



## MMIC SURFACE MOUNT

# Power Splitter/Combiner

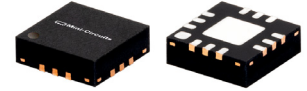
# WP4M+

Mini-Circuits

4 Way-0° 50Ω 720 to 1125 MHz

### FEATURES

- Good isolation, 22 dB typ.
- Excellent phase unbalance, 0.5 deg. typ.
- Good 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

- Cellular
- WCDMA
- GSM

### ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		720		1125	MHz
Insertion Loss* (above 6.0 dB)	720-1125	—	0.7	1.7	dB
Isolation	720-1125	15	22	—	dB
Amplitude Unbalance	720-1125	—	—	0.5	dB
Phase Unbalance	720-1125	—	—	3.0	deg.
VSWR (Port S)	720-1125	—	1.5	—	:1
VSWR (Ports 1,2,3,4)	720-1125	—	1.35	—	:1

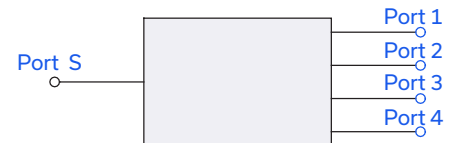
\* Includes fixture loss, 0.1 dB typ.

### 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



REV. D  
ECO-015507  
WP4M+  
MCL NY  
221025

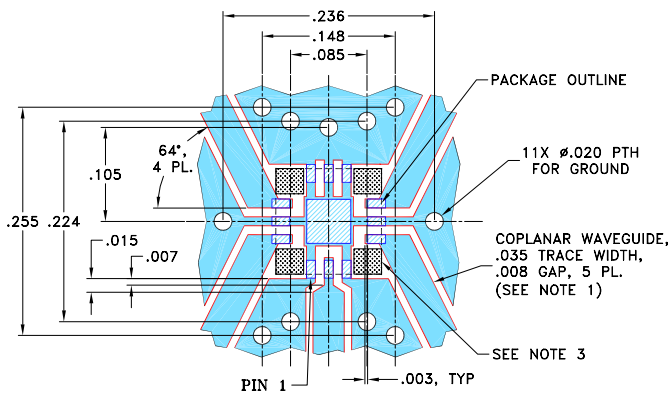




### PAD CONNECTIONS

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)

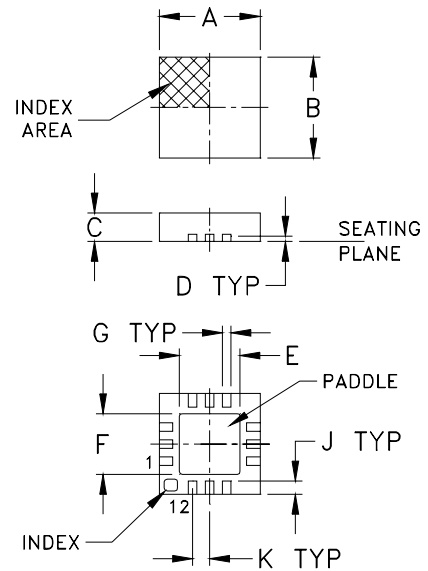


**NOTES:**

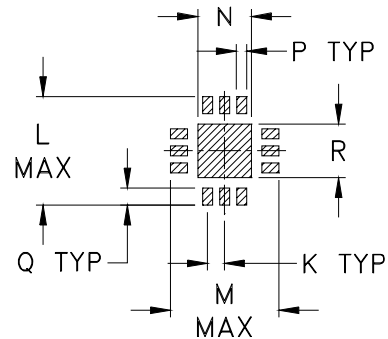
1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. SIGNAL TRACES ARE NOT ALLOWED INSIDE HATCHED AREAS (APPROX. .030 X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

