

Surface Mount

Coaxial-Ceramic Resonator Filters and Multiplexers

50Ω DC to 6 GHz

The Big Deal

- Low insertion loss with excellent power handling
- Passbands up to 6 GHz
- Fractional bandwidth from <1 to 25%
- Low profile designs with min. height of 0.120”
- Excellent temperature stability
- Rugged construction to handle demanding environmental conditions



Product Overview

Mini-Circuits' *Coaxial-Ceramic Resonator filters* offer low insertion loss in very small form factors, using ceramic material with high dielectric constant and superior Q factor. Bandpass and bandstop filters, diplexer and multiplexer designs can be constructed using this technology. Low insertion loss combined with excellent power handling makes these filters well suited for transmitter and receiver signal chains. Advanced filter design and construction can achieve stopband width greater than 3x the center frequency as high as 20 GHz.

All our coaxial-ceramic resonator filters are built with rugged construction, qualified to withstand multiple demanding reflow cycles. Excellent repeatability across units is achieved through precise tuning and process control.

Key Features

Feature	Advantages
Low insertion loss	Low signal loss results in better SNR in signal chain
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stop band	Wide spur-free stopband results in better receiver sensitivity
Excellent power handling	Well suited for transmitter applications
Rugged Construction	These filter assemblies have been qualified over a wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles
Small Size	Very well suited for high performance applications where size is a constraint.
Temperature stability	Very minimal change in electrical performance across temperature makes these filters suitable for a wide range of operating conditions.

Notes

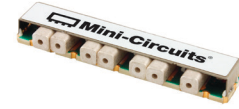
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
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- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp



Surface Mount Bandpass Filter

CBP-1423AF+

50Ω 1333 to 1513 MHz



Features

- High rejection of 50 dB.
- High selectivity
- Miniature shielded package

Generic photo used for illustration purposes only
CASE STYLE:SV2484

Electrical Specifications ⁽¹⁾ at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	-	-	1423	-	MHz	
	Insertion Loss	F1-F2	1333-1513	-	1.8	3.0	dB
	VSWR	F1-F2	1333-1513	-	1.5	1.9	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-1113	50	60	-	dB
	VSWR	DC-F3	DC-1113	-	20	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	1669-2600	50	55	-	dB
	VSWR	F4-F5	1669-2600	-	20	-	:1

(1) Measured on Mini-Circuits Characterization Test Board TB-1069+.

Maximum Ratings

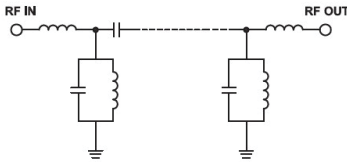
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	10 W Max.

Permanent damage may occur if any of these limits are exceeded.

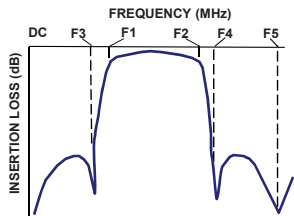
Applications

- Aviation
- Military radar
- Radio astronomy

Functional Schematic



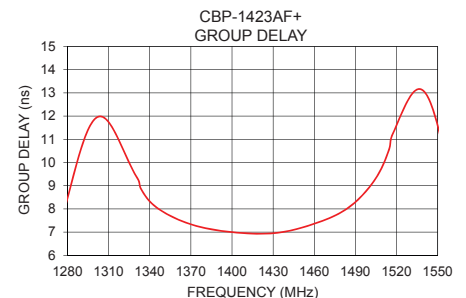
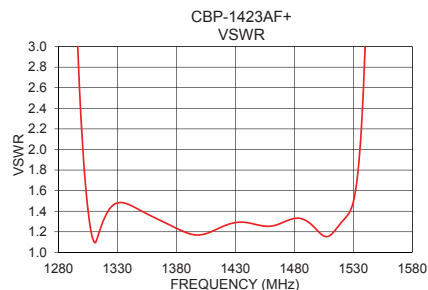
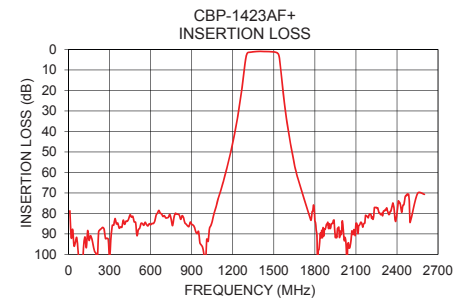
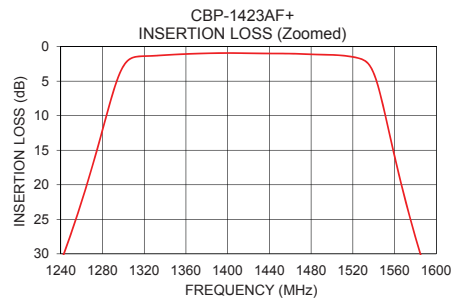
Typical Frequency Response



