

Engineering Development Model

Power Splitter/Combiner

JSPQ-ED13075/1

2 Way-90°

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.

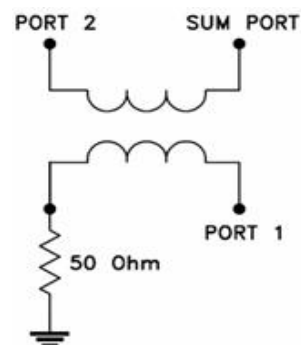
CASE STYLE : BK276

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C				
Parameter		Min.	Typ.	Max. Units
Frequency		4		44 MHz
Isolation	4 - 44 MHz		43	
Insertion Loss				
Average of Coupled Outputs	4 - 44 MHz		0.50	
above 3.0 dB				
Phase Unbalance from 90°	4 - 44 MHz		2.50	
Amplitude Unbalance	4 - 44 MHz		0.15	
VSWR	SUM Port		1.22	(:1)
	OUT Ports		1.27	(:1)

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

PIN CONNECTIONS	
SUM PORT	1
PORT 1	7
PORT 2	8
GND EXT	2,3,4,5,6,9,10,11,12,13,14

Functional Diagram



2 Way-90° Power Splitter/Combiner

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Typical Performance Data

FREQUENCY (MHz)	TOTAL LOSS ¹ (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB)	PHASE UNBALANCE (deg.)	FREQUENCY (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
2.0	3.40	3.16	0.24	36.38	68.85	2.0	1.23	1.46	1.07
2.5	3.39	3.18	0.22	38.23	76.27	2.5	1.22	1.42	1.06
3.0	3.38	3.18	0.20	40.06	81.24	3.0	1.20	1.38	1.05
3.5	3.36	3.18	0.18	41.53	84.47	3.5	1.19	1.34	1.04
4.0	3.35	3.19	0.17	43.16	86.53	4.0	1.17	1.30	1.03
6.0	3.34	3.20	0.14	50.56	88.74	6.0	1.13	1.21	1.02
8.0	3.35	3.22	0.13	54.15	87.94	8.0	1.11	1.16	1.06
10.0	3.36	3.25	0.12	51.04	87.11	10.0	1.11	1.12	1.10
12.0	3.39	3.27	0.12	48.52	86.72	12.0	1.11	1.10	1.14
14.0	3.41	3.30	0.11	46.95	86.73	14.0	1.12	1.09	1.18
16.0	3.44	3.32	0.11	45.87	86.96	16.0	1.13	1.09	1.22
18.0	3.46	3.35	0.12	44.91	87.27	18.0	1.15	1.11	1.26
20.0	3.49	3.37	0.12	44.31	87.59	20.0	1.17	1.13	1.29
22.0	3.52	3.39	0.12	43.65	87.85	22.0	1.19	1.16	1.31
24.0	3.54	3.42	0.13	43.06	88.01	24.0	1.20	1.19	1.34
26.0	3.57	3.44	0.13	42.49	88.09	26.0	1.22	1.22	1.36
28.0	3.60	3.46	0.14	42.03	88.07	28.0	1.24	1.25	1.38
30.0	3.63	3.48	0.15	41.62	87.95	30.0	1.26	1.28	1.39
32.0	3.65	3.49	0.16	41.03	87.74	32.0	1.28	1.31	1.41
34.0	3.68	3.51	0.17	40.65	87.47	34.0	1.30	1.34	1.42
36.0	3.70	3.52	0.18	40.16	87.13	36.0	1.31	1.36	1.42
38.0	3.73	3.53	0.19	39.71	86.73	38.0	1.33	1.39	1.43
40.0	3.75	3.55	0.21	39.23	86.29	40.0	1.35	1.42	1.43
42.0	3.78	3.56	0.22	38.73	85.82	42.0	1.36	1.44	1.43
44.0	3.80	3.57	0.23	38.35	85.32	44.0	1.38	1.47	1.43
46.0	3.83	3.58	0.25	37.89	84.80	46.0	1.39	1.49	1.42
48.0	3.85	3.58	0.26	37.43	84.27	48.0	1.41	1.52	1.42
50.0	3.87	3.59	0.28	37.05	83.73	50.0	1.42	1.54	1.41
52.0	3.89	3.60	0.29	36.63	83.20	52.0	1.43	1.56	1.41
54.0	3.91	3.61	0.31	36.34	82.66	54.0	1.45	1.58	1.40
56.0	3.94	3.62	0.32	35.97	82.12	56.0	1.46	1.61	1.39
58.0	3.96	3.62	0.34	35.66	81.60	58.0	1.47	1.63	1.38
60.0	3.98	3.63	0.35	35.34	81.09	60.0	1.49	1.65	1.38
70.0	4.08	3.66	0.42	33.95	78.72	70.0	1.55	1.74	1.34
80.0	4.17	3.70	0.47	32.84	76.77	80.0	1.62	1.83	1.33
90.0	4.25	3.75	0.50	31.98	75.28	90.0	1.69	1.89	1.35
100.0	4.32	3.80	0.51	31.30	74.25	100.0	1.75	1.94	1.39
110.0	4.37	3.87	0.50	30.81	73.66	110.0	1.81	1.97	1.46

