPLICATIONS

- Lowpass
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Spec	Unit
Cut-Off Frequency (fo)	710	MHz
Bandwidth (BW)	0 ~ 710	MHz
Insertion Loss in BW	2.0 max.	dB
Ripple in BW	1.0 max.	dBpp
Return Loss in BW	15.0	Ratio
In/Out Impedance	50 Ω	
Attenuation (Absolute Value)	7 dB min @ 800 MHz 30 dB min @ 850 MHz	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-fwg-004

Waveguide Filters

FEATURES

- Center Frequency : 9600 MHz
- BandWidth : 9599.5 MHz to 9600.5 MHz
- Input Power (max) : 6 kW peak
- Insertion losses @ fo : < 0.3 dB
- Operating temperature : -25°C to +75°C

DESCRIPTION

The cob-fwg-004 is a waveguide filter.
To achieve very low losses, the waveguide is thick silver plated according to most stringent space standard. All waveguide filters can be offered with connectors (SMA/K/TNC/N) to eliminate expensive adaptors. The maximum input power can be greater than thousand watts.

APPLICATIONS

- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Unit	Value
Filter type	GHz	Waveguide 0.08-12.4
Cut-off frequency (-3dB)	GHz	10.5
Pass band	GHz	9.1 to 10.1
Rejection at 19.30 GHz	dB	> 25
Power handling		6 kW peak, 4% duty
Insertion Loss	dB	< 0.3
Pass band ripple	dBpp	< 0.4
Phase response		± 5° from ideal linear response over pass band
Input/Output return loss	dB	< 20
Input/Output ports		WR90, square flange

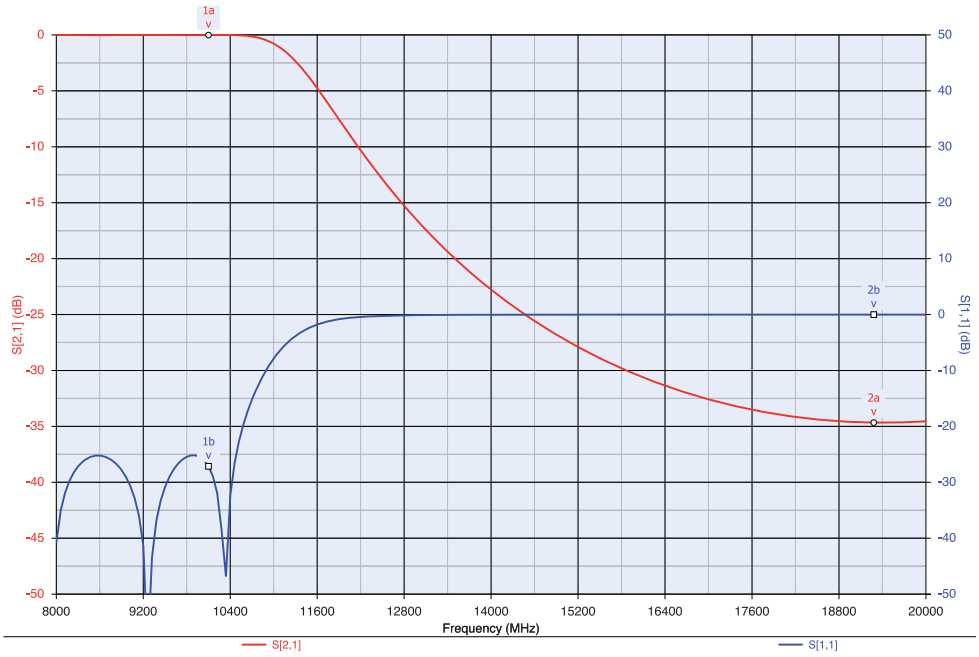
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	°C	-25 →+75
Storage Temperature range	T	°C	-40 →+75
Vibrations – Shocks – Bump test		EN 50155	

OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	100 x 32 x 20
Connectors			WR90

TYPICAL PERFORMANCES



1) 10100 MHz
   a) -8.419e-3 dB
   b) -27.13 dB

2) 19280 MHz
   a) -34.655 dB
   b) -1.487e-3 dB

Cob-dcav-003

Cavity Duplexers

FEATURES

- Low Channel Center Frequency : 382.5 MHz
- Low Channel Bandwidth : 380 MHz to 385 MHz
- High Channel Center Frequency : 392.5 MHz
- High Channel Bandwidth : 390 MHz to 395 MHz
- Input Power (max) : 25 W
- Insertion losses @ fo : < 2 dB
- Operating temperature : -25˚C to +75˚C

DESCRIPTION

The cob-dcav-003 is a cavity diplexer ideal for tetra applications. Low in bandwidth insertion losses (< 2 dB) and excellent attenuation out of bandwidth (> 80 dB) is achieved using state of the art design, assembly and tuning process. This 25 W power handling cavity diplexer is available in low cost package.

APPLICATIONS

- Tetra

ELECTRICAL SPECIFICATIONS

	Unit	Value
Frequency Range:RX-ANT	MHz	380-385
Frequency Range:TX-ANT	MHz	390-395
IL at ANT-RX band	dB	<2.0 (@382MHz)
IL at TX-ANT band	dB	<2.0 (@392MHz)
VSWR		<1.20:1
Isolation at TX-RX band	dB	>80
Isolation at RX-TX band	dB	>80
Isolation at Rx<->Tx guard band (385...390 MHz)	dB	>75
Power Handling capability	W	25

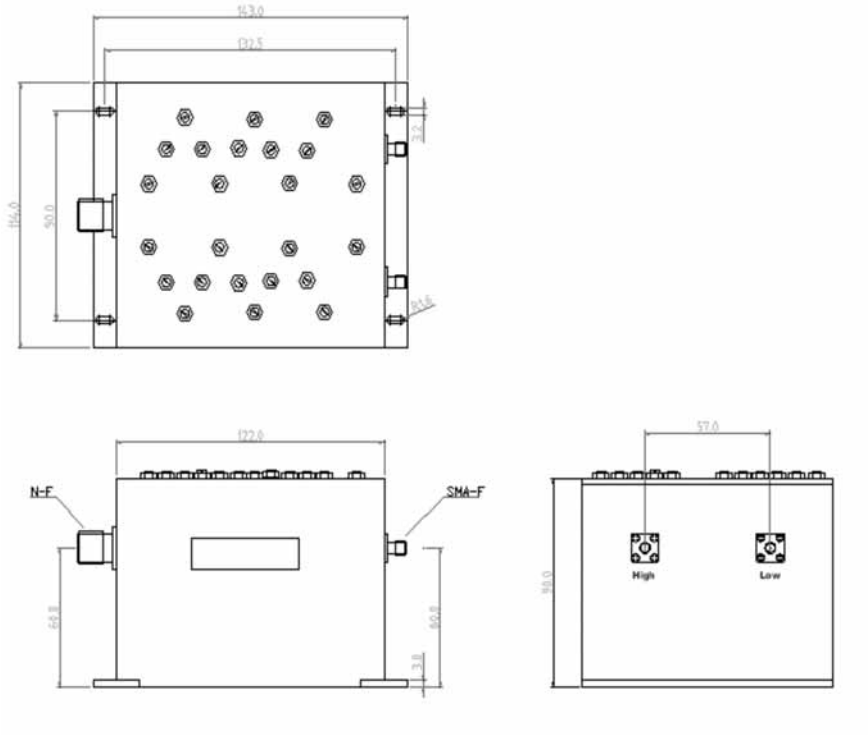
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-25 →+75
Storage Temperature range	T	˚C	-40 →+75
Vibrations – Shocks – Bump test		EN 50155	

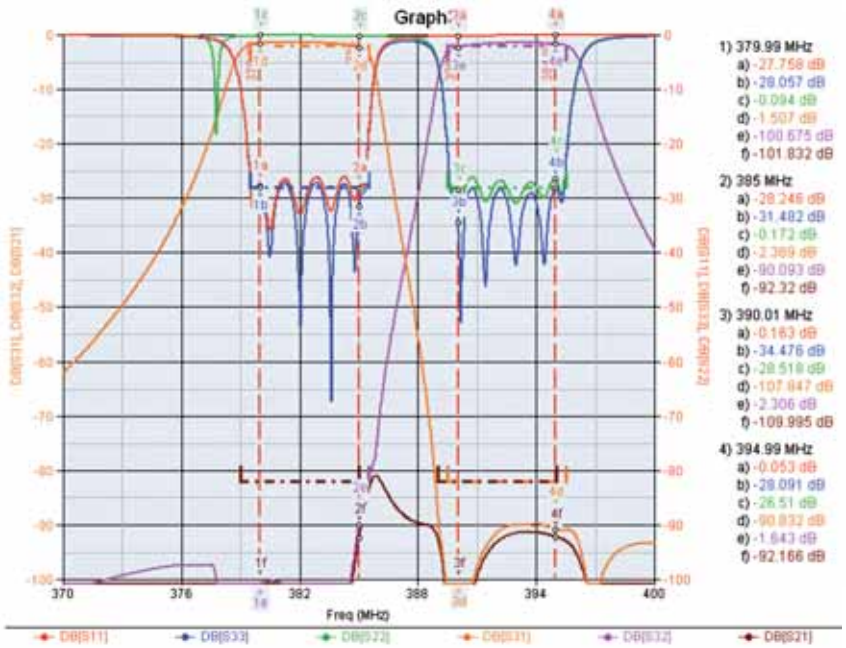
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	122 x 114 x 90
Weight		kg	2.2
Connectors			N/SMA

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcav-011

Cavity Duplexers

FEATURES

- Low Channel Center Frequency : 452.5 MHz
- Low Channel Bandwidth : 450 MHz to 455 MHz
- High Channel Center Frequency : 462.5 MHz
- High Channel Bandwidth : 460 MHz to 465 MHz
- Input Power (max) : 25 W
- Insertion losses @ fo : < 2 dB
- Operating temperature : -25˚C to +75˚C

DESCRIPTION

The cob-dcav-011 is a cavity diplexer ideal for tetra applications. Low in bandwidth insertion losses (< 2 dB) and excellent attenuation out of bandwidth (> 80 dB) is achieved using state of the art design, assembly and tuning process. This 25 W power handling cavity diplexer is available in low cost package.

