



Mini-Circuits

MMIC SURFACE MOUNT

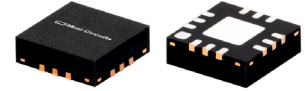
Power Splitter/Combiner

WP4S+

4 Way-0° 50Ω 3400 to 4600 MHz

FEATURES

- Excellent Isolation, Typ. 30 dB
- Good Phase Unbalance, Max. 9 deg.
- Good Amplitude Unbalance, Max. 0.6 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

- Line-of-Sight Links
- Satellite Down Link
- WIMAX

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		3400		4600	MHz
Insertion Loss* (Above 6.0 dB)	3400-4600		0.8	1.8	dB
	3700-4200		0.8	1.4	
Isolation	3400-4600	16	30		dB
	3700-4200	20	30		
Amplitude Unbalance	3400-4600			0.6	dB
	3700-4200			0.6	
Phase Unbalance	3400-4600			9	deg.
	3700-4200			8	
VSWR (Port S)	3400-4600		1.5		:1
	3700-4200		1.3		
VSWR (Ports 1,2,3,4)	3400-4600		1.3		:1
	3700-4200		1.3		

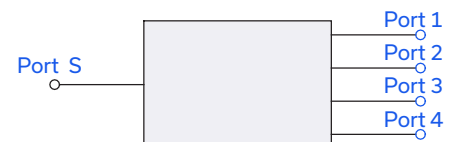
*Includes test fixture loss, 0.25 dB typ.

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



Mini-Circuits

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

REV. E
ECO-026468
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Power Splitter/Combiner

WP4S+

4 Way-0° 50Ω 3400 to 4600 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

Figure 1: Dimensions of the package outline. The drawing shows a top-down view of a square package with a central square pad and four trapezoidal leads. The package outline is 0.236 inches wide and 0.224 inches high. The central pad is 0.148 inches wide and 0.085 inches high. The leads are 0.105 inches wide at the base and 0.015 inches wide at the tip. The distance between the center of the central pad and the center of a lead is 0.007 inches. The package has 11x 0.020 inch plated through holes for ground. The coplanar waveguide has a trace width of 0.035 inches, a gap of 0.008 inches, and 5 plating. The package is labeled with PIN 1 and SEE NOTE 3.

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .020" ± .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.

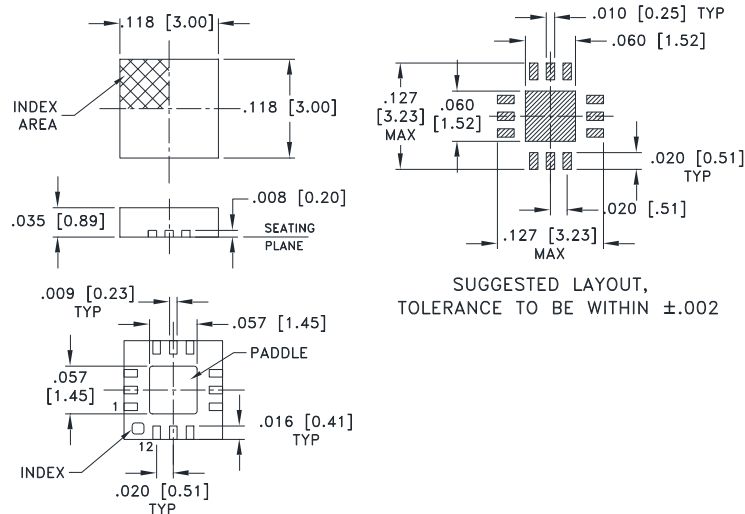
-  DENOTES PCB COPPER LAYOUT WITH SMOBC
 (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Diagram illustrating the components of a black body label:

- Index**: Points to the small white circle (index mark) in the top left corner.
- Black Body**: Points to the black rectangular area.
- Model Family Designation**: Points to the text "MCL WP4S XXXX" on the black body.

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

PCB Land Pattern



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

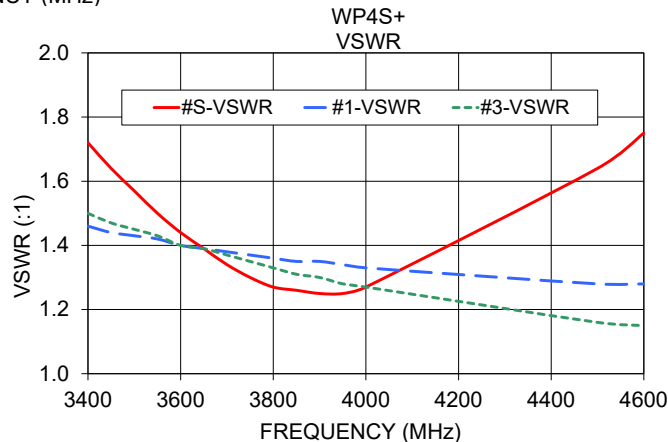
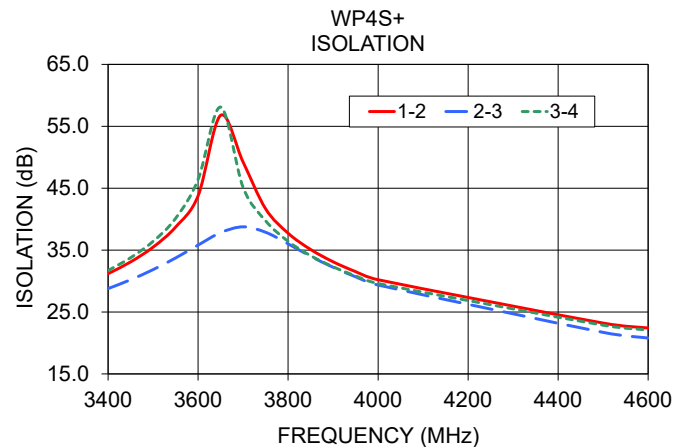
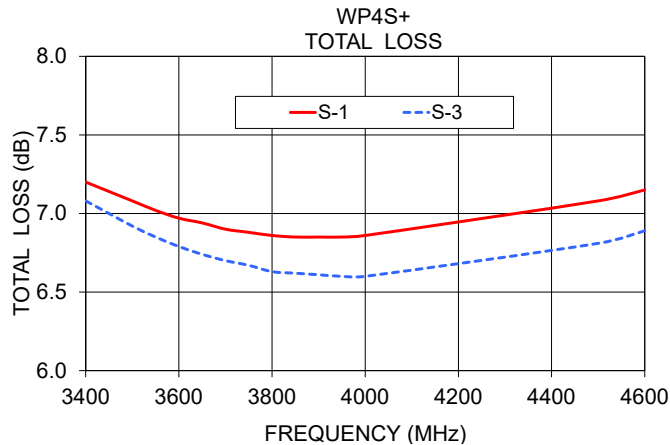
WP4S+

