

## CP0402 High Directivity LGA Termination Directional Couplers

### ITF 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 frequency bands compatible with various types of high frequency wireless systems.

### APPLICATIONS:

- Mobile communications
- Satellite TV receivers
- GPS
- Vehicle location systems
- Wireless LAN's

### Land Grid Array Advantages:

- Inherent Low Profile
- Self Alignment during Reflow
- Excellent Solderability
- Low Parasitics
- Better Heat Dissipation

### PART NUMBER CODE:

**CP 0402 X XXXX X L TR**  
 Type Frequency Sub- LGA Taped &  
 (MHz) Type Term. Reeled  
**L=Sn90Pb10**  
**N=Sn100**

### 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, Ir, 4 hours

### TERMINATION:

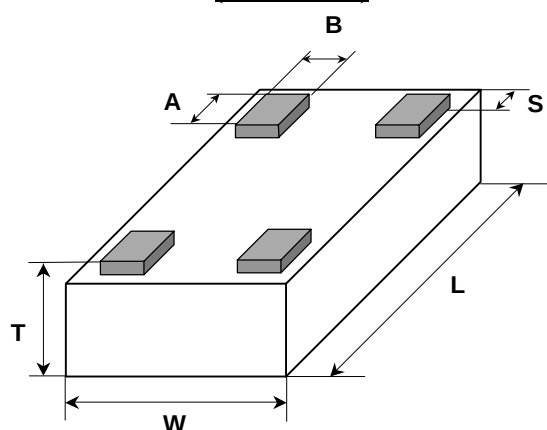
Nickel/Solder coating (Sn, Pb) compatible with automatic soldering technologies: reflow, wave soldering, vapor phase and manual.

### OPERATING TEMPERATURE:

-40°C to +85°C

### DIMENSIONS - mm (inches)

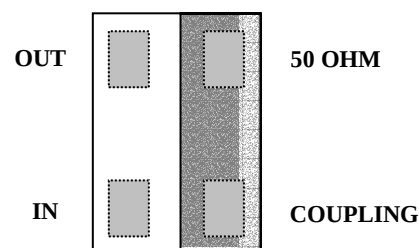
(Bottom View)



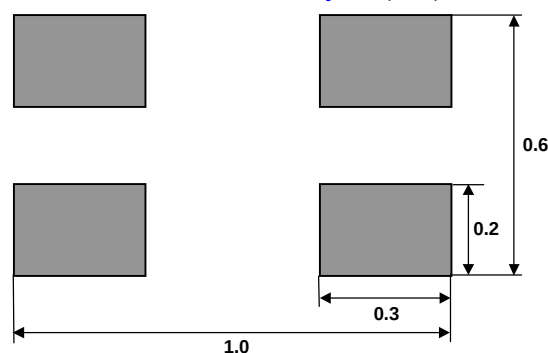
|          |                            |
|----------|----------------------------|
| <b>L</b> | 1.0±0.05<br>(0.040±0.002)  |
| <b>W</b> | 0.58±0.04<br>(0.023±0.002) |
| <b>T</b> | 0.35±0.05<br>(0.014±0.002) |

