Engineering Development Model

Power Splitter/Combiner SCA-ED10699/1

4 Way-0°

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : DZ943

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency		5		1000	MHz
Isolation	**5 - 50 MHz**		30		dB
	50 - 500 MHz		28		dB
	500 - 1000 MHz		22		dB
Insertion Loss Above 6.0 dB	**5 - 50 MHz**		0.50		dB
	50 - 500 MHz		0.70		dB
	500 - 1000 MHz		1.20		dB
Phase Unbalance	**5 - 50 MHz**		0.703		deg.
	50 - 500 MHz		0.648		deg.
	500 - 1000 MHz		1.408		deg.
Amplitude Unbalance	**5 - 50 MHz**		0.344		dB
	50 - 500 MHz		0.347		dB
	500 - 1000 MHz		0.446		dB
VSWR	**SUM Port**		1.20		(:1)
	OUT Ports		1.20		(:1)

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

PIN CONNECTIONS	
SUM PORT	3
PORT 1	6
PORT 2	7
PORT 3	9
PORT 4	10
GND EXT	1, 2, 4, 5, 8

Functional Diagram

4 Way-0° Power Splitter/Combiner SCA-ED10699/1

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP. UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (deg.)
	S-1	S-2	S-3	S-4		1-2	2-3	3-4	
5.0	6.48	6.25	6.38	6.62	0.37	27.49	35.06	28.91	1.15
6.0	6.47	6.25	6.37	6.61	0.36	28.09	35.92	29.46	0.98
7.0	6.47	6.25	6.37	6.60	0.35	28.57	36.51	29.89	0.87
8.0	6.46	6.25	6.37	6.60	0.34	28.91	36.96	30.22	0.76
9.0	6.46	6.25	6.37	6.59	0.34	29.20	37.30	30.50	0.69
10.0	6.46	6.25	6.37	6.59	0.33	29.45	37.56	30.73	0.64
30.0	6.47	6.28	6.40	6.61	0.33	30.74	38.16	31.79	0.27
50.0	6.49	6.31	6.43	6.64	0.33	30.61	38.02	31.42	0.26
70.0	6.51	6.33	6.45	6.66	0.33	30.37	37.96	30.92	0.29
90.0	6.53	6.35	6.48	6.68	0.33	30.13	38.02	30.46	0.33
100.0	6.54	6.36	6.49	6.69	0.33	30.01	38.07	30.24	0.33
125.0	6.56	6.38	6.51	6.71	0.33	29.75	38.28	29.71	0.37
150.0	6.58	6.40	6.54	6.74	0.34	29.52	38.62	29.24	0.42
175.0	6.60	6.42	6.56	6.76	0.34	29.28	39.08	28.80	0.47
200.0	6.62	6.44	6.58	6.78	0.34	29.05	39.66	28.37	0.51
225.0	6.64	6.46	6.60	6.80	0.34	28.78	40.35	27.95	0.56
250.0	6.66	6.48	6.63	6.82	0.34	28.46	41.16	27.54	0.62
300.0	6.70	6.52	6.67	6.87	0.35	27.64	42.43	26.68	0.70
325.0	6.72	6.54	6.70	6.89	0.35	27.14	42.61	26.23	0.77
350.0	6.74	6.56	6.72	6.91	0.35	26.59	42.30	25.78	0.82
375.0	6.76	6.58	6.74	6.93	0.35	26.02	41.47	25.31	0.86
400.0	6.78	6.60	6.76	6.96	0.36	25.41	40.28	24.83	0.91
425.0	6.81	6.62	6.79	6.98	0.36	24.79	39.00	24.34	0.95
450.0	6.83	6.64	6.81	7.01	0.37	24.17	37.65	23.85	0.99
475.0	6.85	6.66	6.84	7.04	0.37	23.56	36.37	23.38	1.06
500.0	6.88	6.69	6.87	7.06	0.38	22.98	35.20	22.91	1.10
525.0	6.90	6.71	6.90	7.09	0.38	22.40	34.11	22.45	1.14
550.0	6.93	6.74	6.93	7.13	0.39	21.86	33.12	22.00	1.18
575.0	6.96	6.76	6.97	7.16	0.40	21.35	32.19	21.57	1.22
600.0	6.99	6.80	7.01	7.20	0.40	20.85	31.36	21.16	1.21
625.0	7.02	6.81	7.03	7.23	0.42	20.40	30.62	20.78	1.23
650.0	7.05	6.84	7.07	7.27	0.43	20.00	29.96	20.45	1.29
675.0	7.08	6.87	7.10	7.30	0.43	19.63	29.35	20.14	1.34
700.0	7.11	6.90	7.14	7.34	0.44	19.31	28.82	19.87	1.38
750.0	7.19	6.97	7.22	7.43	0.46	18.76	27.87	19.42	1.43
800.0	7.28	7.06	7.32	7.54	0.48	18.38	27.12	19.11	1.51
850.0	7.39	7.16	7.44	7.65	0.49	18.14	26.52	18.94	1.61
900.0	7.51	7.27	7.56	7.78	0.51	18.06	26.05	18.91	1.72
950.0	7.65	7.39	7.70	7.93	0.53	18.13	25.71	19.04	1.82
1000.0	7.79	7.53	7.85	8.08	0.55	18.36	25.47	19.31	1.94

