



MMIC SURFACE MOUNT

# Power Splitter/Combiner

## WP4N+

4 Way-0° 50Ω 1215 to 1900 MHz

### FEATURES

- Excellent isolation, 23 dB typ.
- Excellent phase unbalance 1.5 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 Compliant**

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

### APPLICATIONS

- GPS
- WCDMA
- PCS

### ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1215		1900	MHz
Insertion Loss* (above 6.0 dB)	1215-1900	—	0.7	1.9	dB
Isolation	1215-1900	14	23	—	dB
Amplitude Unbalance	1215-1900	—	—	0.5	dB
Phase Unbalance	1215-1900	—	—	5	deg.
VSWR (Port S)	1215-1900	—	1.5	—	:1
VSWR (Ports 1,2,3,4)	1215-1900	—	1.4	—	:1

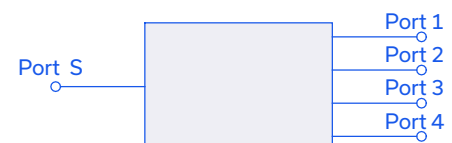
\* Includes fixture loss, 0.15 dB typ. Max value increases to 2.5dB below 1315 MHz.

### 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

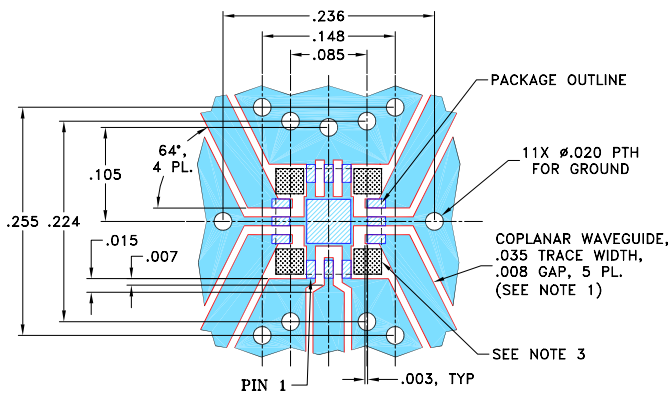




### PAD CONNECTIONS

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)

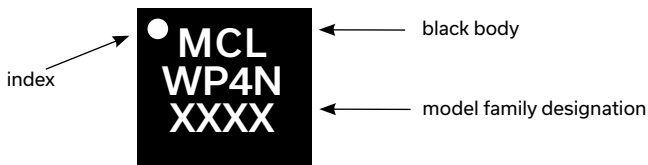


**NOTES:**

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.

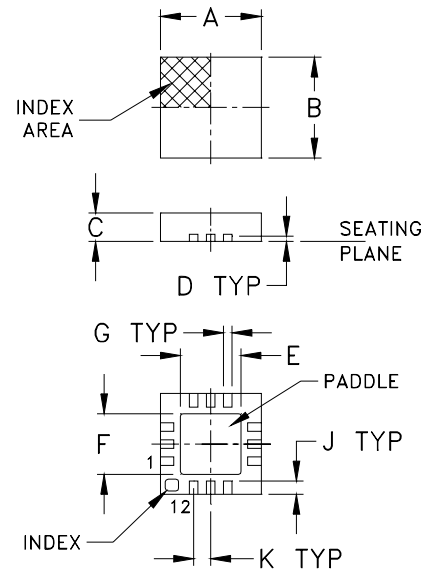
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### PRODUCT MARKING

