

Bandpass Filter

50Ω 480 to 1320 MHz

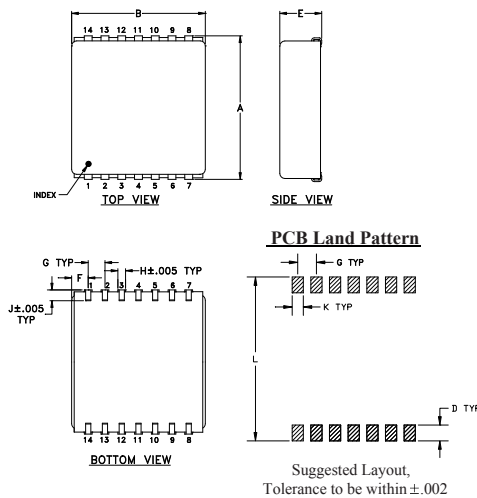
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5W
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

INPUT	2
OUTPUT	9
GROUND	1,3,4,5,6,7,8,10,11,12,13,14

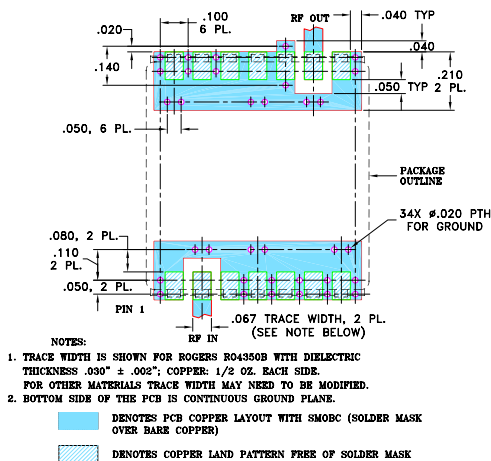
Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F
.870	.800	--	.100	.250	.100
22.09	20.32	--	2.54	6.35	2.54
G	H	J	K	L	wt.
.100	.047	.065	.065	.890	grams
2.54	1.19	1.65	1.65	22.60	4.0

Demo Board MCL P/N: TB-442+ Suggested PCB Layout(PL-269)



- NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH 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

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

Features

- Good VSWR, 1.2:1 typ @ passband
- High stopband rejection
- Aqueous washable

Applications

- Harmonic rejection
- Transmitters/receivers
- Military communications

JCBP-900+



CASE STYLE: BG291

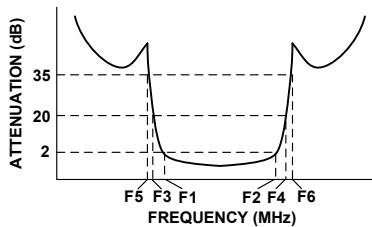
+RoHS Compliant

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

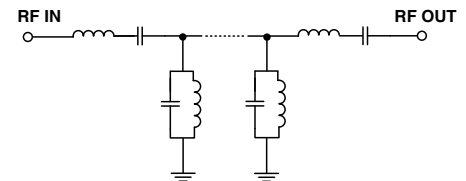
Bandpass Filter Electrical Specifications (T_{AMB} = 25°C)

CENTER FREQ. (MHz)	PASSBAND (MHz) (Loss < 2dB)	STOPBANDS (MHz)				VSWR (:1)	
		Loss > 20dB		Loss 35dB Typ.		Passband	Stopband
	F1 - F2	F3	F4	F5	F6	Max.	Typ.
900	480 - 1320	380	1790	376	1800 - 3000	2.0	20

Typical Frequency Response

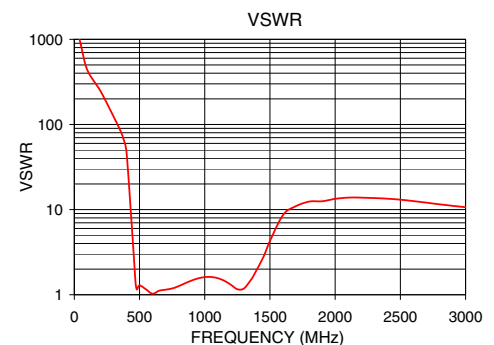


Functional Schematic



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
4.0	76.70	1737.18
100.0	52.57	434.30
200.0	62.04	248.17
376.0	37.48	69.49
380.0	35.44	66.82
420.0	15.63	26.33
438.0	7.66	9.33
450.0	3.67	3.91
480.0	0.85	1.15
900.0	0.78	1.47
1320.0	1.01	1.27
1420.0	1.98	2.25
1490.0	3.76	3.95
1550.0	7.41	6.37
1650.0	15.15	10.25
1790.0	33.08	12.26
1800.0	35.10	12.44
2500.0	34.80	13.09
3000.0	40.09	10.69