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
10	78.76	283.40	1333	8.95
210	102.89	149.75	1345	8.06
1000	105.82	263.03	1353	7.76
1113	68.68	133.77	1355	7.70
1209	42.58	55.94	1391	7.06
1242	30.38	35.97	1401	6.99
1263	20.97	23.54	1411	6.95
1299	3.09	2.33	1417	6.93
1333	1.30	1.48	1423	6.93
1423	0.97	1.27	1427	6.94
1513	1.34	1.19	1429	6.95
1540	3.85	2.99	1431	6.96
1567	20.25	31.92	1451	7.19
1585	30.15	56.24	1461	7.38
1669	61.40	123.86	1469	7.55
2200	80.26	118.63	1479	7.83
2350	79.07	125.98	1487	8.15
2400	79.97	129.79	1501	9.00
2500	83.56	137.26	1509	9.75
2600	70.68	132.11	1513	10.31

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



Notes

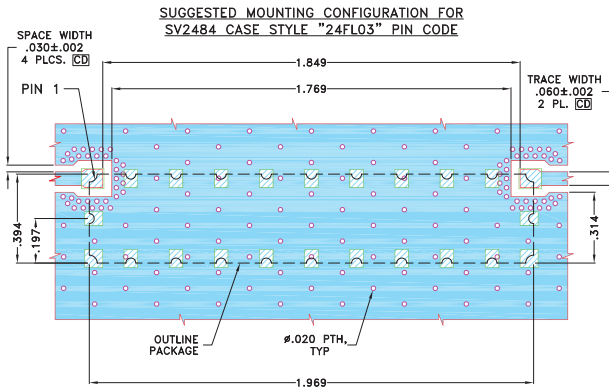
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Pad Connections

INPUT	1
OUTPUT	11
GROUND	2 - 10, 12 - 24

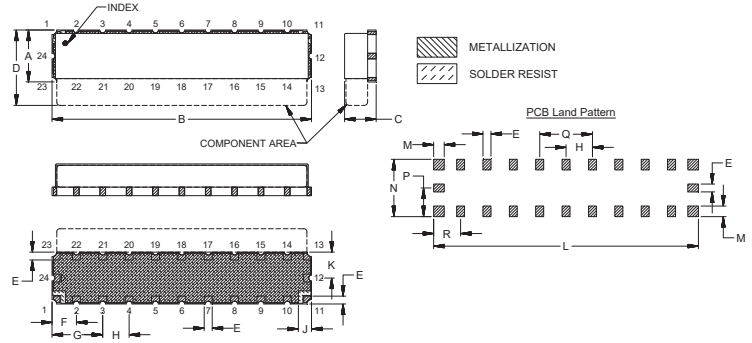
Demo Board MCL P/N: TB-1069+ Suggested PCB Layout (PL-604)



NOTES:

- TRACE WIDTH IS SHOWN FOR ROEGERS (R04350B), WITH DIELECTRIC THICKNESS .030±.002". COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
 - DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 - DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K
.394	1.969	.240	.492	.060	.184	.384	.200	.100	.197
10.00	50.00	6.10	12.50	1.52	4.68	9.76	5.08	2.54	5.00
L	M	N	P	Q	R	Wt.			
2.009	.080	.434	.217	.400	.204	grams			
51.02	2.03	11.02	5.51	10.16	5.19	7.0			

