

# Ultra-Small Ceramic Power Splitter/Combiner

## QCN-13D+

2 Way-90° 50Ω 675 to 1300 MHz



Generic photo used for illustration purposes only  
CASE STYLE: FV1206-1

**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Available Tape and Reel at no extra cost  
Reel Size Devices/Reel  
7" 20, 50, 100, 200, 500, 1000, 3000

### Maximum Ratings

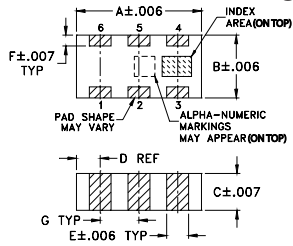
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	15W* max.

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

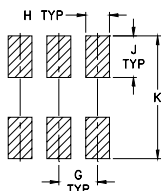
### Pin Connections

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

### Outline Drawing



### PCB Land Pattern



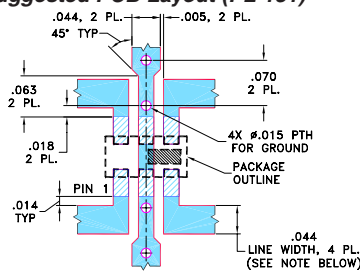
Suggested Layout, Tolerance to be within ±.002

### Outline Dimensions (inch/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

### Demo Board MCL P/N: TB-255+ Suggested PCB Layout (PL-131)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.020" ± 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

### 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

### Electrical Specifications

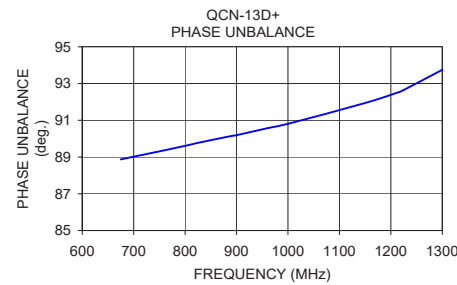
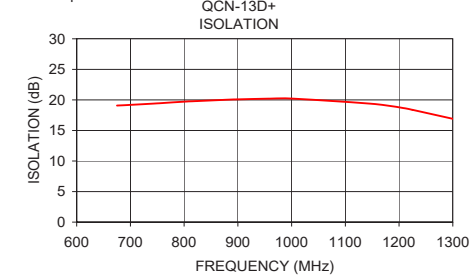
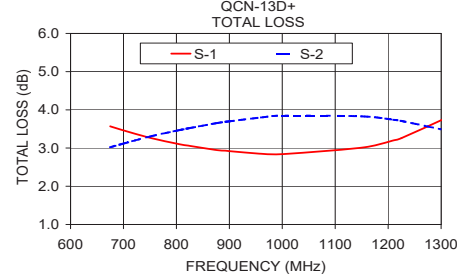
FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) Avg. of Coupled Outputs ABOVE 3 dB		PHASE UNBALANCE (Degrees)		AMPLITUDE UNBALANCE (dB)		VSWR (:1)
	Typ.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.	
$f_L$ - $f_U$									Typ.
675-1300	20	14	0.4	0.9	1.0	8.0	1.0	1.3	1.2
675-820	19	15	0.3	0.5	1.0	4.0	0.7	1.0	1.25
820-900	19	16	0.3	0.5	0.5	3.0	0.6	1.0	1.2
900-1000	19	16	0.4	0.6	1.0	3.0	0.8	1.2	1.2
1000-1200	17	14	0.4	0.6	3.0	5.0	0.8	1.2	1.2
1200-1300	15	13	0.5	0.8	5.0	7.0	0.5	0.9	1.25

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

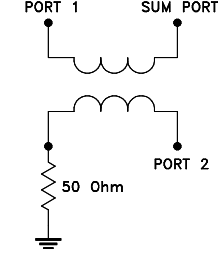
### Typical Performance Data

Frequency (MHz)	Total Loss <sup>1</sup> (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-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 + 3dB splitter loss.



### electrical schematic (Note 1)



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