APPLICATIONS

- Tetra

ELECTRICAL SPECIFICATIONS

	Unit	Value
Frequency Range: RX-ANT	MHz	450-455
Frequency Range: TX-ANT	MHz	460-465
IL at ANT-RX band	dB	<2.0 (@452MHz)
IL at TX-ANT band	dB	<2.0 (@462MHz)
VSWR		<1.20:1
Isolation at TX-RX band (450...455 MHz)	dB	>80
Isolation at RX-TX band (460...465 MHz)	dB	>80
Isolation at Rx<->Tx guard band (455...460 MHz)	dB	>75
Power Handling capability	W	25

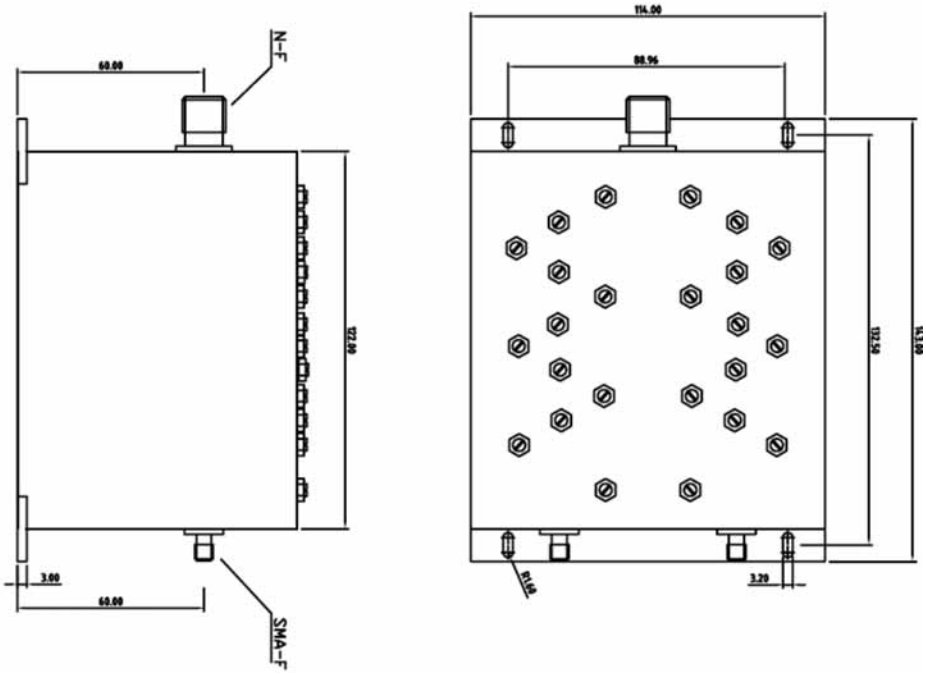
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-25 →+75
Storage Temperature range	T	˚C	-40 →+75
Vibrations – Shocks – Bump test		EN 50155	

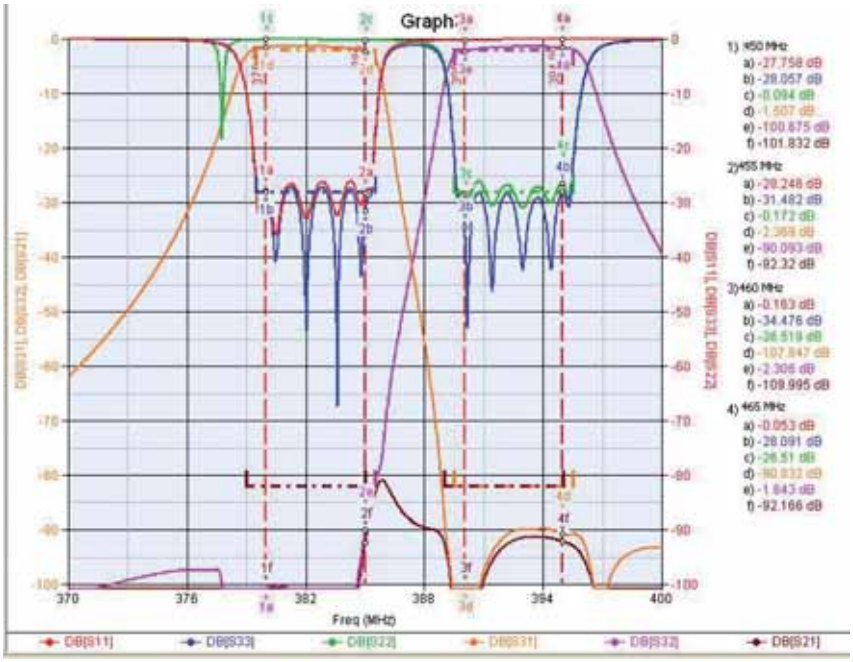
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	122 x 114 x 90
Weight		kg	2.2
Connectors			N/SMA

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcav-013

Cavity Duplexers

FEATURES

- Low Channel Center Frequency : 457 MHz
- Low Channel Bandwidth : 456 MHz to 458 MHz
- High Channel Center Frequency : 467 MHz
- High Channel Bandwidth : 466 MHz to 468 MHz
- Input Power (max) : 20 W
- Insertion losses @ fo : < 1.5 dB
- Operating temperature : -25˚C to +75˚C

DESCRIPTION

The cob-dcav-013 is a cavity diplexer ideal for railways applications. Low in bandwidth insertion losses (< 1.5 dB) and excellent attenuation out of bandwidth (> 70 dB) is achieved using state of the art design, assembly and tuning process. This 20 W power handling cavity diplexer is available in low cost package.

APPLICATIONS

- Railways

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance	Z	Ω	50
Power	Pin	W	20
Low filter			
Bandwidth BwL	BwL	MHz	456.8 - 458.8
Insertion loss in BwL		dB	< 1.5
Return loss in BwL		dB	> 16.6
Attenuation in BwH		dB	> 70
High filter			
Bandwidth BwH	BwH	MHz	466.8 - 468.8
Insertion loss in BwH		dB	< 1.5
Return loss in BwH		dB	> 16.6
Attenuation in BwL		dB	> 70

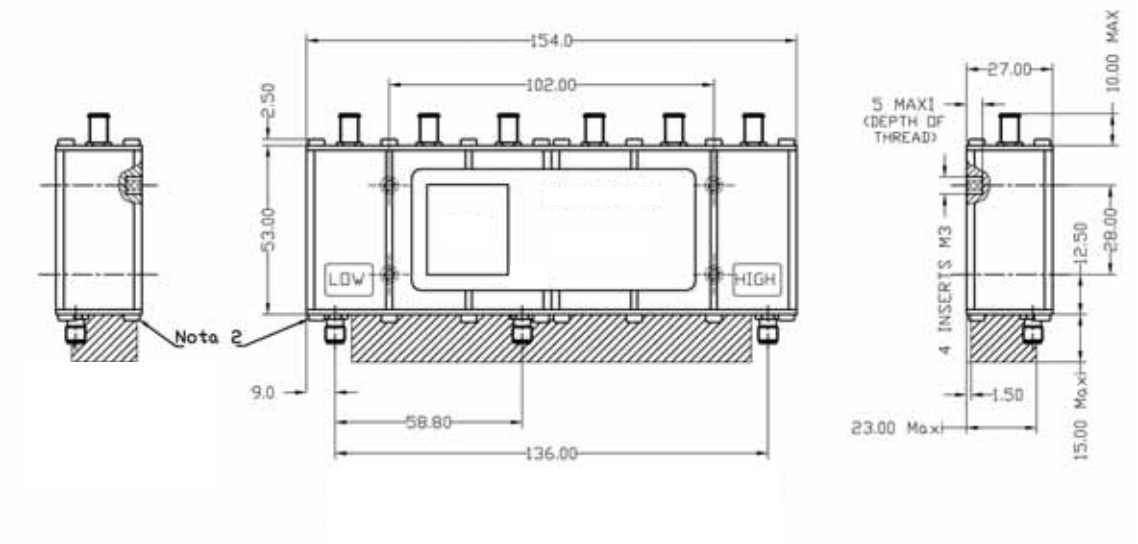
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-25 →+75
Storage Temperature range	T	˚C	-40 →+75
Vibrations – Shocks – Bump test		EN 50155	

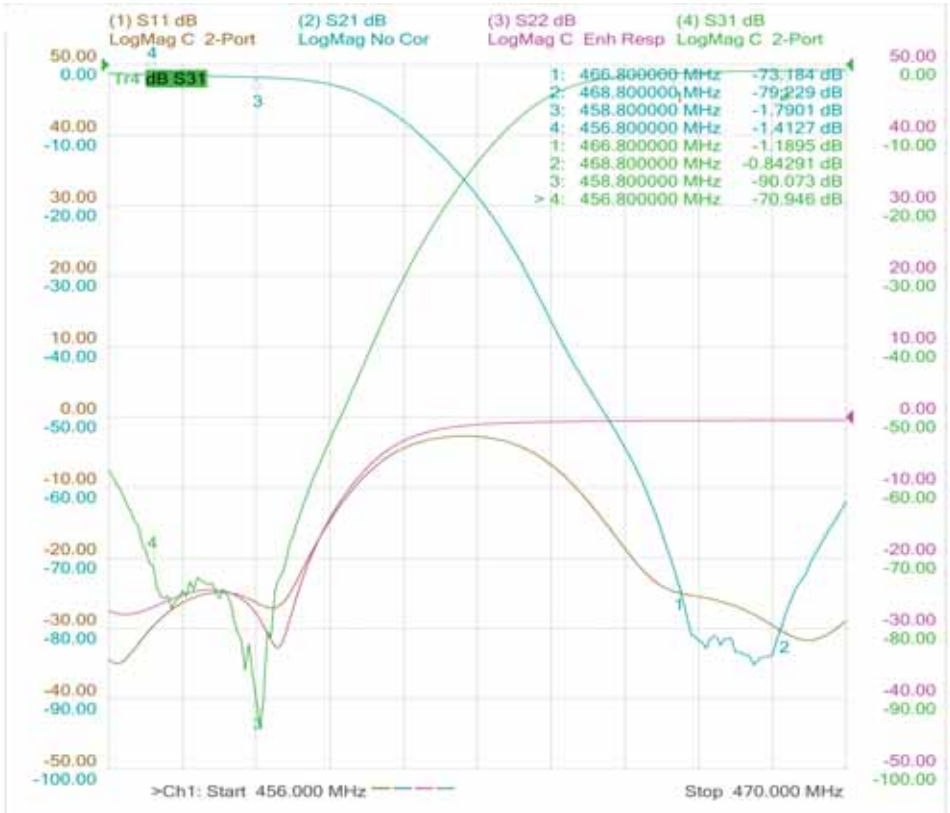
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	154 x 78 x 27
Connectors			SMA female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcav-015

Cavity Duplexers

FEATURES

- Low Channel Center Frequency : 897.5 MHz
- Low Channel Bandwidth : 890 MHz to 915 MHz
- High Channel Center Frequency : 942.5 MHz
- High Channel Bandwidth : 925 MHz to 960 MHz
- Input Power (max) : 50 W CW
- Insertion losses in Bandwidth : <1.5 dB
- Operating Temperature : -20˚C to +70˚C

DESCRIPTION

The cob-dcav-015is a cavity diplexer ideal for GSM applications. Low in bandwidth insertion losses (<1.5 dB) and excellent attenuation out of bandwidth (>67 dB) is achieved using state of the art design, assembly and tuning process. This 50 W CW power handling cavity diplexer is available in low cost 130x100x70 (mm) package.

