

# Catalog *Version 3.0*

## Products

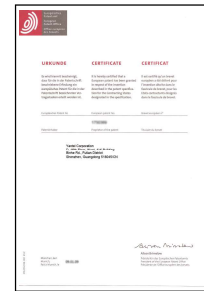
- Temperature Compensation Attenuator (温度补偿衰减器)
- SMD 3dB 90° Hybrid Coupler (贴片式3dB 90°电桥)
- 3dB 90° High Power & Wideband Hybrid Coupler (3dB 90° 大功率&宽带电桥)
- 3dB 90° Drop-In Couplers (插针式宽带大功率电桥)
- Wide band & High Power Series (宽带大功率双定向耦合器)
- SMD Directional Coupler (贴片式定向耦合器)
- 2-way 0° Power Divider IC (2路功分器IC)
- 4-way 0° Power Divider IC (4路功分器IC)
- 3-way 0° Power Divider IC (3路功分器IC)
- Wide band 5-way 0° Power Divider IC (5路功分器IC)
- Directional Coupler IC & Wide band Directional Coupler IC (定向耦合器IC & 宽带定向耦合器IC)
- 3dB 90° Coupler IC (3dB 90°电桥IC)
- Gain Equalizers (均衡器)
- Fixed Attenuator IC & Fixed Attenuator Die (固定衰减片IC & 固定衰减裸片)
- Quadrifilar IC (四相位耦合器IC)
- Variable Attenuator Die (可变衰减器组合裸片)
- Filter IC (滤波器IC)
- Diplexer IC (双工器IC)
- Balun IC (巴伦IC)
- Diamond termination (金刚石负载)
- Rotary Variable Attenuator  
旋钮式可变衰减器 (VAB Series, step 步进式)
- Non-abrupt Change Variable Attenuator  
无突变可变衰减器 (VAS Series, step 步进式)
- Fixed Attenuator Chip (固定衰减片)
- Fixed Attenuator (固定衰减器)
- Rotary Variable Attenuator  
旋鼓/旋钮式可变衰减器 (VAX Series, step 步进式)
- Fixed Attenuator (固定衰减器)
- DIP Variable Attenuator  
可变衰减器 (VAD Series, step 步进式)



*Key Patents Lead Microwave Tech*

### Advanced key patented technologies for

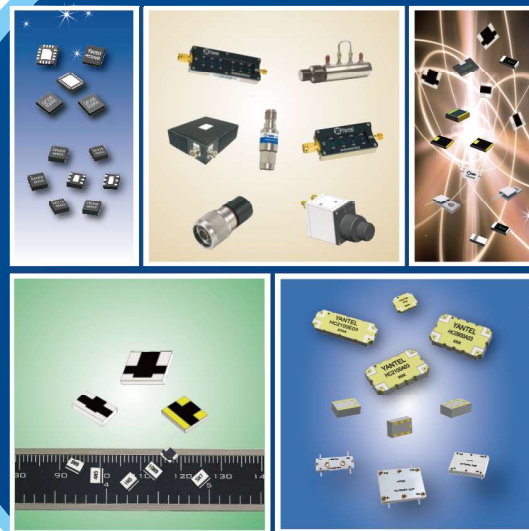
- RF & Microwave Passive Components
- High Precision RF Passive ICs



### Certificates of International Invention Patents



AEC-Q200  
Reliability Test Report



# Company Profile

## Certificate:

- GJB 9001C-2017
- OHSAS18001
- ISO 9001:2015
- IATF16949
- ISO 14001

Yantel Corporation is a national high-tech enterprise founded by several RF and microwave experts returning from overseas, owns the core patents of passive microwave components and microwave semiconductor chips at the forefront of the world.

At present, Yantel has more than 100 patent applications and 70 authorized patents (including 42 authorized invention patents and 11 authorized integrated circuit layout-design patents). All the patent achievements reach the international leading level.

Integrating R&D, design, production and sales, Yantel has advanced production equipment for RF components, including four-channel network analyzers, high- and low-temperature incubators, ten-temperature zone lead-free reflow soldering equipment, wideband RF power tester and other advanced RF testing equipment.

Yantel has established 10 RF full-inspection automation lines via the investment of tens of millions of RMB, including RF specification testing, visual inspection, withstand voltage testing, integrated equipment of testing & tape reel, MES intelligent process control software and hardware system etc., thus ensuring the high quality of products and sufficient capacity reserve.

A number of patented products of Yantel have not only been approved as national, provincial and municipal science and technology projects by the National Technical Innovation Fund, Guangdong Industry-University-Research Collaboration Association (GDIUR) and Shenzhen Innovation Funds, but also passed the project acceptance.

Meanwhile, Yantel was as Shenzhen Intellectual Property Advantageous Enterprises 2008 and the first batch of Chinese High-Tech Enterprise. In addition, Yantel has gained the ISO9001:2008 Quality Management System Certificate, the ISO14000 Environmental Management System Certificate and GJB9001B-2009 Military Standard of Quality Management System Certificate.

Yantel has established long-term and stable cooperation with Huawei, Ericsson, ZTE, Nokia, Datang, Samsung, Comba, Fingu, Mobi, RFHIC, ACE and other famous communication enterprises at home and abroad. At the same time, Yantel's high-precision passive IC series products have been designed and used in large quantities by vehicle-mounted cell phone signal booster projects such as Audi and Volkswagen in Europe. Wideband power divider ICs are widely used in Beidou, GPS, GNSS and other high-precision satellite positioning and antenna application. The main clients include BDStar, ComNav, UniStrong, Huaxin etc.

深圳市研通高频技术有限公司是由数名海外归国的射频微波专家创办的国家级高新技术企业。

公司拥有居于国际前沿的微波无源器件及微波半导体芯片的核心专利技术。

目前公司保有多项国内、国际专利，这些专利成果都处于国际领先水平，在竞争激烈的国际射频元器件及半导体芯片领域中占领了中国企业自主知识产权的一席之地。

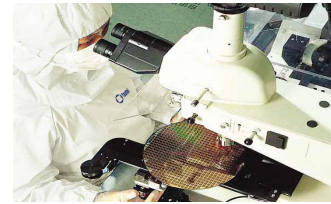
本公司集研发、设计、生产、销售于一体，拥有先进的射频元器件、芯片、组件的生产设备以及多台四通道网络分析仪，阻抗分析仪，高低温恒温箱，十温区无铅回流焊设备，宽带射频功率测试仪等高级射频测试设备。

研通斥资数千万元，建立了10条射频全检自动化线，包括射频全检，外观全检，耐压全检软硬件系统，测封一体化设备，全自动编带机，全自动裂片机，MES智能工序管控软硬件系统等，保证产品的高品质和充足的产能储备。

研通的多项专利产品被国家中小型创新基金，广东省产学研，深圳市科技型中小企业技术创新项目立项为国家、省、市的科技技术项目并合格通过项目验收，为我司的专利技术产业化进程，提供了强大的支持和推动。

同时，本公司也被深圳市知识产权局评为2008年度知识产权优势企业，中国首批国家级高新技术企业，并通过了ISO9001:2008质量管理体系，ISO14000环境管理体系认证以及GJB9001B-2009国军标质量管理体系认证。各类产品均具有中国及国际权威机构提供的可靠性及环保检验报告。