¹Total Loss = Insertion Loss + 3dB Splitter Loss



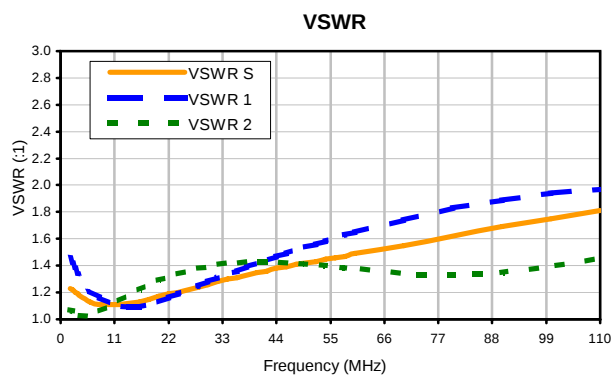
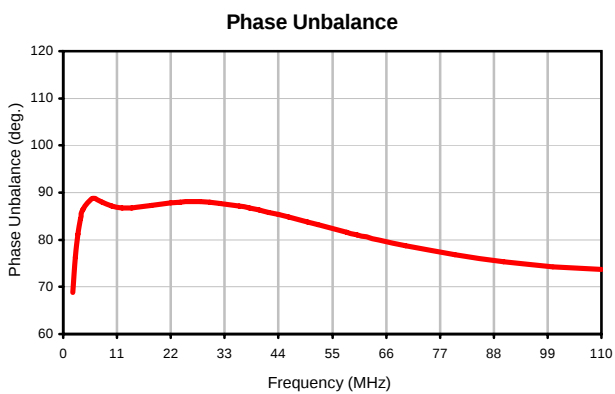
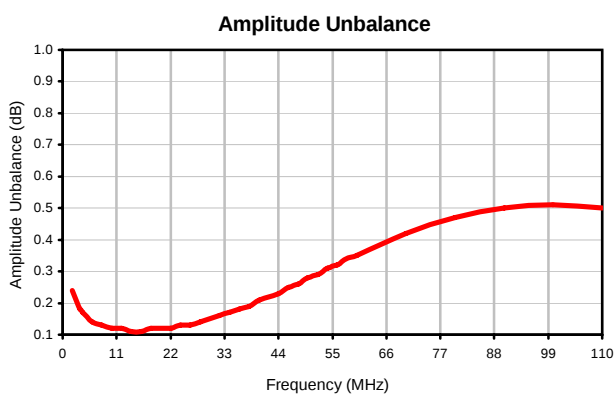
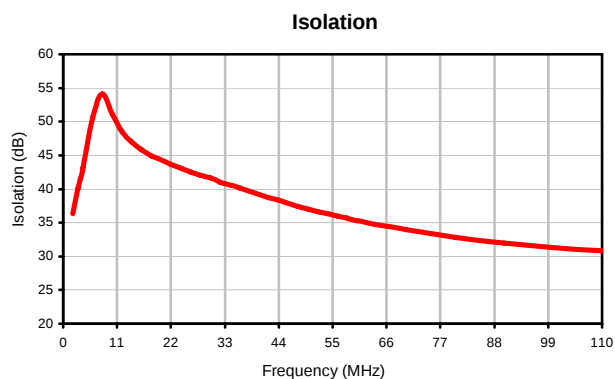
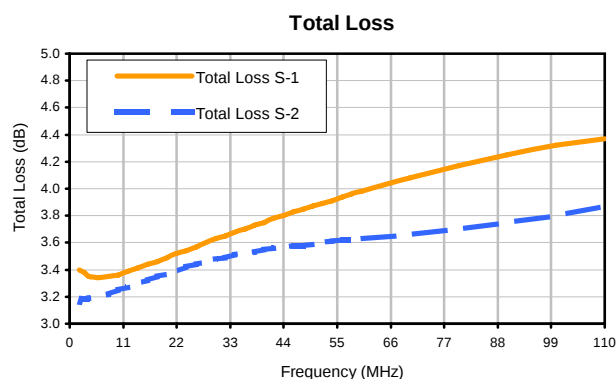
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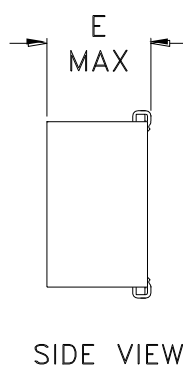
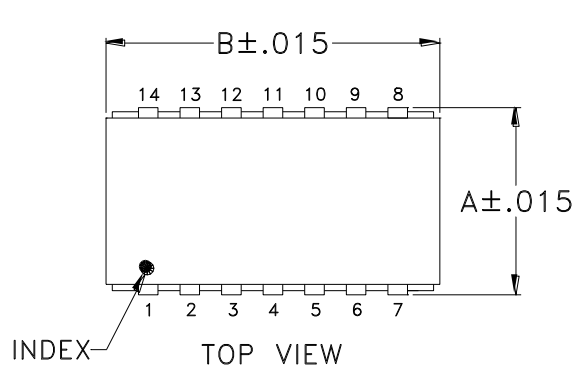
IF/RF MICROWAVE COMPONENTS

