Surface Mount

Diplexer

NON-CATALOG

DPLX-4254-75+

75Ω 5 to 870 MHz (5-42, 54-870 MHz)

Maximum Ratings

Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	250mW at 25°C

Note: 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	7
LOW PASS PORT	9
COMMON PORT	18
GROUND	1-6,8,10-17,19,20

Features

- Low Insertion Loss 0.5dB typ.
- High Isolation 60dB typ.
- 75 Ω Impedance
- Usable up to 1000 MHz

Applications

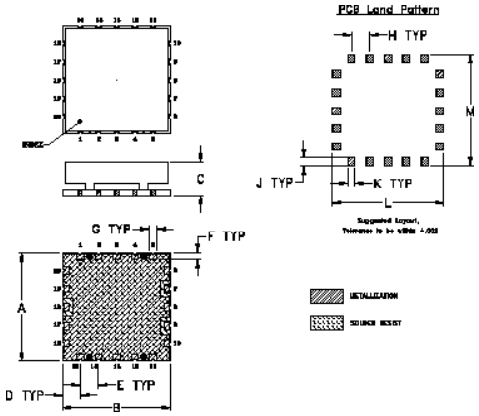
- CATV
- MMDS
- Set-Top Box

CASE STYLE: HR1176

+RoHS Compliant

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

Outline Drawing

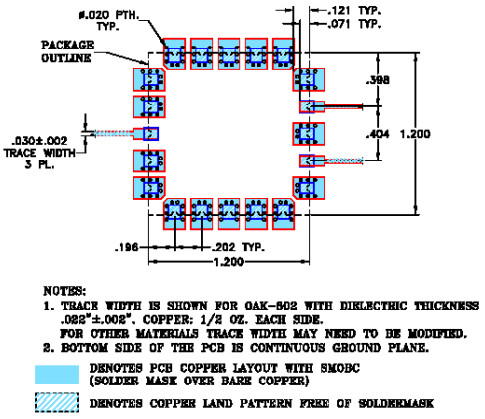


Outline Dimensions (inch / mm)

A	B	C	D	E	F
1.200	**1.200**	**.370**	**.196**	**.202**	**.071**
30.48	30.48	9.40	4.98	5.13	1.80

G	H	J	K	L	M	wt.
.079	**.202**	**.091**	**.079**	**1.240**	**1.240**	**grams**
2.01	5.13	2.31	2.01	31.50	31.50	8.5

Demo Board MCL P/N: TB-563+
Suggested PCB Layout (PL-228)



NOTES:
1. TRACE WIDTH IS SHOWN FOR OAK-602 WITH DIELECTRIC THICKNESS .062"±.005". 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

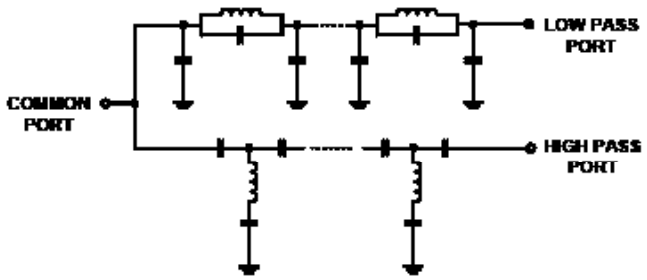
Electrical Specifications (T_{AMB}= 25°C)

Insertion Loss, dB PASSBAND MHz				Isolation, dB STOPBAND MHz				Cross Over Isolation (dB)		Return Loss (dB)							
										Low Pass Port		High Pass Port		Common Port			
5-42		54-870		54-870		5-42		42-54 MHz		5-42 MHz		54-870 MHz		5-42 MHz		54-870 MHz	
Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
0.5	1.2	0.5	1.4	50	40	60	35	30	17	25	18	20	11	30	22	23	11

Typical Performance Data (T_{AMB}= 25°C)

