

## 12 to 18GHz 20dB Directional Coupler

### FPC06078

[www.knowlesc capacitors.com](http://www.knowlesc capacitors.com)

### DESCRIPTION

DLI brand surface mount directional couplers utilize DLI's high dielectric ceramic materials with precision engineering deliver small size and minimal performance variation over temperature. The components are well matched for monitoring incident and reflected power.

### 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 FPC06078-T, see additional data on page 5.

### SPECIFICATIONS\*

| Parameter  | Frequency (GHz)                                   | Min | Max |
|--|---|-----|-----|
| Passband Insertion Loss* (dB)                                  | 12 - 18   |     | 0.3 |
| Passband Return Loss (dB)                                      |   | 15  |     |
| Coupling (dB)  |   | 20  | 22  |
| Directivity (dB)   |   | 14  |     |
| CW Input Power** (W)   |   |     | 25  |
| $\theta_{JC} \left( \frac{^{\circ}\text{C}}{\text{W}} \right)$ | 3   |     |     |
| Size (L x W x H)   | 0.100 x 0.080 x 0.015 in<br>2.54 x 2.03 x 0.38 mm |     |     |



\*Electrical specifications based on typical mounted performance at room temperature. Insertion loss shall vary  $\pm 0.5\text{dB}$  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.

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.

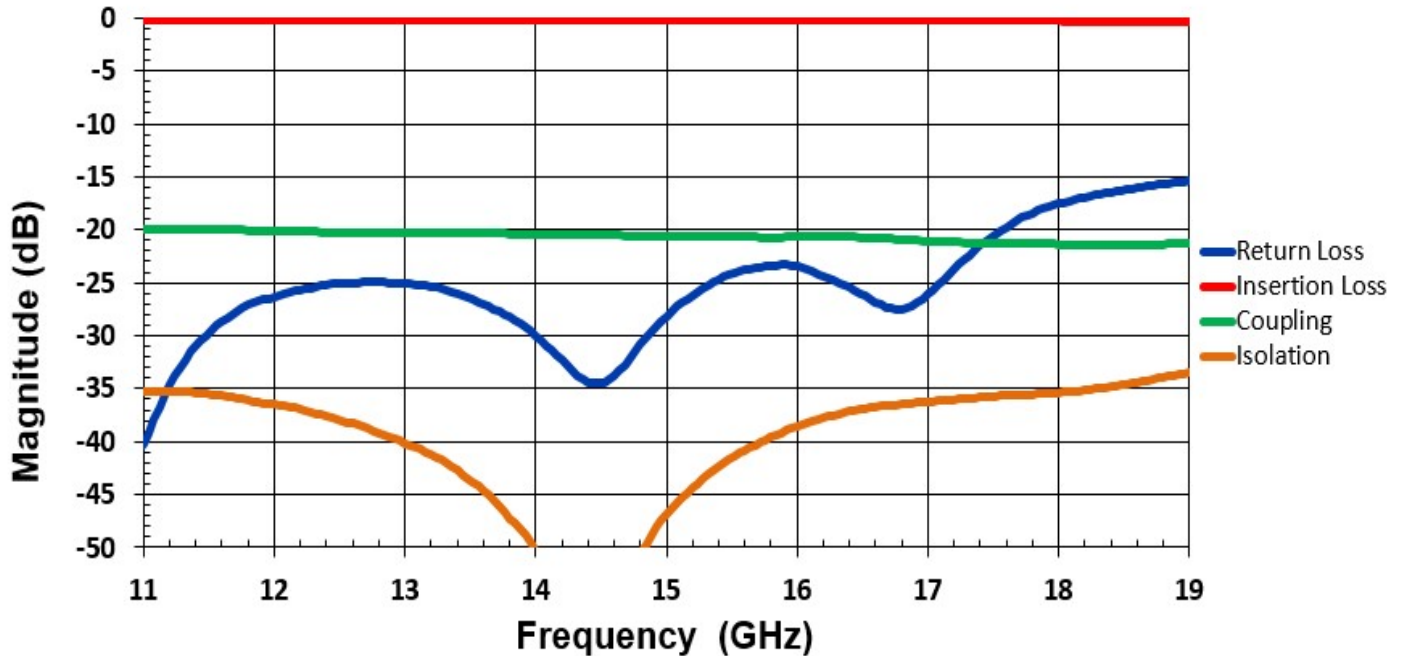
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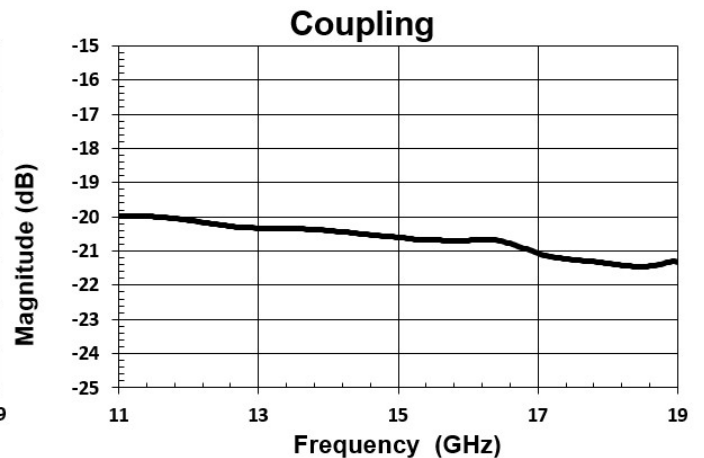
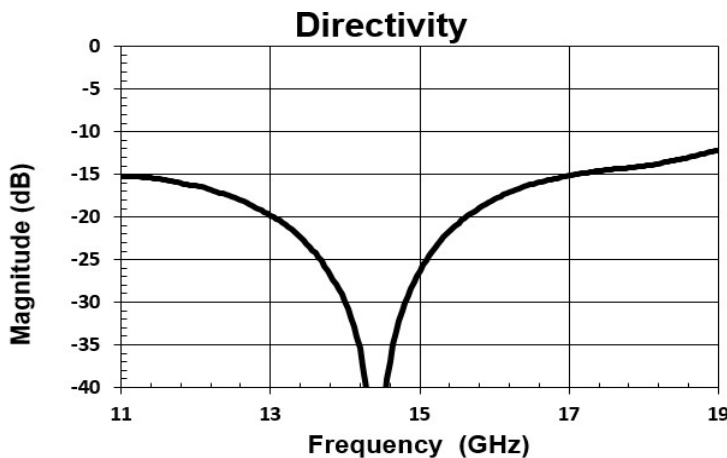
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**Typical Measured Performance\***



