



Mini-Circuits

MMIC SURFACE MOUNT

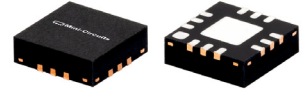
Power Splitter/Combiner

WP4R+

4 Way-0° 50Ω 2300 to 2700 MHz

FEATURES

- Excellent Isolation, Typ. 26 dB
- Good Phase Unbalance, Max. 6 deg.
- Good Amplitude Unbalance, Max. 0.4 dB
- Small Size, 3x3 mm
- High ESD Level
- Aqueous Washable



Generic photo used for illustration purposes only

CASE STYLE: DQ1225

+RoHS CompliantThe +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- WLAN
- WIMAX
- ISM

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		2300		2700	MHz
Insertion Loss* (Above 6.0 dB)	2300-2700		0.7	1.4	dB
Isolation	2300-2700	18	26		dB
Amplitude Unbalance	2300-2700			0.4	dB
Phase Unbalance	2300-2700			6	deg.
VSWR (Port S)	2300-2700		1.35		:1
VSWR (Ports 1,2,3,4)	2300-2700		1.35		:1

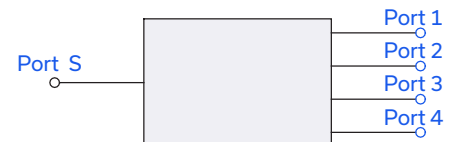
*Includes fixture loss, 0.2 dB typ.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Power Input (as a Splitter)	1.5 W max.
Internal Dissipation	0.375 W max.

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

ELECTRICAL SCHEMATIC

REV. E
ECO-026468
WP4R+
MCL NY
250806

Mini-Circuits

www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

PAGE 1 OF 3



Power Splitter/Combiner

WP4R+

4 Way-0° 50Ω 2300 to 2700 MHz

OUTLINE DRAWING

SUM PORT	2
PORT 1	12
PORT 2	10
PORT 3	6
PORT 4	4
GROUND	1,3,5,7,8,9,11, Paddle

[illegible]

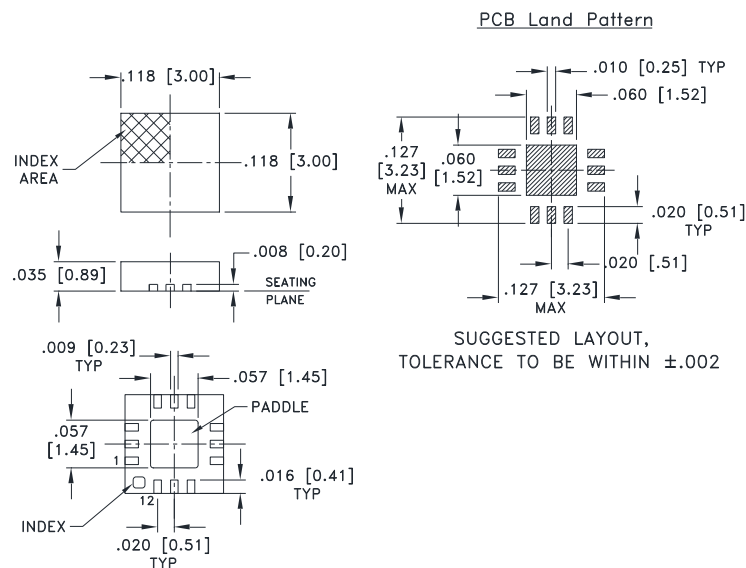
1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .020" $\pm$.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. SIGNAL TRACES ARE NOT ALLOWED INSIDE HATCHED AREAS (APPROX. .030 X .030) AT 4 PLACES AS SHOWN.

-  DENOTES PCB COPPER LAYOUT WITH SMOBC
 (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

The diagram shows a black rectangular label with white text. The text is arranged in four lines: a small white circle, 'MCL', 'WP4R', and 'XXXX'. Annotations with arrows point to specific parts of the label: 'Index' points to the small circle, 'Black Body' points to the 'MCL' text, and 'Model Family Designation' points to the 'XXXX' text.

Marking may contain other features or characters for internal lot control.

OUTLINE DRAWING



Weight: .02 Grams
Dimensions are in inches [mm]. Tolerances in inches: 2 Pl. $\pm .01$; 3 Pl. $\pm .004$ inches

TAPE & REEL INFORMATION: F66



Mini-Circuits

MMIC SURFACE MOUNT

Power Splitter/Combiner

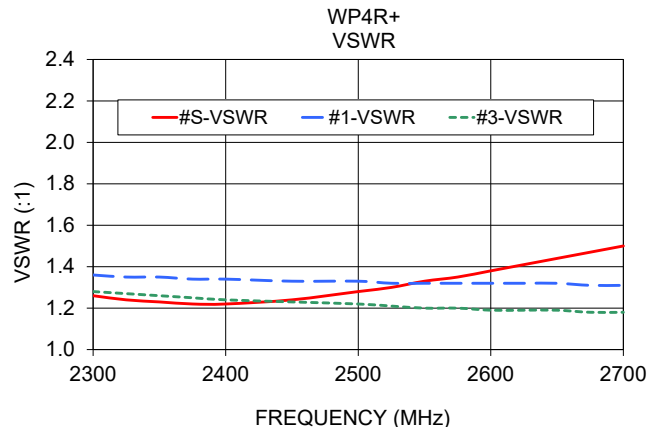
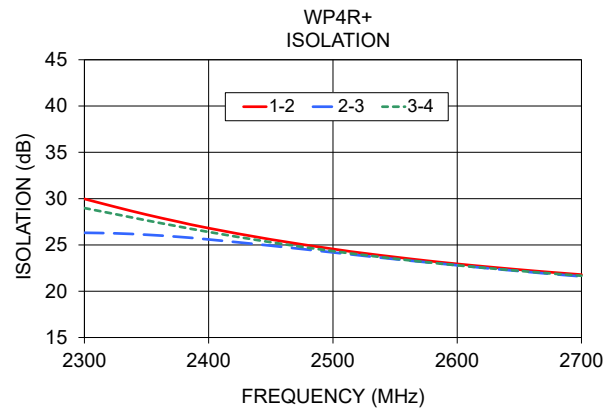
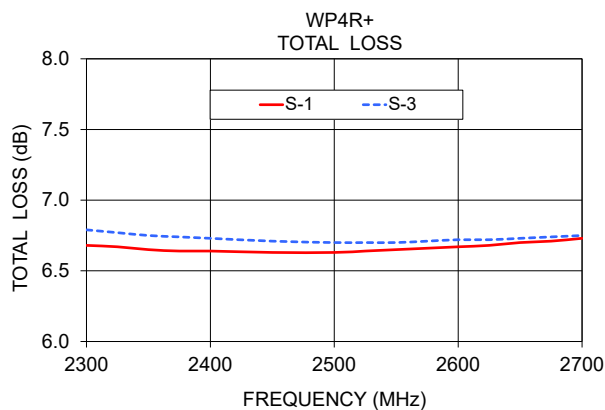
WP4R+

