

# Thin Film Directional Coupler



## CP0402P High Directivity, Tight Coupling Tolerance

### GENERAL DESCRIPTION

#### ITF (Integrated Thin-Film) TECHNOLOGY

The CP0402P Series High Directivity, Tight Coupling Tolerance LGA Coupler is based on the proprietary RFAP 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

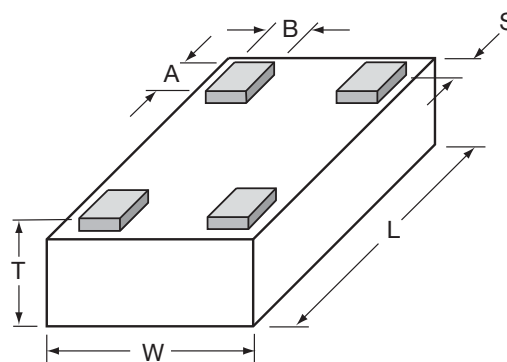
- Wireless communications
- Wireless LAN's
- GPS
- WiMAX

### LAND GRID ARRAY ADVANTAGES

- Inherent Low Profile
- Self Alignment during Reflow
- Excellent Solderability
- Low Parasitics
- Better Heat Dissipation
- Power Rating 3W RF Continuous

### DIMENSIONS: (Bottom View)

millimeters (inches)



|   |                            |
|---|----------------------------|
| L | 1.00±0.05<br>(0.040±0.002) |
| W | 0.58±0.04<br>(0.023±0.002) |
| T | 0.35±0.05<br>(0.014±0.002) |

|   |                            |
|---|----------------------------|
| A | 0.20±0.05<br>(0.008±0.002) |
| B | 0.18±0.05<br>(0.007±0.002) |
| S | 0.05±0.05<br>(0.002±0.002) |

### HOW TO ORDER

**CP**  
T  
Style

**0402**  
T  
Size  
0402

**P**  
T  
Type  
±0.5dB  
Tight Tolerance

**XXXX**  
T  
Frequency  
MHz

**X**  
T  
Sub-Type

**N**  
T  
Termination  
LGA  
Lead-Free

**TR**  
T  
Taped & Reeled

### QUALITY INSPECTION

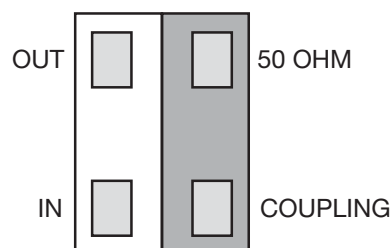
Finished parts are 100% tested for electrical parameters and visual characteristics. Each production lot is evaluated on a sample basis for:

- Static Humidity: 85°C, 85% RH, 160 hours
- Endurance: 125°C,  $I_R$ , 4 hours

### TERMINATION

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

### TERMINALS (Top View)



LEAD-FREE  
LEAD-FREE COMPATIBLE  
COMPONENT

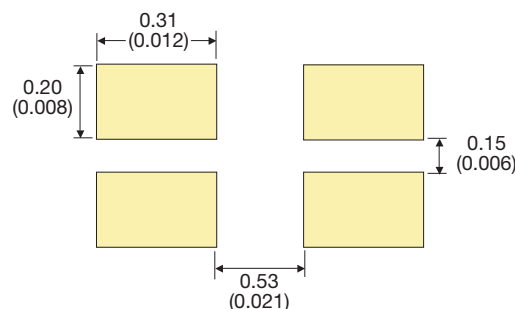


### OPERATING TEMPERATURE:

-40°C to +85°C

### Recommended Pad Layout Dimensions

mm (inches)



# Thin Film Directional Coupler

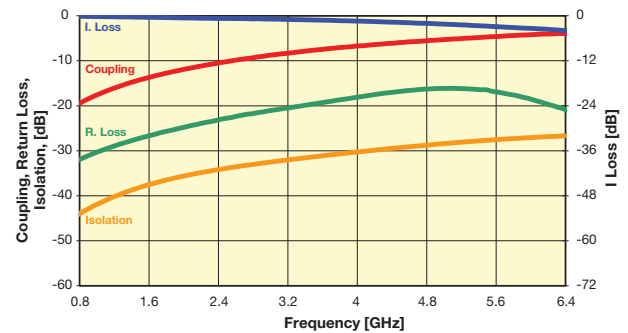
## CP0402P High Directivity, Tight Coupling Tolerance



