# Thin-Film Directional Couplers

## CP0603 SMD Type

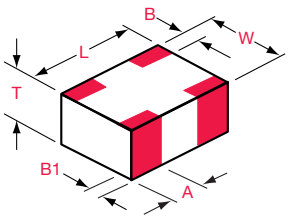
## GENERAL DESCRIPTION
## ITF (Integrated Thin-Film) TECHNOLOGY

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.

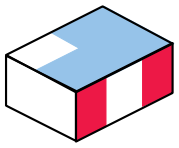
The ITF Coupler is offered in a variety of frequency bands compatible with various types of high frequency wireless systems.

## DIMENSIONS:

millimeters (inches)



Bottom View


Top View

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

## APPLICATIONS

- 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.: -40ºC to +85ºC
- Power Rating: 3W Continuous
- Low Profile
- Rugged Construction
- Taped and Reeled

3

## HOW TO ORDER

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

RoHS COMPLIANT

Please select correct termination style

## QUALITY INSPECTION

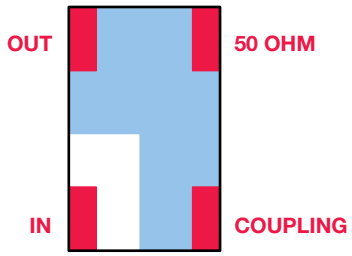
Finished parts are 100% tested for electrical parameters and visual characteristics. Each production lot is evaluated on a sample basis for:

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

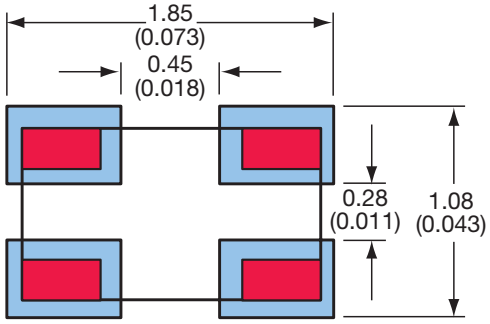
## TERMINATION

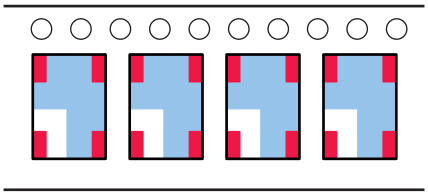
Nickel/Solder coating compatible with automatic soldering technologies: reflow, wave soldering, vapor phase and manual.