4 Way-0° 50Ω 3400 to 4600 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						
3400.00	7.20	7.13	7.08	7.17	0.13	31.19	28.78	31.70	1.61	1.72	1.46	1.49	1.50	1.46
3450.00	7.14	7.05	7.00	7.10	0.14	33.09	30.21	33.77	1.41	1.64	1.44	1.47	1.47	1.44
3500.00	7.08	6.98	6.92	7.04	0.16	35.48	31.85	36.41	1.25	1.57	1.43	1.45	1.45	1.43
3550.00	7.02	6.91	6.85	6.98	0.17	38.72	33.73	40.13	1.02	1.50	1.42	1.43	1.43	1.42
3600.00	6.97	6.85	6.79	6.93	0.18	43.77	35.81	46.42	0.87	1.44	1.40	1.41	1.40	1.40
3650.00	6.94	6.80	6.74	6.90	0.19	56.77	37.82	58.11	0.67	1.39	1.39	1.39	1.39	1.39
3700.00	6.90	6.75	6.70	6.86	0.20	49.22	38.76	45.12	0.50	1.34	1.38	1.37	1.37	1.38
3750.00	6.88	6.72	6.67	6.83	0.22	41.67	37.88	39.73	0.31	1.30	1.37	1.36	1.35	1.37
3800.00	6.86	6.69	6.63	6.81	0.22	37.73	36.01	36.42	0.26	1.27	1.36	1.34	1.33	1.36
3850.00	6.85	6.67	6.62	6.80	0.24	35.10	34.00	34.10	0.44	1.26	1.35	1.32	1.31	1.35
3900.00	6.85	6.66	6.61	6.80	0.24	33.11	32.23	32.30	0.63	1.25	1.35	1.31	1.30	1.35
3950.00	6.85	6.65	6.60	6.80	0.26	31.52	30.69	30.83	0.77	1.25	1.34	1.29	1.28	1.34
4000.00	6.86	6.65	6.60	6.80	0.26	30.21	29.36	29.60	0.95	1.27	1.33	1.28	1.27	1.33
4500.00	7.08	6.86	6.81	7.05	0.27	23.21	21.71	22.87	2.37	1.64	1.28	1.17	1.16	1.29
4600.00	7.15	6.94	6.89	7.12	0.26	22.42	20.80	22.10	2.67	1.75	1.28	1.16	1.15	1.29

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

WP4S+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = -10dBm @Temperature = +25°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
2400	10.95	11.20	11.11	10.91	0.29	6.87	16.80	16.60	16.84	6.56	1.78	1.99	1.98	1.79
2500	10.23	10.44	10.35	10.18	0.26	6.04	17.37	17.08	17.41	5.65	1.75	1.95	1.94	1.76
2600	9.78	9.98	9.88	9.76	0.22	5.86	18.26	17.85	18.31	4.84	1.71	1.90	1.89	1.72
2700	9.03	9.16	9.07	9.01	0.15	5.07	18.86	18.35	18.96	4.17	1.67	1.85	1.84	1.68
2800	8.82	8.97	8.88	8.81	0.16	4.66	20.16	19.51	20.22	3.61	1.63	1.80	1.79	1.64
3000	8.13	8.23	8.16	8.10	0.12	3.78	22.66	21.75	22.74	2.75	1.55	1.69	1.68	1.56
3100	7.74	7.75	7.67	7.74	0.08	3.73	23.98	22.96	24.18	2.42	1.51	1.63	1.63	1.52
3150	7.56	7.59	7.52	7.53	0.07	3.10	24.79	23.68	24.93	2.28	1.49	1.61	1.60	1.50
3200	7.20	7.16	7.09	7.17	0.11	2.70	25.38	24.15	25.61	2.14	1.47	1.58	1.57	1.48
3250	7.27	7.22	7.14	7.26	0.14	2.91	26.52	25.23	26.85	2.03	1.46	1.55	1.55	1.46
3300	7.17	7.14	7.07	7.13	0.10	2.46	27.63	26.19	27.92	1.91	1.44	1.53	1.52	1.44
3350	7.05	7.00	6.93	7.03	0.13	2.31	28.76	27.23	29.10	1.81	1.42	1.51	1.50	1.43
3400	6.84	6.77	6.70	6.81	0.14	1.89	29.99	28.21	30.41	1.72	1.41	1.48	1.47	1.41
3450	6.94	6.83	6.76	6.92	0.18	2.03	31.72	29.76	32.30	1.64	1.40	1.46	1.45	1.40
3500	6.94	6.87	6.81	6.89	0.13	1.84	33.76	31.37	34.32	1.56	1.39	1.44	1.43	1.39
3550	6.65	6.56	6.49	6.61	0.16	1.24	35.82	32.91	36.75	1.50	1.38	1.43	1.42	1.38
3600	6.78	6.65	6.56	6.75	0.21	1.47	39.17	35.13	40.65	1.44	1.36	1.41	1.40	1.37
