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MC20-0220CSP2

General Description

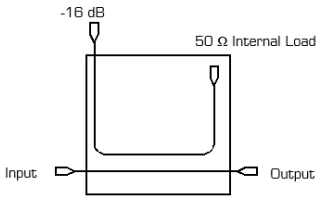
MC20-0220CSP2 is a MMIC 2-22 GHz Directional Coupler. Passive GaAs MMIC technology allows production of smaller constructions that replace larger form factor circuit board constructions. Tight fabrication tolerances result in less unit to unit variation than traditional coupler technologies, allowing for accurate simulations using the provided S3P file taken from measured production units. The MC20-0220CSP2 is available as a 4 X 4 mm QFN package. Evaluation boards are also available.

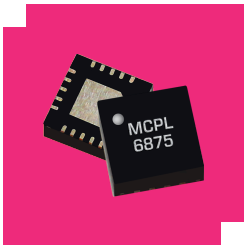
Download s-parameters here

Features

- Broadband Performance
- Low VSWR
- High Directivity
- RoHS Compliant

Functional Block Diagram





Electrical Performance Summary

Parameter	Typ	Unit
Frequency Range	2 to 22	GHz
RF Power Handling	30	dBm
Directivity	23	dB
Mean Coupling	16	dB

Summary only – refer to the Electrical Specifications, Absolute Maximum Ratings, and Recommended Operating Range tables for complete details.

Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MC20-0220CSP2	MC20-0220CSP2	CSP2	REACH RoHS	Pre-release	EAR99

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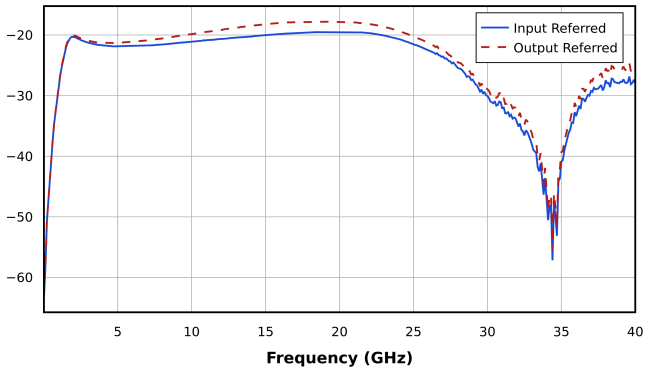
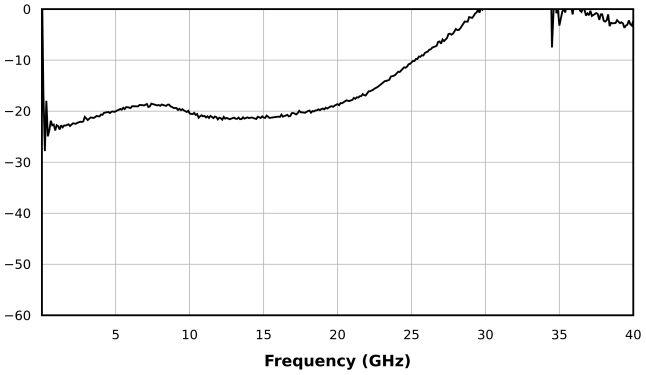
MC20-0220CSP2

Typical Performance

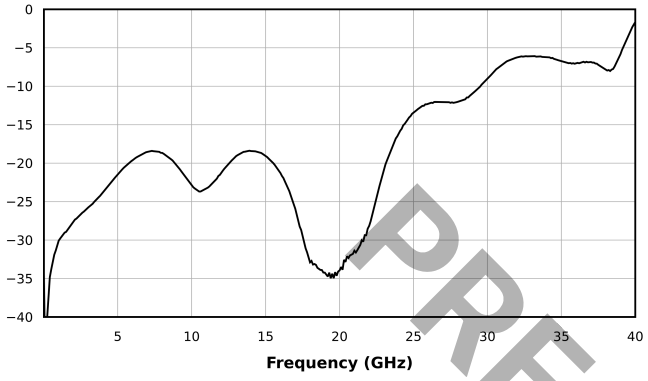
Mean Coupling (dB)