\*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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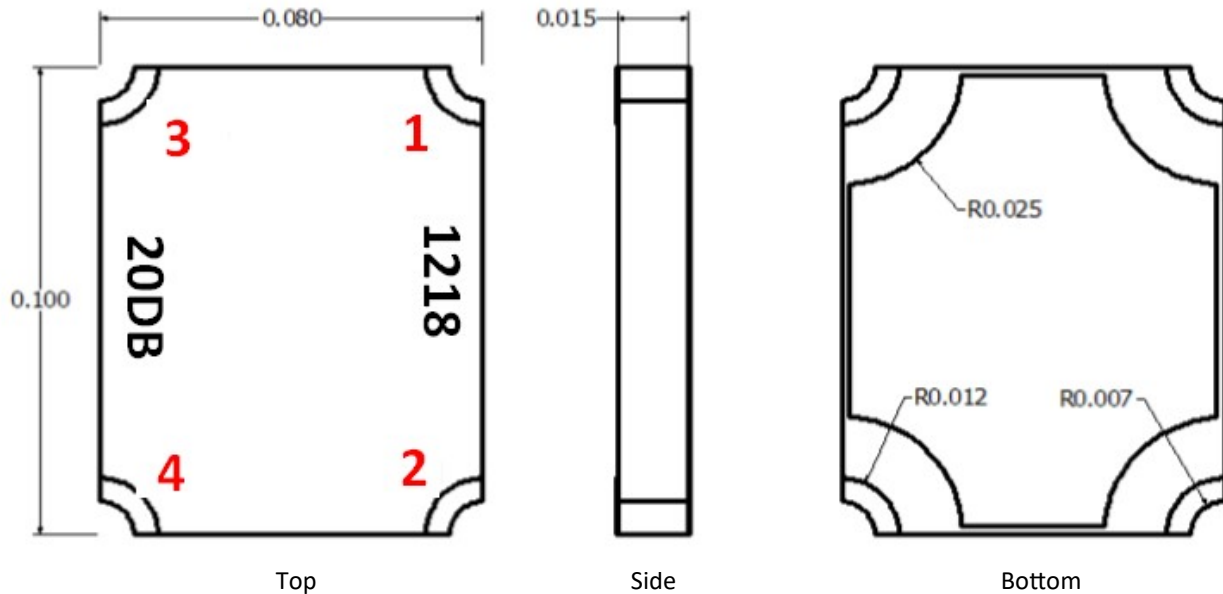
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**Physical Dimensions**