Note: Please refer to case style drawing for details

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Typical Performance Data

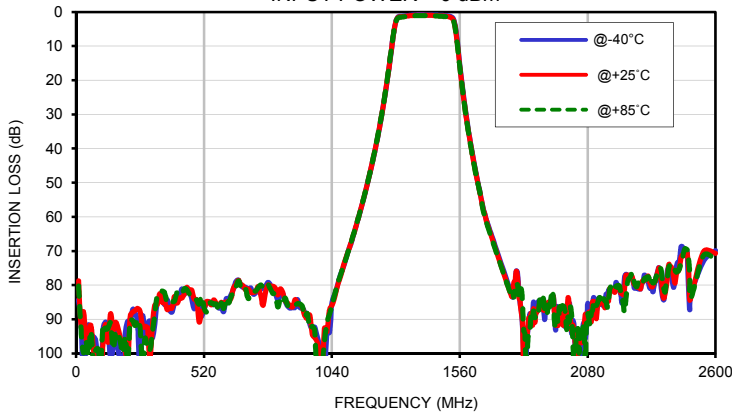
FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
10	84.35	78.76	80.24	0.06	0.06	0.06	0.05	0.06	0.06
50	91.61	94.09	100.47	0.07	0.08	0.07	0.07	0.08	0.08
100	108.06	109.60	102.60	0.09	0.09	0.09	0.09	0.10	0.09
210	90.59	102.89	102.38	0.11	0.12	0.11	0.12	0.13	0.12
500	85.91	90.79	85.59	0.06	0.09	0.10	0.09	0.11	0.12
600	87.73	85.51	86.84	0.04	0.07	0.08	0.07	0.10	0.11
980	94.92	96.61	108.69	0.01	0.06	0.08	0.02	0.07	0.10
1000	104.33	105.82	105.03	0.01	0.07	0.09	0.02	0.08	0.11
1113	68.78	68.68	68.58	0.07	0.13	0.16	0.07	0.13	0.16
1170	54.50	54.36	54.32	0.14	0.21	0.24	0.13	0.20	0.23
1209	42.69	42.58	42.51	0.24	0.31	0.35	0.21	0.29	0.33
1242	30.49	30.38	30.26	0.40	0.48	0.53	0.35	0.43	0.48
1251	26.66	26.54	26.41	0.47	0.56	0.62	0.41	0.50	0.56
1263	21.11	20.97	20.81	0.63	0.74	0.82	0.55	0.66	0.73
1299	3.08	3.09	3.12	7.06	7.95	8.63	6.51	7.20	7.72
1333	1.15	1.30	1.40	13.89	14.20	14.67	13.81	14.15	14.66
1369	0.89	1.02	1.13	17.20	17.79	17.96	17.99	18.76	18.99
1375	0.85	0.99	1.10	18.20	18.70	18.80	19.33	20.01	20.14
1401	0.79	0.93	1.03	21.79	22.08	22.63	22.69	22.91	23.68
1411	0.80	0.94	1.04	19.97	20.52	21.16	19.61	20.10	20.76
1419	0.82	0.96	1.06	18.46	19.09	19.62	17.86	18.44	18.95
1423	0.83	0.97	1.07	17.91	18.55	19.01	17.32	17.93	18.38
1513	1.13	1.34	1.50	21.49	21.11	21.29	29.92	28.96	29.56
1540	3.33	3.85	4.19	6.37	6.05	5.95	8.42	8.19	8.23
1567	19.74	20.25	20.52	0.44	0.54	0.61	0.89	1.02	1.13
1585	29.76	30.15	30.39	0.22	0.31	0.36	0.48	0.59	0.67
1603	38.11	38.42	38.65	0.14	0.23	0.27	0.31	0.41	0.48
1669	61.06	61.40	61.87	0.06	0.14	0.17	0.11	0.19	0.24
1775	83.58	82.25	82.07	0.05	0.13	0.16	0.05	0.13	0.18
1780	80.95	79.20	83.49	0.06	0.13	0.16	0.05	0.13	0.18
1785	79.16	78.75	80.62	0.06	0.13	0.16	0.05	0.13	0.18
1790	75.83	75.92	79.41	0.06	0.13	0.16	0.05	0.13	0.17
1795	76.43	77.88	80.04	0.06	0.13	0.16	0.05	0.13	0.17
1810	87.17	88.30	81.20	0.05	0.13	0.15	0.05	0.13	0.17
1890	84.43	85.34	85.20	0.06	0.13	0.16	0.06	0.13	0.17
1895	86.78	84.37	84.65	0.06	0.13	0.16	0.06	0.13	0.17
1900	85.79	87.36	83.93	0.06	0.13	0.16	0.06	0.13	0.17
1905	90.10	85.04	87.20	0.06	0.13	0.16	0.06	0.13	0.17
1920	85.13	85.17	85.76	0.06	0.13	0.16	0.06	0.14	0.18
1935	83.28	83.46	81.54	0.06	0.14	0.16	0.07	0.14	0.18
1950	93.16	91.75	92.51	0.07	0.14	0.16	0.07	0.14	0.18
1965	87.98	87.47	86.37	0.07	0.14	0.16	0.07	0.14	0.18
1980	88.15	91.76	86.06	0.07	0.14	0.16	0.07	0.14	0.18
1995	90.43	89.20	93.03	0.07	0.14	0.16	0.07	0.14	0.18
2010	87.93	90.06	86.40	0.07	0.14	0.17	0.08	0.15	0.18
2025	91.51	93.03	104.62	0.07	0.14	0.17	0.08	0.15	0.19
2040	94.89	94.93	92.86	0.07	0.14	0.17	0.08	0.15	0.19
2055	97.68	96.72	96.11	0.07	0.14	0.17	0.08	0.15	0.19
2070	95.62	88.63	102.96	0.07	0.14	0.17	0.08	0.15	0.19
2085	87.05	87.91	89.99	0.07	0.14	0.17	0.08	0.15	0.19
2100	85.32	84.89	87.27	0.07	0.14	0.17	0.09	0.16	0.19
2115	87.56	89.86	86.05	0.07	0.14	0.17	0.09	0.16	0.19
2150	84.60	86.67	84.67	0.08	0.14	0.17	0.09	0.16	0.19
2170	81.67	80.97	81.07	0.08	0.14	0.17	0.09	0.16	0.19
2200	80.07	80.26	80.61	0.08	0.15	0.17	0.10	0.17	0.20
2400	78.28	79.97	78.90	0.06	0.13	0.16	0.12	0.19	0.22
2450	73.65	75.76	75.77	0.06	0.13	0.16	0.13	0.20	0.24
2500	82.69	83.56	83.79	0.06	0.13	0.15	0.13	0.21	0.25
2550	73.13	70.31	71.42	0.06	0.13	0.16	0.15	0.23	0.27
2600	69.91	70.68	72.37	0.06	0.13	0.16	0.17	0.26	0.30

