

# Thin-Film RF/Microwave Directional Couplers

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

## CP0603 SMD Type



### GENERAL DESCRIPTION

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

The ITF SMD 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

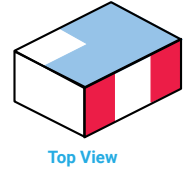
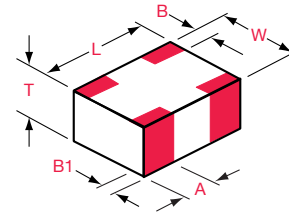
- 4G LTE
- 5G LTE
- Base Stations.
- Automotive
- Industrial
- Mobile Communications
- Satellite TV Receivers
- GPS
- Vehicle Location Systems
- Wireless LAN's

### FEATURES

- Miniature Size: 0603
- Frequency Range: 800MHz - 3GHz
- Characteristic Impedance: 50Ω
- Operating / Storage Temp.: -40°C to +85°C
- Power Rating: 3W Continuous
- Low Profile
- Rugged Construction
- Taped and Reeled

### DIMENSIONS:

millimeters (inches)



Bottom View

|    | 0603                             |
|----|----------------------------------|
| L  | 1.6±0.1<br>(0.063±0.004)         |
| W  | 0.84±0.1<br>(0.033±0.004)        |
| T  | 0.60±0.1<br>(0.028±0.004)        |
| A  | 0.35±0.15<br>(0.014±0.006)       |
| B  | 0.175±0.1<br>(0.007±0.004)       |
| B1 | 0.00±0.1/0-0.0 (0.00±0.004/-0.0) |

### HOW TO ORDER

|                                           |                             |                  |                                 |                      |                                                               |                                                   |
|-------------------------------------------|-----------------------------|------------------|---------------------------------|----------------------|---------------------------------------------------------------|---------------------------------------------------|
| <b>CP</b><br>Style<br>Directional Coupler | <b>0603</b><br>Size<br>0603 | <b>X</b><br>Type | <b>****</b><br>Frequency<br>MHz | <b>X</b><br>Sub-Type | <b>S</b><br>Termination Code<br>W = Sn90, Pb10<br>**S = Sn100 | <b>TR</b><br>Packaging Code<br>TR = Tape and Reel |
|-------------------------------------------|-----------------------------|------------------|---------------------------------|----------------------|---------------------------------------------------------------|---------------------------------------------------|

\*\*RoHS compliant

### QUALITY INSPECTION

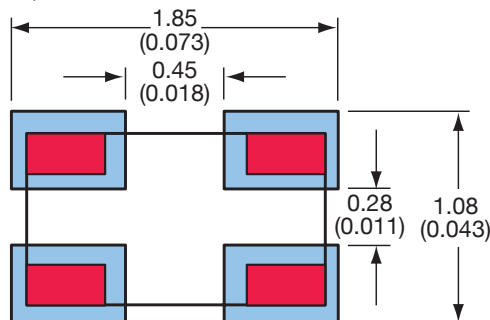
Finished parts are 100% tested for electrical parameters and visual characteristics. Each production lot is evaluated on a sample basis for:

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

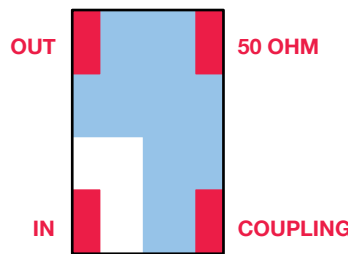
### TERMINATION

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

### Recommended Pad Layout Dimensions mm (inches)



### TERMINALS (TOP VIEW)



Not RoHS Compliant

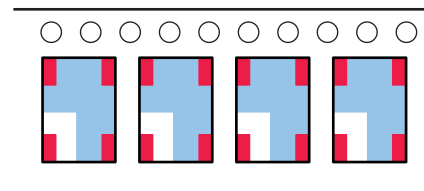


LEAD-FREE  
LEAD-FREE COMPATIBLE  
COMPONENT



RoHS  
COMPLIANT

For RoHS compliant products,  
please select correct termination style.



