

## 8-12GHz 3dB Branchline Coupler

**FPC10207**

[www.knowlescapacitors.com](http://www.knowlescapacitors.com)

### DESCRIPTION

DLI brand surface mount branchline couplers utilize DLI's high dielectric ceramic materials to deliver small size and minimal performance variation over temperature. The components are well matched for signal dividing or combining.

### FEATURES

- Small Size
- Frequency Stable over Temperature
- Solder Surface Mountable
- Moisture Sensitivity Level: MSL1
- Excellent Repeatability
- Operating & Storage Temp: -55°C to +125°C
- Characteristic Impedance: 50Ω

### Packaging and Ordering Information:

To request Tape and Reel packaging, please order part number FPC10207-T, see additional data on page 5.



### SPECIFICATIONS\*

Parameter	Frequency (GHz)	Min	Typ	Max
Excess Passband Insertion Loss* (dB)	8 - 12		0.4	1
Passband Return Loss (dB)		15	20	
Coupling (dB)			3	
Directivity (dB)		15	17	
Amplitude Balance			± 0.5	± 1
Phase Balance (deg)		88	90	92
CW Input Power (W)**				14
$\theta_{JC} \left( \frac{^{\circ}\text{C}}{\text{W}} \right)$	5			
Size (LxWxH)	0.350 x 0.170 x 0.015 in 8.9 x 4.318 x 0.381 mm			

\*Electrical specifications based on typical mounted performance at room temperature. Insertion loss shall vary ±0.5dB over temperature.

\*\* Power rating assumes the component will be mounted to a PCB with good thermally conducting ground via's as outlined in the recommended PCB layout that are connected to an adequate heat sink. Max power is based on 125°C base temperature.

Information in this document is for informational and guideline purposes only. All information regarding the Product described in this datasheet is subject to change from time to time at Knowles Precision Devices' sole discretion. It is the customer's sole responsibility to evaluate the suitability of the Product in the customer's particular application. Knowles Precision Devices assumes no responsibility or liability for the use of the information contained within.