Units = Inches



**Notes :**

1. Termination Finish:

ENIG: 3 - 6  $\mu$ inch Au over 50  $\mu$ inch Ni

2. Maximum Assembly Process Temperature: 250°C

**Tolerances:**

For values with 3 decimal places  $\pm 0.001$

For values with 4 decimal places  $\pm 0.0005$

| FPC06078 Coupler Port Configuration |          |          |          |          |
|-------------------------------------|----------|----------|----------|----------|
|                                     | Port 1   | Port 2   | Port 3   | Port 4   |
| Configuration 1                     | Input    | Output   | Coupled  | Isolated |
| Configuration 2                     | Output   | Input    | Isolated | Coupled  |
| Configuration 3                     | Coupled  | Isolated | Input    | Output   |
| Configuration 4                     | Isolated | Coupled  | Output   | Input    |

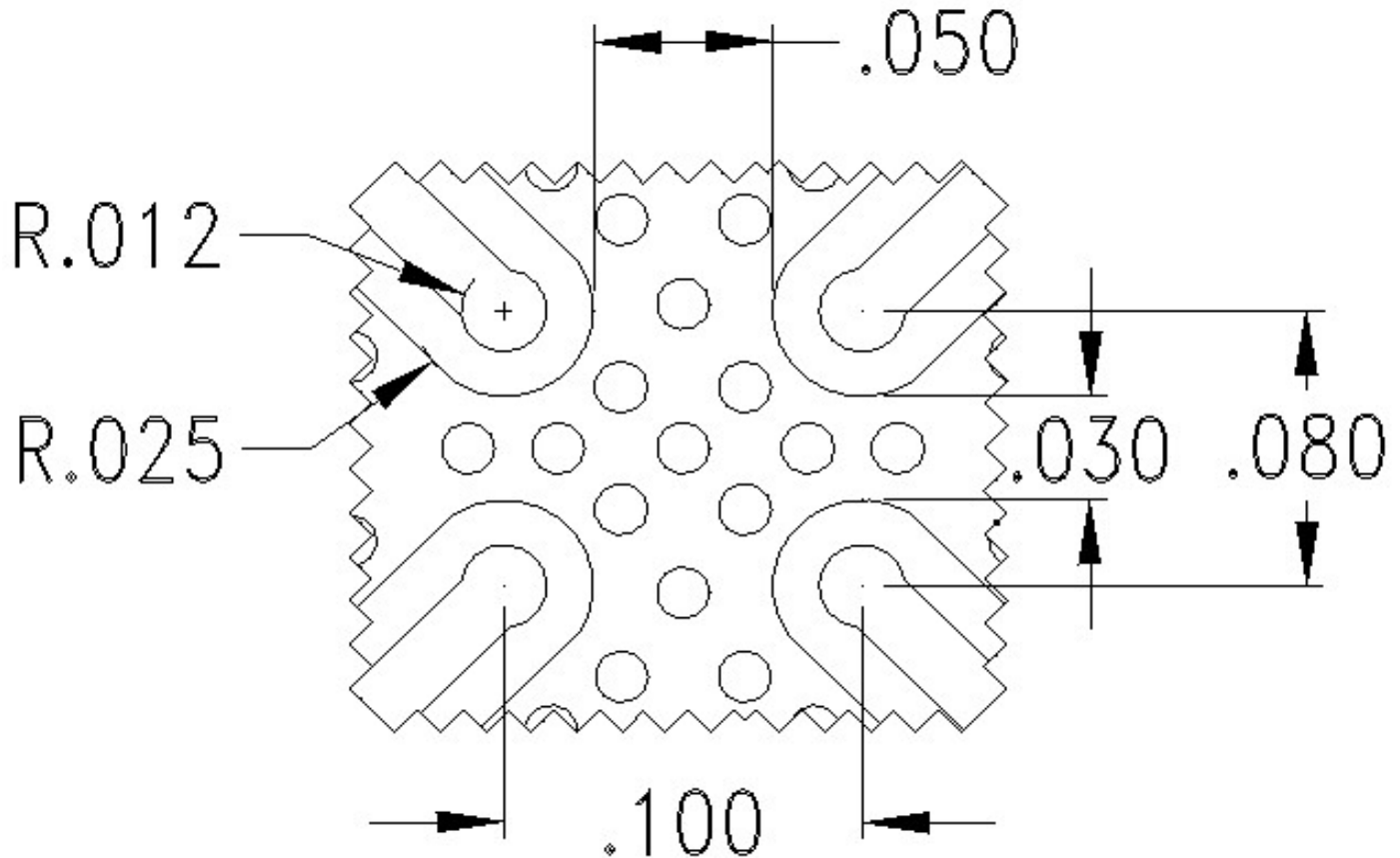
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**Recommended PCB Layout**