REV. X2
JSPQ-ED13075/1
8/27/2010
Page 1 of 1

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	L	WT. GRAM
BK276	.450 (11.43)	.803 (20.40)	-- --	.100 (2.54)	.250 (6.35)	.102 (2.59)	.100 (2.54)	.047 (1.19)	.065 (1.65)	.065 (1.65)	.470 (11.94)	2.0 MAX.

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

Notes:

- Case material: Copper Nickel alloy.
- Base material: Printed wiring laminate.
- Termination finish:

For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.

For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.



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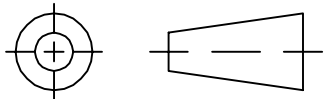
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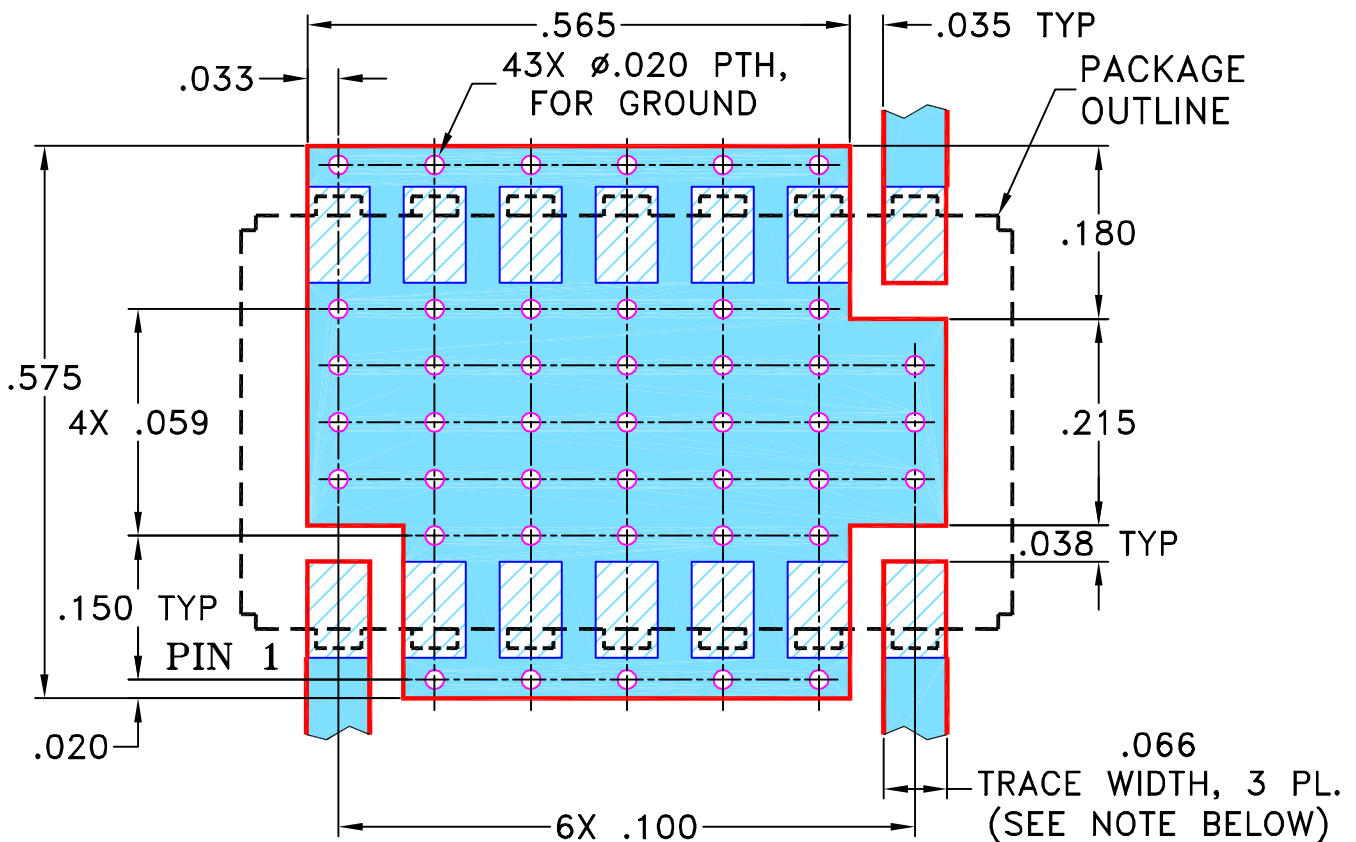
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M82550	NEW RELEASE	11/07/02	MMG	HY
A	M102713	MODIFIED NOTES, ADDED "...WITH SMOBC"	01/16/06	GT	IL

