

4 Way-0° 50Ω 690 to 2700 MHz

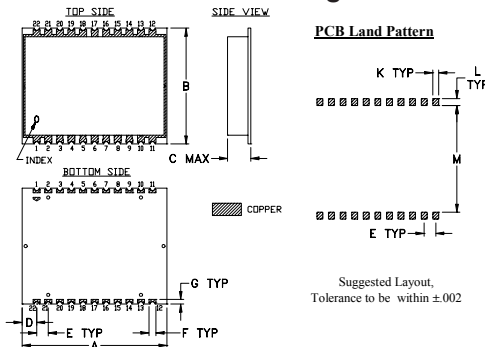
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	5W max.
Internal Dissipation	0.5W max.
DC Current	1A (250 mA for each port)
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

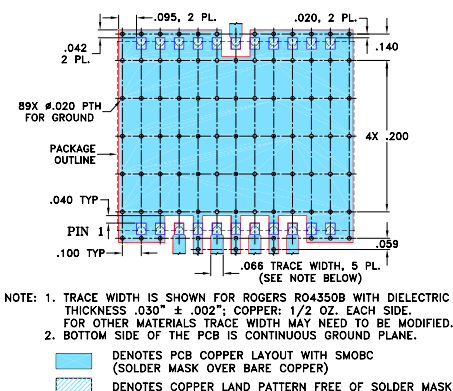
SUM PORT	17
PORT 1	3
PORT 2	5
PORT 3	7
PORT 4	9
GROUND	all others

Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F	G
1.250	1.000	.200	.125	.100	.060	.040
31.75	25.40	5.08	3.18	2.54	1.52	1.02
H	J	K	L	M		wt
--	--	.050	.060	.920		grams
--	--	1.27	1.52	23.37		4.4

Demo Board MCL P/N: TB-441+
Suggested PCB Layout (PL-273)

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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp

Features

- good isolation, 20 dB typ.
- good output matching, VSWR 1.1 typ.
- shielded case
- aqueous washable
- good coplanarity

Applications

- cellular
- GPS
- PCS
- CATV
- ISM
- wireless communication system

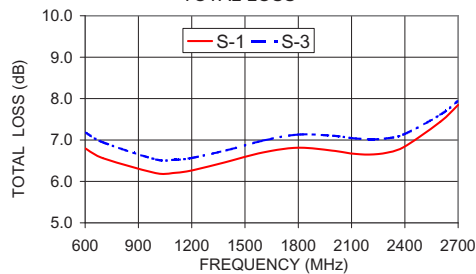
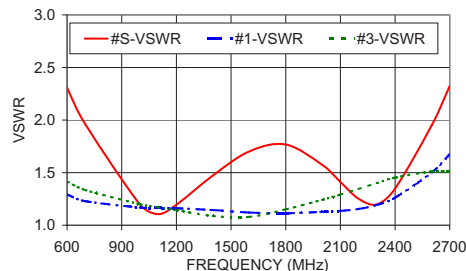
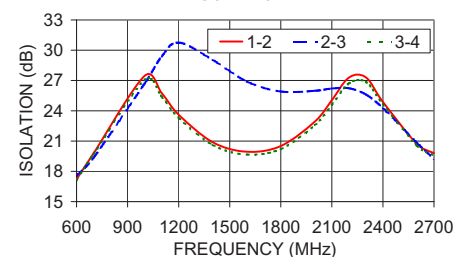
Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		690		2700	MHz
Insertion Loss Above 6.0 dB	800-2200 690-2700		1.0 1.5	1.6 2.6	dB
Isolation	690-2700	15	20		dB
Phase Unbalance	690-2700		4	7	Degree
Amplitude Unbalance	690-2700		0.4	0.8	dB
VSWR (Port S)	690-2700		1.5		:1
VSWR (Port 1-4)	690-2700		1.2		:1