3650	6.79	6.70	6.63	6.74	0.16	1.37	44.43	37.26	47.34	1.39	1.36	1.39	1.39	1.36
3700	6.67	6.56	6.51	6.61	0.16	0.94	56.51	38.97	58.00	1.35	1.35	1.37	1.37	1.36
3750	6.60	6.47	6.40	6.56	0.20	0.99	47.87	39.34	44.87	1.32	1.34	1.36	1.36	1.35
3800	6.78	6.65	6.58	6.74	0.20	0.99	41.29	37.83	39.55	1.30	1.33	1.34	1.35	1.34
3850	6.71	6.61	6.54	6.65	0.17	1.03	37.42	35.46	36.16	1.29	1.33	1.33	1.33	1.34
3900	6.54	6.42	6.35	6.49	0.19	1.59	34.60	33.14	33.62	1.29	1.32	1.32	1.32	1.34
3950	6.82	6.64	6.55	6.79	0.26	1.25	32.77	31.55	32.07	1.30	1.32	1.31	1.31	1.33
4000	6.70	6.60	6.54	6.62	0.17	1.48	31.05	29.90	30.36	1.32	1.31	1.29	1.30	1.33
4050	6.69	6.52	6.44	6.64	0.25	1.88	29.63	28.55	29.09	1.35	1.31	1.28	1.29	1.32
4100	6.74	6.58	6.51	6.67	0.23	1.91	28.52	27.33	28.01	1.37	1.31	1.27	1.27	1.32
4200	6.79	6.64	6.57	6.72	0.21	2.01	26.60	25.41	26.12	1.44	1.30	1.25	1.25	1.31
4300	6.91	6.70	6.63	6.87	0.28	2.52	25.11	23.83	24.76	1.53	1.29	1.23	1.24	1.31
4400	6.80	6.62	6.56	6.74	0.24	2.98	23.77	22.35	23.36	1.61	1.28	1.22	1.22	1.30
4500	7.00	6.80	6.73	6.93	0.26	2.91	22.80	21.29	22.50	1.70	1.28	1.20	1.21	1.29
4600	7.03	6.83	6.76	6.98	0.28	3.41	21.93	20.36	21.66	1.79	1.27	1.19	1.19	1.29
4700	7.13	6.93	6.87	7.06	0.26	3.31	21.24	19.49	20.94	1.89	1.26	1.17	1.18	1.28
4800	7.25	7.04	6.96	7.21	0.29	3.77	20.70	18.93	20.43	1.99	1.26	1.16	1.17	1.28
4900	7.23	7.03	6.96	7.16	0.26	4.06	20.12	18.14	19.87	2.08	1.26	1.16	1.16	1.28
5000	7.36	7.16	7.08	7.30	0.27	4.29	19.76	17.62	19.50	2.18	1.25	1.15	1.16	1.28
5200	7.42	7.26	7.18	7.36	0.24	4.77	19.10	16.64	18.84	2.37	1.25	1.16	1.15	1.28
5300	7.54	7.38	7.30	7.48	0.24	5.20	18.90	16.38	18.67	2.46	1.25	1.16	1.15	1.27
5400	7.54	7.42	7.34	7.50	0.20	5.38	18.68	15.95	18.41	2.55	1.24	1.17	1.15	1.27
5500	7.65	7.53	7.45	7.61	0.20	5.67	18.54	15.70	18.30	2.64	1.24	1.18	1.16	1.27
5600	7.70	7.62	7.53	7.67	0.17	5.89	18.41	15.42	18.14	2.73	1.24	1.19	1.18	1.27
5700	7.76	7.67	7.60	7.73	0.16	6.16	18.26	15.19	18.00	2.82	1.25	1.22	1.19	1.28
5800	7.84	7.77	7.71	7.82	0.12	6.47	18.13	14.94	17.91	2.89	1.25	1.24	1.22	1.29
6000	7.97	7.93	7.90	7.95	0.07	7.20	17.83	14.49	17.63	3.06	1.26	1.29	1.28	1.30
6200	8.12	8.11	8.09	8.10	0.03	7.97	17.56	14.11	17.32	3.22	1.28	1.35	1.34	1.33
6400	8.24	8.32	8.30	8.23	0.09	8.64	17.11	13.73	16.89	3.36	1.31	1.42	1.41	1.35
6600	8.38	8.48	8.45	8.35	0.13	9.44	16.58	13.22	16.37	3.48	1.34	1.51	1.49	1.39
6800	8.45	8.62	8.58	8.40	0.22	10.16	15.93	12.87	15.79	3.59	1.38	1.58	1.58	1.43
7000	8.44	8.75	8.68	8.41	0.34	10.36	15.32	12.55	15.17	3.65	1.42	1.67	1.69	1.49
7200	8.35	8.69	8.59	8.31	0.37	10.79	14.70	12.03	14.52	3.69	1.47	1.77	1.80	1.53
7400	8.58	9.20	9.06	8.60	0.61	11.22	14.50	12.13	14.25	3.72	1.52	1.86	1.86	1.56
7600	8.52	9.08	8.94	8.51	0.57	11.54	13.99	11.71	13.84	3.68	1.56	1.94	1.94	1.60
7800	8.28	8.79	8.60	8.26	0.52	12.33	13.22	11.14	13.26	3.63	1.59	1.99	2.01	1.64
8000	8.30	8.80	8.61	8.31	0.50	12.41	13.07	11.12	13.01	3.57	1.64	2.09	2.08	1.68

