DLI DIELECTRIC LABORATORIES
a Knowles Precision Devices brand

knowles PRECISION DEVICES

20 to 40GHz 20dB Directional Coupler

FPC07181

www.knowlescapacitors.com

DESCRIPTION

DLI brand high frequency, wide band surface mount catalog directional coupler. This coupler and other catalog couplers incorporate DLI's high dielectric ceramic materials which provide small size and minimal performance variation over temperature.

FEATURES

- Small Size
- Solder Surface Mount Package
- Moisture Sensitivity Level: MSL1
- Frequency Stable over Temperature
- 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 FPC07181-T, see additional data on page 5.

Certified System ISO 9001 QMI-SAI Global

Certified System AS 9100 QMI-SAI Global

RoHS 2011/65/EU Lead Free

SPECIFICATIONS*

Parameter	Frequency (GHz)	Min	Max
Passband Insertion Loss* (dB)	20-40		0.5
Passband Return Loss (dB)		14	
Coupling (dB)		18.5	21.5
Directivity (dB)		14	
CW Input Power (W)**			14
$\theta_{JC}\ \left(\frac{°C}{W}\right)$	5.4		
Size (L x W x H)	0.065 x 0.050 x 0.010 in 1.651 x 1.27 x 0.254 mm		

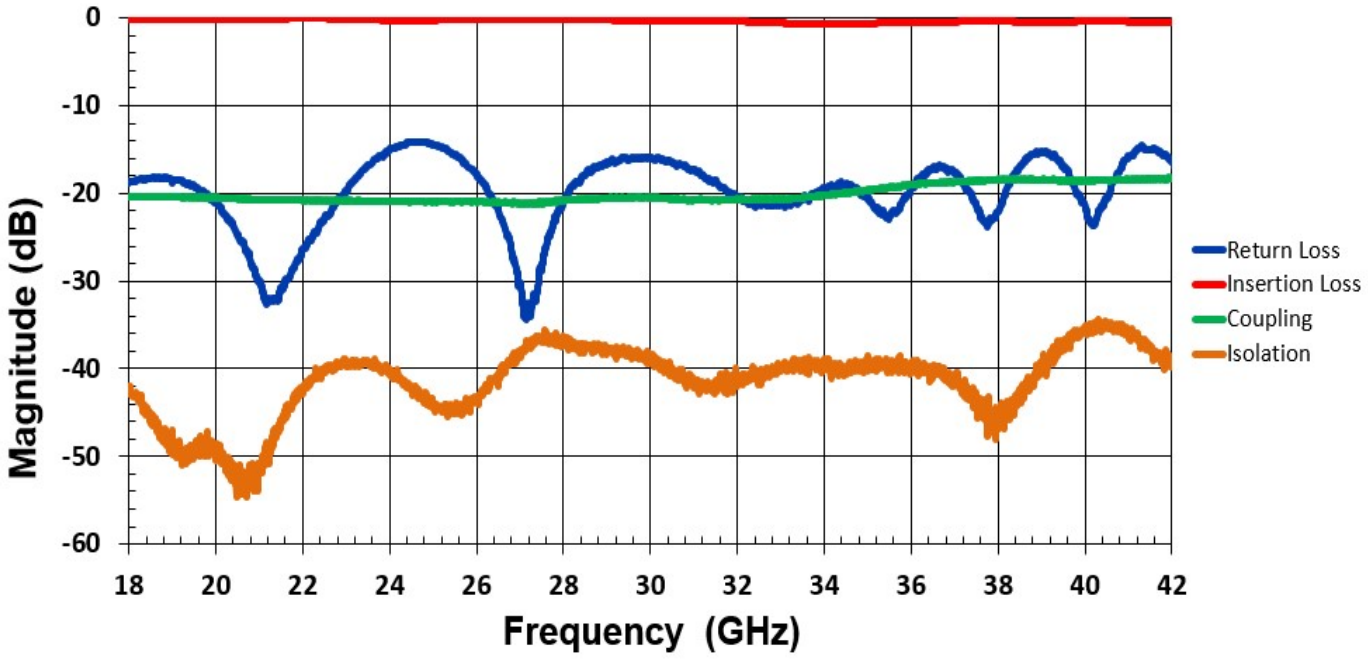
*Electrical specifications based on typical mounted performance at room temperature. Insertion loss shall vary ±0.5dB over temperature.

