2 Way-90° Power Splitter

QCS-332+

50Ω 1800 to 3300 MHz

CASE STYLE: GE0805C-1

The Big Deal

- High Power handling (8W)
- Low Unbalance, 0.8 dB & 2 deg. typ.
- Industry leading combination of size/bandwidth

Product Overview

Mini-Circuits new 90° Power Splitter, model: QCS-332+, 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-332+ 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 0.8 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 8W, the LTCC construction of the QCS-332+ makes this 90° hybrid a robust, rugged product that can be used effectively in either the transmit or receive paths.

Ultra-Small Ceramic LTCC

Power Splitter/Combiner

QCS-332+

2 Way-90° 50Ω 1800 to 3300 MHz

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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, 23 dB typ.
- Miniature size, 0.079"x0.049"x0.033"
- LTCC construction
- High power

Applications

- Balanced amplifiers
- Modulators
- DCS, PCS, UMTS
- ISM
- WiMAX
- Phase Shifter
- Attenuator

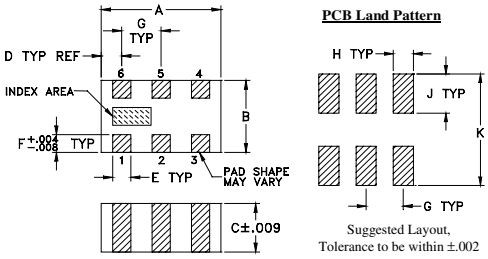
+RoHS Compliant

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

Outline Drawing

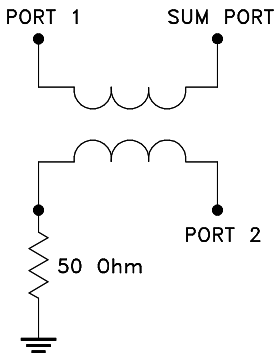


Outline Dimensions (inch / mm)

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

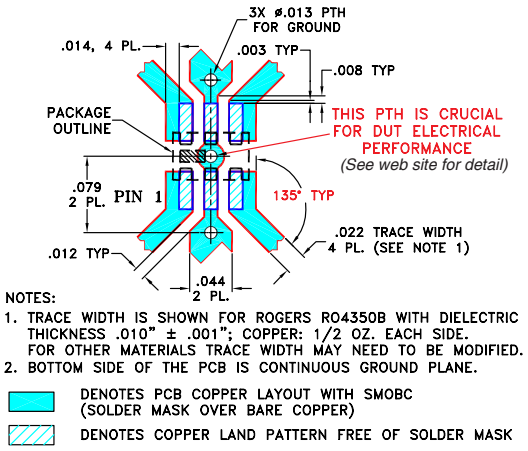
Electrical Schematic



Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		1800		3300	MHz
Insertion Loss (Avg. Of Coupled Outputs) above 3 dB	1800-2000		0.4	0.6	dB
	2000-2200		0.4	0.6	
	2200-2500		0.5	0.7	
	2500-2700		0.5	0.7	
	2900-3100		0.6	0.8	
	3100-3300		0.7	0.9	
Isolation	1800-2000	17	23		dB
	2000-2200	18	25		
	2200-2500	18	25		
	2500-2700	18	25		
	2900-3100	18	25		
	3100-3300	17	23		
Phase Unbalance	1800-2000		2.0	5.0	Degree
	2000-2200		2.0	5.0	
	2200-2500		2.0	5.0	
	2500-2700		2.0	5.0	
	2900-3100		2.0	5.0	
	3100-3300		2.0	5.0	
Amplitude Unbalance	1800-2000		1.0	1.3	dB
	2000-2200		0.5	0.7	
	2200-2500		0.5	0.8	
	2500-2700		0.5	1.0	
	2900-3100		0.5	0.7	
	3100-3300		0.8	1.2	
VSWR	1800-3300		1.2		:1

Demo Board MCL P/N: TB-489-332+
Suggested PCB Layout (PL-304)



