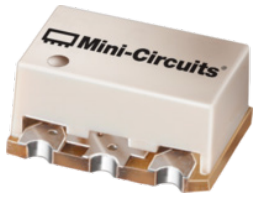
Surface Mount

Bandpass Filter

SYBP-1275+

50Ω 1100 to 1450 MHz



Generic photo used for illustration purposes only

CASE STYLE: TT1423

The Big Deal

- Small size (0.25" X 0.31" X 0.15")
- High power handling, 8 W
- Low insertion loss, 1.6 dB typ.

Product Overview

SYBP-1275+ is a 50Ω bandpass filter fabricated using SMT technology. The bandpass filter covers from 1100 to 1450 MHz offering low insertion loss and good matching within the passband. It is fabricated in a tiny housing with very good power handling capabilities.

Key Features

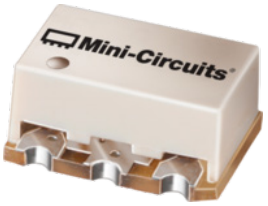
Feature	Advantages
Small size (0.25" X 0.31" X 0.15")	Saves space in dense circuit board layouts.
High power handling, 8 W	Supports a wide range of system power requirements.
Low insertion loss, 1.6 dB typ.	Low insertion loss enables usage in satellite transmitters.

Surface Mount

Bandpass Filter

50Ω 1100 to 1450 MHz

SYBP-1275+



Generic photo used for illustration purposes only
CASE STYLE: TT1423

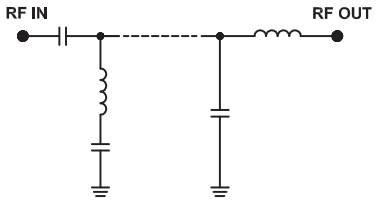
Features

- High power handling
- Small size
- Temperature stable

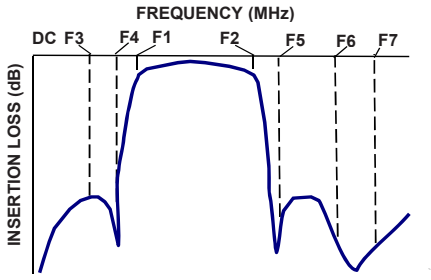
Applications

- Military radio
- Lab use
- Satellite communication

Functional Schematic



Typical Frequency Response



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

Electrical Specifications at 25°C

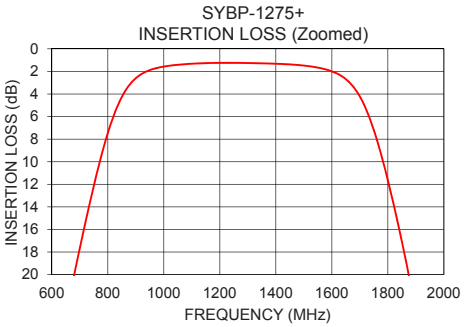
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	-	1275	-	MHz
	Insertion Loss	F1-F2	1100 - 1450	-	1.6	2.5	dB
	VSWR	F1-F2	1100 - 1450	-	1.9	-	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 500	30	38	-	dB
		F3-F4	500 - 600	20	28	-	dB
	VSWR	DC-F4	DC - 600	-	28	-	:1
Stop Band, Upper	Insertion Loss	F5-F6	2050 - 3700	20	30	-	dB
		F6-F7	3700 - 5000	-	25	-	dB
	VSWR	F5-F7	2050 - 5000	-	19	-	:1

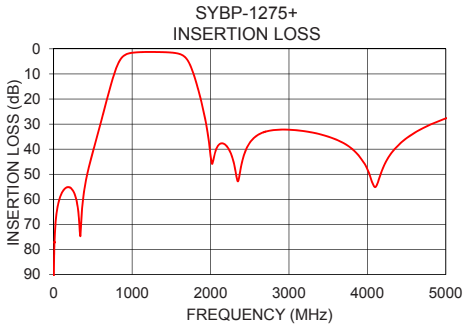
Maximum Ratings	
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	8 W max. at 25°C

