

Surface Mount

Diplexer

RDP-632+

50Ω DC to 6300 MHz
(DC-2100, 3420-6300 MHz)

The Big Deal

- Low insertion loss
- High isolation
- Miniature shielded package



CASE STYLE: CK605

Product Overview

RDP-632+ is a low-pass + high-pass combination device. Low pass port is designed for DC to 2700 MHz and high pass port is designed for 3420 to 6300 MHz. This diplexer can be used in satellite systems, vehicle tracking, communication test sets and other multiband radio systems.

Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application.
Extended stopband rejection	Spurious rejection and avoids using additional filters.
Miniature shielded package	Reduced interference with the surrounding components.

Notes

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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



Surface Mount Diplexer

RDP-632+

50Ω DC to 6300 MHz (DC-2100, 3420-6300 MHz)

Maximum Ratings

Operating Temperature -40°C to 85°C

Storage Temperature -55°C to 100°C

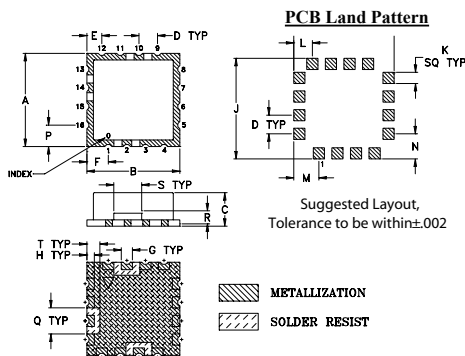
RF Power Input 1W at 25°C

Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation

Pin Connections

HIGH PASS PORT	10
LOW PASS PORT	14
COMMON PORT	2
GROUND	1,3-9,11-13,15,16

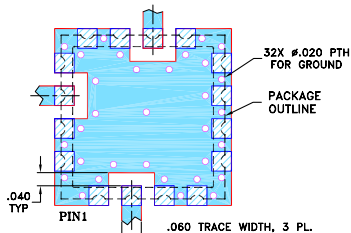
Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K
.500	.500	.180	.100	.080	.115	.060	.040	.540	.060
12.7	12.7	4.572	2.54	2.032	2.921	1.524	1.016	13.72	1.524
L	M	N	P	Q	R	S	T	Wt.	
.100	.135	.135	.115	.140	.070	.160	.070	grams	1.0
2.54	3.429	3.429	2.921	3.556	1.778	3.81	1.778		

Demo Board MCL P/N: TB-788+ Suggested PCB Layout (PL-424)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR FR4 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

Features

- Low insertion loss
- 50Ω Impedance
- Combination of Low pass and High pass filters
- Miniature shielded package
- Aqueous washable

Applications

- Radio astronomy
- Auxiliary broadcasting
- Test and measurement

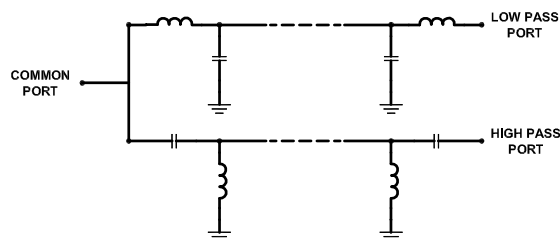
Electrical Specifications at 25°C

Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	Low Pass	DC-2100	-	1.0	2.5
		High Pass	3420-6300	-	1.1	2.5
	Return Loss	Low Pass	DC-2100	-	8	-
		High Pass	3420-6300	-	8	-
		Common	DC-2100	-	8	-
Stop Band Isolation	Low Pass	3420-6300	33	42	-	dB
	High Pass	DC-2100	36	47	-	dB

