

# Thin-Film RF/Microwave Directional Couplers

## CP0302/CP0402/CP0603/CP0805 and DB0603N/DB0805 3dB 90°

### CP0402 High Directivity LGA Termination



#### GENERAL DESCRIPTION

##### ITF (INTEGRATED THIN-FILM) TECHNOLOGY

The ITF High Directivity LGA Coupler is based on thin-film multilayer technology. The technology provides a miniature part with excellent high frequency performance and rugged construction for reliable automatic assembly.

The ITF Coupler is offered in a variety of frequency bands compatible with various types of high frequency wireless systems.

#### APPLICATIONS

- 4G LTE
- 5G LTE
- Base Stations.
- Automotive
- Industrial
- Mobile Communications
- Satellite TV Receivers
- GPS
- Vehicle Location Systems
- Wireless LAN's

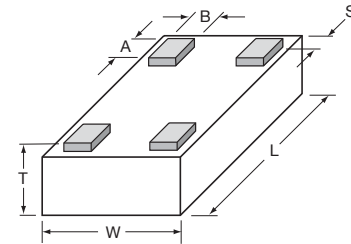
#### FEATURES

- Inherent Low Profile
- Self Alignment during Reflow
- Excellent Solderability
- Low Parasitics
- Better Heat Dissipation
- Operating/Storage Temp -40°C to +85°C
- Power Rating 3W RF Cont

#### DIMENSIONS:

millimeters (inches)

(Bottom View)



<b>L</b>	1.00±0.05 (0.040±0.002)	<b>A</b>	0.20±0.05 (0.008±0.002)
<b>W</b>	0.58±0.04 (0.023±0.002)	<b>B</b>	0.18±0.05 (0.007±0.002)
<b>T</b>	0.35±0.05 (0.014±0.002)	<b>S</b>	0.05±0.05 (0.002±0.002)

#### HOW TO ORDER

**CP**  
T  
**Style**  
Directional Coupler

**0402**  
T  
**Size**  
0402

**X**  
T  
**Type**

**\*\*\*\***  
T  
**Frequency**  
MHz

**X**  
T  
**Sub-Type**

**N**  
T  
**LGA Termination**  
L = LGA Sn90, Pb10  
\*\*N = LGA Sn100

**TR**  
T  
**Packaging Code**  
TR = Tape and Reel

**\*\*RoHS compliant**

#### QUALITY INSPECTION

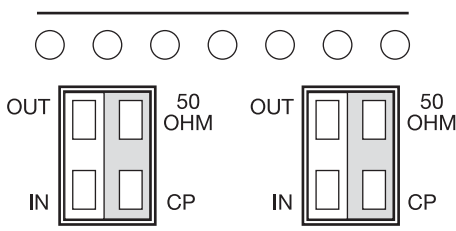
Finished parts are 100% tested for electrical parameters and visual characteristics. Each production lot is evaluated on a sample basis for:

- Static Humidity: 85°C, 85% RH, 160 hours
- Endurance: 125°C, I<sub>R</sub>, 4 hours

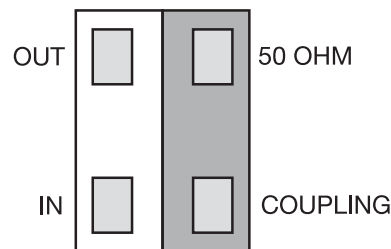
#### TERMINATION

Sn90Pb10 or Lead-Free Sn100 Nickel/Solder coating compatible with automatic soldering technologies: reflow, wave soldering, vapor phase and manual.

#### ORIENTATION IN TAPE



#### TERMINALS (TOP VIEW)



**Not RoHS Compliant**



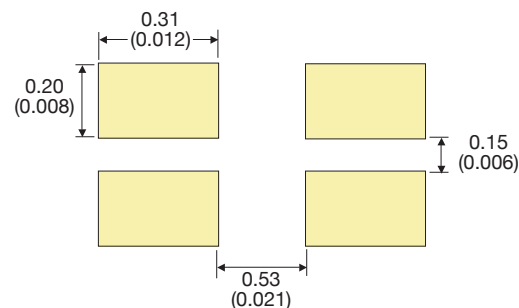
LEAD-FREE  
LEAD-FREE COMPATIBLE  
COMPONENT



For RoHS compliant products,  
please select correct termination style.