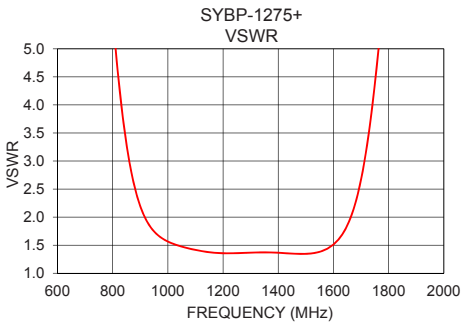
*Passband rating, derate linearly to 3 W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
10	77.26	390.02
100	57.65	568.03
200	55.17	321.04
250	56.75	220.58
500	40.97	50.77
600	29.46	32.29
675	20.58	21.26
880	3.11	2.44
1100	1.32	1.48
1275	1.25	1.46
1450	1.38	1.40
1665	3.02	1.92
1875	20.08	11.90
1950	31.10	15.29
2050	42.24	16.54
2500	37.44	10.56
3000	32.25	27.21
3700	37.64	49.27
4000	47.99	52.12
5000	27.74	46.57







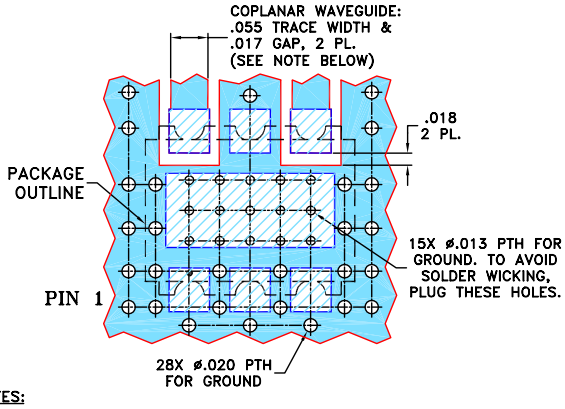
Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. 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

Pad Connections

INPUT	4
OUTPUT	6
GROUND	1,2,3,5

Demo Board MCL P/N: TB-1122+
Suggested PCB Layout (PL-308)

SUGGESTED MOUNTING CONFIGURATION
FOR TT1423 CASE STYLE "06FL04" PIN CONNECTION

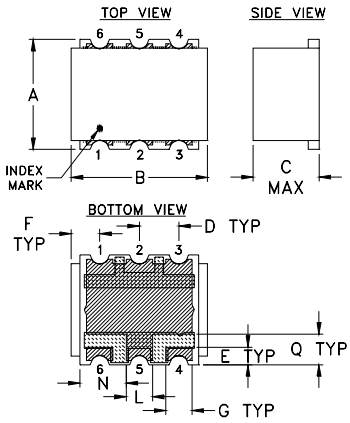


NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

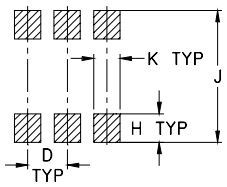
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Outline Drawing



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

METALLIZATION
SOLDER RESIST

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
.25	.31	.15	.090	.040	.065	.060	.065
6.35	7.87	3.81	2.29	1.02	1.65	1.52	1.65