Surface Mount Band Pass Filter

JCBP-900+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURNLOSS (dB)		
	@ -40° C	@ +25° C	@ +85° C	@ -40° C	@ +25° C	@ +85° C	@ -40° C	@ +25° C	@ +85° C
0.5	97.75	91.25	105.36	0.01	0.00	0.00	0.01	0.00	0.00
10	69.15	69.30	69.26	0.01	0.00	0.01	0.01	0.01	0.01
20	63.18	63.48	62.94	0.01	0.01	0.01	0.00	0.01	0.00
30	59.33	59.50	59.25	0.01	0.01	0.01	0.01	0.03	0.02
40	57.38	57.24	57.21	0.01	0.01	0.01	0.01	0.02	0.02
50	55.73	55.63	55.72	0.01	0.01	0.01	0.00	0.02	0.03
60	54.36	54.28	54.48	0.01	0.01	0.02	0.00	0.03	0.05
70	53.53	53.56	53.62	0.01	0.01	0.02	0.00	0.03	0.06
80	53.10	52.88	53.11	0.00	0.01	0.01	0.00	0.04	0.07
90	52.55	52.48	52.54	0.00	0.02	0.02	0.01	0.05	0.08
100	52.25	52.46	52.35	0.02	0.02	0.03	0.01	0.06	0.10
150	55.66	55.62	55.63	0.02	0.03	0.05	0.07	0.13	0.17
210	56.36	56.87	56.78	0.04	0.06	0.07	0.17	0.25	0.31
250	47.77	47.86	47.83	0.07	0.09	0.11	0.26	0.33	0.40
300	45.55	45.63	45.84	0.10	0.13	0.16	0.37	0.46	0.54
350	46.61	46.61	46.62	0.18	0.21	0.25	0.46	0.57	0.66
376	37.32	37.12	36.85	0.23	0.28	0.31	0.48	0.60	0.70
380	35.36	35.12	34.87	0.25	0.30	0.34	0.48	0.61	0.71
390	30.29	30.06	29.81	0.28	0.33	0.40	0.50	0.65	0.75
400	25.28	25.02	24.77	0.34	0.40	0.46	0.54	0.69	0.80
420	15.75	15.53	15.31	0.64	0.73	0.83	0.75	0.95	1.09
430	11.16	10.98	10.79	1.04	1.19	1.32	1.11	1.37	1.56
440	6.97	6.87	6.75	1.99	2.24	2.44	2.02	2.37	2.63
450	3.78	3.78	3.76	4.15	4.54	4.86	4.09	4.57	4.95
460	1.82	1.92	1.99	8.33	8.86	9.30	8.07	8.68	9.13
470	0.96	1.10	1.20	15.24	15.92	16.48	14.35	14.93	15.42
480	0.67	0.82	0.92	28.19	28.89	29.54	22.76	22.77	22.95
500	0.59	0.72	0.81	22.36	22.42	22.59	21.59	21.83	22.17
600	0.42	0.53	0.62	22.95	23.11	23.38	23.90	24.28	24.68
700	0.38	0.51	0.60	17.88	17.73	17.75	18.57	18.71	18.98
800	0.43	0.57	0.68	16.46	15.96	15.70	17.13	16.88	16.80
900	0.58	0.73	0.86	13.47	13.13	12.95	13.88	13.74	13.72
1000	0.64	0.80	0.92	11.93	11.72	11.59	12.23	12.23	12.22
1100	0.65	0.81	0.94	12.63	12.44	12.37	12.82	12.95	13.04
1200	0.54	0.73	0.87	16.59	16.19	16.04	17.33	17.59	17.91
1300	0.53	0.75	0.92	17.40	16.22	15.63	18.83	17.78	17.30
1320	0.67	0.91	1.10	15.57	14.64	14.11	16.52	15.70	15.24
1400	1.24	1.55	1.79	9.45	9.17	8.98	9.19	8.98	8.79
1500	3.94	4.30	4.64	4.33	4.48	4.54	3.59	3.67	3.68
1600	10.67	11.25	11.76	1.54	1.80	1.98	0.88	1.07	1.18
1700	20.33	21.08	21.69	0.81	1.05	1.22	0.33	0.53	0.63
1790	35.00	36.17	37.20	0.65	0.86	1.02	0.21	0.41	0.54
1800	37.02	38.33	39.51	0.61	0.84	0.99	0.21	0.42	0.52
1900	36.10	36.07	35.93	0.56	0.77	0.92	0.18	0.37	0.48
2000	32.16	32.29	32.49	0.53	0.73	0.89	0.17	0.36	0.48
2100	31.71	31.86	32.01	0.56	0.77	0.95	0.19	0.37	0.50
2200	31.99	32.28	32.51	0.61	0.84	1.01	0.18	0.38	0.50
2300	32.71	33.10	33.29	0.67	0.91	1.10	0.15	0.37	0.48
2400	33.78	34.19	34.77	0.65	0.89	1.13	0.16	0.35	0.52
2500	34.73	34.85	35.29	0.65	0.94	1.17	0.16	0.38	0.53
2600	37.04	36.72	37.59	0.70	1.01	1.21	0.18	0.40	0.54
2700	40.36	40.82	40.97	0.76	1.07	1.29	0.11	0.36	0.51
2800	50.15	48.29	49.24	0.79	1.10	1.32	0.15	0.39	0.56
2900	66.54	54.33	56.96	0.75	1.06	1.24	0.13	0.40	0.56
3000	43.55	42.67	42.25	0.84	1.07	1.27	0.12	0.42	0.58