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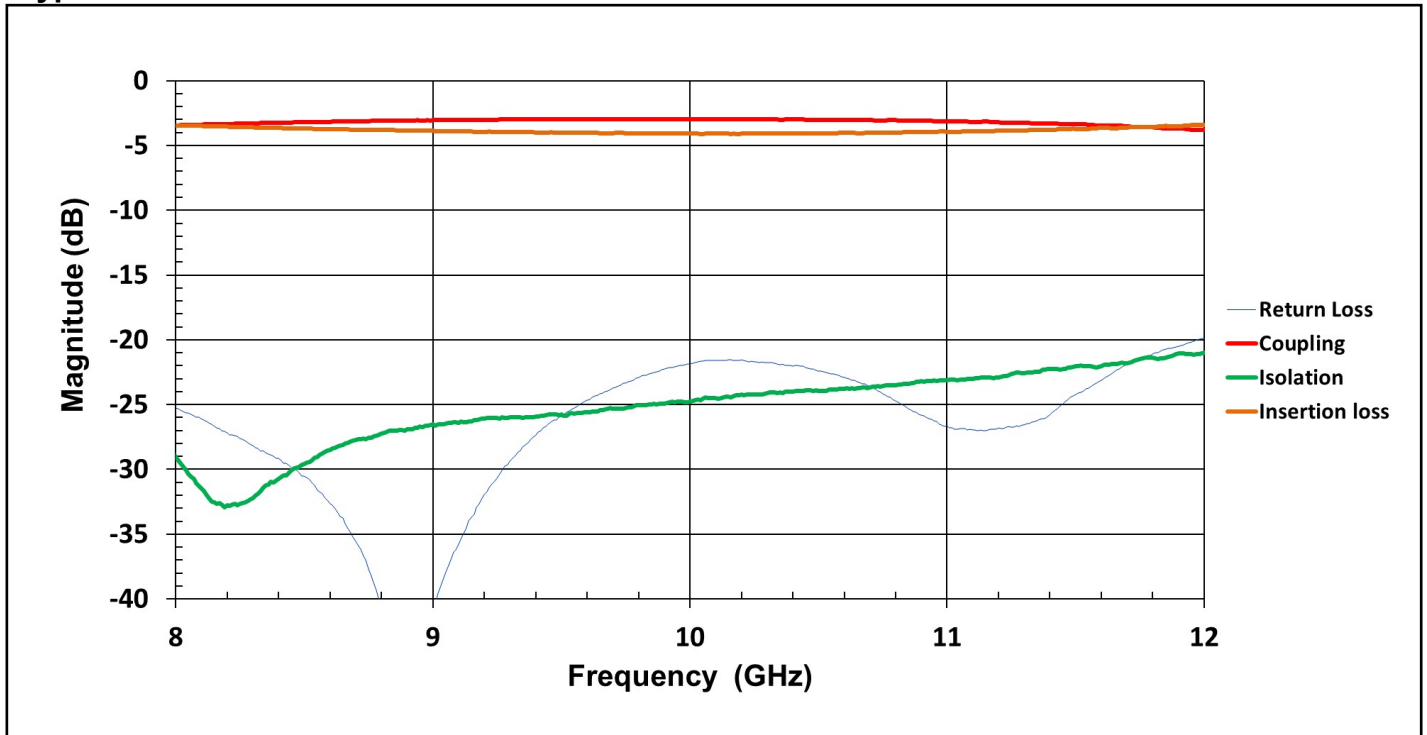
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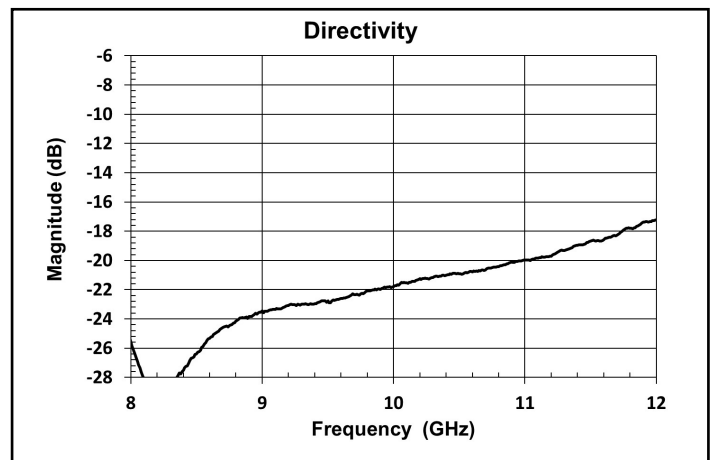
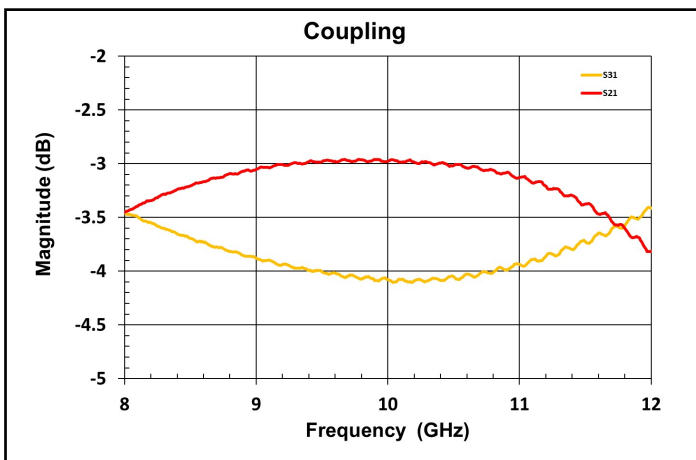
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**Typical Measured Performance\***