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

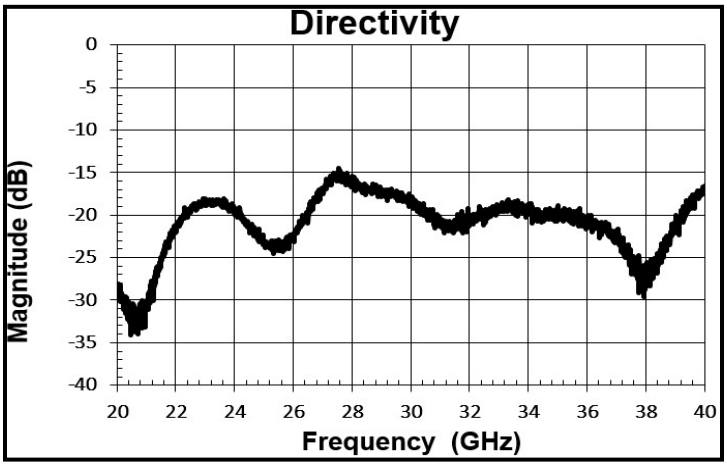
2777 Route 20 East, Cazenovia, NY 13035| Ph.: (315)655-8710

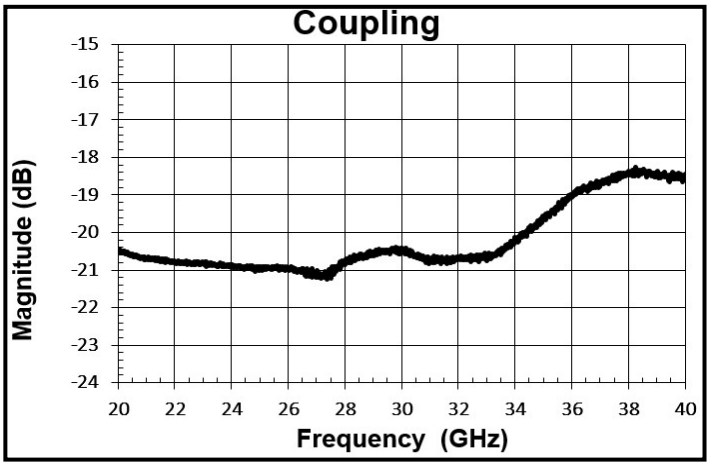
To Order Contact KCCSales@knowles.com | For Technical Inquiries Contact DLIengineering@knowles.com

Typical Measured Performance



*Typical de-embedded measured performance mounted on a connectorized test fixture. DEB is 0.010in RO4350B with 50.0Ohm CPW ground traces going into the ports at room temperature.





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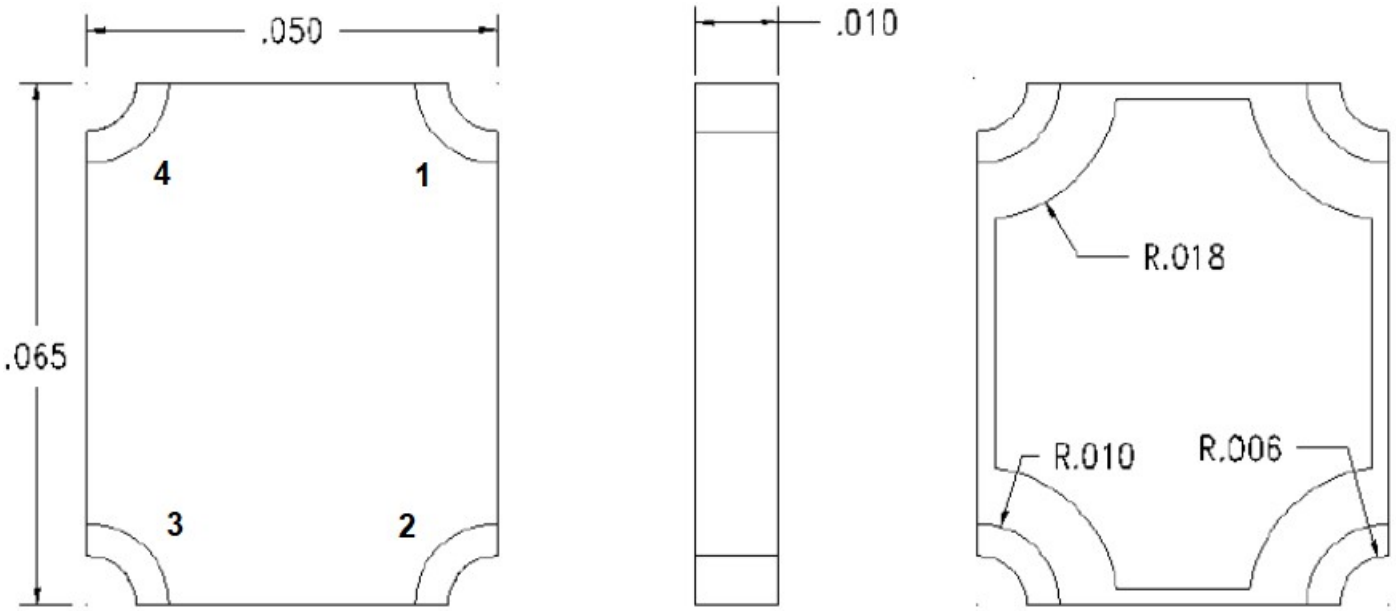
Physical Dimensions