REV. X1

JCBP-900+

090402

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Surface Mount Band Pass Filter

JCBP-900+

Typical Performance Data

FREQ. (MHz)	GROUP DELAY (nsec)		
	@ -40° C	@ +25° C	@ +85° C
450	8.49	8.45	8.45
452	8.54	8.49	8.44
453	8.57	8.53	8.43
454	8.54	8.42	8.39
455	8.52	8.43	8.34
457	8.48	8.34	8.23
458	8.39	8.24	8.15
459	8.34	8.25	8.12
460	8.27	8.14	8.00
462	8.04	7.92	7.79
463	7.97	7.81	7.71
464	7.85	7.69	7.56
465	7.75	7.60	7.47
467	7.53	7.37	7.24
468	7.35	7.23	7.09
469	7.25	7.08	6.95
470	7.07	6.93	6.82
472	6.81	6.65	6.57
473	6.70	6.55	6.47
474	6.49	6.41	6.30
475	6.42	6.30	6.23
477	6.14	6.08	5.96
478	6.00	5.94	5.82
479	5.96	5.82	5.77
480	5.78	5.71	5.62
482	5.59	5.48	5.46
483	5.50	5.40	5.35
484	5.40	5.32	5.27
485	5.31	5.22	5.17
487	5.14	5.07	5.00
488	5.06	4.99	4.95
489	4.93	4.92	4.84
490	4.86	4.83	4.77
500	3.97	3.97	3.95
550	3.22	3.23	3.20
600	2.40	2.39	2.38
650	1.95	1.95	1.94
700	1.70	1.69	1.69
750	1.53	1.52	1.53
800	1.42	1.41	1.41
850	1.34	1.33	1.33
900	1.27	1.27	1.27
950	1.22	1.21	1.21
1000	1.19	1.18	1.18
1050	1.18	1.18	1.18
1100	1.19	1.19	1.19
1150	1.22	1.22	1.23
1200	1.27	1.27	1.27
1250	1.33	1.32	1.33
1300	1.48	1.48	1.51
1310	1.50	1.51	1.51
1320	1.45	1.44	1.44
1330	1.41	1.40	1.39
1340	1.48	1.47	1.48
1350	1.62	1.59	1.60

