

Surface Mount Power Splitter/Combiner

ADQ-22+

2 Way-90° 50Ω 95 to 200 MHz



Generic photo used for illustration purposes only

CASE STYLE: CJ725

+RoHS Compliant

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

Maximum Ratings

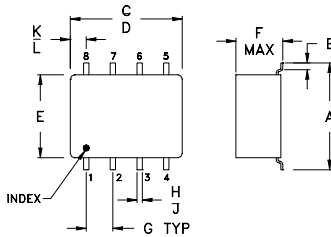
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1W max.

Permanent damage may occur if any of these limits are exceeded.

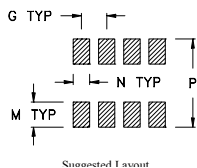
Pin Connections

SUMPORT	1
PORT 1 (0°)	5
PORT 2 (+90°)	8
GROUND EXTERNAL	2,3,6,7
50 OHM TERM EXTERNAL	4

Outline Drawing



PCB Land Pattern

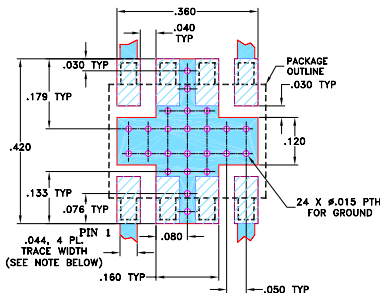


Unconnected 1 unused

Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	
.397	.032	.385	.435	.310	.215	.100	
10.08	0.81	9.78	11.05	7.87	5.46	2.54	
H	J	K	L	M	N	P	wt
.015	.025	.035	.075	.120	.060	.420	grams
0.38	0.64	0.89	1.91	3.05	1.52	10.67	0.45

Demo Board MCL P/N: TB-83 Suggested PCB Layout (PL-063)



- NOTES:
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- Legend:
- Blue shaded area: DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 - Red shaded area: DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- low insertion loss, 0.3 dB typ.
- high isolation, 28 dB typ.
- excellent VSWR, 1.10 typ.
- small size surface mount

Applications

- point to point microwave link

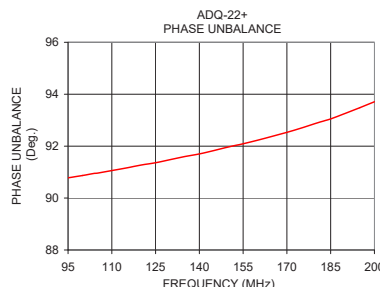
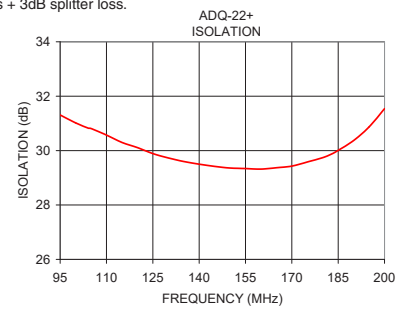
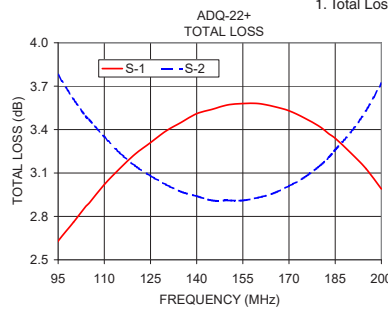
Electrical Specifications

FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) Avg. of Coupled Outputs ABOVE 3 dB		PHASE UNBALANCE (Degrees)	AMPLITUDE UNBALANCE (dB)		VSWR (-1)		
	Typ.	Min.	Typ.	Max.	Typ. Max.	Typ.	Max.	S-Port Typ.	Output Typ.	
f _L -f _H										
95-200	28	24	0.3	0.6	2	6	0.7	1.6	1.1	1.1