APPLICATIONS

- Gsm

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Input Power	Pmax	W	50
Impedance	Z	Ω	50
Low filter			
Bandwidth		MHz	880 - 915
Duplex Separation		MHz	45
Bandwidth Insertion Loss		dB	≤ 1.5
Bandwidth Return Loss		dB	≥ 20
Attenuation [925 – 960]MHz		dB	≥ 67
High filter			
Bandwidth		MHz	925 - 960
Duplex Separation		MHz	45
Bandwidth Insertion Loss		dB	≤ 1.5
Bandwidth Return Loss		dB	≥ 20
Attenuation [880 – 915]MHz		dB	≥ 67

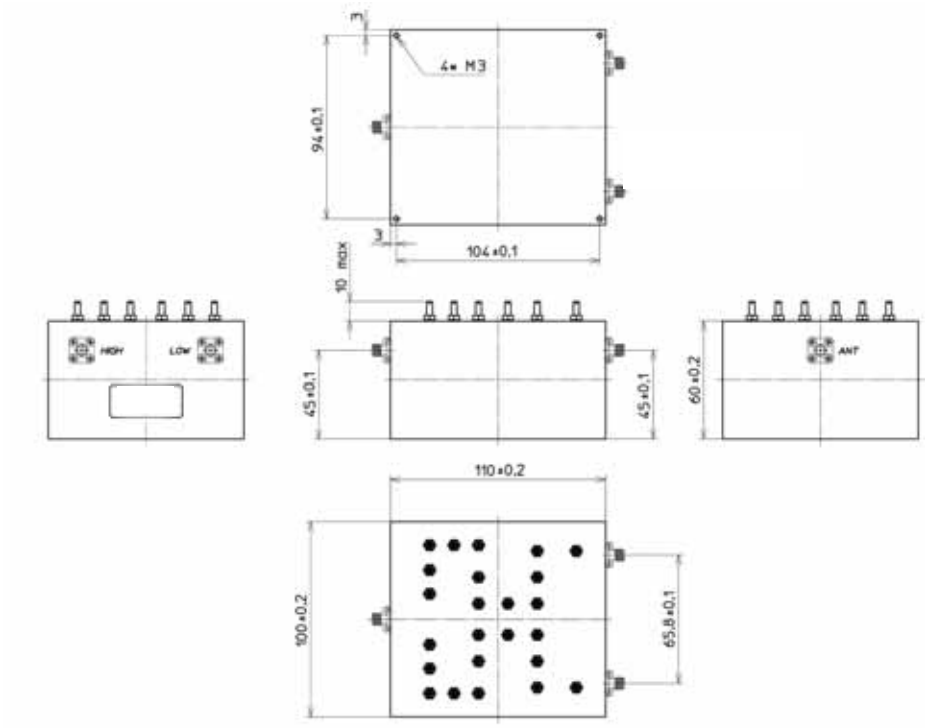
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-20 →+70
Stationary Vibration Sinusoïdal			
Frequency Range		Hz	9 – 200
Amplitude of Acceleration		m/s^2	2
Pulse duration		ms	6
Non Stationary Vibration Sinusoïdal, Incl. Shocks			
Amplitude of Acceleration		m/s^2	50
Pulse Duration		ms	6

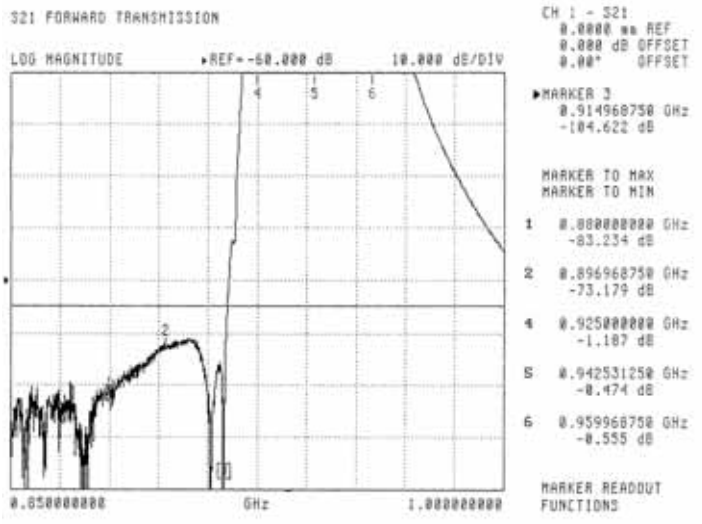
OTHER SPECIFICATIONS

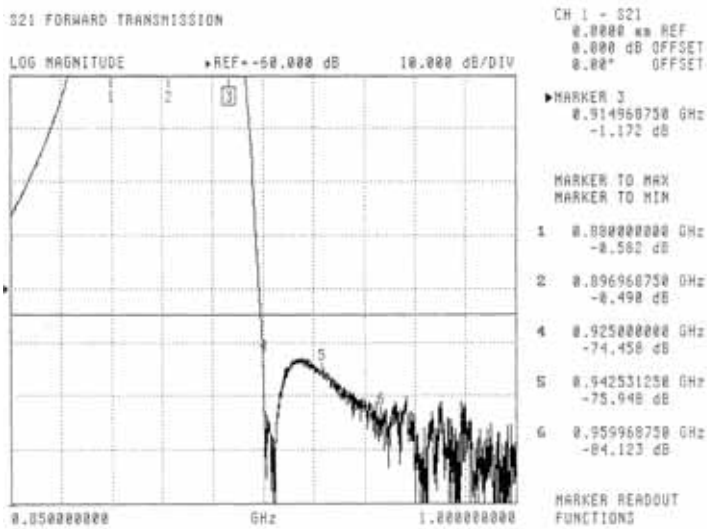
	Symbol	Unit	Value
Dimensions	L x l x h	mm	130 x 100 x 70
Weight		g	1000
Connectors			SMA female

OUTLINE DRAWING



TYPICAL PERFORMANCES





Cob-dcav-019

Cavity Duplexers

FEATURES

- Low Channel Center Frequency : 1880 MHz
- Low Channel Bandwidth : 1850 MHz to 1860 MHz
- High Channel Center Frequency : 1960 MHz
- High Channel Bandwidth : 1930 MHz to 1990 MHz
- Input Power (max) : 50 W
- Insertion losses @ fo : < 1.5 dB
- Operating temperature : -25˚C to +75˚C

DESCRIPTION

The cob-dcav-019 is a cavity diplexer ideal for pcs applications. Low in bandwidth insertion losses (< 1 dB) and excellent attenuation out of bandwidth (> 70 dB) is achieved using state of the art design, assembly and tuning process. This 50 W power handling cavity diplexer is available in low cost package.

APPLICATIONS

- Pcs

ELECTRICAL SPECIFICATIONS

	TX Side	Rx Side
Pass band	1930 MHz...1990 MHz	1850 MHz...1910 MHz
Insertion loss max.	< 1.5 dB	< 1.5 dB
Return loss	> 13 dB	> 13 dB
Return loss at COM port	> 13dB	
Ripple	< 1.5 dBpp	< 1.5 dBpp
Attenuation to COM port	> 50dB @ 1850...1910 MHZ > 40 dB @ 3860...3980 MHz > 20 dB @ 5790...5970 MHz > 10 dB @ 7720...7960 MHz	> 50dB @ 1930...1990 MHz
Isolation between Tx and RX	> 53 dB @ 1850...1910 MHz	> 53 dB @ 1930...1990 MHz
Min CW Power	50 W	-
Min CW power @ COM port	50 W	

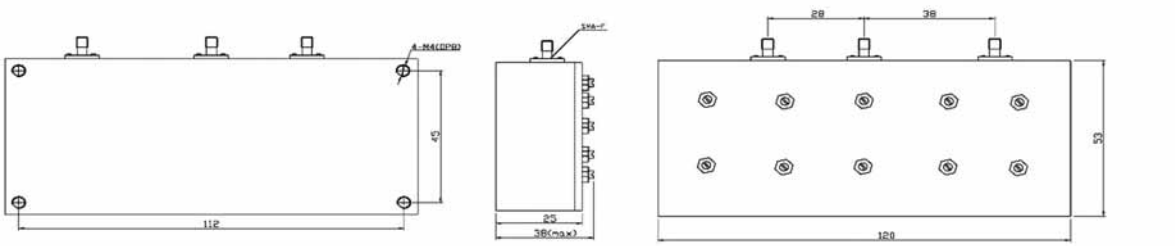
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-25 →+75
Storage Temperature range	T	˚C	-40 →+75
Vibrations – Shocks – Bump test	EN 50155		