Typical Performance Data at 25°C

FREQUENCY (MHz)	INSERTION LOSS (dB)			RETURN LOSS (dB)	
	Low Pass Port	High Pass Port	Common Port	Low Pass Port	High Pass Port
10	0.00	108.36	35.07	35.04	0.00
250	0.13	93.19	17.33	17.41	0.02
500	0.27	78.73	13.27	13.33	0.02
900	0.26	66.85	14.35	14.53	0.00
1000	0.22	64.74	16.20	16.47	0.00
1150	0.18	62.17	20.99	21.46	0.01
1300	0.19	59.35	26.69	26.92	0.02
2100	0.68	48.74	15.17	15.45	0.10
2350	2.04	53.18	8.03	7.70	0.13
2390	3.15	55.75	5.44	5.02	0.14
2710	20.30	35.51	1.17	0.38	0.33
2750	22.72	29.90	1.22	0.32	0.40
2830	27.77	20.28	1.47	0.26	0.59
2870	30.51	16.08	1.77	0.24	0.80
3040	48.29	3.23	9.58	0.20	6.33
3090	49.39	2.12	14.10	0.18	9.48
3200	46.31	1.38	14.10	0.17	12.29
3350	45.65	0.96	16.60	0.15	15.91
3420	45.55	0.82	19.91	0.15	19.03
4500	47.65	0.46	17.75	0.14	19.34
6000	45.17	0.42	21.23	0.17	19.66
6300	42.64	0.48	15.31	0.17	14.55

Functional Schematic



CASE STYLE: CK605

+RoHS Compliant

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

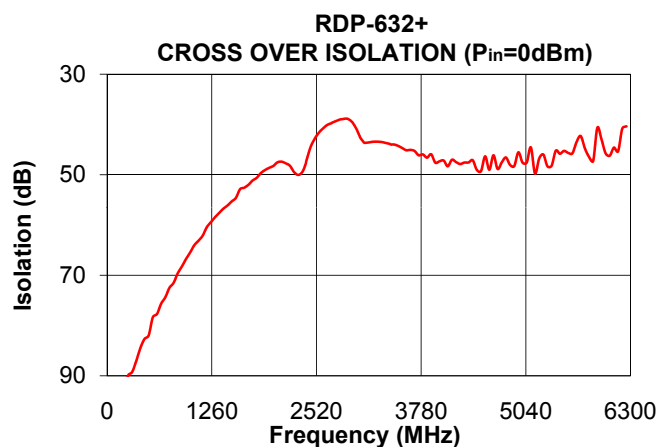
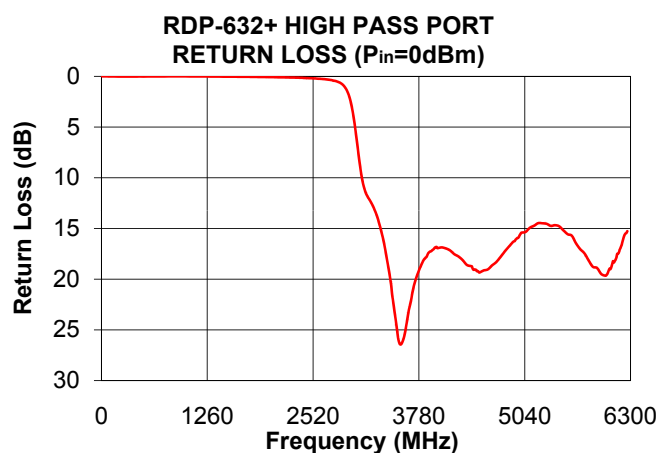
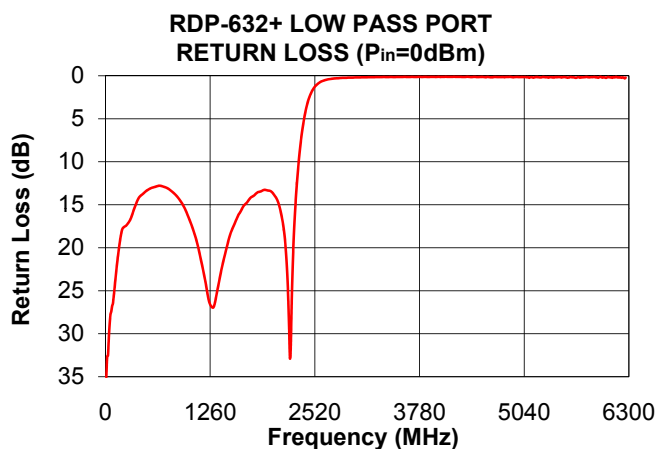
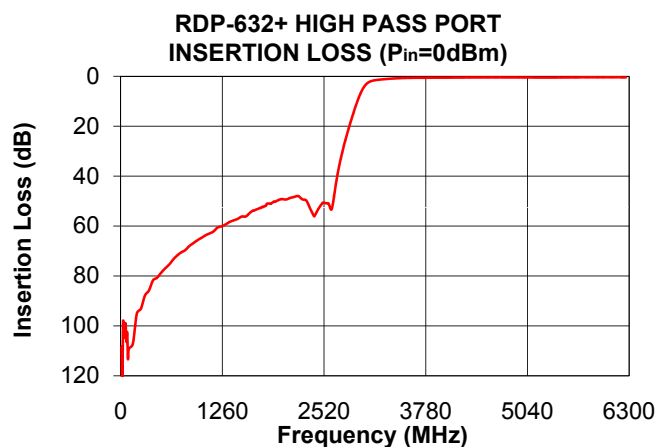
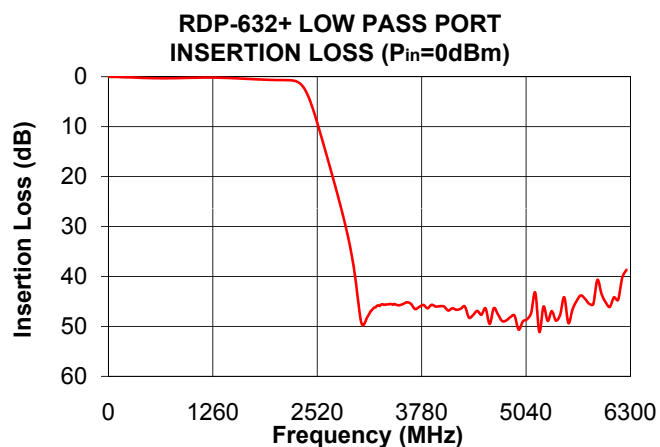
Notes