FREQUENCY (MHz)	INSERTION LOSS (dB)		CROSS OVER ISOLATION (dB)	RETURN LOSS (dB)		
	Low Pass Port	High Pass Port	(between LPF and HPF)	Common Port	Low Pass Port	High Pass Port
5	0.07	61.67	62.95	34.95	34.58	0.01
20	0.19	62.13	62.09	32.08	33.43	0.06
32	0.40	66.98	68.54	42.50	34.00	0.26
41	0.88	51.11	50.32	21.91	20.12	0.80
42	0.98	43.19	43.22	24.42	21.35	0.94
44	1.41	32.07	32.27	18.81	24.12	1.31
46	3.88	23.59	24.95	6.12	6.95	2.04
48	12.68	8.28	24.58	4.27	1.96	4.88
50	27.29	2.78	32.13	11.28	0.98	14.57
52	41.03	1.60	43.85	19.86	0.66	36.57
54	52.64	1.19	54.82	21.30	0.51	25.68
55	53.95	1.08	55.40	21.22	0.46	24.17
80	67.87	0.35	70.63	24.11	0.15	23.17
100	74.51	0.25	74.82	34.71	0.13	29.48
200	61.58	0.18	65.65	23.61	0.17	22.91
400	59.25	0.24	57.06	18.36	0.23	18.84
600	54.63	0.35	53.67	16.07	0.25	16.36
800	50.91	0.47	50.60	13.89	0.29	14.30
870	50.27	0.57	44.86	13.45	0.68	13.67
1000	60.80	1.06	61.87	10.63	0.28	11.27

Functional Schematic



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.
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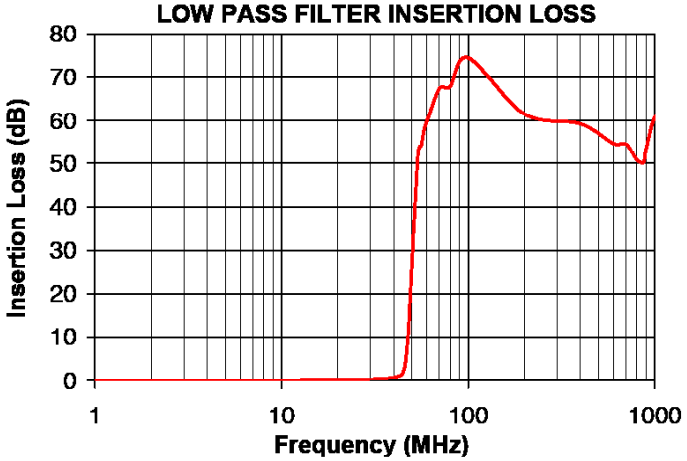
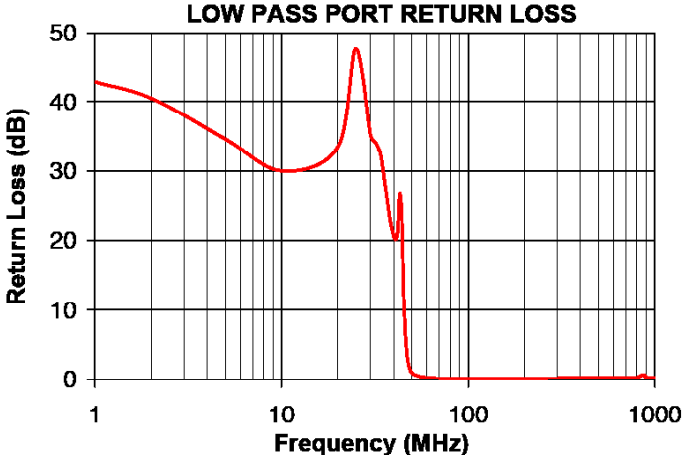
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

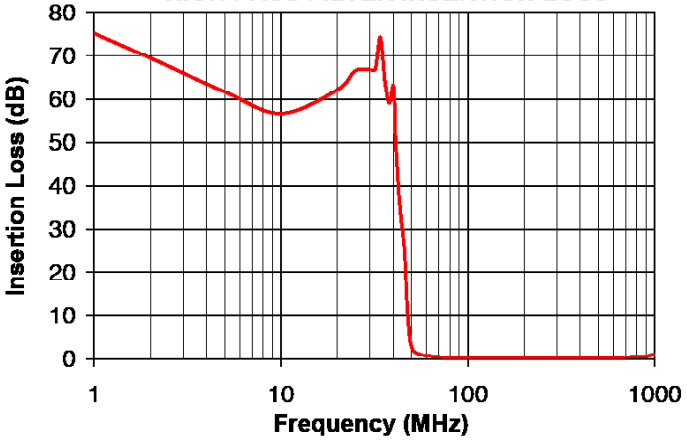
DPLX-4254-75+
LOW PASS FILTER INSERTION LOSS