#### Recommended Pad Layout Dimensions

mm (inches)

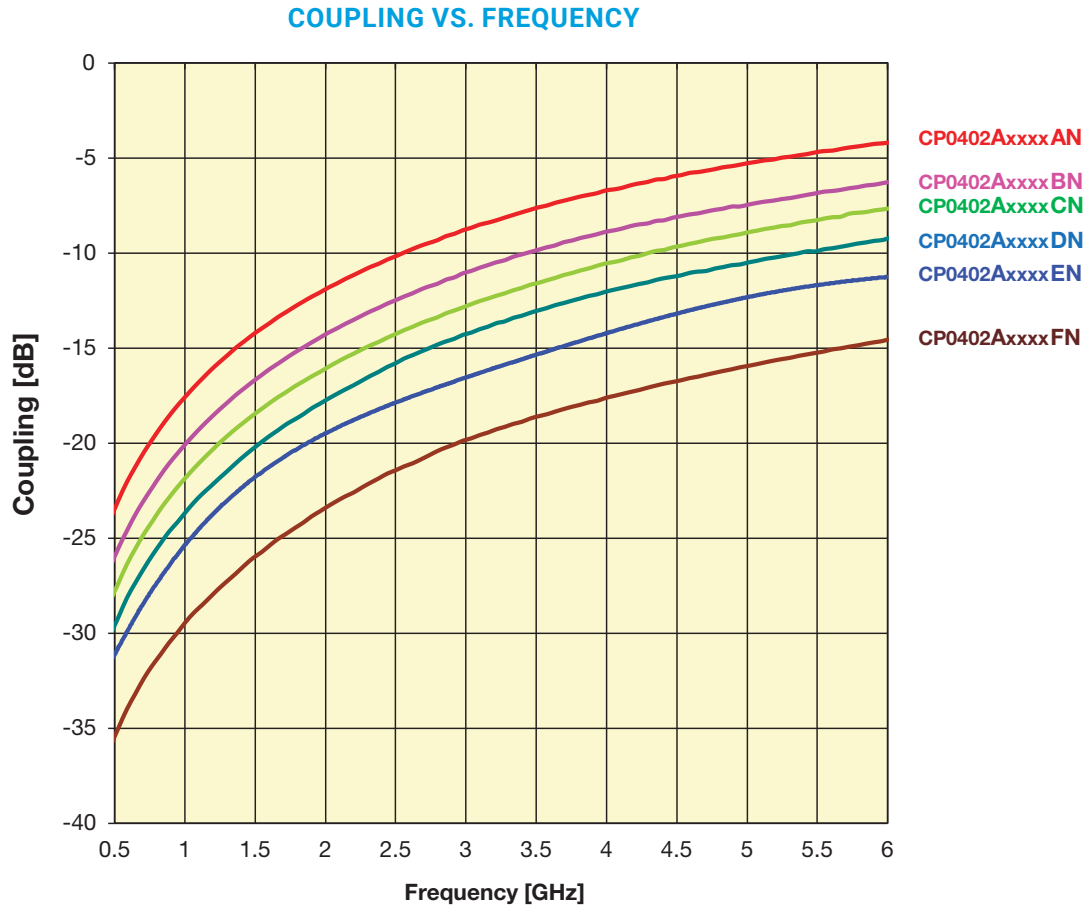


\*The recommended distance to the PCB Ground Plane is 0.254mm (0.010")

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**CP0302/CP0402/CP0603/CP0805 and DB0603N/DB0805 3dB 90°**  
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**CP0402 - TYPE SELECTION CHART**



Intermediate coupling factors are readily available.  
 Please contact factory.

# Thin-Film RF/Microwave Directional Couplers

## CP0302/CP0402/CP0603/CP0805 and DB0603N/DB0805 3dB 90°

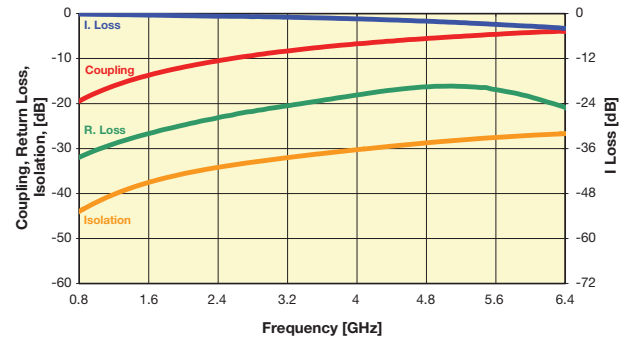
### CP0402 High Directivity LGA Termination



