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Sales & Customer Support: sales@markimicrowave.com
Tech Support: support@markimicrowave.com

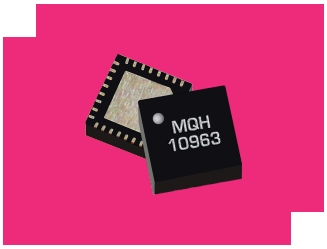
MQH-0516PSM

MMIC 5-16GHz 90° Hybrid Coupler

DEVICE OVERVIEW

General Description

The MQH-0516PSM is a reciprocal MMIC 5-16 GHz quadrature (90°) hybrid which exhibits excellent amplitude balance with broadband quadrature phasing between output ports. The MQH-0516PSM is a reciprocal device, allowing any port to be used as the input without performance degradation. Passive GaAs MMIC technology allows production of smaller constructions that replace larger form factor circuit board constructions. Applications include single sideband upconverters, image rejection downconverters, IQ modulators, balanced amplifiers, microwave correlators, and microwave Butler matrices.



Download s-parameters here

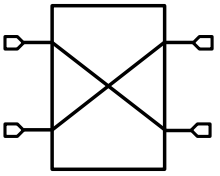
Features

- Fully reciprocal input ports
- Excellent Amplitude and Phase Balance
- High Isolation, 27dB Typical
- Low Insertion Loss, 3.8dB Typical
- On-Chip 50Ω Load Terminations

Applications

- Single Sideband Upconverters
- Image Rejection Downconverters
- IQ Modulators
- Balanced Amplifiers

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MQH-0516PSM	MMIC 5-16GHz 90° Hybrid Coupler	Plastic QFN	RoHS REACH	Released	EAR99
EVB-MQH-0516P	Evaluation Board, 5 - 16 GHz MMIC 90° Hybrid Coupler	EVB	RoHS REACH	Released	EAR99

Table Of Contents

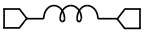
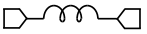
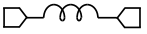
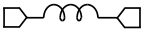
Revision History

Revision Code	Revision Date	Comment
-	2026-05-06	Initial Release

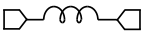
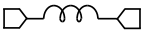
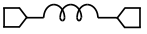
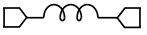
Port Configuration and Functions

Port Functions

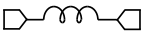
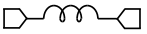
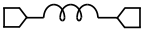
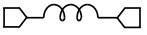
Configuration A

Port	Function	Description	DC Equivalent Circuit
Pin 18	Input	Pin 18 is DC short to pin 7 and open to ground.	
Pin 2	90° Output	Pin 2 is DC short to pin 23 and open to ground.	
Pin 23	Isolated	Pin 23 is DC short to pin 2 and open to ground.	
Pin 7	0° Output	Pin 7 is DC short to pin 18 and open to ground.	

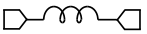
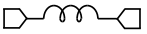
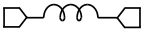
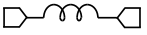
Configuration B

Port	Function	Description	DC Equivalent Circuit
Pin 18	0° Output	Pin 18 is DC short to pin 7 and open to ground.	
Pin 2	Isolated	Pin 2 is DC short to pin 23 and open to ground.	
Pin 23	90° Output	Pin 23 is DC short to pin 2 and open to ground.	
Pin 7	Input	Pin 7 is DC short to pin 18 and open to ground.	

Configuration C

Port	Function	Description	DC Equivalent Circuit
Pin 18	90° Output	Pin 18 is DC short to pin 7 and open to ground.	
Pin 2	Input	Pin 2 is DC short to pin 23 and open to ground.	
Pin 23	0° Output	Pin 23 is DC short to pin 2 and open to ground.	
Pin 7	Isolated	Pin 7 is DC short to pin 18 and open to ground.	