Orientation in tape

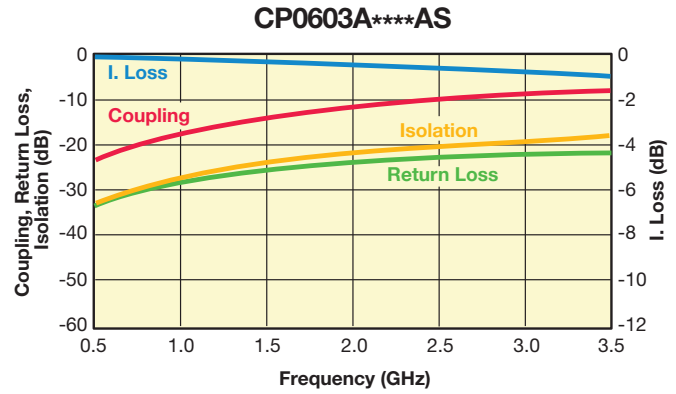
# Thin-Film RF/Microwave Directional Couplers

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

CP0603 SMD Type

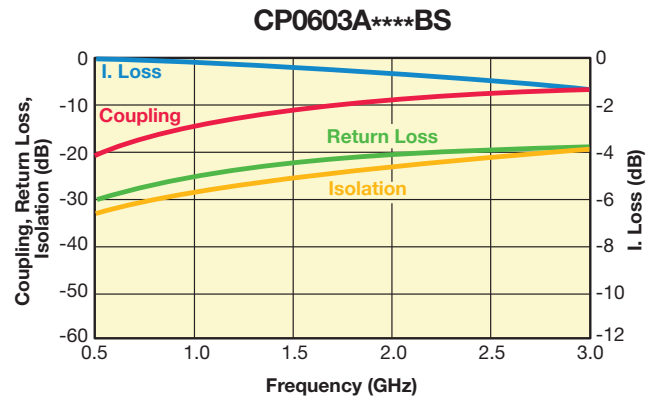
**Coupler P/N CP0603A\*\*\*\*AS**

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---------------|----------------------|---------------|-------------|----------|
| CP0603A0836AS | 824 - 849            | 18.5±1        | 0.25        | 1.2      |
| CP0603A0881AS | 869 - 894            | 18.5±1        | 0.25        | 1.2      |
| CP0603A0902AS | 890 - 915            | 18±1          | 0.25        | 1.2      |
| CP0603A0947AS | 935 - 960            | 17.5±1        | 0.25        | 1.2      |
| CP0603A0897AS | 880 - 915            | 18±1          | 0.25        | 1.2      |
| CP0603A0942AS | 925 - 960            | 17.5±1        | 0.25        | 1.2      |
| CP0603A1441AS | 1429 - 1453          | 14±1          | 0.4         | 1.2      |
| CP0603A1747AS | 1710 - 1785          | 12.5±1        | 0.6         | 1.2      |
| CP0603A1842AS | 1805 - 1880          | 12±1          | 0.6         | 1.2      |
| CP0603A1880AS | 1850 - 1910          | 12±1          | 0.6         | 1.2      |
| CP0603A1960AS | 1930 - 1990          | 11.5±1        | 0.65        | 1.2      |
| CP0603A1907AS | 1895 - 1920          | 12±1          | 0.6         | 1.2      |
| CP0603A1890AS | 1880 - 1900          | 12±1          | 0.6         | 1.2      |
| CP0603A2442AS | 2400 - 2484          | 10±1          | 0.85        | 1.2      |