## TERMINALS (Top View)




**Recommended Pad Layout Dimensions mm (inches)**





Orientation in tape

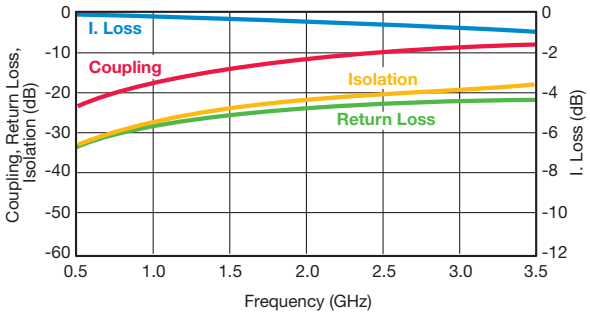
# Thin-Film Directional Couplers

## CP0603 SMD Type

### Coupler P/N CP0603A****AW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---|---|---|---|---|---|
| AMPS | CP0603A0836AW | 824 - 849 | 18.5±1 | 0.25 | 1.2 |
| | CP0603A0881AW | 869 - 894 | 18.5±1 | | |
| GSM | CP0603A0902AW | 890 - 915 | 18±1 | | |
| | CP0603A0947AW | 935 - 960 | 17.5±1 | | |
| E-GSM | CP0603A0897AW | 880 - 915 | 18±1 | | |
| | CP0603A0942AW | 925 - 960 | 17.5±1 | | |
| PDC | CP0603A1441AW | 1429 - 1453 | 14±1 | 0.4 | |
| PCN | CP0603A1747AW | 1710 - 1785 | 12.5±1 | 0.6 | |
| | CP0603A1842AW | 1805 - 1880 | 12±1 | | |
| PCS | CP0603A1880AW | 1850 - 1910 | 12±1 | | |
| | CP0603A1960AW | 1930 - 1990 | 11.5±1 | 0.65 | |
| PHP | CP0603A1907AW | 1895 - 1920 | 12±1 | 0.6 | |
| DECT | CP0603A1890AW | 1880 - 1900 | 12±1 | | |
| Wireless LAN | CP0603A2442AW | 2400 - 2484 | 10±1 | 0.85 | |

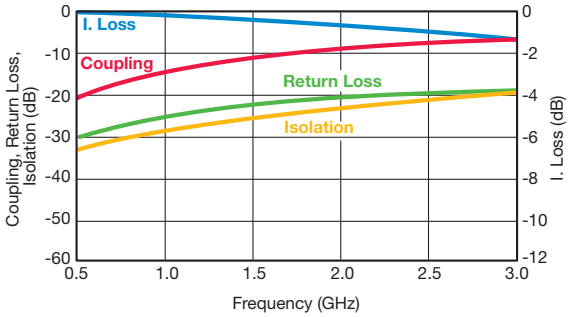
### P/N CP0603A****AW




### Coupler P/N CP0603A****BW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---|---|---|---|---|---|
| AMPS | CP0603A0836BW | 824 - 849 | 16±1 | 0.25 | 1.2 |
| | CP0603A0881BW | 869 - 894 | 15.5±1 | | |
| GSM | CP0603A0902BW | 890 - 915 | 15.5±1 | | |
| | CP0603A0947BW | 935 - 960 | 15±1 | | |
| E-GSM | CP0603A0897BW | 880 - 915 | 15.5±1 | | |
| | CP0603A0942BW | 925 - 960 | 15±1 | | |
| PDC | CP0603A1441BW | 1429 - 1453 | 11.5±1 | 0.55 | |
| PCN | CP0603A1747BW | 1710 - 1785 | 10±1 | 0.8 | 1.3 |
| | CP0603A1842BW | 1805 - 1880 | 9.5±1 | | |
| PCS | CP0603A1880BW | 1850 - 1910 | 9±1 | | 1.4 |
| | CP0603A1960BW | 1930 - 1990 | 9±1 | | |
| PHP | CP0603A1907BW | 1895 - 1920 | 9±1 | | |
| DECT | CP0603A1890BW | 1880 - 1900 | 9±1 | | |
| Wireless LAN | CP0603A2442BW | 2400 - 2484 | 7.5±1 | 1.1 | |