J	K	L	N	Q	wt.
.300	.060	.060	.105	.070	grams
7.62	1.52	1.52	2.67	1.78	0.50

Note: Please refer to case style drawing for details

Surface Mount Band Pass Filter SYBP-1275+

Typical Performance Data

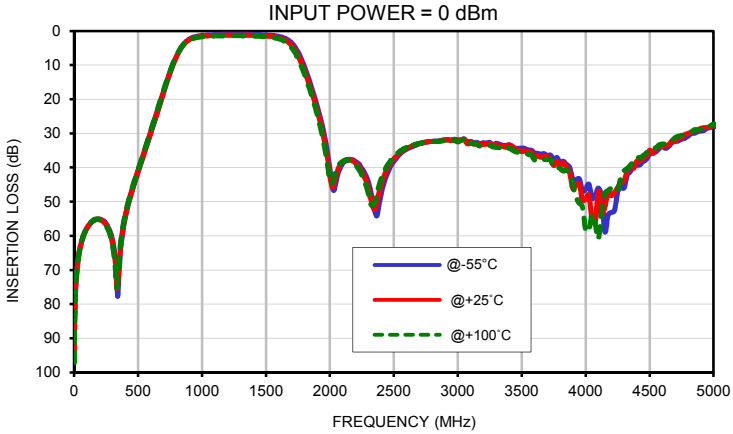
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
10	76.86	76.33	76.23	0.05	0.05	0.05	0.05	0.05	0.05
40	64.74	64.70	64.68	0.03	0.04	0.04	0.04	0.04	0.04
50	62.88	62.88	62.65	0.03	0.04	0.04	0.04	0.04	0.05
60	61.59	61.35	61.35	0.04	0.04	0.05	0.04	0.04	0.04
70	60.42	60.14	60.07	0.04	0.05	0.05	0.03	0.04	0.04
80	59.38	59.27	59.07	0.04	0.05	0.06	0.03	0.04	0.04
100	57.89	57.62	57.56	0.04	0.06	0.07	0.03	0.04	0.04
110	57.20	57.02	56.96	0.05	0.07	0.09	0.03	0.04	0.05
120	56.73	56.68	56.43	0.05	0.08	0.10	0.02	0.04	0.05
150	55.62	55.51	55.39	0.08	0.12	0.14	0.02	0.04	0.06
160	55.40	55.35	55.23	0.09	0.14	0.16	0.03	0.05	0.06
200	55.18	55.26	55.30	0.15	0.20	0.23	0.03	0.06	0.08
230	55.60	55.90	56.12	0.20	0.26	0.30	0.04	0.08	0.09
250	56.46	56.82	57.01	0.24	0.30	0.34	0.05	0.09	0.11
280	58.66	59.27	59.58	0.30	0.37	0.41	0.07	0.11	0.13
300	61.29	61.89	62.72	0.33	0.42	0.46	0.08	0.12	0.14
340	77.71	75.11	73.16	0.41	0.51	0.57	0.11	0.15	0.17
360	65.32	64.25	63.09	0.44	0.55	0.62	0.12	0.17	0.19
400	54.63	54.11	53.70	0.51	0.64	0.73	0.16	0.21	0.24
430	49.83	49.49	49.19	0.56	0.71	0.81	0.18	0.24	0.27
450	47.19	46.86	46.55	0.59	0.75	0.86	0.20	0.26	0.30
480	43.52	43.23	42.94	0.64	0.81	0.94	0.23	0.30	0.34
500	41.21	40.92	40.66	0.67	0.85	0.98	0.25	0.33	0.38
550	35.51	35.23	34.95	0.75	0.95	1.10	0.32	0.41	0.47
600	29.72	29.44	29.13	0.83	1.06	1.23	0.41	0.52	0.59
650	23.82	23.52	23.20	0.94	1.19	1.39	0.53	0.67	0.77
675	20.87	20.56	20.24	1.02	1.29	1.49	0.63	0.79	0.91
800	7.56	7.42	7.25	2.59	3.07	3.44	2.39	2.87	3.30
880	2.96	3.08	3.13	6.51	7.20	7.78	6.71	7.54	8.27
1000	1.32	1.54	1.69	12.67	13.19	13.68	12.88	13.29	13.53
1100	1.07	1.29	1.44	14.66	15.37	15.77	14.08	14.16	14.14
1200	0.98	1.21	1.36	16.18	16.44	16.55	14.81	14.55	14.42
1275	0.97	1.21	1.36	16.38	16.32	16.55	14.93	14.62	14.67
1400	1.02	1.29	1.45	16.43	16.34	16.84	15.41	15.19	15.51
1450	1.07	1.35	1.53	16.58	16.64	17.04	15.69	15.56	15.80
1500	1.16	1.46	1.67	16.46	16.67	16.84	15.79	15.78	15.87
1550	1.31	1.63	1.89	15.63	15.86	15.72	15.31	15.45	15.38
1600	1.58	1.97	2.29	13.67	13.72	13.34	13.89	14.08	13.81
1650	2.15	2.66	3.11	10.60	10.41	9.98	11.12	11.09	10.69
1665	2.43	3.00	3.51	9.51	9.28	8.89	10.03	9.93	9.54
1700	3.44	4.19	4.84	6.97	6.75	6.50	7.37	7.21	6.94
1750	6.11	7.15	8.00	4.01	3.98	3.96	4.15	4.14	4.10
1800	10.34	11.56	12.52	2.33	2.46	2.57	2.32	2.45	2.55
1875	18.64	20.02	21.12	1.32	1.52	1.67	1.23	1.43	1.58
1900	21.84	23.29	24.48	1.16	1.37	1.52	1.07	1.28	1.44
1950	29.25	31.00	32.56	0.96	1.17	1.31	0.89	1.12	1.28
2050	43.97	42.16	40.93	0.71	0.92	1.06	0.74	1.02	1.21
2100	38.82	38.45	38.22	0.65	0.85	0.99	0.75	1.06	1.28
2150	37.59	37.68	37.98	0.60	0.80	0.93	0.79	1.14	1.38
2200	38.21	38.69	39.25	0.54	0.74	0.87	0.85	1.25	1.52
2300	44.17	45.95	47.60	0.48	0.67	0.80	1.06	1.53	1.86
2400	47.82	45.04	43.31	0.43	0.62	0.73	1.22	1.70	2.02
2500	38.16	37.41	36.84	0.40	0.58	0.68	1.21	1.63	1.88
3000	31.91	32.23	32.49	0.24	0.42	0.51	0.35	0.59	0.73
3100	32.32	32.59	32.90	0.23	0.40	0.50	0.27	0.50	0.63
3700	36.53	36.74	37.68	0.13	0.37	0.50	0.08	0.29	0.43
4000	46.32	49.33	58.37	0.08	0.31	0.48	0.08	0.27	0.39
4200	53.17	48.22	46.07	0.10	0.34	0.50	0.10	0.29	0.37
4300	45.98	43.91	40.99	0.16	0.37	0.51	0.10	0.28	0.36
5000	27.64	27.35	27.26	0.14	0.34	0.47	0.17	0.38	0.44