Coupler P/N CP0402PxxxxAN

| Application  | P/N Examples* | Frequency Band [MHz] | Coupling [dB] | I. Loss max. [dB] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|----------------------|---------------|-------------------|------------------|------------------|
| AMPS         | CP0402P0836AN | 824 - 849            | 19.10±0.5     | 0.25              | 32               | 21               |
|              | CP0402P0881AN | 869 - 894            | 18.60±0.5     | 0.25              | 31               |                  |
| GSM          | CP0402P0902AN | 890 - 915            | 18.50±0.5     | 0.25              | 31               |                  |
|              | CP0402P0947AN | 935 - 960            | 18.00±0.5     | 0.25              | 31               |                  |
| E-GSM        | CP0402P0897AN | 880 - 915            | 18.50±0.5     | 0.25              | 31               |                  |
|              | CP0402P0942AN | 925 - 960            | 18.00±0.5     | 0.25              | 31               |                  |
| PDC          | CP0402P1441AN | 1429 - 1453          | 14.50±0.5     | 0.40              | 28               |                  |
| PCN          | CP0402P1747AN | 1710 - 1785          | 13.00±0.5     | 0.50              | 26               |                  |
|              | CP0402P1842AN | 1805 - 1880          | 12.50±0.5     | 0.50              | 26               |                  |
| PCS          | CP0402P1880AN | 1850 - 1910          | 12.30±0.5     | 0.50              | 25               |                  |
|              | CP0402P1960AN | 1930 - 1990          | 12.00±0.5     | 0.50              | 25               |                  |
| PHP          | CP0402P1907AN | 1895 - 1920          | 12.30±0.5     | 0.50              | 25               |                  |
| DECT         | CP0402P1890AN | 1880 - 1900          | 12.30±0.5     | 0.50              | 25               |                  |
| Wireless LAN | CP0402P2442AN | 2400 - 2484          | 10.30±0.5     | 0.70              | 23               |                  |
| WiFi         | CP0402P3500AN | 3450 - 3550          | 7.60±0.5      | 1.30              | 15               | 14               |
|              | CP0402P5000AN | 4950 - 5050          | 5.00±0.5      | 1.50              | 15               | 13               |
|              | CP0402P5500AN | 5450 - 5550          | 4.60±0.5      | 1.50              | 14               | 13               |
|              | CP0402P6000AN | 5950 - 6050          | 4.00±0.5      | 1.50              | 14               | 13               |

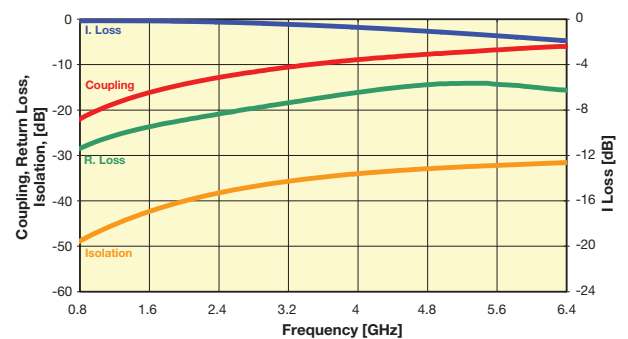
CP0402PxxxxANTR



Coupler P/N CP0402PxxxxBN

| Application  | P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max. [dB] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|----------------------|---------------|-------------------|------------------|------------------|
| AMPS         | CP0402P0836BN | 824 - 849            | 22.00±0.5     | 0.20              | 28               | 27               |
|              | CP0402P0881BN | 869 - 894            | 21.70±0.5     | 0.20              | 28               |                  |
| GSM          | CP0402P0902BN | 890 - 915            | 21.50±0.5     | 0.20              | 28               |                  |
|              | CP0402P0947BN | 935 - 960            | 21.00±0.5     | 0.25              | 27               |                  |
| E-GSM        | CP0402P0897BN | 880 - 915            | 21.50±0.5     | 0.20              | 28               |                  |
|              | CP0402P0942BN | 925 - 960            | 21.00±0.5     | 0.25              | 27               |                  |
| PDC          | CP0402P1441BN | 1429 - 1453          | 17.50±0.5     | 0.25              | 24               |                  |
| PCN          | CP0402P1747BN | 1710 - 1785          | 16.00±0.5     | 0.30              | 23               |                  |
|              | CP0402P1842BN | 1805 - 1880          | 15.50±0.5     | 0.35              | 23               |                  |
| PCS          | CP0402P1880BN | 1850 - 1910          | 15.50±0.5     | 0.35              | 23               |                  |
|              | CP0402P1960BN | 1930 - 1990          | 15.00±0.5     | 0.35              | 22               |                  |
| PHP          | CP0402P1907BN | 1895 - 1920          | 15.50±0.5     | 0.35              | 23               |                  |
| DECT         | CP0402P1890BN | 1880 - 1900          | 15.50±0.5     | 0.35              | 23               |                  |
| Wireless LAN | CP0402P2442BN | 2400 - 2484          | 13.30±0.5     | 0.40              | 21               |                  |
| WiFi         | CP0402P3500BN | 3450 - 3550          | 9.40±0.5      | 0.80              | 18               | 14               |
|              | CP0402P5000BN | 4950 - 5050          | 7.40±0.5      | 1.20              | 14               | 13               |
|              | CP0402P5500BN | 5450 - 5550          | 6.70±0.5      | 1.60              | 14               | 13               |
|              | CP0402P6000BN | 5950 - 6050          | 6.10±0.5      | 2.00              | 14               | 13               |