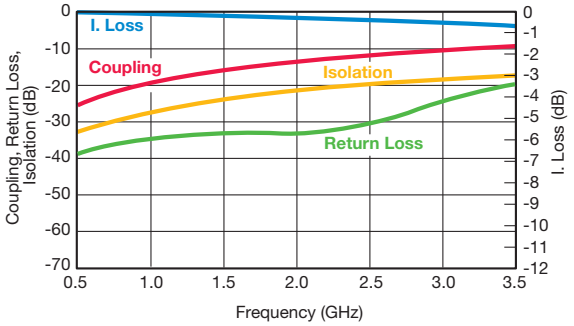
### CP0603A****BW




### Coupler P/N CP0603A****CW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---|---|---|---|---|---|
| AMPS | CP0603A0836CW | 824 - 849 | 21±1 | 0.25 | 1.2 |
| | CP0603A0881CW | 869 - 894 | 20.5±1 | | |
| GSM | CP0603A0902CW | 890 - 915 | 20.5±1 | | |
| | CP0603A0947CW | 935 - 960 | 20±1 | | |
| E-GSM | CP0603A0897CW | 880 - 915 | 20.5±1 | | |
| | CP0603A0942CW | 925 - 960 | 20±1 | | |
| PDC | CP0603A1441CW | 1429 - 1453 | 16.5±1 | 0.40 | |
| PCN | CP0603A1747CW | 1710 - 1785 | 15±1 | 0.5 | |
| | CP0603A1842CW | 1805 - 1880 | 14.5±1 | | |
| PCS | CP0603A1880CW | 1850 - 1910 | 14.5±1 | | |
| | CP0603A1960CW | 1930 - 1990 | 14±1 | | |
| PHP | CP0603A1907CW | 1895 - 1920 | 14.5±1 | | |
| DECT | CP0603A1890CW | 1880 - 1900 | 14.5±1 | | |
| Wireless LAN | CP0603A2442CW | 2400 - 2484 | 12.5±1 | 0.65 | |

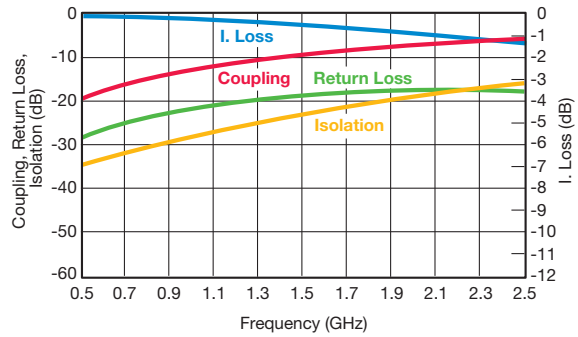
### CP0603A****CW




### Coupler P/N CP0603A****DW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---|---|---|---|---|---|
| AMPS | CP0603A0836DW | 824 - 849 | 15.0±1 | 0.40 | 1.2 |
| | CP0603A0881DW | 869 - 894 | 14.5±1 | | |
| GSM | CP0603A0902DW | 890 - 915 | 14.5±1 | | |
| | CP0603A0947DW | 935 - 960 | 14±1 | | |
| E-GSM | CP0603A0897DW | 880 - 915 | 14.5±1 | | |
| | CP0603A0942DW | 925 - 960 | 14±1 | | |
| PDC | CP0603A1441DW | 1429 - 1453 | 10.5±1 | 0.7 | 1.3 |
| PCN | CP0603A1747DW | 1710 - 1785 | 9±1 | 0.9 | 1.5 |
| | CP0603A1842DW | 1805 - 1880 | 8.5±1 | | |
| PCS | CP0603A1880DW | 1850 - 1910 | 8.5±1 | 1.0 | |
| | CP0603A1960DW | 1930 - 1990 | 8±1 | | |
| PHP | CP0603A1907DW | 1895 - 1920 | 8.5±1 | | |
| DECT | CP0603A1890DW | 1880 - 1900 | 8.5±1 | | |
| Wireless LAN | CP0603A2442DW | 2400 - 2484 | 6.5±1 | 1.5 | |