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

REV. X2

WP4S+

100627

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4 Way-0° Power Splitter/Combiner

WP4S+

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
2400	10.87	11.09	11.03	10.81	0.28	8.05	16.59	16.35	16.72	7.20	1.76	1.98	1.97	1.78
2500	10.19	10.37	10.33	10.12	0.25	7.38	17.17	16.83	17.32	6.13	1.73	1.95	1.94	1.75
2600	9.70	9.85	9.80	9.63	0.22	7.24	17.99	17.52	18.16	5.20	1.70	1.91	1.90	1.72
2700	8.98	9.06	9.02	8.91	0.15	6.52	18.60	18.04	18.83	4.43	1.67	1.86	1.85	1.69
2800	8.78	8.85	8.83	8.70	0.15	6.25	19.91	19.20	20.12	3.82	1.63	1.81	1.81	1.65
3000	8.11	8.17	8.14	8.07	0.10	5.46	22.55	21.51	22.79	2.88	1.55	1.71	1.71	1.58
3100	7.63	7.60	7.56	7.59	0.07	5.19	23.94	22.67	24.28	2.51	1.52	1.66	1.65	1.54
3150	7.53	7.52	7.51	7.48	0.05	4.68	24.89	23.55	25.25	2.36	1.50	1.62	1.62	1.52
3200	7.15	7.08	7.07	7.09	0.09	4.16	25.60	24.10	26.00	2.21	1.47	1.59	1.59	1.49
3250	7.17	7.07	7.04	7.12	0.13	4.35	26.85	25.17	27.32	2.09	1.45	1.56	1.57	1.47
3300	7.12	7.05	7.04	7.06	0.08	3.99	28.19	26.33	28.66	1.97	1.43	1.53	1.54	1.45
3350	6.98	6.89	6.87	6.92	0.11	3.84	29.53	27.43	30.09	1.87	1.41	1.50	1.51	1.43
3400	6.78	6.68	6.68	6.72	0.11	3.37	31.02	28.68	31.73	1.76	1.39	1.48	1.49	1.41
3450	6.82	6.69	6.66	6.76	0.16	3.49	33.04	30.33	34.00	1.67	1.38	1.46	1.46	1.40
3500	6.87	6.77	6.77	6.80	0.10	3.45	35.54	32.27	36.79	1.58	1.37	1.44	1.44	1.39
3550	6.59	6.46	6.46	6.51	0.13	2.90	38.49	34.16	40.14	1.51	1.37	1.43	1.43	1.38
3600	6.65	6.49	6.47	6.59	0.18	2.98	42.92	36.85	46.16	1.45	1.36	1.41	1.41	1.37
3650	6.71	6.59	6.58	6.64	0.13	3.00	47.79	40.02	50.98	1.40	1.35	1.39	1.39	1.36
3700	6.60	6.47	6.47	6.53	0.13	2.69	45.41	41.41	43.68	1.36	1.34	1.37	1.38	1.36
3750	6.50	6.34	6.33	6.44	0.17	2.49	40.56	40.05	39.27	1.33	1.33	1.35	1.36	1.35
3800	6.67	6.51	6.50	6.62	0.18	2.65	37.52	37.49	36.40	1.30	1.32	1.34	1.34	1.34
3850	6.64	6.49	6.50	6.57	0.15	2.47	35.10	35.01	34.21	1.29	1.32	1.32	1.33	1.33
3900	6.48	6.32	6.33	6.39	0.16	2.02	32.98	32.82	32.20	1.29	1.31	1.31	1.31	1.33
3950	6.68	6.47	6.46	6.63	0.22	2.13	31.73	31.27	31.11	1.30	1.31	1.29	1.30	1.32
4000	6.68	6.51	6.54	6.58	0.17	2.29	30.42	29.89	29.83	1.33	1.30	1.28	1.28	1.31
4050	6.59	6.39	6.39	6.52	0.21	2.13	29.25	28.50	28.71	1.36	1.29	1.26	1.28	1.31
4100	6.67	6.46	6.48	6.59	0.21	2.01	28.35	27.55	27.91	1.39	1.29	1.25	1.27	1.30
4200	6.75	6.52	6.55	6.65	0.23	2.06	26.79	25.75	26.38	1.45	1.28	1.23	1.25	1.29
4300	6.81	6.56	6.55	6.72	0.27	2.06	25.44	24.22	25.12	1.54	1.28	1.22	1.23	1.29
4400	6.72	6.52	6.52	6.62	0.21	2.26	24.28	22.88	23.87	1.65	1.28	1.21	1.22	1.29
4500	6.93	6.68	6.70	6.85	0.25	2.21	23.45	21.91	23.13	1.73	1.26	1.19	1.20	1.29
4600	6.94	6.71	6.71	6.85	0.23	2.30	22.62	20.90	22.27	1.81	1.25	1.17	1.19	1.27
4700	7.08	6.82	6.85	6.99	0.26	2.43	21.91	20.14	21.65	1.92	1.25	1.16	1.18	1.27
4800	7.17	6.91	6.93	7.10	0.26	2.85	21.31	19.40	21.10	2.03	1.26	1.16	1.18	1.27
4900	7.14	6.91	6.94	7.07	0.23	2.97	20.71	18.66	20.45	2.11	1.26	1.16	1.17	1.28
5000	7.26	7.01	7.05	7.20	0.24	3.29	20.23	18.10	20.06	2.19	1.25	1.15	1.17	1.28
5200	7.32	7.11	7.15	7.27	0.22	3.59	19.40	17.01	19.22	2.39	1.23	1.15	1.17	1.28
5300	7.41	7.21	7.25	7.36	0.20	3.94	19.09	16.57	18.93	2.47	1.24	1.16	1.17	1.28
5400	7.43	7.25	7.29	7.38	0.18	4.03	18.74	16.15	18.57	2.56	1.24	1.17	1.17	1.28
5500	7.52	7.34	7.39	7.48	0.18	4.34	18.53	15.79	18.38	2.64	1.24	1.18	1.18	1.28
5600	7.57	7.41	7.46	7.50	0.16	4.53	18.24	15.42	18.11	2.72	1.24	1.19	1.19	1.28
5700	7.63	7.47	7.53	7.57	0.16	4.67	18.05	15.06	17.86	2.79	1.24	1.21	1.21	1.29
5800	7.70	7.57	7.62	7.65	0.13	5.00	17.81	14.80	17.67	2.86	1.24	1.22	1.23	1.30
6000	7.86	7.72	7.79	7.77	0.14	5.55	17.46	14.23	17.32	3.04	1.26	1.27	1.29	1.33
6200	8.03	7.96	8.01	7.93	0.10	6.08	17.05	13.78	16.94	3.26	1.29	1.35	1.35	1.35
6400	8.16	8.15	8.23	8.06	0.17	6.61	16.69	13.39	16.54	3.42	1.32	1.41	1.42	1.37
6600	8.35	8.41	8.48	8.27	0.21	7.51	16.30	13.04	16.14	3.62	1.37	1.51	1.50	1.42
6800	8.42	8.58	8.66	8.37	0.29	7.94	15.78	12.66	15.67	3.78	1.39	1.58	1.60	1.47
7000	8.36	8.62	8.70	8.34	0.36	7.74	15.26	12.31	15.08	3.92	1.46	1.70	1.73	1.54
7200	8.27	8.57	8.65	8.26	0.39	8.04	14.59	11.88	14.50	4.01	1.50	1.81	1.84	1.59
7400	8.36	8.88	8.91	8.39	0.55	7.37	14.49	11.96	14.21	4.01	1.57	1.91	1.93	1.63
7600	8.34	8.86	8.88	8.39	0.54	7.95	14.09	11.61	13.80	3.96	1.60	1.99	2.01	1.67
7800	8.16	8.52	8.58	8.15	0.43	8.16	13.37	11.25	13.25	3.86	1.62	2.07	2.07	1.69
8000	8.19	8.59	8.62	8.22	0.43	9.06	13.14	11.18	12.99	3.79	1.63	2.13	2.14	1.73