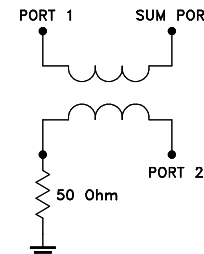
Typical Performance Data

Frequency (MHz)	Total Loss ¹ (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
95.00	2.63	3.78	1.15	31.31	90.78	1.09	1.09	1.06
100.00	2.76	3.61	0.85	31.02	90.87	1.09	1.09	1.06
105.00	2.89	3.47	0.57	30.81	90.96	1.09	1.09	1.06
110.00	3.02	3.35	0.33	30.57	91.06	1.09	1.09	1.06
120.00	3.23	3.15	0.08	30.11	91.27	1.10	1.10	1.06
130.00	3.39	3.02	0.37	29.73	91.48	1.10	1.10	1.06
140.00	3.51	2.94	0.57	29.50	91.70	1.10	1.10	1.06
150.00	3.57	2.91	0.66	29.36	91.97	1.10	1.10	1.06
160.00	3.58	2.93	0.65	29.32	92.23	1.10	1.10	1.06
170.00	3.53	3.01	0.52	29.43	92.53	1.11	1.11	1.05
180.00	3.42	3.15	0.26	29.74	92.88	1.11	1.11	1.05
185.00	3.34	3.26	0.08	30.01	93.05	1.11	1.10	1.05
190.00	3.24	3.38	0.14	30.37	93.26	1.11	1.10	1.05
195.00	3.13	3.53	0.41	30.87	93.48	1.11	1.10	1.04
200.00	2.99	3.72	0.72	31.54	93.71	1.11	1.10	1.04

1. Total Loss = Insertion Loss + 3dB splitter loss.



electrical schematic



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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2 Way-90° Power Splitter/Combiner

ADQ-22+

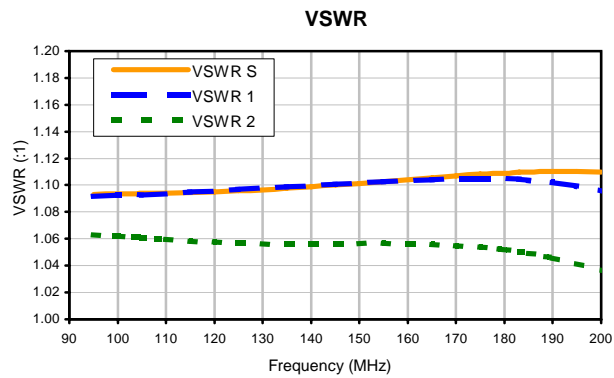
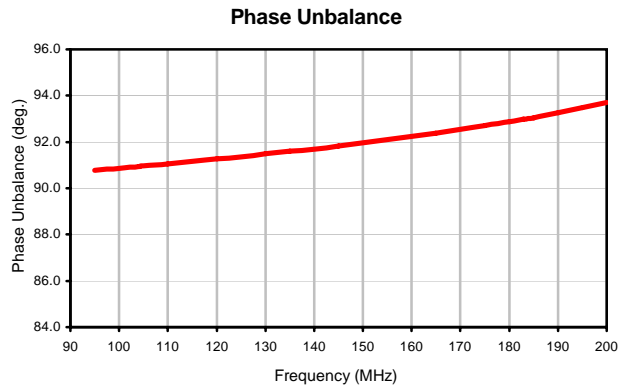
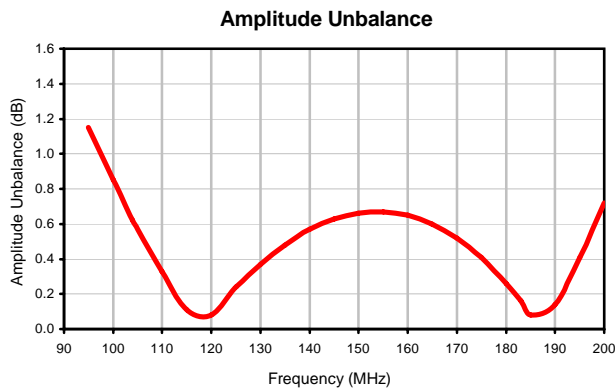
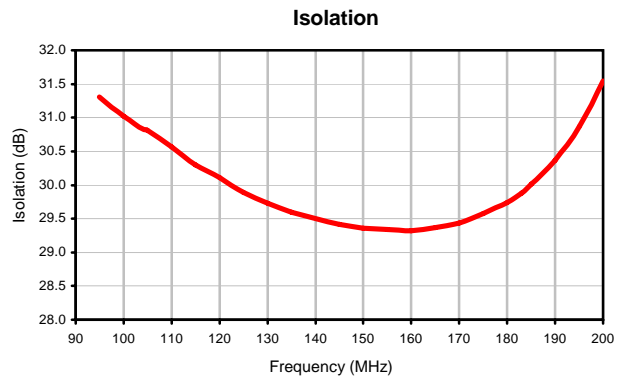
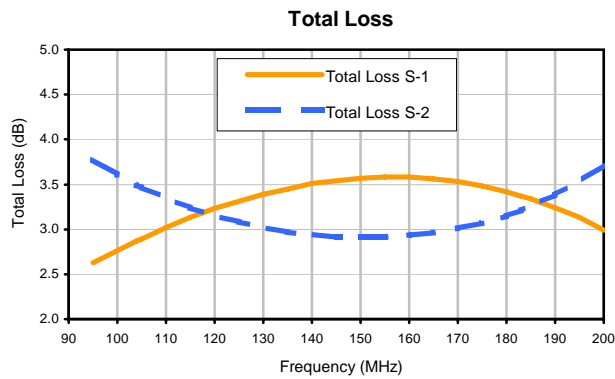
Typical Performance Data