研通与爱立信，华为，中兴，诺基亚，大唐，三星，京信，凡谷，摩比，RFHIC, ACE等国内外著名通信企业建立了长期稳定的合作。同时，本公司的高精度无源IC系列化产品被欧洲的奥迪，大众等高档汽车车载手机信号增强器项目大批量采用。宽带耦合器/功分器产品广泛应用于北斗，GPS，GNSS高精度卫星定位，天线系统，主要客户包括北斗星通，司南，合众思壮，华信天线等。



Research & Development



100% Visual Inspection and Withstand Voltage Test



RF & Temperature Cycle Test



Production Line



100% RF/Visual Inspection



Reflow Welding Test In 10 Temperature Zone

## Product Competitiveness

Yantel products are advanced on its innovative technologies, excellent RF characteristic with competitive cost. They are widely used in various wireless communication terminals and systems. Such as 4G,5G Repeater, Base Station, Small Cell, Pico, Bluetooth, WiFi, CATV, GPS, GNSS, Satellite, Beidou, Antenna, Power Amplifier, LNA, Automotive Electronics, RFID, Radar etc.

## Introduction of the key patented products & technologies

- Wideband temperature compensation attenuator, breaks the iceberg of international monopoly (Microstrip circuit configuration DC-6, 12.4, 18, 20, 16-36GHz)  
以微带电路取代传统π型电路，推出超宽带温度补偿衰减器，打破美国制作商全球垄断的局面 (微带电路设计DC-6, 12.4, 18, 20, 16-36GHz)
- Ultra small size (5×3mm), high power density, SMD 3db coupler and directional coupler with patent. Footprint and size is compatible, applied to 4G and 5G.  
推出具有独立自主知识产权的5G超小型 (5×3mm)，高功率密度3db耦合器及定向耦合器贴片式产品。管脚和尺寸国际兼容，独特专利技术设计为我国的5G直放站和基站通信项目保驾护航。
- Using the world's most advanced wafer technology of Silicon & GaAs, simulate and design the ultra wideband 2 way Power Divider, 4 way Power Divider, 3dB coupler, Directional Coupler, Quadriplar, Variable Attenuator, Fixed Attenuator, Phase Shifters etc. used to 4G, 5G Telecommunication, Satellite Navigation and Vehicle mounted Cell Phone Signal Booster, Active Module etc.  
采用国际前沿的晶圆技术和砷化镓晶圆技术，设计超宽带二路功分器，四路功分器，3db耦合器，定向耦合器，四相位移向器，可变衰减器，固定衰减器，移向器等系列化齐全的无源半导体芯片产品，为全球4G, 5G通信项目，卫星导航，车载通信应用带来的无源芯片解决方案。
- World-first manual varilable attenuator DC-6GHz with Non-abrupt change performance (no need to power off in attenuation adjustment)  
世界首创无突变DC-6GHz手动可调衰减器
- Yantel has launched the world's first SMD coupler by the size of 0603 with PTFE process, and the SMD coupler by the size of 0805 has been produced on a large scale. Therefore, Yantel spares no effort to strive for the market share of 5G terminal application.  
全球推出0603封装的PTFE工艺制作的贴片式耦合器，同时0805封装的贴片式耦合器已经进入批量生产状态，全力以赴争取5G终端应用的市场份额。
- World-first technology to realize real time lossless & accurate temperature compensation within the chip of GaAs PA.  
世界先进技术，实现射频微波场效应管芯片内置的高频率，无损耗温度补偿电路



Certificates of Patent

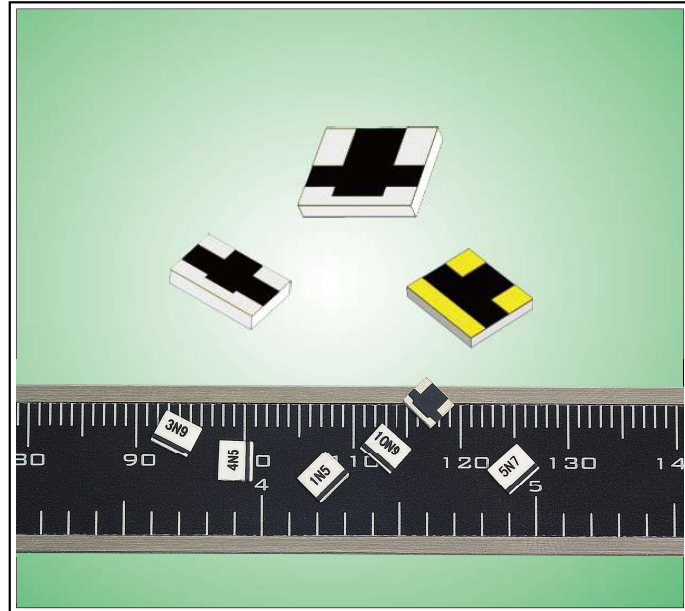
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## Temperature Compensation Attenuator 温度补偿衰减器

US Utility patents #US 7,990,230 B2 etc.  
EU,China,Taiwan,patented

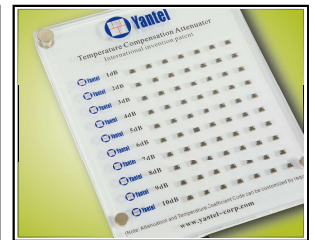


### Features

- Frequency range:DC to 3 GHz, DC to 6 GHz, DC to 12.4 GHz, DC to 18 GHz,DC to 20 GHz,16 to 36 GHz.
- Power rating: 100mW, 200mW, 2W.
- Impedance:50Ω or 75Ω.
- Operating temperature:-55°C to +150°C.
- Adopting 100% Laser trimming,high attenuation accuracy.
- High reliability.Adopting advanced thick film & thin film technology through firing at the high temperature of 850°C.
- Zero distortion, and no phase changes and time delay caused by temperature variation.
- Temperature compensation and RF isolation,which are more suitable for multi-stage power amplifiers.
- No extra IP3 exists and suitable for linear power amplifier.
- Low cost and small size.It can be easily designed in Rf power amplifier to replace AGC loop circuit, which is easy for the regeneration of RF circuit.
- Tape and reel package is available, which is convenient for SMT.

### Applications

- Power Amplifier
- Low Noise Amplifier
- Gain Blocks
- Optical Transceiver Module
- MMIC Amplifiers
- WLAN(2.4GHz or 5.8GHz)
- WiMAX
- UWB
- Mixers
- Power Dividers
- Satellite Communication
- Directional Couplers
- Broadcast(TV & Radio)
- Radar



### Part No. Description

TCA Series	Frequency	Attenuation	Temperature Coefficient Code	Metallization Options	Terminal Plating Options
TCA, STCA, MTCA WTCA, KTCA BTCA, PTCA	03, 06 12, 18, 20 or 36	01 to 10 1dB to 10 dB	(N3 to N10) or (P3 to P8)	no code, W1, W3, WB1, WB2 or G	(no code)=Lead free or (S)=Lead(Pb)

Example: P/N STCA0603N9W3 is STCA series, frequency range DC to 6GHz, 3dB attenuation @25°C, temperature coefficient of attenuation -0.009 dB/dB°C, triple wrap lead free terminal.

