2 Way-90° Power Splitter QCS-442+

50Ω 2800 to 4400 MHz

CASE STYLE: GE0805C-1

The Big Deal

- High Power handling (15W)
- Low Unbalance, 0.5 dB & 3 deg. typ.
- Industry leading combination of size/bandwidth

Product Overview

Mini-Circuits new 90° Power Splitter, model: QCS-442+, 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-442+ offers an industry leading combination of size, bandwidth and frequency. The small footprint (2.0mm x 1.25mm) allows for reduced parasitics in systems with improved performance and simplified layout.
Low Phase and Amplitude Unbalance	Supporting 3 deg. and 0.5 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-442+ 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-442+

2 Way-90° 50Ω 2800 to 4400 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

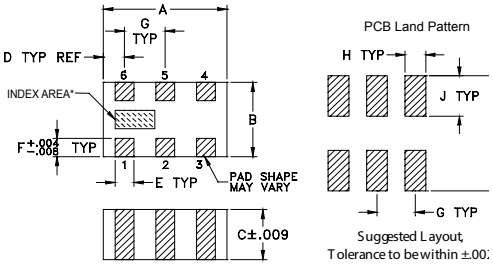
Features

- Low insertion loss, 0.6 dB typ.
- High isolation, 23 dB typ.
- Miniature size, 0.079"x0.049"x0.033"
- LTCC construction
- High power

Applications

- Balanced amplifiers
- Modulators
- WiMax
- Phase Shifter
- Attenuator

Outline Drawing

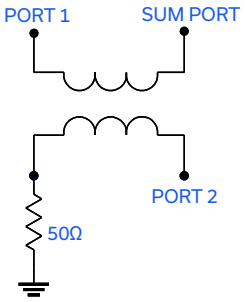


Outline Dimensions (inch / mm)

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

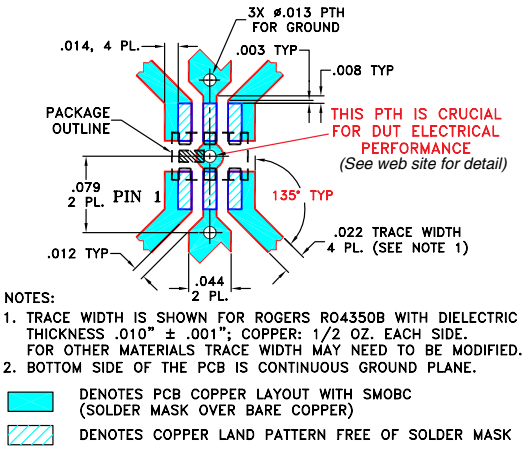
Electrical Schematic



Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		2800		4400	MHz
Insertion Loss (Avg. Of Coupled Outputs) above 3 dB	2800-3300		0.5	0.7	dB
	3300-3400		0.5	0.7	
	3400-3600		0.5	0.7	
	3600-3800		0.5	0.7	
	3800-3900		0.6	0.8	
	3900-4400		0.7	0.9	
Isolation	2800-3300	19	25		dB
	3300-3400	18	24		
	3400-3600	17	23		
	3600-3800	16	22		
	3800-3900	16	21		
	3900-4400	16	21		
Phase Unbalance	2800-3300		3.0	7.0	Degree
	3300-3400		3.0	7.0	
	3400-3600		3.0	7.0	
	3600-3800		3.0	7.0	
	3800-3900		3.0	7.0	
	3900-4400		3.0	7.0	
Amplitude Unbalance	2800-3300		0.4	1.1	dB
	3300-3400		0.5	1.1	
	3400-3600		0.5	1.1	
	3600-3800		0.5	1.1	
	3800-3900		0.5	1.1	
	3900-4400		0.5	1.1	
VSWR	2800-4400		1.2		:1