### CP0603A****DW




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

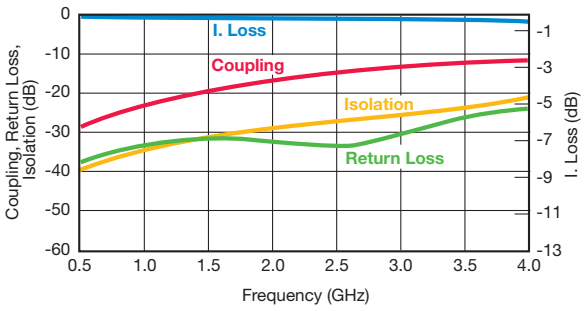
# Thin-Film Directional Couplers

## CP0603 SMD Type

### Coupler P/N CP0603B****AW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---|---|---|---|---|---|
| AMPS | CP0603B0836AW | 824 - 849 | 24.5±1 | 0.2 | 1.2 |
| | CP0603B0881AW | 869 - 894 | 24±1 | | |
| GSM | CP0603B0902AW | 890 - 915 | 24±1 | | |
| | CP0603B0947AW | 935 - 960 | 23.5±1 | | |
| E-GSM | CP0603B0897AW | 880 - 915 | 24±1 | | |
| | CP0603B0942AW | 925 - 960 | 23.5±1 | | |
| PDC | CP0603B1441AW | 1429 - 1453 | 20±1 | 0.25 | |
| PCN | CP0603B1747AW | 1710 - 1785 | 18±1 | | |
| | CP0603B1842AW | 1805 - 1880 | 17.5±1 | 0.3 | |
| PCS | CP0603B1880AW | 1850 - 1910 | 17.5±1 | | |
| | CP0603B1960AW | 1930 - 1990 | 17.5±1 | | |
| PHP | CP0603B1907AW | 1895 - 1920 | 17.5±1 | | |
| DECT | CP0603B1890AW | 1880 - 1900 | 17.5±1 | | |
| Wireless LAN | CP0603B2442AW | 2400 - 2484 | 15.5±1 | 0.45 | |

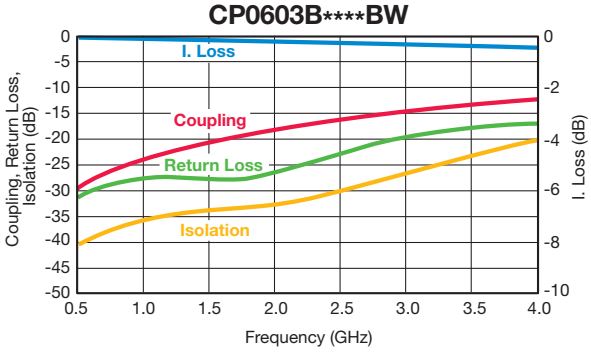
### CP0603B****AW




### Coupler P/N CP0603B****BW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---|---|---|---|---|---|
| AMPS | CP0603B0836BW | 824 - 849 | 25.5±1 | 0.2 | 1.2 |
| | CP0603B0881BW | 869 - 894 | 25±1 | | |
| GSM | CP0603B0902BW | 890 - 915 | 25±1 | | |
| | CP0603B0947BW | 935 - 960 | 24.5±1 | | |
| E-GSM | CP0603B0897BW | 880 - 915 | 25±1 | | |
| | CP0603B0942BW | 925 - 960 | 24.5±1 | | |
| PDC | CP0603B1441BW | 1429 - 1453 | 21±1 | | |
| PCN | CP0603B1747BW | 1710 - 1785 | 19±1 | 0.25 | |
| | CP0603B1842BW | 1805 - 1880 | 19±1 | | |
| PCS | CP0603B1880BW | 1850 - 1910 | 18.5±1 | | |
| | CP0603B1960BW | 1930 - 1990 | 18.5±1 | | |
| PHP | CP0603B1907BW | 1895 - 1920 | 18.5±1 | | |
| DECT | CP0603B1890BW | 1880 - 1900 | 18.5±1 | | |
| Wireless LAN | CP0603B2442BW | 2400 - 2484 | 16.5±1 | 0.35 | |