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

### TERMINALS ( Top View)

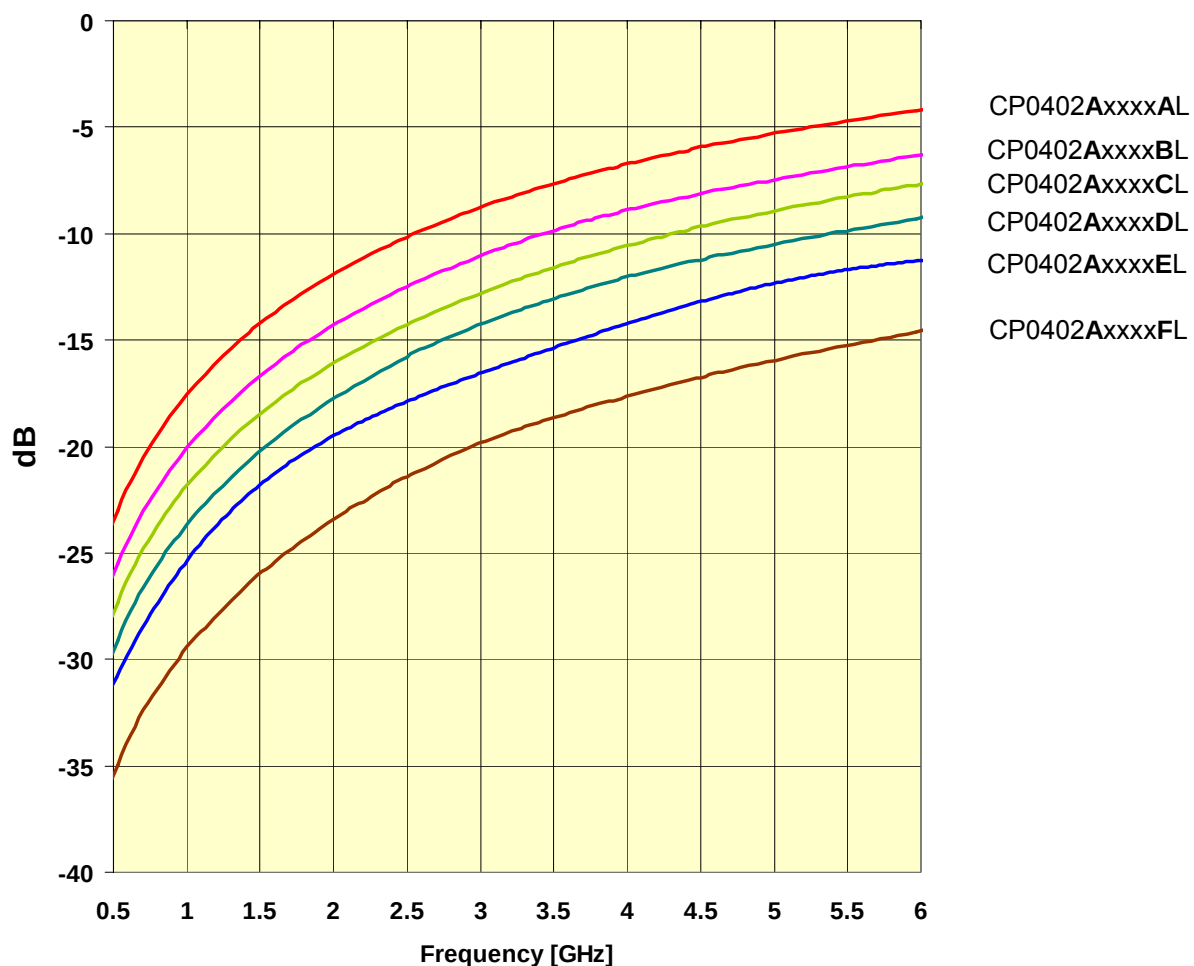


### Recommended Pad Layout (mm)



Coupler Type Selection Graph

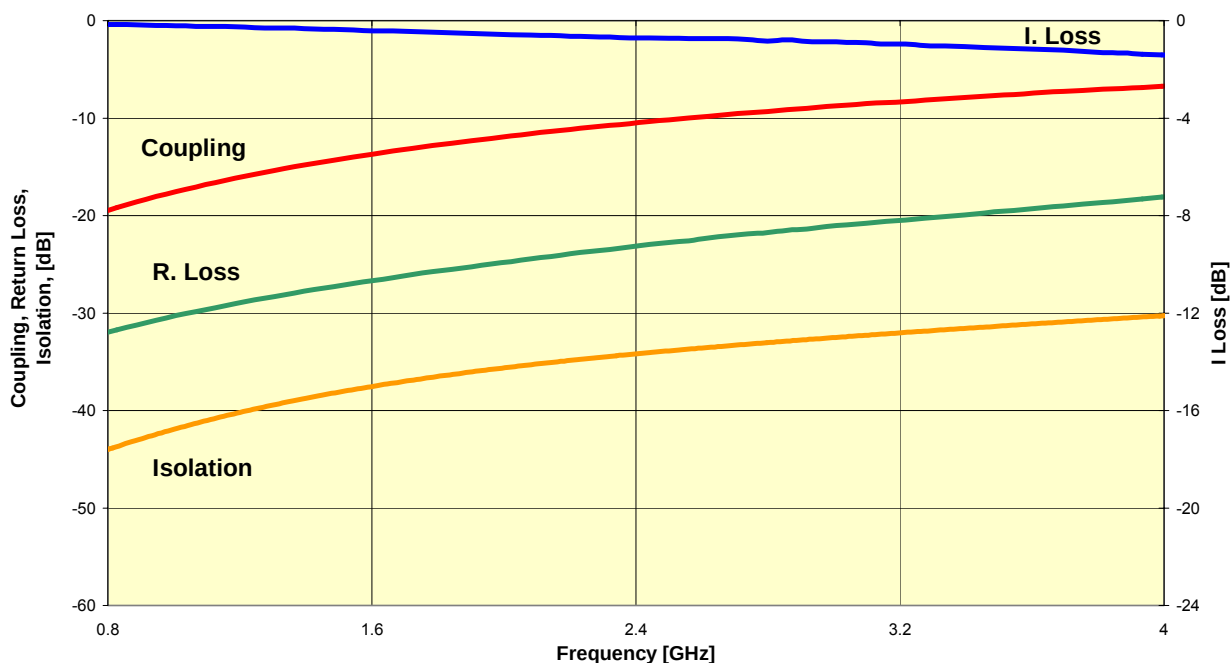
**CP0402 - Type Selection Chart**  
Coupling vs. Frequency