4 Way-0° 50Ω 2300 to 2700 MHz

TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (MHz)	Total Loss ¹ (dB)				Amplitude Unbalance (dB)	Isolation (dB)			Phase Unbalance (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						
2300.00	6.68	6.81	6.79	6.69	0.13	29.97	26.31	28.98	0.68	1.26	1.36	1.26	1.28	1.31
2325.00	6.67	6.79	6.77	6.67	0.12	29.10	26.25	28.32	0.65	1.24	1.35	1.25	1.27	1.30
2350.00	6.65	6.77	6.75	6.66	0.12	28.27	26.10	27.65	0.67	1.23	1.35	1.25	1.26	1.30
2375.00	6.64	6.76	6.74	6.65	0.12	27.52	25.88	27.01	0.70	1.22	1.34	1.24	1.25	1.30
2400.00	6.64	6.74	6.73	6.64	0.11	26.81	25.59	26.40	0.79	1.22	1.34	1.23	1.24	1.29
2450.00	6.63	6.73	6.71	6.64	0.10	25.59	24.92	25.29	0.96	1.24	1.33	1.21	1.23	1.28
2500.00	6.63	6.72	6.70	6.64	0.09	24.56	24.19	24.33	1.19	1.28	1.33	1.20	1.22	1.28
2525.00	6.64	6.73	6.70	6.65	0.08	24.10	23.82	23.91	1.30	1.30	1.32	1.20	1.21	1.28
2550.00	6.65	6.73	6.70	6.65	0.08	23.69	23.46	23.51	1.39	1.33	1.32	1.19	1.20	1.27
2575.00	6.66	6.73	6.71	6.66	0.07	23.30	23.13	23.14	1.47	1.35	1.32	1.19	1.20	1.27
2600.00	6.67	6.74	6.72	6.68	0.07	22.95	22.80	22.80	1.57	1.38	1.32	1.18	1.19	1.27
2625.00	6.68	6.75	6.72	6.69	0.06	22.63	22.47	22.49	1.67	1.41	1.32	1.18	1.19	1.27
2650.00	6.70	6.76	6.73	6.70	0.06	22.33	22.17	22.20	1.75	1.44	1.32	1.17	1.19	1.27
2675.00	6.71	6.77	6.74	6.72	0.05	22.05	21.87	21.92	1.85	1.47	1.31	1.17	1.18	1.27
2700.00	6.73	6.78	6.75	6.73	0.05	21.79	21.60	21.67	1.94	1.50	1.31	1.17	1.18	1.27

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



NOTES

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



4 Way-0° Power Splitter/Combiner

WP4R+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = -10dBm @Temperature = +25°C

FREQ. (MHz)	TOTAL LOSS ¹				AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION			VSWR				
	S-1	S-2	S-3	S-4			1-2	2-3	3-4	S	1	2	3	4
1500	10.52	10.82	10.78	10.49	0.32	3.82	16.84	14.86	16.39	5.61	1.89	1.74	1.74	1.80
1600	9.56	9.84	9.79	9.53	0.31	3.27	18.10	15.83	17.60	4.39	1.84	1.71	1.71	1.76
1700	8.76	9.01	8.96	8.73	0.28	2.68	19.73	17.04	19.13	3.47	1.78	1.66	1.67	1.71
1800	8.11	8.33	8.29	8.08	0.26	2.14	21.86	18.53	21.09	2.78	1.72	1.61	1.62	1.66
1900	7.60	7.81	7.77	7.57	0.23	1.66	24.67	20.36	23.62	2.26	1.67	1.55	1.57	1.61
2000	7.23	7.41	7.37	7.20	0.21	1.25	28.59	22.51	26.99	1.88	1.62	1.50	1.52	1.56
2050	7.08	7.25	7.22	7.05	0.20	1.05	31.26	23.72	29.10	1.73	1.59	1.48	1.49	1.53
2100	6.96	7.12	7.08	6.93	0.19	0.88	34.57	24.99	31.44	1.60	1.57	1.45	1.47	1.51
2150	6.87	7.02	6.98	6.83	0.19	0.64	37.86	26.22	33.72	1.49	1.55	1.43	1.44	1.49
2200	6.79	6.93	6.89	6.76	0.18	0.46	37.91	27.37	34.68	1.39	1.54	1.41	1.43	1.48
2250	6.73	6.86	6.82	6.69	0.17	0.33	34.86	28.15	33.63	1.33	1.52	1.39	1.41	1.46
2300	6.69	6.81	6.77	6.65	0.16	0.32	32.12	28.55	31.65	1.27	1.51	1.37	1.39	1.45
2320	6.68	6.80	6.75	6.64	0.15	0.35	31.17	28.48	30.88	1.26	1.50	1.36	1.38	1.44
2340	6.67	6.78	6.73	6.63	0.15	0.44	30.34	28.34	30.13	1.25	1.50	1.36	1.38	1.44
2360	6.66	6.77	6.72	6.62	0.15	0.53	29.63	28.20	29.44	1.25	1.49	1.35	1.37	1.43