Typical Performance Data

Freq. (MHz)	Total Loss ¹ (dB)				Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4						
600	6.80	7.23	7.19	6.77	0.46	17.21	17.55	17.13	0.63	2.31	1.29	1.41	1.42	1.30
700	6.56	6.99	6.94	6.54	0.45	19.79	19.35	19.70	0.49	1.96	1.23	1.33	1.33	1.25
1000	6.20	6.58	6.53	6.18	0.39	27.46	26.70	27.06	0.53	1.20	1.17	1.19	1.20	1.19
1100	6.21	6.56	6.52	6.18	0.38	25.76	29.38	25.39	0.67	1.10	1.16	1.16	1.17	1.18
1200	6.27	6.61	6.57	6.24	0.37	23.61	30.76	23.29	0.87	1.19	1.16	1.13	1.14	1.17
1400	6.48	6.79	6.76	6.44	0.35	20.89	29.04	20.61	1.34	1.47	1.14	1.08	1.09	1.15
1600	6.70	7.02	6.98	6.65	0.36	19.94	26.90	19.67	1.89	1.70	1.12	1.07	1.08	1.12
1800	6.81	7.17	7.13	6.77	0.40	20.51	25.91	20.21	2.36	1.77	1.11	1.14	1.15	1.12
2000	6.74	7.15	7.10	6.71	0.43	22.93	25.98	22.57	2.61	1.57	1.13	1.24	1.24	1.14
2100	6.67	7.09	7.05	6.65	0.44	25.05	26.20	24.59	2.67	1.41	1.14	1.29	1.29	1.15
2200	6.65	7.06	7.02	6.62	0.44	27.28	26.23	26.70	2.73	1.25	1.15	1.34	1.34	1.17
2300	6.70	7.09	7.04	6.67	0.42	27.31	25.62	26.86	2.79	1.20	1.19	1.40	1.40	1.20
2400	6.85	7.19	7.15	6.80	0.39	24.87	24.27	24.63	2.89	1.35	1.26	1.45	1.45	1.26
2600	7.44	7.67	7.61	7.37	0.30	20.70	20.83	20.54	3.55	1.95	1.50	1.50	1.51	1.48
2700	7.84	8.01	7.95	7.75	0.26	19.81	19.24	19.58	4.16	2.32	1.67	1.50	1.51	1.64