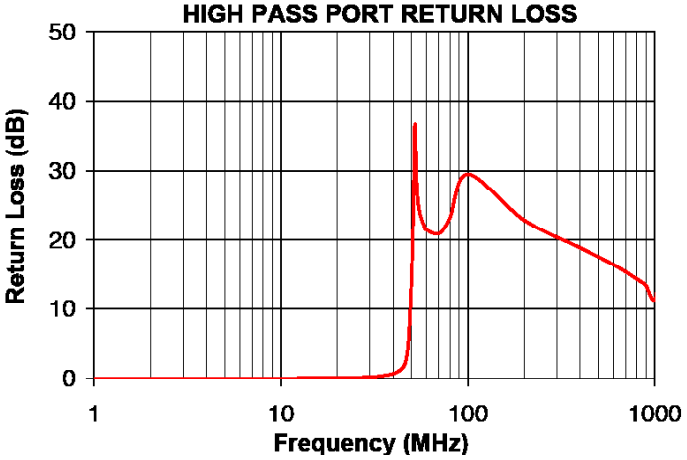
DPLX-4254-75+
LOW PASS PORT RETURN LOSS



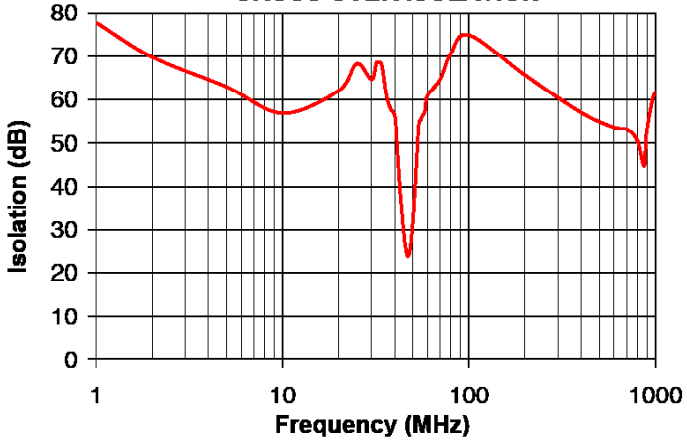
DPLX-4254-75+
HIGH PASS FILTER INSERTION LOSS



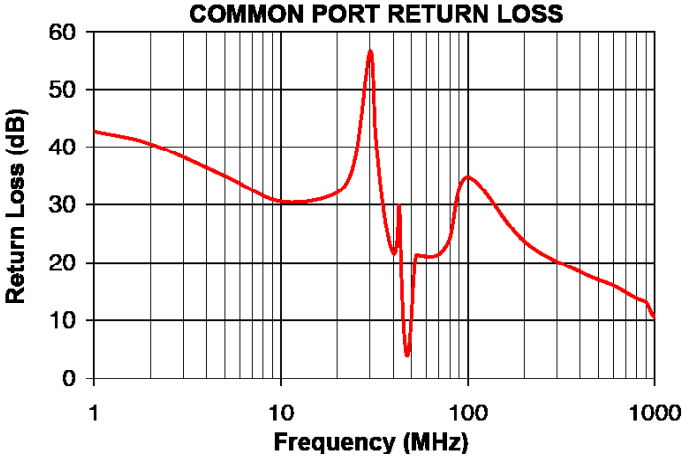
DPLX-4254-75+
HIGH PASS PORT RETURN LOSS



DPLX-4254-75+
CROSS OVER ISOLATION



DPLX-4254-75+
COMMON PORT RETURN LOSS



Notes
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Surface Mount Diplexer DPLX-4254-75+