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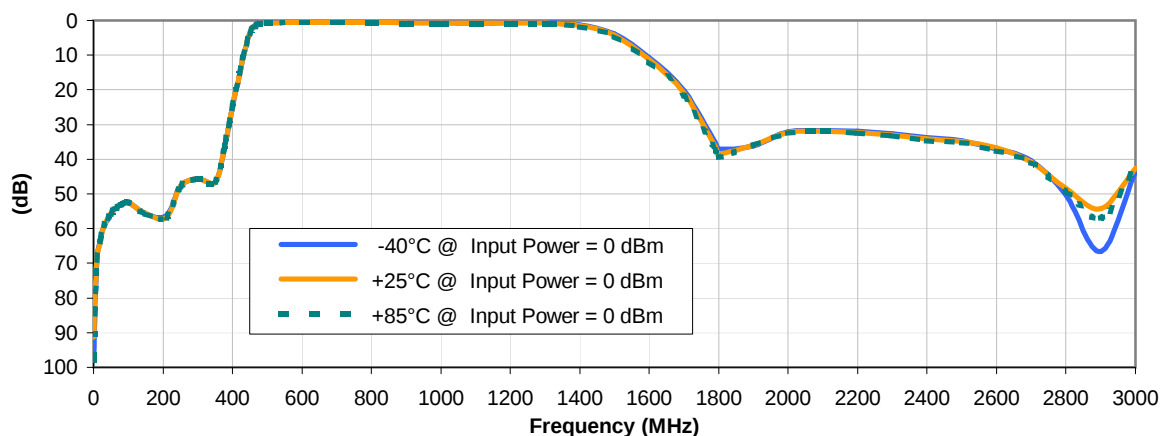


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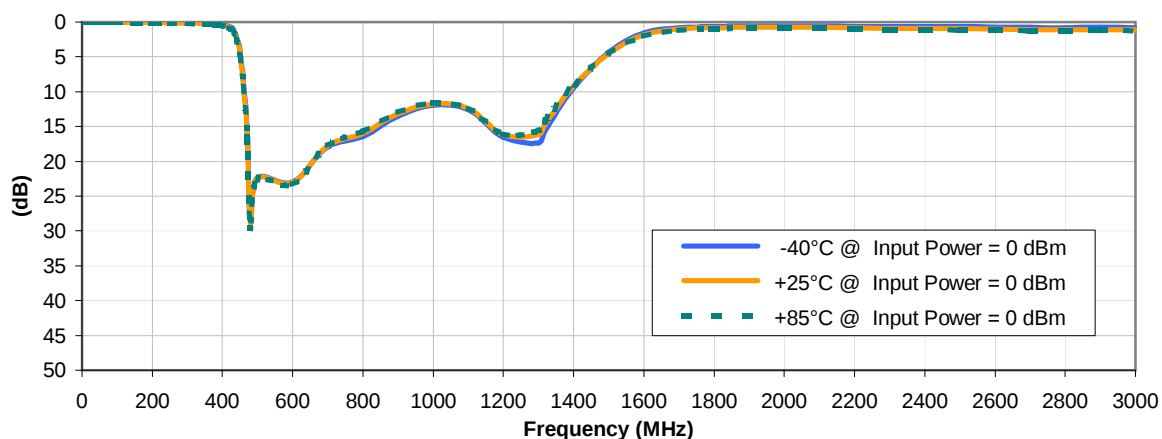