### Material Specification

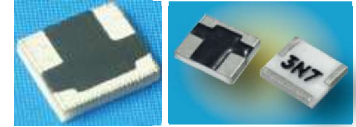
- Substrate: Alumina (Al<sub>2</sub>O<sub>3</sub>)
- Resistive material: Thick film
- Terminal material:  
Thick film, Nickel barrier with solder plate  
or gold.
- Protective Coating: Thick film (ethyl acetate)

### Metallization & Plating Options

- Planar(no code): planar terminal.
- Single wrap(W1): metallization wrap ground terminal.
- Triple wrap(W3): metallization wrap input, output and ground terminal.
- Wire bond(WB1): metallization wrap ground terminal, input and output terminal have gold metallization for wire bonding.
- Lead(Pb) (S): Lead terminals improve solderability (available on planar, W3 & W1 options).
- Lead free(no code): Lead free terminals. (planar, W1 and W3 are available)
- Planar gold(G): planar terminal with gold metallization for wire bonding.

## TCA Series Specifications

- Frequency range: DC to 6GHz
- Power rating: 2W
- Impedance: 50Ω
- Operating temperature: -55℃ to 150℃
- Size: 3.1×3.7×0.53(mm), type I
- Thick film technology
- Planar
- Triple wrap, W3

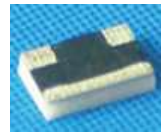


Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/℃)①	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
TCA0601N*	1	N3~N9	-0.003~-0.009	1.20	±0.5
TCA0602N*	2	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0603N*	3	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0604N*	4	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0605N*	5	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0606N*	6	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0607N*	7	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0608N*	8	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0609N*	9	N3~N10	-0.003~-0.010	1.20	±0.5
TCA0610N*	10	N3~N10	-0.003~-0.010	1.20	±0.5

① Note: For example 4N9, when temperature changes by 1℃, the attenuation variation equals 4dB x 0.009(temperature coefficient code) x 1℃ = 0.036dB. When temperature changes by 100℃, the attenuation variation equals 4dB x 0.009 x 100℃ =3.6dB.

## STCA Series Specifications

- Frequency range: DC to 6GHz
- Power rating: 100mW
- Impedance: 50Ω
- Operating temperature: -55℃ to 150℃
- Size: 1.25×2.0×0.45(mm), type III
- Thick film technology



Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/℃)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
STCA0601N*	1	N3~N7	-0.003~-0.007	1.20	±0.5
STCA0602N*	2	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0603N*	3	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0604N*	4	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0605N*	5	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0606N*	6	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0607N*	7	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0608N*	8	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0609N*	9	N3~N9	-0.003~-0.009	1.20	±0.5
STCA0610N*	10	N3~N9	-0.003~-0.009	1.20	±0.5

## MTCA Series Specifications

- Frequency range:
  - 1) Planar series DC-18GHz(N3~N5); DC-12.4GHz(N6~N9)
  - 2) W series DC-12.4GHz(All W1/W3/WB1 Series)
    - Single wrap(W1): metallization wrap ground terminal.
    - Triple wrap(W3): metallization wrap input, output and ground terminal.
    - Wire bond(WB1): metallization wrap ground terminal, input and output terminal have gold metallization for wire bonding.
- Operating temperature: -55℃ to 150℃
- Impedance: 50Ω
- Size: 1.52×1.91×0.28(mm), 1.52×1.91×0.4(mm), type II



Planar Triple wrap, W3 Gold, WB1 Package

- Power rating: 200mW
- Thick film technology

Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/℃)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
MTCA1801N*	1	N3~N7	-0.003~-0.007	1.20	±0.5
MTCA1802N*	2	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1803N*	3	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1804N*	4	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1805N*	5	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1806N*	6	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1807N*	7	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1808N*	8	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1809N*	9	N3~N9	-0.003~-0.009	1.20	±0.5
MTCA1810N*	10	N3~N9	-0.003~-0.009	1.20	±0.5

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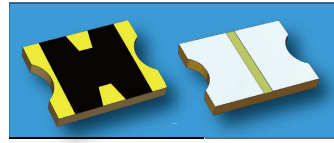
Technical support: +86-755-8355-1211(International)

: +86-755-8355-1938(Chinese)

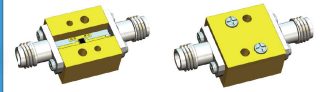
[www.yantel-corp.com](http://www.yantel-corp.com)

## WTCA-WB2 Series Specifications

- Wide frequency range: DC to 20GHz
- Power rating: 200mW
- Operating temperature: -55°C to 150°C
- Impedance: 50Ω
- Size: 1.52×1.81×0.38(mm)
- Thick film technology



Gold, WB2 Package

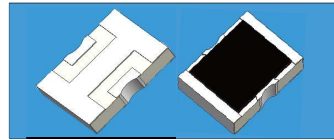


Test fixture

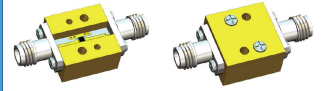
Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/°C)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
WTCA2002N*WB2	2	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2003N*WB2	3	N3~N9	-0.003~-0.007	1.20	±0.5
WTCA2004N*WB2	4	N3~N9	-0.003~-0.009	1.20	±0.5
WTCA2005N*WB2	5	N3~N10	-0.003~-0.009	1.20	±0.5
WTCA2006N*WB2	6	N3~N10	-0.003~-0.010	1.20	±0.5
WTCA2007N*WB2	7	N3~N10	-0.003~-0.010	1.20	±0.5

## WTCA-SMT Series Specifications

- Wide frequency range: DC to 20GHz
- Power rating: 200mW
- Operating temperature: -55°C to 150°C
- Impedance: 50Ω
- Size: 1.52×1.91×0.38(mm)
- Thick film technology



SMT Package

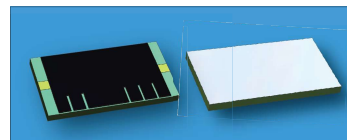


Test fixture

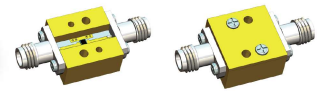
Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/°C)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
WTCA2002N*SMT	2	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2003N*SMT	3	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2004N*SMT	4	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2005N*SMT	5	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2006N*SMT	6	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2007N*SMT	7	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2008N*SMT	8	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA2009N*SMT	9	N3~N7	-0.003~-0.007	1.20	±0.5
WTCA20010N*SMT	10	N3~N7	-0.003~-0.007	1.20	±0.5

## KTCA Series Specifications

- Wide frequency range: 16 to 36GHz
- Power rating: 200mW
- Operating temperature: -55°C to 150°C
- Impedance: 50Ω
- Size: 3.05×1.65×0.28(mm)
- Thin film technology