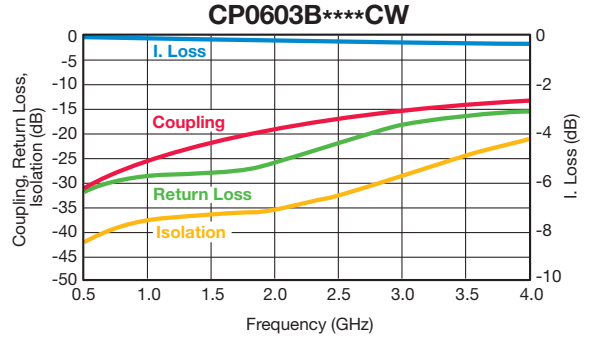
### CP0603B****BW




### Coupler P/N CP0603B****CW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max | VSWR max |
|---|---|---|---|---|---|
| AMPS | CP0603B0836CW | 824 - 849 | 26.5±1 | 0.2 | 1.2 |
| | CP0603B0881CW | 869 - 894 | 26±1 | | |
| GSM | CP0603B0902CW | 890 - 915 | 26±1 | | |
| | CP0603B0947CW | 935 - 960 | 25.5±1 | | |
| E-GSM | CP0603B0897CW | 880 - 915 | 26±1 | | |
| | CP0603B0942CW | 925 - 960 | 25.5±1 | | |
| PDC | CP0603B1441CW | 1429 - 1453 | 22±1 | | |
| PCN | CP0603B1747CW | 1710 - 1785 | 20.5±1 | 0.25 | |
| | CP0603B1842CW | 1805 - 1880 | 20±1 | | |
| PCS | CP0603B1880CW | 1850 - 1910 | 20±1 | | |
| | CP0603B1960CW | 1930 - 1990 | 19.5±1 | | |
| PHP | CP0603B1907CW | 1895 - 1920 | 20±1 | | |
| DECT | CP0603B1890CW | 1880 - 1900 | 20±1 | | |
| Wireless LAN | CP0603B2442CW | 2400 - 2484 | 18±1 | 0.35 | 1.3 |

### CP0603B****CW




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

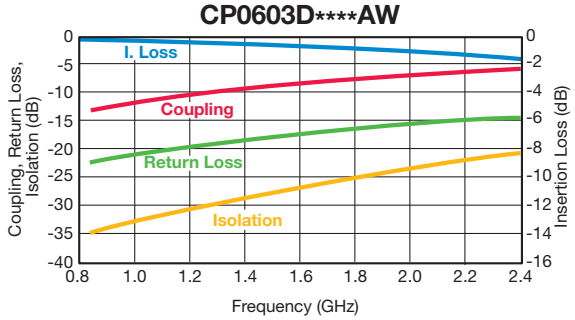
# Thin-Film Directional Couplers

## CP0603 SMD Type – High Directivity

### Coupler P/N CP0603D****AW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max. [dB] | Return Loss [dB] | Directivity [dB] |
|---|---|---|---|---|---|---|
| AMPS | CP0603D0836AW | 824 - 849 | 13.50 | 0.50 | 23 | 21 |
| | CP0603D0881AW | 869 - 894 | 13.00 | | 22 | |
| GSM | CP0603D0902AW | 890 - 915 | | | | |
| | CP0603D0947AW | 935 - 960 | 12.50 | | | |
| E-GSM | CP0603D0897AW | 880 - 915 | 13.00 | | | |
| | CP0603D0942AW | 925 - 960 | 12.50 | | | |
| PDC | CP0603D1441AW | 1429 - 1453 | 9.00 | 1.00 | 18 | 19 |
| PCN | CP0603D1747AW | 1710 - 1785 | 8.00 | 1.40 | 17 | 18 |
| | CP0603D1842AW | 1805 - 1880 | 7.50 | | | 17 |
| PCS | CP0603D1880AW | 1850 - 1910 | | | | |
| | CP0603D1960AW | 1930 - 1990 | | | 16 | |
| PHP | CP0603D1907AW | 1895 - 1920 | 7.00 | | | |
| DECT | CP0603D1890AW | 1880 - 1900 | | | | |
| Wireless LAN | CP0603D2442AW | 2400 - 2484 | 5.50 | 2.00 | 15 | 15 |