Typical Performance Curves

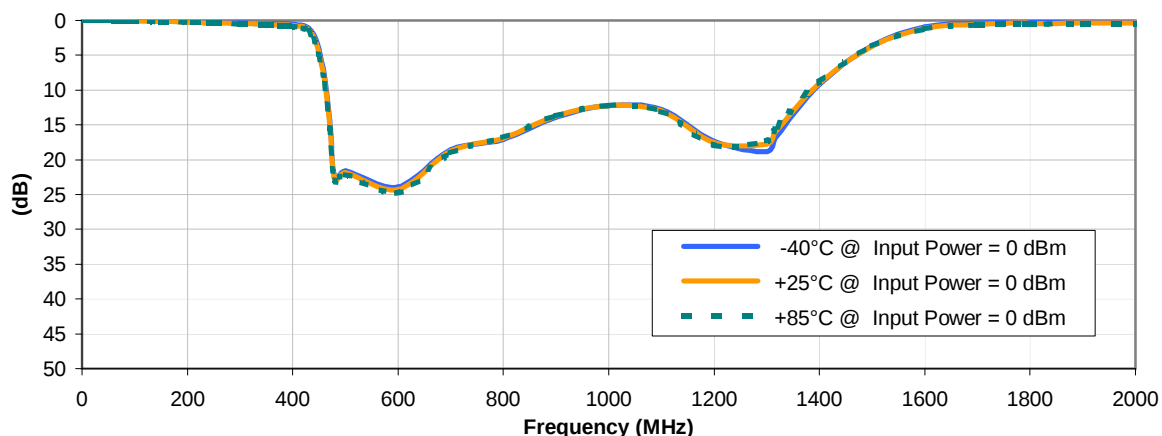
INSERTION LOSS vs. TEMPERATURE



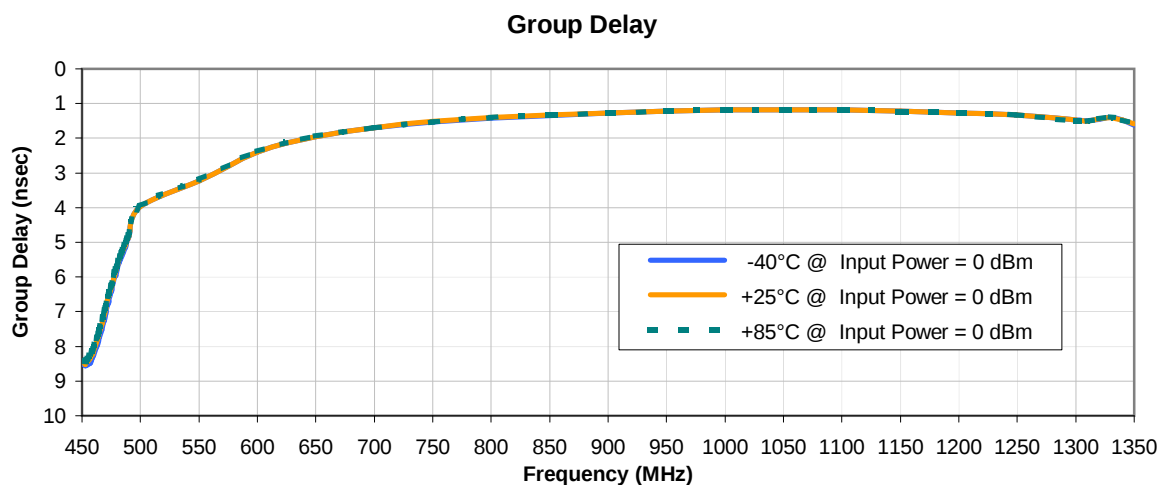
INPUT RETURN LOSS vs. TEMPERATURE



OUTPUT RETURN LOSS vs. TEMPERATURE



Typical Performance Curves



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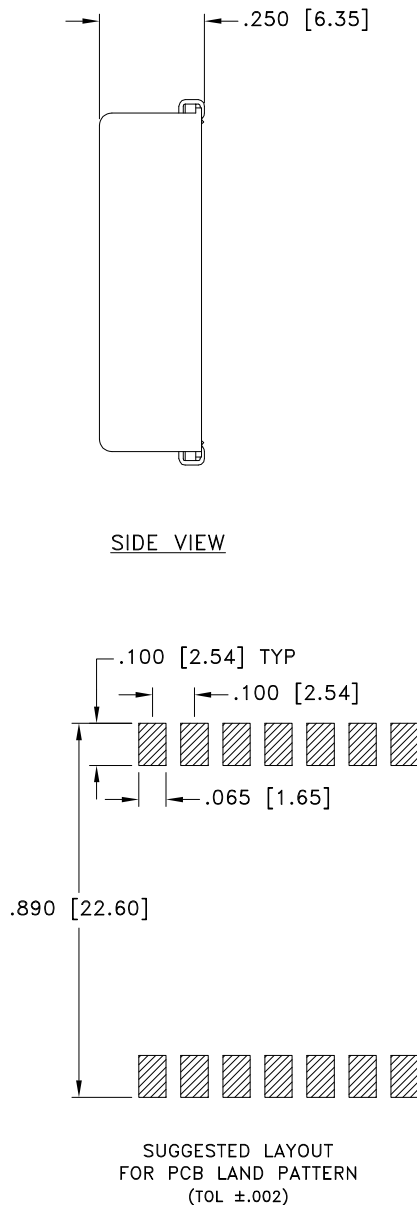
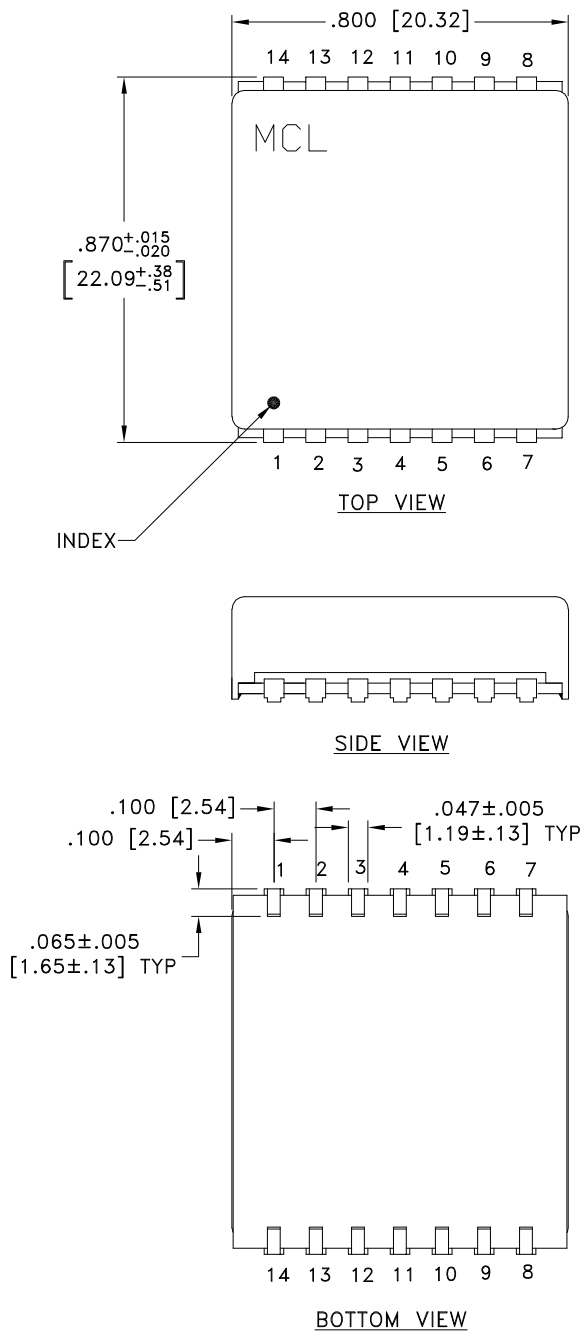


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Outline Dimensions

BG291



DENOTES METALLIZATION

Weight: 4 gram