FREQUENCY (MHz)	TOTAL LOSS ¹ (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB) 1-2	PHASE UNBALANCE (deg.)	FREQUENCY (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
95.0	2.63	3.78	1.15	31.31	90.78	95.0	1.09	1.09	1.06
100.0	2.76	3.61	0.85	31.02	90.87	100.0	1.09	1.09	1.06
104.0	2.87	3.49	0.62	30.83	90.95	104.0	1.09	1.09	1.06
105.0	2.89	3.47	0.57	30.81	90.96	105.0	1.09	1.09	1.06
110.0	3.02	3.35	0.33	30.57	91.06	110.0	1.09	1.09	1.06
115.0	3.13	3.24	0.11	30.30	91.16	115.0	1.09	1.09	1.06
120.0	3.23	3.15	0.08	30.11	91.27	120.0	1.10	1.10	1.06
125.0	3.31	3.08	0.24	29.89	91.36	125.0	1.10	1.10	1.06
130.0	3.39	3.02	0.37	29.73	91.48	130.0	1.10	1.10	1.06
135.0	3.45	2.97	0.48	29.60	91.60	135.0	1.10	1.10	1.06
140.0	3.51	2.94	0.57	29.50	91.70	140.0	1.10	1.10	1.06
145.0	3.54	2.91	0.63	29.42	91.83	145.0	1.10	1.10	1.06
150.0	3.57	2.91	0.66	29.36	91.97	150.0	1.10	1.10	1.06
155.0	3.58	2.91	0.67	29.34	92.09	155.0	1.10	1.10	1.06
160.0	3.58	2.93	0.65	29.32	92.23	160.0	1.10	1.10	1.06
165.0	3.56	2.96	0.60	29.37	92.38	165.0	1.11	1.10	1.06
170.0	3.53	3.01	0.52	29.43	92.53	170.0	1.11	1.11	1.05
175.0	3.48	3.07	0.41	29.58	92.70	175.0	1.11	1.11	1.05
180.0	3.42	3.15	0.26	29.74	92.88	180.0	1.11	1.11	1.05
183.0	3.37	3.21	0.16	29.88	92.98	183.0	1.11	1.10	1.05
185.0	3.34	3.26	0.08	30.01	93.05	185.0	1.11	1.10	1.05
190.0	3.24	3.38	0.14	30.37	93.26	190.0	1.11	1.10	1.05
195.0	3.13	3.53	0.41	30.87	93.48	195.0	1.11	1.10	1.04
200.0	2.99	3.72	0.72	31.54	93.71	200.0	1.11	1.10	1.04

