2 Way-90° Power Splitter

QCS-981+

50Ω 540 to 980 MHz

CASE STYLE: GE0805C-1

The Big Deal

- High Power handling (15W)
- Low Unbalance, 0.3 dB & 2 deg. typ.
- Industry leading combination of size/bandwidth

Product Overview

Mini-Circuits new 90° Power Splitter, model: QCS-981+, offers an industry leading combination of operating bandwidth and size; supporting nearly an octave band in a miniature EIA-0805 form factor. The outstanding phase and amplitude unbalance make this component a versatile building block for use in a variety of systems and sub-system designs.

Key Features

Feature	Advantages
Small Size	Offered in the EIA-0805 package size, the QCS-981+ offers an industry leading combination of size, bandwidth and frequency. The small footprint (2.0mm x1.25mm) allows for reduced parasitics in systems with improved performance and simplified layout.
Low Phase and Amplitude Unbalance	Supporting 2 deg. and 0.3 dB unbalance make this 90° hybrid applicable for use in higher level integrated components such as image reject mixers, single sideband modulators, phase shifters, variable attenuators, and balance amplifiers.
High Power Handling	Capable of operating up to 15W, the LTCC construction of the QCS-981+ makes this 90° hybrid a robust, rugged product that can be used effectively in either the transmit or receive paths.

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/MCLStore/terms.jsp

Ultra-Small Ceramic LTCC

Power Splitter/Combiner

QCS-981+

2 Way-90° 50Ω 540 to 980 MHz

Generic photo used for illustration purposes only

CASE STYLE: GE0805C-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, 2000

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

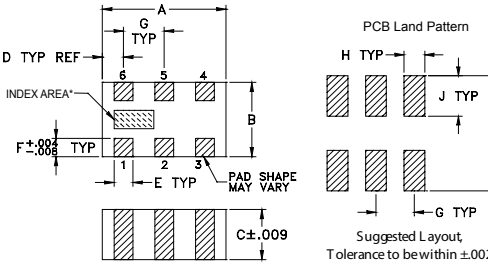
Features

- Low insertion loss, 0.6 dB typ.
- High isolation, 18 dB typ.
- Miniature size, 0.079"x0.049"x0.033"
- LTCC construction
- High power

Applications

- Balanced amplifiers
- Modulators
- DCS, PCS, UMTS
- WiMax
- WiFi • ISM
- Phase Shifter
- Attenuator
- Point to Point

Outline Drawing

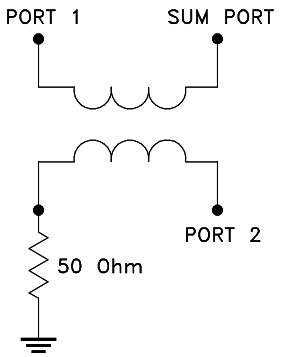


Outline Dimensions (inch / mm)

A	B	C	D	E	F
.079	.049	.033	.014	.012	.012
2.01	1.24	0.84	0.36	0.30	0.30

G	H	J	K	wt
.026	.014	.039	.110	grams
0.66	0.36	1.00	2.80	.008

Electrical Schematic

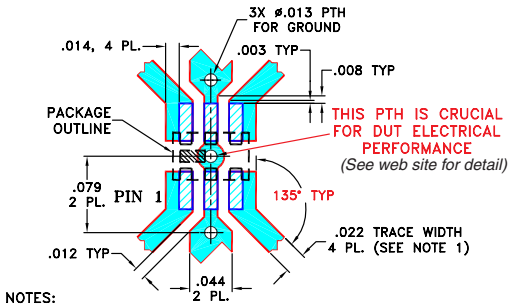


Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		540		980	MHz
Insertion Loss (Avg. Of Coupled Outputs) above 3 dB	540-700	—	0.4	0.8	dB
	700-800	—	0.5	0.8	
	800-900	—	0.7	0.9	
	900-980	—	0.9	1.4	
Isolation	540-700	17	21	—	dB
	700-800	17	20	—	
	800-900	16	19	—	
	900-980	14	17	—	
Phase Unbalance	540-700	—	2	4	Degree
	700-800	—	2	4	
	800-900	—	1	4	
	900-980	—	3	6	
Amplitude Unbalance	540-700	—	0.8	1.4	dB
	700-800	—	0.35	0.8	
	800-900	—	0.3	0.7	
	900-980	—	1.2	1.6	
VSWR (Port S)	540-980	—	1.4	1.6	:1
VSWR (Port 1-2)	540-980	—	1.5	1.7	:1

Demo Board MCL P/N: TB-489-981+

Suggested PCB Layout (PL-304)



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001"; 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