2400	6.64	6.75	6.70	6.60	0.14	0.67	28.26	27.73	28.16	1.24	1.49	1.34	1.36	1.43
2420	6.64	6.74	6.69	6.60	0.14	0.76	27.61	27.37	27.57	1.25	1.48	1.33	1.35	1.42
2440	6.64	6.74	6.68	6.60	0.14	0.82	27.12	27.02	27.01	1.26	1.48	1.33	1.35	1.42
2460	6.64	6.73	6.68	6.60	0.13	0.89	26.66	26.72	26.51	1.27	1.48	1.32	1.34	1.42
2500	6.64	6.73	6.67	6.60	0.13	1.03	25.79	26.05	25.65	1.29	1.47	1.31	1.33	1.41
2520	6.65	6.73	6.68	6.61	0.12	1.09	25.38	25.66	25.24	1.31	1.47	1.31	1.33	1.41
2540	6.66	6.73	6.68	6.61	0.11	1.16	25.01	25.32	24.88	1.33	1.47	1.30	1.32	1.41
2560	6.66	6.73	6.68	6.62	0.11	1.22	24.68	24.99	24.51	1.35	1.47	1.30	1.32	1.41
2580	6.67	6.73	6.68	6.63	0.10	1.31	24.35	24.67	24.19	1.37	1.47	1.29	1.32	1.41
2600	6.67	6.74	6.68	6.63	0.11	1.37	24.01	24.37	23.87	1.39	1.46	1.29	1.31	1.40
2620	6.69	6.74	6.69	6.65	0.10	1.44	23.75	24.02	23.57	1.41	1.46	1.29	1.31	1.40
2640	6.69	6.75	6.69	6.65	0.09	1.52	23.50	23.74	23.30	1.44	1.46	1.29	1.30	1.40
2660	6.71	6.76	6.70	6.67	0.09	1.58	23.26	23.44	23.03	1.46	1.46	1.28	1.30	1.40
2680	6.72	6.77	6.71	6.68	0.08	1.63	23.00	23.17	22.78	1.48	1.46	1.28	1.30	1.40
2700	6.73	6.77	6.72	6.70	0.07	1.71	22.79	22.90	22.57	1.50	1.46	1.28	1.30	1.40
2750	6.77	6.80	6.74	6.73	0.07	1.87	22.25	22.28	22.01	1.56	1.45	1.27	1.29	1.39
2800	6.81	6.82	6.77	6.77	0.05	2.08	21.78	21.70	21.54	1.62	1.46	1.26	1.29	1.39
2850	6.85	6.85	6.80	6.81	0.05	2.23	21.33	21.19	21.11	1.68	1.45	1.25	1.28	1.39
2900	6.90	6.88	6.83	6.86	0.06	2.37	20.94	20.70	20.73	1.74	1.45	1.25	1.27	1.39
2950	6.94	6.91	6.86	6.90	0.07	2.53	20.61	20.29	20.39	1.80	1.45	1.24	1.27	1.39
3000	6.99	6.95	6.90	6.95	0.08	2.70	20.29	19.84	20.08	1.85	1.45	1.24	1.26	1.39
3100	7.08	7.01	6.98	7.04	0.10	3.01	19.71	19.12	19.54	1.96	1.44	1.23	1.25	1.38
3200	7.18	7.09	7.05	7.14	0.13	3.31	19.20	18.46	19.09	2.07	1.44	1.22	1.24	1.38
3300	7.27	7.16	7.13	7.23	0.15	3.64	18.77	17.90	18.68	2.17	1.43	1.20	1.23	1.37
3400	7.37	7.24	7.21	7.32	0.16	3.93	18.38	17.35	18.32	2.27	1.42	1.19	1.22	1.35
3500	7.46	7.32	7.29	7.41	0.17	4.24	18.02	16.84	18.01	2.37	1.41	1.18	1.20	1.34
3600	7.55	7.39	7.36	7.49	0.18	4.51	17.69	16.38	17.72	2.48	1.39	1.16	1.18	1.32
3800	7.72	7.57	7.52	7.65	0.20	5.06	17.10	15.54	17.19	2.69	1.35	1.13	1.14	1.28
4000	7.88	7.73	7.68	7.81	0.19	5.59	16.60	14.82	16.71	2.90	1.30	1.09	1.09	1.22
4200	8.04	7.91	7.84	7.97	0.20	6.09	16.20	14.14	16.27	3.11	1.24	1.05	1.04	1.16
4400	8.17	8.05	7.99	8.12	0.18	6.54	15.79	13.57	15.82	3.30	1.18	1.05	1.04	1.11
4600	8.30	8.21	8.16	8.27	0.15	7.07	15.30	13.01	15.36	3.50	1.11	1.10	1.10	1.06
4800	8.42	8.35	8.30	8.39	0.13	7.50	14.78	12.51	14.85	3.69	1.08	1.18	1.17	1.08
5000	8.51	8.48	8.43	8.49	0.08	8.00	14.24	12.09	14.31	3.83	1.11	1.26	1.26	1.14
5200	8.59	8.58	8.56	8.58	0.02	8.40	13.64	11.74	13.75	3.96	1.18	1.35	1.35	1.22
5400	8.66	8.72	8.68	8.66	0.06	8.84	13.04	11.46	13.16	4.09	1.28	1.46	1.46	1.31
5600	8.76	8.89	8.83	8.76	0.13	9.30	12.42	11.19	12.54	4.31	1.38	1.57	1.58	1.40
5800	8.84	9.03	8.89	8.79	0.24	9.73	11.84	10.96	11.92	4.43	1.49	1.69	1.69	1.49
6000	8.91	9.15	8.97	8.82	0.33	10.13	11.28	10.80	11.34	4.52	1.61	1.81	1.81	1.59

