



Mini-Circuits

MMIC SURFACE MOUNT

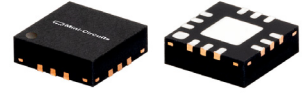
Power Splitter/Combiner

WP4P+

4 Way-0° 50Ω 1710 to 2025 MHz

FEATURES

- Excellent isolation, 29 dB typ.
- Excellent phase unbalance, 0.5 deg. typ.
- Excellent amplitude unbalance, 0.15 dB typ.
- Small size, .118" x .118" x .035"
- 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

- PCS
- WCDMA
- DCS

ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1710		2025	MHz
Insertion Loss* (above 6.0 dB)	1710-2025	—	0.7	1.4	dB
Isolation	1710-2025	19	29	—	dB
Amplitude Unbalance	1710-2025	—	—	0.4	dB
Phase Unbalance	1710-2025	—	—	4.0	deg.
VSWR (Port S)	1710-2025	—	1.3	—	:1
VSWR (Ports 1,2,3,4)	1710-2025	—	1.4	—	:1

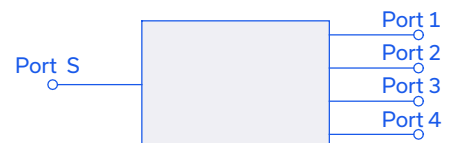
*Includes fixture loss, 0.16 dB typ.

MAXIMUM RATINGS

Parameter	Ratings
Operating temperature	-40°C to 85°C
Storage temperature	-65°C to 150°C
Power Input (as a splitter)	1.5W max.
Internal Dissipation	0.375W 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. D
ECO-015507
WP4P+
MCL NY
221025

PAGE 1 OF 3



Mini-Circuits

MMIC SURFACE MOUNT

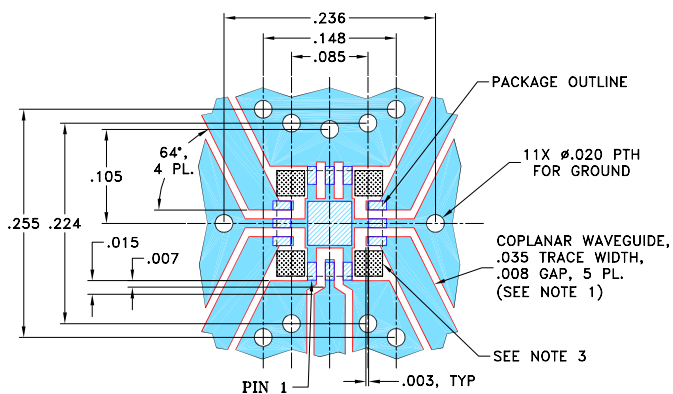
Power Splitter/Combiner

WP4P+

4 Way-0° 50Ω 1710 to 2025 MHz

PAD CONNECTIONS

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

DEMO BOARD MCL P/N: TB-395+
SUGGESTED PCB LAYOUT (PL-259)

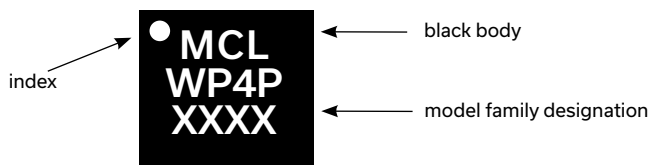
NOTES:

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)

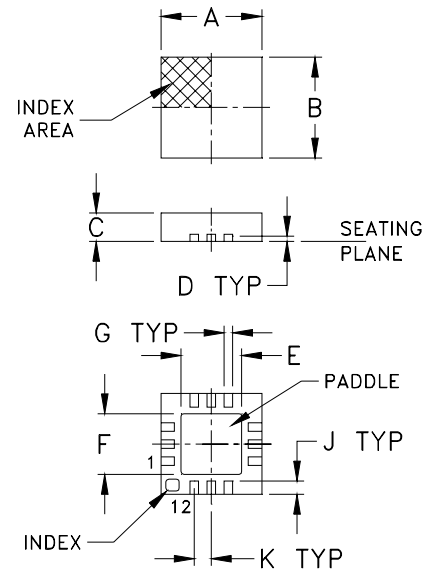
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

PRODUCT MARKING

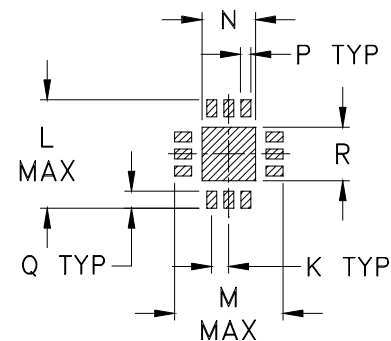


Marking may contain other features or characters for internal lot control

OUTLINE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inch
mm)

A	B	C	D	E	F	G	H	J
.118	.118	.035	.008	.057	.057	.009	---	.016
3.00	3.00	0.89	0.20	1.45	1.45	0.23	---	0.41
K	L	M	N	P	Q	R		wt
.020	.127	.127	.049	.010	.020	.049		grams
0.51	3.23	3.23	1.24	0.25	0.51	1.24		0.02

TAPE & REEL INFORMATION: F66

Mini-Circuits

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

PAGE 2 OF 3



Mini-Circuits

MMIC SURFACE MOUNT

Power Splitter/Combiner

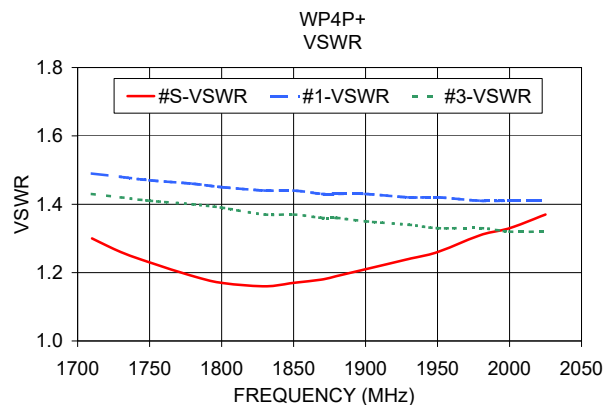
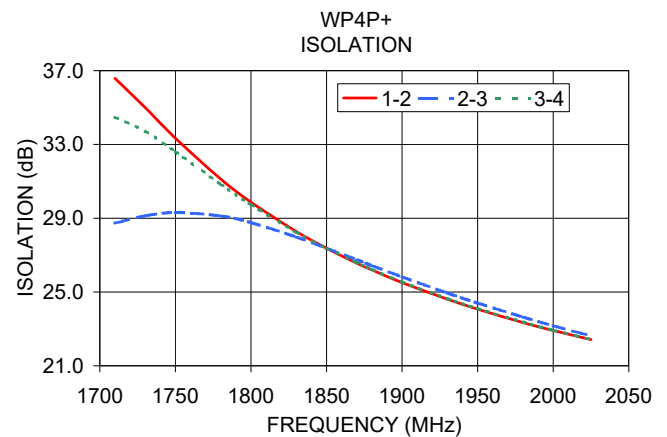
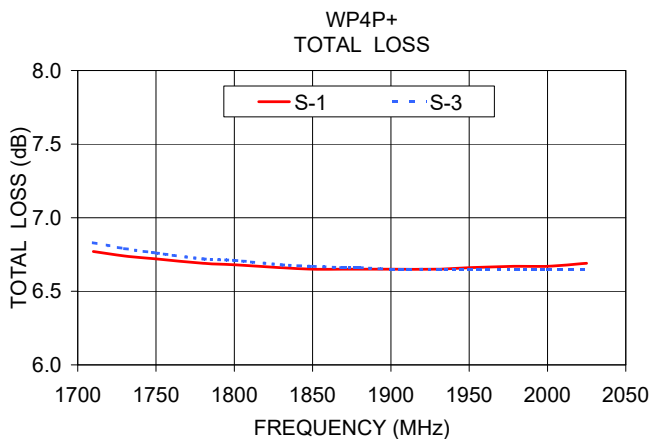
WP4P+