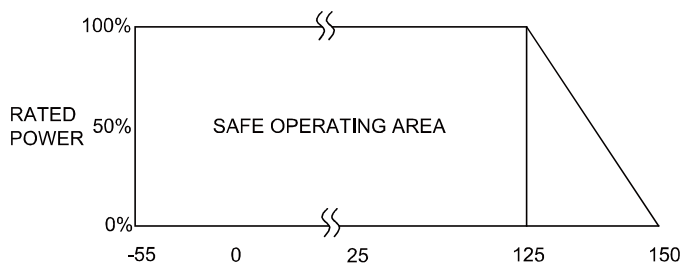
Gold, WB1 Package



Test fixture

Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/°C)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
KTCA3602N*	2	N3~N13	-0.003~-0.013	1.35	±0.5
KTCA3603N*	3	N3~N13	-0.003~-0.013	1.35	±0.5
KTCA3604N*	4	N3~N13	-0.003~-0.013	1.35	±0.5
KTCA3605N*	5	N3~N13	-0.003~-0.013	1.35	±0.5
KTCA3606N*	6	N3~N13	-0.003~-0.013	1.35	±0.5

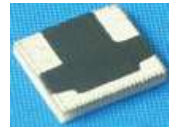
## Power Rating & Derating Curve



## BTCA Series (Suitable for Optical Transceiver Module in Broadcast Application 广播应用)

### Specifications

- Wide frequency range: DC to 6GHz
- Power rating: 2W
- Impedance: 75Ω
- Operating temperature: -55°C to 150°C
- Size: 3.1×3.70×0.53(mm), type I
- Thick film technology

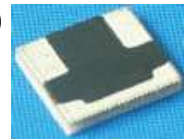


Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/°C)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
BTCA0601N*	1	N3~N9	-0.003~-0.009	1.20	±0.5
BTCA0602N*	2	N3~N9	-0.003~-0.009	1.20	±0.5
BTCA0603N*	3	N3~N9	-0.003~-0.009	1.20	±0.5
BTCA0604N*	4	N3~N9	-0.003~-0.009	1.20	±0.5
BTCA0605N*	5	N3~N9	-0.003~-0.009	1.20	±0.5
BTCA0606N*	6	N3~N9	-0.003~-0.009	1.20	±0.5

## PTCA Series (Thermal compensation characteristics with positive coefficients 正温补偿系数)

### Specifications

- Wide frequency range: DC to 6GHz
- Power rating: 2W
- Impedance: 50Ω or 75Ω
- Operating temperature: -55°C to 150°C
- Size: 3.1×3.70×0.53(mm), type I
- Thick film technology



Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/°C)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
PTCA0601P*	1	P3~P9	+0.003~+0.009	1.20	±0.5
PTCA0602P*	2	P3~P9	+0.003~+0.009	1.20	±0.5
PTCA0603P*	3	P3~P9	+0.003~+0.009	1.20	±0.5
PTCA0604P*	4	P3~P9	+0.003~+0.009	1.20	±0.5
PTCA0605P*	5	P3~P9	+0.003~+0.009	1.20	±0.5
PTCA0606P*	6	P3~P9	+0.003~+0.009	1.20	±0.5



S2P file with RF performance DC-6GHz,DC-18GHz,DC-20GHz,16-36GHz under the temperature -55°C to +125°C can be downloaded.



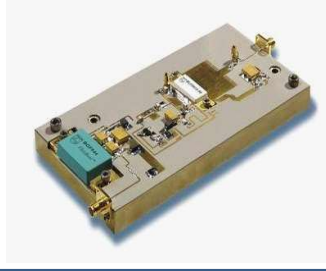

[www.yantel-corp.com/en/products/products1\\_200.html#WB2](http://www.yantel-corp.com/en/products/products1_200.html#WB2)

- 已通过GJB 9001B-2009国军标质量管理体系认证



High-Low Temperature Test

## Applications

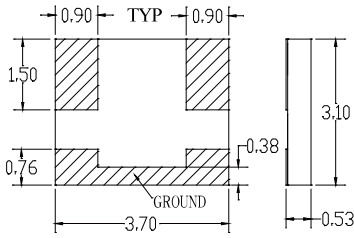
			
SATCOM	Wireless, Microwave Communication	Transceiver Module, Power Amplifier Module	Phase Array Radar

Tel: +86-755-8355-1886 Fax: +86-755-8355-2533  
E-mail: [inform@yantel-corp.com](mailto:inform@yantel-corp.com)

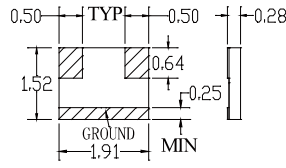
[www.yantel-corp.com](http://www.yantel-corp.com)

Technical support: +86-755-8355-1211(International)  
: +86-755-8355-1938(Chinese)

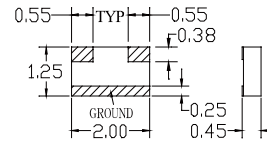
## Planar Configuration (unit: mm)



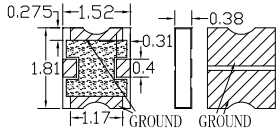
TCA



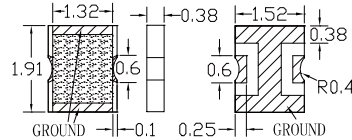
MTCA



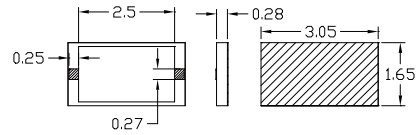
STCA



WTCA-WB2



WTCA-SMT



KTCA

## TCA Selector Tool (software)

**Step 1**

Select a Product:

- TCA0602N7
- TCA0602N8
- TCA0602N9
- TCA0602M10
- TCA0603N4
- TCA0603N5
- TCA0603N7
- TCA0603N9
- TCA0603M10

**Step 2**

Enter your Product(s) Attenuation:    Frequency: **2000** MHz

Temp (°C)	Amplifier Gain (dB)	TCA Attn (dB)	Compensated Attn (dB)
-55	24.6	NaN	NaN
-35	24.4	3.97	20.43
-15	24.25	3.69	20.56
5	24.10	3.42	20.68
25	23.88	3.18	20.70
45	23.6	2.94	20.66
65	23.4	2.75	20.65
85	23.15	2.58	20.57
105	22.8	2.44	20.36
125	22.4	NaN	NaN

**Step 3**

Tasks:

Downloads:

Link:

**Results**

**TCA0603N4 Response**

**Amplifier Response**

Step1: Select a P/N.

Step2: Enter your amplifier gain (before compensation) at desired frequency point.

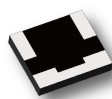
Results: You will get an automatic result of response chart.

Step3: Printing chart or downloading datasheet.

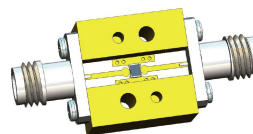
Note: Some Anti-virus software may prevent the program installation !