**Directional Coupler Type CP0402AxxxxALTR**

| APPLICATION  | P/N           | FREQUENCY BAND [ MHz ] | COUPLING [ dB ] | I. Loss max [ dB ] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|------------------------|-----------------|--------------------|------------------|------------------|
| AMPS         | CP0402A0836AL | 824 ÷ 849              | 19.10           | 0.25               | 32               | 21               |
|              | CP0402A0881AL | 869 ÷ 894              | 18.60           | 0.25               | 31               |                  |
| GSM          | CP0402A0902AL | 890 ÷ 915              | 18.50           | 0.25               | 31               |                  |
|              | CP0402A0947AL | 935 ÷ 960              | 18.00           | 0.25               | 31               |                  |
| E-GSM        | CP0402A0897AL | 880 ÷ 915              | 18.50           | 0.25               | 31               |                  |
|              | CP0402A0942AL | 925 ÷ 960              | 18.00           | 0.25               | 31               |                  |
| PDC          | CP0402A1441AL | 1429 ÷ 1453            | 14.50           | 0.40               | 28               |                  |
| PCN          | CP0402A1747AL | 1710 ÷ 1785            | 13.00           | 0.50               | 26               |                  |
|              | CP0402A1842AL | 1805 ÷ 1880            | 12.50           | 0.50               | 26               |                  |
| PCS          | CP0402A1880AL | 1850 ÷ 1910            | 12.30           | 0.50               | 25               |                  |
|              | CP0402A1960AL | 1930 ÷ 1990            | 12.00           | 0.50               | 25               |                  |
| PHP          | CP0402A1907AL | 1895 ÷ 1920            | 12.30           | 0.50               | 25               |                  |
| DECT         | CP0402A1890AL | 1880 ÷ 1900            | 12.30           | 0.50               | 25               |                  |
| Wireless LAN | CP0402A2442AL | 2400 ÷ 2484            | 10.30           | 0.70               | 23               |                  |