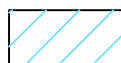
SUGGESTED MOUNTING CONFIGURATION FOR BK276 CASE STYLE, "mq" PIN CONNECTION



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $0.030'' \pm 0.002''$; 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 $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

DRAWN

MMG

10/29/02

CHECKED

AV

11/07/02

APPROVED

HY

11/07/02



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PL, mq, BK276, JSPQ, TB-217

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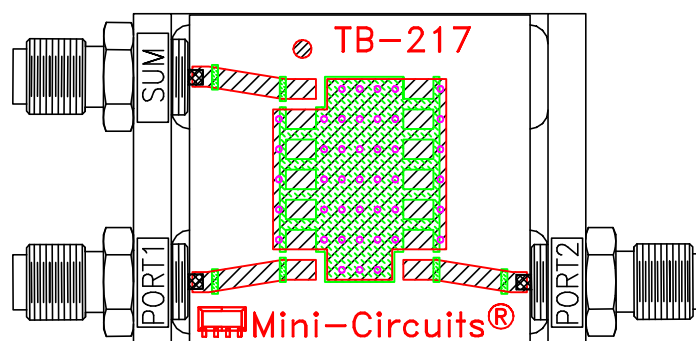
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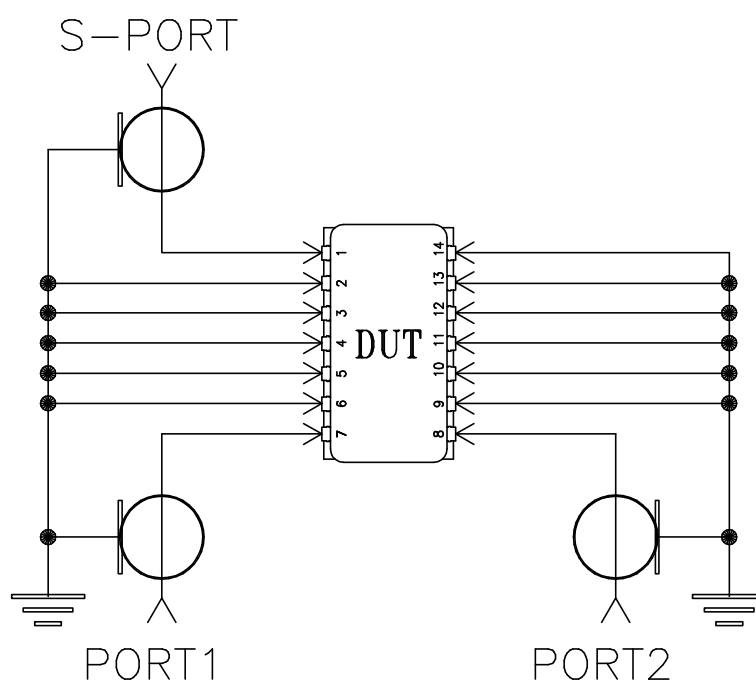
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SHEET: 1 OF 1

Evaluation Board and Circuit



TB-217



Schematic Diagram

Notes:

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