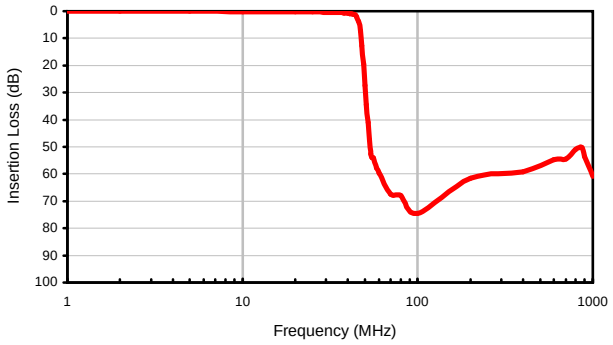
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)		CROSS OVER ISOLATION (dB)	RETURN LOSS (dB)		
	Low Pass Port	High Pass Port	Between LPF and HPF	Common Port	Low Pass Port	High Pass Port
1	0.05	75.12	77.67	42.69	42.88	0.01
2	0.05	69.45	69.78	40.48	40.48	0.01
5	0.07	61.67	62.95	34.95	34.58	0.01
10	0.16	56.70	56.92	30.53	30.04	0.03
20	0.19	62.13	62.09	32.08	33.43	0.06
25	0.28	66.53	68.24	38.11	47.68	0.12
30	0.36	66.75	64.67	56.60	35.06	0.21
32	0.40	66.98	68.54	42.50	34.00	0.26
34	0.44	74.26	68.04	33.52	32.18	0.33
36	0.52	64.05	61.23	27.55	27.71	0.42
38	0.63	59.17	57.80	23.59	23.25	0.54
40	0.78	62.97	56.33	21.57	20.47	0.71
41	0.88	51.11	50.32	21.91	20.12	0.80
42	0.98	43.19	43.22	24.42	21.35	0.94
43	1.14	36.75	37.44	29.75	26.69	1.10
44	1.41	32.07	32.27	18.81	24.12	1.31
45	2.13	28.77	27.97	10.92	13.03	1.60
46	3.88	23.59	24.95	6.12	6.95	2.04
47	7.30	14.79	23.70	3.92	3.60	2.92
48	12.68	8.28	24.58	4.27	1.96	4.88
49	19.63	4.55	27.53	6.94	1.28	8.70
50	27.29	2.78	32.13	11.28	0.98	14.57
51	34.47	1.99	37.62	16.16	0.78	23.00
52	41.03	1.60	43.85	19.86	0.66	36.57
53	47.35	1.35	49.96	21.21	0.58	29.12
54	52.64	1.19	54.82	21.30	0.51	25.68
55	53.95	1.08	55.40	21.22	0.46	24.17
56	54.11	0.98	56.15	21.20	0.40	23.35
58	57.76	0.84	57.31	21.17	0.33	22.23
60	59.76	0.75	60.95	21.04	0.27	21.50
70	67.37	0.47	64.65	21.41	0.18	20.98
80	67.87	0.35	70.63	24.11	0.15	23.17
100	74.51	0.25	74.82	34.71	0.13	29.48
200	61.58	0.18	65.65	23.61	0.17	22.91
400	59.25	0.24	57.06	18.36	0.23	18.84
600	54.63	0.35	53.67	16.07	0.25	16.36
700	54.48	0.45	53.22	14.89	0.25	15.31
800	50.91	0.47	50.60	13.89	0.29	14.30
870	50.27	0.57	44.86	13.45	0.68	13.67
900	53.45	0.53	53.08	13.20	0.35	13.30
1000	60.80	1.06	61.87	10.63	0.28	11.27