**Note:**

- 50 $\Omega$  trace dimensions are application specific.
- 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>

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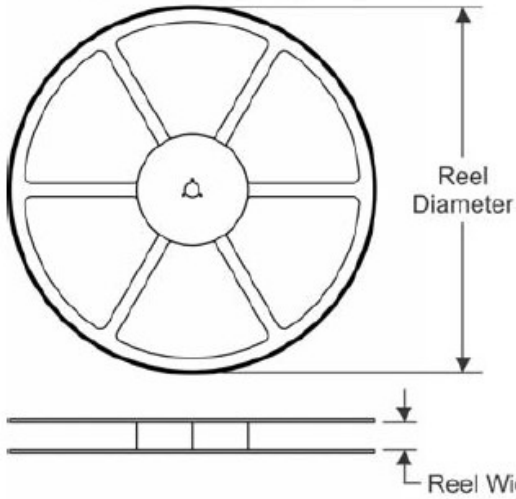
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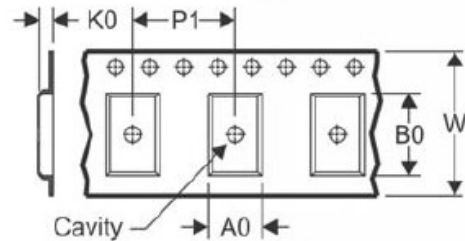
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**TAPE AND REEL INFORMATION**

**REEL DIMENSIONS**

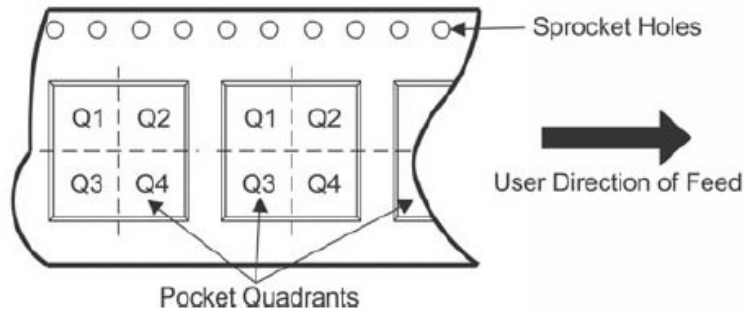


**TAPE DIMENSIONS**



|    |   |
|----|---|
| 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     | Package Type | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|------------|--------------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| FPC06078-T | SMD          | 180                | 8.4                | 1.9     | 2.4     | 0.6     | 4       | 8      | Q1&2          |

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