For more information on the Selector Tool, please visit our website:

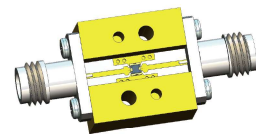
<http://www.yantel-corp.com/ShowCrystal.aspx>



Samples and evaluation boards are available upon request



Applied for SMT DC-20GHz test Fixture



Applied for wire-bonding DC-20GHz test Fixture

Tel: +86-755-8355-1886 Fax: +86-755-8355-2533

E-mail: [inform@yantel-corp.com](mailto:inform@yantel-corp.com)

Technical support: +86-755-8355-1211(International)

: +86-755-8355-1938(Chinese)

[www.yantel-corp.com](http://www.yantel-corp.com)



## Green TCA Series

(Lead content much less than 1000ppm, no need RoHS exemption)

### Features

- Available in TCA, STCA, MTCA and BTCA series
- Frequency range: DC ~ 3GHz, DC ~ 6GHz, DC ~ 12.4GHz, DC ~ 18GHz, DC ~ 20GHz
- Input power: 100mW, 200mW, 2W
- Impedance: 50Ω or 75Ω
- Wide attenuation variable range at temperature from -55°C to +150°C
- Low attenuation tolerance and low VSWR
- 10 attenuations from 1dB to 10dB, and 7 variation slope characteristics from N3 to N9 per attenuation are offered as standard products
- Variation slope is calculated by linear regression
- High reliability using thick film & thin film package



Real Lead-free  
Green Temp. Comp. Attenuator

## Coaxial Temp. Comp. Attenuator

### Model Description

Co-TCA Series	Frequency	Attenuation	Temperature Coefficient Code	Connector Type
Co-TCA, Co-WTCA	06, 15	01 to 10 1dB to 10 dB	N3 to N10	S=SMA N=N-type

Example: P/N Co-TCA0603N9S is Co-TCA series, frequency range DC to 6GHz, 3dB attenuation @25°C, temperature coefficient of attenuation -0.009 dB/dB/°C, SMA connector.

## Co-TCA Series

### Specifications

- Frequency range: DC to 6GHz
- Power rating: 2W
- Operating temperature: -55°C to 150°C
- Impedance: 50Ω
- Outline Dimensions: 26.75XΦ9.4(mm)-SMA(type 1), 43.5XΦ20.0(mm)-N type

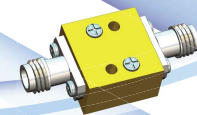


Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/°C)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
Co-TCA0601N**	1	N3~N9	-0.003~-0.009	1.20	±0.5
Co-TCA0602N**	2	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0603N**	3	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0604N**	4	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0605N**	5	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0606N**	6	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0607N**	7	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0608N**	8	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0609N**	9	N3~N10	-0.003~-0.010	1.20	±0.5
Co-TCA0610N**	10	N3~N10	-0.003~-0.010	1.20	±0.5

## Co-WTCA Series

### Specifications

- Frequency range: DC to 20GHz
- Power rating: 200mW
- Operating temperature: -55°C to 150°C
- Impedance: 50Ω
- Outline Dimensions: 15X7.5X34.2(mm)-SMA(type 2)



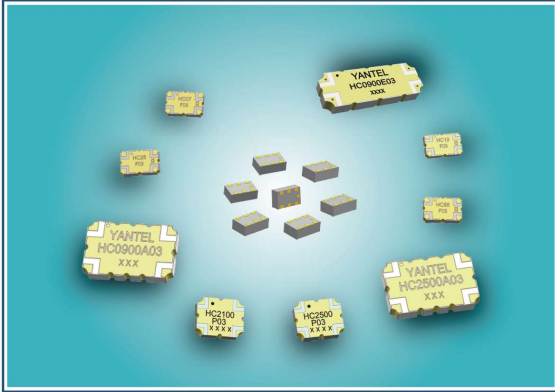
Part No.	Attenuation (dB)	Temperature Coefficient Code	Temperature Coefficient of Attenuation(dB/dB/°C)	Max. VSWR(:1)@1GHz	Attenuation Accuracy(dB)
Co-WTCA2002N*S	2	N3~N9	-0.003~-0.009	1.20	±0.5
Co-WTCA2003N*S	3	N3~N9	-0.003~-0.009	1.20	±0.5
Co-WTCA2004N*S	4	N3~N9	-0.003~-0.009	1.20	±0.5
Co-WTCA2005N*S	5	N3~N9	-0.003~-0.009	1.20	±0.5
Co-WTCA2006N*S	6	N3~N9	-0.003~-0.009	1.20	±0.5
Co-WTCA2007N*S	7	N3~N9	-0.003~-0.009	1.20	±0.5

For more information on the part no. and specs of Co-TCA Series, please refer to Yantel website  
<http://en.yantel-corp.com/en/co-tca.htm>



## 3dB 90° Hybrid Coupler 3dB 90° 电桥

SMD Package



Yantel 3dB 90° hybrid coupler is a low profile, low cost high performance surface mounted device. This series products are suitable for AMPS, DCS, PCS, UMTs & 3G band applications. The excellent electrical characteristics of high isolation, high return loss, low insertion loss and tight amplitude & phase balance can reach rigorous requirements of power distribution & combination and signal control circuits, such as balanced amplifiers, variable attenuators & phase shifters, LNAs.

### Applications

- Power Amplifiers
- LNAs
- Variable Attenuators
- Variable Phase Shifter

### Features

- Very Low Loss
- Tight Amplitude Balance
- High Isolation
- Low VSWR
- Good Repeatability
- CTE compatible with FR4, G-10, RF-35, RO4350B and polyimide
- Immersion gold, prevent surface oxidation & scratch
- RoHS Compliant
- Tape & Reel Package available

### Part No. Description

**	****	*	**
Hybrid Coupler	Center Frequency(MHz)	Size(mm)	Coupling Value
	0450=410-480	C=34.0X17.0	
	0900=800 to 1000	B=25.4 x 12.7	
	1400=1200 to 1600	L=16.51 x 12.19	
HC	1900=1700 to 2000	A=14.22 x 8.89	03=3 dB
	2100=2000 to 2300	E=14.22 x 5.08	
	2500=2300 to 2700	M=10.16 x 5.08	
	3500=3300 to 3800	P=6.35 x 5.08	
		S=6.0x3.0	
		F=5.08x3.18	
		T=2x1.25	

### Specifications

Standard Series for SMT

	Part No.	Freq.Range (GHz) fL-fU	Power (W)	Size LxW (mm)	Return Loss (dB)	Insertion Loss (dB)	Amplitude Balance (dB)	Phase Balance (degrees)	Isolation (dB)
New	HC09T03	0.7 ~ 1	4	2.0x1.25	18	0.3	±0.3	90±4.0	20
New	HC12T03	0.96 ~ 1.53	4	2.0x1.25	18	0.6	±0.5	90±6.0	18
AEC-Q200	HC13T03	1 ~ 1.5	4	2.0x1.25	20	0.55	±0.5	90±6.0	20
New	HC14T03	1.15 ~ 1.65	4	2.0x1.25	20	0.55	±0.5	90±5.0	18
AEC-Q200	HC16T03	1.5 ~ 1.7	4	2.0x1.25	20	0.3	±0.5	90±4.0	21
New	HC19T03	1.7 ~ 2.0	4	2.0x1.25	18	0.3	±0.3	90±4.0	20
New	HC20T03	1.7 ~ 2.3	4	2.0x1.25	18	0.4	±0.4	90±5.0	20
New	HC21T03	2.0 ~ 2.3	4	2.0x1.25	18	0.3	±0.3	90±4.0	20
New	HC25T03	2.3 ~ 2.7	4	2.0x1.25	18	0.3	±0.3	90±3.0	20
New	HC35T03	3.2 ~ 3.7	4	2.0x1.25	18	0.3	±0.3	90±5.0	20
New	HC55T03	4.5 ~ 6.0	4	2.0x1.25	18	0.35	±0.5	90±5.0	20
New	HC70T03	6.0 ~ 7.0	4	2.0x1.25	18	0.35	±1.0	90±7.0	15.5
AEC-Q200	HC14K03	1.15~ 1.65	4	2.0x2.5	18	0.5	±0.5	90±5.0	20
New	HC07F03	0.6 ~ 1	25	5.08x3.18	21	0.2	±0.70	90±2.0	23
New	HC09F03	0.8 ~ 1	25	5.08x3.18	21	0.2	±0.30	90±2.0	23