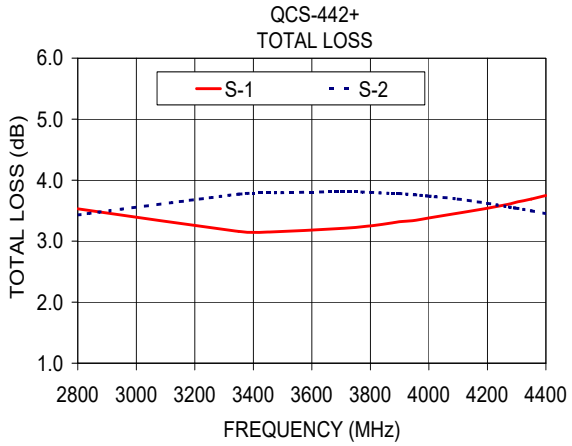
Demo Board MCL P/N: TB-489-442+
Suggested PCB Layout (PL-304)

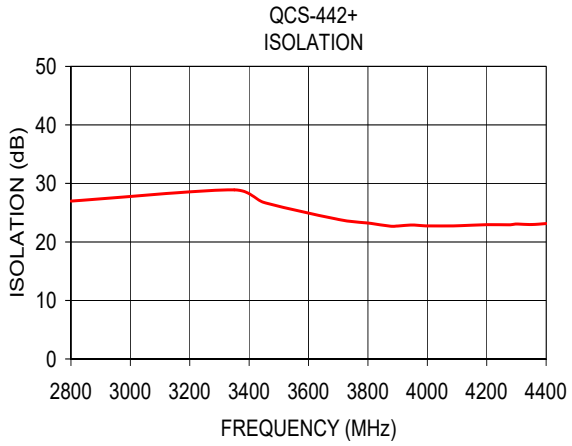


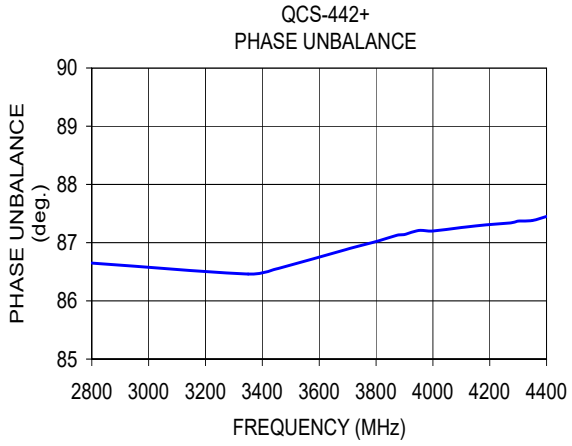
Typical Performance Data

Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
2800.00	3.53	3.43	0.33	26.98	86.65	1.23	1.06	1.30
3350.00	3.16	3.77	0.61	28.91	86.46	1.16	1.19	1.18
3450.00	3.15	3.79	0.64	26.74	86.55	1.16	1.20	1.16
3700.00	3.21	3.81	0.60	23.85	86.89	1.19	1.21	1.12
3800.00	3.25	3.80	0.54	23.23	87.02	1.20	1.21	1.11
3875.00	3.30	3.78	0.49	22.70	87.13	1.21	1.20	1.10
3900.00	3.32	3.78	0.46	22.71	87.14	1.21	1.20	1.10
3950.00	3.34	3.76	0.41	22.90	87.21	1.20	1.19	1.09
4000.00	3.38	3.74	0.36	22.74	87.20	1.21	1.19	1.09
4100.00	3.46	3.69	0.23	22.77	87.26	1.21	1.18	1.08
4200.00	3.54	3.62	0.08	22.96	87.31	1.20	1.17	1.06
4275.00	3.61	3.56	0.05	22.94	87.34	1.20	1.17	1.05
4300.00	3.64	3.54	0.10	23.07	87.37	1.19	1.16	1.05
4350.00	3.69	3.50	0.20	22.97	87.38	1.20	1.16	1.04
4400.00	3.75	3.45	0.30	23.15	87.45	1.18	1.16	1.04

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







Notes
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