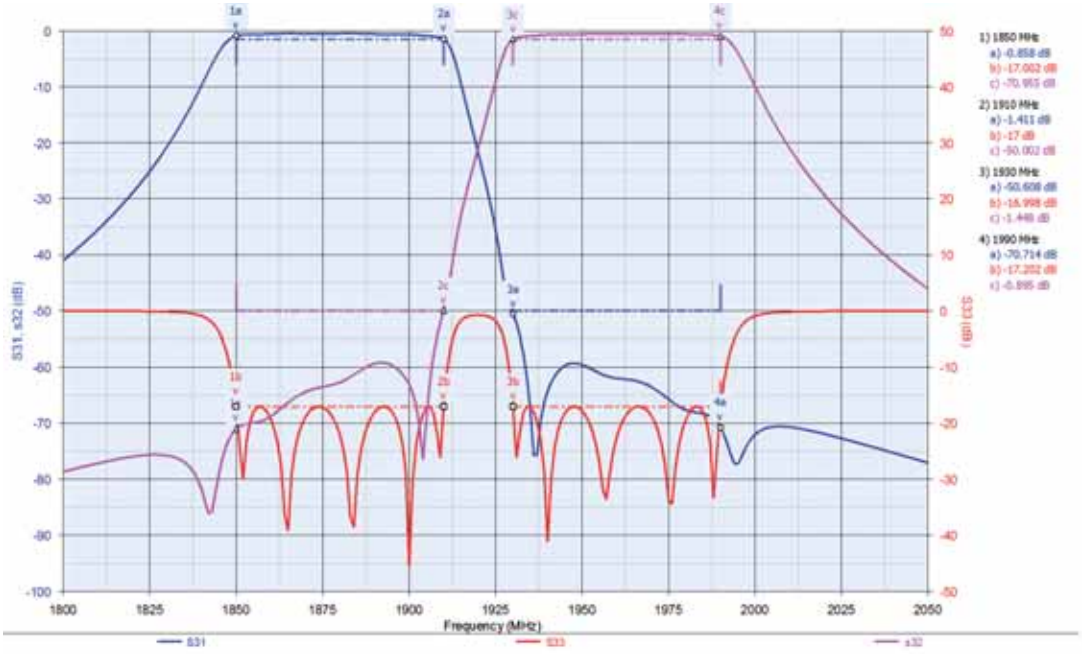
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	100 x 53 x 30
Connectors			SMA female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcav-022

Cavity Duplexers

FEATURES

- Low Channel Center Frequency : 2033 MHz
- Low Channel Bandwidth : 2032 MHz to 2034 MHz
- High Channel Center Frequency : 2202 MHz
- High Channel Bandwidth : 2201 MHz to 2203 MHz
- Input Power (max) : 5 W
- Insertion losses @ fo : < 1 dB
- Operating temperature : -20˚C to +70˚C

DESCRIPTION

The cob-dcav-022 is a cavity diplexer ideal for wimax applications. Low in bandwidth insertion losses (< 1 dB) and excellent attenuation out of bandwidth (> 70 dB) is achieved using state of the art design, assembly and tuning process. This 5 W power handling cavity diplexer is available in low cost package.

APPLICATIONS

- Wimax

ELECTRICAL SPECIFICATIONS

	Unit	Value
Low Channel		
Centre frequency	MHz	2033
Bandwidth	MHz	> 1
Insertion loss in bandwidth	dB	0.8 typical
Return loss	dB	> 14
Isolation Low Channel / High Channel	dBc	> 90
Impedance	Ω	50
High Channel		
Centre frequency	MHz	2202
Bandwidth	MHz	> 1
Insertion loss in bandwidth	dB	0.8 typical
Return loss	dB	> 14
Isolation High Channel / Low Channel	dBc	> 90
Impedance	Ω	50

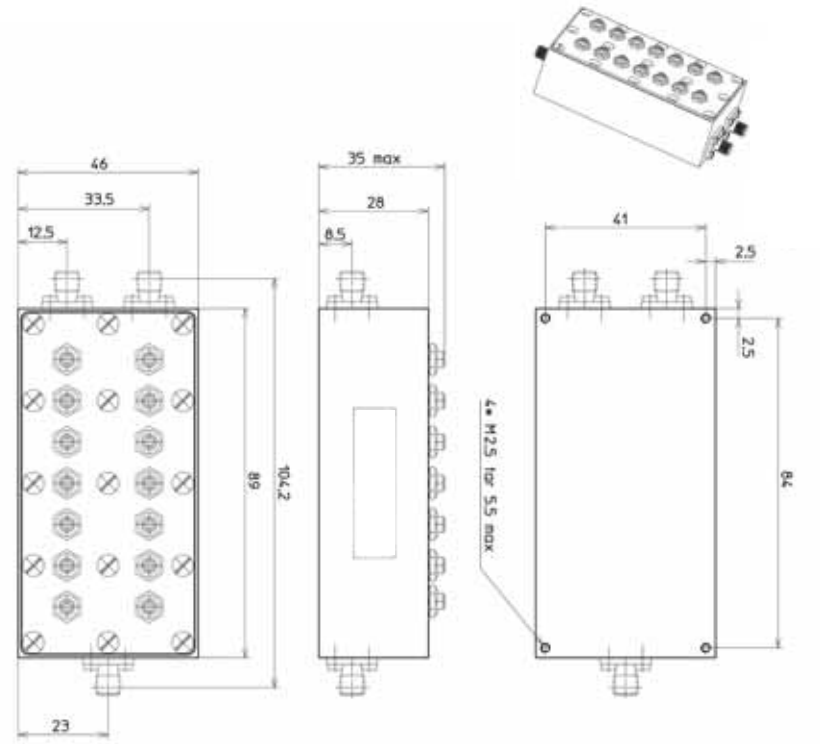
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature range	T	˚C	-20 →+70
Storage Temperature range	T	˚C	-25 →+75

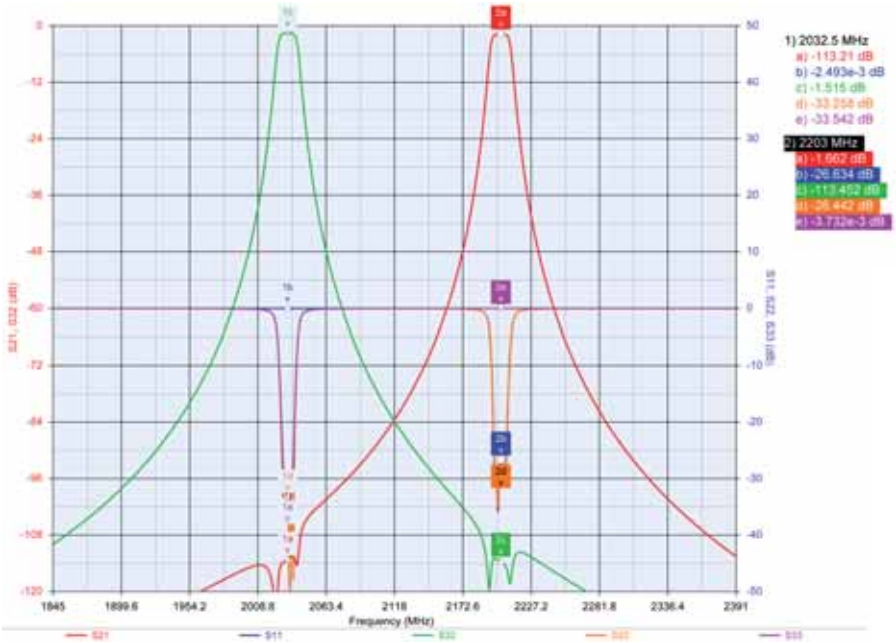
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	115 x 50 x 35
Connectors			SMA

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcer-001

Ceramic Duplexers

FEATURES

- Low ChannelCenter Frequency : 382.5 MHz
- Low Channel Bandwidth : 380 MHz to 385 MHz
- High Channel Center Frequency : 392.5 MHz
- High Channel Bandwidth : 390 MHz to 395 MHz
- Input Power (max) : 3 W
- Insertion losses @ fo : < 4.5 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-001 is a dielectric resonator duplexer ideal for stringent requirement such as Tetra applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

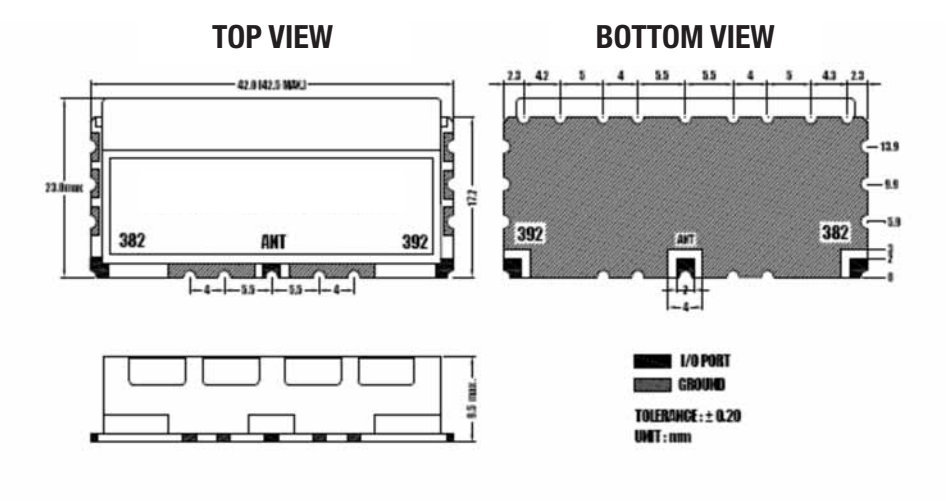
APPLICATIONS

- Tetra

ELECTRICAL SPECIFICATIONS

Item	Ant >> Low	Ant >> High
Center frequency (fo)	382.5 MHz	392.5 MHz
Bandwidth at 1dB (BW)	fo ± 2.5 (380 ~ 385) MHz	fo ± 2.5 (390 ~ 395) MHz
Insertion Loss in BW	4.5 dB max.	4.5 dB max.
Ripple in BW	2.5 dBpp	2.5 dBpp
VSWR in BW	1.5: 1max.	1.5: 1max.
Attenuation (Absolute Value)	40 dB min @ 390 ~ 395 MHz 8 dB min @ 387.5 MHz	40 dB min @ 380 ~ 385 MHz 8 dB min @ 387.5 MHz
Isolation between RX and Tx	35 dB min	
Input Power	3.0 W max.	
In/Out Impedance	50 Ω	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-dcer-005

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 447.5 MHz
- Low Channel Bandwidth : 445 MHz to 450 MHz
- High Channel Center Frequency : 457.5 MHz
- High Channel Bandwidth : 455 MHz to 460 MHz
- Input Power (max) : 3 W
- Insertion losses @ fo : < 4.5 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-005 is a dielectric resonator duplexer ideal for stringent requirement such as Tetra applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