Dimensions are in inches[mm]. Tolerances: 2PL $\pm$ 0.03[0.76]; 3 PL $\pm$ 0.015 [0.381] inches[mm], unless otherwise specified

Notes:

1. Case material: Copper-Nickel alloy.
2. Base material: Printed wiring laminate.
3. Termination finish:

For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.

For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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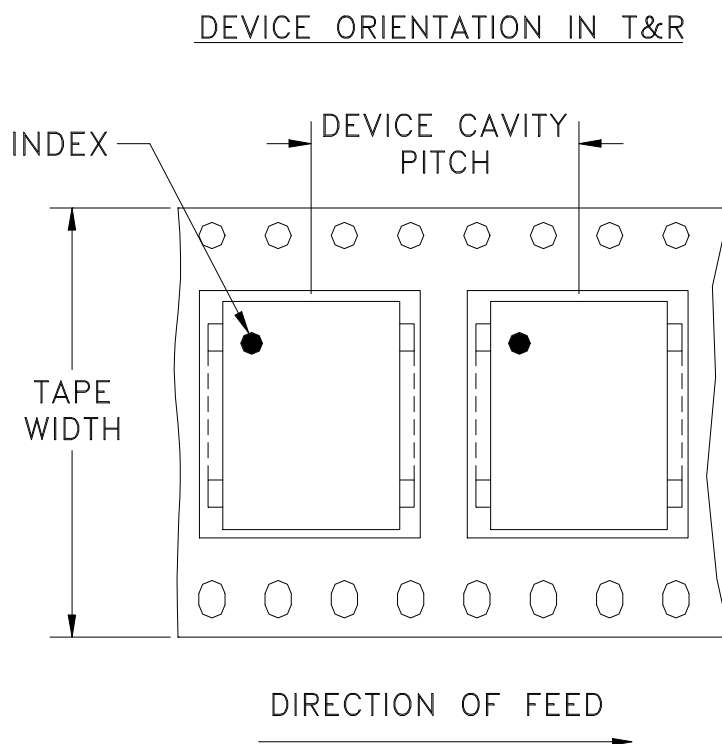
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Tape & Reel Packaging TR-F21