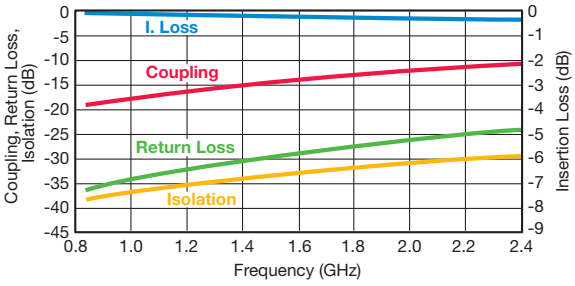
### CP0603D****AW




### Coupler P/N CP0603D****BW

| Application | P/N Examples | Frequency Band [MHz] | Coupling [dB] | I. Loss max. [dB] | Return Loss [dB] | Directivity [dB] |
|---|---|---|---|---|---|---|
| AMPS | CP0603D0836BW | 824 - 849 | 20.00 | 0.25 | 36 | 19 |
| | CP0603D0881BW | 869 - 894 | 19.50 | | 35 | |
| GSM | CP0603D0902BW | 890 - 915 | | | | |
| | CP0603D0947BW | 935 - 960 | 19.00 | | | |
| E-GSM | CP0603D0897BW | 880 - 915 | 19.50 | | 36 | |
| | CP0603D0942BW | 925 - 960 | 19.00 | | 35 | |
| PDC | CP0603D1441BW | 1429 - 1453 | 15.50 | 0.40 | 30 | |
| PCN | CP0603D1747BW | 1710 - 1785 | 14.00 | 0.50 | 28 | |
| | CP0603D1842BW | 1805 - 1880 | 13.50 | 0.55 | 27 | |
| PCS | CP0603D1880BW | 1850 - 1910 | | | | |
| | CP0603D1960BW | 1930 - 1990 | | | | |
| PHP | CP0603D1907BW | 1895 - 1920 | 13.00 | | | |
| DECT | CP0603D1890BW | 1880 - 1900 | | | | |
| Wireless LAN | CP0603D2442BW | 2400 - 2484 | 11.00 | 0.70 | 24 | |

### CP0603D****BW




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

## ITF TEST JIG FOR COUPLER TYPES 0805 AND 0603 SMD

### GENERAL DESCRIPTION

This jig is designed for the testing of CP0805 and CP0603 series Directional Couplers using a vector network analyzer.

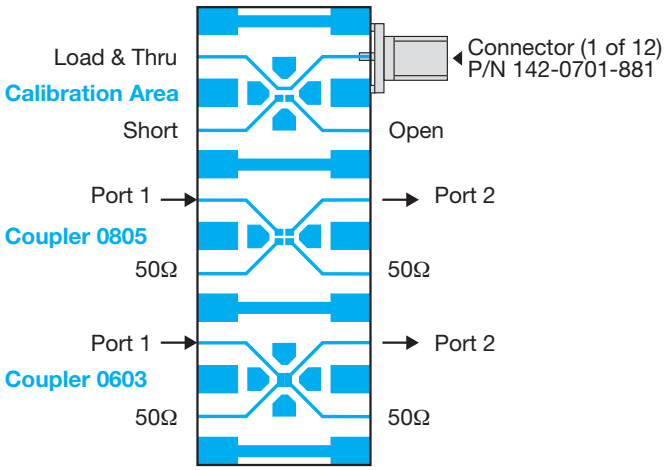
It consists of a FR4 multi-layer substrate, having 50Ω microstrips as conducting lines and a ground plane in the middle layer, located at a distance of 0.2mm from the microstrips.

The connectors are SMA type (female), 'Johnson Components Inc.' Product P/N: 142-0701-881.

The jig is designed for a full 2-port calibration. LOAD calibration can be done either by a 50Ω SMA termination, or by soldering a 50Ω chip resistor at the 50Ω ports.