### OUTLINE DRAWING

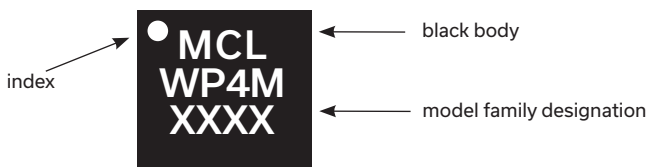


### PCB Land Pattern



Suggested Layout,  
Tolerance to be within ±.002

### PRODUCT MARKING



Marking may contain other features or characters for internal lot control

### 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

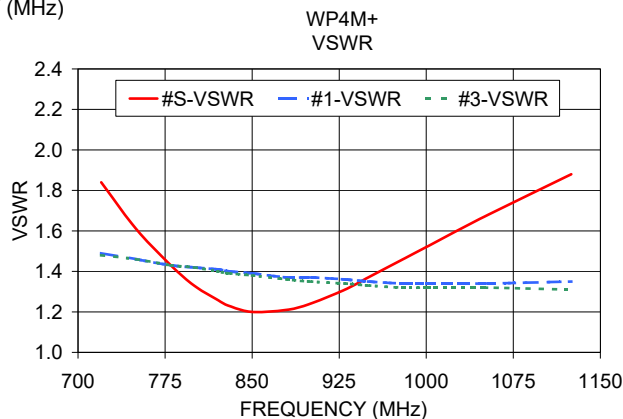
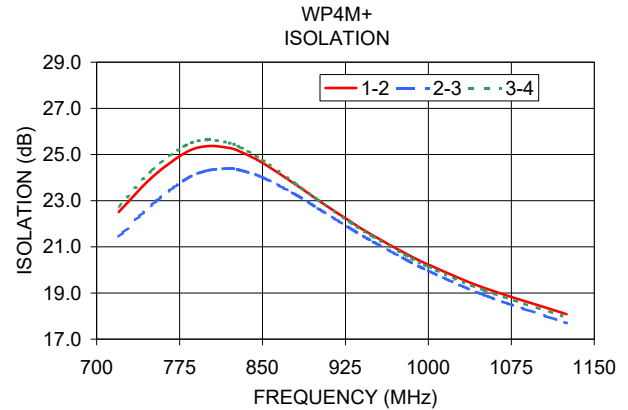
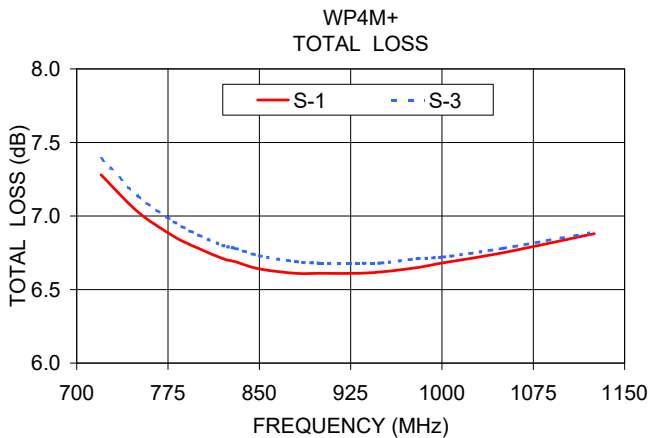
### TAPE & REEL INFORMATION: F66



### 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						
720.00	7.28	7.42	7.39	7.27	0.15	22.51	21.44	22.76	0.66	1.84	1.49	1.49	1.48	1.46
750.00	7.03	7.18	7.14	7.03	0.15	24.01	22.83	24.31	0.52	1.61	1.46	1.46	1.46	1.44
780.00	6.86	7.00	6.96	6.85	0.14	25.07	23.91	25.38	0.38	1.43	1.43	1.44	1.43	1.41
800.00	6.78	6.91	6.87	6.77	0.14	25.36	24.30	25.63	0.36	1.33	1.42	1.42	1.42	1.40
820.00	6.71	6.84	6.80	6.70	0.14	25.28	24.39	25.50	0.37	1.26	1.41	1.41	1.40	1.38
830.00	6.69	6.81	6.78	6.68	0.14	25.12	24.32	25.31	0.35	1.23	1.40	1.40	1.39	1.38
850.00	6.64	6.77	6.73	6.64	0.14	24.64	24.01	24.76	0.36	1.20	1.39	1.39	1.38	1.36
880.00	6.61	6.73	6.69	6.60	0.13	23.70	23.26	23.73	0.47	1.21	1.37	1.37	1.36	1.35
900.00	6.61	6.72	6.68	6.59	0.13	23.03	22.67	23.04	0.55	1.24	1.37	1.36	1.35	1.34
930.00	6.61	6.72	6.68	6.59	0.13	22.08	21.78	22.04	0.69	1.31	1.36	1.35	1.34	1.33
950.00	6.62	6.73	6.68	6.60	0.13	21.49	21.22	21.44	0.78	1.37	1.35	1.34	1.33	1.33
980.00	6.65	6.75	6.71	6.63	0.13	20.70	20.44	20.63	0.90	1.46	1.34	1.34	1.32	1.32
1000.00	6.68	6.77	6.72	6.65	0.13	20.23	19.96	20.14	0.98	1.52	1.34	1.33	1.32	1.32
1050.00	6.75	6.84	6.78	6.71	0.12	19.23	18.92	19.12	1.15	1.67	1.34	1.33	1.32	1.31
1125.00	6.88	6.95	6.89	6.84	0.12	18.08	17.69	17.95	1.45	1.88	1.35	1.33	1.31	1.32

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)