FREQ. (MHz)	VSWR (:1)				
	S	1	2	3	4
5.0	1.06	1.36	1.29	1.33	1.38
6.0	1.05	1.34	1.28	1.31	1.36
7.0	1.05	1.33	1.27	1.30	1.34
8.0	1.05	1.31	1.26	1.29	1.33
9.0	1.05	1.31	1.25	1.28	1.32
10.0	1.04	1.30	1.25	1.28	1.32
30.0	1.04	1.27	1.22	1.25	1.29
50.0	1.05	1.26	1.22	1.25	1.28
70.0	1.05	1.26	1.21	1.24	1.27
90.0	1.06	1.25	1.21	1.24	1.27
100.0	1.06	1.25	1.21	1.24	1.27
125.0	1.07	1.25	1.21	1.23	1.26
150.0	1.08	1.25	1.21	1.23	1.26
175.0	1.10	1.24	1.21	1.23	1.25
200.0	1.11	1.24	1.21	1.23	1.25
225.0	1.12	1.24	1.21	1.22	1.24
250.0	1.13	1.24	1.21	1.22	1.24
300.0	1.15	1.23	1.21	1.22	1.23
325.0	1.16	1.23	1.21	1.22	1.22
350.0	1.16	1.22	1.21	1.22	1.21
375.0	1.17	1.22	1.21	1.21	1.21
400.0	1.18	1.21	1.21	1.21	1.20
425.0	1.18	1.21	1.20	1.21	1.19
450.0	1.19	1.20	1.20	1.21	1.19
475.0	1.19	1.19	1.20	1.21	1.18
500.0	1.20	1.18	1.19	1.20	1.17
525.0	1.20	1.17	1.19	1.20	1.16
550.0	1.21	1.16	1.18	1.20	1.15
575.0	1.21	1.15	1.17	1.19	1.14
600.0	1.22	1.14	1.17	1.19	1.13
625.0	1.23	1.13	1.16	1.19	1.12
650.0	1.25	1.12	1.16	1.19	1.11
675.0	1.26	1.11	1.15	1.19	1.10
700.0	1.28	1.10	1.15	1.19	1.10
750.0	1.32	1.09	1.16	1.20	1.09
800.0	1.38	1.10	1.18	1.21	1.11
850.0	1.45	1.13	1.21	1.24	1.13
900.0	1.53	1.17	1.25	1.27	1.17
950.0	1.61	1.22	1.30	1.32	1.21
1000.0	1.70	1.27	1.35	1.36	1.25