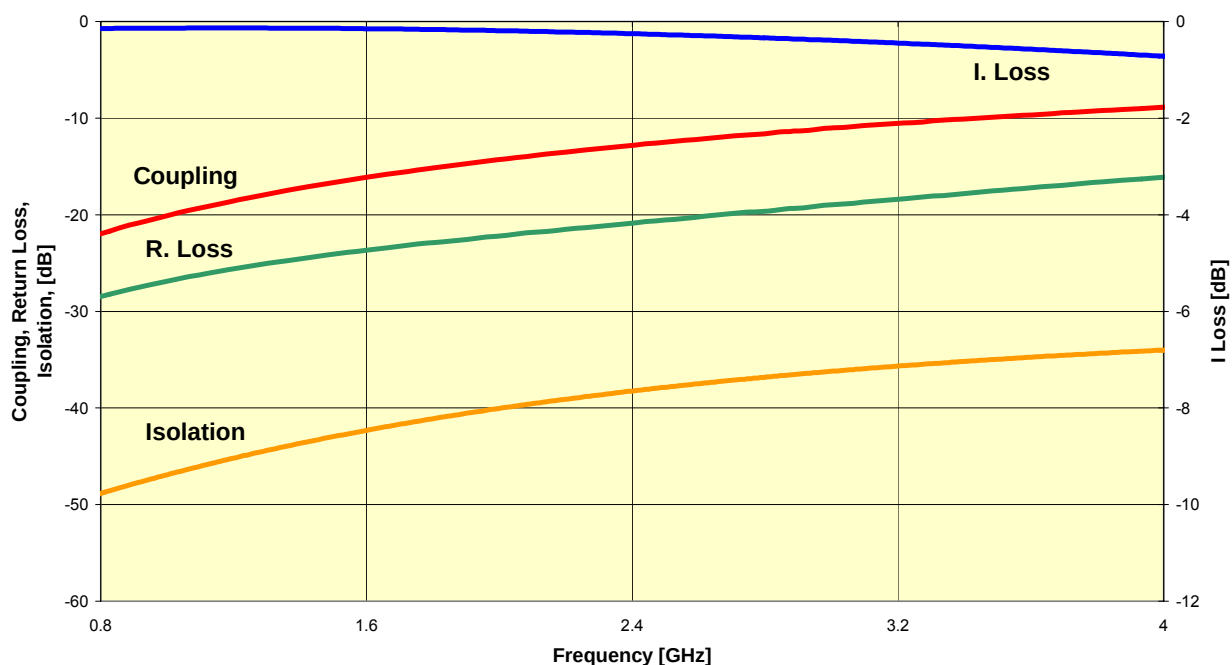
**CP0402AxxxxALTR**



**Directional Coupler Type CP0402AxxxxBLTR**

| APPLICATION  | P/N           | FREQUENCY BAND [ MHz ] | COUPLING [ dB ] | I. Loss max [ dB ] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|------------------------|-----------------|--------------------|------------------|------------------|
| AMPS         | CP0402A0836BL | 824 ÷ 849              | 22.00           | 0.20               | 28               | 27               |
|              | CP0402A0881BL | 869 ÷ 894              | 21.70           | 0.20               | 28               |                  |
| GSM          | CP0402A0902BL | 890 ÷ 915              | 21.50           | 0.20               | 28               |                  |
|              | CP0402A0947BL | 935 ÷ 960              | 21.00           | 0.25               | 27               |                  |
| E-GSM        | CP0402A0897BL | 880 ÷ 915              | 21.50           | 0.20               | 28               |                  |
|              | CP0402A0942BL | 925 ÷ 960              | 21.00           | 0.25               | 27               |                  |
| PDC          | CP0402A1441BL | 1429 ÷ 1453            | 17.50           | 0.25               | 24               |                  |
| PCN          | CP0402A1747BL | 1710 ÷ 1785            | 16.00           | 0.30               | 23               |                  |
|              | CP0402A1842BL | 1805 ÷ 1880            | 15.50           | 0.35               | 23               |                  |
| PCS          | CP0402A1880BL | 1850 ÷ 1910            | 15.50           | 0.35               | 23               |                  |
|              | CP0402A1960BL | 1930 ÷ 1990            | 15.00           | 0.35               | 22               |                  |
| PHP          | CP0402A1907BL | 1895 ÷ 1920            | 15.50           | 0.35               | 23               |                  |
| DECT         | CP0402A1890BL | 1880 ÷ 1900            | 15.50           | 0.35               | 23               |                  |
| Wireless LAN | CP0402A2442BL | 2400 ÷ 2484            | 13.30           | 0.40               | 21               |                  |