Coupler P/N CP0402AxxxxAN

P/N Examples*	Frequency Band [MHz]	Coupling [dB]	I. Loss max. [dB]	Return Loss [dB]	Directivity [dB]
CP0402A0836AN	824 - 849	19.10	0.25	32	21
CP0402A0881AN	869 - 894	18.60	0.25	31	21
CP0402A0902AN	890 - 915	18.50	0.25	31	21
CP0402A0947AN	935 - 960	18.00	0.25	31	21
CP0402A0897AN	880 ÷ 915	18.50	0.25	31	21
CP0402A0942AN	925 ÷ 960	18.00	0.25	31	21
CP0402A1441AN	1429 - 1453	14.50	0.40	28	21
CP0402A1747AN	1710 - 1785	13.00	0.50	26	21
CP0402A1842AN	1805 - 1880	12.50	0.50	26	21
CP0402A1880AN	1850 - 1910	12.30	0.50	25	21
CP0402A1960AN	1930 - 1990	12.00	0.50	25	21
CP0402A1907AN	1895 - 1920	12.30	0.50	25	21
CP0402A1890AN	1880 - 1900	12.30	0.50	25	21
CP0402A2442AN	2400 - 2484	10.30	0.70	23	21
CP0402A3500AN	3450 - 3550	7.60	1.30	15	14
CP0402A5000AN	4950 - 5050	5.00	1.50	15	13
CP0402A5500AN	5450 - 5550	4.60	1.50	14	13
CP0402A6000AN	5950 - 6050	4.00	1.50	14	13

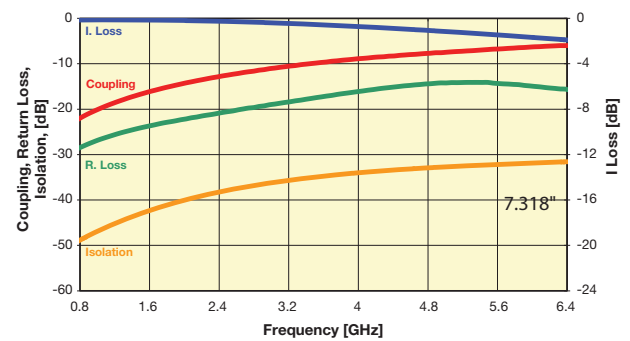
CP0402AxxxxANTR



Coupler P/N CP0402AxxxxBN

P/N Examples*	Frequency Band [MHz]	Coupling [dB]	I. Loss max. [dB]	Return Loss [dB]	Directivity [dB]
CP0402A0836BN	824 - 849	22.00	0.20	28	27
CP0402A0881BN	869 - 894	21.70	0.20	28	27
CP0402A0902BN	890 - 915	21.50	0.20	28	27
CP0402A0947BN	935 - 960	21.00	0.25	27	27
CP0402A0897BN	880 ÷ 915	21.50	0.20	28	27
CP0402A0942BN	925 ÷ 960	21.00	0.25	27	27
CP0402A1441BN	1429 - 1453	17.50	0.25	24	27
CP0402A1747BN	1710 - 1785	16.00	0.30	23	27
CP0402A1842BN	1805 - 1880	15.50	0.35	23	27
CP0402A1880BN	1850 - 1910	15.50	0.35	23	27
CP0402A1960BN	1930 - 1990	15.00	0.35	22	27
CP0402A1907BN	1895 - 1920	15.50	0.35	23	27
CP0402A1890BN	1880 - 1900	15.50	0.35	23	27
CP0402A2442BN	2400 - 2484	13.30	0.40	21	27
CP0402A3500BN	3450 - 3550	9.40	0.80	18	14
CP0402A5000BN	4950 - 5050	7.40	1.20	14	13
CP0402A5500BN	5450 - 5550	6.70	1.60	14	13
CP0402A6000BN	5950 - 6050	6.10	2.00	14	13