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	32	13	200

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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REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M110266	NEW RELEASE	03/07	DK	HH
OR	R68010	NEW RELEASE	03/07	DK	HH

Top view of the PCB layout showing dimensions and component locations. Key dimensions include: .020, .140, .040 TYP, .040, .210, .050 TYP 2 PL., .050, 6 PL., .080, 2 PL., .110 2 PL., .050, 2 PL., .067 TRACE WIDTH, 2 PL. (SEE NOTE BELOW), .100 6 PL., RF OUT, RF IN, PIN 1, 34X Ø.020 PTH FOR GROUND, and PACKAGE OUTLINE.

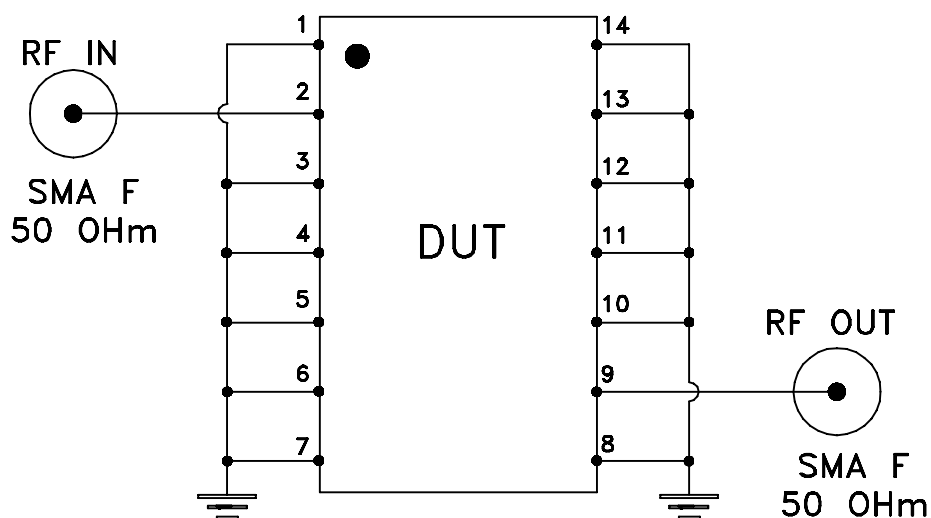
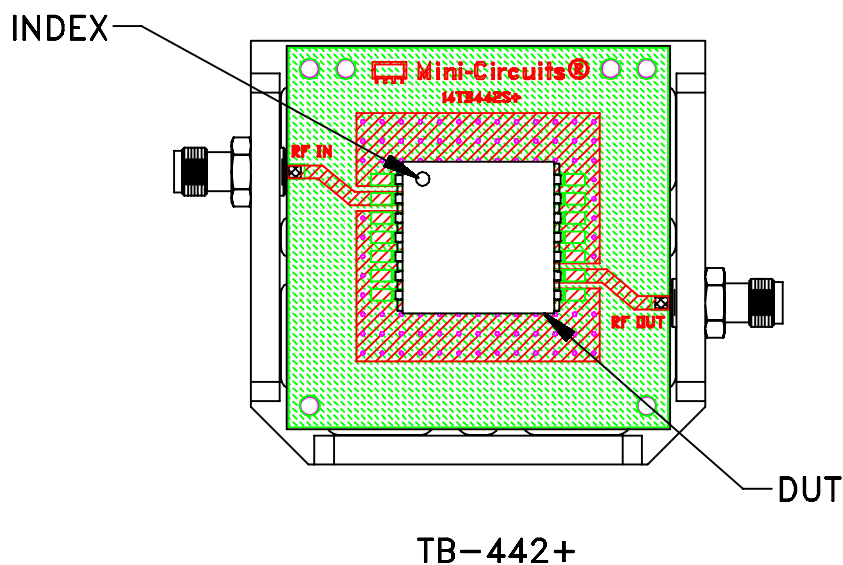
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FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

PL, sc, BG291, JCBP-25, TB-442+

SHEET:	1 OF 1
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Evaluation Board and Circuit



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: ROGERS R04350 or equivalent,
Dielectric Constant=3.48, Thickness=.030 inch.

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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