1. Total Loss = Insertion Loss + 6dB splitter theoretical loss.

SEPS-4-272+
TOTAL LOSSSEPS-4-272+
VSWRSEPS-4-272+
ISOLATION

Electrical Schematic



Generic photo used for illustration purposes only

CASE STYLE: JF1258

+RoHS Compliant

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

4 Way-0° Power Splitter/Combiner

SEPS-4-272+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS ¹ (dB)				AMP. UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR (:1)				
	S-1	S-2	S-3	S-4		1-2	2-3	3-4			S	1	2	3	4
600.0	6.80	7.23	7.19	6.77	0.46	17.21	17.55	17.13	0.63	600.0	2.31	1.29	1.41	1.42	1.30
700.0	6.56	6.99	6.94	6.54	0.45	19.79	19.35	19.70	0.49	700.0	1.96	1.23	1.33	1.33	1.25
800.0	6.37	6.79	6.74	6.36	0.43	22.91	21.45	22.78	0.41	800.0	1.65	1.19	1.26	1.28	1.22
850.0	6.30	6.71	6.66	6.29	0.42	24.61	22.64	24.44	0.43	850.0	1.52	1.18	1.24	1.25	1.21
900.0	6.25	6.65	6.60	6.24	0.41	26.20	23.91	25.96	0.45	900.0	1.40	1.18	1.22	1.23	1.20
950.0	6.22	6.60	6.56	6.20	0.40	27.28	25.27	26.94	0.49	950.0	1.29	1.17	1.20	1.22	1.19
1000.0	6.20	6.58	6.53	6.18	0.39	27.46	26.70	27.06	0.53	1000.0	1.20	1.17	1.19	1.20	1.19
1050.0	6.19	6.56	6.52	6.18	0.39	26.82	28.14	26.42	0.60	1050.0	1.13	1.17	1.17	1.18	1.18
1100.0	6.21	6.56	6.52	6.18	0.38	25.76	29.38	25.39	0.67	1100.0	1.10	1.16	1.16	1.17	1.18
1150.0	6.23	6.58	6.54	6.21	0.37	24.63	30.31	24.29	0.76	1150.0	1.14	1.16	1.15	1.16	1.18
1200.0	6.27	6.61	6.57	6.24	0.37	23.61	30.76	23.29	0.87	1200.0	1.19	1.16	1.13	1.14	1.17
1250.0	6.31	6.64	6.60	6.28	0.36	22.73	30.70	22.43	0.97	1250.0	1.26	1.16	1.12	1.13	1.16
1300.0	6.36	6.69	6.65	6.33	0.36	21.99	30.29	21.70	1.10	1300.0	1.33	1.15	1.11	1.11	1.16
1350.0	6.42	6.74	6.70	6.38	0.36	21.38	29.69	21.10	1.22	1350.0	1.40	1.15	1.09	1.10	1.15
1400.0	6.48	6.79	6.76	6.44	0.35	20.89	29.04	20.61	1.34	1400.0	1.47	1.14	1.08	1.09	1.15
1450.0	6.53	6.85	6.82	6.49	0.36	20.50	28.38	20.22	1.48	1450.0	1.54	1.14	1.07	1.08	1.14
1500.0	6.59	6.91	6.87	6.55	0.36	20.22	27.83	19.94	1.60	1500.0	1.60	1.13	1.07	1.07	1.13
1550.0	6.65	6.97	6.93	6.60	0.36	20.04	27.32	19.76	1.77	1550.0	1.65	1.13	1.06	1.07	1.13
1600.0	6.70	7.02	6.98	6.65	0.36	19.94	26.90	19.67	1.89	1600.0	1.70	1.12	1.07	1.08	1.12
1650.0	6.74	7.07	7.03	6.70	0.37	19.93	26.53	19.65	2.05	1650.0	1.74	1.12	1.09	1.09	1.12
1700.0	6.78	7.11	7.08	6.73	0.38	20.01	26.23	19.73	2.17	1700.0	1.76	1.11	1.10	1.11	1.12
1750.0	6.80	7.15	7.11	6.76	0.39	20.21	26.06	19.92	2.27	1750.0	1.78	1.11	1.12	1.13	1.12
1800.0	6.81	7.17	7.13	6.77	0.40	20.51	25.91	20.21	2.36	1800.0	1.77	1.11	1.14	1.15	1.12
1850.0	6.81	7.19	7.15	6.78	0.41	20.92	25.85	20.61	2.46	1850.0	1.75	1.11	1.17	1.17	1.13
1900.0	6.80	7.18	7.14	6.77	0.42	21.45	25.85	21.13	2.51	1900.0	1.70	1.12	1.19	1.20	1.13
1950.0	6.77	7.17	7.13	6.74	0.43	22.12	25.90	21.79	2.58	1950.0	1.65	1.12	1.21	1.22	1.14
2000.0	6.74	7.15	7.10	6.71	0.43	22.93	25.98	22.57	2.61	2000.0	1.57	1.13	1.24	1.24	1.14
2050.0	6.70	7.11	7.07	6.68	0.44	23.92	26.09	23.52	2.67	2050.0	1.50	1.13	1.26	1.27	1.15
2100.0	6.67	7.09	7.05	6.65	0.44	25.05	26.20	24.59	2.67	2100.0	1.41	1.14	1.29	1.29	1.15
2150.0	6.65	7.07	7.03	6.63	0.44	26.25	26.26	25.73	2.71	2150.0	1.33	1.14	1.31	1.32	1.16
2200.0	6.65	7.06	7.02	6.62	0.44	27.28	26.23	26.70	2.73	2200.0	1.25	1.15	1.34	1.34	1.17
2300.0	6.70	7.09	7.04	6.67	0.42	27.31	25.62	26.86	2.79	2300.0	1.20	1.19	1.40	1.40	1.20
2400.0	6.85	7.19	7.15	6.80	0.39	24.87	24.27	24.63	2.89	2400.0	1.35	1.26	1.45	1.45	1.26
2500.0	7.10	7.39	7.34	7.04	0.34	22.41	22.55	22.26	3.12	2500.0	1.61	1.36	1.49	1.49	1.35
2600.0	7.44	7.67	7.61	7.37	0.30	20.70	20.83	20.54	3.55	2600.0	1.95	1.50	1.50	1.51	1.48
2700.0	7.84	8.01	7.95	7.75	0.26	19.81	19.24	19.58	4.16	2700.0	2.32	1.67	1.50	1.51	1.64