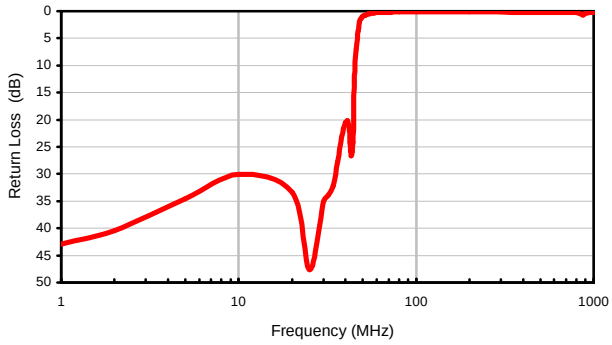
Surface Mount Diplexer DPLX-4254-75+

Typical Performance Curves

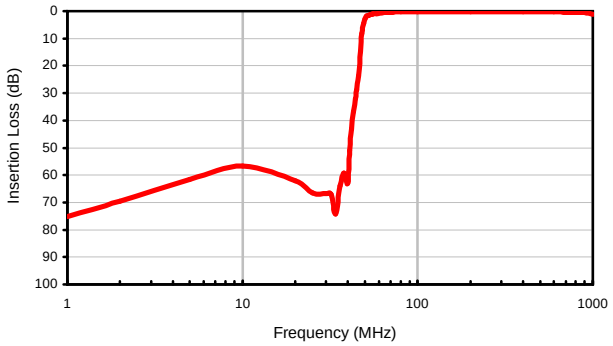
Low Pass Port Insertion Loss



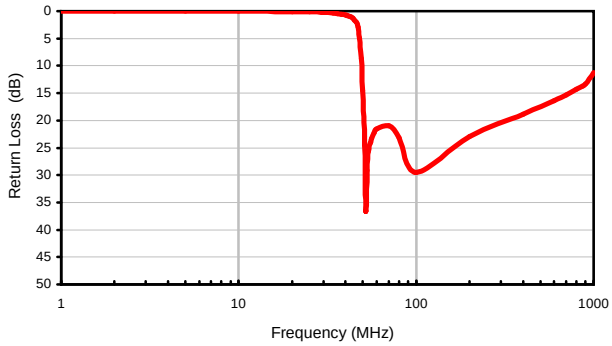
Low Pass Port Return Loss



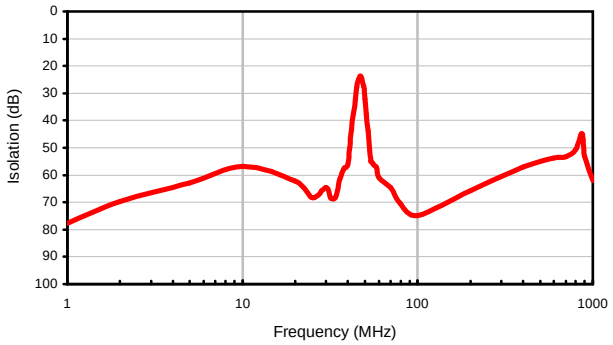
High Pass Port Insertion Loss



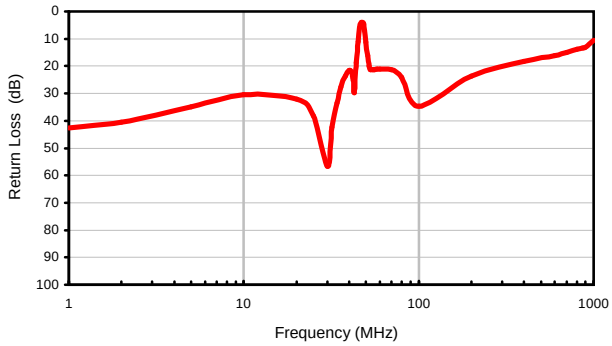
High Pass Port Return Loss



Cross Over Isolation



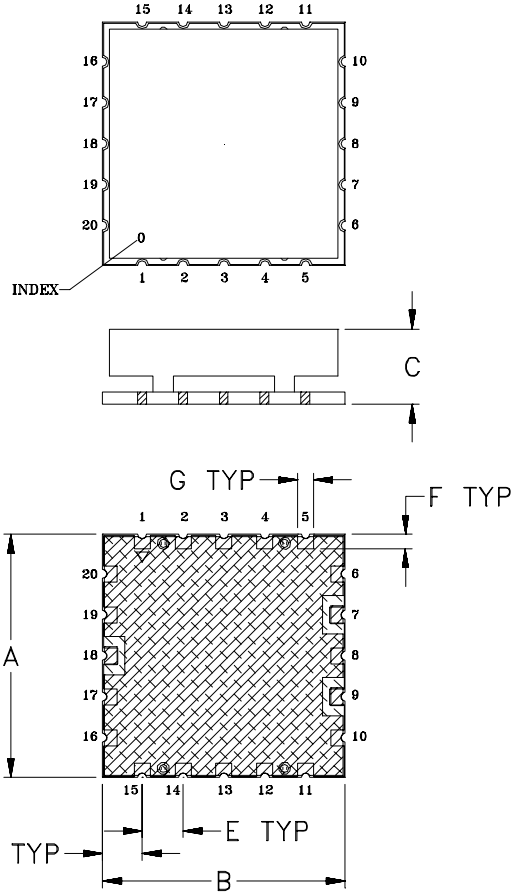
Common Port Return Loss