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

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4 Way-0° Power Splitter/Combiner

WP4S+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = -10dBm @Temperature = +85°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
2400	11.04	11.28	11.18	10.97	0.30	6.56	16.85	16.67	16.90	6.13	1.77	1.99	1.98	1.80
2500	10.29	10.49	10.40	10.22	0.27	5.73	17.38	17.10	17.44	5.30	1.73	1.94	1.94	1.76
2600	9.88	10.05	9.96	9.81	0.24	5.53	18.26	17.88	18.34	4.56	1.69	1.89	1.89	1.72
2700	9.12	9.22	9.13	9.06	0.17	4.82	18.84	18.35	18.96	3.95	1.64	1.84	1.83	1.67
2800	8.90	9.02	8.93	8.85	0.17	4.44	20.13	19.50	20.22	3.44	1.60	1.78	1.78	1.63
3000	8.19	8.28	8.19	8.12	0.15	3.37	22.68	21.73	22.78	2.65	1.51	1.67	1.67	1.55
3100	7.85	7.84	7.76	7.81	0.10	3.41	24.13	23.00	24.35	2.35	1.48	1.62	1.61	1.51
3150	7.64	7.64	7.55	7.56	0.09	2.64	25.00	23.72	25.19	2.21	1.46	1.59	1.59	1.49
3200	7.30	7.24	7.14	7.23	0.16	2.31	25.70	24.27	25.99	2.09	1.44	1.56	1.56	1.47
3250	7.40	7.32	7.21	7.34	0.18	2.55	27.09	25.47	27.41	1.98	1.43	1.54	1.54	1.45
3300	7.27	7.20	7.11	7.18	0.15	2.03	28.35	26.53	28.66	1.87	1.42	1.52	1.51	1.44
3350	7.18	7.09	6.99	7.09	0.19	1.93	29.75	27.69	30.18	1.78	1.41	1.50	1.49	1.42
3400	6.97	6.85	6.76	6.87	0.21	1.51	31.31	28.90	31.89	1.69	1.39	1.48	1.47	1.41
3450	7.08	6.95	6.85	7.01	0.23	1.62	33.64	30.60	34.38	1.62	1.38	1.46	1.45	1.40
3500	7.05	6.96	6.86	6.94	0.19	1.27	36.40	32.59	37.44	1.55	1.38	1.44	1.43	1.39
3550	6.78	6.63	6.54	6.68	0.23	0.86	40.11	34.31	41.59	1.49	1.37	1.42	1.42	1.38
3600	6.92	6.76	6.67	6.85	0.25	0.90	47.40	36.86	52.46	1.43	1.36	1.40	1.40	1.37
3650	6.92	6.79	6.70	6.80	0.22	0.75	59.12	38.70	51.46	1.38	1.35	1.39	1.39	1.36
3700	6.80	6.65	6.56	6.68	0.24	0.46	44.24	38.69	42.04	1.34	1.35	1.37	1.37	1.36
3750	6.75	6.57	6.47	6.65	0.28	0.51	39.07	37.39	37.69	1.31	1.35	1.36	1.36	1.35
3800	6.92	6.75	6.66	6.82	0.26	0.35	35.89	35.12	35.06	1.29	1.34	1.35	1.35	1.35
3850	6.85	6.68	6.60	6.71	0.24	0.61	33.71	33.00	32.97	1.28	1.34	1.34	1.33	1.34
3900	6.68	6.51	6.42	6.56	0.27	1.09	31.84	31.07	31.14	1.28	1.34	1.32	1.32	1.34
3950	6.99	6.76	6.66	6.89	0.32	0.64	30.68	29.89	30.13	1.29	1.33	1.31	1.31	1.33
4000	6.84	6.68	6.60	6.68	0.24	1.04	29.33	28.59	28.80	1.30	1.33	1.30	1.30	1.33
4050	6.85	6.63	6.54	6.75	0.31	1.29	28.33	27.42	27.88	1.33	1.33	1.29	1.29	1.32
4100	6.89	6.68	6.60	6.75	0.29	1.29	27.49	26.64	27.04	1.35	1.32	1.28	1.28	1.32
4200	6.94	6.73	6.65	6.79	0.28	1.45	26.05	24.88	25.59	1.42	1.32	1.26	1.25	1.31
4300	7.08	6.83	6.74	6.96	0.34	1.73	24.90	23.57	24.58	1.51	1.31	1.24	1.24	1.31
4400	6.96	6.74	6.66	6.85	0.30	2.34	23.81	22.38	23.47	1.59	1.30	1.22	1.22	1.30
4500	7.15	6.91	6.84	7.02	0.32	2.11	23.13	21.54	22.74	1.68	1.30	1.21	1.20	1.30
4600	7.19	6.95	6.87	7.08	0.32	2.57	22.36	20.69	22.07	1.77	1.30	1.19	1.19	1.29
4700	7.28	7.02	6.95	7.13	0.33	2.59	21.76	19.92	21.43	1.86	1.29	1.18	1.18	1.29
4800	7.42	7.14	7.07	7.28	0.35	2.91	21.27	19.29	21.02	1.96	1.29	1.16	1.16	1.28
4900	7.38	7.13	7.07	7.26	0.31	3.25	20.76	18.63	20.46	2.06	1.28	1.16	1.16	1.28
5000	7.52	7.25	7.18	7.39	0.33	3.41	20.37	18.16	20.09	2.16	1.28	1.15	1.15	1.28
5200	7.58	7.33	7.27	7.45	0.31	4.02	19.64	17.13	19.32	2.35	1.27	1.15	1.14	1.27
5300	7.70	7.45	7.38	7.57	0.32	4.38	19.36	16.75	19.08	2.45	1.27	1.15	1.14	1.27
5400	7.72	7.49	7.42	7.58	0.30	4.67	19.09	16.31	18.77	2.54	1.26	1.16	1.14	1.26
5500	7.83	7.60	7.52	7.69	0.31	4.99	18.83	15.97	18.56	2.63	1.26	1.16	1.15	1.26
5600	7.89	7.69	7.61	7.76	0.28	5.28	18.61	15.62	18.30	2.73	1.27	1.18	1.16	1.26
5700	7.97	7.75	7.68	7.82	0.29	5.58	18.33	15.28	18.03	2.82	1.27	1.20	1.18	1.27
5800	8.05	7.87	7.79	7.91	0.26	5.90	18.13	14.99	17.84	2.91	1.28	1.22	1.20	1.27
6000	8.19	8.06	7.97	8.04	0.22	6.59	17.72	14.40	17.41	3.06	1.28	1.27	1.26	1.29
6200	8.34	8.25	8.16	8.18	0.18	7.30	17.26	13.92	16.99	3.18	1.30	1.32	1.32	1.31
6400	8.50	8.50	8.39	8.33	0.16	7.88	16.81	13.49	16.59	3.29	1.32	1.39	1.38	1.33
6600	8.60	8.65	8.52	8.41	0.24	8.56	16.31	13.03	16.10	3.35	1.35	1.48	1.46	1.37
6800	8.66	8.80	8.65	8.49	0.31	9.00	15.80	12.71	15.59	3.40	1.40	1.58	1.55	1.41
7000	8.69	8.96	8.82	8.55	0.42	9.29	15.30	12.45	15.07	3.41	1.44	1.66	1.65	1.46
7200	8.60	8.89	8.77	8.43	0.46	9.24	14.66	11.98	14.49	3.42	1.48	1.76	1.75	1.51
7400	8.88	9.37	9.20	8.73	0.64	10.00	14.66	12.27	14.26	3.42	1.51	1.84	1.82	1.54
7600	8.73	9.20	9.04	8.64	0.57	10.41	14.10	11.86	13.84	3.40	1.54	1.92	1.89	1.58
7800	8.51	8.88	8.75	8.39	0.49	10.08	13.41	11.46	13.19	3.39	1.57	1.98	1.96	1.62
8000	8.48	8.87	8.70	8.39	0.48	11.44	13.13	11.34	12.86	3.38	1.58	2.04	2.03	1.67

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

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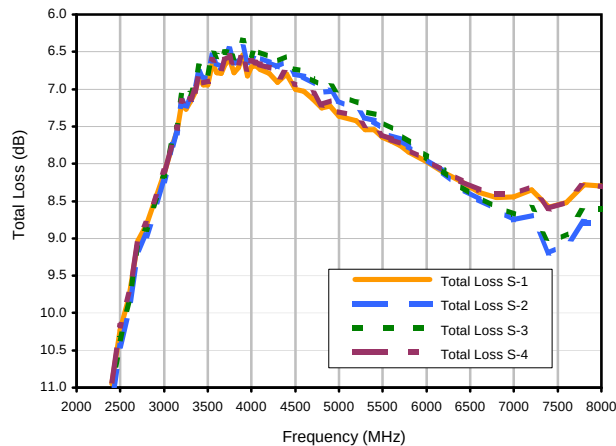


4 Way-0° Power Splitter/Combiner

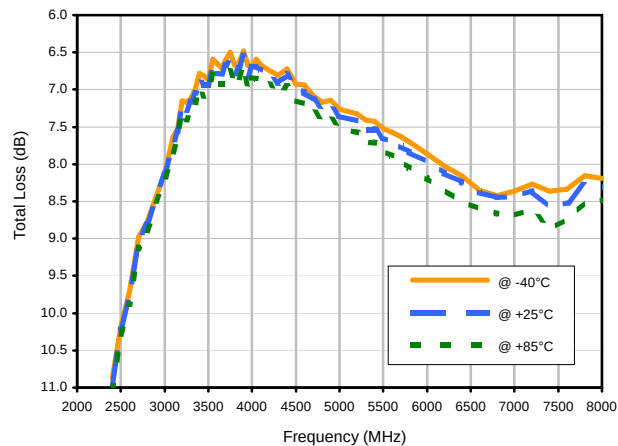
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Typical Performance Curves