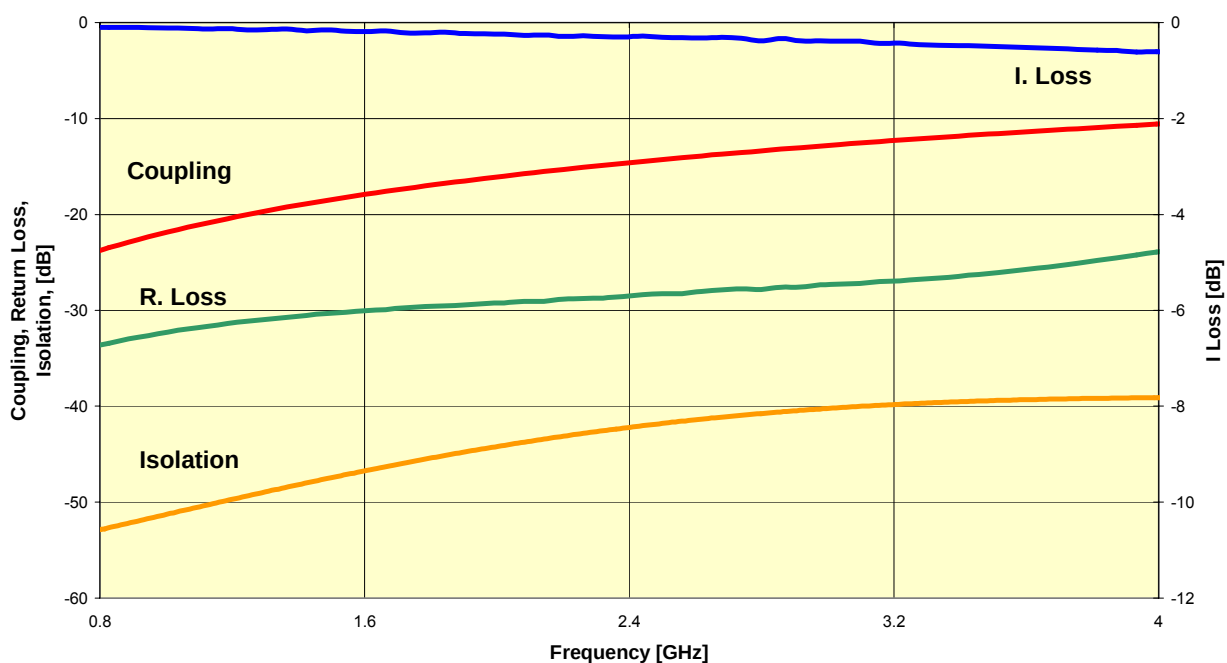
**CP0402AxxxxBLTR**



**Directional Coupler Type CP0402AxxxxCLTR**

| APPLICATION  | P/N           | FREQUENCY BAND [ MHz ] | COUPLING [ dB ] | I. Loss max [ dB ] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|------------------------|-----------------|--------------------|------------------|------------------|
| AMPS         | CP0402A0836CL | 824 ÷ 849              | 23.60           | 0.20               | 33               | 22               |
|              | CP0402A0881CL | 869 ÷ 894              | 23.00           | 0.20               | 33               |                  |
| GSM          | CP0402A0902CL | 890 ÷ 915              | 23.00           | 0.20               | 26               |                  |
|              | CP0402A0947CL | 935 ÷ 960              | 22.50           | 0.20               | 33               |                  |
| E-GSM        | CP0402A0897CL | 880 ÷ 915              | 23.00           | 0.20               | 25               |                  |
|              | CP0402A0942CL | 925 ÷ 960              | 22.50           | 0.20               | 32               |                  |
| PDC          | CP0402A1441CL | 1429 ÷ 1453            | 19.00           | 0.25               | 31               | 30               |
| PCN          | CP0402A1747CL | 1710 ÷ 1785            | 17.20           | 0.25               | 30               |                  |
|              | CP0402A1842CL | 1805 ÷ 1880            | 17.00           | 0.25               | 30               |                  |
| PCS          | CP0402A1880CL | 1850 ÷ 1910            | 16.80           | 0.25               | 30               |                  |
|              | CP0402A1960CL | 1930 ÷ 1990            | 16.50           | 0.25               | 29               |                  |
| PHP          | CP0402A1907CL | 1895 ÷ 1920            | 16.80           | 0.25               | 29               |                  |
| DECT         | CP0402A1890CL | 1880 ÷ 1900            | 16.80           | 0.25               | 30               |                  |
| Wireless LAN | CP0402A2442CL | 2400 ÷ 2484            | 14.70           | 0.45               | 28               |                  |