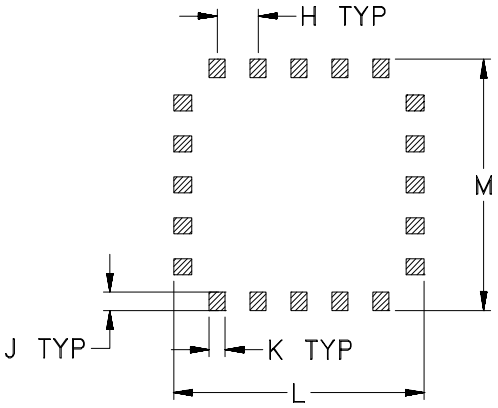
Case Style HR

Outline Dimensions

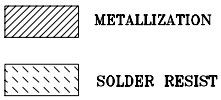
HR1176



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAM
HR1176	1.200 (30.48)	1.200 (30.48)	.370 (9.40)	.196 (4.98)	.202 (5.13)	.071 (1.80)	.079 (2.01)	.202 (5.13)	.091 (2.31)	.079 (2.01)	1.240 (31.50)	1.240 (31.50)	8.5

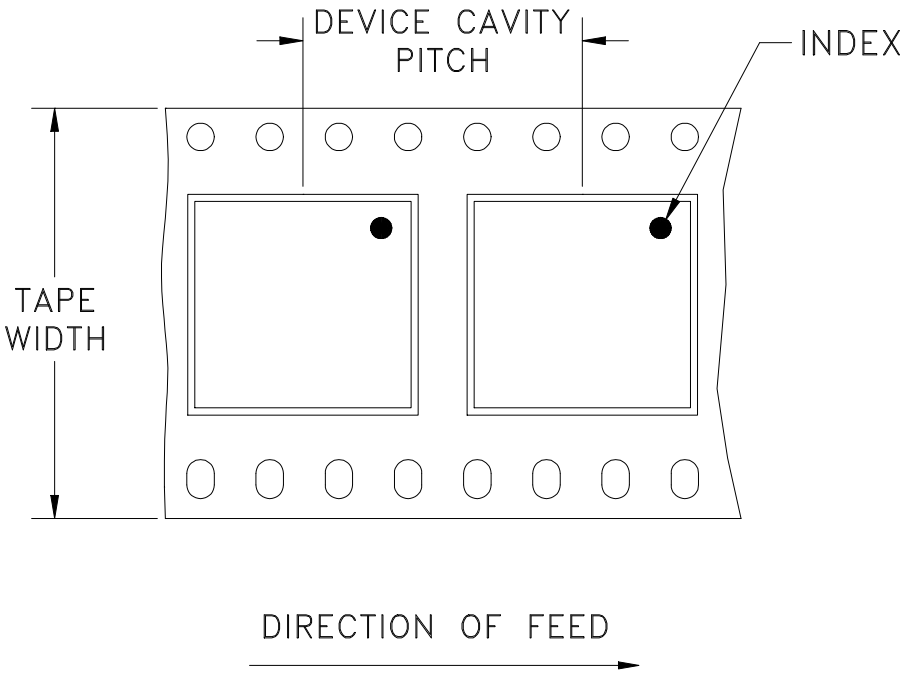
Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. 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.