New  
AEC-Q200

New

New

New

New

New

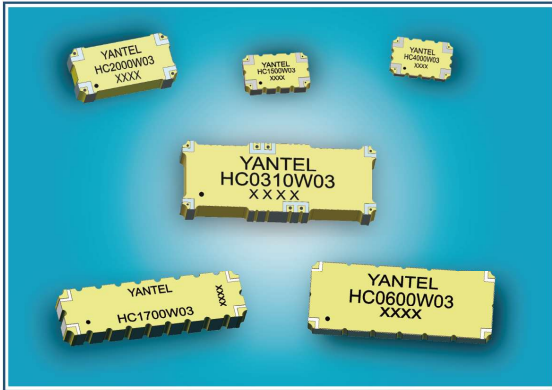
AEC-Q200

Part No.	Freq.Range (GHz) fL-fU	Power (W)	Size L×W (mm)	Return Loss (dB)	Insertion Loss (dB)	Amplitude Balance (dB)	Phase Balance (degrees)	Isolation (dB)
HC12F03	0.96 ~ 1.53	25	5.08×3.18	20	0.5	-0.4 ~ 0.8	90±4.0	20
HC14F03	1.2 ~ 1.7	25	5.08×3.18	21	0.3	±0.35	90±4.0	22
HC19F03	1.7 ~ 2.3	25	5.08×3.18	18	0.3	±0.25	90±3.0	19.5
HC25F03	2.1 ~ 2.7	20	5.08×3.18	20	0.3	±0.45	90±3.0	23
HC35F03	3.3 ~ 3.7	20	5.08×3.18	23	0.25	±0.35	90±4.0	24
HC55F03	4.9 ~ 6.3	25	5.08×3.18	13.1	0.49	±0.65	90±6.0	15
HC0510P03	0.48 ~ 0.55	60	6.35×5.08	20	0.2	±0.35	90±3.0	20
HC0700P03H	0.758 ~ 0.821	130	6.35×5.08	22	0.25	±0.30	90±4.0	23
HC0900P03	0.8 ~ 1.0	28	6.35×5.08	19.7	0.4	±0.25	90±4.0	20
HC0900P03S	0.8 ~ 1.0	60	6.35×5.08	24	0.2	±0.35	90±3.0	30
HC0900P03H	0.7 ~ 1.0	100	6.35×5.08	19	0.3	±0.4	90±5.0	20
HC1400P03	1.2 ~ 1.7	30	6.35×5.08	20.8	0.3	±0.35	90±4.0	20
HC1400P03-L	1.1 ~ 1.6	30	6.35×5.08	20.8	0.3	±0.50	90±2.0	20
HC1400P03S	1.15 ~ 1.63	30	6.35×5.08	20.8	0.3	±0.35	90±3.0	22
HC1600P03	1.558 ~ 1.616	30	6.35×5.08	23	0.19	±0.35	90±3.0	25
HC1900P03	1.7 ~ 2.0	60	6.35×5.08	20.8	0.2	±0.30	90±3.5	20
HC1900P03H2	1.7 ~ 2.3	176	6.35×5.08	19	0.25	±0.40	90±2.5	19
HC2100P03	1.8 ~ 2.3	60	6.35×5.08	20.8	0.3	±0.25	90±4.0	21
HC2100P03H	1.7 ~ 2.3	90	6.35×5.08	20	0.25	±0.15	90±2.0	27
HC2500P03	2.3 ~ 2.7	60	6.35×5.08	20.8	0.3	±0.25	90±3.0	20
HC2500P03H	2.3 ~ 2.7	60	6.35×5.08	20.8	0.3	±0.25	90±3.0	20
HC3500P03	3.3 ~ 3.8	25	6.35×5.08	18.2	0.3	±0.30	90±4.0	20
HC0350A03	0.30 ~ 0.40	150	14.22×8.89	19.1	0.3	±0.30	90±4.0	18
HC0450A03	0.35 ~ 0.52	125	14.22×8.89	23.1	0.3	±0.25	90±3.0	22
HC0480A03	0.435 ~ 0.524	125	14.22×8.89	20.1	0.25	±0.20	90±3.0	20
HC0650A03	0.47 ~ 0.86	200	14.22×8.89	17.2	0.3	±0.40	90±2.5	17
HC0700A03	0.7 ~ 0.8	225	14.22×8.89	20	0.25	±0.25	90±2.0	21
HC0900A03	0.8 ~ 1.0	175	14.22×8.89	20	0.2	±0.25	90±2.0	22
HC1400A03	1.2 ~ 1.7	150	14.22×8.89	20.8	0.2	±0.25	90±2.0	22
HC1500A03	1.0 ~ 2.0	60	14.22×8.89	17.69	0.45	±0.55	90±3.0	20
HC1700A03	0.69 ~ 2.7	50	14.22×8.89	13-29	0.62	±0.8	90±6.0	16
HC1900A03	1.7 ~ 2.0	150	14.22×8.89	20.8	0.15	±0.25	90±2.0	23
HC2035A03	1.575 ~ 2.575	80	14.22×8.89	21.7	0.25	±0.35	90±3.0	23
HC2100A03	2.0 ~ 2.3	105	14.22×8.89	20	0.15	±0.25	90±2.0	24
HC2500A03	2.3 ~ 2.7	200	14.22×8.89	20.8	0.17	±0.25	90±2.0	23
HC0570C03	0.47 ~ 0.65	500	34×17	20.8	0.25	±0.35	90±2.0	22
HC0650C03	0.47 ~ 0.86	500	34×17	17.7	0.25	±0.4	90±2.0	20
HC0750C03	0.65 ~ 0.86	500	34×17	20.8	0.25	±0.40	90±2.0	25
HC0150B03	0.13 ~ 0.174	125	25.4×12.7	24.3	0.4	±0.25	90±3.5	22
HC0230B03	0.22 ~ 0.24	90	25.4×12.7	19.1	0.35	±0.30	90±2.0	20
HC0650B03	0.47 ~ 0.86	300	25.4×12.7	19.1	0.25	±0.42	90±2.0	20
HC0900B03	0.8 ~ 1.0	300	25.4×12.7	20.8	0.15	±0.25	90±1.5	22
HC1900B03	1.7 ~ 2.0	300	25.4×12.7	19.1	0.2	±0.25	90±2.0	20
HC2100B03	2.0 ~ 2.3	300	25.4×12.7	19.1	0.12	±0.30	90±2.5	24
HC0450L03	0.38 ~ 0.52	200	16.51×12.19	20.8	0.3	±0.30	90±3.0	20
HC0465L03	0.40 ~ 0.53	200	16.51×12.19	20.8	0.25	±0.35	90±3.0	20
HC0900L03	0.8 ~ 1.0	225	16.51×12.19	20.8	0.25	±0.25	90±2.0	22
HC2100L03	1.8 ~ 2.5	300	16.51×12.19	20.8	0.2	±0.25	90±3.0	20
HC0900E03	0.8 ~ 1.0	70	14.22×5.08	20.8	0.25	±0.30	90±3.0	20
HC1500E03H	1.4 ~ 1.6	250	14.22×5.08	20	0.25	±0.30	90±4.0	22
HC1900E03	1.7 ~ 2.0	120	14.22×5.08	24.9	0.15	±0.25	90±2.0	24
HC2100E03	2.0 ~ 2.3	100	14.22×5.08	26.4	0.15	±0.25	90±2.0	26
HC2200E03	1.7 ~ 2.7	160	14.22×5.08	23.1	0.15	±0.25	90±4.0	23
HC2200E03H	1.8 ~ 2.7	250	14.22×5.08	20	0.25	±0.30	90±4.0	22
HC2500E03	2.3 ~ 2.7	100	14.22×5.08	24.9	0.2	±0.15	90±2.0	26
HC2100S03	1.7 ~ 2.3	20	6.00×3.00	21	0.3	±0.30	90±2.0	21
HC2500S03	2.3 ~ 2.7	20	6.00×3.00	20.8	0.5	±0.25	90±3.5	20
HC5500M03	5.0 ~ 6.0	20	10.16×5.08	20	0.25	±0.40	90±3.0	20