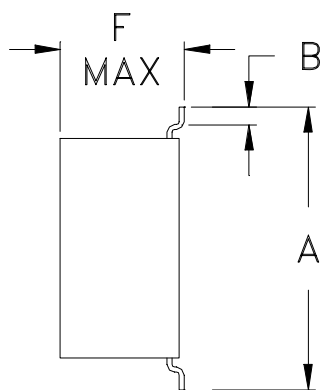
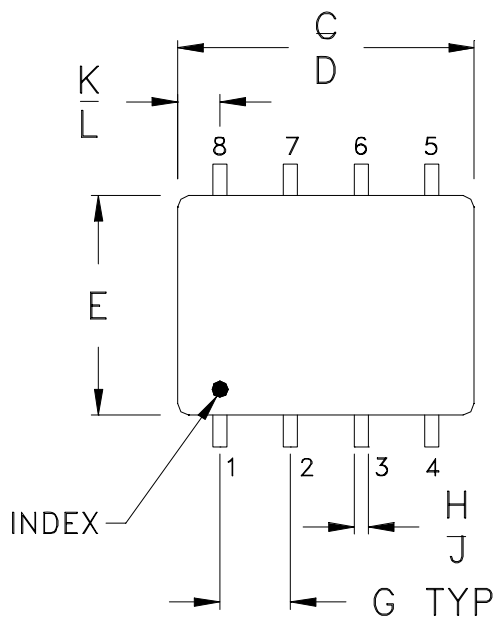
¹Total Loss = Insertion Loss + 3dB Splitter Loss



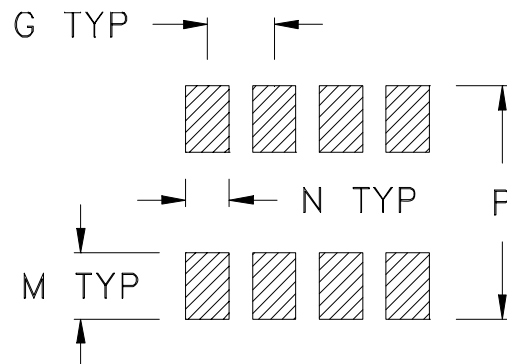
Typical Performance Curves



Outline Dimensions



PCB Land Pattern



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

CASE #	A	B	C	D	E	F	G	H	J	K
CJ608	.397 (10.08)	.032 (.813)	.385 (9.78)	.435 (11.05)	.310 (7.87)	.175 (4.45)	.100 (2.54)	.015 (0.38)	.025 (0.64)	.035 (0.89)
CJ725						.215 (5.46)				

CASE #	L	M	N	P	WT. GRAM
CJ608	.075 (1.91)	.120 (3.05)	.060 (1.52)	.420 (10.67)	.40
CJ725					.45

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

Notes:

- Case material: Plastic.
- Termination finish:
Tin plate over Nickel plate.



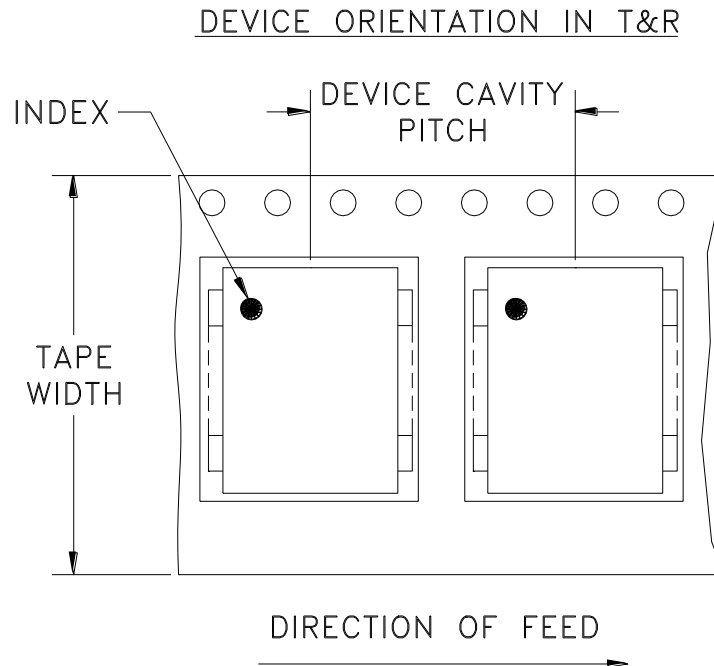
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Tape & Reel Packaging TR-F10



