Ultra-Small Ceramic

Power Splitter/Combiner

QCN-13D+

2 Way-90° 50Ω 675 to 1300 MHz

CASE STYLE: FV1206-1
PRICE: $4.45 ea. QTY (20)

+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

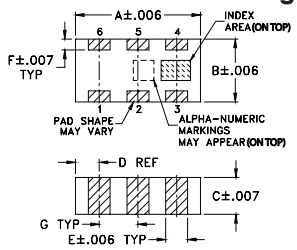
Features

- 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"

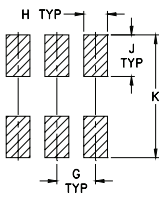
Applications

- balanced amplifiers
- modulators
- GSM
- defense communication
- WiMax 700
- GPS civilian

Outline Drawing



PCB Land Pattern



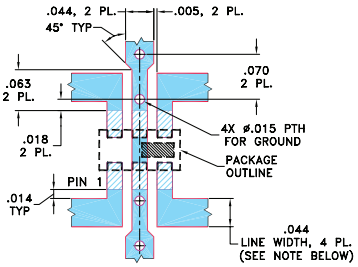
Suggested Layout,
Tolerance to be within ±.002

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 RO4350B 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

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)
f_L-f_U	Typ.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.	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

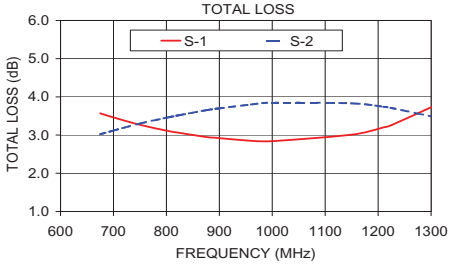
1. For applications requiring DC voltage to be applied to the RF ports. DC resistance to ground is 100 Mohms min.

Typical Performance Data

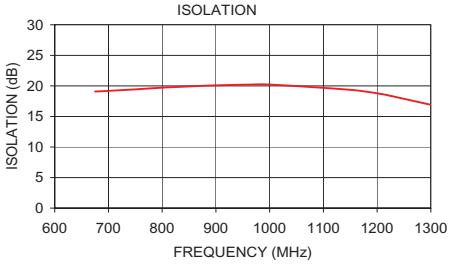
Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
675.00	3.57	3.02	0.55	19.07	88.87	1.27	1.22	1.26
698.00	3.47	3.11	0.36	19.18	89.01	1.27	1.21	1.26
750.00	3.27	3.30	0.02	19.44	89.31	1.26	1.18	1.24
806.00	3.10	3.47	0.37	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.

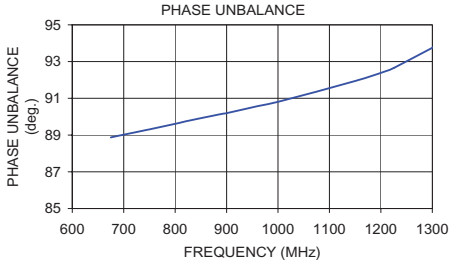
QCN-13D+
TOTAL LOSS



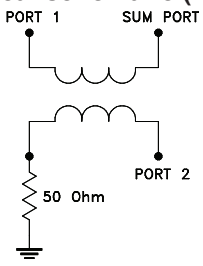
QCN-13D+
ISOLATION



QCN-13D+
PHASE UNBALANCE



electrical schematic (Note 1)



For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. **2.** Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. **3.** The parts covered by this specification sheet 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/MCLStore/terms.jsp.

REV. C
M127604
QCN-13D+
ED-13193/2
AD/CP/AM
130226