# 3dB 90° High Power & Wide band Hybrid Coupler

## 3dB 90° 大功率&宽带电桥

### SMD Package



Yantel 3dB 90° hybrid coupler is a low profile, low cost high performance surface mounted device. This series products are suitable for AMPS, DCS, PCS, UMTs & 3G band applications. The excellent electrical characteristics of high isolation, high return loss, low ion loss and tight amplitude & phase balance can reach rigorous requirements of power distribution & combination and signal control circuits. Such as balanced amplifiers, variable attenuators & phase shifters, LNAs.

### Applications

- Power Amplifiers
- Variable Attenuators
- LNAs
- Variable Phase Shifter

### Wide band & High Power Series for SMT

Part No.	Freq. Range (GHz) fL- fU	Power (W)	Size L×W (mm)	Return Loss (dB)	Insertion Loss (dB)	Amplitude Balance (dB)	Phase Balance (degrees)	Isolation (dB)
HC0310W03	0.088~0.52	200	50.8×19.05	14-25	0.75	±0.8	90±7.0	13
HC0450W03	0.295~0.605	300	25.4×12.7	16-25	0.30	±0.5	90±3.5	16.5
HC0600W03	0.2~1.0	150	50.8×19.05	20	0.35	±0.65	90±3.0	20
HC1100W03	0.225~2.0	200	37.34×28.7	18	0.80	±1.0	90±5.0	17
HC1200W03	0.8~1.6	200	21.59×6.35	19	0.25	±0.55	90±5.0	19
HC1500W03	1.0~2.0	150	14.22×8.89	21	0.20	±0.55	90±2.0	21
HC1505W03	0.5~2.5	100	45.72×12.7	17.7	0.50	±0.65	90±5.0	18
HC1700W03	0.5~3.0	200	45.72×12.7	17-28	0.55	±1.0	90±3.0	17
HC1750W03	1.0~2.5	150	14.22×8.89	19	0.25	±0.7	90±5.0	19
HC2000W03	1.0~3.0	400	25.4×12.7	19	0.20	±1.0	90±4.0	20
HC2300W03	0.8~3.8	100	45.72×10.16	17.7	0.50	±0.65	90±5.0	18
HC2600W03	1.0~4.2	90	22.86×12.7	13.5-23	0.65	±0.8	90±7.0	15
HC3000W03	2.0~4.0	100	14.22×8.89	17.6	0.35	±0.5	90±5.0	18
HC3100W03	2.7~3.5	200	14.22×8.89	19	0.25	±0.2	90±5.0	20
HC3105W03	2.7~3.5	300	25.4×12.7	17.6	0.20	±0.25	90±5.0	18
HC3345W03	0.69~6.0	50	25.4×12.7	15.6	0.80	±0.90	90±9.0	15
HC3500W03	1.0~6.0	50	41.91×5.08	15.5	0.75	±0.8	90±5.0	15
HC4005W03	2.0~6.0	100	14.22×5.08	17.7	0.27	±1.0	90±5.0	18
HC4000W03	2.0~6.0	250	14.22×8.89	12-35	0.25	±1.4	90±5.0	17
HC4001W03	2.0~6.0	150	31.75×5.08	17.7	0.40	±0.4	90±6.0	17
HC4250W03	2.5~6.0	100	14.22×5.08	17.7	0.30	±0.75	90±5.0	18
HC4350W03	2.6~6.1	100	14.22×5.08	17.7	0.30	±0.75	90±5.0	18
HC4400W03	2.0~6.8	100	14.22×5.08	19	0.30	±1.25	90±5.0	17
HC5000W03	4.0~5.0	100	14.22×5.08	17.7	0.25	±0.45	90±5.0	18
HC6000W03	4.0~8.0	75	10.16×5.08	12-35	0.45	±0.9	90±8.0	14
HC7250W03	6.0~8.5	100	10.16×5.08	17.7	0.40	±0.35	90±6.0	17
HC7500W03	7.0~8.0	125	10.16×5.08	17.7	0.30	±0.35	90±5.0	17
HC9000W03	6.0~12.0	50	6.35×5.08	16	0.45	±0.7	90±6.0	16
HC100HW03	8.0~12.0	50	6.35×5.08	16.5	0.30	±0.55	90±6.0	17

# 3dB 90° Drop-In Couplers

## 3dB 90° 插针式宽带大功率电桥

New



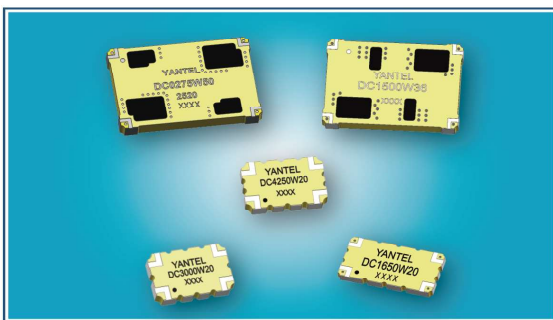
### Features

- Very Low Loss
- Tight Amplitude Balance
- High Isolation
- Low VSWR
- Good Repeatability
- Immersion gold, prevent surface oxidation & scratch
- RoHS Compliant
- Tape & Reel Package available

