



Mini-Circuits

STRIPLINE SURFACE MOUNT

2 Way 90° Power Splitter

QCH-392+

50Ω 2 Way-90° 600 to 3900 MHz 130W

KEY FEATURES

- High Power Handling, up to 130W
- Ultra Wide bandwidth
- Excellent Phase Unbalance, $\pm 5^\circ$

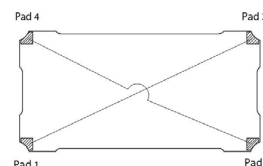
APPLICATIONS

- Balanced Amplifiers
- I & Q Modulators
- Defense and Military



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits new 2-way 90° power splitter, QCH-392+ capable of handling up to 130W with amplitude unbalance of ± 1.3 dB typ and phase unbalance of $\pm 5^\circ$ deg. typ. Operating over a frequency range of 600 to 3900 MHz, the outstanding phase and amplitude unbalance make this component a versatile building block for use in a variety of systems and sub-system designs from balanced amplifiers and antenna feeds to military applications and more. The splitter is fabricated using laminated PCB process (1.26 x 0.5 x 0.2") and includes wrap-around terminations for good solderability and easy visual inspection.

ELECTRICAL SPECIFICATIONS^{1,2} AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		600		3900	MHz
Insertion Loss ³	600-3900	-	0.8	1.4	dB
Isolation	600-3900	11.5	14	-	dB
Phase Unbalance	600-3900	-	± 5	± 12	deg
Amplitude Unbalance	600-3900	-	± 1.3	± 1.4	dB
Return Loss	600-3900	9.5	15	-	dB
Thermal Resistance ⁴	600-3900	-	0.5	-	°C/W

1. Tested on Evaluation Board TB-863-1+. De-embedded to the device reference plane.

2. Symmetrical all ports are interchangeable. See Pad Configuration Table and S-Parameters for actual performance.

3. Does not include theoretical loss due to coupling. Nominal theoretical loss is 3 dB.

4. Thermal Resistance is defined as, example $(\theta_{jc}) = (\text{Hot Spot Temperature on DUT} - \text{Base Plate Temperature}) / \text{Input Power}$

ABSOLUTE MAXIMUM RATINGS⁵

Operating Case Temperature ⁶		-55 °C to +105 °C
Storage Temperature		-55 °C to +105 °C
Power Input	+85 °C case	130 W
	+95 °C case	110 W
	+105 °C case	90 W

5. Permanent damage may occur if any of these limits are exceeded.

6. Case temperature is defined as temperature on base plate.

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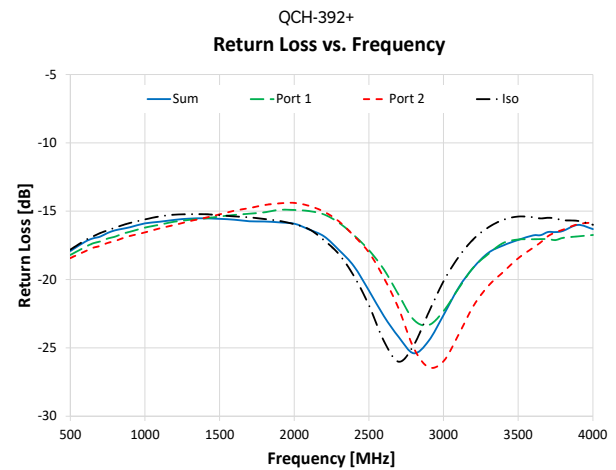
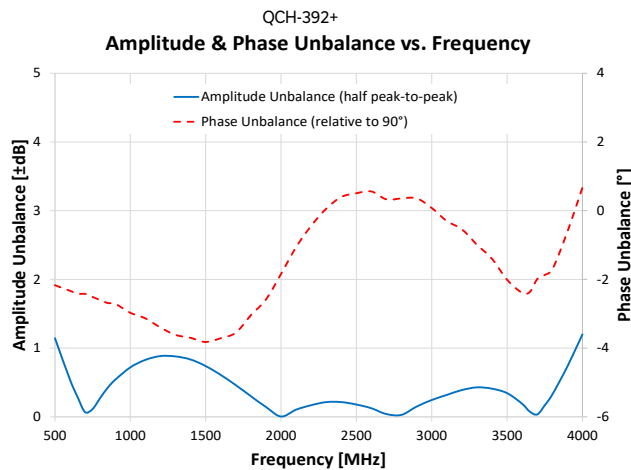
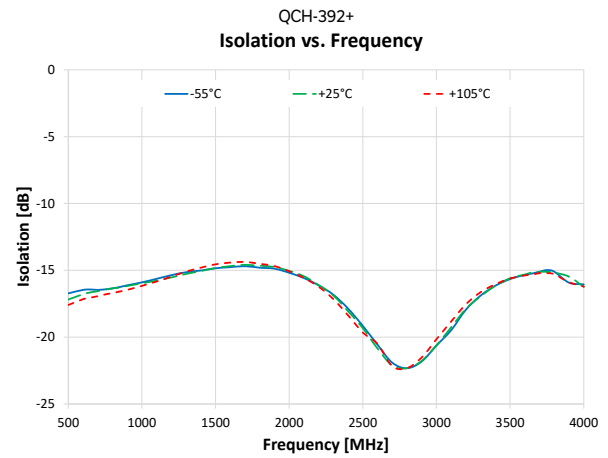
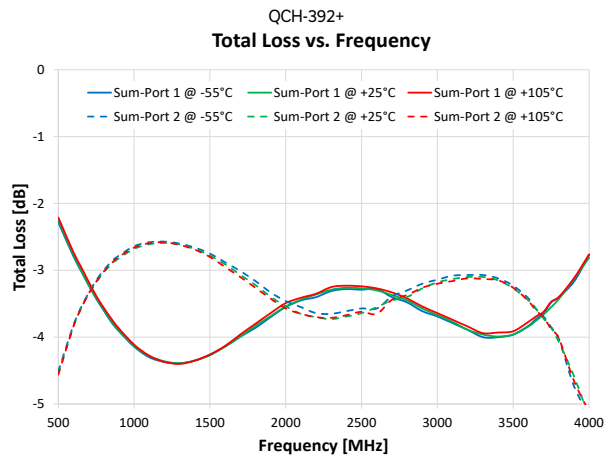
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TYPICAL PERFORMANCE GRAPHS