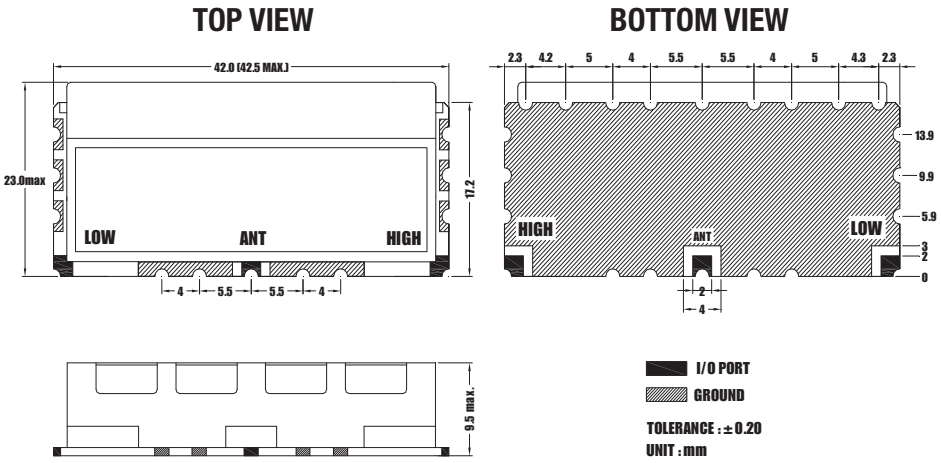
APPLICATIONS

- Tetra

ELECTRICAL SPECIFICATIONS

Item	Ant >> Low	Ant >> High
Center frequency (fo)	447.5 MHz	457.5 MHz
Bandwidth at 1dB (BW)	fo ± 2.5 [445 ~ 450] MHz	fo ± 2.5 [455 ~ 460] MHz
Insertion Loss in BW	4.5 dB max.	4.5 dB max.
Ripple in BW	2.5 dBpp	2.5 dBpp
VSWR in BW	1.5: 1max.	1.5: 1max.
Attenuation (Absolute Value)	40dB min. @ 455-460 MHz 8dB min. @ 452.5 MHz	40dB min. @ 445-450 MHz 8dB min. @ 452.5 MHz
Isolation between RX and Tx	35 dB min	
Input Power	3.0 W max.	
In/Out Impedance	50 Ω	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-dcer-011

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 1227 MHz
- Low Channel Bandwidth : 1213 MHz to 1241 MHz
- High Channel Center Frequency : 1575 MHz
- High Channel Bandwidth : 1553 MHz to 1597 MHz
- Input Power (max) : 30 dBm
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-011 is a dielectric resonator duplexer ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Space
- Avionics

ELECTRICAL SPECIFICATIONS

	Unit	Value
Input		
Frequency Range	GHz	1-2
Power (max)	dBm	30
VSWR		< 1.5:1
Output 1 (L1) BPF		
Center frequency f0	MHz	1575
Insertion Loss	dB	3 dB (max)
Bandwidth	MHz	44MHz (+/- 22 MHz)
Change of Gain in overall Bandwidth	dB	< 3 dB
Return loss in 80% of bw	dB	> 14 dB
Band rejection @ 32 MHz (from f0)	dB	15 dB (min)
Band rejection @ 46 MHz (from f0)	dB	40 dB (min)
Temperature Range		-40 ˚C to +85 ˚C
Group Delay stability in bw and temperature		< 3 ns
Absolute delay variation in bw and temperature		< 5 ns
VSWR (for all the bandwidth)		< 1.5:1
Output 2 (L2) BPF		
Center frequency f0	MHz	1227
Insertion Loss	dB	3 dB (max)
Bandwidth	MHz	28 MHz (+/- 14 MHz)
Change of Gain in overall Bandwidth	dB	< 1.5 dB
Return loss in 80% of bw	dB	> 14 dB
Band rejection @ 32 MHz (from f0)	dB	15 dB (min)
Band rejection @ 46 MHz (from f0)	dB	45 dB (min)
Temperature Range		-40 ˚C to +85 ˚C
Group Delay stability in bw and temperature		< 2.0 ns
Absolute delay variation in bw and temperature		< 5 ns
VSWR (for all the bandwidth)		< 1.5:1
Isolation between the outputs	dB	> 30 dB

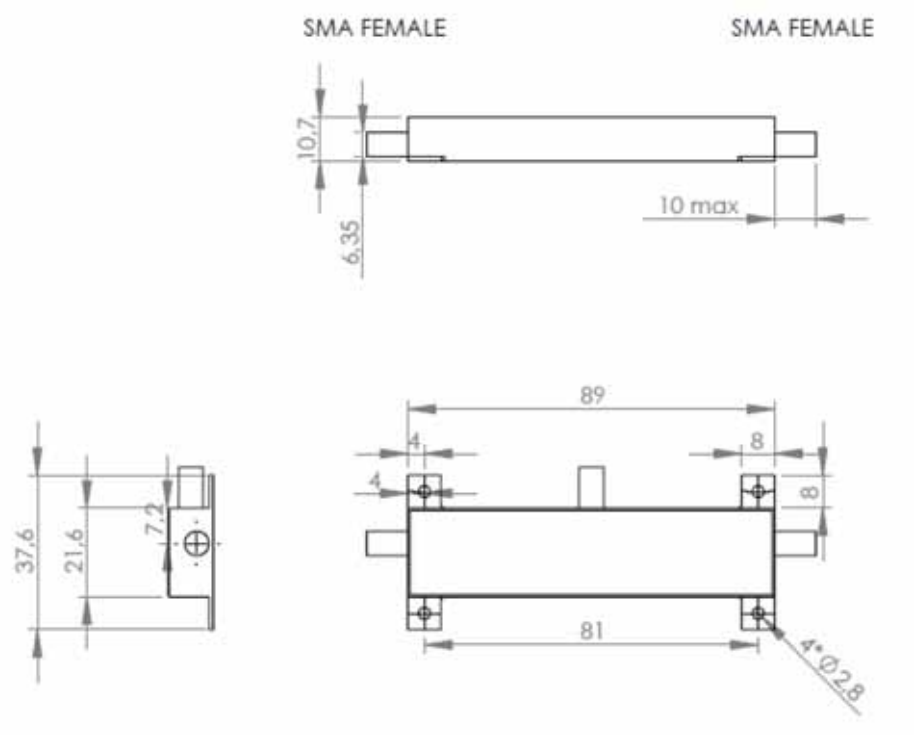
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature range	T	˚C	-50 →+90
Altitude		m	3000
Vibrations	2 hours/axes in accordance with CEI68-2-6		
Shocks	30G, 11ms, half sinus		
Solvent resistance	(CEI 68-2-45)		

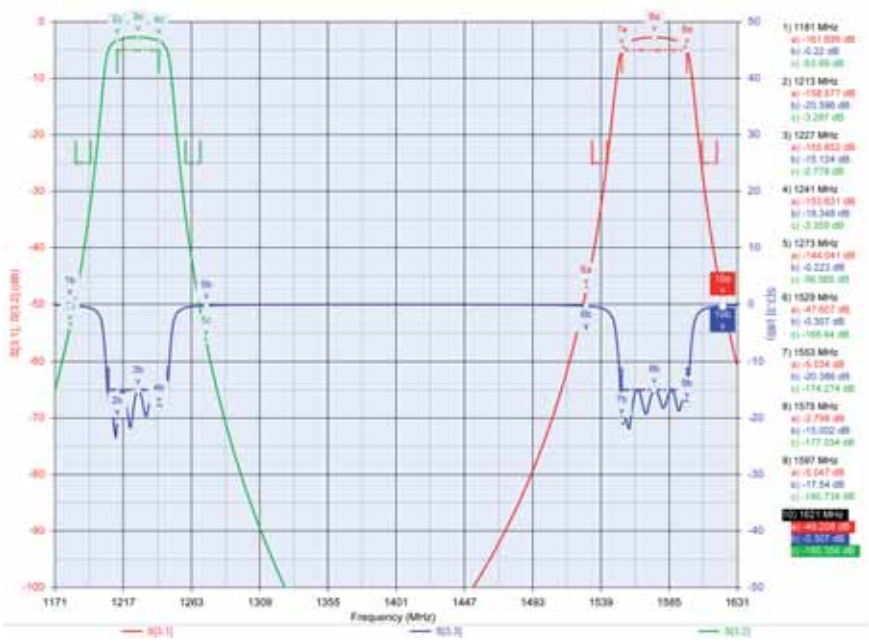
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	19.05x6.5x6.5
Weight		g	3.9 ± 0.4
Connectors			SMA Female

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcer-012

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 1227 MHz
- Low Channel Bandwidth : 1215 MHz to 1239 MHz
- High Channel Center Frequency : 1575 MHz
- High Channel Bandwidth : 1563 MHz to 1587 MHz
- Input Power (max) : 3 W
- Insertion losses @ fo : < 1.7 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-012 is a dielectric resonator duplexer ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

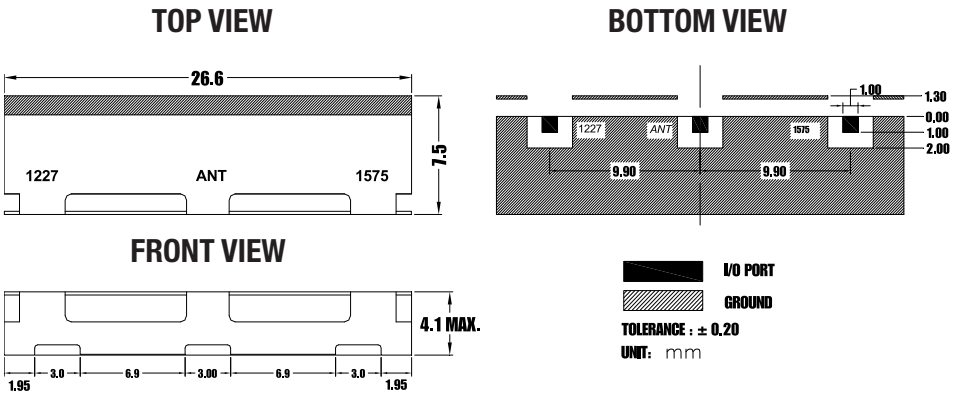
APPLICATIONS

- Gps
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Ant >> Low	Ant >> High
Center frequency (fo)	1227.6	1575.42
Bandwidth (BW)	fo ±12 [1215.6 - 1239.6] MHz	fo ±12 [1563.42-1587.42] MHz
Insertion Loss in BW	1.7 dB max.	1.7 dB max.
Ripple in BW	0.5 dBpp	0.5 dBpp
VSWR in BW	2.0 : 1 max.	2.0 : 1 max.
Input Power	3.0 W max.	
Attenuation (Absolute Value)	40 dB min. @ 1227.6 MHz 33 dB min. @ 1455.42 MHz 27 dB min. @ 1515.42 MHz 27 dB min. @ 1635.42 MHz 45 dB min. @ 2000-2500 MHz	33 dB min. @ 1107.6 MHz 27 dB min. @ 1167.6 MHz 27 dB min. @ 1287.6 MHz 45 dB min. @ 1575.42 MHz 40 dB min. @ 2000-2500 MHz
Group Delay Variation	TBD	
In/Out Impedance	50 Ω	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-dcer-013