Configuration D

Port	Function	Description	DC Equivalent Circuit
Pin 18	Isolated	Pin 18 is DC short to pin 7 and open to ground.	
Pin 2	0° Output	Pin 2 is DC short to pin 23 and open to ground.	
Pin 23	Input	Pin 23 is DC short to pin 2 and open to ground.	
Pin 7	90° Output	Pin 7 is DC short to pin 18 and open to ground.	

Specifications

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	5 x 5 mm
Moisture Sensitivity Level	-	MSL 1

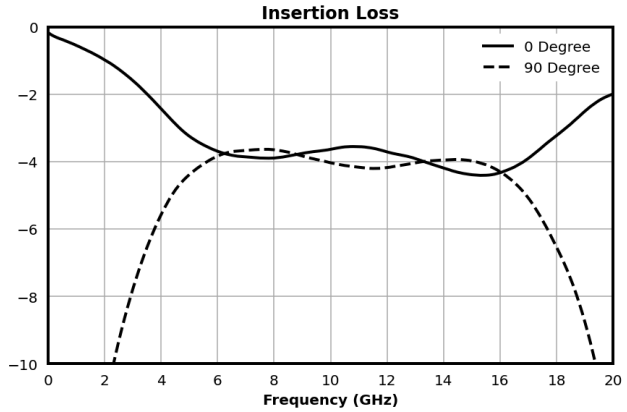
Electrical Specifications

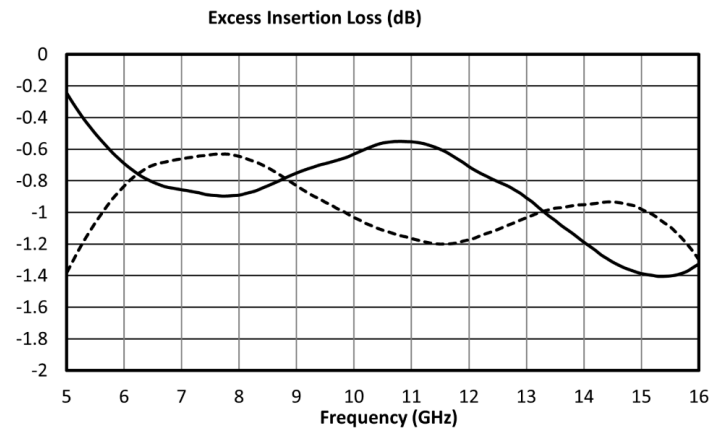
Parameter	Port Configuration	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Insertion Loss	A	-	5	16	-	3.8	-	dB
Amplitude Balance	A	-	5	16	-	0.3	-	dB
Coupling	A	-	5	16	-	3	-	dB
Nominal Phase Shift	A	-	5	16	-	90	-	°
Excess Insertion Loss [1]	A	-	5	16	-	0.8	-	dB
Isolation	A	-	5	16	-	27	-	dB
Phase Balance	A	-	5	16	-	3	-	°
Impedance	-	All Ports	5	16	-	50	-	Ω
Return Loss	-	All Ports	5	16	-	26	-	dB

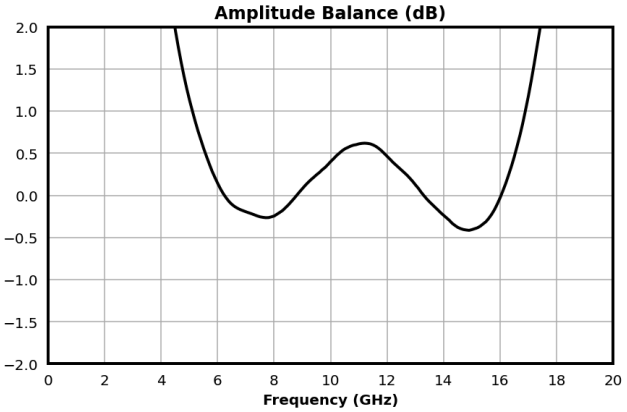
[1] Excess Insertion Loss = Input to Output Insertion Loss - 3dB

