

## Engineering Development Model

# Power Splitter/Combiner

## 2 Way-90°

# ADPQ-ED8376/1

### 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.

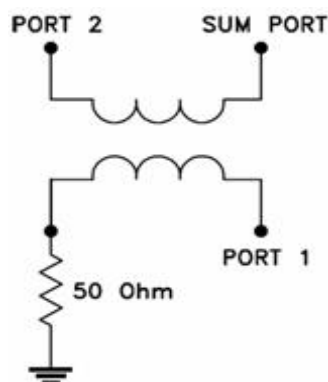
CASE STYLE : CD542

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency		150		350	MHz
Isolation	150 - 350 MHz		25		dB
Insertion Loss					
Average of Coupled Outputs above 3.0 dB	150 - 350 MHz		0.21		dB
Phase Unbalance	150 - 350 MHz		0.282		deg.
Amplitude Unbalance	150 - 350 MHz		1.118		dB
VSWR	SUM Port		1.12		(:1)
	OUT Ports		1.12		(:1)

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

PIN CONNECTIONS	
SUM PORT	1
PORT 1	6
PORT 2	3
GND EXT	2, 5
50Ω TERMINATION	4

### Functional Diagram



# 2 Way-90° Power Splitter/Combiner

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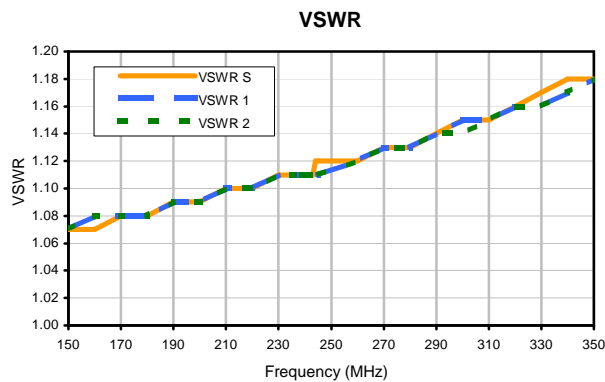
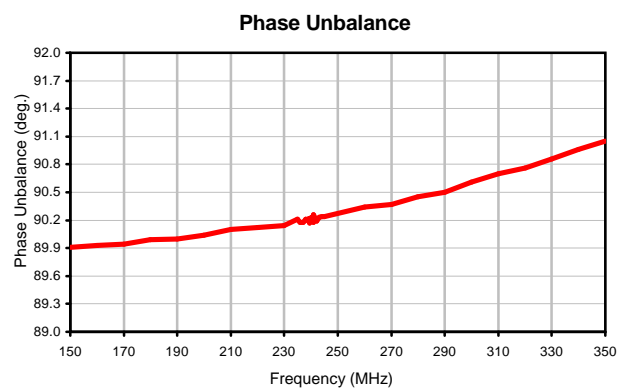
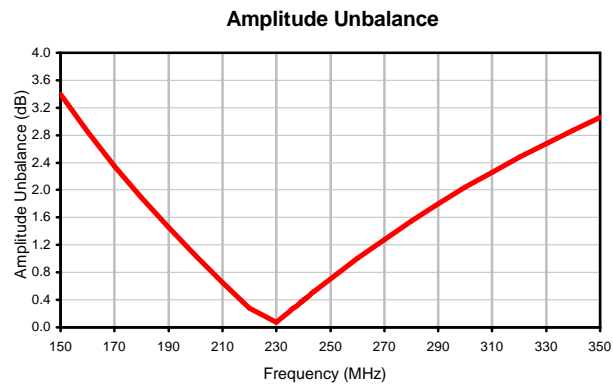
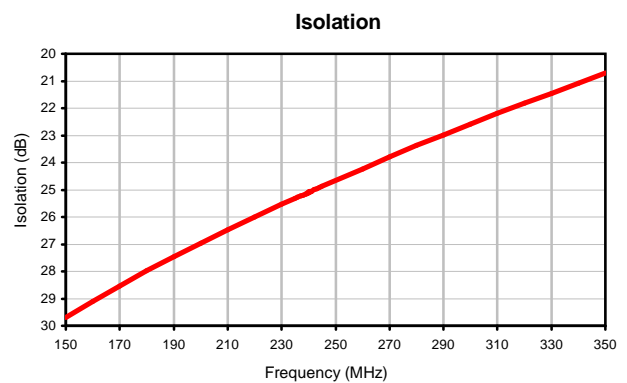
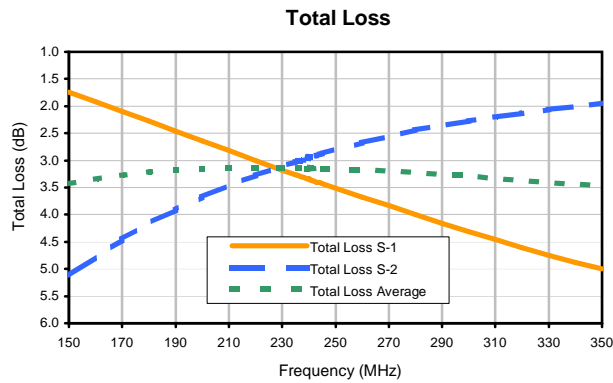
## Typical Performance Data