Typical Performance Data

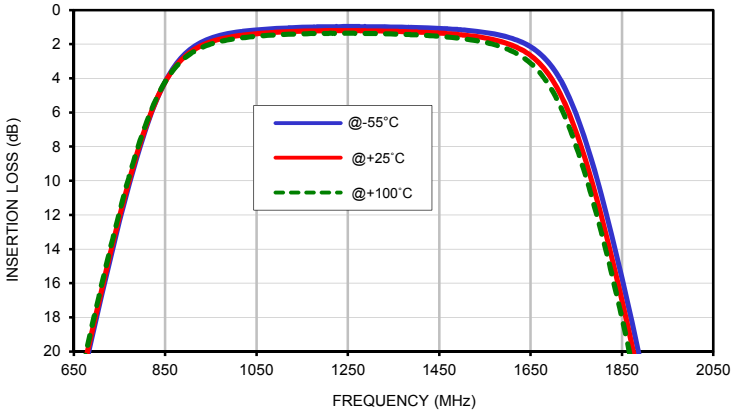
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-55°C	@+25°C	@+100°C
1100	1.34	1.32	1.31
1108	1.32	1.31	1.29
1116	1.31	1.30	1.28
1124	1.30	1.29	1.27
1132	1.29	1.28	1.26
1140	1.28	1.26	1.25
1148	1.26	1.25	1.24
1156	1.25	1.24	1.23
1164	1.25	1.24	1.22
1172	1.24	1.23	1.22
1180	1.24	1.22	1.21
1188	1.22	1.21	1.20
1196	1.22	1.20	1.19
1204	1.21	1.20	1.18
1212	1.21	1.19	1.18
1220	1.20	1.19	1.18
1228	1.20	1.19	1.18
1236	1.19	1.18	1.17
1244	1.19	1.17	1.17
1252	1.18	1.17	1.16
1260	1.18	1.17	1.16
1268	1.18	1.17	1.17
1275	1.18	1.17	1.17
1284	1.18	1.17	1.16
1292	1.17	1.16	1.16
1300	1.17	1.16	1.16
1308	1.17	1.16	1.16
1316	1.18	1.17	1.17
1324	1.18	1.17	1.17
1332	1.18	1.17	1.17
1340	1.18	1.17	1.17
1348	1.18	1.17	1.17
1356	1.18	1.17	1.17
1364	1.18	1.18	1.18
1372	1.19	1.19	1.19
1380	1.20	1.20	1.20
1388	1.20	1.20	1.20
1400	1.21	1.20	1.21
1410	1.22	1.21	1.22
1420	1.23	1.23	1.23
1450	1.26	1.26	1.26