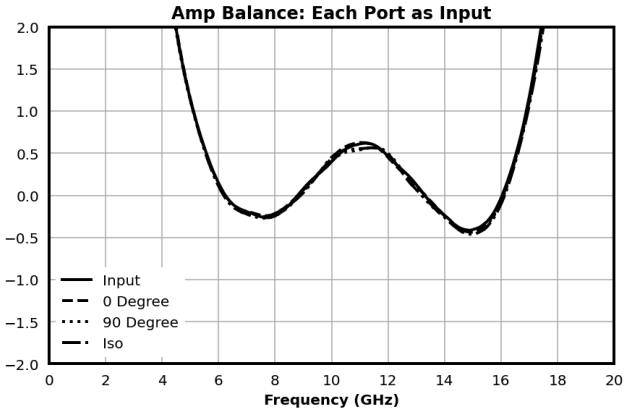
Typical performance plots shown for port configuration A. Performance may vary in alternate configurations.

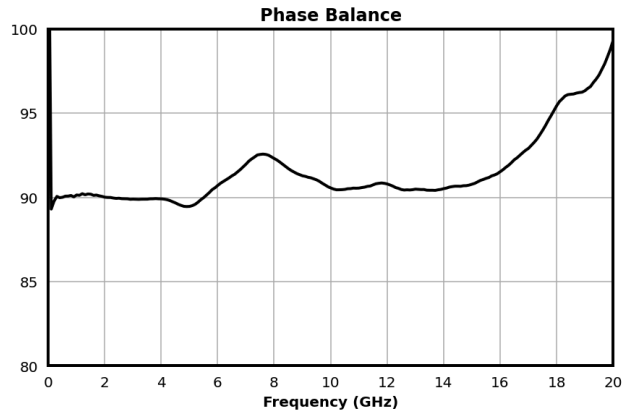
Typical Performance Plots

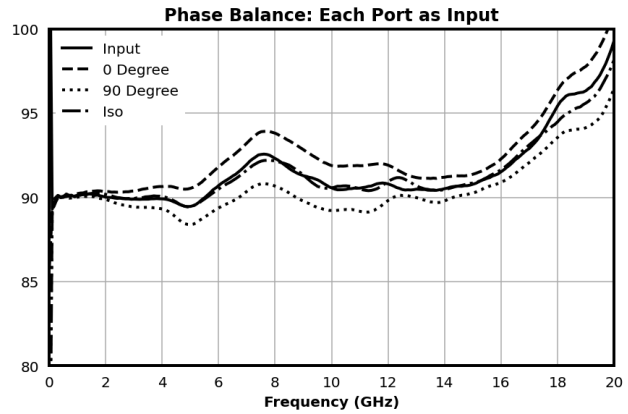


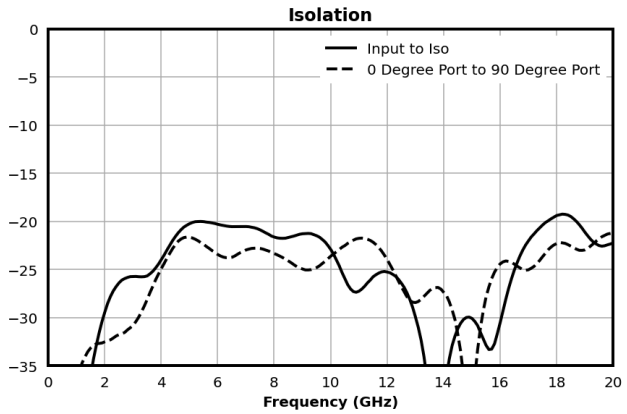


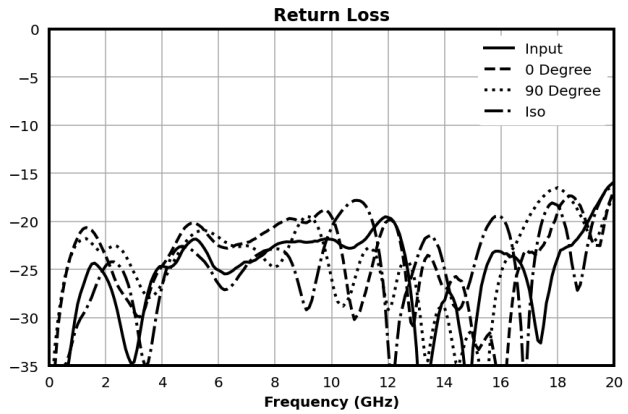












Mechanical Data

Outline Drawing

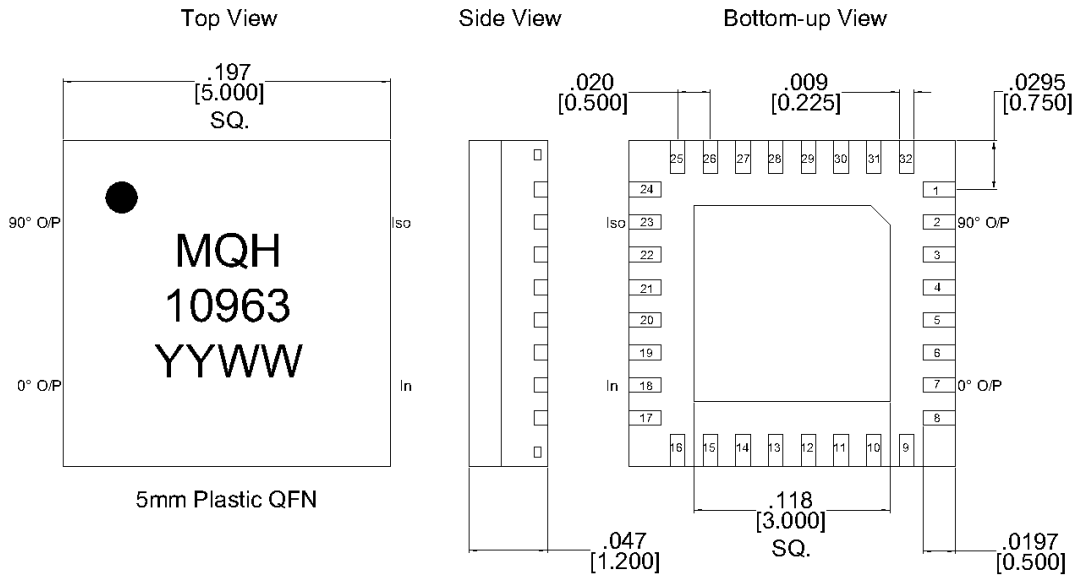
Download : Outline 2D Drawing

*All measurements are typical
Units in inch +/-.004" [millimeter +/-0.1]

PROJECTION INCH [MM]

REVISIONS

REV.	DESCRIPTION	DATE	APPROVALS
A	Initial Release	2/25/26	AT



Pin #	Function
1	N/C
2	90° O/P
3	N/C
4	N/C
5	N/C
6	N/C
7	0° O/P
8	N/C
9	N/C
10	N/C
11	N/C
12	N/C
13	N/C
14	N/C
15	N/C
16	N/C
17	N/C
18	In
19	N/C
20	RF
21	N/C
22	N/C
23	Iso
24	N/C
25	N/C
26	N/C
27	N/C
28	N/C
29	N/C
30	N/C
31	N/C
32	N/C

Notes (unless otherwise specified):

1. Substrate material is LCP.
2. I/O Leads and Die Paddle is (from base to finish):
   Ni: 0.5um MIN
   Pd: 0.02um MIN
   Au: 0.05um MAX
3. All unconnected pins should be connected to PCB RF ground.