¹ Total Loss = Insertion Loss + 6dB Splitter Loss



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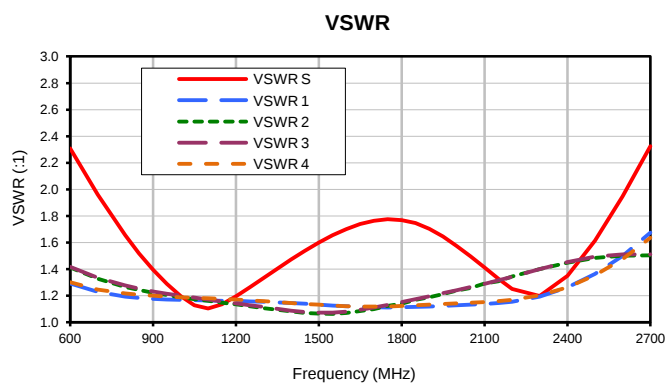
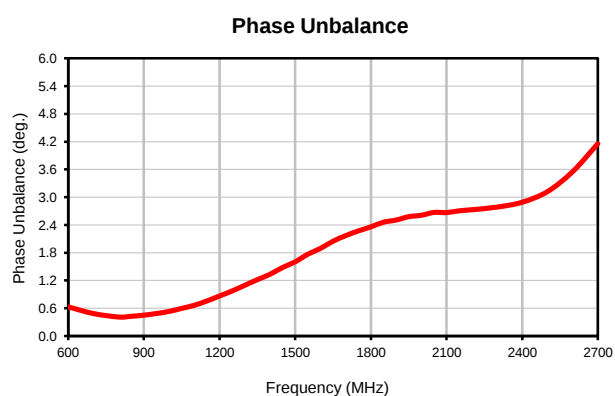
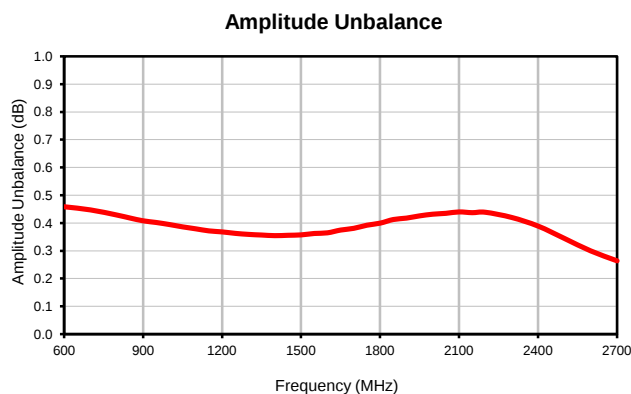
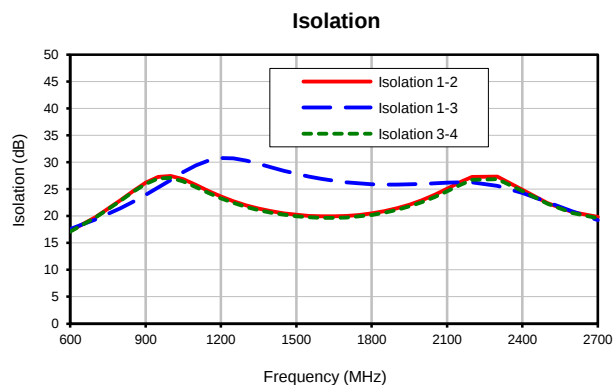
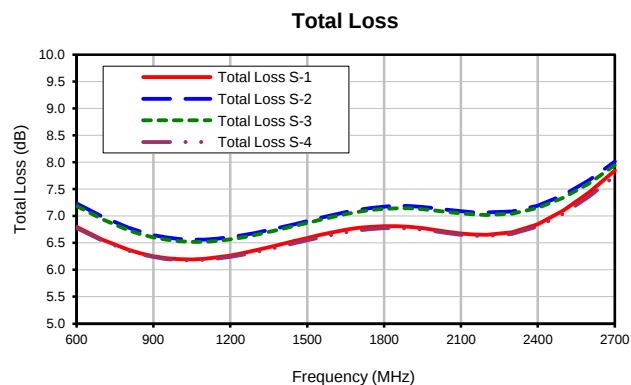