### MEASUREMENT PROCEDURE

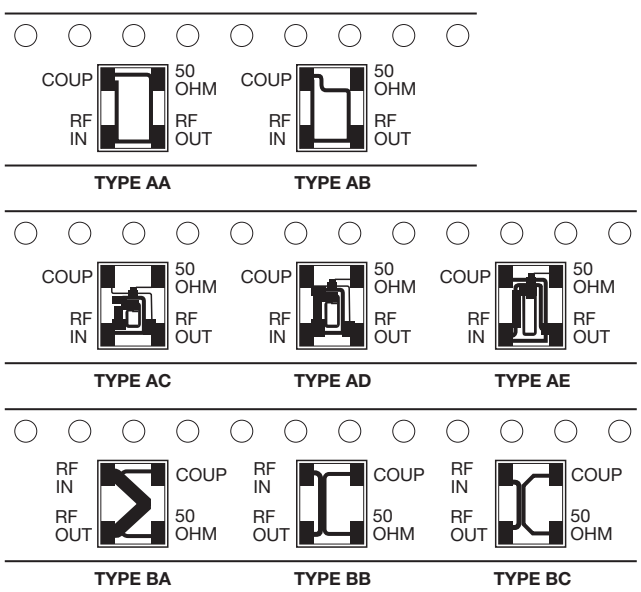
When measuring a component, it can be either soldered or pressed by a non-metallic stick until all four ports touch the appropriate pads. To measure the coupling (and the R. Loss) place the component on the Port 1 & Port 2 pads. Use two SMA 50Ω terminations (male) to terminate the ports, which are not connected to the network analyzer, and connect the network analyzer to the two ports. A 90° rotation of the component on its pads allows measuring a second parameter (I. Loss).




## CP0805 SERIES DIRECTIONAL COUPLERS

**Orientation and Tape and Reel Packaging Specification**

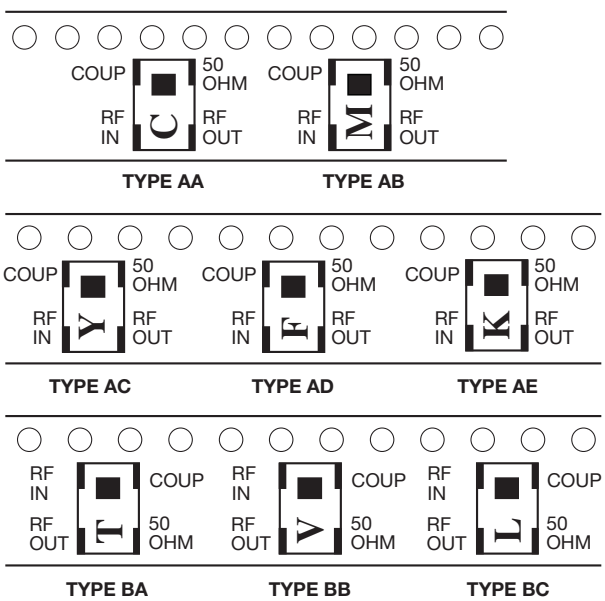
**(Top View)**




**The parts should be mounted on the PCB with White (Alumina) side down and the "dark" side up.**

**CP0805xxxxxxSTR (Sn100)**

**(Top View)**




**The parts should be mounted on the PCB with printed side up.**

# 射 频 和 天 线 设 计 培 训 课 程 推 荐

易迪拓培训(www.edatop.com)由数名来自于研发第一线的资深工程师发起成立，致力并专注于微波、射频、天线设计研发人才的培养；我们于 2006 年整合合并微波 EDA 网(www.mweda.com)，现已发展成为国内最大的微波射频和天线设计人才培养基地，成功推出多套微波射频以及天线设计经典培训课程和 ADS、HFSS 等专业软件使用培训课程，广受客户好评；并先后与人民邮电出版社、电子工业出版社合作出版了多本专业图书，帮助数万名工程师提升了专业技术能力。客户遍布中兴通讯、研通高频、埃威航电、国人通信等多家国内知名公司，以及台湾工业技术研究院、永业科技、全一电子等多家台湾地区企业。