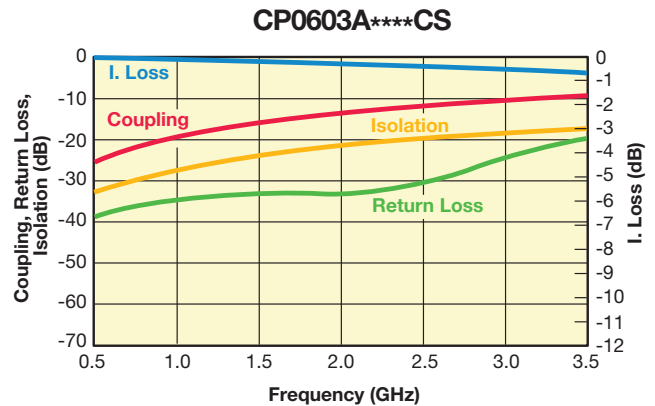
**Coupler P/N CP0603A\*\*\*\*BS**

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---------------|----------------------|---------------|-------------|----------|
| CP0603A0836BS | 824 - 849            | 16±1          | 0.25        | 1.2      |
| CP0603A0881BS | 869 - 894            | 15.5±1        | 0.25        | 1.2      |
| CP0603A0902BS | 890 - 915            | 15.5±1        | 0.25        | 1.2      |
| CP0603A0947BS | 935 - 960            | 15±1          | 0.25        | 1.2      |
| CP0603A0897BS | 880 - 915            | 15.5±1        | 0.25        | 1.2      |
| CP0603A0942BS | 925 - 960            | 15±1          | 0.25        | 1.2      |
| CP0603A1441BS | 1429 - 1453          | 11.5±1        | 0.55        | 1.2      |
| CP0603A1747BS | 1710 - 1785          | 10±1          | 0.8         | 1.3      |
| CP0603A1842BS | 1805 - 1880          | 9.5±1         | 0.8         | 1.3      |
| CP0603A1880BS | 1850 - 1910          | 9±1           | 0.8         | 1.4      |
| CP0603A1960BS | 1930 - 1990          | 9±1           | 0.8         | 1.4      |
| CP0603A1907BS | 1895 - 1920          | 9±1           | 0.8         | 1.4      |
| CP0603A1890BS | 1880 - 1900          | 9±1           | 0.8         | 1.4      |
| CP0603A2442BS | 2400 - 2484          | 7.5±1         | 1.1         | 1.4      |



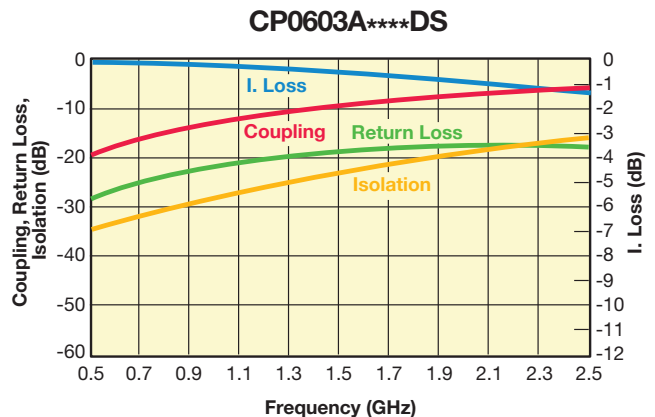
**Coupler P/N CP0603A\*\*\*\*CS**

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---------------|----------------------|---------------|-------------|----------|
| CP0603A0836CS | 824 - 849            | 21±1          | 0.25        | 1.2      |
| CP0603A0881CS | 869 - 894            | 20.5±1        | 0.25        | 1.2      |
| CP0603A0902CS | 890 - 915            | 20.5±1        | 0.25        | 1.2      |
| CP0603A0947CS | 935 - 960            | 20±1          | 0.25        | 1.2      |
| CP0603A0897CS | 880 - 915            | 20.5±1        | 0.25        | 1.2      |
| CP0603A0942CS | 925 - 960            | 20±1          | 0.25        | 1.2      |
| CP0603A1441CS | 1429 - 1453          | 16.5±1        | 0.55        | 1.2      |
| CP0603A1747CS | 1710 - 1785          | 15±1          | 0.8         | 1.2      |
| CP0603A1842CS | 1805 - 1880          | 14.5±1        | 0.8         | 1.2      |
| CP0603A1880CS | 1850 - 1910          | 14.5±1        | 0.8         | 1.2      |
| CP0603A1960CS | 1930 - 1990          | 14±1          | 0.8         | 1.2      |
| CP0603A1907CS | 1895 - 1920          | 14.5±1        | 0.8         | 1.2      |
| CP0603A1890CS | 1880 - 1900          | 14.5±1        | 0.8         | 1.2      |
| CP0603A2442CS | 2400 - 2484          | 12.5±1        | 1.1         | 1.2      |



**Coupler P/N CP0603A\*\*\*\*DS**

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---------------|----------------------|---------------|-------------|----------|
| CP0603A0836DS | 824 - 849            | 15.0±1        | 0.25        | 1.2      |
| CP0603A0881DS | 869 - 894            | 14.5±1        | 0.25        | 1.2      |
| CP0603A0902DS | 890 - 915            | 14.5±1        | 0.25        | 1.2      |
| CP0603A0947DS | 935 - 960            | 14±1          | 0.25        | 1.2      |
| CP0603A0897DS | 880 - 915            | 14.5±1        | 0.25        | 1.2      |
| CP0603A0942DS | 925 - 960            | 14±1          | 0.25        | 1.2      |
| CP0603A1441DS | 1429 - 1453          | 10.5±1        | 0.7         | 1.3      |
| CP0603A1747DS | 1710 - 1785          | 9±1           | 0.9         | 1.5      |
| CP0603A1842DS | 1805 - 1880          | 8.5±1         | 0.9         | 1.5      |
| CP0603A1880DS | 1850 - 1910          | 8.5±1         | 1.0         | 1.5      |
| CP0603A1960DS | 1930 - 1990          | 8±1           | 1.0         | 1.5      |
| CP0603A1907DS | 1895 - 1920          | 8.5±1         | 1.0         | 1.5      |
| CP0603A1890DS | 1880 - 1900          | 8.5±1         | 1.0         | 1.5      |
| CP0603A2442DS | 2400 - 2484          | 6.5±1         | 1.5         | 1.5      |