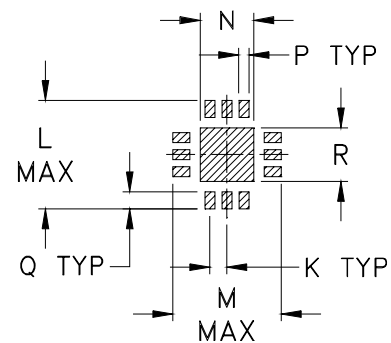


Marking may contain other features or characters for internal lot control

### 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	

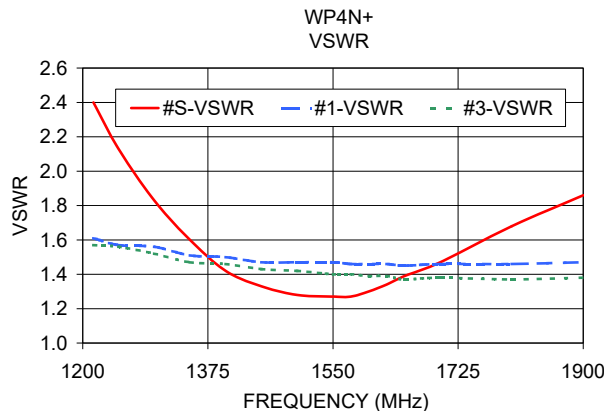
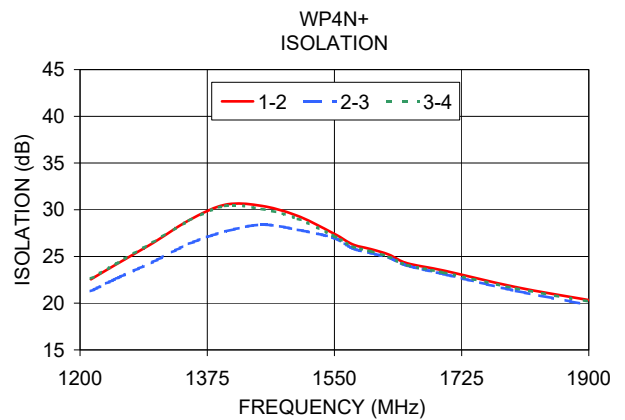
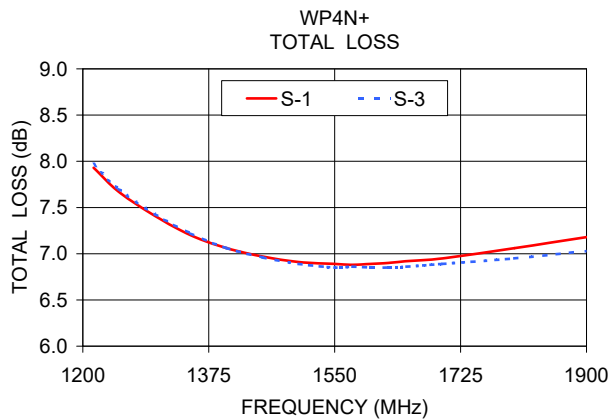
### TAPE & REEL INFORMATION: F66



### TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (MHz)	Total Loss <sup>1</sup> (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						
1215.0	7.93	7.96	7.97	7.89	0.07	22.55	21.29	22.63	0.99	2.40	1.61	1.57	1.57	1.54
1250.0	7.67	7.69	7.70	7.64	0.06	24.17	22.64	24.24	0.77	2.13	1.57	1.57	1.56	1.52
1300.0	7.41	7.43	7.43	7.37	0.06	26.42	24.41	26.49	0.54	1.83	1.56	1.54	1.52	1.48
1350.0	7.20	7.21	7.22	7.17	0.05	28.88	26.35	28.83	0.28	1.60	1.51	1.50	1.47	1.45
1400.0	7.06	7.05	7.06	7.02	0.04	30.54	27.67	30.41	0.30	1.42	1.50	1.49	1.46	1.43
1450.0	6.97	6.95	6.96	6.94	0.03	30.41	28.39	30.08	0.45	1.33	1.47	1.47	1.43	1.41
1500.0	6.91	6.88	6.89	6.87	0.04	29.33	27.85	29.02	0.63	1.28	1.47	1.42	1.42	1.40
1550.0	6.89	6.84	6.85	6.85	0.04	27.42	26.95	27.16	0.98	1.27	1.47	1.44	1.40	1.39
1575.0	6.88	6.84	6.86	6.85	0.04	26.30	25.87	26.06	1.09	1.27	1.46	1.40	1.40	1.39
1600.0	6.89	6.84	6.85	6.87	0.05	25.79	25.36	25.55	1.07	1.30	1.46	1.39	1.39	1.38
1625.0	6.90	6.84	6.85	6.87	0.06	25.20	24.88	24.95	1.20	1.34	1.46	1.37	1.39	1.38
1650.0	6.92	6.84	6.86	6.87	0.08	24.28	24.03	24.07	1.27	1.39	1.45	1.39	1.37	1.38
1700.0	6.95	6.87	6.89	6.92	0.08	23.50	23.12	23.27	1.65	1.47	1.46	1.39	1.38	1.39
1800.0	7.06	6.95	6.95	7.02	0.12	21.72	21.31	21.57	2.01	1.68	1.46	1.36	1.37	1.42
1900.0	7.18	7.03	7.03	7.11	0.15	20.33	19.82	20.18	2.53	1.86	1.47	1.35	1.38	1.43

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](http://www.minicircuits.com/terms/viewterm.html)