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

REV. X2

WP4R+

100627

Page 1 of 3

Mini-Circuits®

RF/MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED • RoHS compliant

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



The Design Engineers Search Engine finds the model you need, instantly • For detailed performance specs & shopping online see



4 Way-0° Power Splitter/Combiner

WP4R+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = -10dBm @Temperature = -40°C

FREQ. (MHz)	TOTAL LOSS ¹				AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION			VSWR				
	S-1	S-2	S-3	S-4			1-2	2-3	3-4	S	1	2	3	4
1500	10.46	10.76	10.73	10.46	0.30	4.61	16.58	14.65	16.15	6.09	1.88	1.73	1.73	1.80
1600	9.49	9.76	9.73	9.47	0.30	4.04	17.81	15.59	17.33	4.73	1.83	1.70	1.70	1.75
1700	8.67	8.91	8.89	8.65	0.27	3.56	19.40	16.78	18.83	3.69	1.77	1.65	1.66	1.70
1800	8.00	8.23	8.20	7.99	0.24	3.15	21.51	18.26	20.75	2.93	1.71	1.60	1.61	1.65
1900	7.49	7.70	7.67	7.48	0.22	2.73	24.24	20.06	23.23	2.38	1.66	1.55	1.56	1.59
2000	7.11	7.29	7.26	7.08	0.21	2.29	28.11	22.22	26.54	1.96	1.61	1.50	1.51	1.55
2050	6.95	7.12	7.10	6.93	0.20	2.19	30.79	23.47	28.60	1.79	1.58	1.47	1.48	1.52
2100	6.83	6.99	6.96	6.80	0.19	1.98	34.25	24.78	30.97	1.64	1.56	1.45	1.46	1.50
2150	6.73	6.88	6.85	6.70	0.18	1.80	38.11	26.11	33.36	1.52	1.54	1.43	1.43	1.47
2200	6.65	6.79	6.76	6.62	0.17	1.62	38.57	27.34	34.77	1.42	1.53	1.41	1.41	1.46
2250	6.59	6.72	6.69	6.56	0.16	1.55	35.14	28.21	33.98	1.34	1.51	1.39	1.39	1.44
2300	6.54	6.67	6.64	6.52	0.15	1.59	32.14	28.65	32.01	1.28	1.49	1.37	1.37	1.43
2320	6.53	6.65	6.62	6.50	0.15	1.63	31.14	28.57	31.19	1.26	1.49	1.37	1.37	1.43
2340	6.52	6.64	6.61	6.49	0.15	1.61	30.28	28.46	30.38	1.25	1.48	1.36	1.36	1.42
2360	6.51	6.62	6.59	6.48	0.14	1.67	29.57	28.29	29.66	1.25	1.48	1.35	1.36	1.42
2400	6.50	6.61	6.57	6.47	0.14	1.82	28.17	27.80	28.32	1.24	1.47	1.34	1.35	1.42
2420	6.50	6.60	6.56	6.46	0.13	1.92	27.52	27.41	27.72	1.24	1.47	1.33	1.34	1.41
2440	6.49	6.59	6.55	6.46	0.13	1.99	27.00	27.10	27.15	1.25	1.47	1.33	1.34	1.41
2460	6.49	6.59	6.55	6.46	0.12	2.13	26.55	26.76	26.62	1.26	1.47	1.32	1.33	1.41
2500	6.49	6.58	6.54	6.47	0.12	2.25	25.65	26.07	25.71	1.28	1.46	1.31	1.32	1.40
2520	6.50	6.58	6.54	6.48	0.11	2.35	25.24	25.66	25.28	1.30	1.46	1.31	1.32	1.40
2540	6.51	6.58	6.54	6.48	0.10	2.45	24.88	25.31	24.90	1.32	1.46	1.30	1.31	1.39
2560	6.51	6.58	6.54	6.48	0.10	2.53	24.53	24.95	24.53	1.34	1.46	1.30	1.31	1.39
2580	6.52	6.59	6.55	6.49	0.09	2.64	24.17	24.63	24.18	1.36	1.46	1.29	1.31	1.39
2600	6.52	6.60	6.55	6.50	0.09	2.74	23.81	24.29	23.87	1.38	1.45	1.29	1.30	1.39
2620	6.54	6.60	6.56	6.51	0.09	2.82	23.54	23.96	23.55	1.41	1.45	1.29	1.30	1.39
2640	6.54	6.60	6.56	6.52	0.08	2.91	23.28	23.63	23.27	1.43	1.45	1.28	1.29	1.39
2660	6.56	6.61	6.57	6.53	0.08	3.02	23.06	23.32	23.00	1.46	1.46	1.28	1.29	1.39
2680	6.57	6.63	6.58	6.55	0.08	3.12	22.79	23.06	22.74	1.48	1.46	1.28	1.29	1.39
2700	6.58	6.64	6.59	6.57	0.07	3.19	22.58	22.78	22.50	1.51	1.45	1.28	1.29	1.39
2750	6.62	6.65	6.61	6.60	0.06	3.43	22.09	22.16	21.96	1.57	1.45	1.27	1.28	1.39
2800	6.66	6.68	6.64	6.64	0.04	3.64	21.64	21.59	21.46	1.63	1.46	1.26	1.28	1.39
2850	6.70	6.70	6.66	6.68	0.03	3.86	21.23	21.12	21.02	1.69	1.45	1.25	1.27	1.39
2900	6.74	6.73	6.70	6.73	0.04	4.10	20.86	20.65	20.63	1.75	1.45	1.25	1.27	1.39
2950	6.78	6.76	6.73	6.76	0.05	4.35	20.54	20.26	20.28	1.81	1.45	1.24	1.26	1.38
3000	6.83	6.79	6.76	6.81	0.06	4.56	20.22	19.82	19.96	1.87	1.44	1.23	1.25	1.38
3100	6.91	6.86	6.84	6.90	0.08	4.94	19.65	19.11	19.41	1.98	1.43	1.22	1.24	1.37
3200	7.00	6.92	6.90	6.98	0.10	5.34	19.15	18.47	18.95	2.08	1.42	1.21	1.23	1.36
3300	7.09	6.99	6.98	7.07	0.11	5.75	18.68	17.87	18.54	2.19	1.42	1.19	1.21	1.35
3400	7.19	7.08	7.07	7.17	0.12	6.16	18.23	17.29	18.19	2.31	1.40	1.17	1.20	1.34
3500	7.28	7.16	7.15	7.27	0.13	6.48	17.85	16.77	17.86	2.42	1.38	1.16	1.19	1.33
3600	7.37	7.24	7.23	7.34	0.14	6.77	17.51	16.30	17.57	2.53	1.37	1.15	1.17	1.31
3800	7.55	7.40	7.39	7.50	0.16	7.43	16.91	15.44	17.04	2.76	1.33	1.11	1.14	1.27
4000	7.70	7.56	7.53	7.65	0.17	7.93	16.44	14.71	16.56	2.96	1.28	1.08	1.08	1.21
4200	7.86	7.75	7.70	7.82	0.16	8.58	16.00	14.03	16.13	3.19	1.22	1.04	1.03	1.16
4400	7.99	7.88	7.83	7.96	0.16	9.27	15.59	13.45	15.68	3.37	1.17	1.06	1.04	1.09
4600	8.13	8.06	8.01	8.12	0.12	9.87	15.11	12.87	15.22	3.61	1.11	1.11	1.11	1.06
4800	8.25	8.19	8.16	8.25	0.09	10.53	14.60	12.37	14.72	3.81	1.08	1.18	1.18	1.08
5000	8.35	8.32	8.28	8.34	0.07	11.16	14.11	11.93	14.18	3.96	1.11	1.27	1.25	1.14
5200	8.40	8.40	8.39	8.42	0.03	11.76	13.56	11.60	13.61	4.09	1.18	1.36	1.34	1.20
5400	8.44	8.50	8.49	8.48	0.06	11.89	12.96	11.30	13.05	4.20	1.27	1.46	1.45	1.29
5600	8.49	8.61	8.61	8.55	0.12	12.43	12.36	11.06	12.42	4.37	1.38	1.55	1.57	1.39
5800	8.60	8.76	8.71	8.61	0.17	12.76	11.73	10.82	11.81	4.57	1.49	1.69	1.70	1.49
6000	8.62	8.85	8.76	8.62	0.23	13.41	11.18	10.68	11.24	4.63	1.61	1.83	1.84	1.59

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

REV. X2

WP4R+

100627

Page 2 of 3

4 Way-0° Power Splitter/Combiner

WP4R+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = -10dBm @Temperature = +85°C