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

# Thin-Film RF/Microwave Directional Couplers

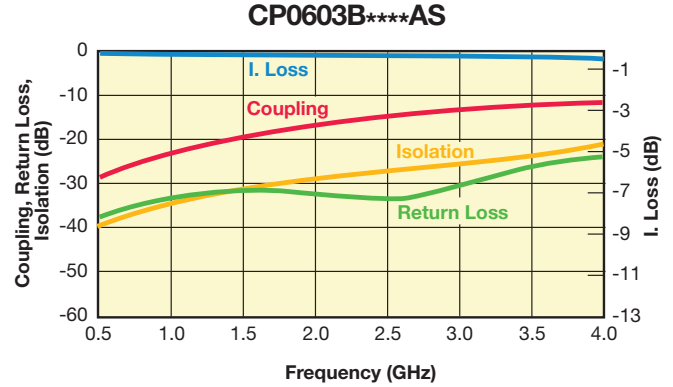
CP0302/CP0402/CP0603/CP0805 and DB0603N/DB0805 3dB 90°

CP0603 SMD Type



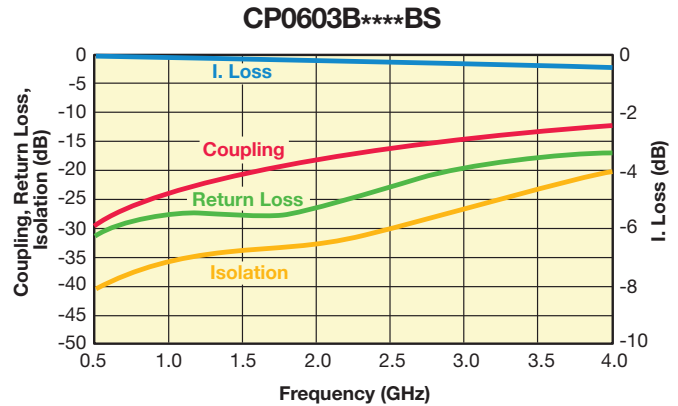
Coupler P/N CP0603B\*\*\*\*AS

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---------------|----------------------|---------------|-------------|----------|
| CP0603B0836AS | 824 - 849            | 24.5±1        | 0.2         | 1.2      |
| CP0603B0881AS | 869 - 894            | 24±1          | 0.2         | 1.2      |
| CP0603B0902AS | 890 - 915            | 24±1          | 0.2         | 1.2      |
| CP0603B0947AS | 935 - 960            | 23.5±1        | 0.2         | 1.2      |
| CP0603B0897AS | 880 - 915            | 24±1          | 0.2         | 1.2      |
| CP0603B0942AS | 925 - 960            | 23.5±1        | 0.2         | 1.2      |
| CP0603B1441AS | 1429 - 1453          | 20±1          | 0.25        | 1.2      |
| CP0603B1747AS | 1710 - 1785          | 18±1          | 0.25        | 1.2      |
| CP0603B1842AS | 1805 - 1880          | 17.5±1        | 0.3         | 1.2      |
| CP0603B1880AS | 1850 - 1910          | 17.5±1        | 0.3         | 1.2      |
| CP0603B1960AS | 1930 - 1990          | 17.5±1        | 0.3         | 1.2      |
| CP0603B1907AS | 1895 - 1920          | 17.5±1        | 0.3         | 1.2      |
| CP0603B1890AS | 1880 - 1900          | 17.5±1        | 0.3         | 1.2      |
| CP0603B2442AS | 2400 - 2484          | 15.5±1        | 0.45        | 1.2      |