Units = inches



Top Side Bottom

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

FPC07181 Coupler Port Configuration				
	Port 1	**Port 2**	**Port 3**	**Port 4**
Configuration 1	Input	Output	Isolated	Coupled
Configuration 2	Output	Input	Coupled	Isolated
Configuration 3	Coupled	Isolated	Output	Input
Configuration 4	Isolated	Coupled	Input	Output

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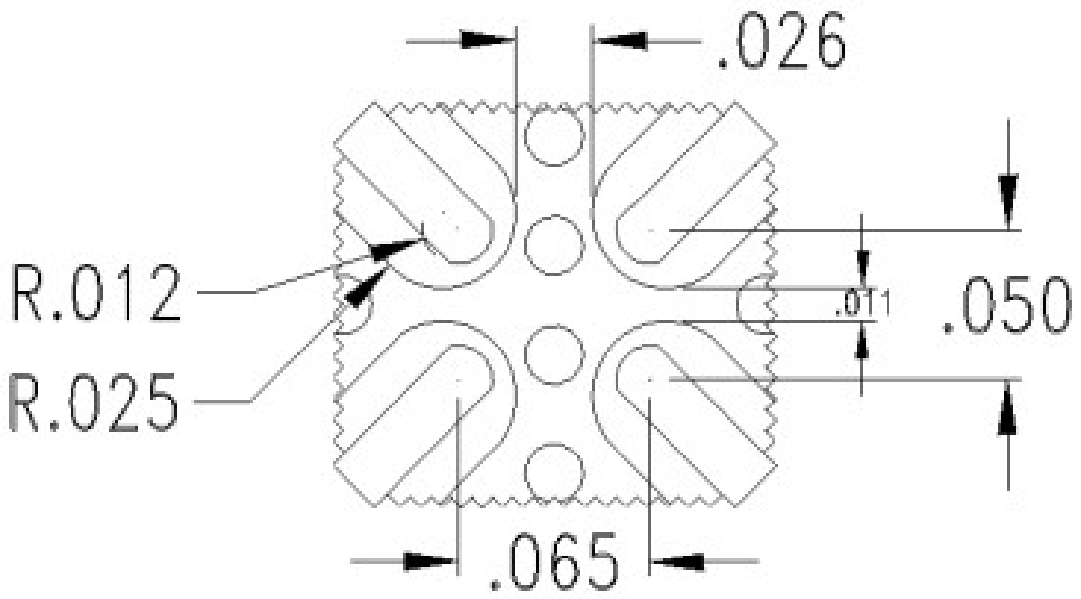
Recommended PCB Layout (unit inch)

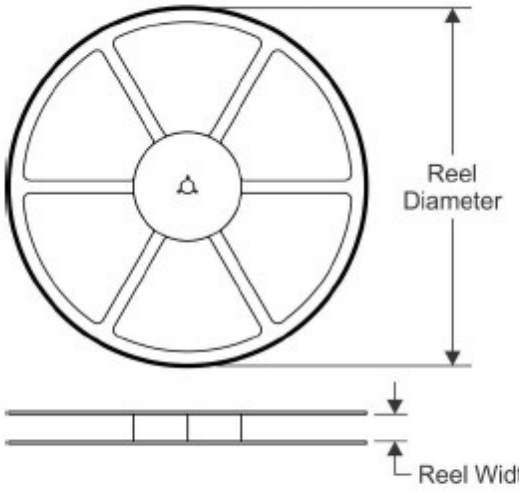


- 50Ω trace dimensions are application specific.
- 50Ω trace dimensions are designed for 10mil thick R04350B Rogers Board .
- Ensure adequate grounding beneath the part.
- Trace feed locations can be horizontal, vertical, or angled.

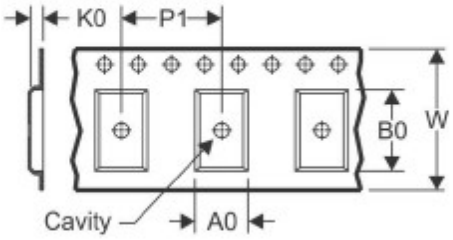
For further details and best practices, reference the **Microwave Products Guide,** available at: https://www.knowlescapacitors.com/Support/Catalogs

TAPE AND REEL INFORMATION

REEL DIMENSIONS

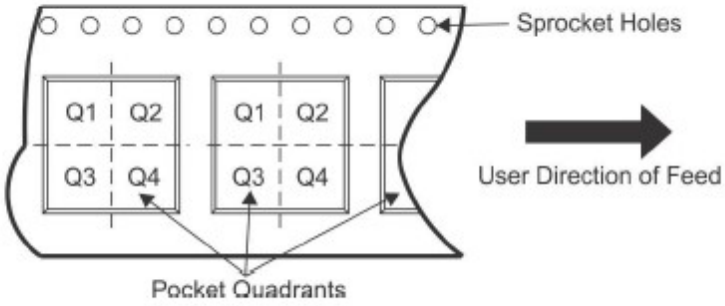


TAPE DIMENSIONS



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	Package Type	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
FPC07181-T	SMD	180	8.4	1.3	1.76	0.5	4	8	Q2