FREQ. (MHz)	TOTAL LOSS ¹ (dB)				AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)			VSWR (:1)				
	S-1	S-2	S-3	S-4			1-2	2-3	3-4	S	1	2	3	4
1500	10.57	10.87	10.82	10.54	0.33	5.33	16.99	15.00	16.55	5.31	1.89	1.75	1.75	1.81
1600	9.61	9.89	9.85	9.58	0.31	4.82	18.26	15.95	17.77	4.19	1.84	1.71	1.71	1.76
1700	8.82	9.08	9.04	8.79	0.29	4.38	19.88	17.16	19.32	3.34	1.79	1.66	1.67	1.71
1800	8.18	8.41	8.37	8.15	0.26	3.98	21.99	18.63	21.29	2.69	1.73	1.60	1.62	1.66
1900	7.68	7.89	7.85	7.65	0.24	3.63	24.80	20.48	23.84	2.20	1.67	1.55	1.57	1.60
2000	7.31	7.49	7.46	7.28	0.22	3.29	28.79	22.63	27.22	1.84	1.62	1.49	1.51	1.56
2050	7.17	7.34	7.30	7.13	0.21	3.09	31.50	23.84	29.37	1.69	1.59	1.47	1.49	1.53
2100	7.05	7.21	7.17	7.01	0.20	2.96	34.93	25.13	31.74	1.56	1.57	1.44	1.47	1.51
2150	6.95	7.10	7.06	6.91	0.19	2.78	38.55	26.40	33.91	1.46	1.55	1.42	1.44	1.49
2200	6.88	7.02	6.98	6.84	0.18	2.66	38.48	27.61	34.69	1.37	1.54	1.40	1.42	1.48
2250	6.82	6.95	6.91	6.78	0.17	2.49	35.12	28.41	33.54	1.30	1.52	1.38	1.40	1.46
2300	6.77	6.90	6.85	6.74	0.16	2.37	32.20	28.84	31.58	1.25	1.51	1.36	1.38	1.45
2320	6.76	6.88	6.84	6.73	0.16	2.28	31.26	28.74	30.82	1.23	1.50	1.36	1.38	1.44
2340	6.75	6.87	6.82	6.72	0.15	2.28	30.39	28.61	30.04	1.23	1.50	1.35	1.37	1.44
2360	6.75	6.86	6.81	6.71	0.15	2.31	29.66	28.44	29.35	1.22	1.49	1.34	1.36	1.43
2400	6.73	6.84	6.79	6.69	0.15	2.32	28.33	27.91	28.08	1.22	1.48	1.33	1.35	1.43
2420	6.73	6.83	6.78	6.69	0.14	2.33	27.64	27.54	27.52	1.23	1.48	1.33	1.35	1.42
2440	6.73	6.83	6.77	6.69	0.14	2.39	27.10	27.19	26.97	1.24	1.48	1.32	1.34	1.42
2460	6.73	6.82	6.77	6.69	0.13	2.47	26.66	26.86	26.49	1.25	1.48	1.32	1.34	1.41
2500	6.73	6.82	6.76	6.70	0.13	2.62	25.79	26.14	25.64	1.28	1.47	1.31	1.33	1.41
2520	6.74	6.82	6.77	6.70	0.12	2.70	25.35	25.75	25.21	1.30	1.47	1.30	1.32	1.41
2540	6.75	6.82	6.77	6.70	0.12	2.79	25.00	25.40	24.87	1.32	1.47	1.30	1.32	1.40
2560	6.75	6.82	6.77	6.71	0.11	2.93	24.66	25.04	24.52	1.34	1.47	1.29	1.32	1.40
2580	6.76	6.83	6.77	6.72	0.11	2.97	24.32	24.72	24.19	1.36	1.46	1.29	1.31	1.40
2600	6.77	6.84	6.78	6.73	0.11	3.05	23.99	24.40	23.86	1.38	1.46	1.29	1.31	1.40
2620	6.78	6.84	6.78	6.74	0.10	3.10	23.71	24.07	23.57	1.40	1.45	1.28	1.30	1.40
2640	6.79	6.84	6.79	6.75	0.10	3.19	23.45	23.75	23.31	1.43	1.45	1.28	1.30	1.40
2660	6.80	6.85	6.79	6.76	0.10	3.26	23.20	23.45	23.05	1.45	1.46	1.28	1.30	1.40
2680	6.82	6.87	6.80	6.77	0.09	3.36	22.96	23.17	22.80	1.47	1.46	1.27	1.30	1.40
2700	6.83	6.87	6.82	6.79	0.08	3.41	22.73	22.90	22.57	1.49	1.45	1.27	1.29	1.40
2750	6.87	6.90	6.84	6.82	0.07	3.59	22.20	22.26	22.04	1.55	1.45	1.26	1.28	1.39
2800	6.91	6.93	6.87	6.87	0.06	3.75	21.71	21.65	21.56	1.61	1.45	1.26	1.28	1.39
2850	6.95	6.95	6.90	6.90	0.05	4.01	21.28	21.15	21.14	1.67	1.44	1.25	1.28	1.39
2900	7.00	6.99	6.94	6.96	0.06	4.18	20.87	20.65	20.76	1.73	1.44	1.25	1.27	1.39
2950	7.05	7.01	6.97	7.00	0.08	4.32	20.54	20.23	20.42	1.78	1.44	1.24	1.27	1.39
3000	7.10	7.06	7.01	7.05	0.08	4.48	20.21	19.78	20.11	1.84	1.44	1.24	1.26	1.39
3100	7.20	7.13	7.09	7.15	0.11	4.84	19.64	19.05	19.58	1.95	1.44	1.23	1.26	1.39
3200	7.30	7.21	7.17	7.24	0.13	5.22	19.14	18.40	19.13	2.06	1.43	1.22	1.25	1.38
3300	7.40	7.29	7.25	7.34	0.15	5.55	18.73	17.83	18.72	2.15	1.43	1.21	1.24	1.38
3400	7.50	7.37	7.33	7.43	0.17	5.90	18.36	17.31	18.38	2.25	1.43	1.20	1.23	1.37
3500	7.59	7.44	7.41	7.52	0.19	6.21	18.03	16.82	18.06	2.34	1.42	1.18	1.21	1.35
3600	7.68	7.52	7.48	7.60	0.20	6.61	17.73	16.38	17.79	2.44	1.40	1.17	1.19	1.33
3800	7.84	7.68	7.63	7.77	0.21	7.30	17.19	15.58	17.27	2.63	1.35	1.14	1.15	1.28
4000	7.99	7.84	7.79	7.93	0.21	8.06	16.72	14.88	16.79	2.84	1.30	1.09	1.09	1.22
4200	8.16	8.01	7.95	8.08	0.21	8.85	16.33	14.22	16.34	3.03	1.24	1.05	1.03	1.16
4400	8.28	8.15	8.09	8.23	0.18	9.36	15.90	13.63	15.90	3.22	1.18	1.05	1.05	1.10
4600	8.41	8.30	8.26	8.37	0.15	9.87	15.40	13.09	15.43	3.43	1.11	1.11	1.11	1.06
4800	8.52	8.45	8.40	8.50	0.12	10.29	14.86	12.60	14.92	3.61	1.08	1.18	1.19	1.09
5000	8.62	8.58	8.54	8.60	0.08	10.72	14.31	12.19	14.39	3.76	1.12	1.27	1.28	1.16
5200	8.71	8.69	8.69	8.70	0.02	11.15	13.72	11.84	13.84	3.91	1.20	1.35	1.38	1.24
5400	8.80	8.85	8.81	8.79	0.06	11.61	13.14	11.55	13.27	4.05	1.29	1.47	1.47	1.34
5600	8.91	9.04	8.95	8.89	0.15	12.17	12.54	11.29	12.66	4.24	1.39	1.58	1.58	1.42
5800	9.01	9.20	9.00	8.91	0.29	12.79	11.97	11.06	12.04	4.34	1.49	1.70	1.67	1.50
6000	9.10	9.35	9.08	8.95	0.40	13.26	11.42	10.93	11.47	4.42	1.61	1.81	1.78	1.58

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

REV. X2

WP4R+

100627

Page 3 of 3

Mini-Circuits®

IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED • RoHS compliant

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



The Design Engineers Search Engine finds the model you need, instantly • For detailed performance specs & shopping online see