4 Way-0° 50Ω 1710 to 2025 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						
1710.00	6.77	6.88	6.83	6.73	0.15	36.58	28.73	34.47	0.62	1.30	1.49	1.42	1.43	1.45
1730.00	6.74	6.85	6.79	6.70	0.14	35.00	29.13	33.71	0.54	1.26	1.48	1.41	1.42	1.44
1750.00	6.72	6.82	6.76	6.68	0.14	33.34	29.30	32.61	0.45	1.23	1.47	1.40	1.41	1.43
1780.00	6.69	6.78	6.72	6.64	0.13	31.12	29.12	30.84	0.32	1.19	1.46	1.38	1.40	1.42
1800.00	6.68	6.76	6.71	6.63	0.13	29.87	28.76	29.73	0.25	1.17	1.45	1.37	1.39	1.41
1830.00	6.66	6.73	6.68	6.61	0.12	28.28	27.98	28.24	0.19	1.16	1.44	1.36	1.37	1.40
1850.00	6.65	6.72	6.67	6.61	0.12	27.37	27.37	27.37	0.22	1.17	1.44	1.35	1.37	1.40
1870.00	6.65	6.71	6.66	6.60	0.11	26.56	26.75	26.59	0.27	1.18	1.43	1.35	1.36	1.39
1880.00	6.65	6.71	6.66	6.60	0.11	26.20	26.43	26.22	0.32	1.19	1.43	1.34	1.36	1.39
1900.00	6.65	6.70	6.65	6.59	0.11	25.51	25.82	25.54	0.40	1.21	1.43	1.34	1.35	1.38
1930.00	6.65	6.69	6.65	6.60	0.10	24.61	24.94	24.64	0.50	1.24	1.42	1.33	1.34	1.38
1950.00	6.66	6.69	6.65	6.60	0.09	24.07	24.40	24.10	0.57	1.26	1.42	1.32	1.33	1.38
1980.00	6.67	6.69	6.65	6.61	0.09	23.34	23.64	23.37	0.67	1.31	1.41	1.31	1.33	1.37
2000.00	6.67	6.69	6.65	6.61	0.08	22.91	23.17	22.93	0.71	1.33	1.41	1.31	1.32	1.37
2025.00	6.69	6.70	6.65	6.62	0.08	22.42	22.62	22.43	0.81	1.37	1.41	1.30	1.32	1.37