Notes

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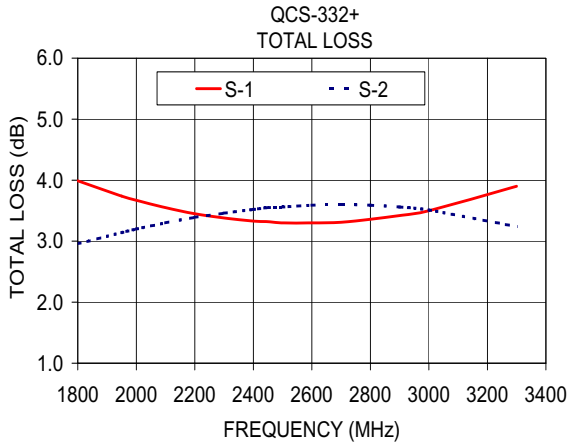
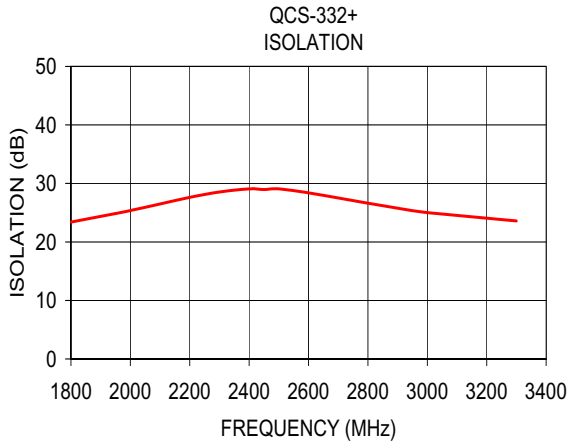
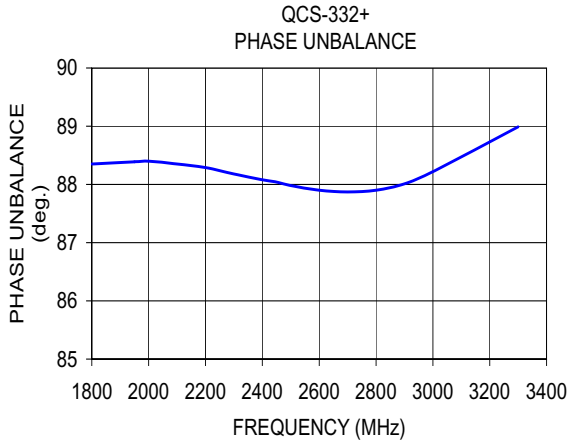
Typical Performance Data

Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
1800.00	3.99	2.96	1.03	23.40	88.35	1.31	1.05	1.30
1950.00	3.74	3.14	0.60	24.85	88.39	1.27	1.07	1.25
2000.00	3.67	3.20	0.47	25.37	88.40	1.26	1.08	1.23
2100.00	3.55	3.30	0.25	26.50	88.35	1.23	1.10	1.21
2200.00	3.45	3.39	0.06	27.62	88.29	1.21	1.11	1.18
2300.00	3.38	3.46	0.08	28.54	88.18	1.18	1.13	1.16
2400.00	3.33	3.52	0.19	29.07	88.08	1.15	1.15	1.15
2450.00	3.32	3.55	0.23	28.97	88.04	1.14	1.17	1.14
2500.00	3.30	3.56	0.26	29.08	87.98	1.13	1.17	1.13
2600.00	3.30	3.59	0.29	28.38	87.90	1.10	1.19	1.12
2700.00	3.31	3.60	0.29	27.51	87.87	1.09	1.21	1.11
2800.00	3.36	3.59	0.24	26.62	87.90	1.08	1.23	1.10
2900.00	3.42	3.56	0.15	25.76	88.01	1.08	1.25	1.10
3000.00	3.50	3.51	0.01	25.02	88.22	1.09	1.26	1.10
3300.00	3.90	3.24	0.65	23.60	88.99	1.15	1.26	1.14

1. Total Loss = Insertion Loss + 3dB splitter loss.







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