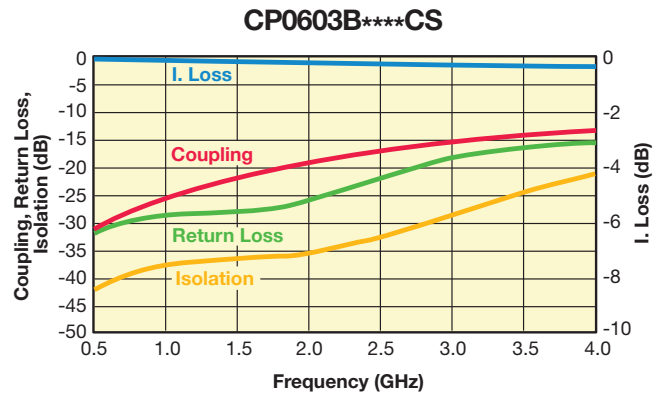
Coupler P/N CP0603B\*\*\*\*BS

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---------------|----------------------|---------------|-------------|----------|
| CP0603B0836BS | 824 - 849            | 25.5±1        | 0.2         | 1.2      |
| CP0603B0881BS | 869 - 894            | 25±1          | 0.2         | 1.2      |
| CP0603B0902BS | 890 - 915            | 25±1          | 0.2         | 1.2      |
| CP0603B0947BS | 935 - 960            | 24.5±1        | 0.2         | 1.2      |
| CP0603B0897BS | 880 - 915            | 25±1          | 0.2         | 1.2      |
| CP0603B0942BS | 925 - 960            | 24.5±1        | 0.2         | 1.2      |
| CP0603B1441BS | 1429 - 1453          | 21±1          | 0.2         | 1.2      |
| CP0603B1747BS | 1710 - 1785          | 19±1          | 0.25        | 1.2      |
| CP0603B1842BS | 1805 - 1880          | 19±1          | 0.25        | 1.2      |
| CP0603B1880BS | 1850 - 1910          | 18.5±1        | 0.25        | 1.2      |
| CP0603B1960BS | 1930 - 1990          | 18.5±1        | 0.25        | 1.2      |
| CP0603B1907BS | 1895 - 1920          | 18.5±1        | 0.25        | 1.2      |
| CP0603B1890BS | 1880 - 1900          | 18.5±1        | 0.25        | 1.2      |
| CP0603B2442BS | 2400 - 2484          | 16.5±1        | 0.35        | 1.2      |



Coupler P/N CP0603B\*\*\*\*CS

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---------------|----------------------|---------------|-------------|----------|
| CP0603B0836CS | 824 - 849            | 26.5±1        | 0.2         | 1.2      |
| CP0603B0881CS | 869 - 894            | 26±1          | 0.2         | 1.2      |
| CP0603B0902CS | 890 - 915            | 26±1          | 0.2         | 1.2      |
| CP0603B0947CS | 935 - 960            | 25.5±1        | 0.2         | 1.2      |
| CP0603B0897CS | 880 - 915            | 26±1          | 0.2         | 1.2      |
| CP0603B0942CS | 925 - 960            | 25.5±1        | 0.2         | 1.2      |
| CP0603B1441CS | 1429 - 1453          | 22±1          | 0.2         | 1.2      |
| CP0603B1747CS | 1710 - 1785          | 20.5±1        | 0.25        | 1.2      |
| CP0603B1842CS | 1805 - 1880          | 20±1          | 0.25        | 1.2      |
| CP0603B1880CS | 1850 - 1910          | 20±1          | 0.25        | 1.2      |
| CP0603B1960CS | 1930 - 1990          | 19.5±1        | 0.25        | 1.2      |
| CP0603B1907CS | 1895 - 1920          | 20±1          | 0.25        | 1.2      |
| CP0603B1890CS | 1880 - 1900          | 20±1          | 0.25        | 1.2      |
| CP0603B2442CS | 2400 - 2484          | 18±1          | 0.35        | 1.3      |



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

# Thin-Film RF/Microwave Directional Couplers

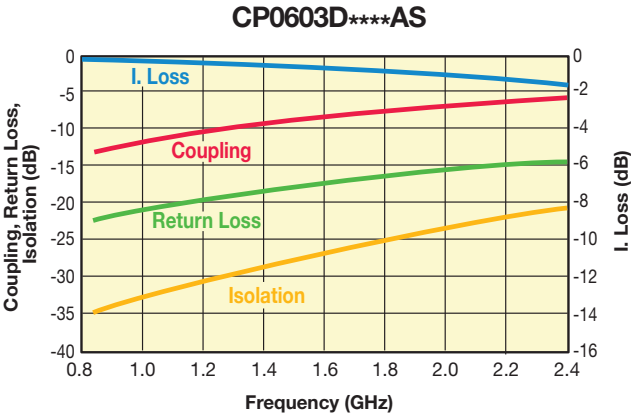
## CP0302/CP0402/CP0603/CP0805 and DB0603N/DB0805 3dB 90°