1. Total Loss = Insertion Loss + 6dB 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

WP4P+

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
1200	9.98	10.24	10.15	9.95	0.29	3.76	17.01	15.25	16.97	4.82	1.76	1.69	1.70	1.68
1300	8.85	9.09	9.00	8.82	0.27	3.22	18.94	16.81	18.87	3.51	1.70	1.64	1.65	1.63
1400	7.99	8.21	8.12	7.97	0.25	2.75	21.67	18.89	21.52	2.61	1.63	1.59	1.60	1.57
1500	7.38	7.58	7.49	7.35	0.23	2.30	25.63	21.61	25.36	2.00	1.56	1.53	1.53	1.52
1525	7.26	7.46	7.37	7.23	0.22	2.19	26.91	22.40	26.61	1.88	1.55	1.51	1.52	1.50
1575	7.07	7.25	7.16	7.04	0.21	1.98	29.98	24.11	29.61	1.68	1.52	1.48	1.49	1.48
1600	6.98	7.16	7.08	6.95	0.21	1.88	31.75	25.01	31.40	1.58	1.50	1.47	1.48	1.47
1650	6.85	7.01	6.93	6.82	0.20	1.69	34.91	26.76	35.09	1.42	1.48	1.44	1.45	1.44
1675	6.80	6.95	6.87	6.76	0.19	1.60	35.19	27.49	35.99	1.36	1.47	1.43	1.44	1.43
1710	6.73	6.89	6.80	6.70	0.19	1.49	33.76	28.19	34.96	1.27	1.45	1.41	1.42	1.41
1720	6.72	6.87	6.79	6.68	0.18	1.46	33.16	28.30	34.34	1.25	1.45	1.41	1.42	1.41
1740	6.69	6.84	6.76	6.66	0.18	1.39	31.91	28.38	33.00	1.22	1.44	1.40	1.41	1.40
1760	6.67	6.81	6.73	6.63	0.18	1.33	30.71	28.28	31.68	1.18	1.43	1.39	1.40	1.39
1780	6.65	6.79	6.71	6.62	0.17	1.27	29.60	28.02	30.45	1.16	1.43	1.38	1.39	1.39
1800	6.64	6.77	6.69	6.60	0.17	1.21	28.61	27.64	29.36	1.14	1.42	1.38	1.38	1.38
1820	6.62	6.75	6.67	6.59	0.16	1.15	27.72	27.17	28.38	1.13	1.42	1.37	1.38	1.37
1840	6.62	6.74	6.66	6.58	0.16	1.09	26.92	26.66	27.50	1.13	1.41	1.36	1.37	1.37
1860	6.61	6.73	6.65	6.58	0.16	1.03	26.20	26.13	26.72	1.14	1.41	1.36	1.36	1.36
1880	6.61	6.73	6.65	6.57	0.15	0.97	25.54	25.59	26.01	1.16	1.40	1.35	1.36	1.35
1900	6.61	6.72	6.64	6.57	0.15	0.91	24.95	25.06	25.36	1.18	1.40	1.34	1.35	1.35
1920	6.61	6.72	6.64	6.58	0.15	0.86	24.40	24.55	24.78	1.21	1.40	1.34	1.35	1.34
1940	6.61	6.72	6.64	6.58	0.14	0.80	23.91	24.08	24.25	1.24	1.40	1.34	1.34	1.34
1960	6.62	6.72	6.64	6.58	0.14	0.75	23.45	23.62	23.76	1.27	1.39	1.33	1.34	1.33
1980	6.63	6.73	6.64	6.59	0.13	0.69	23.03	23.19	23.31	1.30	1.39	1.33	1.33	1.33
2000	6.63	6.73	6.65	6.60	0.13	0.64	22.64	22.77	22.89	1.33	1.39	1.32	1.33	1.32
2025	6.65	6.74	6.66	6.61	0.12	0.63	22.19	22.29	22.40	1.37	1.39	1.32	1.32	1.32
2050	6.66	6.75	6.67	6.63	0.12	0.64	21.79	21.84	21.97	1.41	1.39	1.31	1.32	1.32
2100	6.70	6.77	6.69	6.66	0.11	0.65	21.07	21.03	21.19	1.49	1.39	1.31	1.31	1.31
2150	6.74	6.80	6.72	6.71	0.10	0.72	20.47	20.32	20.53	1.57	1.39	1.30	1.31	1.30
2200	6.78	6.84	6.75	6.75	0.09	0.85	19.94	19.70	19.97	1.65	1.39	1.30	1.30	1.30
2250	6.83	6.88	6.79	6.80	0.09	0.98	19.50	19.15	19.48	1.73	1.39	1.30	1.30	1.30
2300	6.88	6.92	6.83	6.85	0.09	1.10	19.12	18.67	19.06	1.80	1.39	1.30	1.30	1.30
2350	6.93	6.96	6.87	6.90	0.09	1.24	18.78	18.23	18.69	1.88	1.40	1.30	1.30	1.29
2375	6.96	6.98	6.89	6.93	0.10	1.32	18.63	18.02	18.52	1.92	1.40	1.29	1.30	1.29
2400	6.99	7.01	6.91	6.95	0.10	1.40	18.50	17.83	18.36	1.95	1.40	1.29	1.30	1.29
2500	7.09	7.10	6.99	7.06	0.11	1.72	18.01	17.15	17.82	2.09	1.41	1.30	1.29	1.29
2600	7.20	7.19	7.08	7.17	0.13	2.03	17.63	16.56	17.39	2.24	1.41	1.30	1.29	1.29
2700	7.32	7.29	7.17	7.27	0.15	2.34	17.32	16.05	17.07	2.37	1.41	1.29	1.29	1.29
2800	7.42	7.37	7.25	7.37	0.18	2.65	17.06	15.60	16.81	2.48	1.42	1.29	1.28	1.29
3000	7.64	7.54	7.41	7.56	0.22	3.24	16.63	14.79	16.42	2.71	1.41	1.28	1.27	1.28
3200	7.83	7.69	7.56	7.73	0.27	3.75	16.28	14.07	16.14	2.91	1.39	1.26	1.25	1.26
3400	8.00	7.82	7.70	7.88	0.30	4.25	15.95	13.39	15.89	3.07	1.37	1.24	1.23	1.24
3600	8.17	7.96	7.84	8.03	0.34	4.65	15.59	12.75	15.61	3.24	1.35	1.22	1.21	1.23
3800	8.34	8.10	7.97	8.17	0.37	5.11	15.21	12.15	15.26	3.42	1.33	1.21	1.21	1.23
4000	8.50	8.27	8.12	8.32	0.39	5.63	14.78	11.60	14.81	3.62	1.32	1.22	1.22	1.25
4200	8.65	8.42	8.24	8.45	0.41	6.27	14.27	11.12	14.26	3.80	1.32	1.26	1.25	1.28
4400	8.76	8.55	8.36	8.59	0.41	7.00	13.65	10.71	13.57	3.94	1.33	1.32	1.30	1.33
4600	8.86	8.67	8.47	8.66	0.39	7.74	12.90	10.36	12.82	4.10	1.37	1.42	1.38	1.42
4800	8.92	8.77	8.56	8.73	0.36	8.40	12.12	10.11	12.04	4.22	1.42	1.54	1.47	1.52
5000	8.94	8.82	8.64	8.73	0.30	8.96	11.33	9.98	11.27	4.28	1.49	1.67	1.60	1.65
5200	8.91	8.86	8.70	8.73	0.21	9.35	10.61	9.97	10.55	4.29	1.58	1.82	1.75	1.82
5400	8.89	8.94	8.78	8.74	0.20	9.55	9.97	10.05	9.90	4.34	1.68	1.99	1.92	1.99
5600	8.88	9.02	8.85	8.73	0.29	9.81	9.41	10.16	9.32	4.39	1.79	2.15	2.09	2.17
5800	8.86	9.13	8.93	8.77	0.37	10.22	8.93	10.25	8.82	4.45	1.88	2.29	2.24	2.34