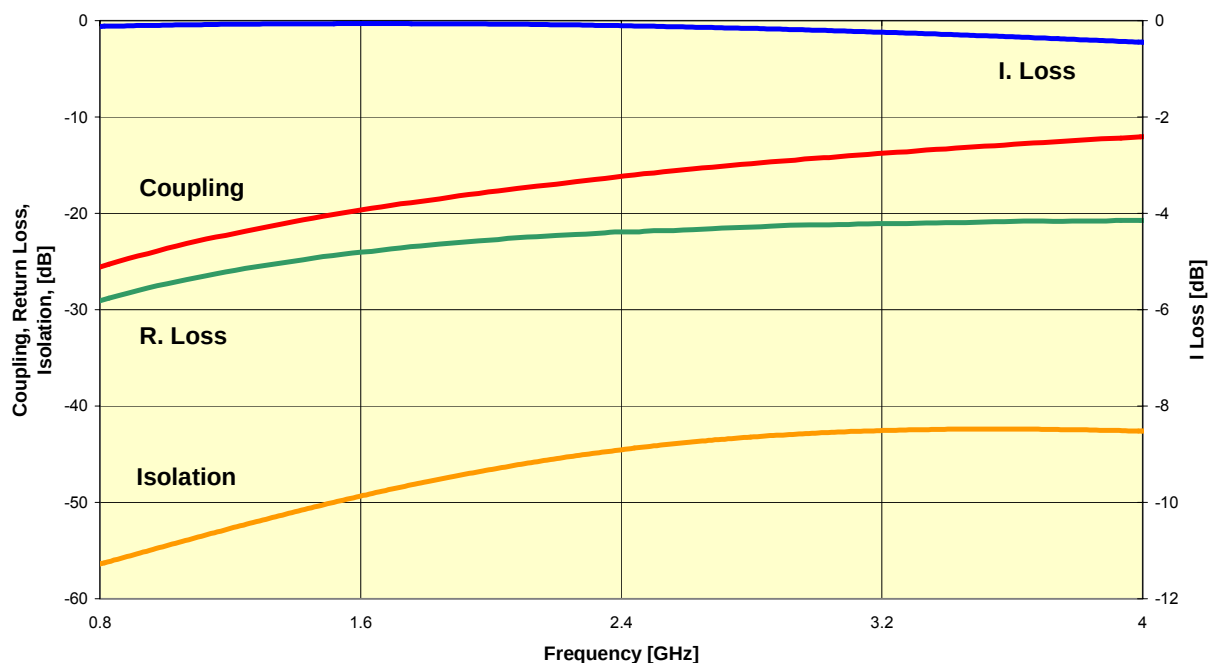
**CP0402AxxxxCLTR**



**Directional Coupler Type CP0402AxxxxDLTR**

| APPLICATION  | P/N           | FREQUENCY BAND [ MHz ] | COUPLING [ dB ] | I. Loss max [ dB ] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|------------------------|-----------------|--------------------|------------------|------------------|
| AMPS         | CP0402A0836DL | 824 ÷ 849              | 25.20           | 0.20               | 29               | 20               |
|              | CP0402A0881DL | 869 ÷ 894              | 24.80           | 0.20               | 28               |                  |
| GSM          | CP0402A0902DL | 890 ÷ 915              | 24.70           | 0.20               | 28               |                  |
|              | CP0402A0947DL | 935 ÷ 960              | 24.10           | 0.20               | 28               |                  |
| E-GSM        | CP0402A0897DL | 880 ÷ 915              | 24.70           | 0.20               | 28               |                  |
|              | CP0402A0942DL | 925 ÷ 960              | 24.10           | 0.20               | 28               |                  |
| PDC          | CP0402A1441DL | 1429 ÷ 1453            | 20.50           | 0.20               | 25               | 23               |
| PCN          | CP0402A1747DL | 1710 ÷ 1785            | 19.00           | 0.20               | 24               |                  |
|              | CP0402A1842DL | 1805 ÷ 1880            | 18.50           | 0.25               | 23               |                  |
| PCS          | CP0402A1880DL | 1850 ÷ 1910            | 18.20           | 0.25               | 23               |                  |
|              | CP0402A1960DL | 1930 ÷ 1990            | 18.00           | 0.25               | 23               |                  |
| PHP          | CP0402A1907DL | 1895 ÷ 1920            | 18.10           | 0.25               | 23               |                  |
| DECT         | CP0402A1890DL | 1880 ÷ 1900            | 18.20           | 0.25               | 23               |                  |
| Wireless LAN | CP0402A2442DL | 2400 ÷ 2484            | 16.00           | 0.35               | 22               |                  |