FREQ. (MHz)	TOTAL LOSS <sup>1</sup> (dB)			AMP. UNBAL. (dB)	ISOLATION (dB) 1-2	PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR (:1)		
	S-1	S-2	AVG.					S	1	2
150.0	1.74	5.13	3.44	3.39	29.69	89.91	150.0	1.07	1.07	1.07
160.0	1.92	4.77	3.35	2.85	29.10	89.93	160.0	1.07	1.08	1.08
170.0	2.10	4.45	3.28	2.35	28.55	89.94	170.0	1.08	1.08	1.08
180.0	2.27	4.16	3.22	1.89	27.98	89.99	180.0	1.08	1.08	1.08
190.0	2.46	3.91	3.19	1.45	27.46	90.00	190.0	1.09	1.09	1.09
200.0	2.64	3.68	3.16	1.04	26.96	90.04	200.0	1.09	1.09	1.09
210.0	2.82	3.47	3.15	0.65	26.48	90.10	210.0	1.10	1.10	1.10
220.0	3.00	3.28	3.14	0.28	26.00	90.12	220.0	1.10	1.10	1.10
230.0	3.18	3.11	3.15	0.07	25.54	90.14	230.0	1.11	1.11	1.11
235.0	3.26	3.03	3.15	0.23	25.32	90.21	235.0	1.11	1.11	1.11
236.0	3.28	3.01	3.15	0.27	25.28	90.18	236.0	1.11	1.11	1.11
237.0	3.30	3.00	3.15	0.30	25.23	90.18	237.0	1.11	1.11	1.11
238.0	3.31	2.99	3.15	0.33	25.20	90.21	238.0	1.11	1.11	1.11
239.0	3.33	2.97	3.15	0.36	25.15	90.19	239.0	1.11	1.11	1.11
239.2	3.33	2.97	3.15	0.37	25.15	90.22	239.2	1.11	1.11	1.11
239.4	3.34	2.97	3.16	0.37	25.12	90.17	239.4	1.11	1.11	1.11
239.6	3.34	2.96	3.15	0.38	25.12	90.21	239.6	1.11	1.11	1.11
239.8	3.35	2.96	3.16	0.39	25.10	90.20	239.8	1.11	1.11	1.11
240.0	3.34	2.95	3.15	0.39	25.09	90.20	240.0	1.11	1.11	1.11
240.2	3.35	2.95	3.15	0.40	25.10	90.23	240.2	1.11	1.11	1.11
240.4	3.36	2.95	3.16	0.41	25.06	90.20	240.4	1.11	1.11	1.11
240.6	3.36	2.95	3.16	0.41	25.08	90.21	240.6	1.11	1.11	1.11
240.8	3.36	2.94	3.15	0.42	25.07	90.18	240.8	1.11	1.11	1.11
241.0	3.37	2.94	3.16	0.43	25.06	90.26	241.0	1.11	1.11	1.11
242.0	3.38	2.92	3.15	0.46	24.99	90.19	242.0	1.11	1.11	1.11
243.0	3.40	2.91	3.16	0.49	24.96	90.23	243.0	1.11	1.11	1.11
244.0	3.41	2.89	3.15	0.52	24.92	90.24	244.0	1.12	1.11	1.11
245.0	3.43	2.88	3.16	0.55	24.87	90.24	245.0	1.12	1.11	1.11
260.0	3.68	2.67	3.18	1.01	24.23	90.34	260.0	1.12	1.12	1.12
270.0	3.83	2.56	3.20	1.28	23.79	90.37	270.0	1.13	1.13	1.13
280.0	4.00	2.44	3.22	1.55	23.37	90.45	280.0	1.13	1.13	1.13
290.0	4.16	2.36	3.26	1.80	22.98	90.50	290.0	1.14	1.14	1.14
300.0	4.31	2.27	3.29	2.04	22.59	90.61	300.0	1.15	1.15	1.14
310.0	4.46	2.20	3.33	2.26	22.20	90.70	310.0	1.15	1.15	1.15
320.0	4.61	2.13	3.37	2.48	21.82	90.76	320.0	1.16	1.16	1.16
330.0	4.75	2.06	3.41	2.68	21.45	90.86	330.0	1.17	1.16	1.16
340.0	4.88	2.01	3.45	2.87	21.08	90.96	340.0	1.18	1.17	1.17
350.0	5.00	1.94	3.47	3.06	20.71	91.05	350.0	1.18	1.18	1.18