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

REV. X2

WP4P+

100627

Page 1 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

WP4P+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = -10dBm @Temperature = -40°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
1200	9.94	10.19	10.12	9.93	0.26	4.54	16.74	15.02	16.73	5.19	1.76	1.68	1.69	1.67
1300	8.79	9.03	8.95	8.78	0.24	4.08	18.63	16.54	18.59	3.74	1.69	1.64	1.65	1.62
1400	7.90	8.12	8.04	7.89	0.23	3.70	21.34	18.63	21.18	2.74	1.62	1.59	1.59	1.56
1500	7.27	7.47	7.39	7.26	0.21	3.33	25.24	21.34	24.94	2.08	1.56	1.52	1.53	1.51
1525	7.15	7.34	7.27	7.14	0.20	3.24	26.52	22.14	26.15	1.95	1.54	1.50	1.51	1.50
1575	6.95	7.13	7.05	6.94	0.19	3.07	29.63	23.91	29.08	1.73	1.51	1.48	1.49	1.47
1600	6.86	7.04	6.96	6.85	0.19	2.99	31.49	24.85	30.85	1.63	1.50	1.47	1.47	1.46
1650	6.72	6.89	6.81	6.71	0.18	2.84	35.11	26.71	34.75	1.46	1.47	1.44	1.45	1.44
1675	6.67	6.83	6.75	6.65	0.18	2.77	35.61	27.50	36.05	1.39	1.46	1.43	1.43	1.43
1710	6.60	6.76	6.68	6.59	0.17	2.67	34.19	28.27	35.47	1.30	1.45	1.41	1.42	1.41
1720	6.59	6.74	6.67	6.58	0.17	2.65	33.56	28.41	34.89	1.28	1.44	1.41	1.41	1.41
1740	6.56	6.71	6.64	6.55	0.16	2.60	32.24	28.54	33.52	1.24	1.44	1.40	1.40	1.40
1760	6.54	6.68	6.61	6.53	0.16	2.55	30.97	28.47	32.12	1.20	1.43	1.39	1.40	1.39
1780	6.52	6.66	6.59	6.51	0.15	2.50	29.79	28.23	30.83	1.17	1.42	1.38	1.39	1.38
1800	6.50	6.64	6.57	6.49	0.14	2.44	28.74	27.85	29.67	1.14	1.41	1.37	1.38	1.38
1820	6.49	6.62	6.55	6.48	0.14	2.39	27.79	27.37	28.64	1.13	1.41	1.36	1.37	1.37
1840	6.48	6.61	6.54	6.47	0.14	2.35	26.93	26.82	27.72	1.12	1.40	1.35	1.36	1.36
1860	6.48	6.60	6.53	6.47	0.13	2.29	26.16	26.24	26.89	1.14	1.40	1.35	1.35	1.36
1880	6.47	6.60	6.52	6.46	0.13	2.24	25.46	25.65	26.16	1.15	1.39	1.34	1.35	1.35
1900	6.47	6.59	6.52	6.47	0.13	2.24	24.83	25.07	25.49	1.17	1.38	1.34	1.34	1.34
1920	6.47	6.59	6.52	6.47	0.12	2.26	24.26	24.53	24.88	1.20	1.38	1.33	1.33	1.34
1940	6.48	6.59	6.52	6.47	0.12	2.28	23.75	24.02	24.33	1.23	1.38	1.33	1.33	1.33
1960	6.48	6.60	6.52	6.48	0.12	2.30	23.29	23.54	23.82	1.27	1.37	1.33	1.32	1.33
1980	6.49	6.60	6.52	6.49	0.11	2.32	22.86	23.09	23.35	1.30	1.37	1.32	1.32	1.32
2000	6.50	6.61	6.53	6.50	0.11	2.34	22.47	22.67	22.92	1.33	1.37	1.32	1.32	1.32
2025	6.51	6.61	6.54	6.51	0.10	2.35	22.03	22.19	22.42	1.37	1.37	1.32	1.31	1.31
2050	6.53	6.62	6.55	6.53	0.10	2.38	21.63	21.74	21.97	1.41	1.37	1.31	1.31	1.31
2100	6.56	6.65	6.57	6.56	0.09	2.42	20.90	20.92	21.18	1.49	1.37	1.30	1.30	1.30
2150	6.61	6.68	6.60	6.60	0.08	2.48	20.28	20.19	20.50	1.57	1.37	1.29	1.29	1.30
2200	6.65	6.72	6.64	6.64	0.08	2.52	19.75	19.55	19.92	1.66	1.37	1.29	1.29	1.29
2250	6.70	6.75	6.68	6.69	0.08	2.57	19.31	19.00	19.43	1.74	1.37	1.29	1.29	1.29
2300	6.75	6.79	6.71	6.74	0.08	2.62	18.95	18.53	18.99	1.81	1.38	1.29	1.29	1.29
2350	6.80	6.83	6.75	6.79	0.08	2.68	18.64	18.11	18.61	1.89	1.39	1.29	1.29	1.29
2375	6.82	6.85	6.77	6.81	0.08	2.72	18.50	17.92	18.44	1.92	1.39	1.29	1.29	1.29
2400	6.85	6.87	6.79	6.83	0.08	2.76	18.37	17.74	18.28	1.96	1.40	1.29	1.29	1.29
2500	6.95	6.95	6.86	6.93	0.09	2.94	17.92	17.08	17.73	2.10	1.41	1.30	1.29	1.29
2600	7.05	7.04	6.94	7.03	0.11	3.28	17.55	16.51	17.30	2.24	1.41	1.30	1.29	1.29
2700	7.14	7.12	7.01	7.12	0.13	3.72	17.28	16.04	16.97	2.36	1.41	1.29	1.28	1.29
2800	7.23	7.18	7.08	7.20	0.15	4.14	17.04	15.61	16.71	2.47	1.41	1.29	1.28	1.29
3000	7.41	7.33	7.23	7.37	0.18	4.93	16.59	14.81	16.32	2.69	1.39	1.26	1.27	1.27
3200	7.62	7.49	7.38	7.56	0.23	5.69	16.14	14.02	16.03	2.92	1.37	1.24	1.24	1.25
3400	7.82	7.65	7.54	7.74	0.28	6.35	15.70	13.26	15.77	3.15	1.35	1.22	1.21	1.23
3600	8.04	7.84	7.72	7.95	0.32	6.76	15.31	12.56	15.46	3.40	1.34	1.22	1.20	1.23
3800	8.25	8.03	7.90	8.13	0.36	7.22	14.93	11.92	15.13	3.66	1.33	1.22	1.20	1.23
4000	8.42	8.19	8.03	8.27	0.39	7.55	14.57	11.38	14.69	3.88	1.32	1.23	1.20	1.24
4200	8.54	8.32	8.15	8.38	0.39	8.02	14.11	10.92	14.17	4.04	1.32	1.26	1.23	1.27
4400	8.63	8.42	8.23	8.44	0.40	8.81	13.54	10.53	13.51	4.13	1.34	1.32	1.29	1.33
4600	8.70	8.53	8.34	8.50	0.35	9.22	12.81	10.18	12.77	4.30	1.35	1.41	1.38	1.41
4800	8.65	8.52	8.35	8.49	0.30	9.71	12.09	10.00	12.04	4.26	1.41	1.53	1.49	1.53
5000	8.64	8.55	8.40	8.48	0.24	10.32	11.30	9.86	11.24	4.30	1.49	1.68	1.63	1.68
5200	8.62	8.57	8.48	8.49	0.14	10.73	10.54	9.84	10.51	4.35	1.58	1.83	1.79	1.84
5400	8.57	8.59	8.52	8.50	0.09	11.08	9.89	9.92	9.85	4.35	1.68	1.99	1.95	2.02
5600	8.61	8.73	8.63	8.55	0.19	11.41	9.30	10.07	9.22	4.53	1.83	2.20	2.15	2.22
5800	8.58	8.77	8.70	8.59	0.20	11.19	8.79	10.10	8.71	4.57	1.93	2.32	2.30	2.37

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

REV. X2

WP4P+

100627

Page 2 of 3

Mini-Circuits®

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

P.O. Box 350166, Brooklyn, New York 11235-0006 (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