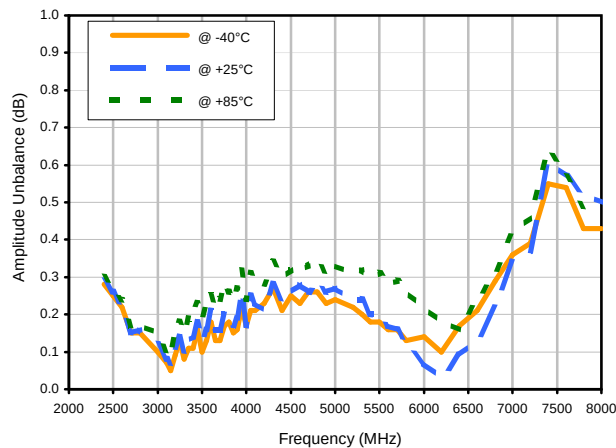
Total Loss



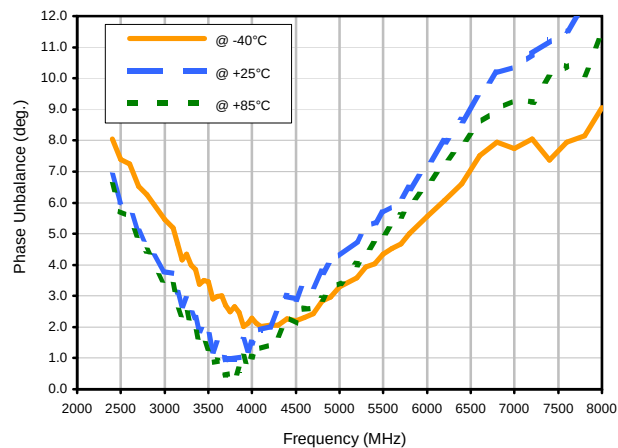
Total Loss S-1 vs. TEMPERATURE



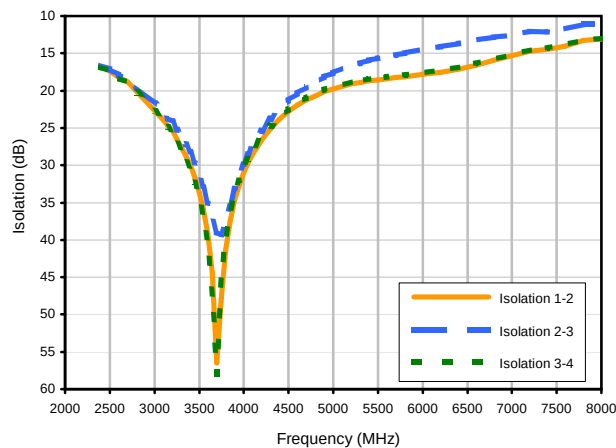
Amplitude Unbalance vs. TEMPERATURE



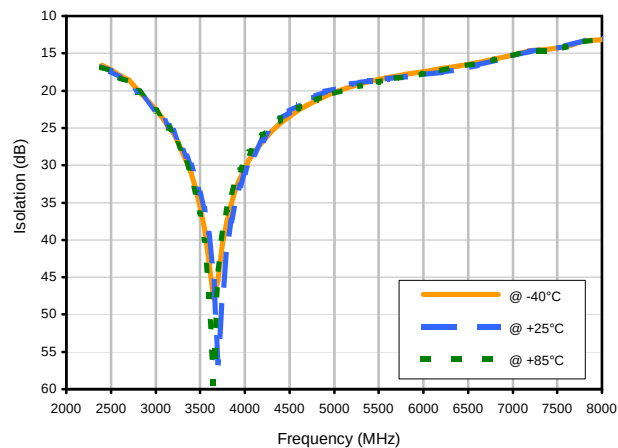
Phase Unbalance vs. TEMPERATURE



Isolation



Isolation 1-2 vs. TEMPERATURE

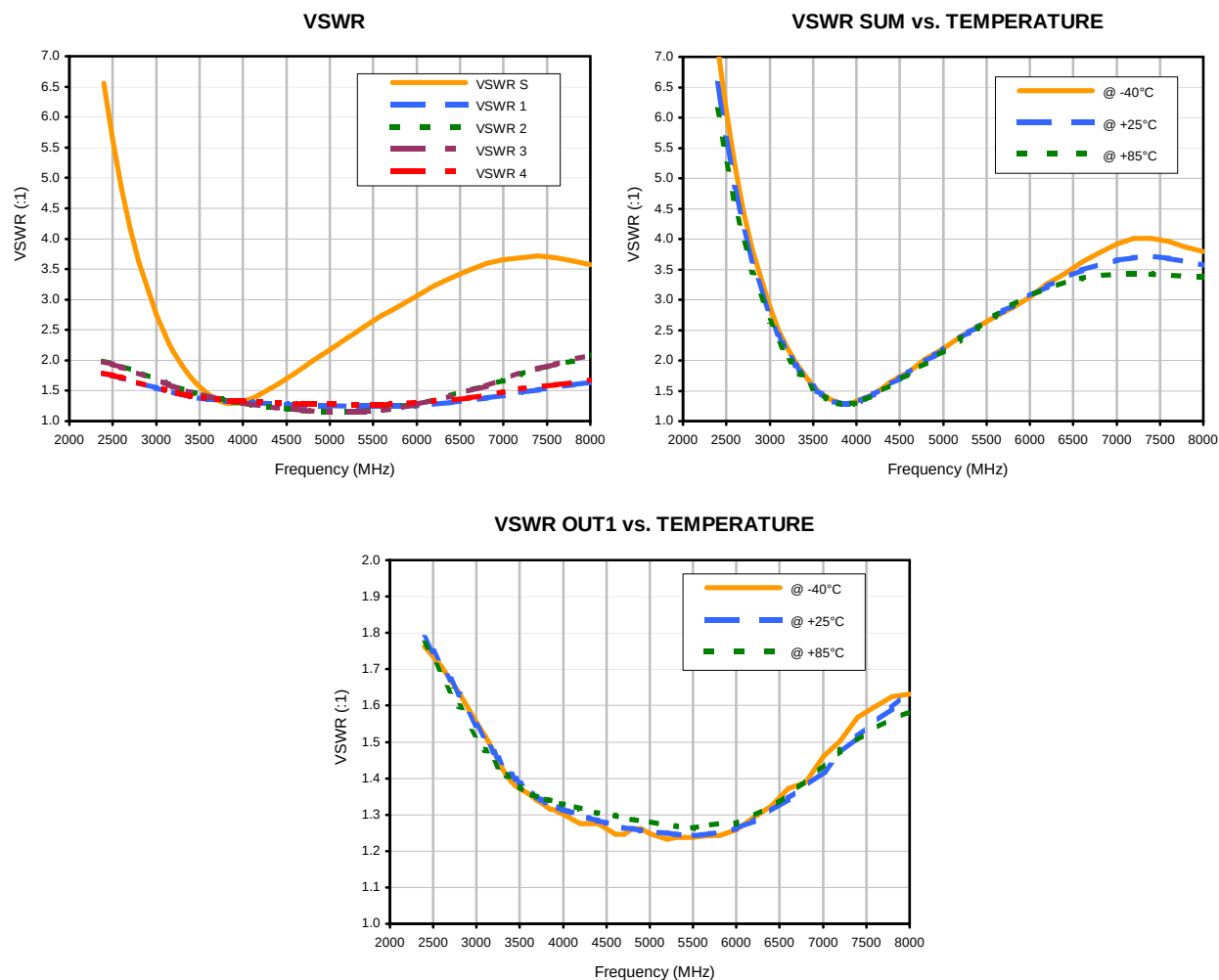


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4 Way-0° Power Splitter/Combiner