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 1227 MHz
- Low Channel Bandwidth : 1215 MHz to 1239 MHz
- High Channel Center Frequency : 1575 MHz
- High Channel Bandwidth : 1563 MHz to 1587 MHz
- Input Power (max) : 1 W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-013 is a dielectric resonator duplexer ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

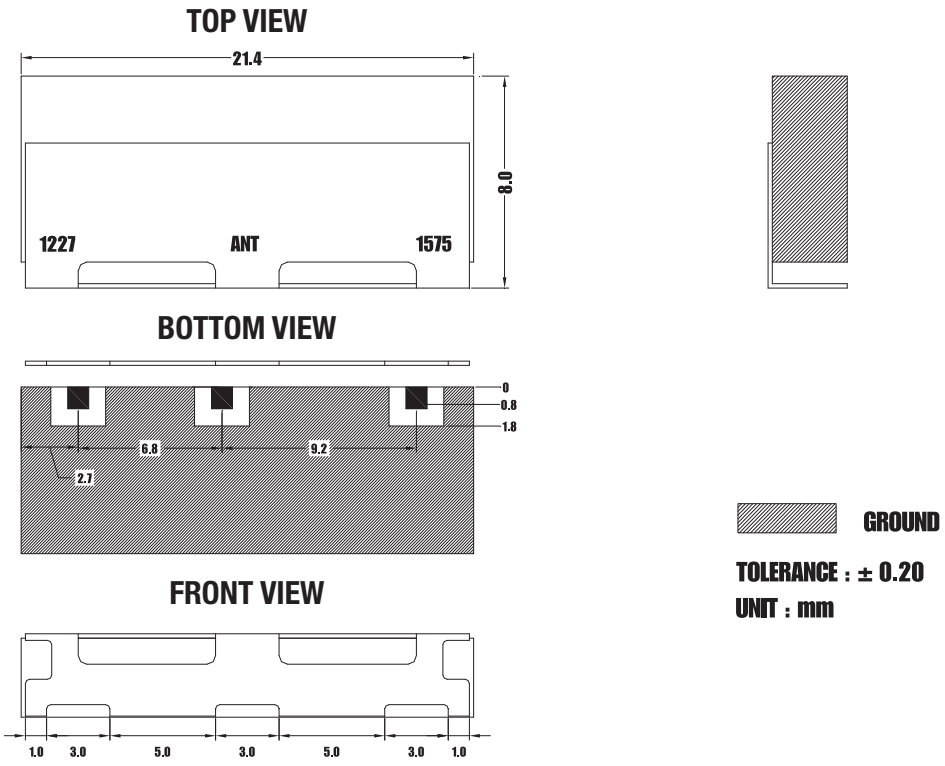
APPLICATIONS

- Gps
- Avionics

ELECTRICAL SPECIFICATIONS

Item	Ant >> Low	Ant >> High
Center frequency (fo)	1227.60 MHz	1575.42 MHz
Bandwidth [BW]	fo ± 12 min MHz	fo ± 12 min MHz
Insertion Loss in BW	3.0 dB max.	3.0 dB max.
Ripple in BW	1.0 dBpp	1.0 dBpp
Return Loss in BW	11.0 min.	11.0 min.
Attenuation (Absolute Value)	33dB min. @ 1170.60 MHz 27dB min. @ 1167.60 MHz 27dB min. @ 1287.60 MHz 45dB min. @ 1575.42 MHz 40dB min. @ 2000 - 2500 MHz	40dB min. @ 1227.60 MHz 33dB min. @ 1455.42 MHz 27dB min. @ 1515.42 MHz 27dB min. @ 1635.42 MHz 40dB min. @ 2000 - 2500 MHz
Input Power	1.0 W max.	
In/Out Impedance	50 Ω	
Operation Temperature Rang	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-dcer-014

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 1227 MHz
- Low Channel Bandwidth : 1219 MHz to 1235 MHz
- High Channel Center Frequency : 1575 MHz
- High Channel Bandwidth : 1567 MHz to 1583 MHz
- Input Power (max) : 30 dBm
- Insertion losses @ fo : < 1 dB
- Operating temperature : -46°C to +110°C

DESCRIPTION

The cob-dcer-014 is a dielectric resonator duplexer ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Impedance at input and output	Z	Ω	50
Channel 1 → 2 Cells			
Center frequency Fo		MHz	1575.4
Bandwidth at 0.5dB		MHz	≥ ± 8
Insertion loss to in the bandwidth		dB	≤ 0.8 à 25°C ≤ 1 à 110°C
Rejection at Fo ± 50 MHz		dBc	≥ 5
Rejection at Fo ± 75 MHz		dBc	≥ 11.5
Rejection at Fo - 300 MHz		dBc	≥ 33
Rejection at Fo + 300 MHz		dBc	≥ 31
Rejection at F=1227.6 MHz		dBc	≥ 40
Channel 2 →2 Cells			
Center frequency Fo		MHz	1227.6
Bandwidth at 0.5dB		MHz	≥ ± 8
Insertion loss to in the bandwidth		dB	≤ 0.8 à 25°C ≤ 1 à 110°C
Maximum ripple inside BW		dBpp	< 0.5
Rejection at Fo ± 50 MHz		dBc	≥ 5
Rejection at Fo ± 75 MHz		dBc	≥ 12
Rejection at Fo ± 300 MHz		dBc	≥ 33
Rejection at F=1575.4 MHz		dBc	≥ 35
For the 2 channels			
Impedance	Z	Ω	50
Return Loss in the band		dB	>14
Maximum group delay Inside both channels BW		ns	≤ 15
Maximum group delay variation versus frequency inside BW		ns pp	≤ 3
Maximum input RF voltage	Vmax	VRMS	1000
Maximum input power inside BW	Pmax	dBm	30

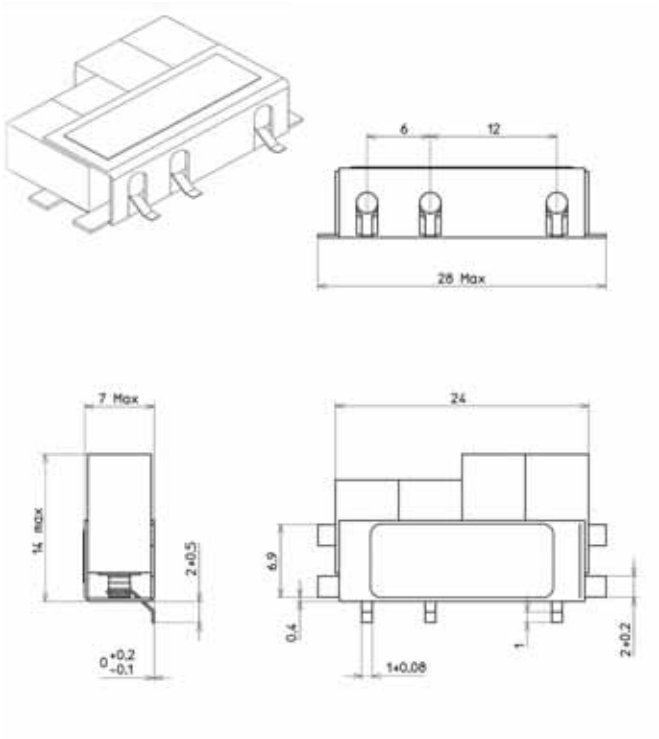
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	°C	-46 →+110
Storage Temperarture Range	T	°C	-55 →+85

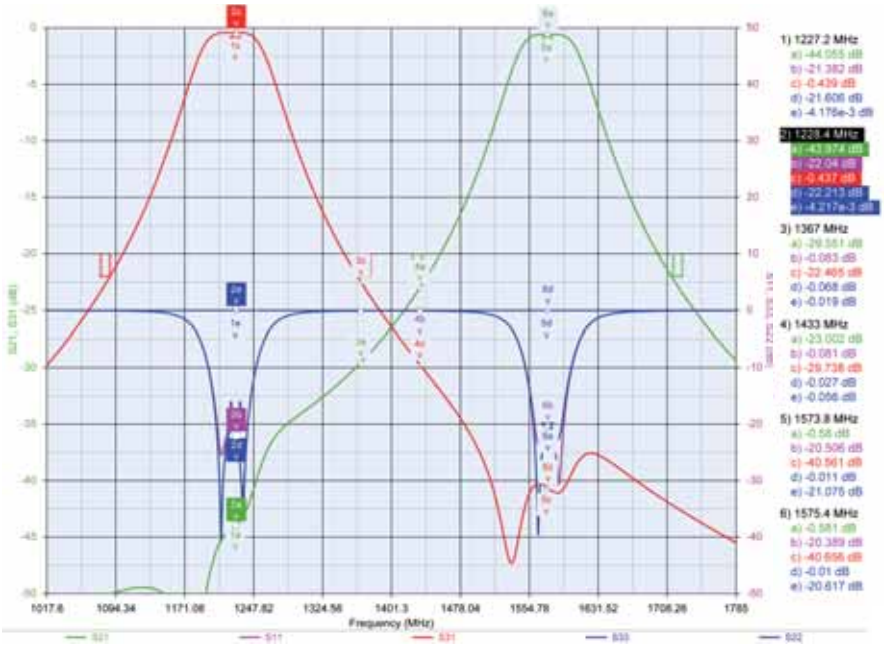
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	28x14x7
Weight		g	≈ 40
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcer-017

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 1575 MHz
- Low Channel Bandwidth : 1565 MHz to 1585 MHz
- High Channel Center Frequency : 1603 MHz
- High Channel Bandwidth : 1597 MHz to 1609 MHz
- Input Power (max) : 30 dBm
- Insertion losses @ fo : < 3.1 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-017 is a dielectric resonator duplexer ideal for stringent requirement such as the ones of Avionics and Space applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