WP4P+

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
1200	10.01	10.26	10.17	9.98	0.29	4.15	17.19	15.40	17.14	4.56	1.77	1.69	1.70	1.68
1300	8.90	9.14	9.04	8.87	0.27	3.69	19.11	16.94	19.05	3.36	1.70	1.64	1.64	1.63
1400	8.06	8.28	8.18	8.03	0.25	3.29	21.81	18.99	21.73	2.53	1.63	1.58	1.59	1.57
1500	7.47	7.66	7.57	7.43	0.23	2.92	25.70	21.66	25.60	1.96	1.56	1.52	1.52	1.51
1525	7.35	7.54	7.45	7.32	0.22	2.83	26.95	22.43	26.85	1.85	1.54	1.50	1.51	1.50
1575	7.15	7.33	7.24	7.12	0.21	2.67	29.96	24.12	29.85	1.65	1.51	1.47	1.48	1.47
1600	7.07	7.24	7.15	7.04	0.20	2.59	31.72	25.00	31.61	1.56	1.50	1.46	1.47	1.46
1650	6.93	7.10	7.01	6.90	0.19	2.43	34.98	26.76	35.08	1.40	1.47	1.43	1.44	1.44
1675	6.88	7.04	6.95	6.85	0.19	2.36	35.37	27.51	35.78	1.34	1.46	1.42	1.43	1.43
1710	6.82	6.97	6.88	6.79	0.18	2.25	34.02	28.25	34.65	1.26	1.44	1.40	1.42	1.41
1720	6.80	6.95	6.86	6.78	0.18	2.23	33.43	28.38	34.04	1.24	1.44	1.40	1.41	1.41
1740	6.77	6.92	6.83	6.75	0.17	2.17	32.18	28.50	32.75	1.20	1.43	1.39	1.40	1.40
1760	6.75	6.89	6.81	6.73	0.17	2.11	30.96	28.42	31.48	1.16	1.43	1.38	1.40	1.39
1780	6.73	6.87	6.78	6.71	0.16	2.05	29.83	28.19	30.30	1.14	1.42	1.38	1.39	1.39
1800	6.72	6.85	6.77	6.69	0.16	2.00	28.82	27.82	29.24	1.12	1.41	1.37	1.38	1.38
1820	6.71	6.84	6.75	6.68	0.15	1.94	27.92	27.37	28.29	1.11	1.41	1.36	1.37	1.37
1840	6.70	6.82	6.74	6.67	0.15	1.88	27.11	26.86	27.44	1.11	1.40	1.36	1.37	1.37
1860	6.69	6.81	6.73	6.67	0.15	1.83	26.36	26.33	26.68	1.14	1.40	1.35	1.36	1.36
1880	6.69	6.81	6.72	6.66	0.14	1.78	25.69	25.78	25.98	1.14	1.39	1.34	1.35	1.35
1900	6.69	6.80	6.71	6.66	0.14	1.75	25.09	25.25	25.36	1.17	1.39	1.34	1.35	1.35
1920	6.69	6.80	6.71	6.66	0.13	1.78	24.53	24.73	24.78	1.20	1.39	1.33	1.34	1.34
1940	6.69	6.80	6.71	6.67	0.13	1.86	24.02	24.24	24.26	1.22	1.39	1.33	1.34	1.34
1960	6.70	6.80	6.71	6.67	0.13	1.93	23.55	23.77	23.77	1.26	1.38	1.33	1.34	1.34
1980	6.70	6.80	6.72	6.68	0.12	2.01	23.12	23.32	23.33	1.29	1.38	1.32	1.33	1.33
2000	6.71	6.81	6.72	6.69	0.12	2.10	22.71	22.90	22.91	1.32	1.38	1.32	1.33	1.33
2025	6.73	6.82	6.73	6.70	0.11	2.20	22.25	22.39	22.44	1.36	1.38	1.31	1.32	1.33
2050	6.74	6.83	6.74	6.72	0.11	2.29	21.84	21.93	22.00	1.40	1.38	1.31	1.32	1.32
2100	6.78	6.85	6.76	6.75	0.10	2.48	21.10	21.09	21.24	1.48	1.38	1.30	1.31	1.32
2150	6.82	6.89	6.80	6.79	0.09	2.67	20.48	20.36	20.58	1.56	1.38	1.30	1.31	1.31
2200	6.87	6.92	6.83	6.84	0.09	2.85	19.94	19.72	20.02	1.64	1.38	1.30	1.30	1.31
2250	6.92	6.97	6.87	6.89	0.10	3.03	19.49	19.15	19.53	1.72	1.38	1.30	1.30	1.30
2300	6.97	7.01	6.91	6.94	0.10	3.21	19.10	18.66	19.11	1.80	1.39	1.29	1.30	1.30
2350	7.02	7.06	6.95	6.99	0.10	3.39	18.76	18.21	18.74	1.88	1.39	1.29	1.30	1.30
2375	7.05	7.08	6.98	7.02	0.11	3.48	18.61	18.00	18.57	1.92	1.39	1.29	1.30	1.30
2400	7.08	7.11	7.00	7.05	0.11	3.56	18.46	17.80	18.41	1.95	1.40	1.29	1.30	1.30
2500	7.20	7.21	7.09	7.16	0.12	3.93	17.98	17.10	17.87	2.10	1.41	1.30	1.30	1.30
2600	7.33	7.31	7.18	7.27	0.14	4.32	17.59	16.50	17.44	2.25	1.42	1.30	1.30	1.30
2700	7.45	7.41	7.28	7.39	0.17	4.66	17.29	15.99	17.11	2.38	1.42	1.30	1.29	1.30
2800	7.57	7.50	7.37	7.50	0.20	5.02	17.04	15.54	16.85	2.50	1.43	1.30	1.29	1.30
3000	7.79	7.68	7.54	7.71	0.26	5.75	16.65	14.76	16.46	2.71	1.42	1.29	1.27	1.28
3200	7.98	7.82	7.68	7.88	0.30	6.45	16.34	14.07	16.18	2.88	1.40	1.27	1.25	1.26
3400	8.13	7.94	7.80	8.02	0.33	7.19	16.03	13.43	15.94	3.01	1.37	1.25	1.22	1.23
3600	8.27	8.05	7.91	8.15	0.36	7.88	15.70	12.82	15.66	3.13	1.34	1.23	1.20	1.22
3800	8.41	8.18	8.04	8.27	0.38	8.63	15.33	12.24	15.32	3.28	1.32	1.22	1.21	1.23
4000	8.56	8.32	8.17	8.40	0.39	9.36	14.88	11.71	14.87	3.46	1.31	1.22	1.23	1.25
4200	8.70	8.46	8.30	8.51	0.40	10.13	14.35	11.23	14.31	3.63	1.32	1.26	1.27	1.29
4400	8.84	8.60	8.43	8.62	0.41	10.89	13.70	10.80	13.61	3.80	1.34	1.32	1.32	1.34
4600	8.98	8.75	8.57	8.74	0.41	11.71	12.93	10.43	12.84	4.02	1.38	1.42	1.39	1.42
4800	9.07	8.87	8.67	8.81	0.40	12.62	12.17	10.18	12.05	4.17	1.43	1.54	1.48	1.51
5000	9.11	8.97	8.76	8.87	0.35	13.42	11.38	10.04	11.28	4.27	1.50	1.68	1.60	1.65
5200	9.09	9.04	8.81	8.89	0.28	14.15	10.69	10.05	10.58	4.29	1.59	1.85	1.74	1.81
5400	9.08	9.15	8.89	8.92	0.26	14.91	10.07	10.13	9.94	4.34	1.69	2.01	1.90	1.98
5600	9.05	9.24	8.95	8.94	0.31	15.83	9.53	10.23	9.39	4.36	1.79	2.16	2.07	2.15
5800	9.03	9.35	9.02	8.95	0.39	16.67	9.06	10.34	8.90	4.38	1.89	2.29	2.20	2.31

¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

REV. X2

WP4P+

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

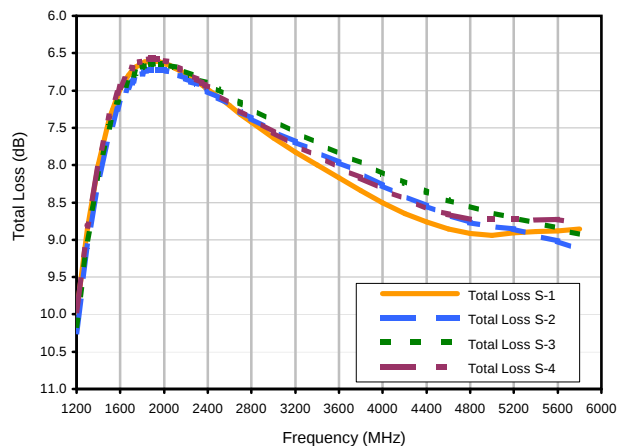


4 Way-0° Power Splitter/Combiner

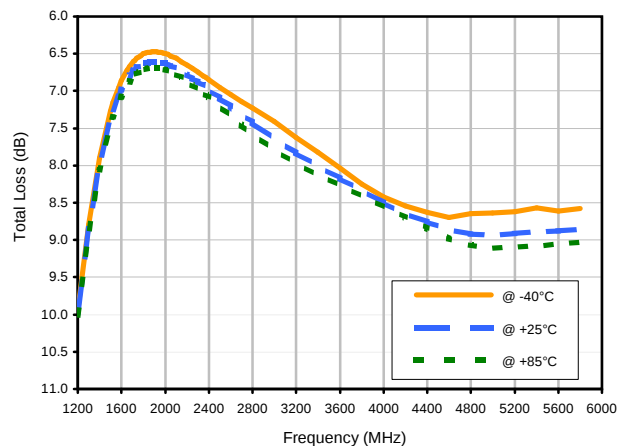
WP4P+

Typical Performance Curves

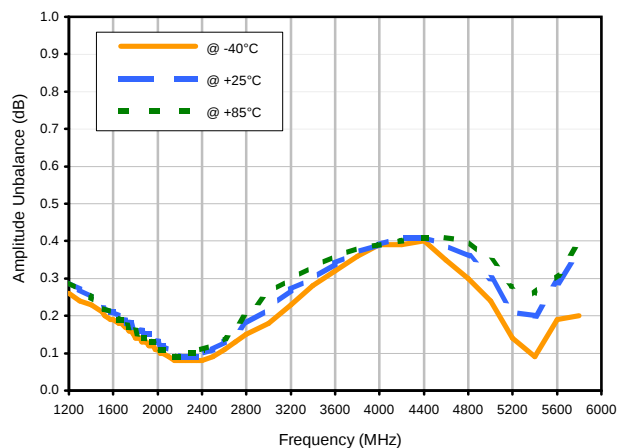
Total Loss



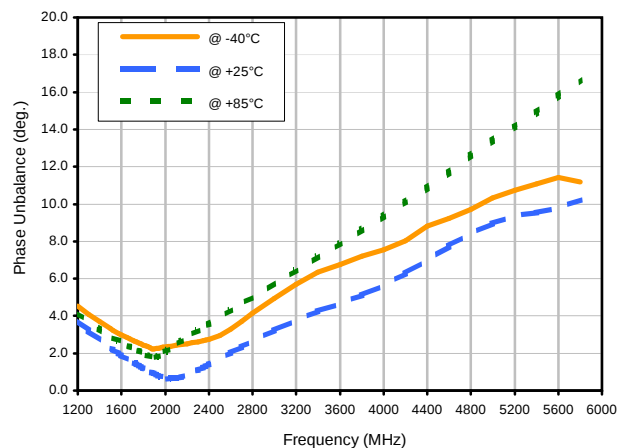
Total Loss S-1 vs. TEMPERATURE



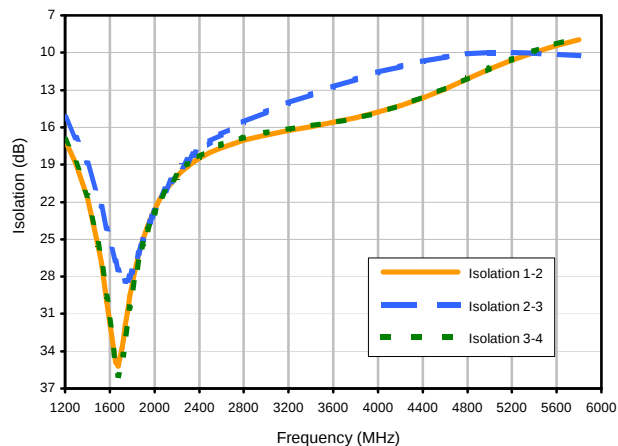
Amplitude Unbalance vs. TEMPERATURE



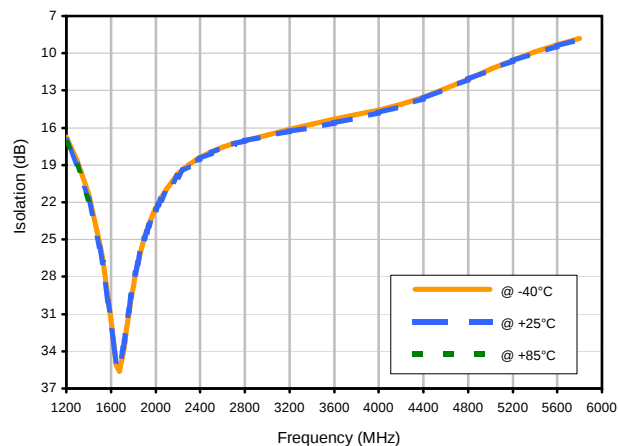
Phase Unbalance vs. TEMPERATURE



Isolation



Isolation 1-2 vs. TEMPERATURE



REV. X2

WP4P+

100627

Page 1 of 2



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

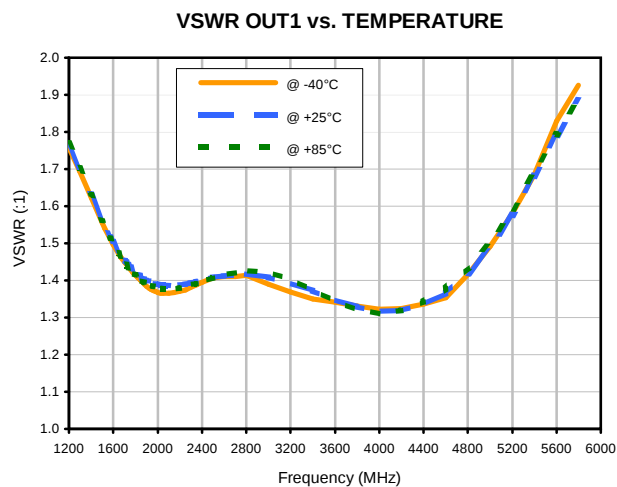
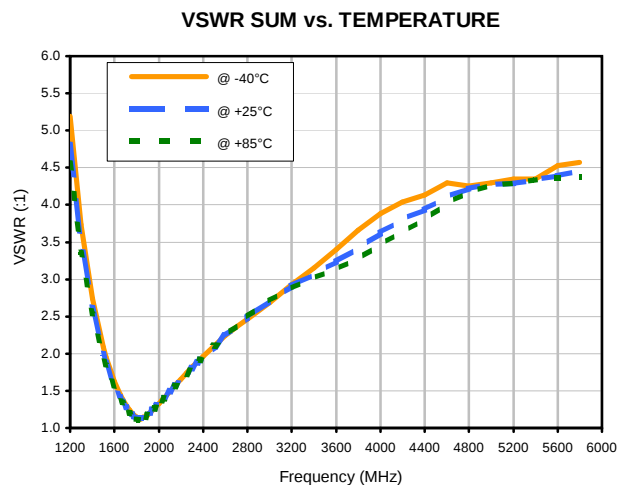
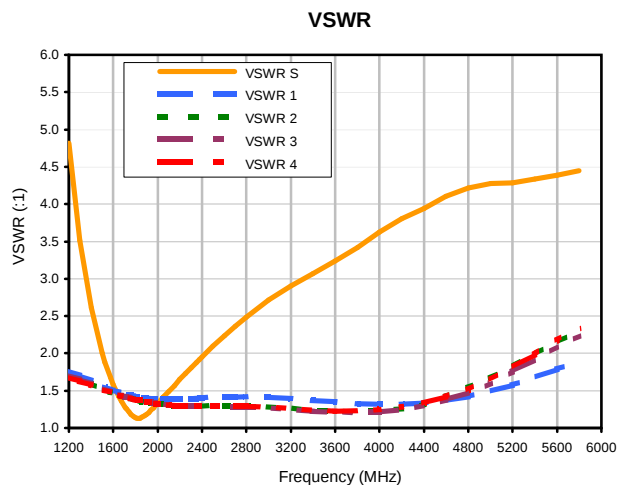
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