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4 Way-0° Power Splitter/Combiner

SEPS-4-272+

Typical Performance Curves



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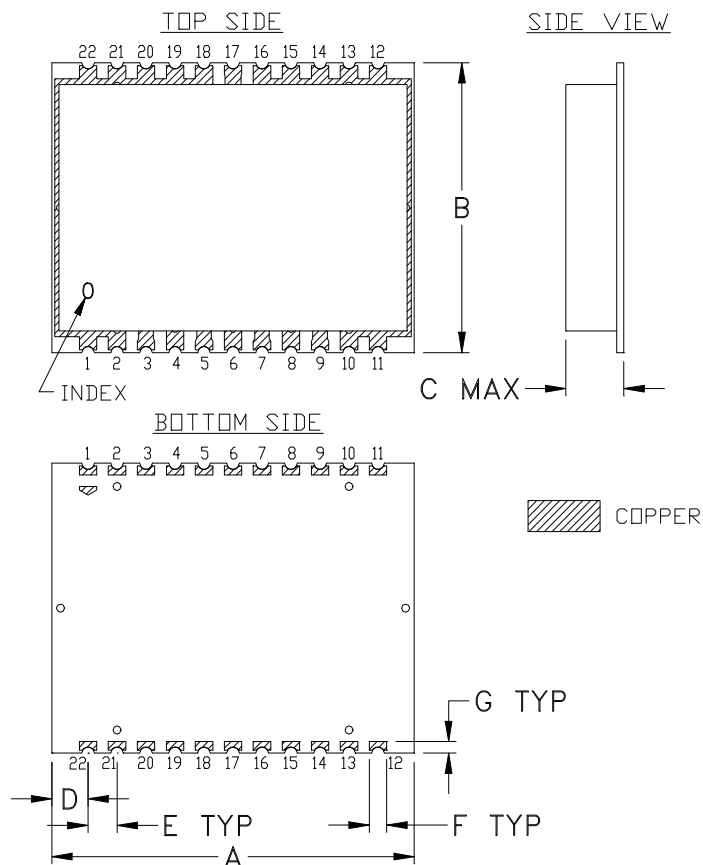


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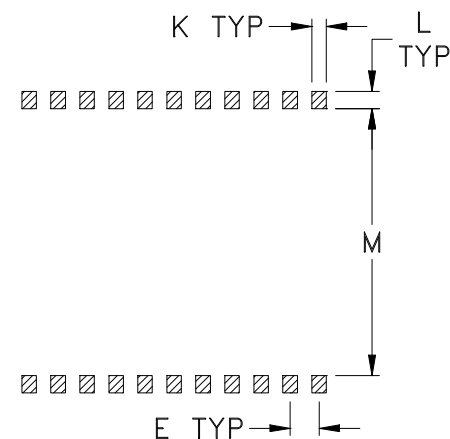
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Outline Dimensions