[1] Total Loss = Insertion Loss + 6dB Splitter Loss

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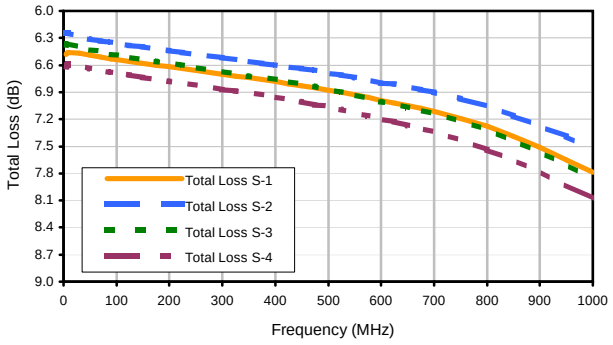
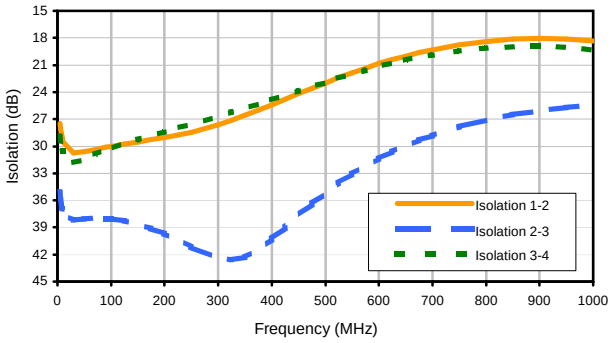
Typical Performance Curves