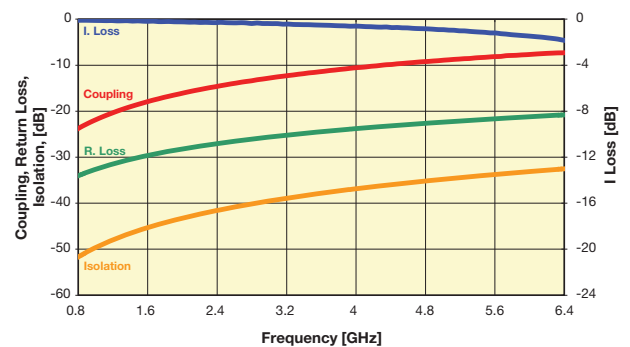
CP0402AxxxxBNTR



Coupler P/N CP0402AxxxxCN

P/N Examples*	Frequency Band [MHz]	Coupling [dB]	I. Loss max. [dB]	Return Loss [dB]	Directivity [dB]
CP0402A0836CN	824 - 849	23.60	0.20	33	22
CP0402A0881CN	869 - 894	23.00	0.20	33	22
CP0402A0902CN	890 - 915	23.00	0.20	26	22
CP0402A0947CN	935 - 960	22.50	0.20	33	22
CP0402A0897CN	880 ÷ 915	23.00	0.20	25	22
CP0402A0942CN	925 ÷ 960	22.50	0.20	32	22
CP0402A1441CN	1429 - 1453	19.00	0.25	31	22
CP0402A1747CN	1710 - 1785	17.20	0.25	30	19
CP0402A1842CN	1805 - 1880	17.00	0.25	30	19
CP0402A1880CN	1850 - 1910	16.80	0.25	30	19
CP0402A1960CN	1930 - 1990	16.50	0.25	29	19
CP0402A1907CN	1895 - 1920	16.80	0.25	29	19
CP0402A1890CN	1880 - 1900	16.80	0.25	30	19
CP0402A2442CN	2400 - 2484	14.70	0.45	28	19
CP0402A3500CN	3450 - 3550	10.97	0.67	23	17
CP0402A5000CN	4950 - 5050	8.00	1.00	21	16
CP0402A5500CN	5450 - 5550	7.50	1.10	21	15
CP0402A6000CN	5950 - 6050	7.10	1.30	23	15

CP0402AxxxxCNTR



Important: Couplers can be used at any frequency within the indicated range.



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at [www.avx.com/disclaimer/](http://www.avx.com/disclaimer/) by reference and should be reviewed in full before placing any order.

# Thin-Film RF/Microwave Directional Couplers

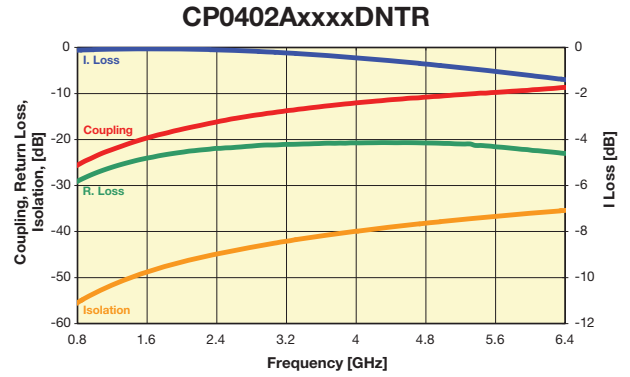
## CP0302/CP0402/CP0603/CP0805 and DB0603N/DB0805 3dB 90°

### CP0402 High Directivity LGA Termination



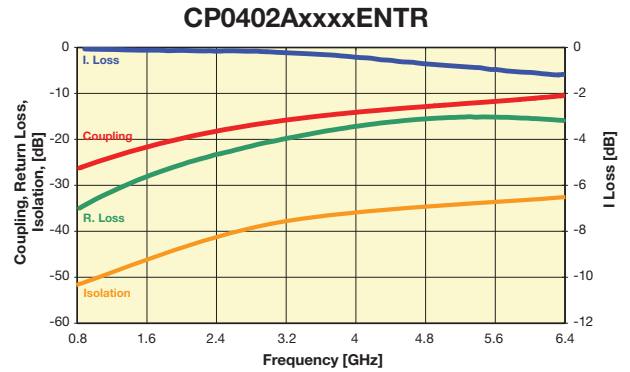
#### Coupler P/N CP0402AxxxxDN

P/N Examples*	Frequency Band [MHz]	Coupling [dB]	I. Loss max. [dB]	Return Loss [dB]	Directivity [dB]
CP0402A0836DN	824 - 849	25.20	0.20	29	20
CP0402A0881DN	869 - 894	24.80	0.20	28	20
CP0402A0902DN	890 - 915	24.70	0.20	28	20
CP0402A0947DN	935 - 960	24.10	0.20	28	20
CP0402A0897DN	880 ÷ 915	24.70	0.20	28	20
CP0402A0942DN	925 ÷ 960	24.10	0.20	28	20
CP0402A1441DN	1429 - 1453	20.50	0.20	25	20
CP0402A1747DN	1710 - 1785	19.00	0.20	24	18
CP0402A1842DN	1805 - 1880	18.50	0.25	23	18
CP0402A1880DN	1850 - 1910	18.20	0.25	23	18
CP0402A1960DN	1930 - 1990	18.00	0.25	23	18
CP0402A1907DN	1895 - 1920	18.10	0.25	23	18
CP0402A1890DN	1880 - 1900	18.20	0.25	23	18
CP0402A2442DN	2400 - 2484	16.00	0.35	22	18
CP0402A3500DN	3450 - 3550	12.50	0.46	21	17
CP0402A5000DN	4950 - 5050	10.00	0.65	21	16
CP0402A5500DN	5450 - 5550	9.60	0.76	20	15
CP0402A6000DN	5950 - 6050	9.10	0.84	20	15