### CP0603 SMD Type – High Directivity



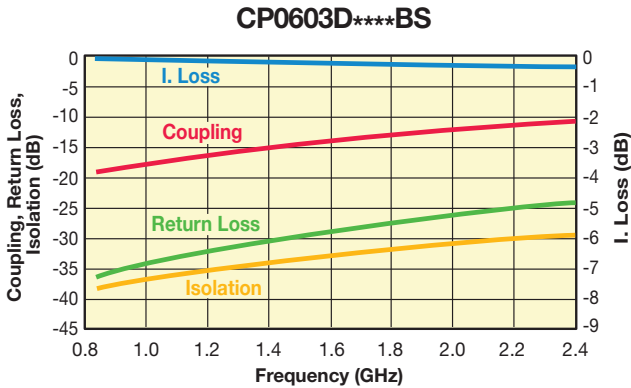
Coupler P/N CP0603D\*\*\*\*AS

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max. [dB] | Return Loss [dB] | Directivity [dB] |
|---------------|----------------------|---------------|-------------------|------------------|------------------|
| CP0603D0836AS | 824 - 849            | 13.50         | 0.50              | 23               | 21               |
| CP0603D0881AS | 869 - 894            | 13.00         | 0.50              | 22               | 21               |
| CP0603D0902AS | 890 - 915            | 13.00         | 0.50              | 22               | 21               |
| CP0603D0947AS | 935 - 960            | 12.50         | 0.50              | 22               | 21               |
| CP0603D0897AS | 880 - 915            | 13.00         | 0.50              | 22               | 21               |
| CP0603D0942AS | 925 - 960            | 12.50         | 0.50              | 22               | 21               |
| CP0603D1441AS | 1429 - 1453          | 9.00          | 1.00              | 18               | 19               |
| CP0603D1747AS | 1710 - 1785          | 8.00          | 1.40              | 17               | 18               |
| CP0603D1842AS | 1805 - 1880          | 7.50          | 1.40              | 17               | 17               |
| CP0603D1880AS | 1850 - 1910          | 7.50          | 1.40              | 16               | 17               |
| CP0603D1960AS | 1930 - 1990          | 7.00          | 1.40              | 16               | 17               |
| CP0603D1907AS | 1895 - 1920          | 7.00          | 1.40              | 16               | 17               |
| CP0603D1890AS | 1880 - 1900          | 7.00          | 1.40              | 16               | 17               |
| CP0603D2442AS | 2400 - 2484          | 5.50          | 2.00              | 15               | 15               |



Coupler P/N CP0603D\*\*\*\*BS

| P/N Examples  | Frequency Band [MHz] | Coupling [dB] | I. Loss max. [dB] | Return Loss [dB] | Directivity [dB] |
|---------------|----------------------|---------------|-------------------|------------------|------------------|
| CP0603D0836BS | 824 - 849            | 20.00         | 0.25              | 36               | 19               |
| CP0603D0881BS | 869 - 894            | 19.50         | 0.25              | 36               | 19               |
| CP0603D0902BS | 890 - 915            | 19.50         | 0.25              | 35               | 19               |
| CP0603D0947BS | 935 - 960            | 19.00         | 0.25              | 36               | 19               |
| CP0603D0897BS | 880 - 915            | 19.50         | 0.25              | 36               | 19               |
| CP0603D0942BS | 925 - 960            | 19.00         | 0.25              | 35               | 19               |
| CP0603D1441BS | 1429 - 1453          | 15.50         | 0.40              | 30               | 19               |
| CP0603D1747BS | 1710 - 1785          | 14.00         | 0.50              | 28               | 19               |
| CP0603D1842BS | 1805 - 1880          | 13.50         | 0.55              | 27               | 19               |
| CP0603D1880BS | 1850 - 1910          | 13.50         | 0.55              | 27               | 19               |
| CP0603D1960BS | 1930 - 1990          | 13.50         | 0.55              | 27               | 19               |
| CP0603D1907BS | 1895 - 1920          | 13.00         | 0.55              | 27               | 19               |
| CP0603D1890BS | 1880 - 1900          | 13.00         | 0.55              | 27               | 19               |
| CP0603D2442BS | 2400 - 2484          | 11.00         | 0.70              | 24               | 19               |



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



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