MATERIAL:

FINISH:

DO NOT SCALE DRAWING

NOTES:

DRAWN BY	DATE
LCG	9/22/25
AJN	2/24/26
LG	2/24/26

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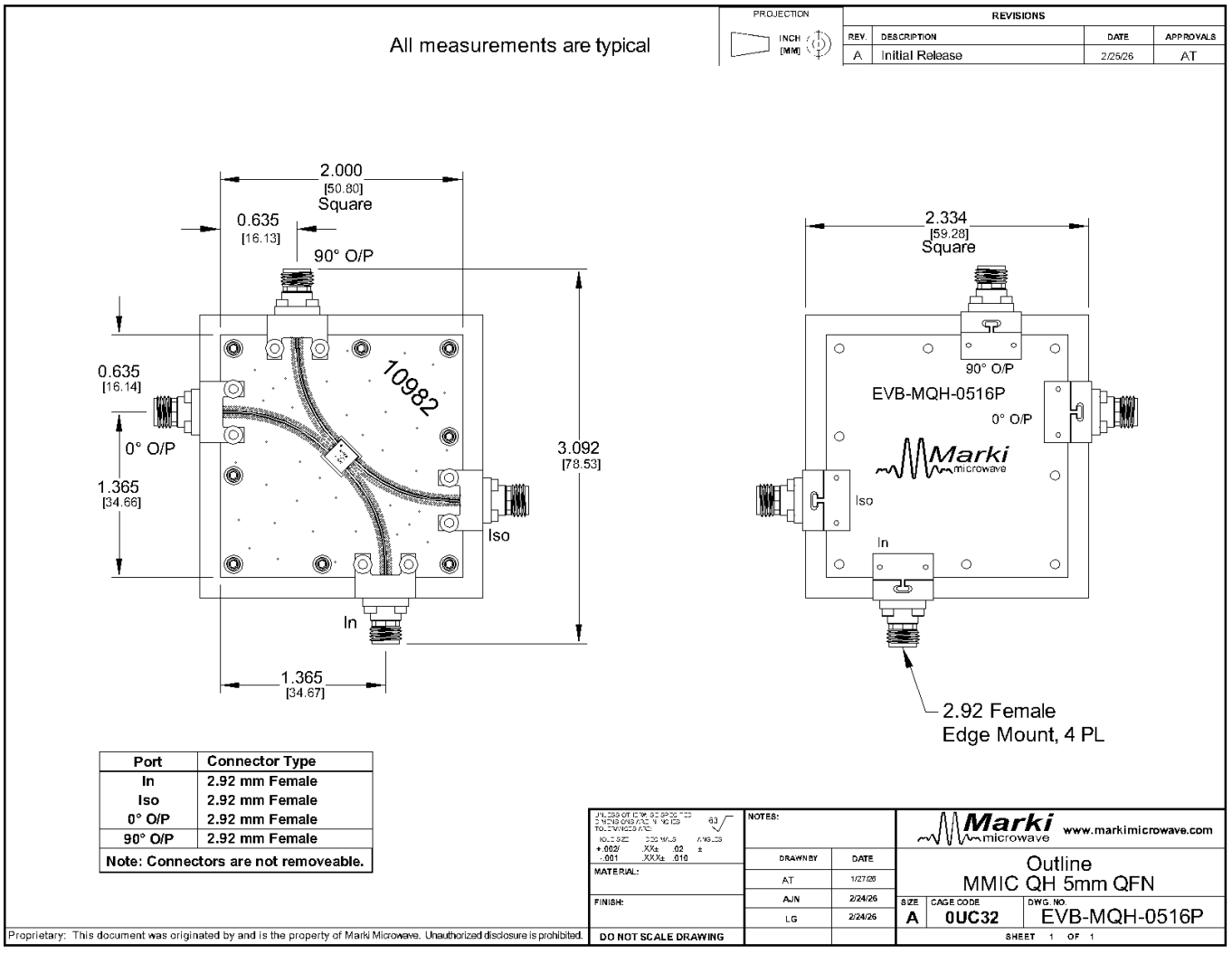
Outline
MQH 5mm QFN

SIZE	CAGE CODE	DWG. NO.
A	0UC32	MQH-0516PSM

SHEET 1 OF 1

Evaluation Board - Outline Drawing



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