



STRIPLINE SURFACE MOUNT

Power Splitter/Combiner

QCH-392+

50Ω 600 to 3900 MHz 2-Way 90° 130W

KEY FEATURES

- High power handling, up to 130W
- Wide bandwidth
- Excellent phase unbalance, ± 5 dB

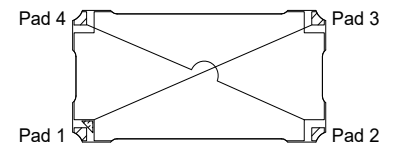
APPLICATIONS

- Balanced amplifiers
- I&Q modulators
- Defense and military



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' QCH-392+ is a 2-way 90° power splitter, capable of handling up to 130W with amplitude unbalance of ± 1.3 dB typ and phase unbalance of ± 5.0 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 (1.0 x 0.5 x 0.2") and includes wrap-around terminations for good solderability and easy visual inspection.

ELECTRICAL SPECIFICATIONS ¹ AT +25°C

Parameter	Conditions (MHz)	Min.	Typ.	Max.	Unit
Frequency Range	-	600	-	3900	MHz
Insertion Loss ²	600 - 3900	-	0.8	1.4	dB
Isolation	600 - 3900	11.5	14.0	-	dB
Phase Unbalance	600 - 3900	-	± 5.0	± 12.0	deg
Amplitude Unbalance	600 - 3900	-	± 1.3	± 1.4	dB
Return Loss	600 - 3900	9.5	15.0	-	dB
Thermal Resistance ³	600 - 3900	-	0.5	-	°C/W

1. Tested in Evaluation Board TB-QCH-272+. De-embedded to the device reference plane.

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

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

ABSOLUTE MAXIMUM RATINGS ⁴

Operating Case Temperature ⁵	-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