PCB Land Pattern



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

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAM
JF1258	1.250 (31.75)	1.000 (25.40)	.200 (5.08)	.125 (3.17)	.100 (2.54)	.060 (1.52)	.040 (1.02)	-	-	.050 (1.27)	.060 (1.52)	.920 (23.37)	4.4

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 μ m) Gold over 120-240 μ inch (3-6 μ m) Nickel plate.
All models, (+) suffix.



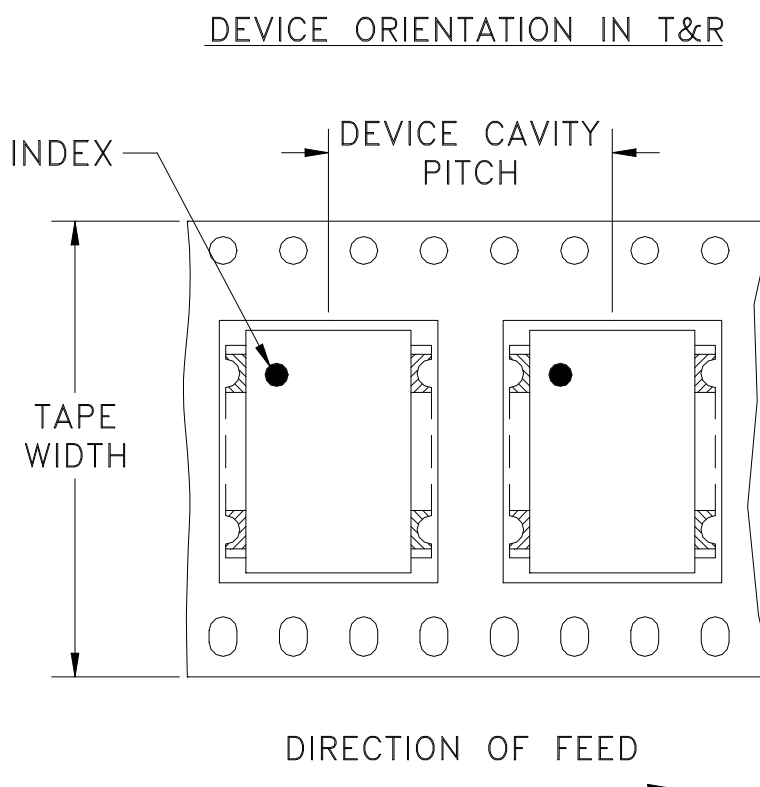
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Tape & Reel Packaging TR-F27



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
44	32	13	125

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.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