Typical Performance Data

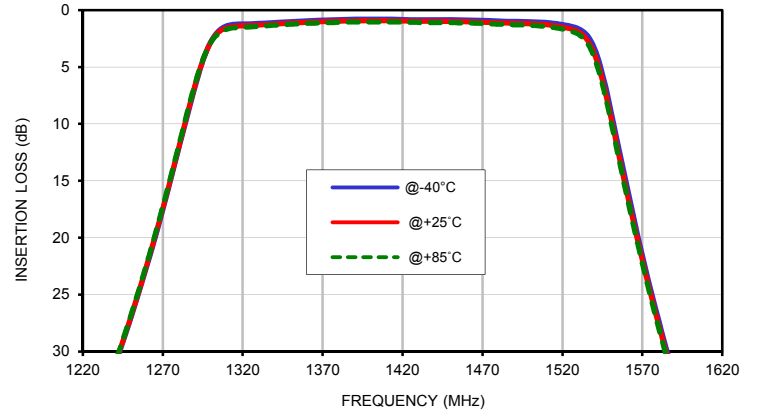
FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
1333	9.02	8.95	8.90
1337	8.59	8.54	8.51
1341	8.30	8.26	8.24
1345	8.09	8.06	8.04
1349	7.92	7.90	7.88
1353	7.78	7.76	7.74
1357	7.66	7.64	7.62
1361	7.55	7.53	7.51
1365	7.46	7.44	7.42
1369	7.38	7.36	7.33
1373	7.30	7.28	7.26
1377	7.24	7.22	7.20
1381	7.19	7.17	7.14
1385	7.14	7.12	7.10
1389	7.10	7.08	7.06
1393	7.07	7.05	7.03
1397	7.04	7.02	7.00
1401	7.01	6.99	6.98
1405	6.99	6.97	6.96
1409	6.97	6.95	6.95
1413	6.95	6.94	6.93
1417	6.94	6.93	6.93
1421	6.93	6.93	6.92
1423	6.93	6.93	6.93
1429	6.95	6.95	6.94
1433	6.97	6.97	6.97
1437	7.00	7.00	7.00
1441	7.04	7.05	7.04
1445	7.10	7.10	7.09
1449	7.16	7.16	7.15
1453	7.23	7.23	7.22
1457	7.30	7.30	7.30
1461	7.38	7.38	7.38
1465	7.46	7.46	7.46
1469	7.55	7.55	7.55
1473	7.65	7.65	7.66
1477	7.76	7.77	7.77
1479	7.82	7.83	7.84
1481	7.89	7.90	7.91
1483	7.96	7.98	7.98
1485	8.04	8.06	8.07
1487	8.13	8.15	8.16
1489	8.22	8.24	8.25
1491	8.32	8.35	8.36
1493	8.43	8.46	8.47
1495	8.55	8.58	8.59
1497	8.68	8.71	8.72
1499	8.82	8.85	8.86
1501	8.96	9.00	9.01
1503	9.12	9.16	9.17
1513	10.25	10.31	10.34

