



ULTRA-SMALL CERAMIC

Power Splitter/Combiner

QCN-13D+

2 Way-90° 50Ω 675 to 1300 MHz

FEATURES

- Low insertion loss, 0.4 dB typ.
- High isolation, 19 dB typ.
- Wrap-around terminal for excellent solderability
- Ultra small, 0.12"X0.06"X0.035"

APPLICATIONS

- Balanced amplifiers
- Modulators
- GSM
- Defense communication
- WiMax 700
- GPS civilian



Generic photo used for illustration purposes only

CASE STYLE: FV1206-1

+RoHS Compliant

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

ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		675		1300	MHz
Insertion Loss, above 3.0 dB	675-1300		0.4	0.9	dB
	675-820		0.3	0.5	
	820-900		0.3	0.5	
	900-1000		0.4	0.6	
	1000-1200		0.4	0.6	
	1200-1300		0.5	0.8	
Isolation	675-1300	14	20		dB
	675-820	15	19		
	820-900	16	19		
	900-1000	16	19		
	1000-1200	14	17		
	1200-1300	13	15		
Phase Unbalance	675-1300		1.0	8.0	Degree
	675-820		1.0	4.0	
	820-900		0.5	3.0	
	900-1000		1.0	3.0	
	1000-1200		3.0	5.0	
	1200-1300		5.0	7.0	
Amplitude Unbalance	675-1300		1.0	1.3	dB
	675-820		0.7	1.0	
	820-900		0.6	1.0	
	900-1000		0.8	1.2	
	1000-1200		0.8	1.2	
	1200-1300		0.5	0.9	
VSWR	675-1300		1.2		(:1)
	675-820		1.25		
	820-900		1.2		
	900-1000		1.2		
	1000-1200		1.2		
	1200-1300		1.25		

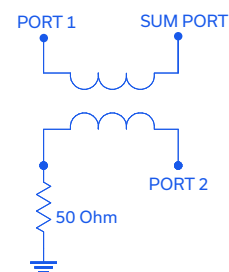
1. For applications requiring DC voltage to be applied to the RF ports. DC resistance to ground is 100 Mohms min.

MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	15W* max.

* Derate linearly to 7W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

ELECTRICAL SCHEMATIC (NOTE 1)





ULTRA-SMALL CERAMIC

Power Splitter/Combiner

QCN-13D+

Mini-Circuits

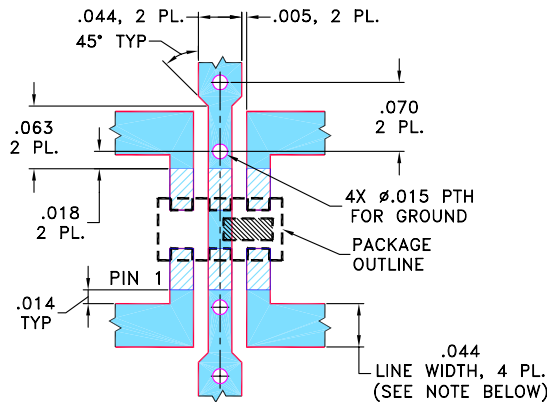
2 Way-90° 50Ω 675 to 1300 MHz

PIN CONNECTIONS

SUM PORT	1
PORT 1 (0°)	4
PORT 2 (+90°)	6
GROUND	2,5
50 OHM TERM EXTERNAL	3

PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-255
SUGGESTED PCB LAYOUT (PL-131)

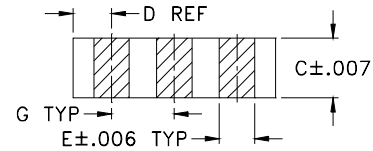
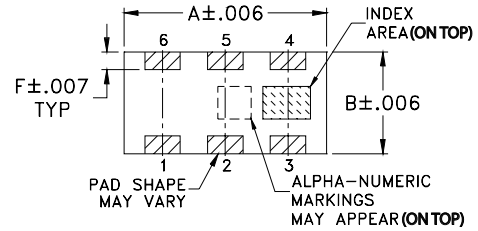


NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS $0.020" \pm 0.0015"$; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

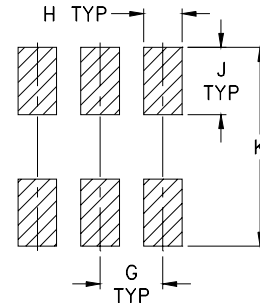
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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 ± 0.002

OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F
.126	.063	.035	.024	.022	.011
3.20	1.60	0.89	0.61	0.56	0.28
G	H	J	K	wt	
.039	.024	.042	.123	grams	
0.99	0.61	1.07	3.12	.020	

TAPE & REEL INFORMATION: F75





ULTRA-SMALL CERAMIC

Power Splitter/Combiner

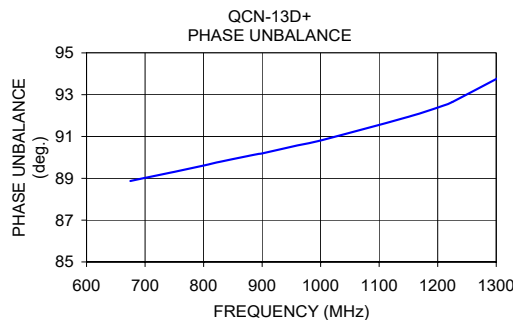
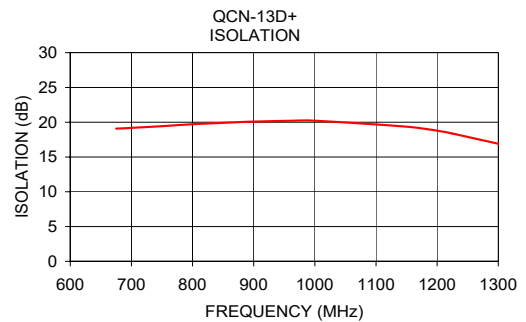
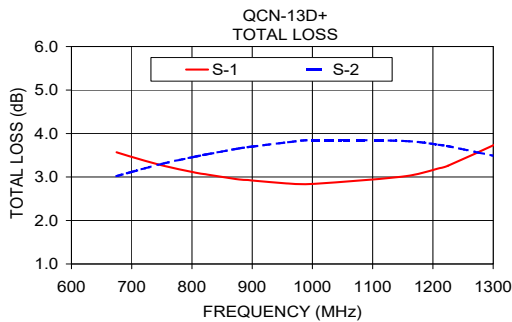
QCN-13D+

2 Way-90° 50Ω 675 to 1300 MHz

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Total Loss ¹ (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR (:1)		
	S-1	S-2				S	1	2
675.00	3.57	3.02	0.55	19.07	88.87	1.27	1.22	1.26
698.00	3.47	3.11	0.36	19.18	89.01	1.27	1.21	1.26
750.00	3.27	3.30	0.02	19.44	89.31	1.26	1.18	1.24
806.00	3.10	3.47	0.37	19.74	89.65	1.25	1.15	1.22
824.00	3.06	3.52	0.46	19.81	89.77	1.25	1.15	1.22
875.00	2.95	3.65	0.69	20.01	90.06	1.25	1.13	1.21
894.00	2.93	3.69	0.76	20.08	90.17	1.25	1.12	1.20
900.00	2.92	3.70	0.78	20.09	90.19	1.25	1.12	1.20
960.00	2.85	3.80	0.95	20.20	90.57	1.27	1.11	1.19
1000.00	2.84	3.85	1.01	20.22	90.81	1.28	1.11	1.18
1150.00	3.01	3.83	0.82	19.36	91.94	1.36	1.17	1.18
1210.00	3.20	3.74	0.54	18.64	92.48	1.42	1.21	1.19
1225.00	3.26	3.71	0.44	18.37	92.65	1.44	1.22	1.19
1310.00	3.79	3.46	0.32	16.71	93.90	1.56	1.30	1.23

1. Total Loss = Insertion Loss + 3 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