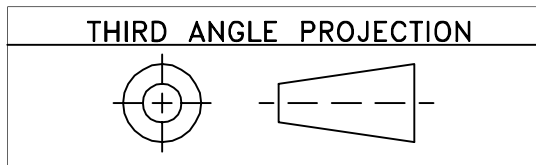


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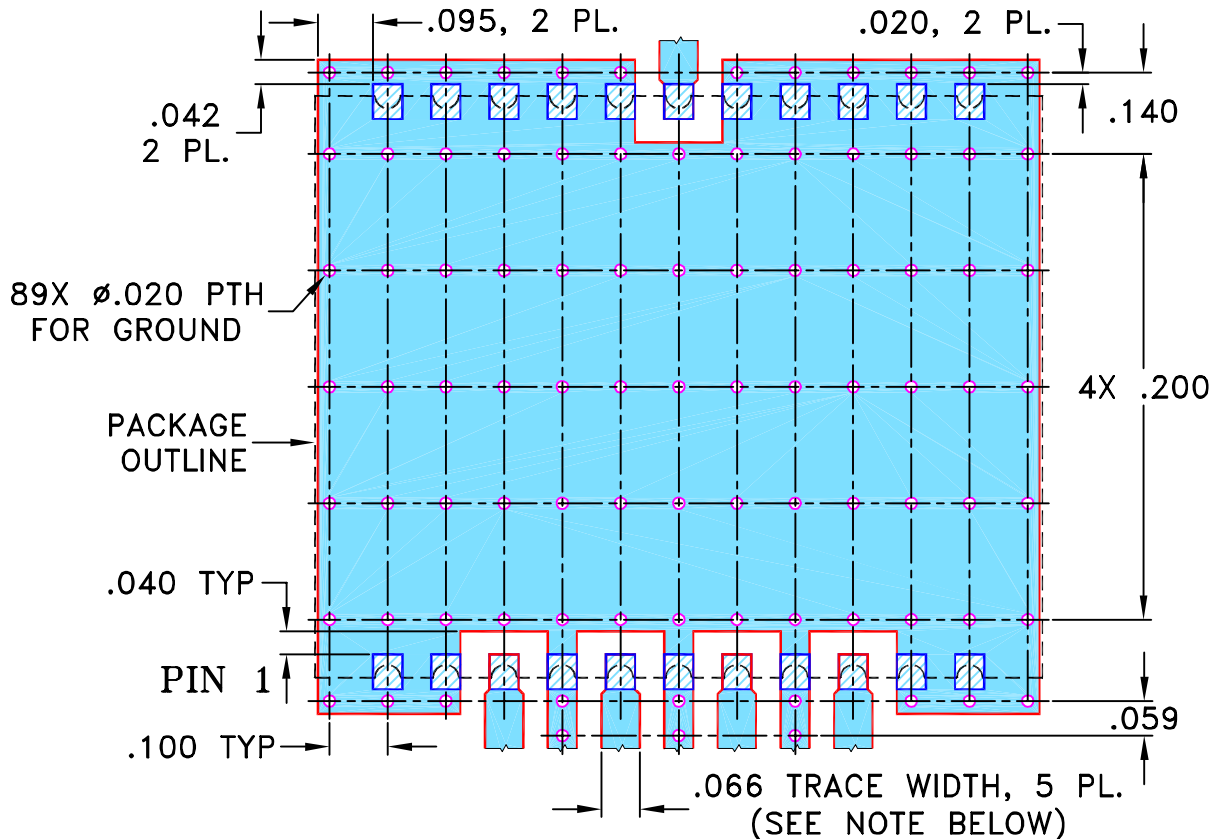
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REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M112242	NEW RELEASE	07/05/07	MMG	HY
A	M138952	PIN CONNECTION 22SP01 WAS "sq"	10/03/12	GF	WP

**SUGGESTED MOUNTING CONFIGURATION FOR
JF1258 CASE STYLE, "22SP01" PIN CONNECTION**



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" $\pm$.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

UNLESS OTHERWISE SPECIFIED	INITIALS		DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005 ANGLES $\pm$ FRACTIONS $\pm$	DRAWN	MMG	06/28/07
	CHECKED	AY	07/05/07
	APPROVED	HY	07/05/07