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	16	7	10,20,50,100,200
		13	500

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

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

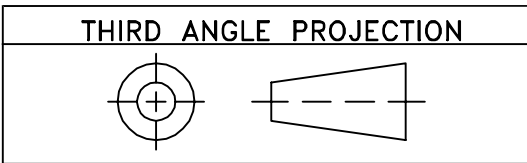


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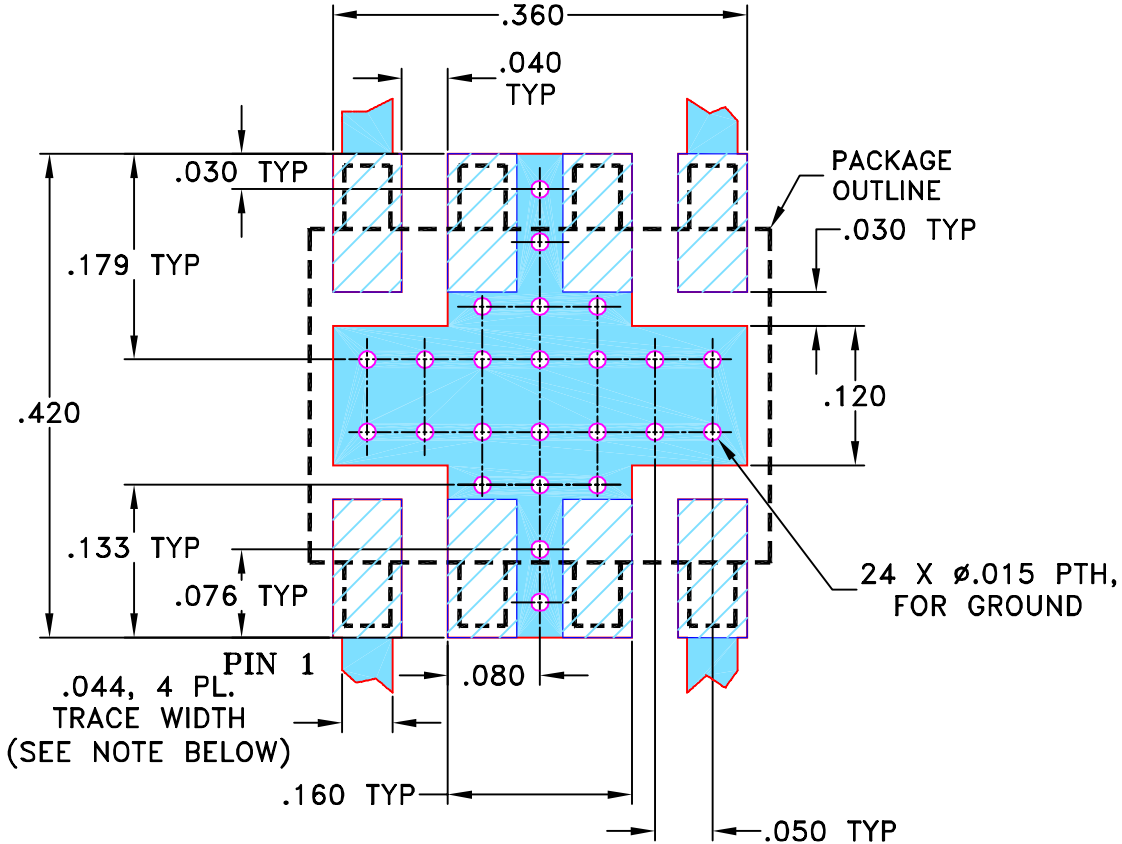
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REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M82272	NEW RELEASE	08/06/02	GF	DJ
A	M102713	UPDATED NOTES, ADDED "...WITH SMOBC"	01/16/06	GT	IL