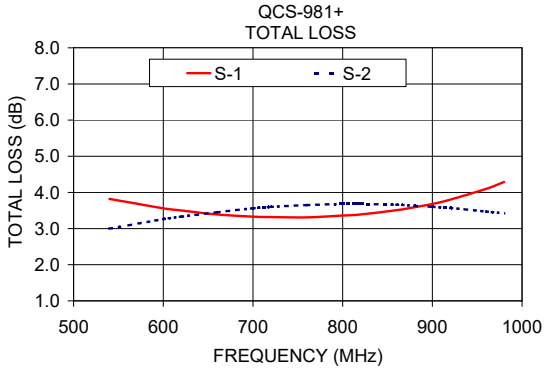
Notes

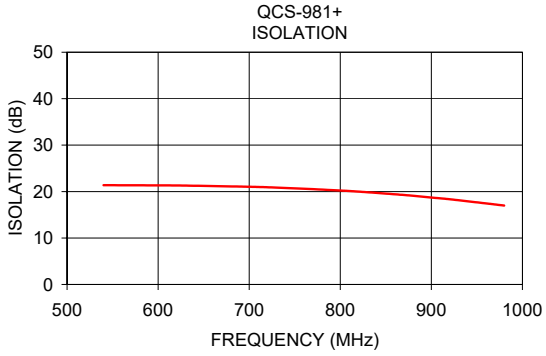
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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/MCLStore/terms.jsp

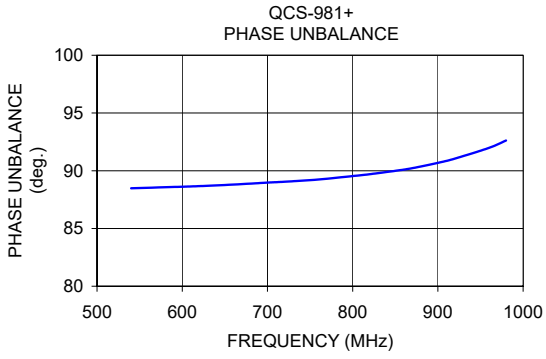
Typical Performance Data

Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
540.00	3.82	3.00	0.82	21.38	88.48	1.18	1.11	1.21
600.00	3.56	3.26	0.30	21.34	88.62	1.18	1.11	1.21
620.00	3.50	3.33	0.17	21.31	88.67	1.18	1.11	1.21
660.00	3.39	3.45	0.06	21.19	88.80	1.18	1.12	1.21
700.00	3.33	3.56	0.22	21.04	88.97	1.18	1.14	1.22
720.00	3.32	3.60	0.27	20.92	89.05	1.18	1.15	1.23
760.00	3.31	3.65	0.34	20.61	89.24	1.19	1.18	1.24
800.00	3.36	3.68	0.32	20.23	89.54	1.20	1.22	1.26
820.00	3.39	3.68	0.28	20.00	89.70	1.21	1.24	1.27
860.00	3.51	3.66	0.15	19.42	90.10	1.23	1.28	1.30
880.00	3.59	3.63	0.05	19.09	90.37	1.24	1.31	1.32
900.00	3.68	3.60	0.08	18.72	90.68	1.25	1.34	1.34
920.00	3.80	3.57	0.24	18.34	91.05	1.27	1.37	1.37
960.00	4.10	3.47	0.63	17.46	91.98	1.32	1.44	1.44
980.00	4.29	3.42	0.88	16.98	92.62	1.35	1.49	1.47

1. Total Loss = Insertion Loss + 3dB 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/MCLStore/terms.jsp

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Signal Conditioning ***category:***

Click to view products by Mini-Circuits ***manufacturer:***

Other Similar products are found below :

MAPDCC0001 MAPDCC0004 PD0409J5050S2HF 880157 HHS-109-PIN DC1417J5005AHF AFS14A30-2185.00-T3 AFS14A35-1591.50-T3 DS-323-PIN B39321R801H210 1A0220-3 JP510S LFB212G45SG8C341 LFB322G45SN1A504 LFL182G45TC3B746 SF2159E 30057 FM-104-PIN CER0813B MAPDCC0005 3A325 40287 41180 ATB3225-75032NCT BD0810N50100AHF BD2425J50200AHF C5060J5003AHF JHS-115-PIN JP503AS DC0710J5005AHF DC2327J5005AHF DC3338J5005AHF 43020 LFB2H2G60BB1C106 LFL15869MTC1B787 X3C19F1-20S XC3500P-20S 10013-20 SF2194E CDBLB455KCAX39-B0 TGL2208-SM, EVAL RF1353C PD0922J5050D2HF 1E1305-3 1G1304-30 B0922J7575AHF 2020-6622-20 TP-102-PIN TP-103-PIN BD1222J50200AHF