Tape & Reel Packaging TR-F80

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
44	40	13	100

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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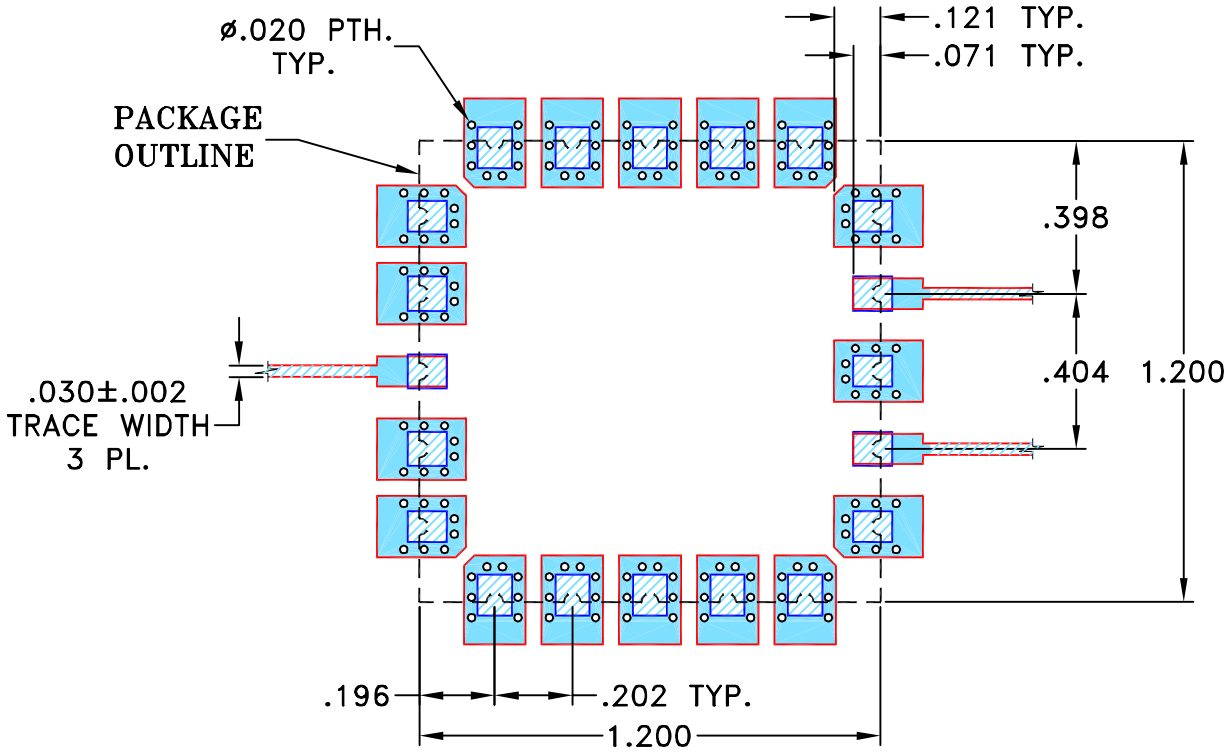
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M101264	NEW RELEASE (FROM RAVON)	12/05	DK	HH
A	M108938	SWITCH HATCHES	12/06	DK	HH
A	R67045	SWITCH HATCHES	12/06	DK	HH
B	M125793	LAND PATTERN CHANGED	01/10	RB	KG



NOTES:

1. TRACE WIDTH IS SHOWN FOR OAK-602 WITH DIELECTRIC THICKNESS .022"±.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

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	RB	24 JAN 10
TOLERANCES ON:	CHECKED	MD	24 JAN 10
2 PL DECIMALS ±	APPROVED	GM	24 JAN 10
3 PL DECIMALS ± .005"			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®