Typical Performance Curves

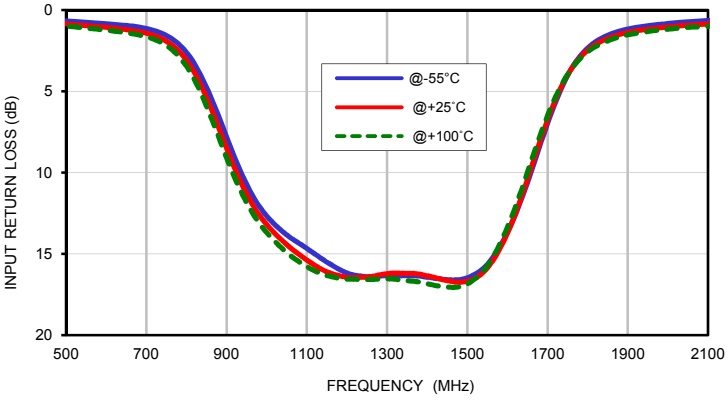
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



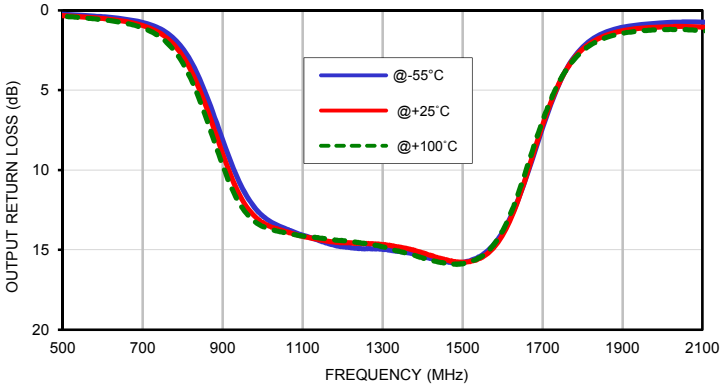
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



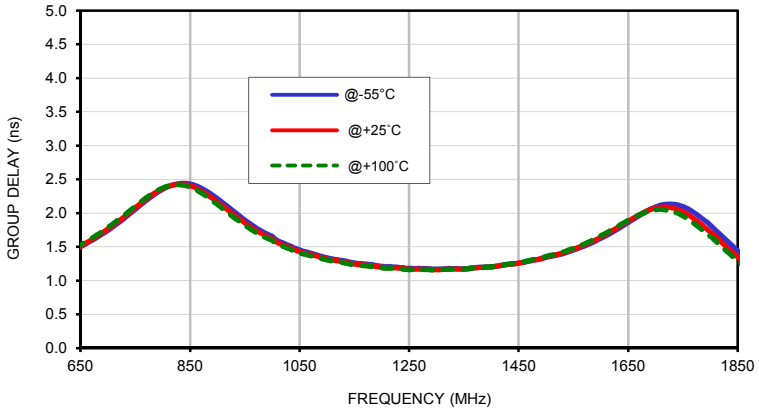
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



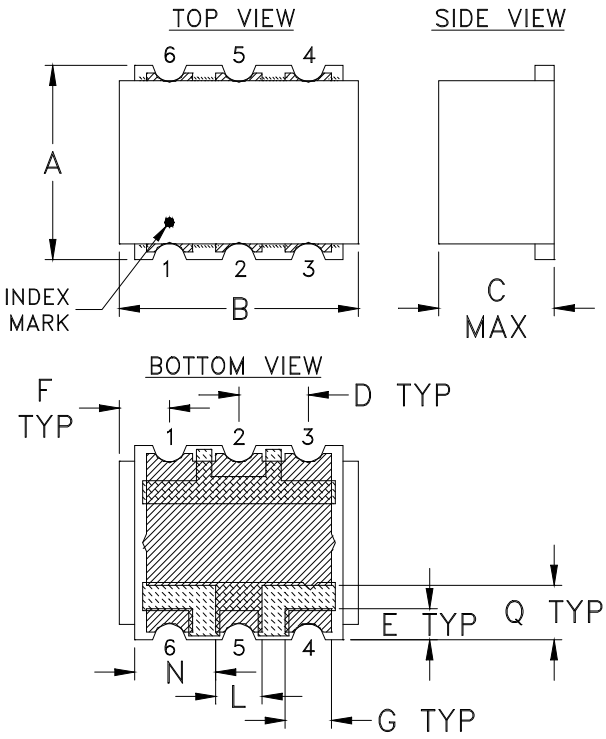
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