APPLICATIONS

- Gps
- Avionics

ELECTRICAL SPECIFICATIONS

	Symbol	Unit	Value
Max CW Input Power		dBm	30
Impedance	Z	Ω	50
Low Filter			
Center Frequency Fo		MHz	1575.4
Insertion Loss @ Fo		dB	≤ 3.0
-1.5dB Bandwidth		MHz	≥ 20
Return Loss in Bandwidth [1566.9 – 1583.9] MHz		dB	> 10
Return Loss in Bandwidth [1565.9 – 1584.9] MHz		dB	> 9
Ripple in Bandwidth @ -0.5dB		dBpp	≤ 0.5
Attenuation @ Fo ± 15 MHz		dBc	≥ 1.5
Attenuation @ F = 1597 MHz		dBc	≥ 7.0
Attenuation @ F = 1608 MHz		dBc	≥ 14
Attenuation @ Fo ± 50 MHz		dBc	≥ 17
Attenuation @ Fo ± 100 MHz		dBc	≥ 27
Attenuation @ F < Fo – 100 MHz		dBc	≥ 27
Group Delay @ Fo = 1575.4 MHz		ns	16 ± 2
Group Delay Variation @ Fo ± 5 MHz		ns	≤ 3.0
Group Delay Variation @ Fo ± 8 MHz		ns	≤ 6.0
High Filter			
Center Frequency Fo		MHz	1603.0
Insertion Loss @ Fo		dB	≤ 3.1
-1.0dB Bandwidth		MHz	≥ 12
Relative Insertion Loss @ F = 1596 MHz		dBc	≤ 1.5
Relative Insertion Loss @ F = 1610 MHz		dBc	≤ 1.0
Return Loss in Bandwidth [1596 – 1610] MHz		dB	> 10
Return Loss in Bandwidth [1595 – 1611] MHz		dB	> 9
Ripple in Bandwidth @ -0.5dB		dBpp	≤ 0.5
Attenuation @ F = 1587 MHz		dBc	≥ 7.0
Attenuation @ Fo ± 20 MHz		dBc	≥ 9.0
Attenuation @ Fo ± 30 MHz		dBc	≥ 16
Attenuation @ Fo ± 50 MHz		dBc	≥ 25
Attenuation @ F < Fo – 50 MHz		dBc	≥ 25

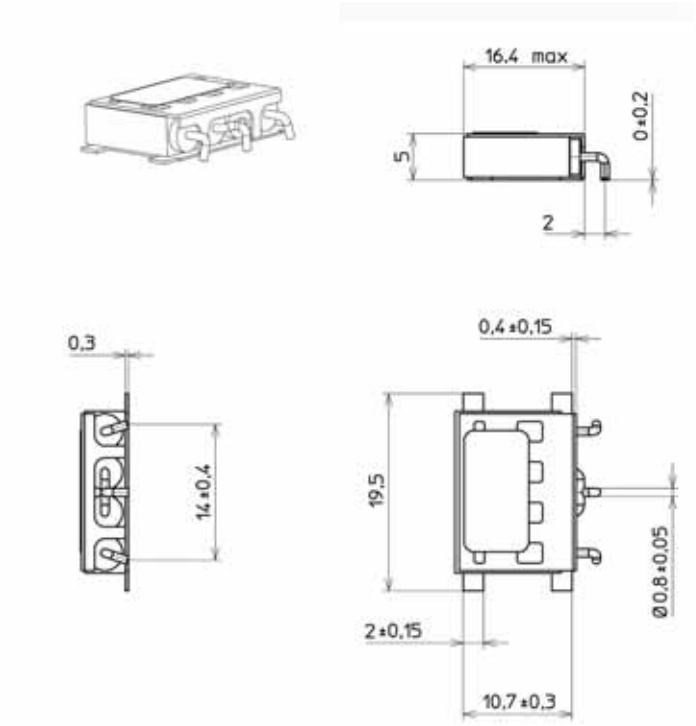
ENVIRONMENTAL SPECIFICATIONS

	Symbol	Unit	Value
Operating Temperature Range	T	˚C	-40 →+85
Storage Temperature Range	T	˚C	-55 →+85

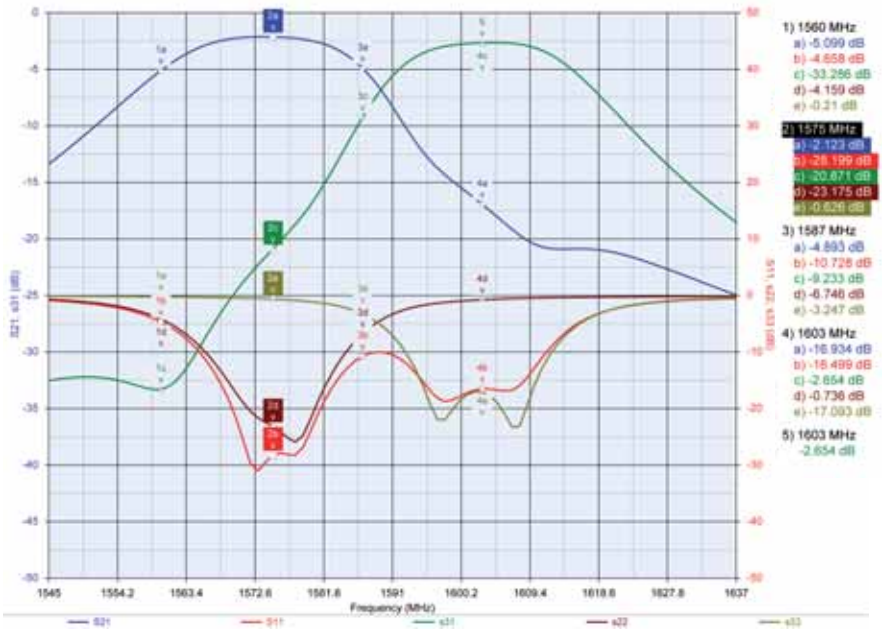
OTHER SPECIFICATIONS

	Symbol	Unit	Value
Dimensions	L x l x h	mm	16.4 x 19.5 x5.0
Weight		g	3.5 ± 0.4
Connectors			SMD

OUTLINE DRAWING



TYPICAL PERFORMANCES



Cob-dcer-019

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 1882.5 MHz
- Low Channel Bandwidth : 1850 MHz to 1915 MHz
- High Channel Center Frequency : 1962.5 MHz
- High Channel Bandwidth : 1930 MHz to 1995 MHz
- Input Power (max) : 5 W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-019 is a dielectric resonator duplexer ideal for DCS repeater applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

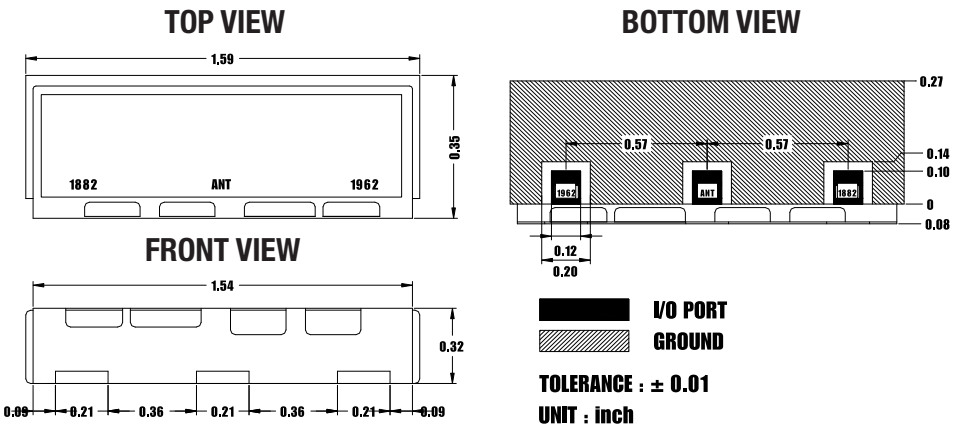
APPLICATIONS

- Dcs

ELECTRICAL SPECIFICATIONS

Item	Com >> Low	Com >> High
Center frequency (fo)	1882.5 MHz	1962.5
Bandwidth (BW)	fo ±32.5 [1850 ~ 1915] MHz	fo ±32.5 [1930 ~ 1995] MHz
Insertion Loss in BW	3.0 dB max.	3.0 dB max.
Ripple in BW	1.0 dBpp	1.0 dBpp
Return Loss in BW	14 min.	14 min.
Input Power	5.0 W max.	
Attenuation (Absolute Value)	20 dBc min. @ 1930~1995 MHz	20 dBc min. @ 1850~1915 MHz
In/Out Impedance	50 Ω	
Operation Temperature Range	-40 ˚C to + 85˚C	

OUTLINE DRAWING



Cob-dcer-021

Ceramic Duplexers

FEATURES

- Low Channel Center Frequency : 1950 MHz
- Low Channel Bandwidth : 1920 MHz to 1980 MHz
- High Channel Center Frequency : 2140 MHz
- High Channel Bandwidth : 2110 MHz to 2170 MHz
- Input Power (max) : 3W
- Insertion losses @ fo : < 3 dB
- Operating temperature : -40˚C to +85˚C

DESCRIPTION

The cob-dcer-021 is a dielectric resonator duplexer ideal for UMTS repeater applications. Very high thermal stability, excellent selectivity combined to best in class electrical performances are offered in a low profile SMD package.