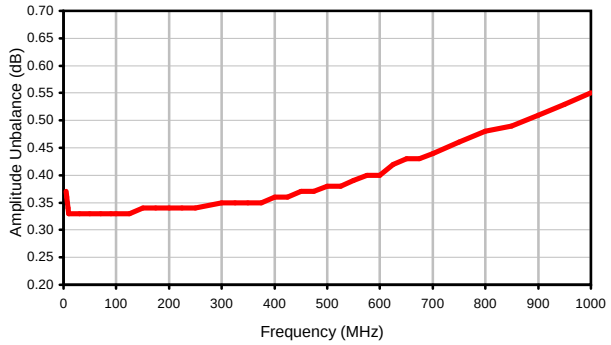
Total Loss



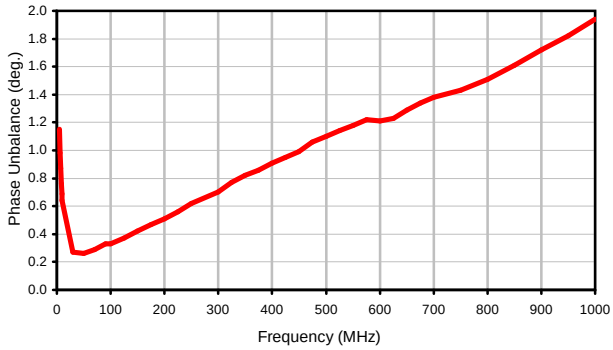
Isolation



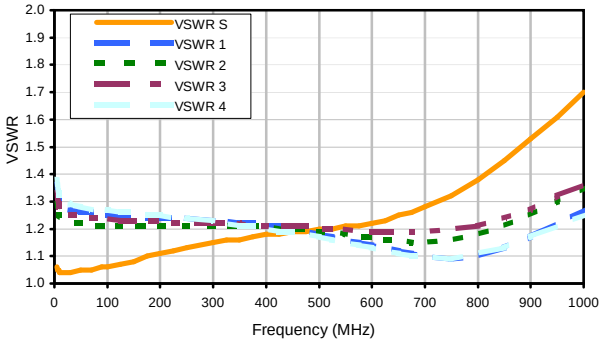
Amplitude Unbalance



Phase Unbalance



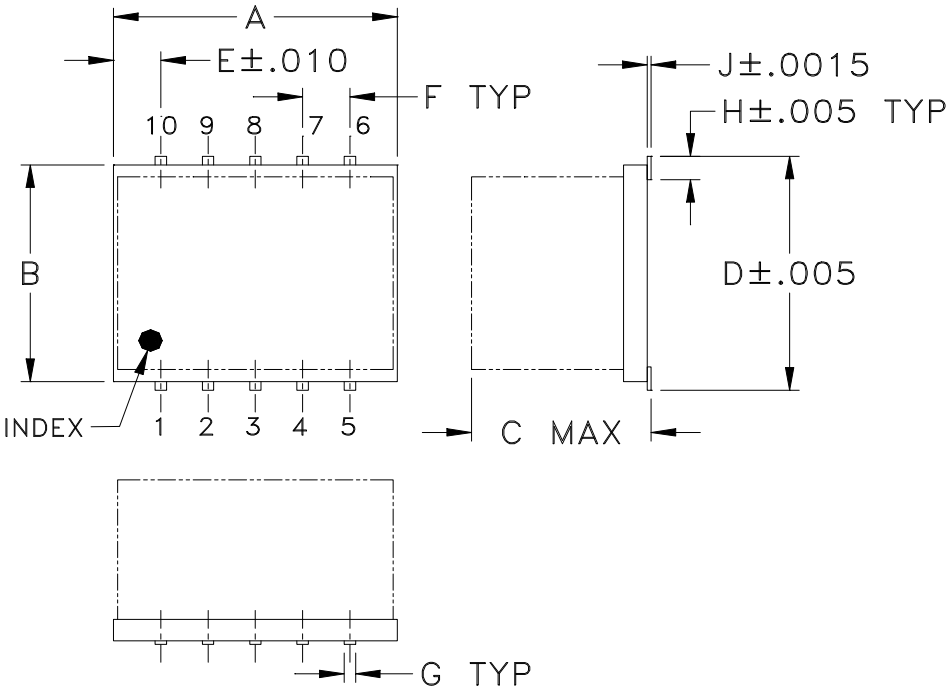
VSWR



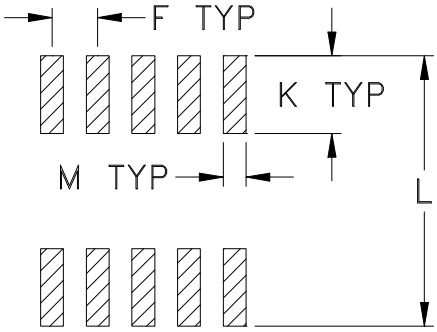
Case Style DZ

DZ943

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAMS
DZ943	.30 (7.62)	.250 (6.35)	.190 (4.83)	.266 (6.76)	.050 (1.27)	.050 (1.27)	.012 (0.30)	.029 (0.74)	.004 (0.10)	.085 (2.16)	.296 (7.52)	.030 (0.76)	0.5

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

Notes:

1. Case material: Plastic.
2. Base: Ceramic.
3. Termination finish:
   For RoHS Case Styles: Tin plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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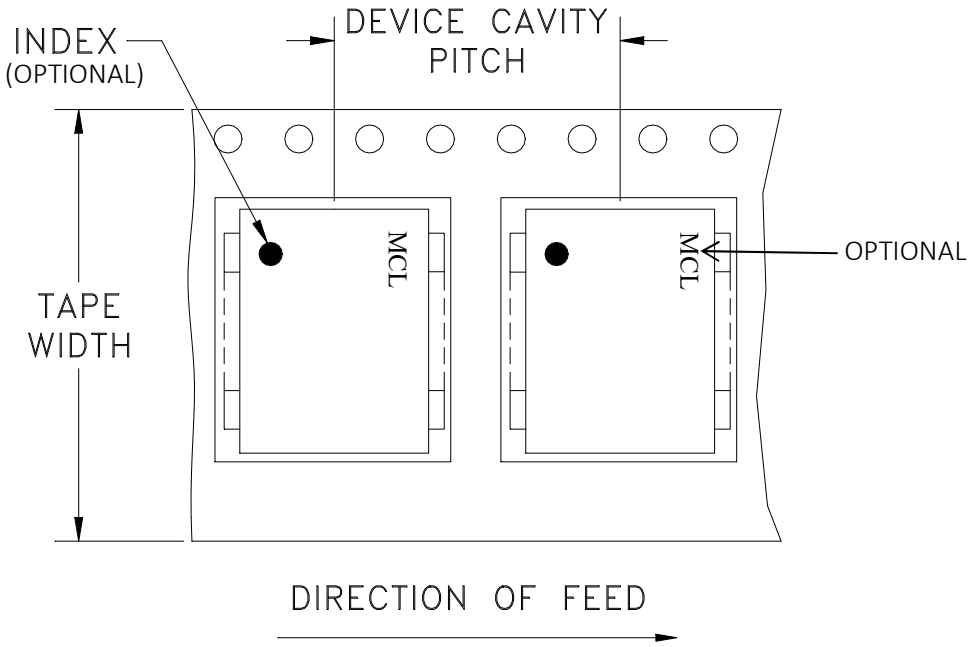
Tape & Reel Packaging TR-F34