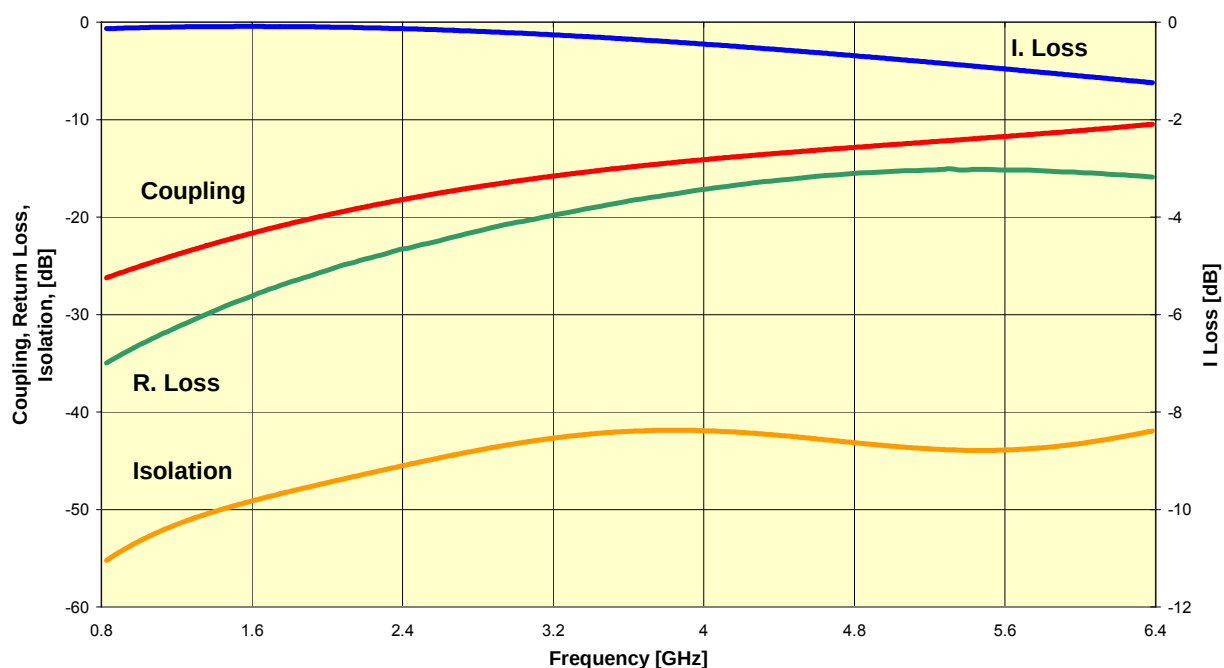
**CP0402AxxxxDLTR**



**Directional Coupler Type CP0402AxxxxELTR**

| APPLICATION  | P/N           | FREQUENCY BAND [ MHz ] | COUPLING [ dB ] | I. Loss max [ dB ] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|------------------------|-----------------|--------------------|------------------|------------------|
| AMPS         | CP0402A0836EL | 824 ÷ 849              | 27.20           | 0.20               | 35               | 25               |
|              | CP0402A0881EL | 869 ÷ 894              | 26.80           | 0.20               | 34               |                  |
| GSM          | CP0402A0902EL | 890 ÷ 915              | 26.50           | 0.20               | 34               |                  |
|              | CP0402A0947EL | 935 ÷ 960              | 26.00           | 0.20               | 34               |                  |
| E-GSM        | CP0402A0897EL | 880 ÷ 915              | 26.50           | 0.20               | 34               |                  |
|              | CP0402A0942EL | 925 ÷ 960              | 26.00           | 0.20               | 34               |                  |
| PDC          | CP0402A1441EL | 1429 ÷ 1453            | 22.30           | 0.25               | 29               | 23               |
| PCN          | CP0402A1747EL | 1710 ÷ 1785            | 20.50           | 0.25               | 27               |                  |
|              | CP0402A1842EL | 1805 ÷ 1880            | 20.30           | 0.25               | 26               |                  |
| PCS          | CP0402A1880EL | 1850 ÷ 1910            | 20.00           | 0.25               | 26               |                  |
|              | CP0402A1960EL | 1930 ÷ 1990            | 20.00           | 0.25               | 26               |                  |
| PHP          | CP0402A1907EL | 1895 ÷ 1920            | 20.00           | 0.25               | 26               |                  |
| DECT         | CP0402A1890EL | 1880 ÷ 1900            | 20.00           | 0.25               | 26               |                  |
| Wireless LAN | CP0402A2442EL | 2400 ÷ 2484            | 18.00           | 0.35               | 23               |                  |