Note : Data corresponds to +25°C unless specified otherwise.





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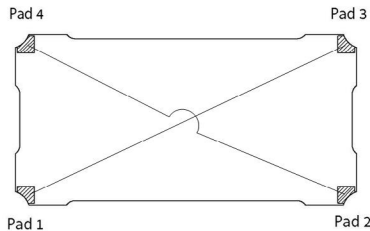


Figure 1. QCH-392+ Functional Diagram

PAD DESCRIPTION/CONFIGURATION⁷

Function	Pad Number	Description
Input	1	Connects to RF Input Port
Output	2	Connects to RF Output Port
Coupled Forward	4	Connects to Coupled Forward Port
Coupled Reverse	3	Connects to Coupled Reverse Port
Ground	5	Connects to Ground

Configuration	Sum	Isolation	Port 1 (0°)	Port 2 (90°)
A	1	2	3	4
B	2	1	4	3
C	3	4	1	2
D	4	3	2	1

7. Model is symmetrical and all ports are interchangeable, see Port Function Description/Configuration table for details and S-Parameters for actual performance.

SUGGESTED PCB LAYOUT (PL-469)

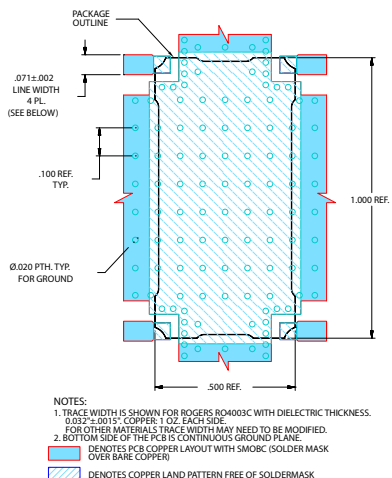
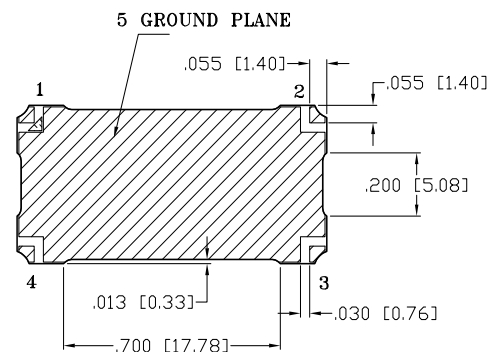
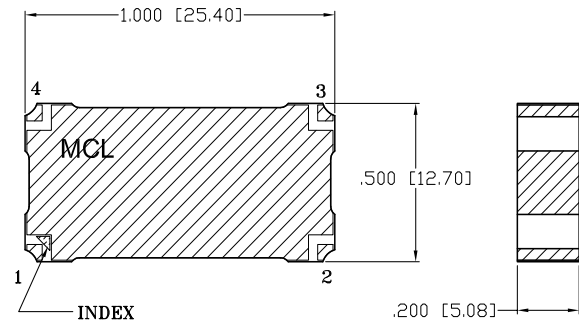


Figure 2. Suggested PCB Layout PL-469

CASE STYLE DRAWING (PQ2098-1)



NOTES:

1. DIMENSIONS INCH [MM].
2. PIN NUMBERS DO NOT APPEAR ON UNIT, FOR REFERENCE ONLY.

(Blue hatched) METALLIZATION (Red hatched) SOLDER RESIST

PRODUCT MARKING*: QCH-392+

*Marking may contain other features or characters for internal lot control.



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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD.

[CLICK HERE](#)

Performance Data & Graphs	Data
	Graphs
	S-Parameter (S4P Files) Data Set (.zip file) De-embedded to device pads
Case Style	PQ2098-1 Lead Finish: 2-5 inch (0.05-0.13 microns) Immersion Gold.
RoHS Status	Compliant
Tape and Reel	F118
Suggested Layout for PCB Design	PL-469
Evaluation Board	TB-863-1+
	Gerber file
Environmental Rating	ENV02T8

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-Circuits' 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/terms/viewterm.html



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