SUGGESTED MOUNTING CONFIGURATION FOR
CJ725 CASE STYLE, "ma", "nf" PIN CONNECTIONS



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". 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
	DRAWN	GF	07/18/02
	CHECKED	HY	08/01/02
	APPROVED	DJ	08/06/02

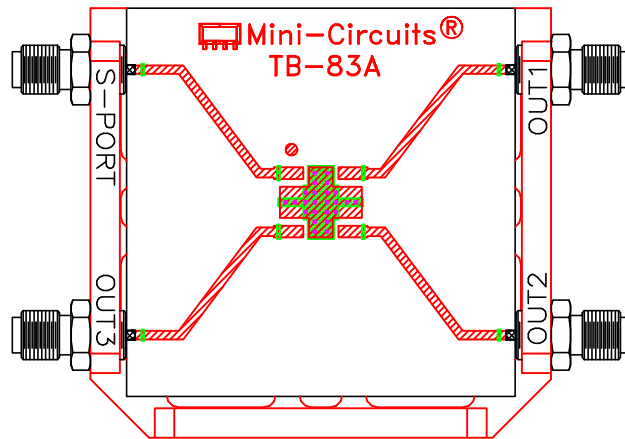
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PL, ma/nf, CJ725, AD3PS/ADQ, TB-83

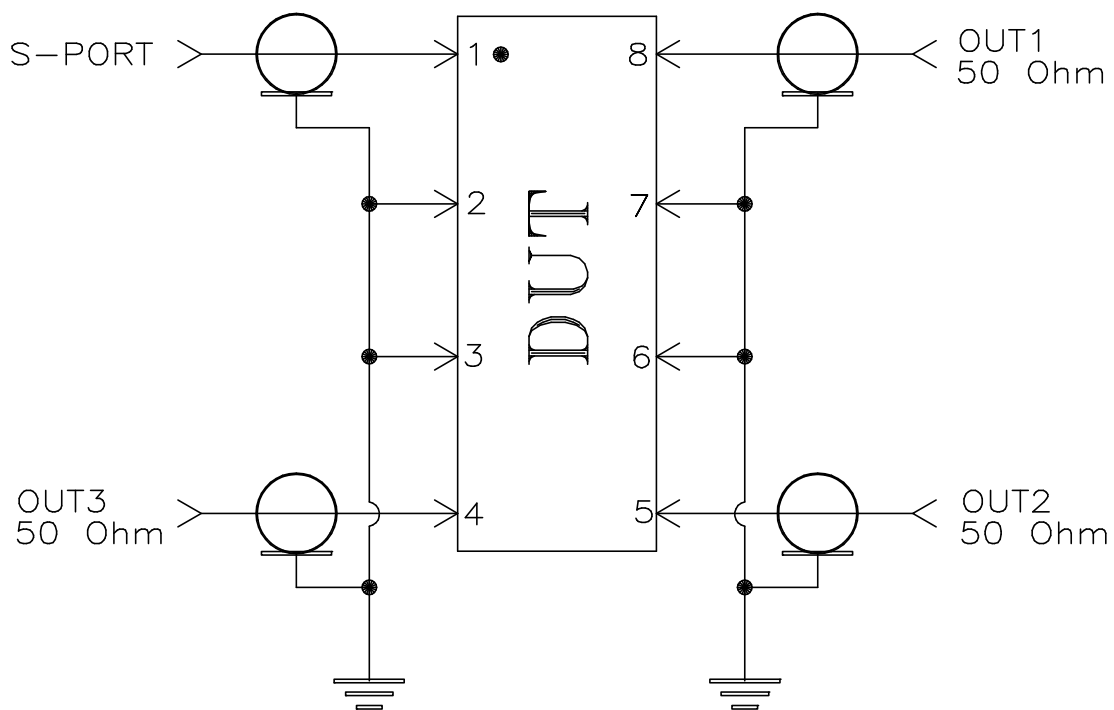
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SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-063	REV: A
FILE: 98PL063	SCALE: 6:1	SHEET: 1 OF 1	

Evaluation Board and Circuit




TB-83



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent, Dielectric Constant=3.5, Thickness=.020 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