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RDP-632+
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Page 2 of 3



Notes

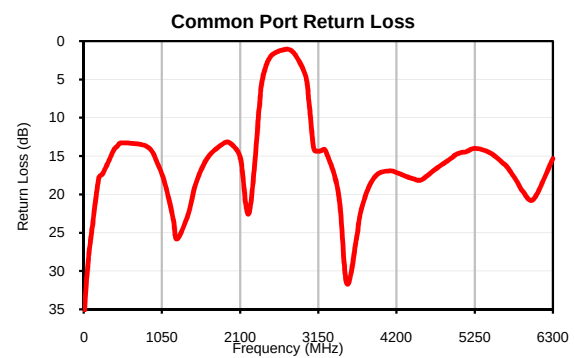
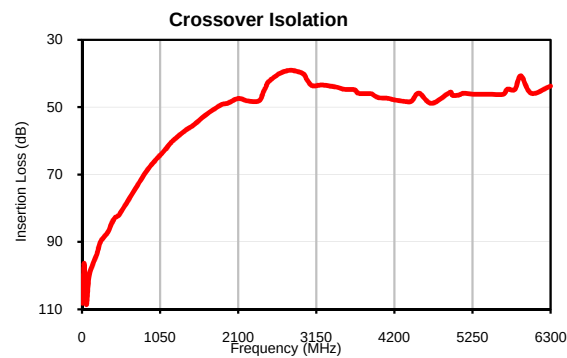
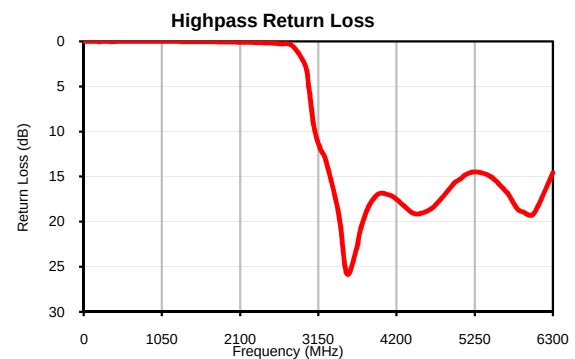
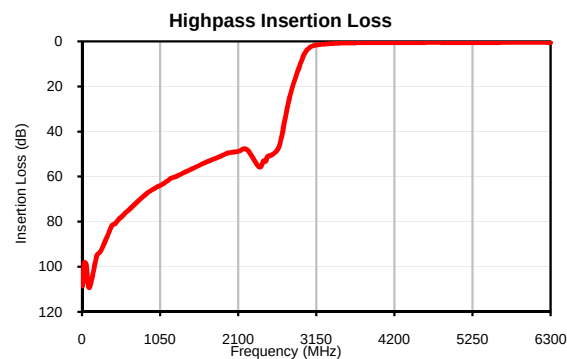
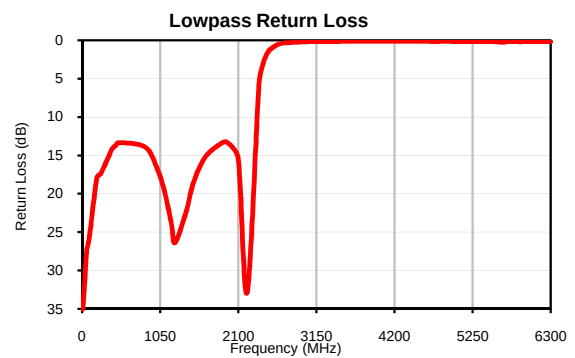
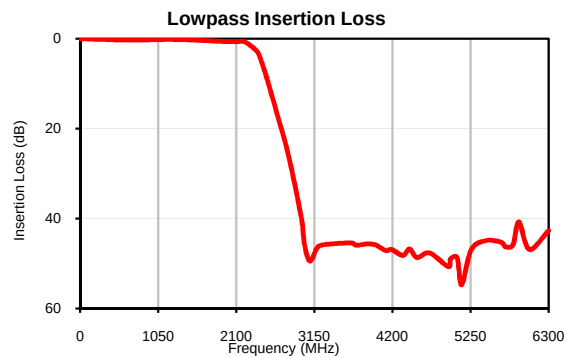
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Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)		Cross over Isolation (dB) (between LPF and HPF)	RETURN LOSS (dB)		
	Lowpass port	Highpass port		Common port	Lowpass port	Highpass port
10	0.00	108.36	108.27	35.07	35.04	0.00
30	0.05	98.10	96.35	31.79	32.53	0.00
60	0.04	98.94	108.60	28.42	27.76	0.00
100	0.04	109.19	99.79	25.19	25.56	0.01
200	0.13	95.05	93.66	17.83	17.90	0.02
250	0.13	93.19	90.01	17.33	17.41	0.02
350	0.19	85.81	87.06	15.28	15.34	0.02
400	0.23	81.78	84.48	14.18	14.22	0.02
450	0.25	80.75	82.66	13.70	13.74	0.01
500	0.27	78.73	81.96	13.27	13.33	0.02
850	0.28	68.02	69.60	13.76	13.91	0.00
1000	0.22	64.74	65.43	16.20	16.47	0.00
1100	0.19	62.99	63.11	18.99	19.34	0.01
1200	0.18	60.61	60.43	23.25	23.81	0.01
1250	0.18	60.13	59.41	25.81	26.37	0.01
1400	0.23	57.74	56.73	22.60	22.33	0.03
1500	0.29	56.19	55.30	18.68	18.48	0.03
1660	0.42	53.67	52.36	15.22	15.17	0.04
1870	0.58	50.83	49.30	13.37	13.44	0.06
1960	0.64	49.52	48.80	13.27	13.35	0.07
2100	0.68	48.74	47.40	15.17	15.45	0.10
2220	0.74	47.96	48.09	22.36	32.86	0.11