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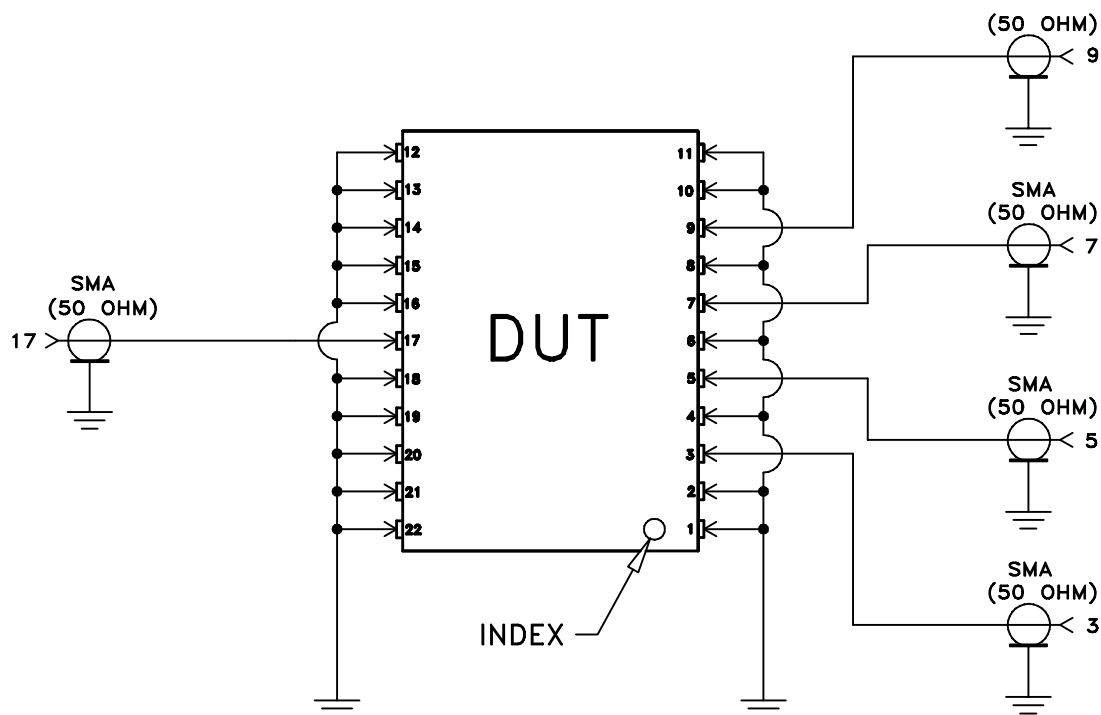
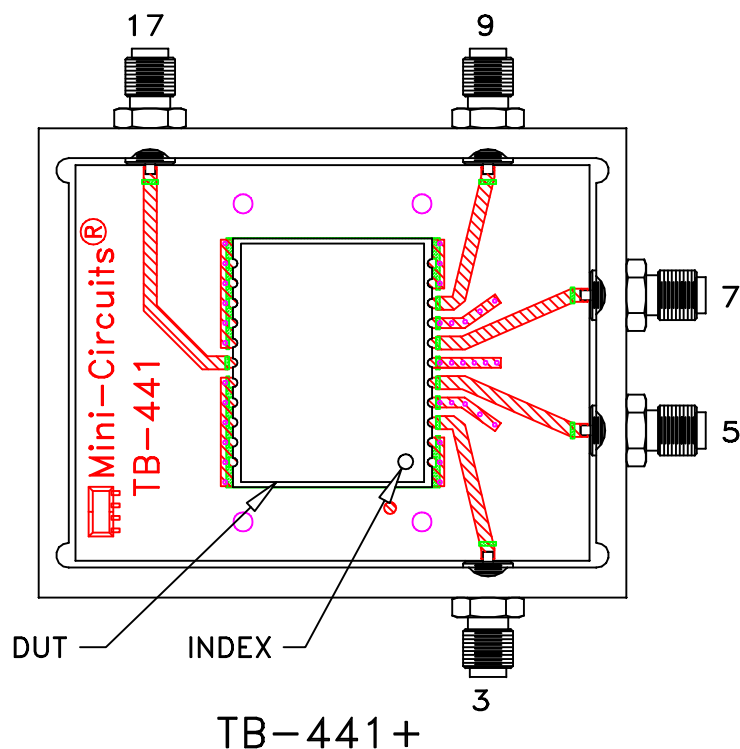
PL, 22SP01, JF1258, TB-441+

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

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-273	A
FILE:	98PL273	SCALE:	SHEET:
		3:1	1 OF 1

Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.030 inch.

 Mini-Circuits®



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