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Typical Performance Curves



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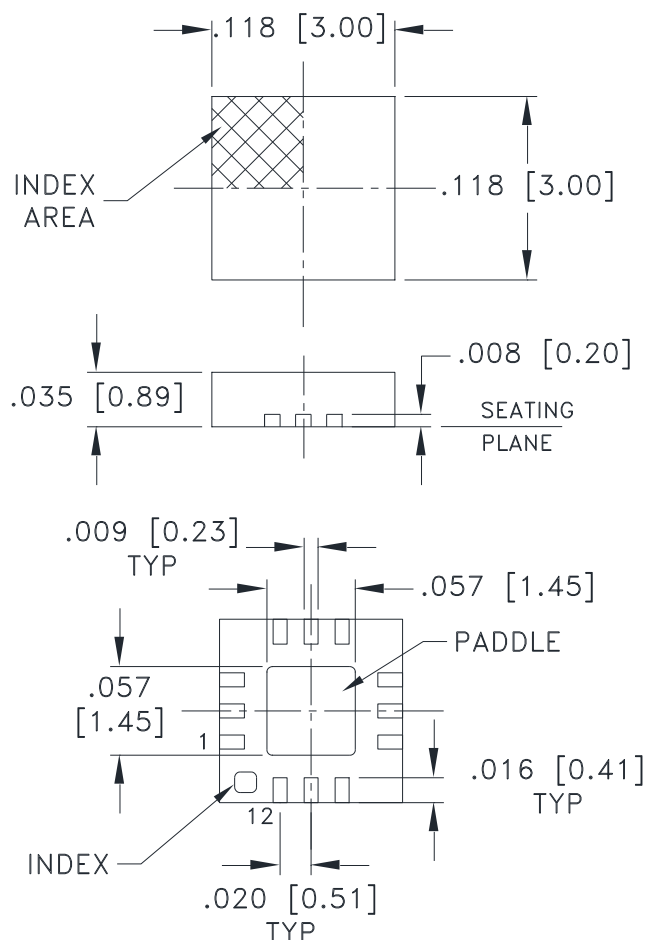
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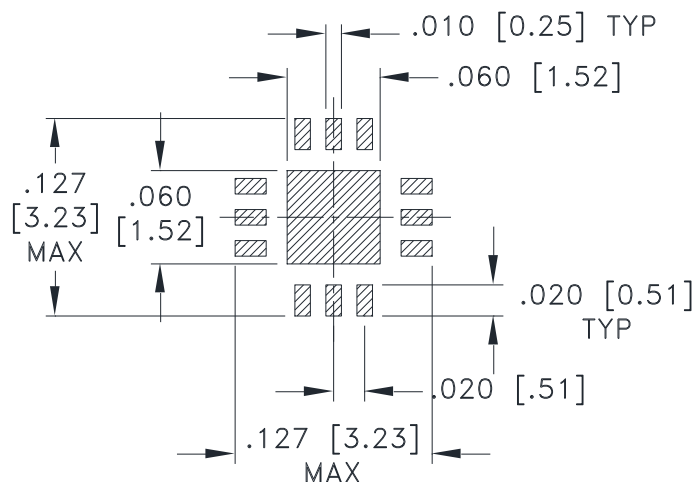
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Outline Dimensions



PCB Land Pattern



SUGGESTED LAYOUT,
TOLERANCE TO BE WITHIN $\pm .002$

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.



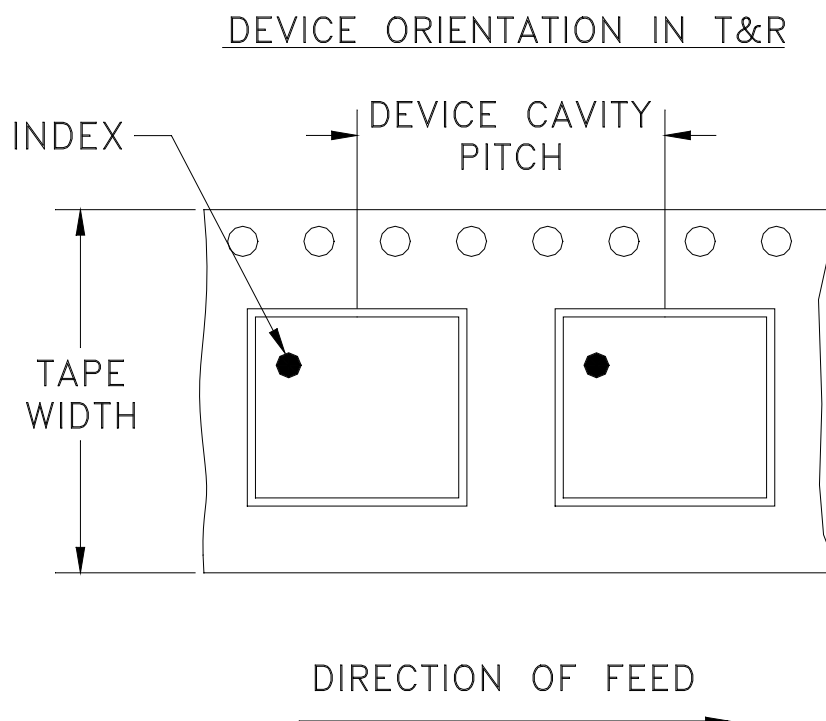
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Tape & Reel Packaging TR-F66



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.

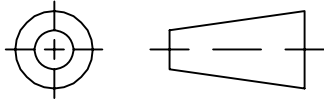
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