2380	2.83	55.59	48.12	5.99	5.60	0.14
2440	5.14	53.01	45.41	3.39	2.88	0.18
2470	6.58	53.17	44.10	2.62	2.10	0.18
2490	7.61	51.23	42.95	2.25	1.70	0.19
2520	9.24	50.67	42.20	1.85	1.26	0.19
2530	9.80	50.72	42.01	1.74	1.15	0.20
2650	16.73	46.69	40.08	1.20	0.48	0.27
2800	25.81	23.70	39.02	1.34	0.29	0.49
2970	39.26	6.98	39.98	4.28	0.22	2.61
3020	45.82	4.01	41.66	7.68	0.19	5.06
3090	49.39	2.12	43.56	14.10	0.18	9.48
3180	46.66	1.45	43.47	14.31	0.16	12.02
3240	45.88	1.25	43.41	14.20	0.16	12.94
3420	45.55	0.82	44.00	19.91	0.15	19.03
3530	45.41	0.68	44.67	31.59	0.14	25.73
3660	45.39	0.62	44.75	25.84	0.14	23.03
3710	45.89	0.60	45.81	22.61	0.14	21.02
3800	45.70	0.59	45.96	19.68	0.14	18.75
3890	45.57	0.58	46.00	17.93	0.14	17.45
3980	45.85	0.57	47.12	17.14	0.14	16.84
4110	47.06	0.55	47.34	16.92	0.13	17.05
4190	46.84	0.52	47.77	17.10	0.12	17.43
4340	48.16	0.48	48.27	17.69	0.13	18.54
4430	46.69	0.48	48.20	17.96	0.13	19.08
4530	48.61	0.50	45.80	18.11	0.13	19.05
4700	47.59	0.45	48.85	16.85	0.14	18.32
4950	50.65	0.49	45.54	15.15	0.14	15.95
4980	48.90	0.50	46.46	14.88	0.15	15.65
5070	48.63	0.50	46.36	14.50	0.18	15.16
5130	54.66	0.52	45.83	14.44	0.17	14.75
5260	46.83	0.53	46.09	13.98	0.15	14.47
5460	44.84	0.51	46.11	14.59	0.16	14.96
5660	45.23	0.45	46.15	16.17	0.25	16.55
5720	46.24	0.42	44.62	16.89	0.17	17.18
5820	45.83	0.40	44.72	18.35	0.18	18.54
5900	40.68	0.46	40.66	19.64	0.19	18.90
6040	46.82	0.42	45.85	20.61	0.17	19.11
6300	42.64	0.48	43.72	15.31	0.17	14.55