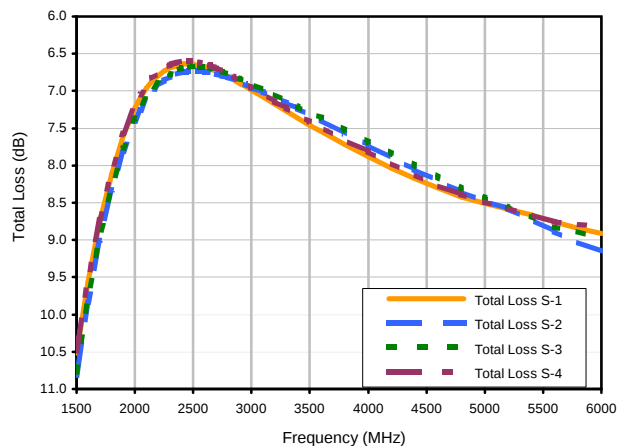


4 Way-0° Power Splitter/Combiner

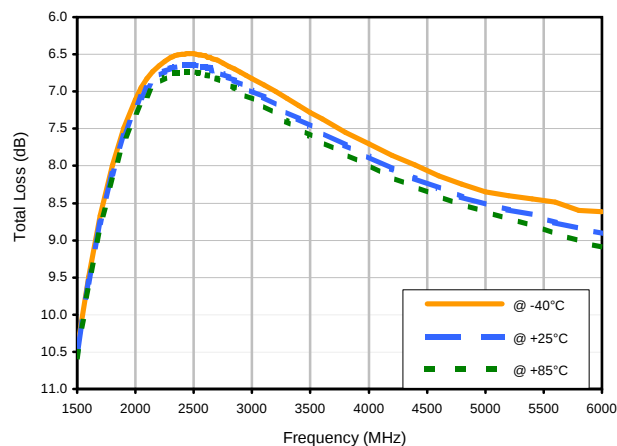
WP4R+

Typical Performance Curves

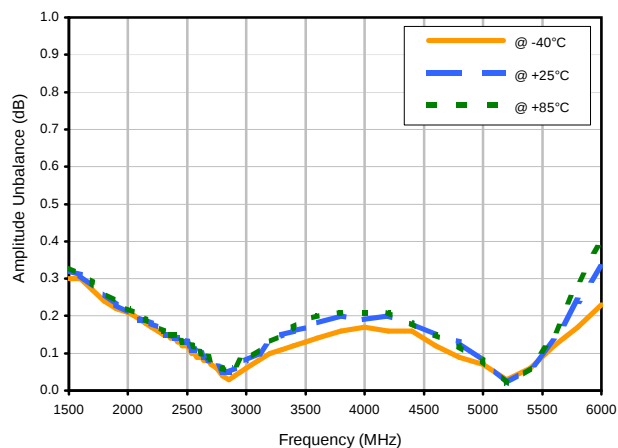
Total Loss



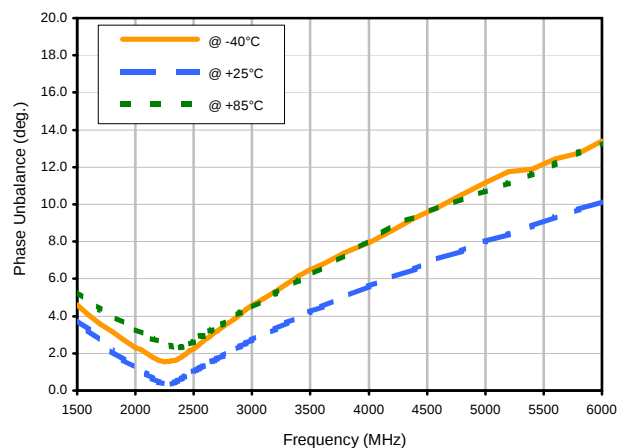
Total Loss S-1 vs. TEMPERATURE



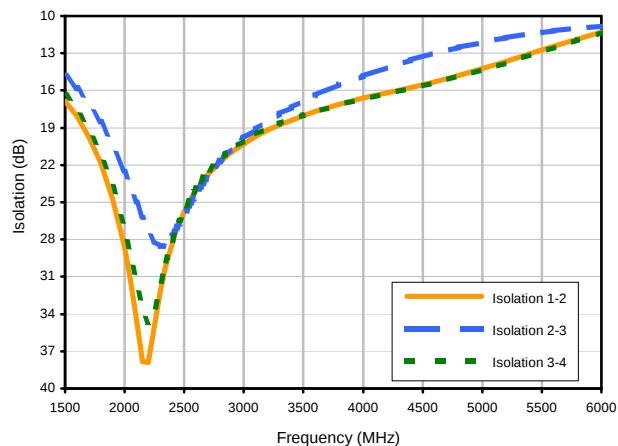
Amplitude Unbalance vs. TEMPERATURE



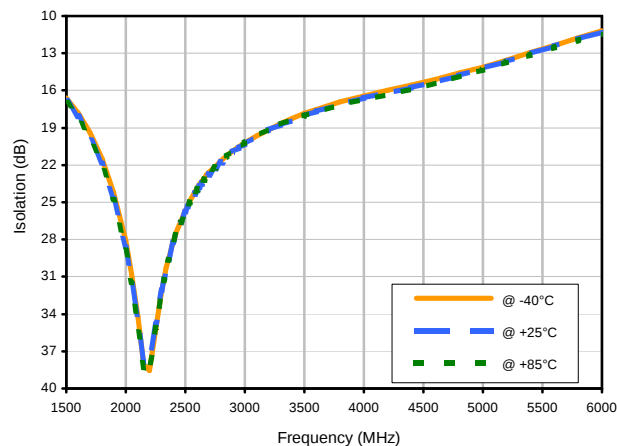
Phase Unbalance vs. TEMPERATURE



Isolation



Isolation 1-2 vs. TEMPERATURE

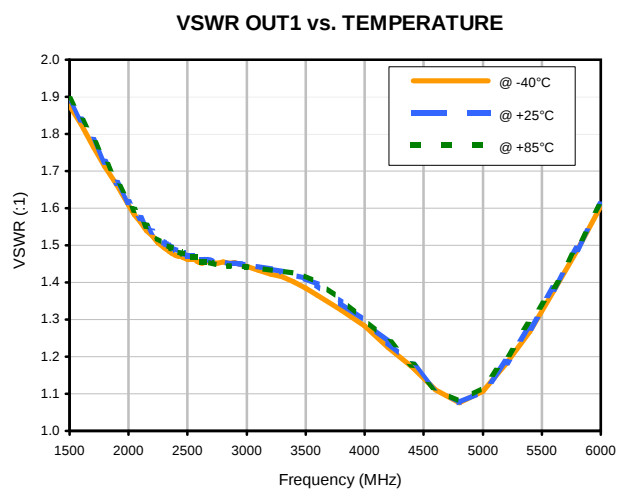
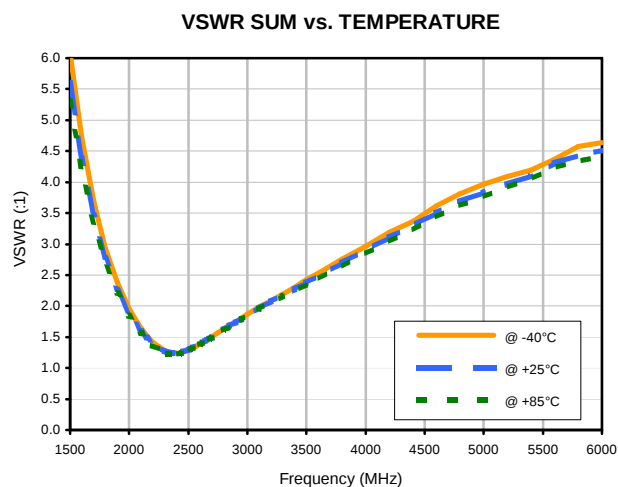
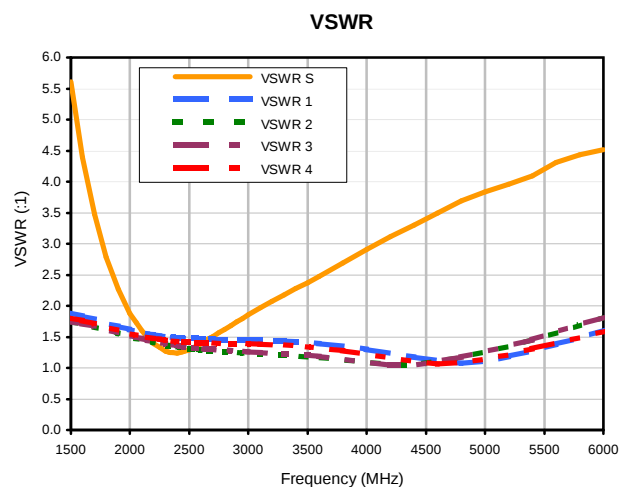