Typical Performance Curves

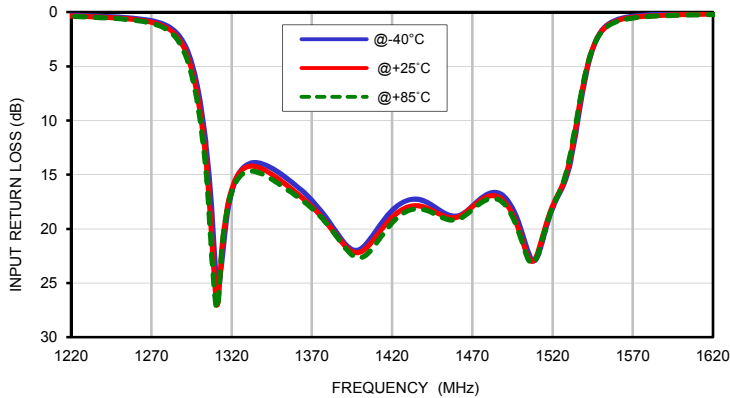
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



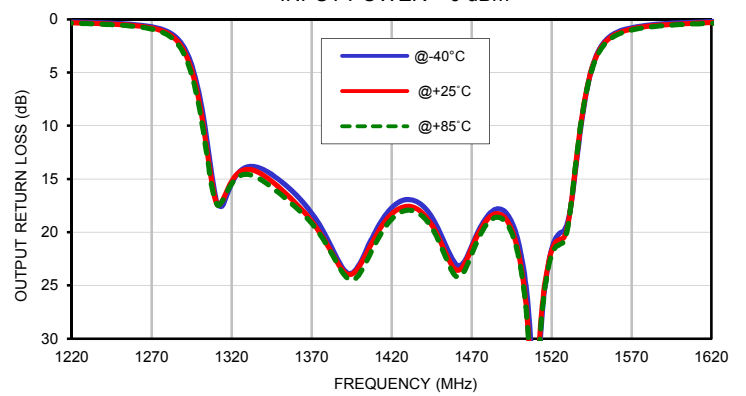
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



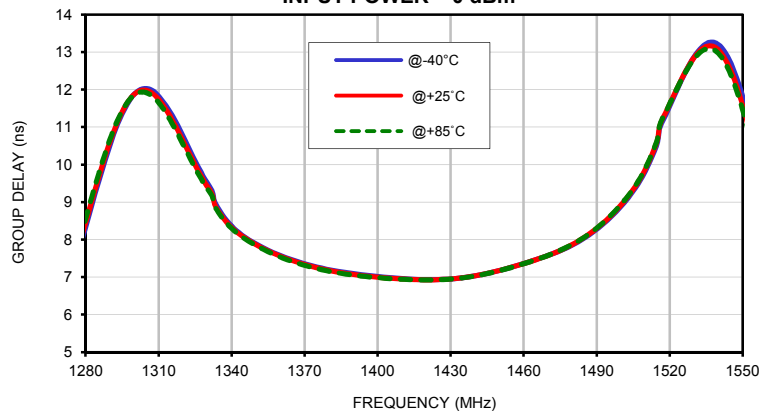
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