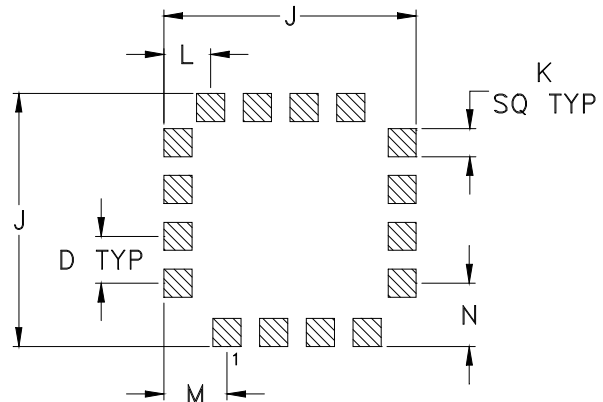
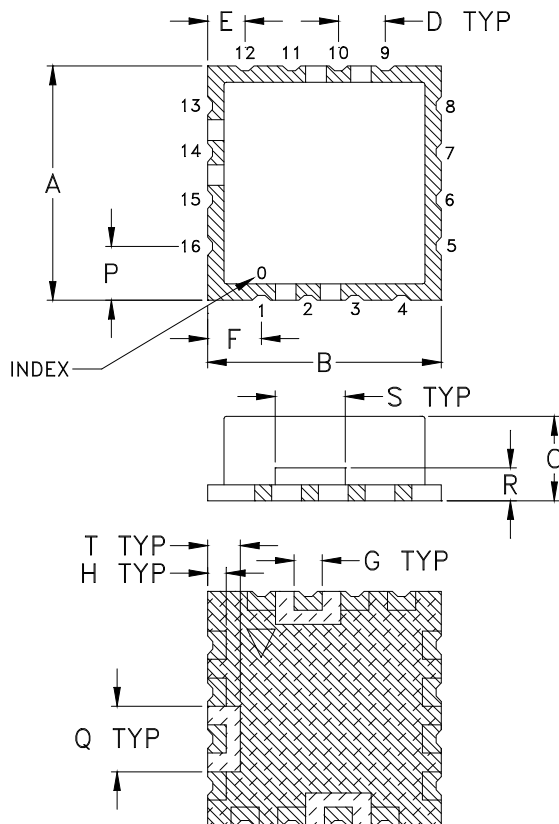
Typical Performance Curves