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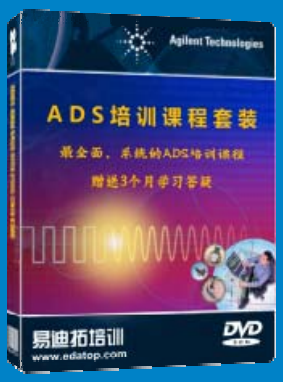
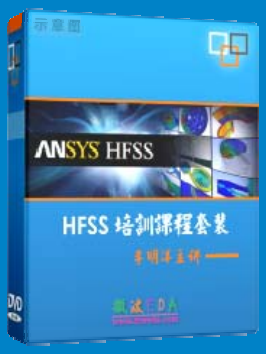
课程网址：http://www.edatop.com/peixun/rfe/110.html

## ADS 学习培训课程套装




该套装是迄今国内最全面、最权威的 ADS 培训教程，共包含 10 门 ADS 学习培训课程。课程是由具有多年 ADS 使用经验的微波射频与通信系统设计领域资深专家讲解，并多结合设计实例，由浅入深、详细而又全面地讲解了 ADS 在微波射频电路设计、通信系统设计和电磁仿真设计方面的内容。能让您在最短的时间内学会使用 ADS，迅速提升个人技术能力，把 ADS 真正应用到实际研发工作中去，成为 ADS 设计专家...

课程网址： http://www.edatop.com/peixun/ads/13.html




## HFSS 学习培训课程套装

该套课程套装包含了本站全部 HFSS 培训课程，是迄今国内最全面、最专业的 HFSS 培训教程套装，可以帮助您从零开始，全面深入学习 HFSS 的各项功能和在多个方面的工程应用。购买套装，更可超值赠送 3 个月免费学习答疑，随时解答您学习过程中遇到的棘手问题，让您的 HFSS 学习更加轻松顺畅…

课程网址：http://www.edatop.com/peixun/hfss/11.html

## CST 学习培训课程套装


该培训套装由易迪拓培训联合微波 EDA 网共同推出，是最全面、系统、专业的 CST 微波工作室培训课程套装，所有课程都由经验丰富的专家授课，视频教学，可以帮助您从零开始，全面系统地学习 CST 微波工作的各项功能及其在微波射频、天线设计等领域的设计应用。且购买该套装，还可超值赠送 3 个月免费学习答疑…

**课程网址**：http://www.edatop.com/peixun/cst/24.html


## HFSS 天线设计培训课程套装

套装包含 6 门视频课程和 1 本图书，课程从基础讲起，内容由浅入深，理论介绍和实际操作讲解相结合，全面系统的讲解了 HFSS 天线设计的全过程。是国内最全面、最专业的 HFSS 天线设计课程，可以帮助您快速学习掌握如何使用 HFSS 设计天线，让天线设计不再难…

**课程网址**：http://www.edatop.com/peixun/hfss/122.html

## 13.56MHz NFC/RFID 线圈天线设计培训课程套装


套装包含 4 门视频培训课程，培训将 13.56MHz 线圈天线设计原理和仿真设计实践相结合，全面系统地讲解了 13.56MHz 线圈天线的工作原理、设计方法、设计考量以及使用 HFSS 和 CST 仿真分析线圈天线的具体操作，同时还介绍了 13.56MHz 线圈天线匹配电路的设计和调试。通过该套课程的学习，可以帮助您快速学习掌握 13.56MHz 线圈天线及其匹配电路的原理、设计和调试…

**详情浏览**：http://www.edatop.com/peixun/antenna/116.html

## 我们的课程优势：

※ 成立于 2004 年，10 多年丰富的行业经验，

※ 一直致力并专注于微波射频和天线设计工程师的培养，更了解该行业对人才的要求

※ 经验丰富的一线资深工程师讲授，结合实际工程案例，直观、实用、易学

## 联系我们：

※ 易迪拓培训官网：http://www.edatop.com

※ 微波 EDA 网：http://www.mweda.com

※ 官方淘宝店：http://shop36920890.taobao.com