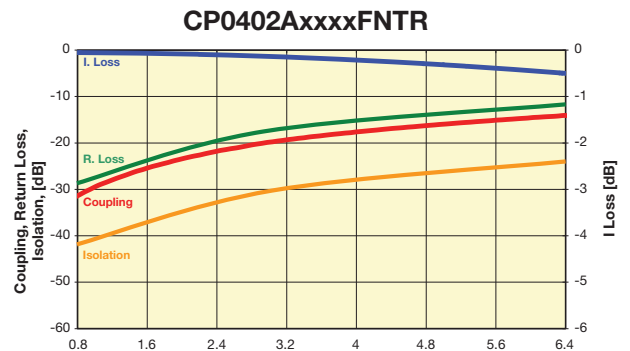
#### Coupler P/N CP0402AxxxxEN

P/N Examples*	Frequency Band [MHz]	Coupling [dB]	I. Loss max. [dB]	Return Loss [dB]	Directivity [dB]
CP0402A0836EN	824 - 849	25.20	0.20	29	20
CP0402A0881EN	869 - 894	24.80	0.20	28	20
CP0402A0902EN	890 - 915	24.70	0.20	28	20
CP0402A0947EN	935 - 960	24.10	0.20	28	20
CP0402A0897EN	880 ÷ 915	24.70	0.20	28	20
CP0402A0942EN	925 ÷ 960	24.10	0.20	28	20
CP0402A1441EN	1429 - 1453	20.50	0.20	25	20
CP0402A1747EN	1710 - 1785	19.00	0.20	24	18
CP0402A1842EN	1805 - 1880	18.50	0.25	23	18
CP0402A1880EN	1850 - 1910	18.20	0.25	23	18
CP0402A1960EN	1930 - 1990	18.00	0.25	23	18
CP0402A1907EN	1895 - 1920	18.10	0.25	23	18
CP0402A1890EN	1880 - 1900	18.20	0.25	23	18
CP0402A2442EN	2400 - 2484	16.00	0.35	22	18
CP0402A3500EN	3450 - 3550	12.50	0.46	21	17
CP0402A5000EN	4950 - 5050	10.00	0.65	21	16
CP0402A5500EN	5450 - 5550	9.60	0.76	20	15
CP0402A6000EN	5950 - 6050	9.10	0.84	20	15



#### Coupler P/N CP0402AxxxxFN

P/N Examples*	Frequency Band [MHz]	Coupling [dB]	I. Loss max. [dB]	Return Loss [dB]	Directivity [dB]
CP0402A0836FN	824 - 849	31.00	0.20	29.10	11
CP0402A0881FN	869 - 894	30.70	0.20	28.60	11
CP0402A0902FN	890 - 915	30.60	0.20	28.50	11
CP0402A0947FN	935 - 960	30.00	0.20	28.10	11
CP0402A0897FN	880 ÷ 915	30.60	0.20	28.50	11
CP0402A0942FN	925 ÷ 960	30.00	0.20	28.10	11
CP0402A1441FN	1429 - 1453	26.50	0.20	25.00	11
CP0402A1747FN	1710 - 1785	25.00	0.20	23.80	11
CP0402A1842FN	1805 - 1880	24.50	0.20	23.60	11
CP0402A1880FN	1850 - 1910	24.20	0.20	23.50	11
CP0402A1960FN	1930 - 1990	24.00	0.20	23.30	11
CP0402A1907FN	1895 - 1920	24.20	0.20	23.40	11
CP0402A1890FN	1880 - 1900	24.20	0.20	23.50	11
CP0402A2442FN	2400 - 2484	22.00	0.25	22.60	11
CP0402A3500FN	3450 - 3550	18.00	0.27	22.00	9
CP0402A5000FN	4950 - 5050	15.70	0.30	23.01	8
CP0402A5500FN	5450 - 5550	15.20	0.30	20.36	7.5
CP0402A6000FN	5950 - 6050	14.50	0.30	18.94	7.5



Important: Couplers can be used at any frequency within the indicated range.