Outline Dimensions

CK605

PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

CASE #	A	B	C	D	E	F	G	H	J	K
CK605	.500 (12.70)	.500 (12.70)	.180 (4.57)	.100 (2.54)	.080 (2.03)	.115 (2.92)	.060 (1.52)	.040 (1.02)	.540 (13.72)	.060 (1.52)

CASE #	L	M	N	P	Q	R	S	T	WT. GRAM
CK605	.100 (2.54)	.135 (3.43)	.135 (3.43)	.115 (2.92)	.140 (3.56)	.070 (1.78)	.150 (3.81)	.070 (1.78)	1.2 +0.5 -0.0

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

Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:
For RoHS Case Styles: 3-5 μ inch (.08-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.
All models, (+) suffix.



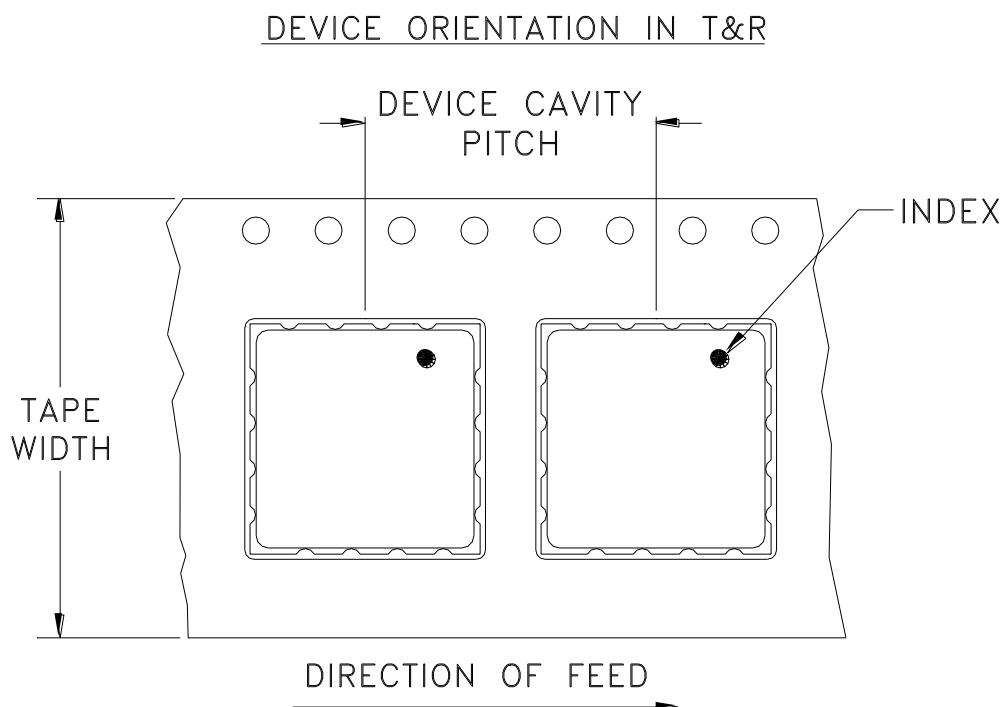
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The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F37



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
24	16	7	Small quantity standards (see note)	10
				20
				50
				100
		13	Standard	200
				500

Note: Please consult individual model data sheet to determine device per reel availability.

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	M146654	NEW RELEASE	MAY 14	DDR	MD