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
16	12	7	Small quantity standard (see note)	20
				50
				100
				200
		13	Standard	500
				1000

Note: Availability of small reel quantity varies by model.
Refer to pricing and availability on individual model dashboard.

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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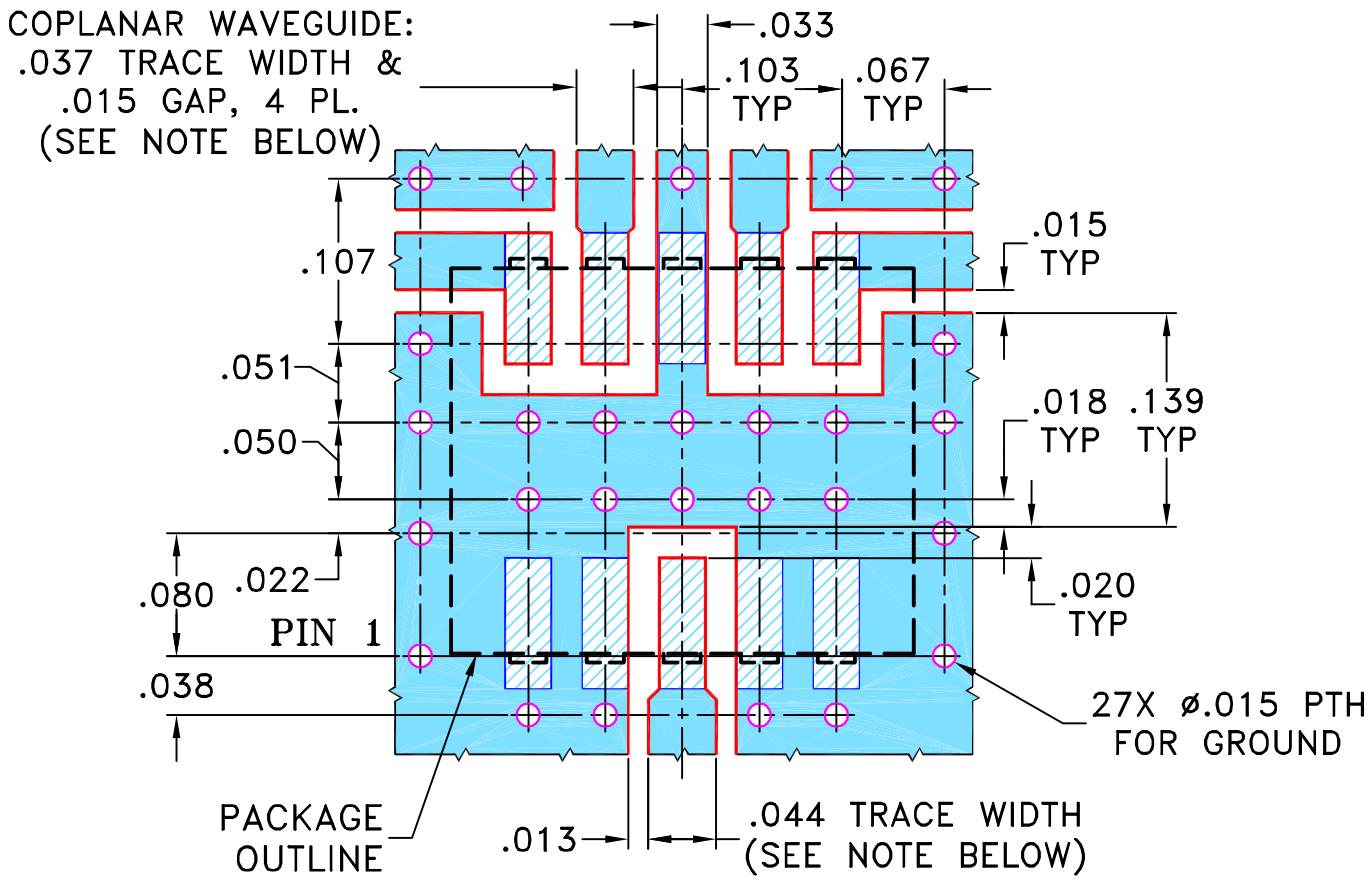
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M84016	NEW RELEASE	01/03/03	MMG	WP
A	M91639	REMOVED NOTE 2, UPDATED DIMENSIONS	04/14/04	AV	DJ
B	M102713	ADDED"...WITH SMOBC"	01/16/06	GF	IL