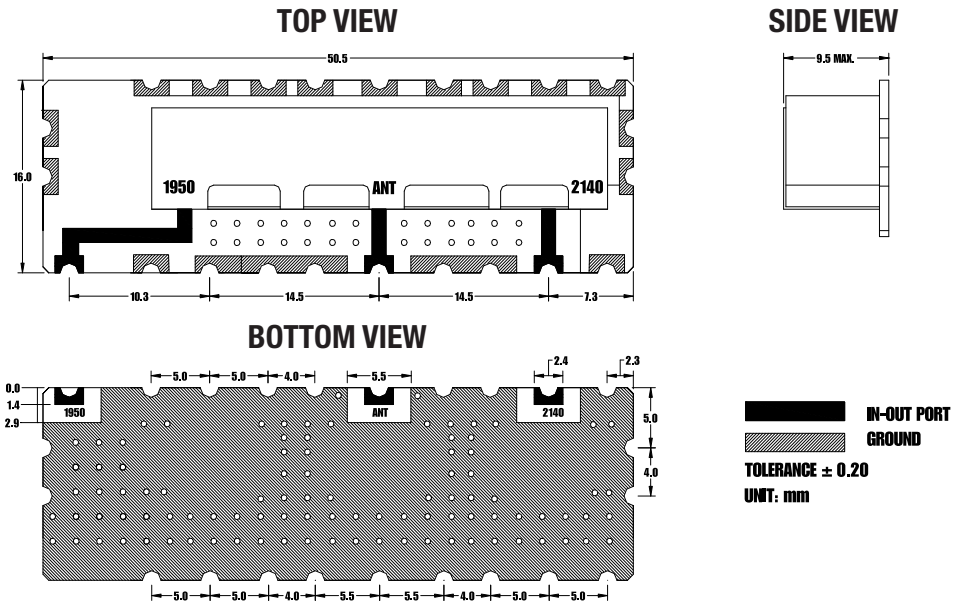
APPLICATIONS

- Umts

ELECTRICAL SPECIFICATIONS

Item	Ant >> RX	Ant >> TX
Center frequency (fo)	1950.0 MHz	2140.0 MHz
Bandwidth [BW]	fo ± 30.0 MHz	fo ± 30.0 MHz
Insertion Loss in BW	3.0 dB max.	1.7 dB max.
Ripple in BW	2.0 dB max.	2.0 dB max.
V S W R in BW	1.5 : 1 max.	1.5 : 1 max.
Attenuation (Absolute Value)	45dB min 50dB typ 2110-2170 MHz 30 dB min. @ 1805~1840 MHz 15 dB min. @ 2000~2010 MHz 30 dB min. @ 2010~2110 MHz 30 dB min. @ 2170~1275 MHz 25 dB min. @ 1840~1880 MHz	55dB min 60dB typ 1920~1980 MHz 24 dB min. @ 2010~2025 MHz 55 dB min. @ 2500~2570 MHz
Input Power	3.0 W max.	
In/Out Impedance	50 Ω	
Operation Temperature Rang	-40 ˚C to + 85˚C	

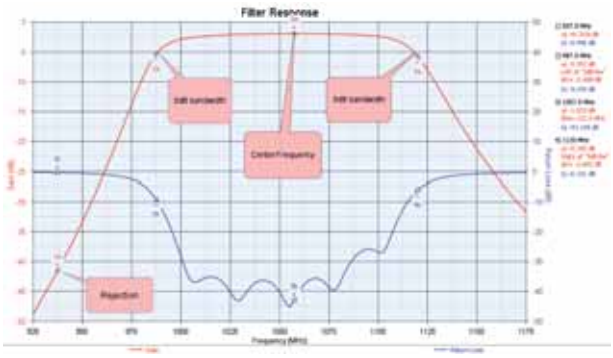
OUTLINE DRAWING



How to specify a filter or duplexer

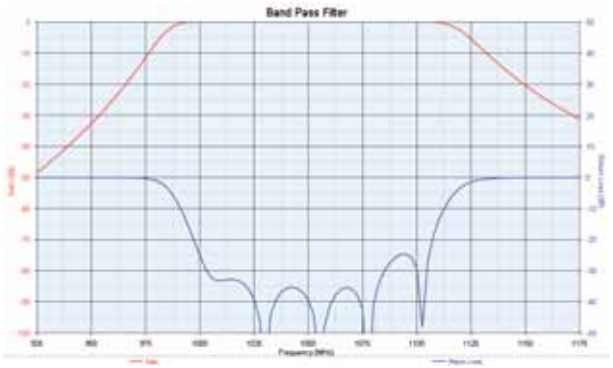
REJECTION AT FO ± X MHZ

The attenuation of RF power through a filter, referenced to the minimum insertion loss point of the filter to the carrier (dBc). Those values can be specified at different frequencies

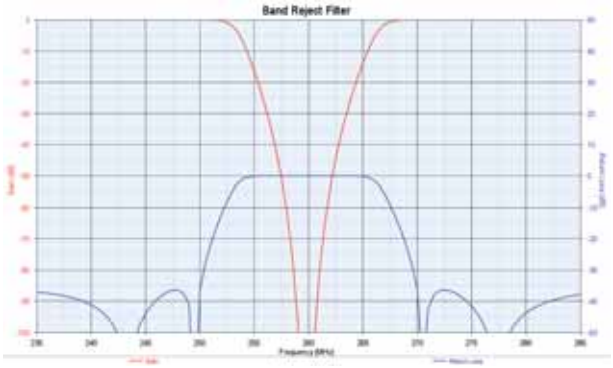


BANDPASS /BANDREJECT LOW PASS/ HIGH PASS

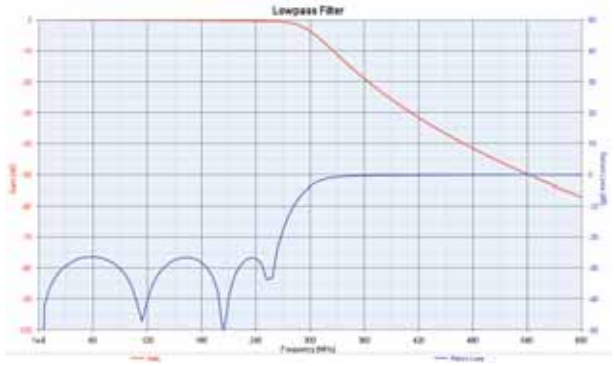
Bandpass: A filter that passes one band of frequencies and rejects both higher and lower frequencies



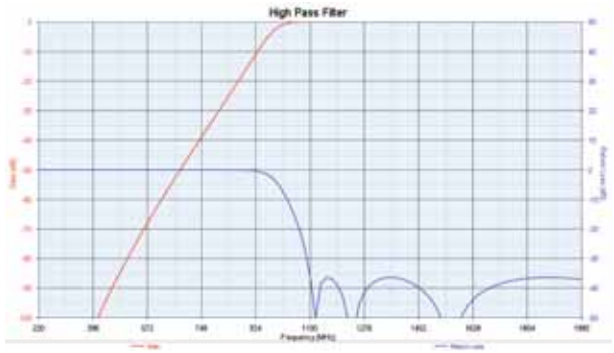
Band Reject Filter: A filter that rejects one band of frequencies and passes both higher and lower frequencies



Lowpass Filter: A filter which passes low frequencies and rejects high frequencies



Highpass filter: A filter which passes high frequencies and rejects low frequencies



ABSOLUTE GROUP DELAY VALUE

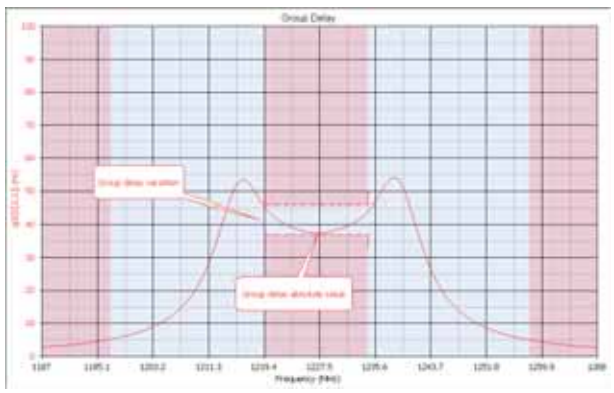
The propagation time of a signal through the filter

GROUP DELAY VARIATION IN BANDWIDTH

Variation of the group delay values within the filter bandwidth

PHASE LINEARITY

The deviation in the phase response from a straight line, usually expressed in degrees



TECHNOLOGY
Air cavity
Ceramic resonators
Lumped element (discrete)
Waveguide

CENTRE FREQUENCY (FO)
This frequency is defined as the average frequency of the 3dB bandwidth

CUT OFF FREQUENCY
3dB rejection frequency (Low Pas and High Pass filter only)

BANDWIDTH
The width of the passband is referenced to the minimum insertion loss point in the pass band. (3dB bandwidth for example)

RIPPLE
The difference in peaks and valleys of the amplitude response in the passband that are always the same

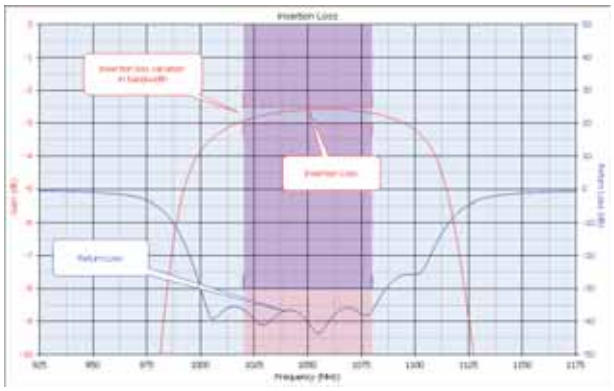
INSERTION LOSS
The loss of the filter measured at center frequency

INSERTION LOSS IN BANDWIDTH
The loss of the filter measured in bandwidth

INSERTION LOSS VARIATION IN BANDWIDTH
The difference between maximum and minimum value of the amplitude response in the pass band

RETURN LOSS
Return Loss (dB) is defined as a ratio of the incoming signal to the same reflected signal

VSWR
Ratio of the incident signal compared to the reflected signal in a transmission line



MAXIMUM INPUT POWER (CW)
The maximum power input filter without degradation in performance

MAXIMUM PEAK POWER
The peak power is much greater than the average power

INPUT IMPEDANCE
The impedance measured at the input terminal of a filter when the output is properly terminated. Not applicable for waveguide filters without connectors.

OUTPUT IMPEDANCE
The impedance measured at the output terminal of a filter when the input is properly terminated. Not applicable for waveguide filters without connectors

OPERATING TEMPERATURE
Functional temperature without degradation in performance

STORAGE TEMPERATURE
Maximum temperature range for the filter

SPECIFIC ENVIRONMENT REQUEST
Can be according to MIL standard or specific values

MAXIMUM TEMPERATURE SOLDERING REFLOW
Standard value is a maximum temperature 245°C on component during soldering process

MAXIMUM SIZE (L X W X H)
Generally overall size, connectors not included

WEIGHT
Maximum weight

CONNECTORS / FLANGE / SMD
SMA / TNC / N / WR....
In case of connectors interface, Male or Female must be defined

COATING
Silver plated / Black Painted / Other

ROHS
Restriction of Hazardous Substances:
Lead (Pb) < 0.1%
Mercury (Hg) < 0.1%
Cadmium (Cd) < 0.01%
Hexavalent Chromium (CrVI) < 0.1%
Polybrominated Biphenyls (PBB) < 0.1%
Polybrominated Diphenyl Esters (PBDE) < 0.1%

COBHAM

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