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

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



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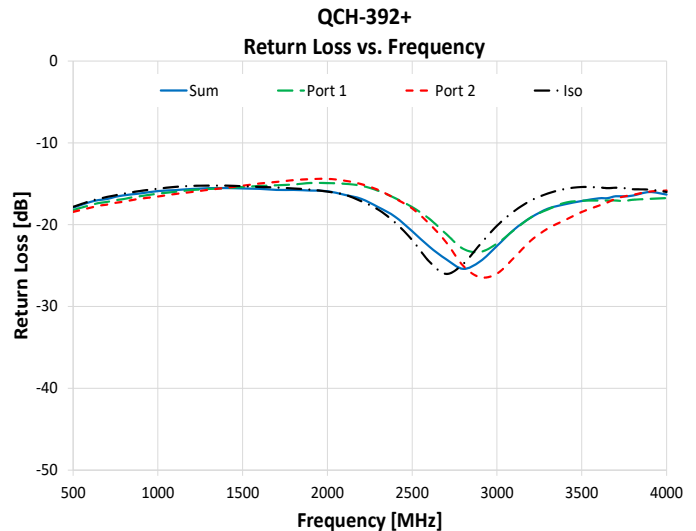
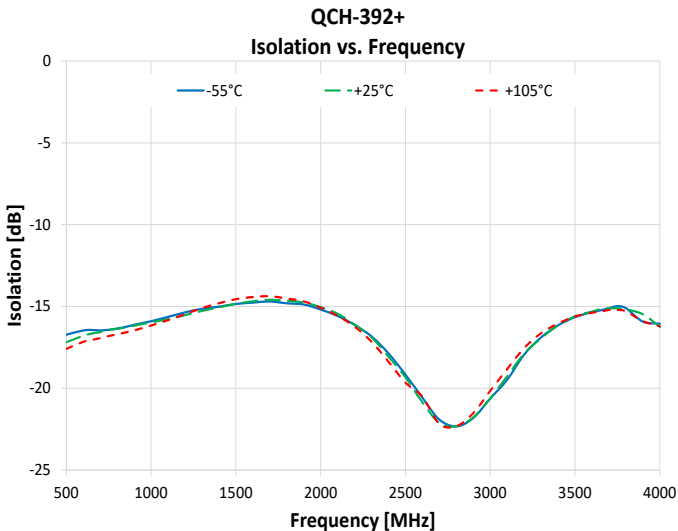
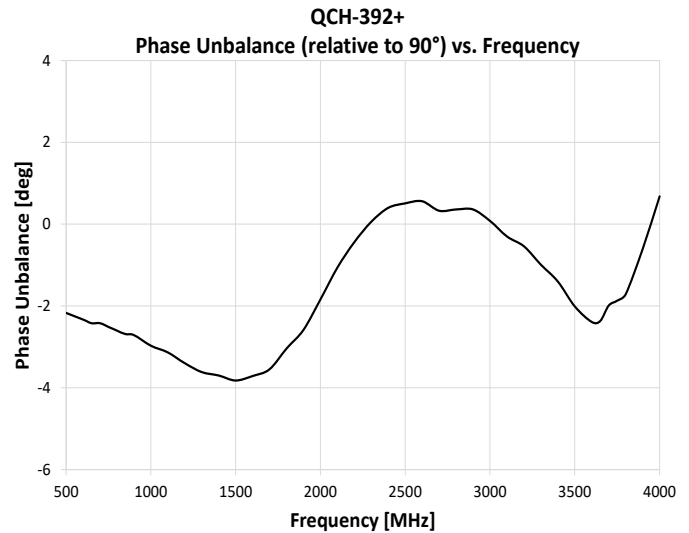
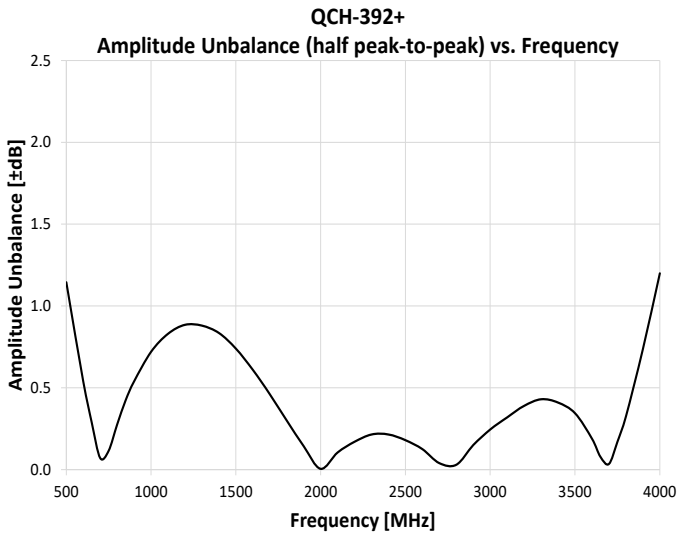
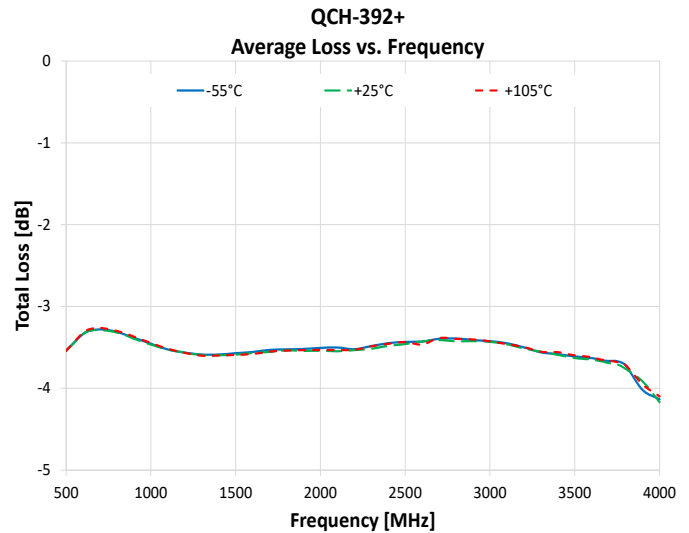
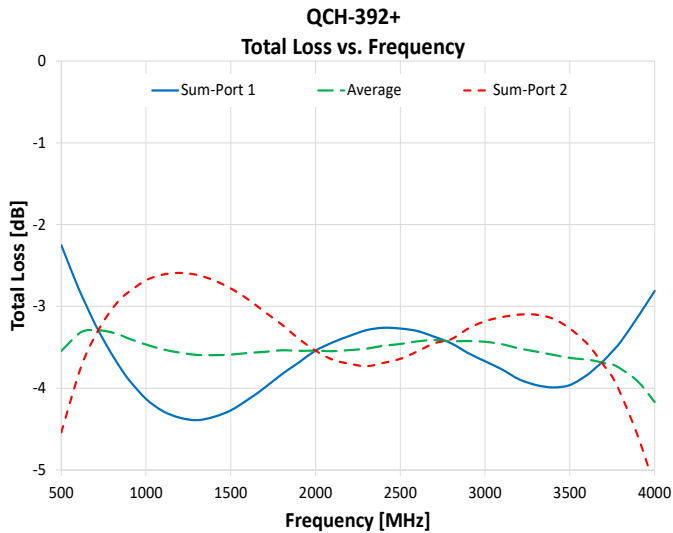
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TYPICAL PERFORMANCE GRAPHS*



* Data corresponds to +25°C unless otherwise specified.