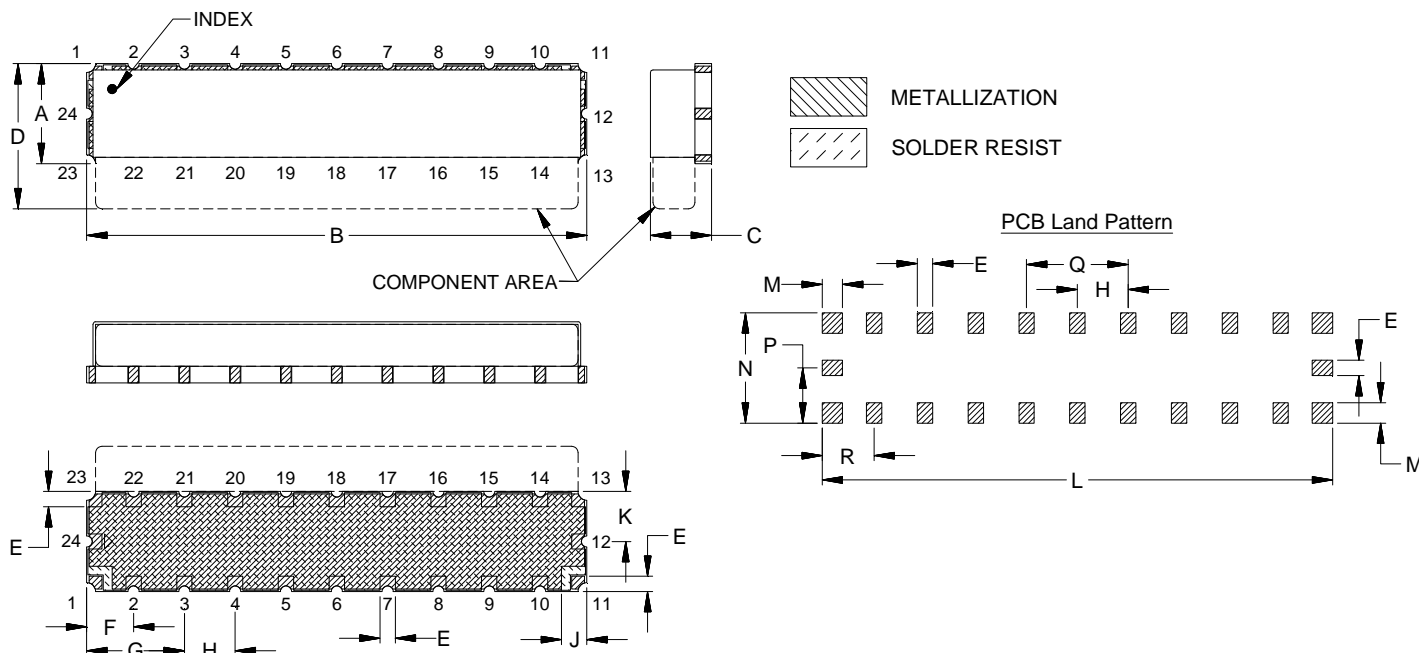
OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M
SV2484	.394 (10.00)	1.969 (50.00)	.240 (6.10)	.492 (12.50)	.060 (1.52)	.184 (4.68)	.384 (9.76)	.200 (5.08)	.100 (2.54)	.197 (5.00)	2.009 (51.02)	.080 (2.03)

CASE#	N	P	Q	R	WT. GRAMS
SV2484	.434 (11.02)	.217 (5.51)	.400 (10.16)	.204 (5.19)	7.0

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:
 - For RoHS Case Styles: 3-5 μ inch Gold over 120-240 μ inch Nickel plate.
 - For RoHS-5 Case Styles: Tin-Lead plate.



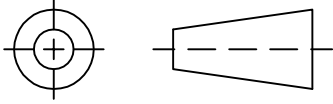
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