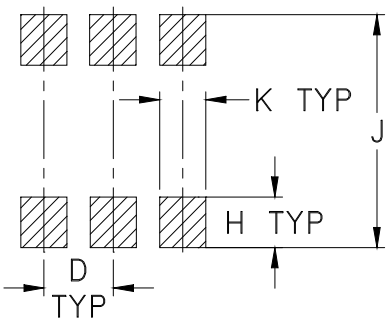
Case Style TT

TT1423

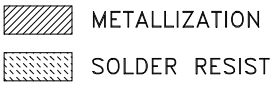
Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002



CASE #	A	B	C	D	E	F	G	H	J	K	L	M
TT1423	.25 (6.35)	.31 (7.87)	.15 (3.81)	.090 (2.29)	.040 (1.02)	.065 (1.65)	.060 (1.52)	.065 (1.65)	.300 (7.62)	.060 (1.52)	.060 (1.52)	- -

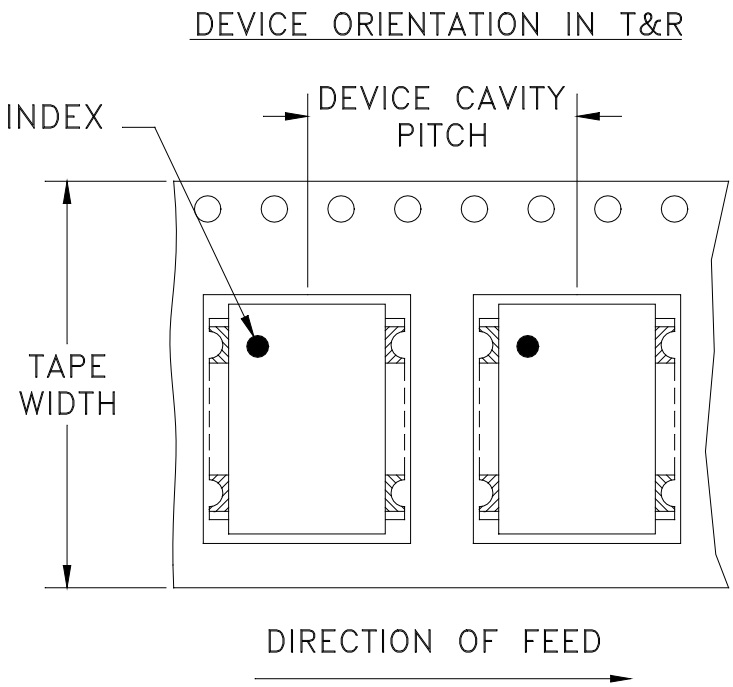
CASE #	N	P	Q	WT. GRAM
TT1423	.105 (2.67)	- -	.070 (1.78)	.50

Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3 Pl. ± .005

Notes:

1. Case material: Plastic.
3. Terminations: 2-10 µ inch (.05-.25 microns) Gold over 100-300 µ inch (2.54-7.62 microns) Nickel plate.