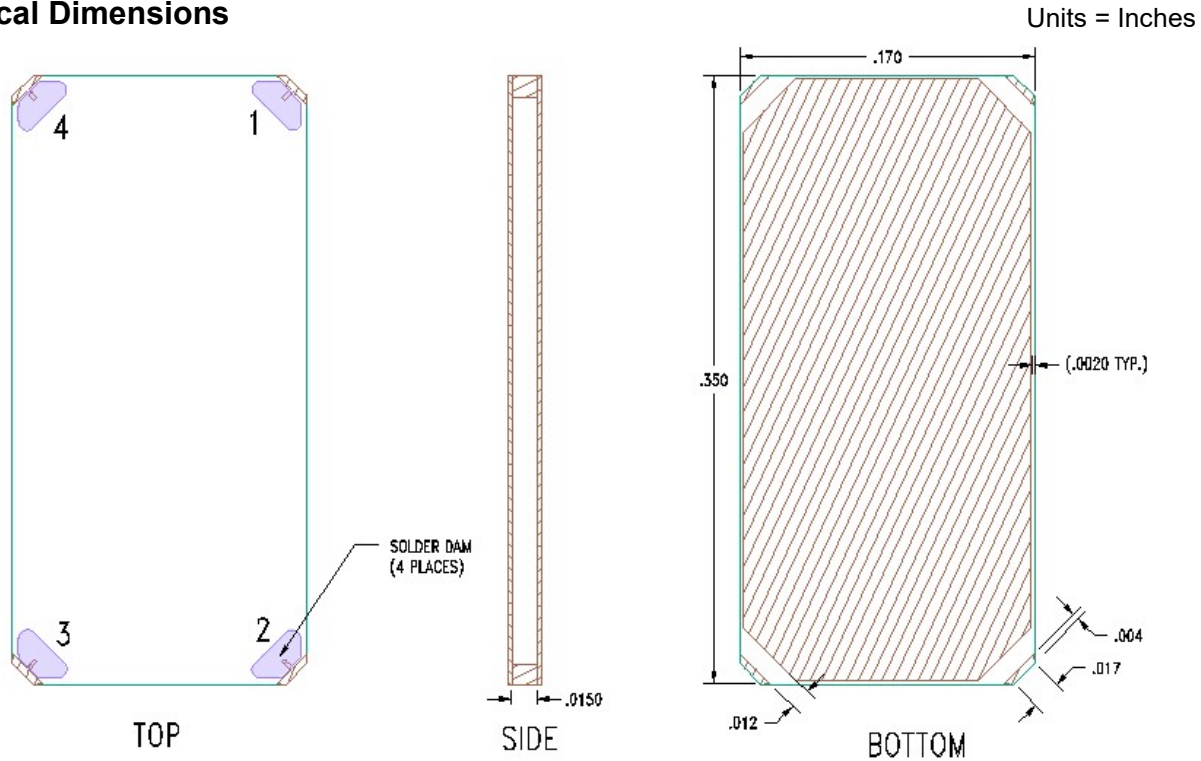
\*Typical de-embedded measured performance mounted on a connectorized 10mil RO4350B PCB with 50Ω CPW ground traces going into the ports at room temperature.



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**Physical Dimensions**



**Notes :**

1. Termination Finish:

ENIG: 3 - 6 μinch Au over 50 μinch Ni

2. Maximum Assembly Process Temperature: 250°C

**Tolerances:**

For values with 3 decimal places ±0.001

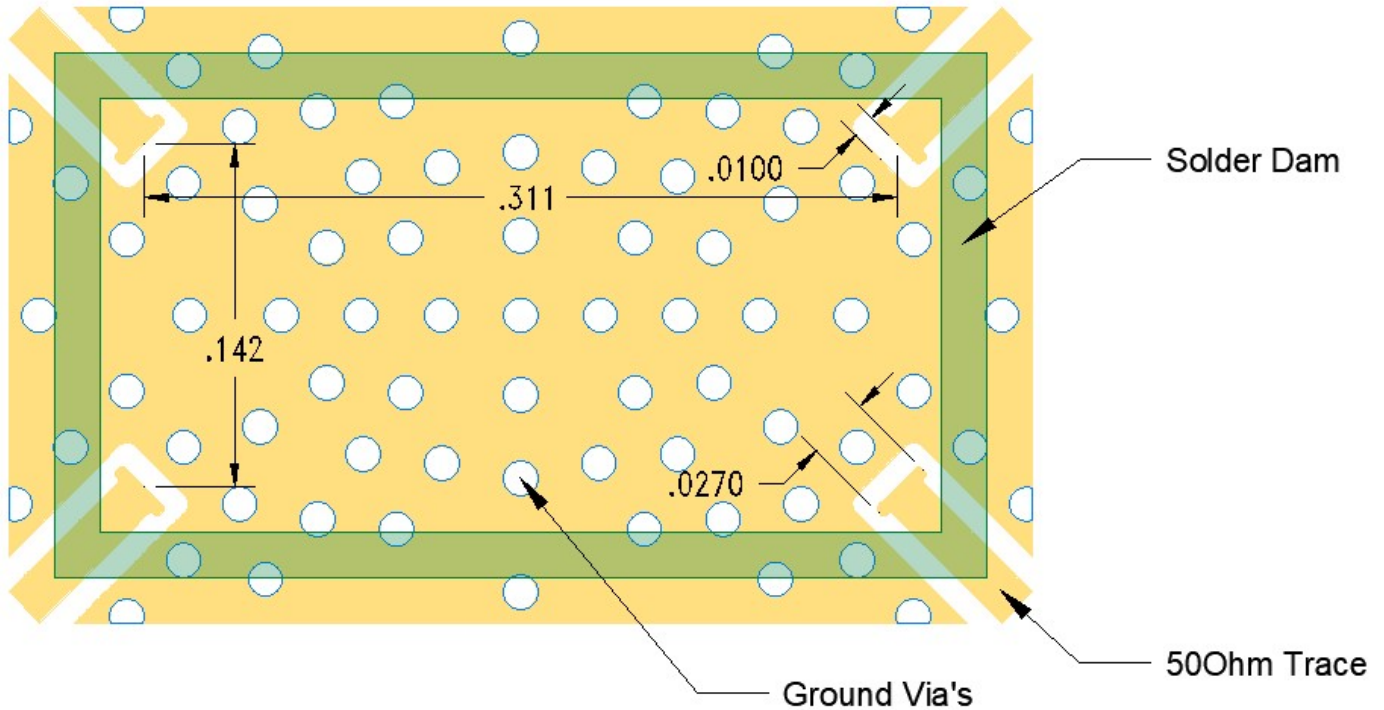
For values with 4 decimal places ±0.0005