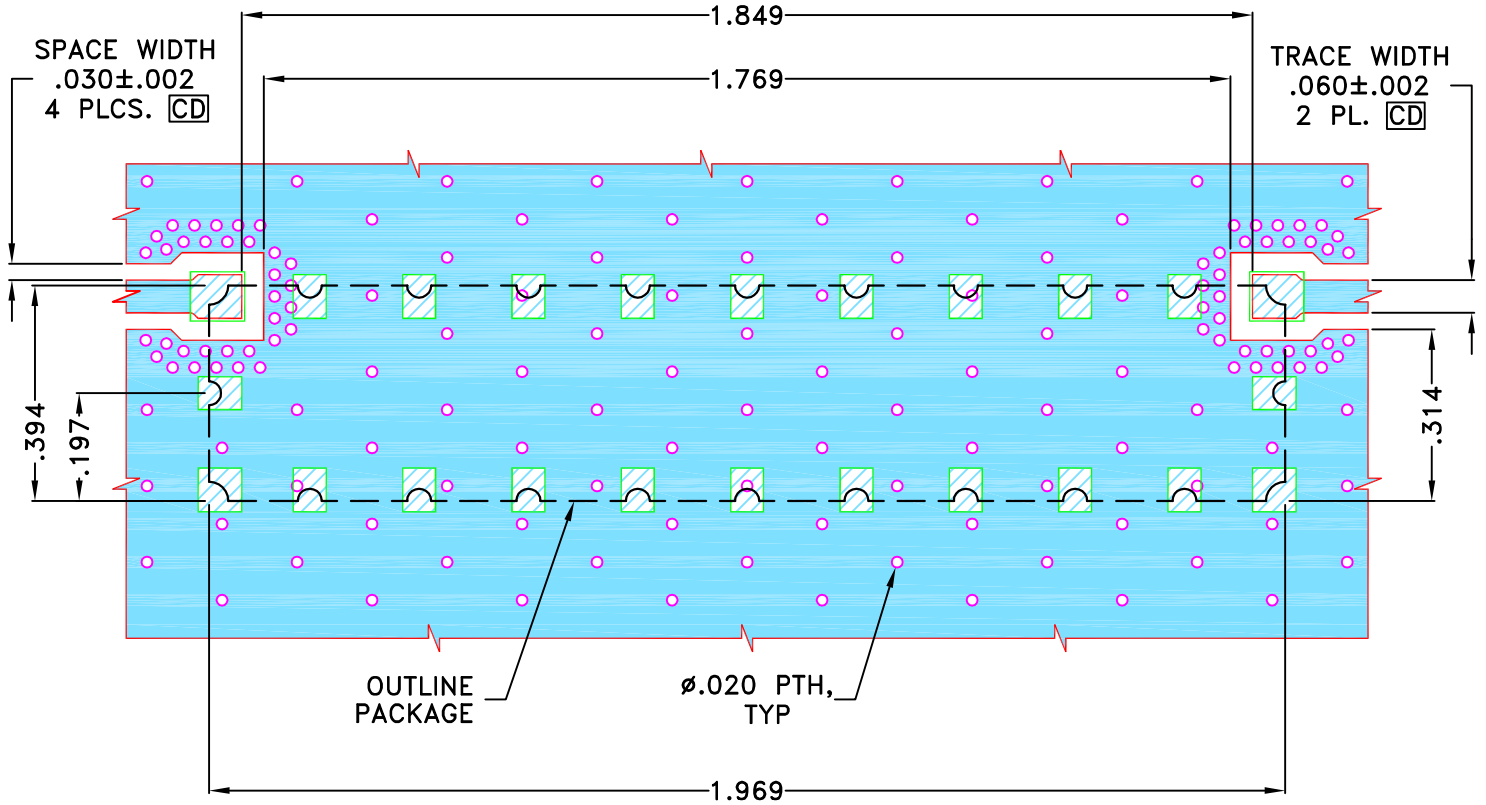
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M169276	NEW RELEASE	AUG 18	TM	MD

SUGGESTED MOUNTING CONFIGURATION FOR SV2484 CASE STYLE "24FL03" PIN CODE



NOTES:

- TRACE WIDTH IS SHOWN FOR REOGERS (R04350B), WITH DIELECTRIC THICKNESS .030"±.002". COPPER: 1/2 Oz. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.



DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED	INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN TM	16 AUG 18
TOLERANCES ON:	CHECKED MD	16 AUG 18
2 PL DECIMALS ±	APPROVED KK	16 AUG 18
3 PL DECIMALS ± .005"		
ANGLES ±		
FRACTIONS ±		

PL, 24FL03, SV2484, CBP
TB-1069+, 50 Ohm

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SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-604	REV: OR
FILE: 98PL604	SCALE: 3:1	SHEET: 1 OF 1	

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 96 hours, 40°C	MIL-STD-202, Method 103B, Condition B, Except 50°C
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A