Tape & Reel Packaging TR-F2



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note
16	12	7	10
			20
			50
			100
			200
		13	500
			1000

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

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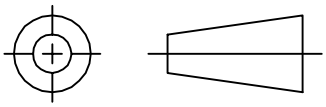
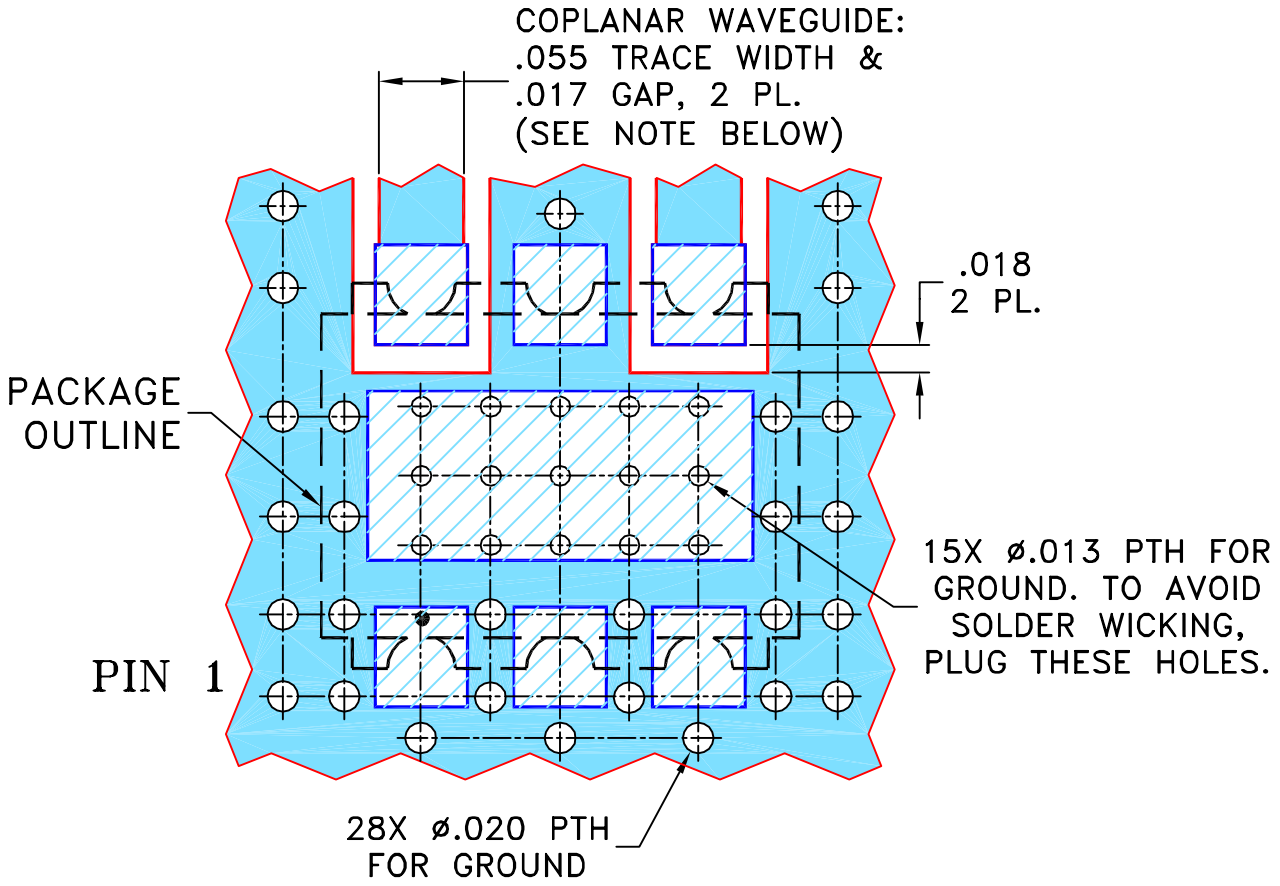
THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M123346	NEW RELEASE	07/10/09	AV	DY

SUGGESTED MOUNTING CONFIGURATION FOR TT1423 CASE STYLE "06FL04" PIN CONNECTION



NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. 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 SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	AV	06/22/09
TOLERANCES ON:	CHECKED	IL	07/10/09
2 PL DECIMALS ±	APPROVED	DY	07/10/09
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®

ASHEETA1.DWG REV:A DATE:01/12/95

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 06FL04, TT1423, SYBP, TB-517+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-308	OR
FILE: 98PL308	SCALE: 8:1	SHEET: 1 OF 1	

Mini-Circuits

Environmental Specifications ENV02T1

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, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	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
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215