REV. X2
WP4R+
100627
Page 1 of 2

4 Way-0° Power Splitter/Combiner

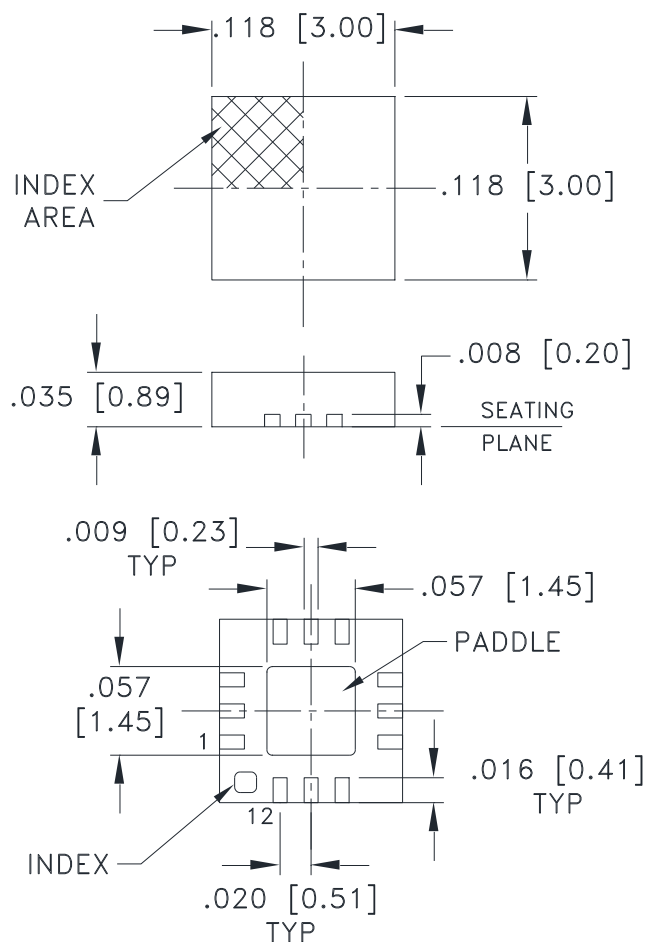
WP4R+

Typical Performance Curves

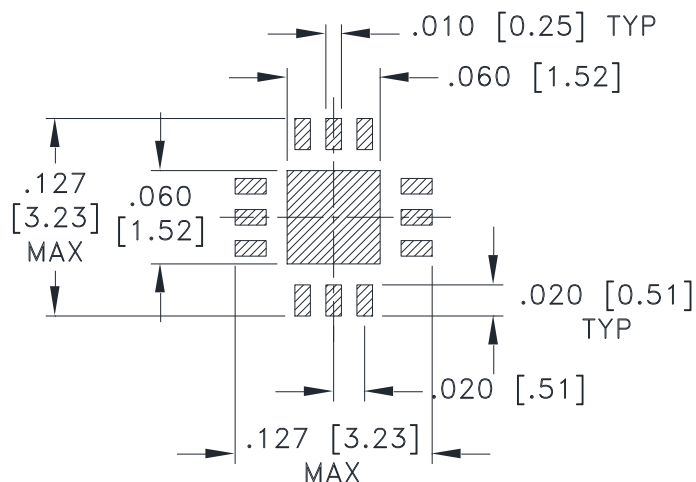


REV. X2
WP4R+
100627
Page 2 of 2

Outline Dimensions



PCB Land Pattern



SUGGESTED LAYOUT,
TOLERANCE TO BE WITHIN ± 0.002

Weight: .02 Grams

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .01$; 3 Pl. $\pm .004$

Notes:

- Case material: Plastic.
- Termination finish:
 - For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin. All models, (+) suffix. See Data sheet.
 - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.



INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

Tape & Reel Packaging TR-F66



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
8	4	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000, 2000, 3000

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

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



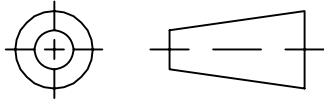
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