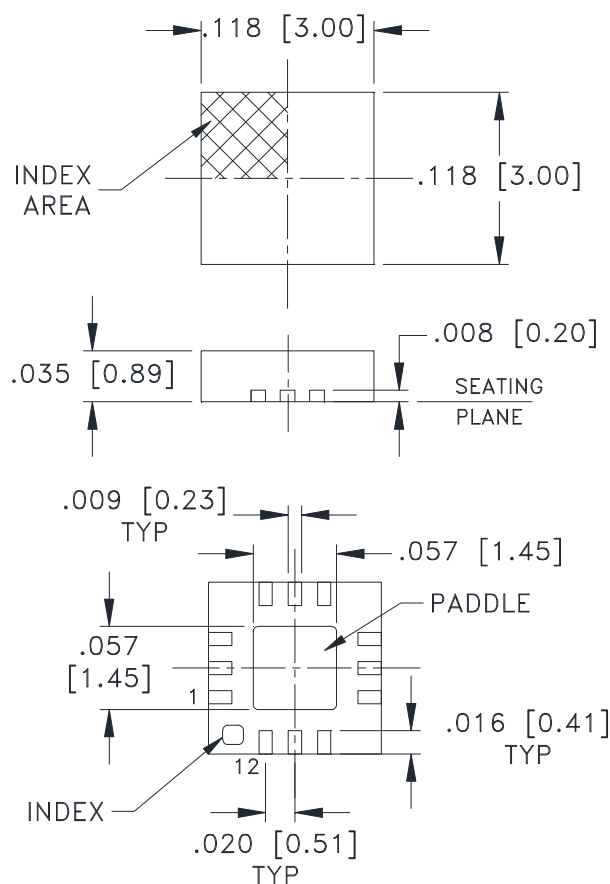
The Design Engineers Search Engine finds the model you need, instantly • For detailed performance specs & shopping online see



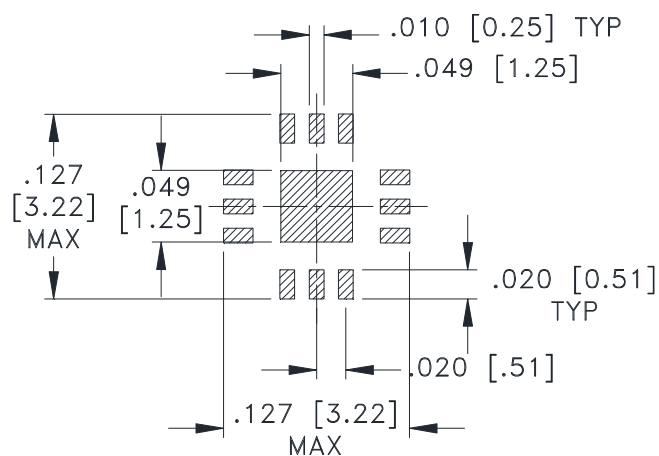
Typical Performance Curves



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.

Mini-Circuits®

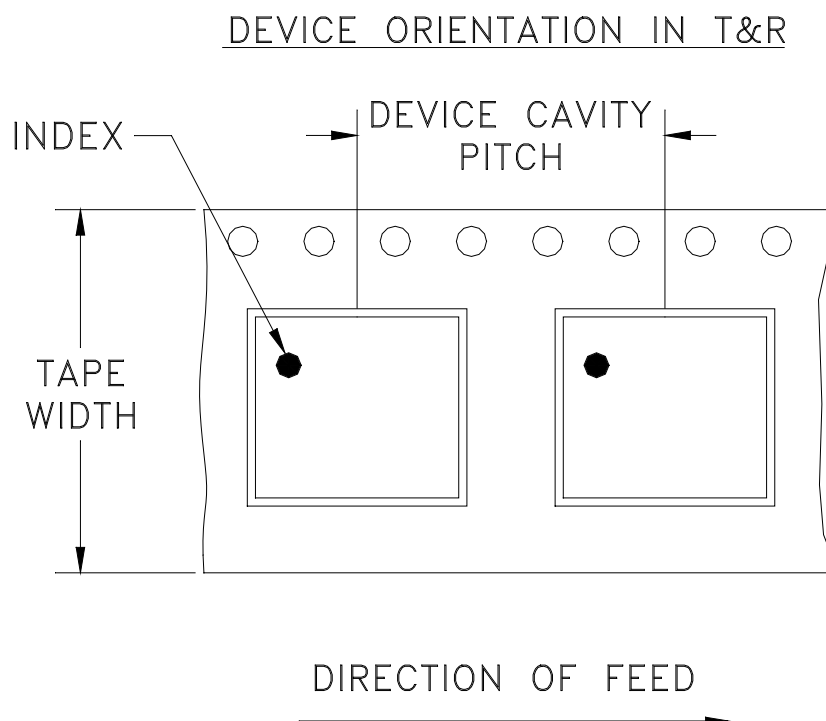
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

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

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

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.