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

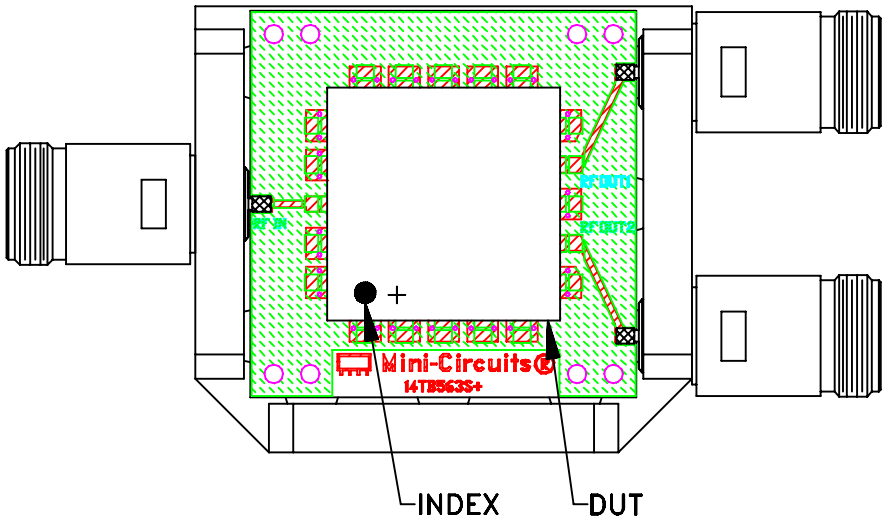
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, rg, HR1176, DPLX, TB-563+, 75Ω

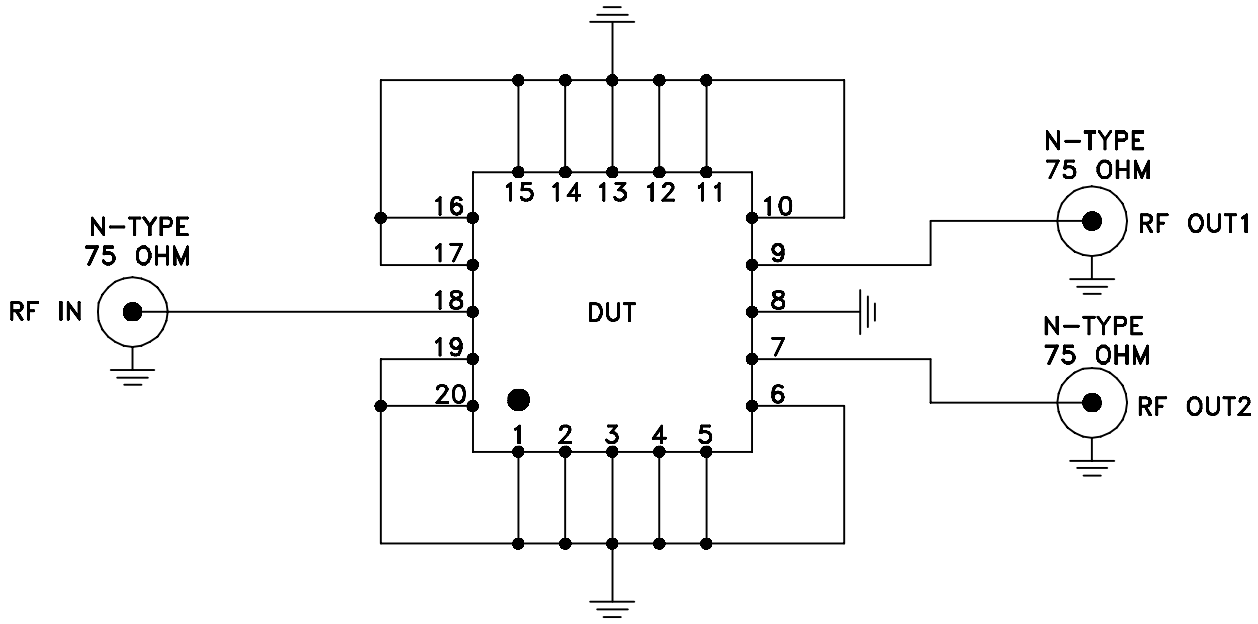
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-228	B

FILE:	SCALE:	SHEET:
98PL228	2:1	1 OF 1

Evaluation Board and Circuit



TB-563+



Schematic Diagram

Notes:

1. 75 Ohm N-Type Female connectors.
2. PCB Material: OAK-602 or equivalent, Dielectric Constant=2.5, Thickness=.022 inch.

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Environmental Specifications ENV03

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