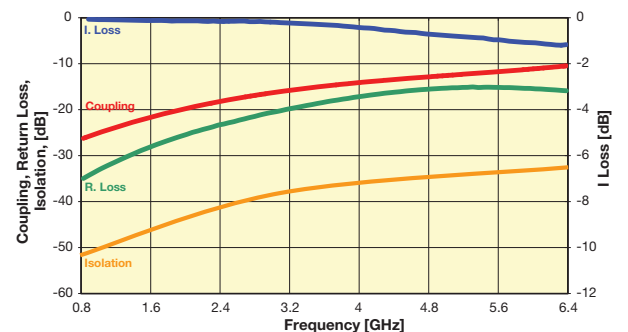
CP0402PxxxxBNTR



Coupler P/N CP0402PxxxxEN

| Application  | P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max. [dB] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|----------------------|---------------|-------------------|------------------|------------------|
| AMPS         | CP0402P0836EN | 824 - 849            | 27.20±0.5     | 0.20              | 35               | 25               |
|              | CP0402P0881EN | 869 - 894            | 26.80±0.5     | 0.20              | 34               |                  |
| GSM          | CP0402P0902EN | 890 - 915            | 26.50±0.5     | 0.20              | 34               |                  |
|              | CP0402P0947EN | 935 - 960            | 26.00±0.5     | 0.20              | 34               |                  |
| E-GSM        | CP0402P0897EN | 880 - 915            | 26.50±0.5     | 0.20              | 34               | 23               |
|              | CP0402P0942EN | 925 - 960            | 26.00±0.5     | 0.20              | 34               |                  |
| PDC          | CP0402P1441EN | 1429 - 1453          | 22.30±0.5     | 0.25              | 29               |                  |
| PCN          | CP0402P1747EN | 1710 - 1785          | 20.50±0.5     | 0.25              | 27               |                  |
|              | CP0402P1842EN | 1805 - 1880          | 20.30±0.5     | 0.25              | 26               |                  |
| PCS          | CP0402P1880EN | 1850 - 1910          | 20.00±0.5     | 0.25              | 26               |                  |
|              | CP0402P1960EN | 1930 - 1990          | 20.00±0.5     | 0.25              | 26               |                  |
| PHP          | CP0402P1907EN | 1895 - 1920          | 20.00±0.5     | 0.25              | 26               |                  |
| DECT         | CP0402P1890EN | 1880 - 1900          | 20.00±0.5     | 0.25              | 26               |                  |
| Wireless LAN | CP0402P2442EN | 2400 - 2484          | 18.00±0.5     | 0.35              | 23               |                  |
| WiFi         | CP0402P3500EN | 3450 - 3550          | 15.00±0.5     | 0.37              | 20               | 16               |
|              | CP0402P5000EN | 4950 - 5050          | 12.50±0.5     | 0.50              | 18               | 13               |
|              | CP0402P5500EN | 5450 - 5550          | 11.50±0.5     | 0.65              | 16               | 13               |
|              | CP0402P6000EN | 5950 - 6050          | 11.10±0.5     | 0.70              | 15               | 13               |

CP0402PxxxxENTR



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| <a href="#"><u>CP0402P1950ENTR</u></a> | <a href="#"><u>CP0402P1950BNTR</u></a> | <a href="#"><u>CP0402P1950ANTR</u></a> | <a href="#"><u>CP0402P1907ENTR</u></a> | <a href="#"><u>CP0402P2442ANTR</u></a> |
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| <a href="#"><u>CP0402P1960ENTR</u></a> | <a href="#"><u>CP0402P1747ENTR</u></a> | <a href="#"><u>CP0402P1842ENTR</u></a> | <a href="#"><u>CP0402P2140ANTR</u></a> | <a href="#"><u>CP0402P0836BNTR</u></a> |
| <a href="#"><u>CP0402P3500BNTR</u></a> | <a href="#"><u>CP0402P0881BNTR</u></a> | <a href="#"><u>CP0402P1907ANTR</u></a> | <a href="#"><u>CP0402P0947ANTR</u></a> | <a href="#"><u>CP0402P2140BNTR</u></a> |
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| <a href="#"><u>CP0402P0881ENTR</u></a> | <a href="#"><u>CP0402P0947BNTR</u></a> | <a href="#"><u>CP0402P0942ENTR</u></a> | <a href="#"><u>CP0402P0942BNTR</u></a> | <a href="#"><u>CP0402P1747ANTR</u></a> |
| <a href="#"><u>CP0402P0902ENTR</u></a> | <a href="#"><u>CP0402P0902BNTR</u></a> | <a href="#"><u>CP0402P0902ANTR</u></a> | <a href="#"><u>CP0402P1747BNTR</u></a> | <a href="#"><u>CP0402P0897BNTR</u></a> |
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