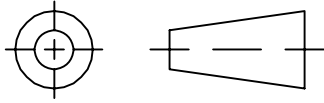
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

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

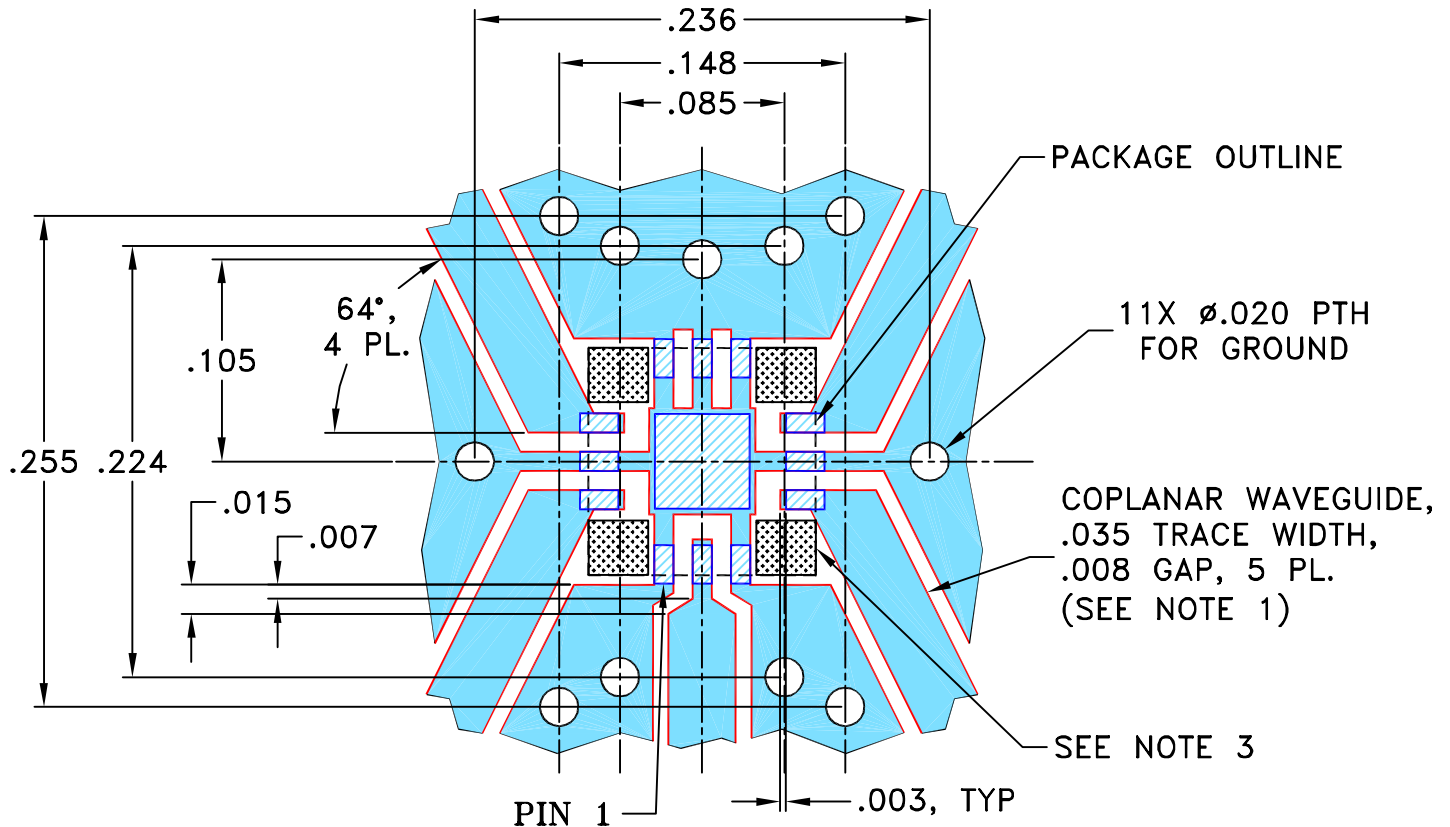
THIRD ANGLE PROJECTION



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

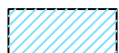


NOTES:

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 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

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

INITIALS

DRAWN

PW

DATE

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+

SIZE
A

CODE IDENT
15542

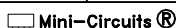
DRAWING NO:
98-PL-259

REV:
A

FILE: 98PL259

SCALE: 10:1

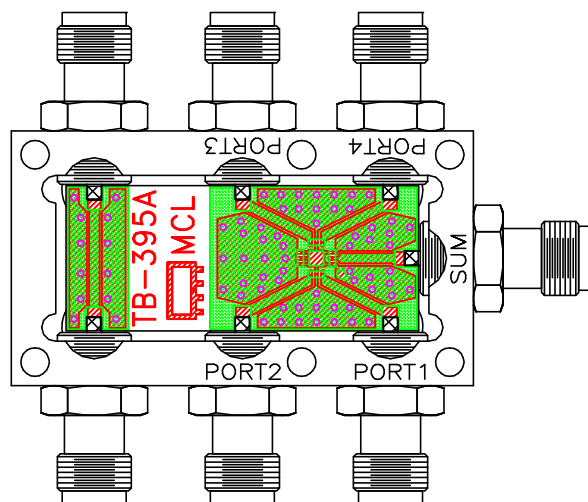
SHEET: 1 OF 1



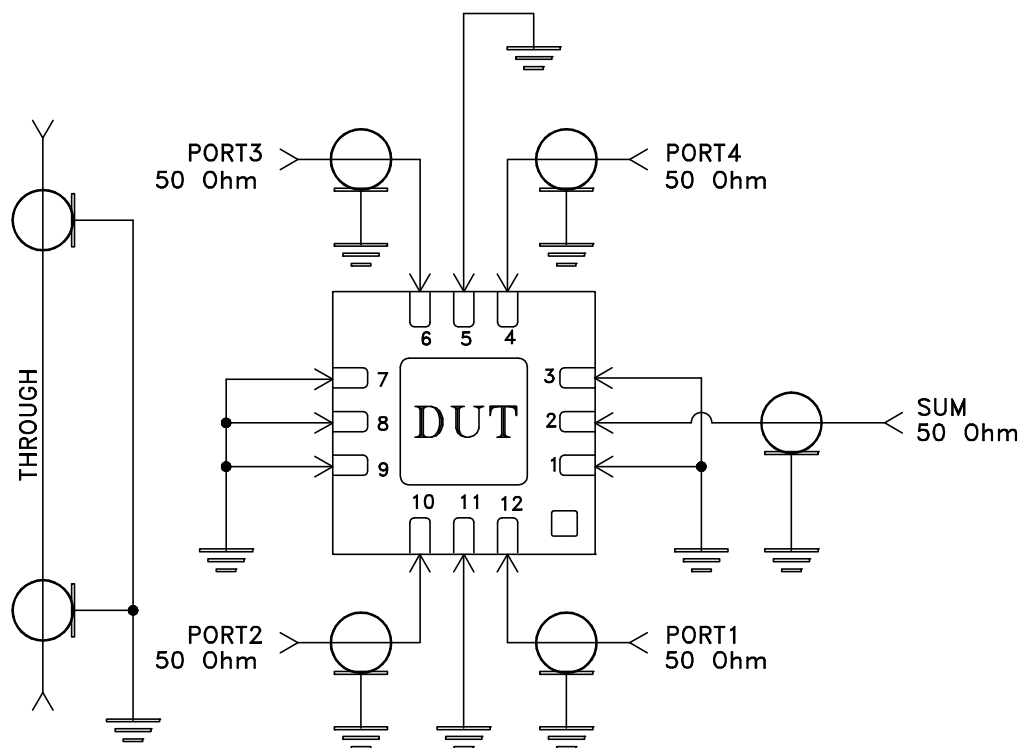
THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THEREON. THESE CONTENTS SHALL NOT BE USED, 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

Evaluation Board and Circuit



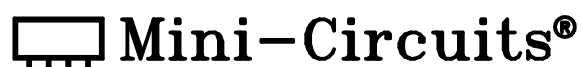
TB-395+



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