<sup>1</sup> Total Loss = Insertion Loss + 3dB Splitter Loss



## Typical Performance Curves



# Case Style

# CD

CD541  
CD542  
CD636  
CD637

## 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
CD541					.082 (2.08)							.15
CD542	.272 (6.91)	.310 (7.87)	.220 (5.58)	.100 (2.54)	.112 (2.84)	.055 (1.40)	.100 (2.54)	.030 (0.76)	.026 (0.66)	.065 (1.65)	.300 (7.62)	.20
CD636					.162 (4.11)							.25
CD637					.206 (5.23)							.40

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

### Notes:

- Case material: Plastic.
- 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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# Tape & Reel Packaging TR-F34



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.

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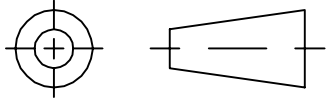
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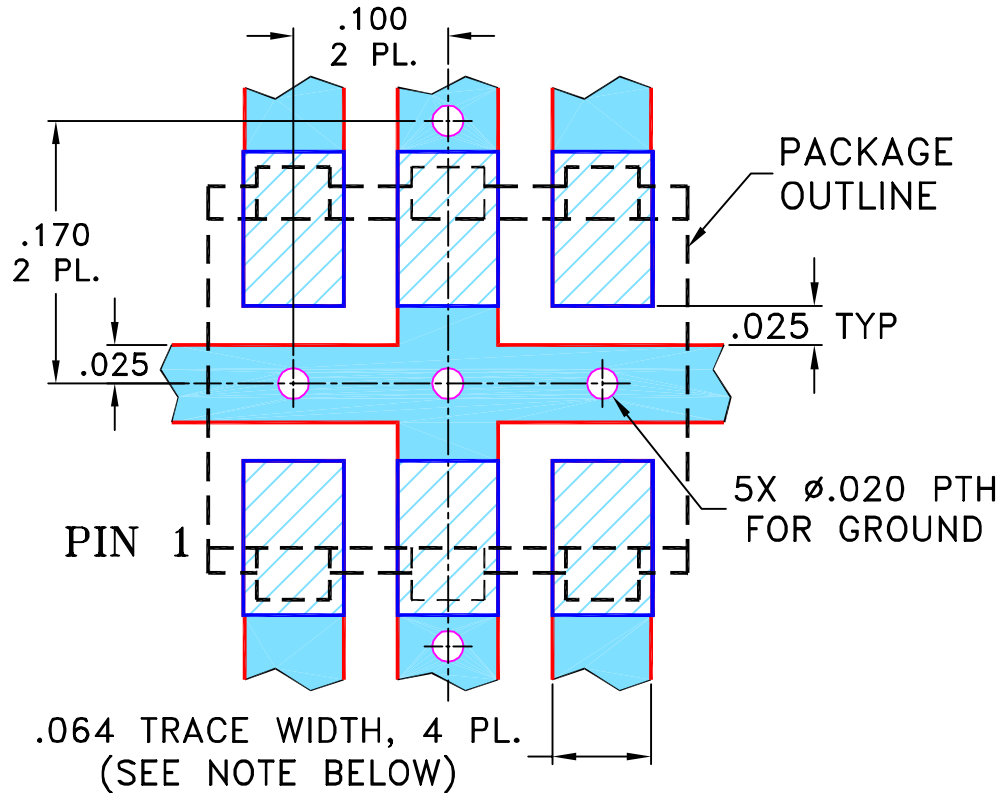
THIRD ANGLE PROJECTION