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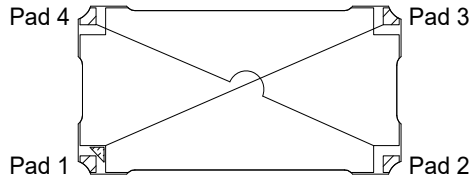
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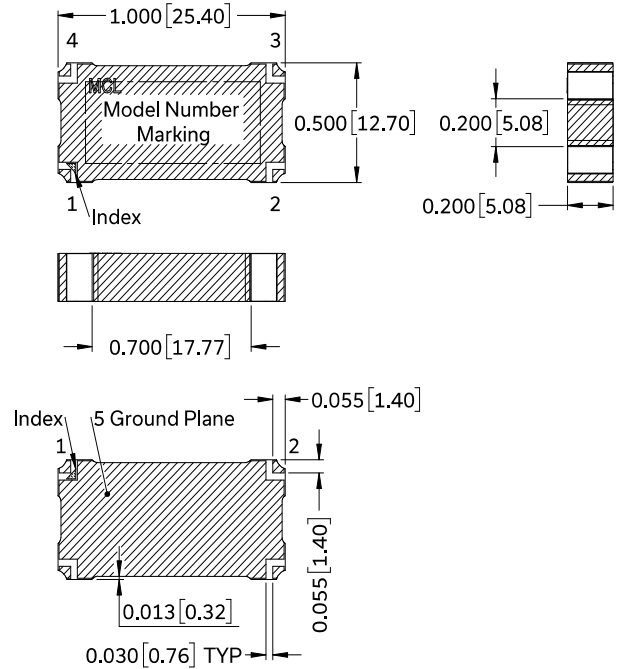
FUNCTIONAL DIAGRAM



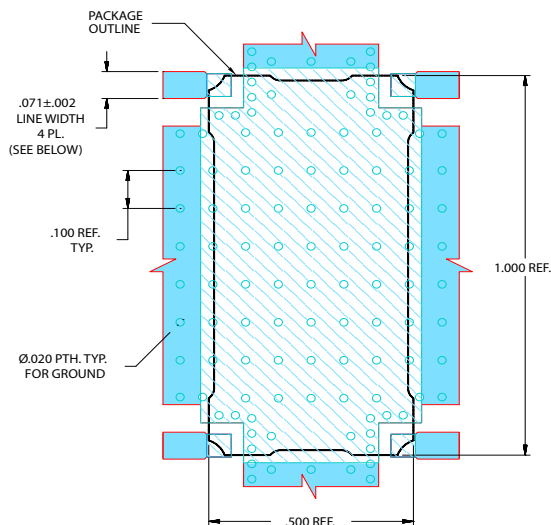
PAD DESCRIPTION

Function	Pad	Description
Sum	1	Sum port
Isolation	2	Isolation port
Port 1 (0°)	3	0° port
Port 2 (90°)	4	90° port
Ground	5	Ground

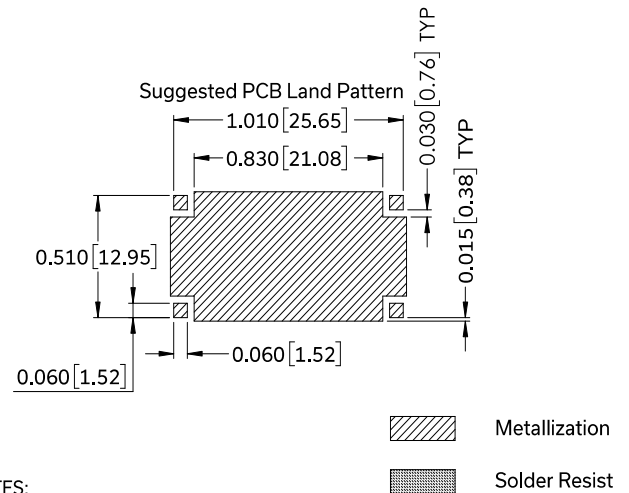
CASE STYLE DRAWING (PQ2098-1)



SUGGESTED PCB LAYOUT (PL-469)



- NOTES:
- TRACE WIDTH IS SHOWN FOR ROGERS RO4003C WITH DIELECTRIC THICKNESS 0.032"±.0015". COPPER: 1 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 - 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 SOLDERMASK



NOTES:

- Base material: Printed wiring laminate.
- Termination finish: 2-5 μinch (.05-.13 microns) Immersion Gold.
- Dimensions: Inches [mm]. Tolerances 2 Pl. ±.03 inch; 3 Pl. ±.010 inch.
- Weight: 8.0 grams
- Marking may contain other features or characters for internal lot control.

PRODUCT MARKING*: QCH-392+

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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 μ 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-QCH-272+ 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-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 <https://www.minicircuits.com/terms/viewterm.html>



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