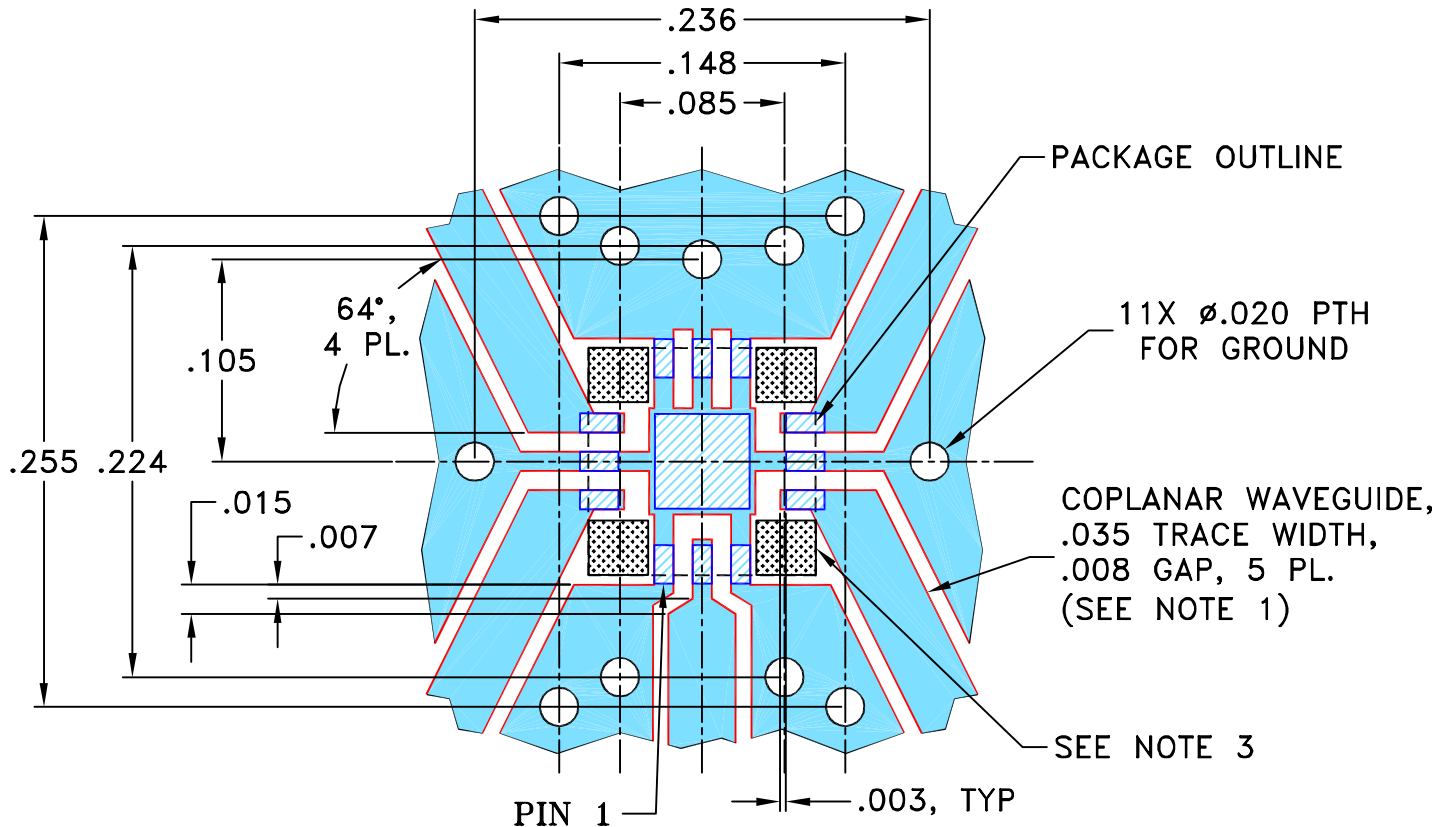
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M109251	NEW RELEASE	01/11/07	PW	WP
A	M112849	UPDATED NOTE 3	08/03/07	AV	WP

SUGGESTED MOUNTING CONFIGURATION FOR DQ1225 CASE STYLE, "rx" PIN CONNECTION

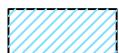


NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.020'' \pm .0015''$; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. SIGNAL TRACES ARE NOT ALLOWED INSIDE HATCHED AREAS (APPROX. $.030 \times .030$) AT 4 PLACES AS SHOWN.



DENOTES PCB COPPER LAYOUT WITH SMOBC
(SOLDER MASK OVER BARE COPPER)



DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PL DECIMALS $\pm$
3 PL DECIMALS $\pm .005$
ANGLES $\pm 1^\circ$
FRACTIONS $\pm$

INITIALS

DATE

DRAWN	PW	01/10/07
CHECKED	IL	01/11/07
APPROVED	WP	01/11/07



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235

PL, rx, DQ1225, WP4, TB-395+

THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

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

SIZE
A

CODE IDENT
15542

DRAWING NO:
98-PL-259

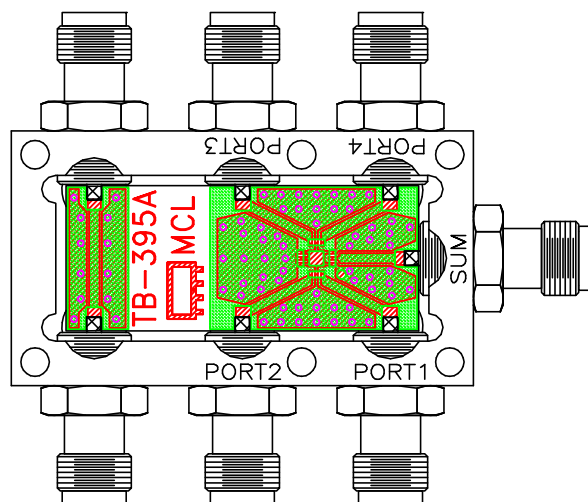
REV:
A

FILE: 98PL259

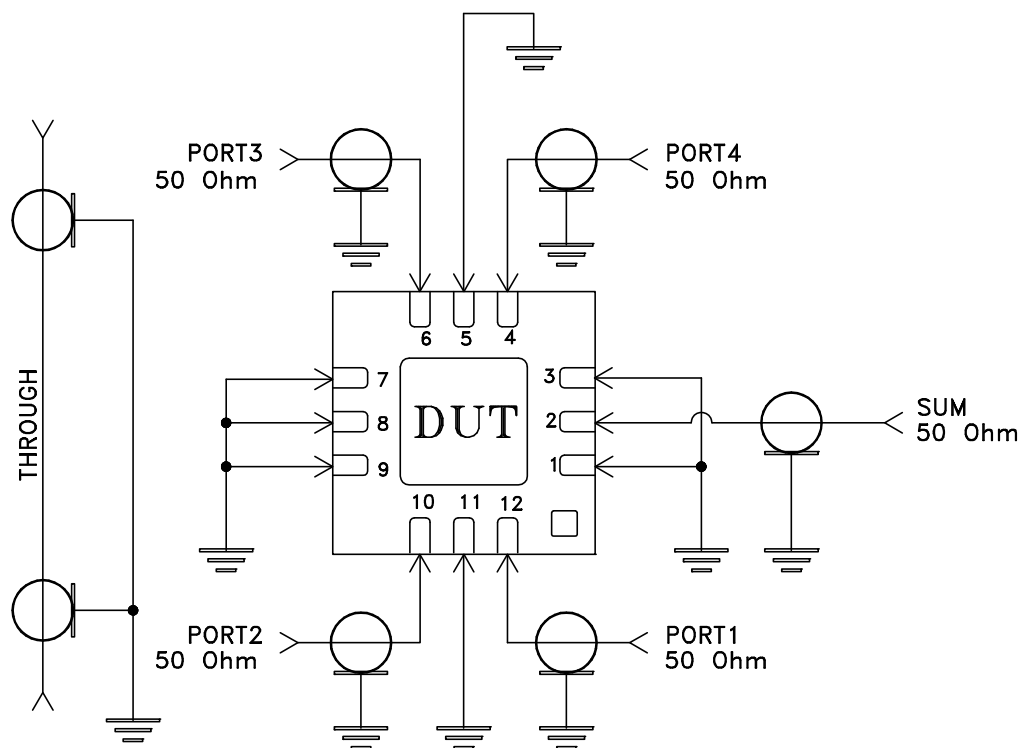
SCALE: 10:1

SHEET: 1 OF 1

Evaluation Board and Circuit



TB-395+



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 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	-65° to 150° C Ambient Environment	Individual Model Data Sheet
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102-C, Condition C
Temperature Cycling	-65° to 150°C, 100 cycles	JESD22-A104
Temperature Humidity	85°C/ 85% RH, 168 hours	JESD22-113
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 240°C peak (Non-RoHS) or 260°C (RoHS)	J-STD-020
Solderability	10X magnification, 95% coverage	JESD22-B102, Method 1: Dip and Look Test
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
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