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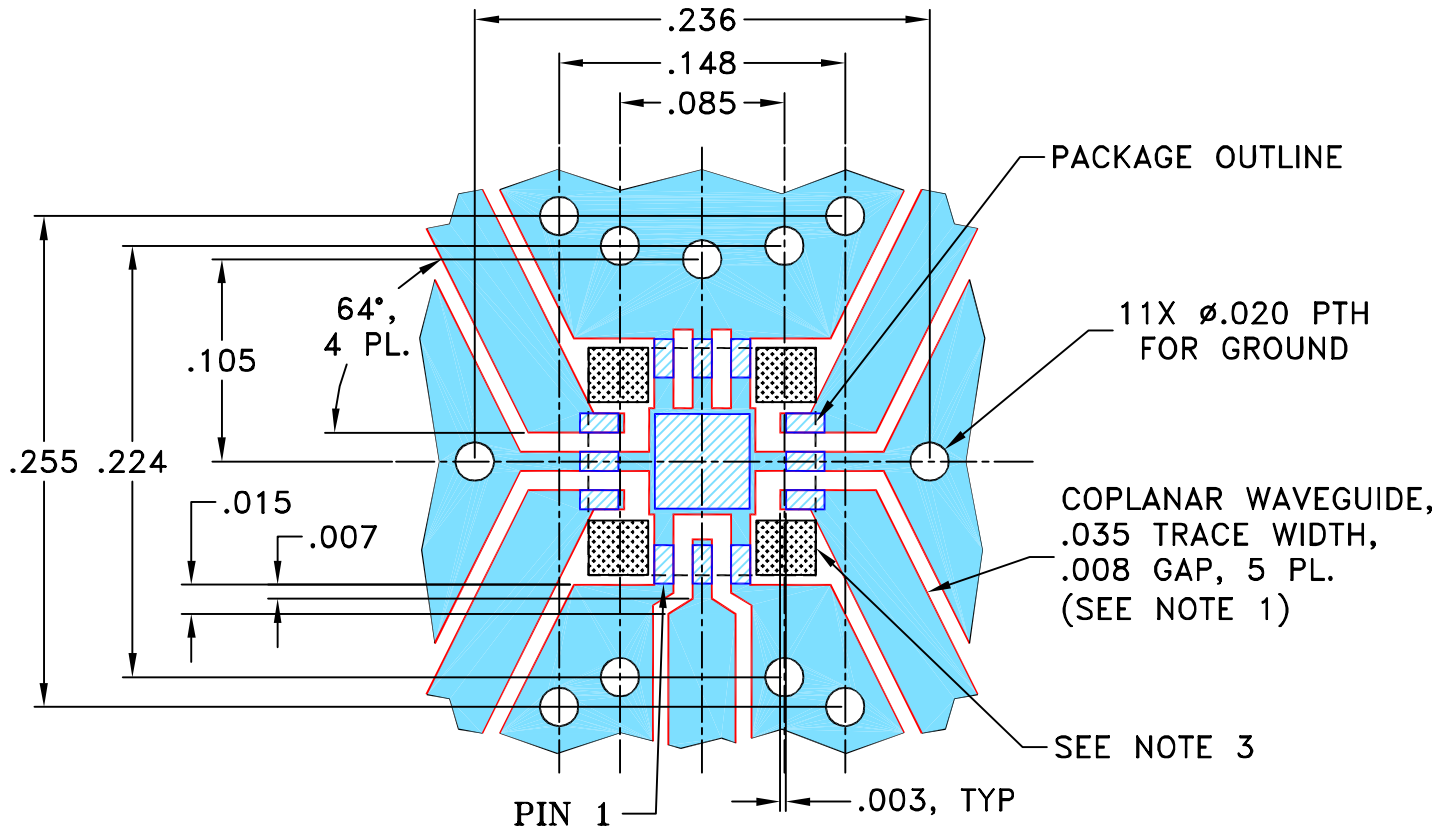
THIRD ANGLE PROJECTION



REVISIONS

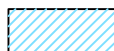
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M109251	NEW RELEASE	01/11/07	PW	WP
A	M112849	UPDATED NOTE 3	08/03/07	AV	WP

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 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

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005ANGLES $\pm$ 1°FRACTIONS $\pm$

DRAWN

PW

01/10/07

CHECKED

IL

01/11/07

APPROVED

WP

01/11/07



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Brooklyn NY 11235

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

SIZE
ACODE IDENT
15542DRAWING NO:
98-PL-259REV:
A

FILE: 98PL259

SCALE: 10:1

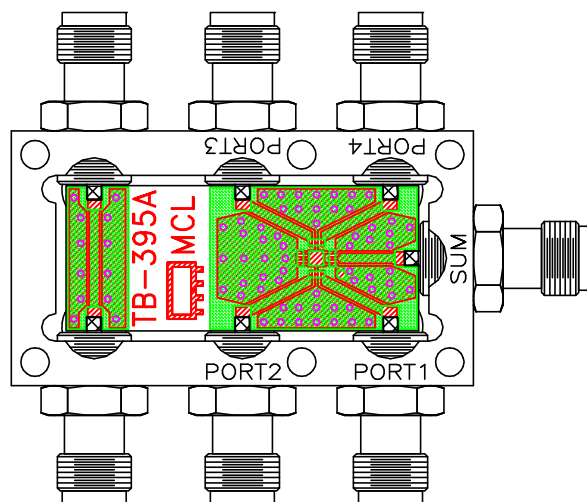
SHEET: 1 OF 1

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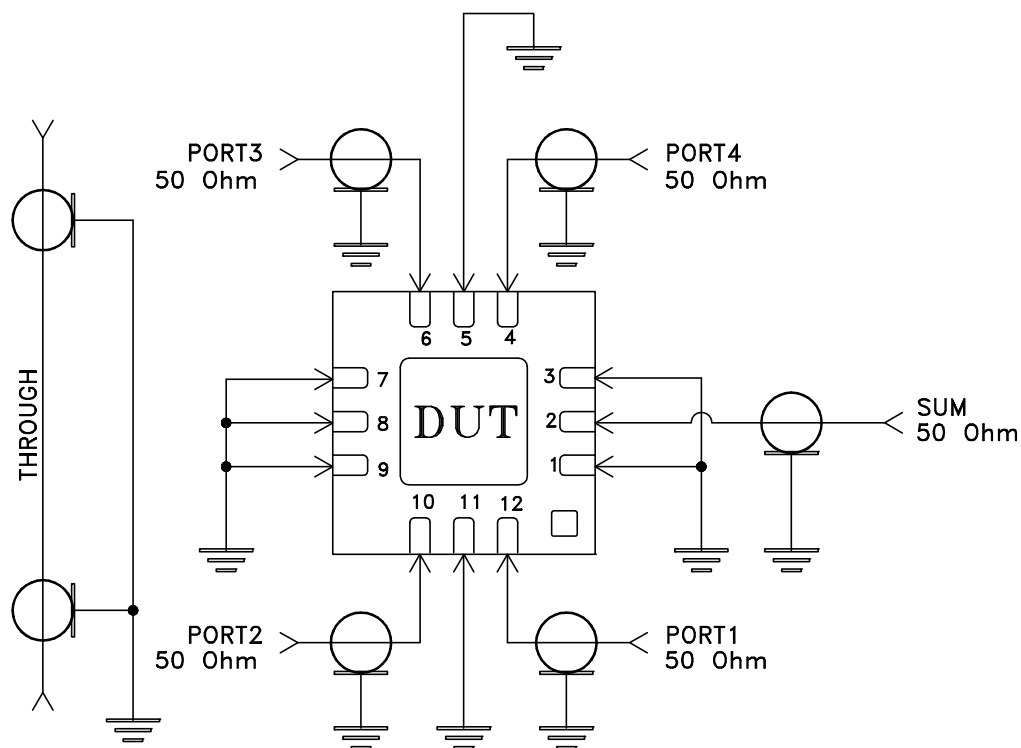
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ASHEETA1.DWG REV:A DATE:01/12/95

Evaluation Board and Circuit



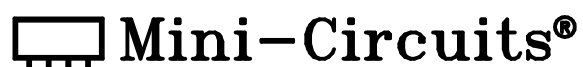
TB-395+



Schematic Diagram

Notes:

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





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