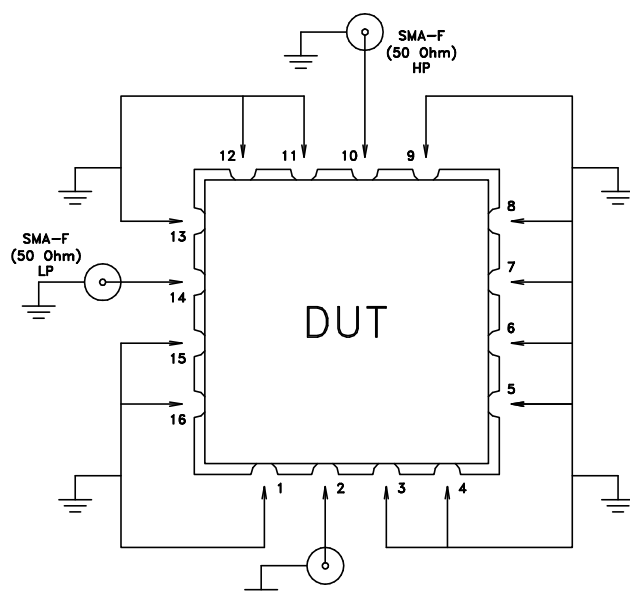
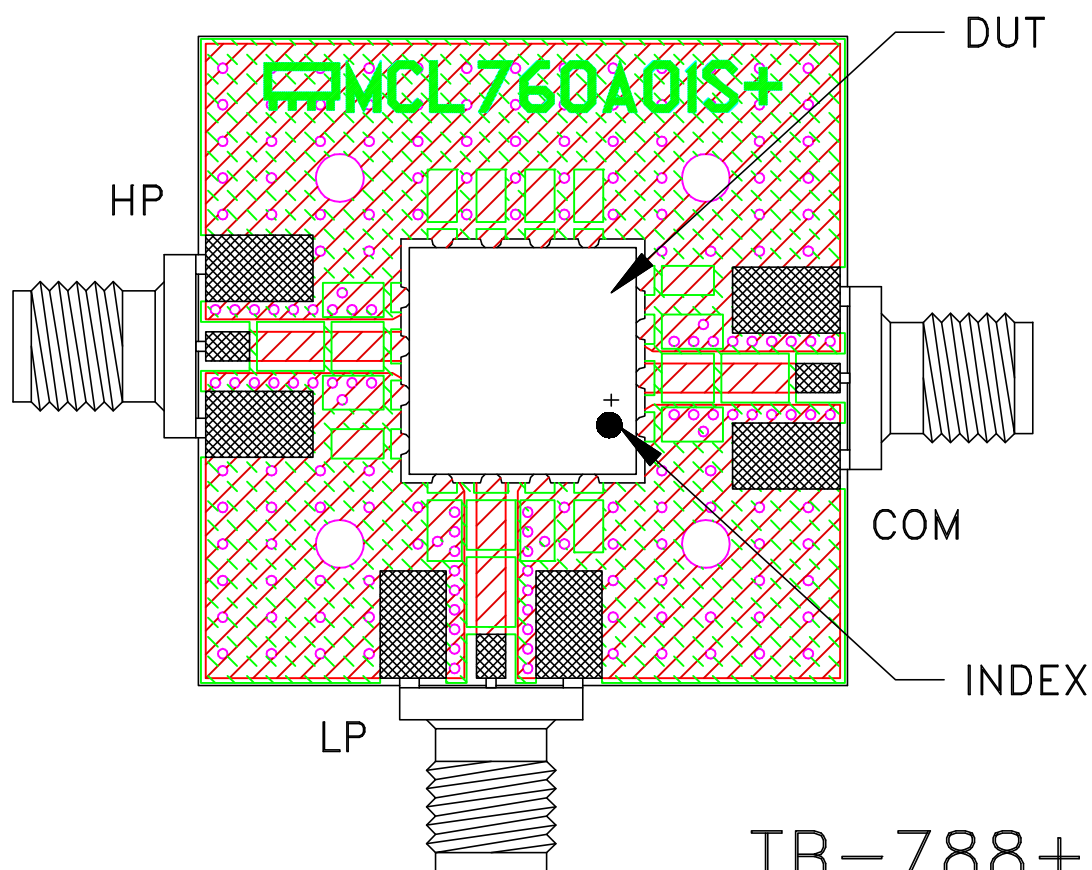
1. TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .030"±.002". COPPER: 1/2 Oz EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

 DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-424		REV: OR
FILE:	98PL424	SCALE: 3:1	SHEET: 1 OF 1	

Evaluation Board and Circuit



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: ROGERS (R04350B) OR Equivalent
Dielectric Constant= $3.48 \pm .05$, 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	-55° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
HAST	130°C, 85% RH, 96 hours	JESD22-A110
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 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, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
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