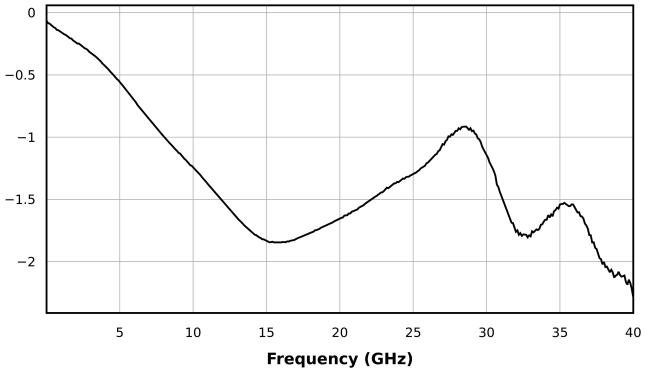
Directivity (dB)



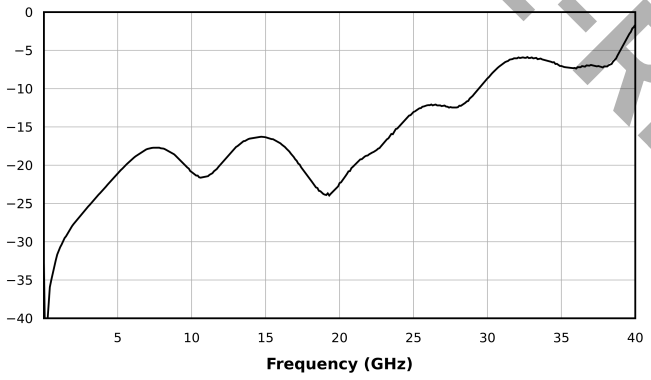
Input Return Loss (dB)



Direct Line Insertion Loss (dB)



Output Return Loss (dB)



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SPECIFICATIONS

Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits are guaranteed at TA=+25°C. All measured data is taken from the eval board with de-embedding of the connectors and traces, but group delay may vary.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Frequency Range	-	2	22	-	-	-	GHz
Coupling Ratio	Temp = 25°C	2	22	-	1.51	-	dB
Direct Line Insertion Loss	-	12	22	-	2	3.5	dB
Directivity	-	2	12	14	23	-	dB
Direct Line Insertion Loss	Temp = 25°C	2	22	-	41.0	-	dB
Directivity	Temp = 25°C	2	22	-	20	-	dB
Directivity	Temp = 25°C	2	22	-	19	-	dB
Coupled Port Return Loss	Temp = 25°C	2	22	-	22	-	dB
Frequency Sensitivity	Temp = 25°C	2	22	-	1.61	-	dB
Mean Coupling	-	2	22	-	16	-	dB
Direct Line Insertion Loss	DC-12	-	-	-	1.2	2.5	dB
VSWR	-	2	22	-	1.22	-	-
Impedance	-	-	-	-	50	-	Ω

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
RF Power Handling	30	dBm
Minimum Operating Temperature	-55	°C
Maximum Operating Temperature	100	°C
Minimum Storage Temperature	-65	°C
DC Current at any Port	60	mA
Maximum Storage Temperature	125	°C

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	2.50 x 2.50 mm
Moisture Sensitivity Level	-	MSL 1

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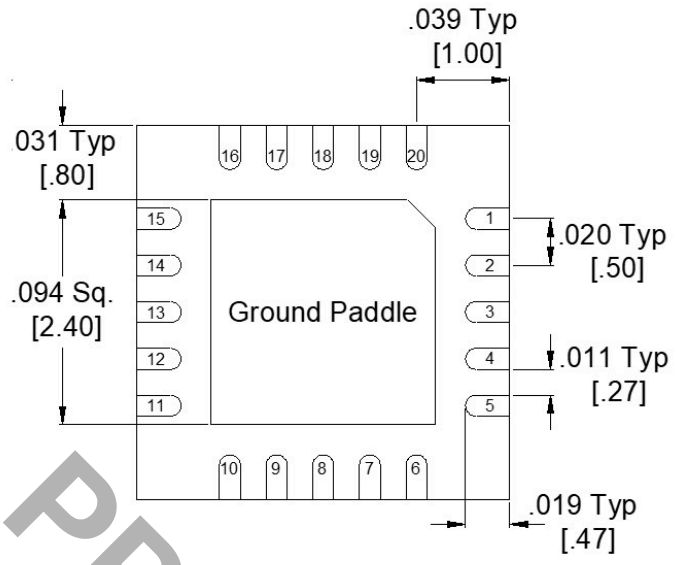
PORT CONFIGURATION AND FUNCTIONS