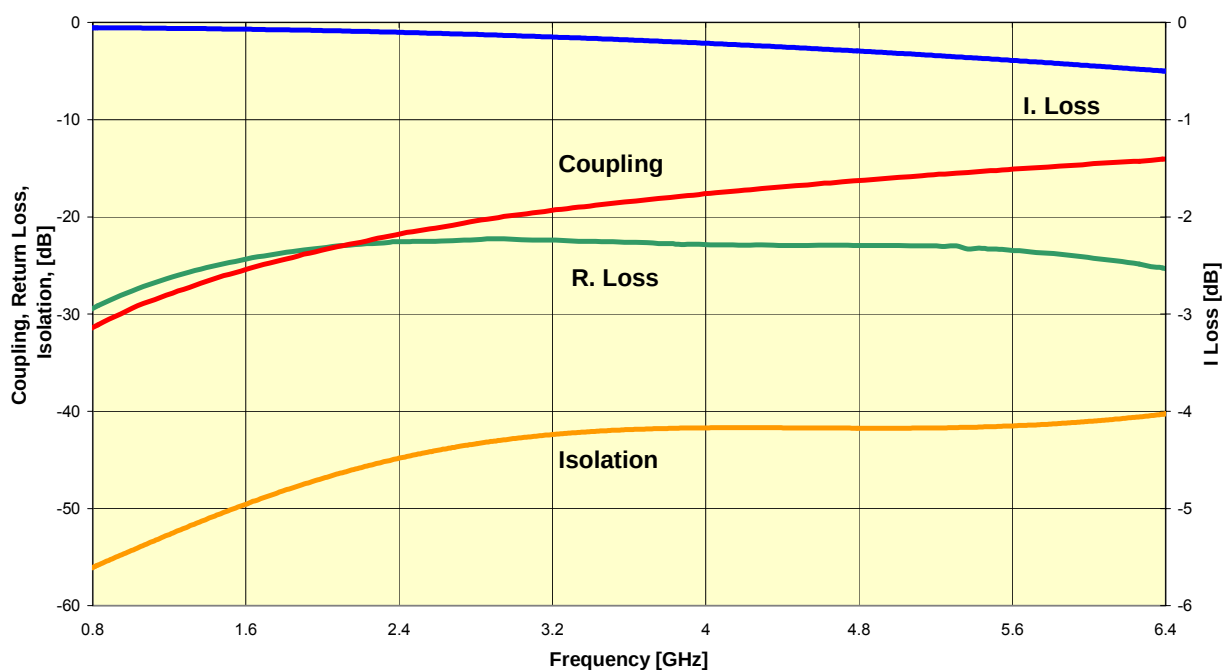
**CP0402AxxxxELTR**



**Directional Coupler Type CP0402AxxxxFLTR**

| APPLICATION  | P/N           | FREQUENCY BAND [ MHz ] | COUPLING [ dB ] | I. Loss max [ dB ] | Return Loss [dB] | Directivity [dB] |
|--------------|---------------|------------------------|-----------------|--------------------|------------------|------------------|
| AMPS         | CP0402A0836FL | 824 ÷ 849              | 31.00           | 0.20               | 29.10            | 11               |
|              | CP0402A0881FL | 869 ÷ 894              | 30.70           | 0.20               | 28.60            |                  |
| GSM          | CP0402A0902FL | 890 ÷ 915              | 30.60           | 0.20               | 28.50            |                  |
|              | CP0402A0947FL | 935 ÷ 960              | 30.00           | 0.20               | 28.10            |                  |
| E-GSM        | CP0402A0897FL | 880 ÷ 915              | 30.60           | 0.20               | 28.50            |                  |
|              | CP0402A0942FL | 925 ÷ 960              | 30.00           | 0.20               | 28.10            |                  |
| PDC          | CP0402A1441FL | 1429 ÷ 1453            | 26.50           | 0.20               | 25.00            |                  |
| PCN          | CP0402A1747FL | 1710 ÷ 1785            | 25.00           | 0.20               | 23.80            |                  |
|              | CP0402A1842FL | 1805 ÷ 1880            | 24.50           | 0.20               | 23.60            |                  |
| PCS          | CP0402A1880FL | 1850 ÷ 1910            | 24.20           | 0.20               | 23.50            |                  |
|              | CP0402A1960FL | 1930 ÷ 1990            | 24.00           | 0.20               | 23.30            |                  |
| PHP          | CP0402A1907FL | 1895 ÷ 1920            | 24.20           | 0.20               | 23.40            |                  |
| DECT         | CP0402A1890FL | 1880 ÷ 1900            | 24.20           | 0.20               | 23.50            |                  |
| Wireless LAN | CP0402A2442FL | 2400 ÷ 2484            | 22.00           | 0.25               | 22.60            |                  |

**CP0402AxxxxFLTR**





## CP0402 / CP0603 High Directivity Couplers

### Test Jigs

#### GENERAL DESCRIPTION

These jigs are designed for testing the CP0402 and CP0603 High Directivity Couplers using a Vector Network Analyzer.

They consist of a dielectric substrate, having 50Ω microstrips as conducting lines and a bottom ground plane located at a distance of 0.254mm from the microstrips.

The substrate used is Neltec's NH9338ST0254C1BC.

The connectors are SMA type (female), 'Johnson Components Inc.' Product P/N: 142-0701-841.

Both a measurement jig and a calibration jig are provided.

The calibration jig is designed for a full 2-port calibration, and consists of an open line, short line and through line. LOAD calibration can be done by a 50Ω SMA termination.

#### MEASUREMENT PROCEDURE

When measuring a component, it can be either soldered or pressed using a non-metallic stick until all four ports touch the appropriate pads. Set the VNA to the relevant frequency band. Connect the VNA using a 10dB attenuator on the jig terminal connected to port 2. Follow the VNA's instruction manual and use the [calibration jig](#) to perform a full 2-Port calibration in the required bandwidths.

**Place the coupler on the [measurement jig](#) as follows:**

Input (Coupler) → Connector 1 (Jig). Termination (Coupler) → Connector 3 (Jig).

Output (Coupler) → Connector 2 (Jig). Coupling (Coupler) → Connector 4 (Jig).

**To measure I.Loss connect:**

Connector1 (Jig) → Port1 (VNA)

Connector2 (Jig) → Port2 (VNA)

Connector3 (Jig) → 50Ω

Connector4 (Jig) → 50Ω.

**To measure R.Loss and Coupling connect:**

Connector1 (Jig) → Port1(VNA) Connector3 (Jig) → 50Ω

Connector2 (Jig) → 50Ω

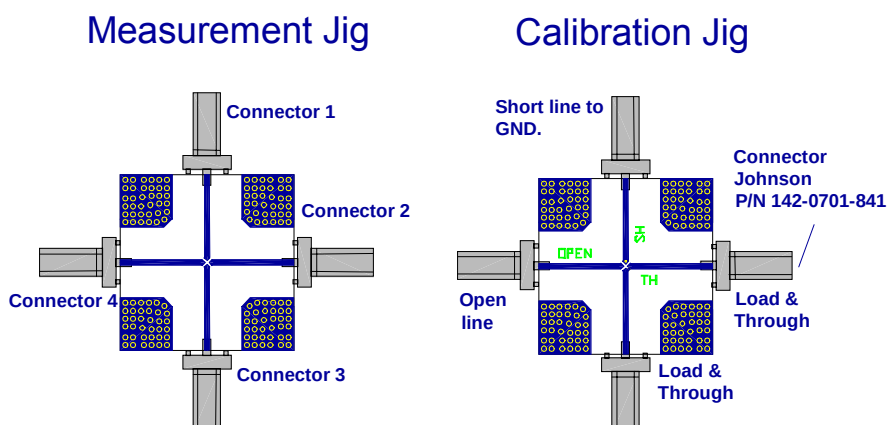
Connector4 (Jig) → Port2 (VNA).

**To measure Isolation connect:**

Connector1 (Jig) → 50Ω

Connector3 (Jig) → 50Ω

Connector2 (Jig) → Port1(VNA) Connector4 (Jig) → Port2 (VNA).



# AMEYA360

## Components Supply Platform

Authorized Distribution Brand :



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