SUGGESTED MOUNTING CONFIGURATION FOR DZ943 CASE STYLE, "ny" PIN CONNECTION.



NOTES: 1.COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015".
COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH & GAP 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	DRAWN	MMG	01/03/03
TOLERANCES ON:	CHECKED	AV	01/03/03
2 PL DECIMALS ±	APPROVED	WP	01/03/03
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

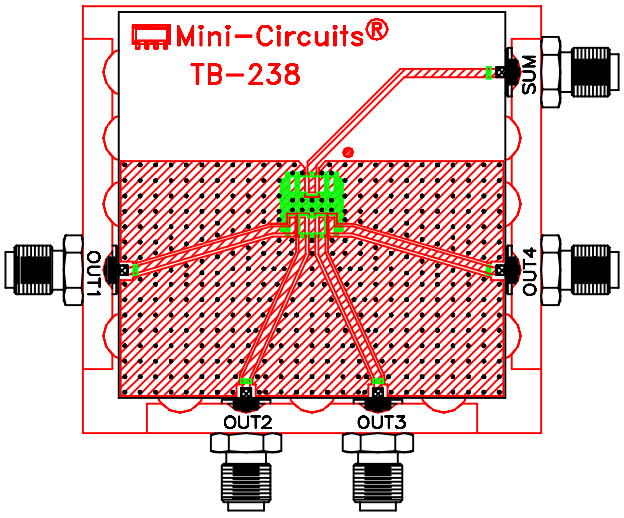
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, ny, DZ943, SCA-4-10, TB-238

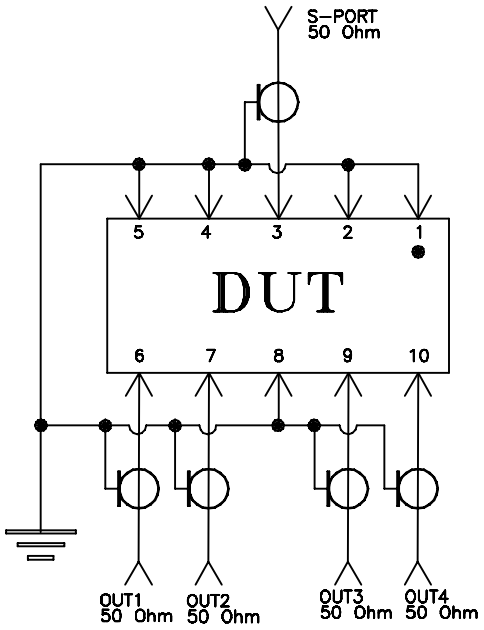
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-124	B

FILE:	SCALE:	SHEET:
98PL124	8:1	1 OF 1

Evaluation Board and Circuit



TB-238



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.020 inch.

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Environmental Specifications ENV05

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
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102-C, Condition C
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process: 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
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