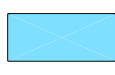
REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M82476	NEW RELEASE	11/26/02	MMG	HY
A	M102713	ADDED "ay", "ls" PIN CONNECTIONS, CD636/637 CASE STYLES & "...WITH SMOBC"	01/17/06	MMG	IL

SUGGESTED MOUNTING CONFIGURATION  
FOR BH292, CD636/CD637 CASE STYLES,  
"ay", "jg", "ls" PIN CONNECTIONS



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .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

DRAWN

MMG

10/30/02

TOLERANCES ON:

CHECKED

AV

11/26/02

2 PL DECIMALS ± .005

APPROVED

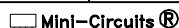
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11/26/02

3 PL DECIMALS ±

ANGLES ±

FRACTIONS ±



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PL, ay/jg/lb, BH292, CD636/637,  
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A

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15542

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98-PL-097

REV:  
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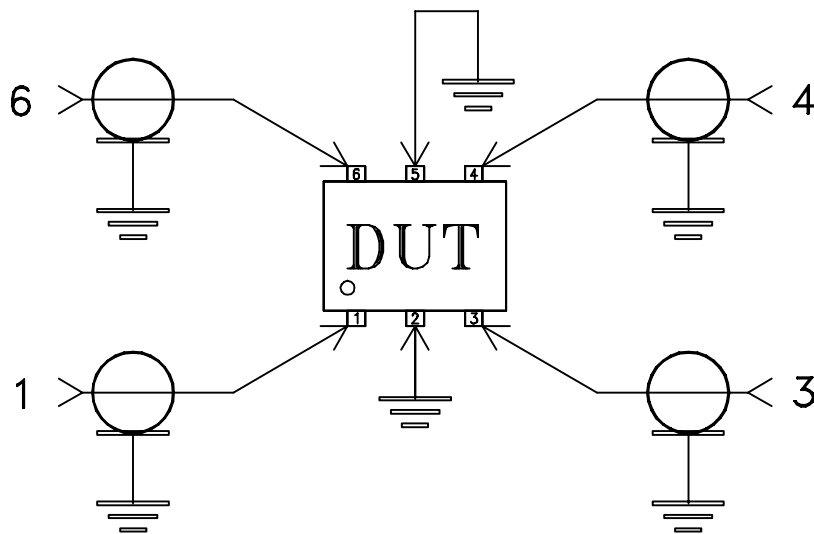
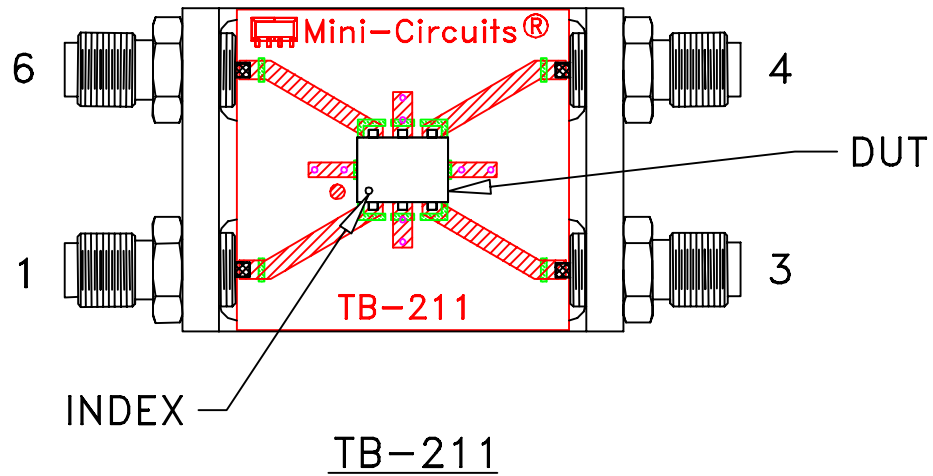
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SHEET: 1 OF 1

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

# 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.

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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