Port Diagram

A bottom-up view of the MC20-0220CSP2's SM package outline drawing is shown below.



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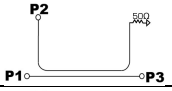
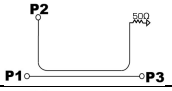
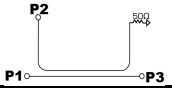
Port Functions

Port	Function	Description	DC Equivalent Circuit
Pad	Ground	SM package ground path is provided through the ground paddle.	
Pin 11	Output	The output port is DC short to the input port and open to ground.	
Pin 5	Input	The input port is DC short to the output port and open to ground.	
Pin 1	Coupled	The coupled port is DC connected to a 50 Ω load.	

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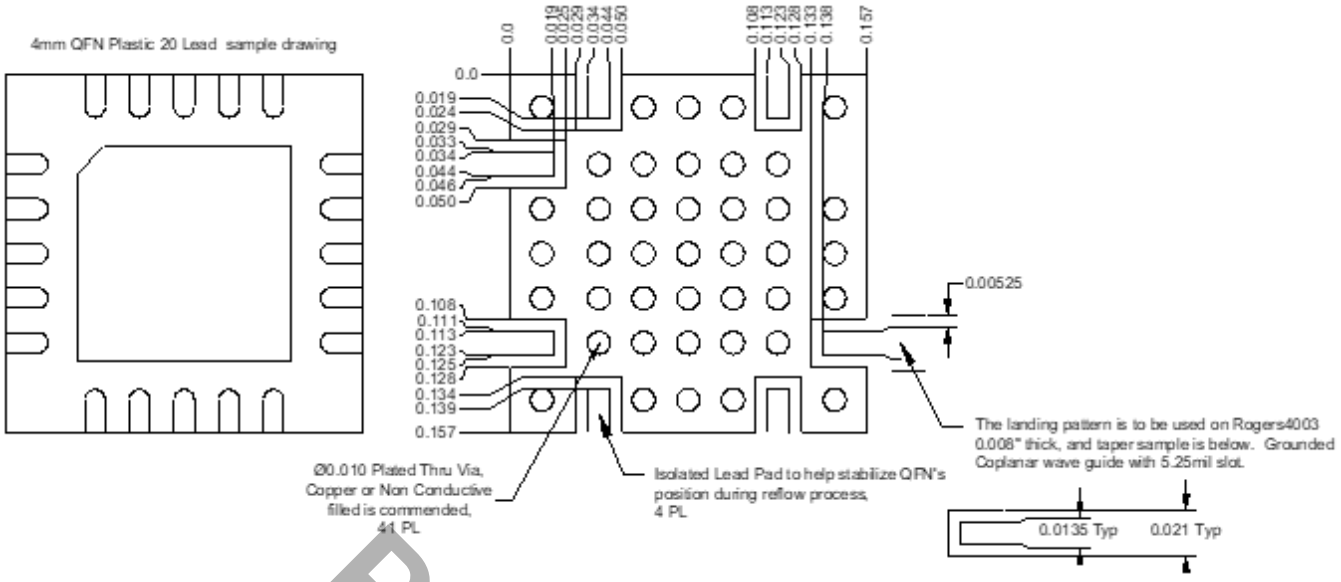
MC20-0220CSP2

FOOTPRINT IMAGE

Download : Footprint Drawing



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REVISION HISTORY

Revision Code	Revision Date	Comment
G1	2026-11-20	Initial Draft

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