<b>FPC10207 Coupler Port Configuration</b>				
	<b>Port 1</b>	<b>Port 2</b>	<b>Port 3</b>	<b>Port 4</b>
<b>Configuration 1</b>	Input	Output/Coupled (-90 degree phase)	Output/Coupled (180 degree phase)	Isolated
<b>Configuration 2</b>	Output/Coupled (-90 degree phase )	Input	Isolated	Output/Coupled (180 degree phase )
<b>Configuration 3</b>	Isolated	Output/Coupled (180 degree phase )	Output/Coupled (-90 degree phase )	Input
<b>Configuration 4</b>	Output/Coupled (180 degree phase)	Isolated	Input	Output/Coupled (-90 degree phase)

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### Recommended PCB Layout



#### Parameters of the Recommended PCB:

- 0.010 inch Rogers Board RO4350B
- 3.66 dK, Board Material design
- Dimensions of 50.0 Ohm CPWG :
  - 0.019 inch RF trace width
  - 0.011 inch spacing

Units = Inches

For further details and best practices, reference the **Microwave Products Guide**, available at: <https://www.knowlescapacitors.com/Support/Catalogs>

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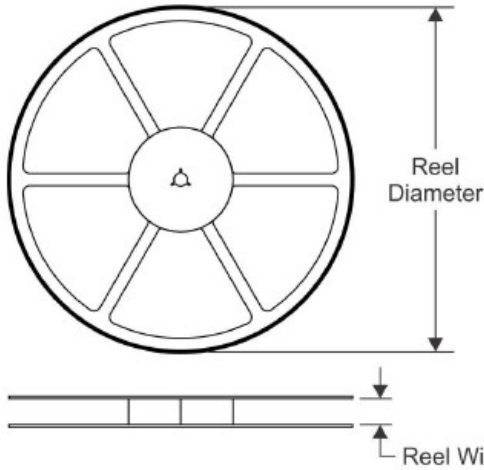
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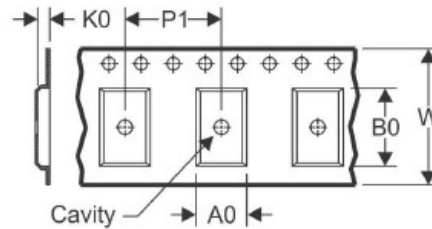
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**TAPE AND REEL INFORMATION**

**REEL DIMENSIONS**

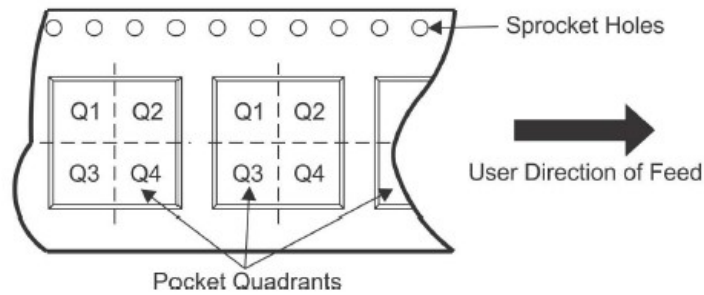


**TAPE DIMENSIONS**



A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

**QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE**



\*All dimensions are nominal

Device	Type	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
FPC10207-T	SMD	180	24.4	4.6	9.2	1.1	8	24	Q2

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