Part No.	Freq.Range (MHz) fL- Fu	Power (W)	Size LxW (mm)	Return Loss (dB)	Insertion Loss (dB)	Amplitude Balance (dB)	Phase Balance (degrees)	Isolation (dB)
HC0059D03	30 ~ 88	400	67.31×67.31	17.7	0.25	±0.95	90±5.0	18
HC0270D03	20 ~ 520	200	55.88×76.2	17.7	0.8	±0.30	90±10.0	16
HC0290D03	80 ~ 500	800	63.5×152.4	17.7	0.35	±0.95	90±5.0	16
HC0300D03	100 ~ 500	150	38.1×83.82	17.7	0.5	±0.75	90±6.0	16
HC0305D03	100 ~ 500	800	63.5×127	17.7	0.35	±0.80	90±5.0	16
HC0310D03	100 ~ 520	400	38.1×83.82	17.7	0.45	±0.75	90±5.0	17
HC0312D03	225 ~ 400	250	14.22×41.15	20.8	0.25	±0.50	90±5.0	20
HC0315D03	225 ~ 400	400	12.7×50.8	19	0.25	±0.50	90±5.0	20
HC0360D03	200 ~ 520	400	12.7×50.8	19	0.25	±0.75	90±5.0	20
HC0372D03	225 ~ 520	200	12.7×50.8	19	0.25	±0.7	90±5.0	20
HC0510D03	20 ~ 1000	150	55.88×76.2	17.7	0.9	±0.25	90±12.0	16
HC0700D03	400 ~ 1000	800	67.31×67.31	19	0.2	±0.70	90±5.0	20
HC0750D03	500 ~ 1000	200	12.7×34.29	20.82	0.25	±0.50	90±5.0	20
HC1225D03	800 ~ 1650	400	12.7×34.29	17.7	0.2	±0.60	90±5.0	18
HC1500D03	500 ~ 2500	200	20.32×55.88	17.2	0.5	±0.70	90±6.0	17
HC1505D03	1000 ~ 2000	200	12.7×34.29	20.8	0.25	±0.50	90±5.0	20
HC1600D03	1000 ~ 2000	1000	25.4×60.96	19	0.2	±0.50	90±5.0	18
HC1700D03	500 ~ 3000	200	20.32×55.88	17.2	0.5	±0.70	90±5.0	17
HC1750D03	800 ~ 2700	400	22.86×81.28	17.7	0.4	±0.60	90±5.0	18
HC2000D03	1000 ~ 3000	150	12.7×34.29	17.7	0.3	±1.10	90±5.0	18
HC2100D03	1750 ~ 2400	400	12.7×34.29	19	0.2	±0.30	90±5.0	20
HC2250D03	1500 ~ 3000	400	12.7×34.29	17.7	0.25	±0.50	90±5.0	18
HC3000D03	2000 ~ 4000	400	12.7×34.29	17.7	0.3	±0.50	90±5.0	18
HC4000D03	2000 ~ 6000	100	6.35×33.02	17.7	0.3	±0.1.0	90±5.0	18

## Wide band & High Power Series 宽带大功率双定向耦合器

Bi-directional coupler and DUAL directional coupler



Yantel directional coupler is a low profile, low cost high performance surface mounted device. This series products are suitable for AMPS, DCS, PCS, UMTs & 3G band applications. The excellent electrical characteristics of high isolation, high directivity, low ion loss and can reach rigorous requirements of signal sampling, and feed-forward amplifiers.

### Applications

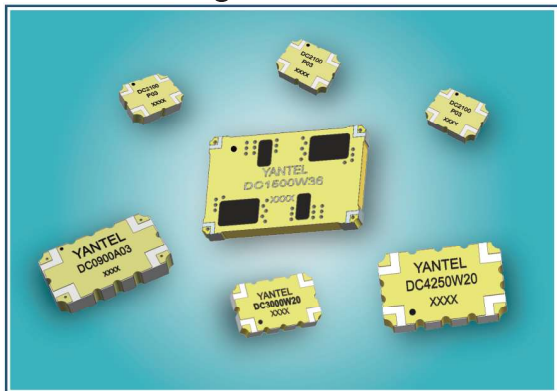
- Power Amplifiers
- Signal Sampling

Part No.	Freq.Range (MHz) fL- fU	Power (W)	Size LxW (mm)	Insertion Loss (dB)	Mean Coupling (dB)	Directivity (dB)	Return (dB)
DC0270W50	20~520	300	38.1×25.4	0.25	50±1.0	20	19
DC0275W50	30~520	300	38.1×25.4	0.20	50±1.0	21	20
DC0300W40	100~500	300	38.1×25.4	0.25	40±1.0	20	19
DC0500W50	20~1000	150	31.75×19.05	0.35	50±1.0	20	13.5
DC0510W50	20~1000	300	38.1×25.4	0.30	50±1.0	14	20
DC0600W40	200~1000	300	38.1×25.4	0.35	40±1.0	20	19
DC1500W20	1000~2000	200	14.22×8.89	0.20	20±1.0	20	19
DC1500W36	500~2700	200	38.1×25.4	0.40	36±1.5	18	18
DC1650W20	800~2500	150	25.4×12.7	0.25	20±1.5	20	19
DC3000W20	2000~4000	100	14.22×8.89	0.25	20±1.0	20	17.5
DC4000W10	2000~6000	100	14.22×5.08	0.25	10±1.0	18	17.7
DC4000W20	2000~6000	100	14.22×5.08	0.25	20±1.0	16	17.7
DC4250W20	2500~6000	100	14.22×8.89	0.25	22±3.0	11-29	14-35
DC4250W10	2500~6000	100	25.41×8.89	0.40	20±0.5	15	16.5

# Directional Coupler

## 定向耦合器

### SMD Package



Yantel directional coupler is a low profile, low cost high performance surface mounted device. This series products are suitable for AMPS, DCS, PCS, UMTs & 3G band applications. The excellent electrical characteristics of high isolation, high directivity, low insertion loss and can reach rigorous requirements of signal sampling, and feed-forward amplifiers.

### Applications

- Feed-forward Amplifiers
- Signal Sampling

### Features

- Very Low Loss
- High Directivity
- Low VSWR
- Good Repeatability
- CTE compatible with FR4, G-10, RF-35, RO4350B and polyimide
- Immersion gold, prevent surface oxidation & scratch
- RoHS Compliant
- Tape & Reel Package available

### Part No. Description

**	****	*	**
Directional Coupler	Center Frequency(MHz)	Size(mm)	Coupling Value
	0450=410-480	B=25.40 x 12.70	05=5 dB
	0900=800 to 1000	A=14.22 x 8.89	10=10 dB
	1400=1200 to 1600	E=14.22 x 5.08	20=20 dB
DC	1900=1700 to 2000	M=10.16 x 5.08	30=30 dB
	2100=2000 to 2300	P=6.35 x 5.08	
	2500=2300 to 2700	F=5.08x3.18	
	3500=3300 to 3800	T=2x1.25	

### Specifications

Standard Series

	Part No.	Freq.Range (GHz) fL- fU	Power (W)	Size LxW (mm)	Insertion Loss (dB)	Mean Coupling (dB)	Directivity (dB)	Return (dB)
New	DC09T10	0.7 ~ 1	2	2.0x1.25	0.3	10±0.5	18	18
New	DC09T20	0.7 ~ 1	2	2.0x1.25	0.3	20±0.5	18	18
New	DC19T10	1.7 ~ 2.2	2	2.0x1.25	0.4	10±0.5	18	18
New	DC19T20	1.7 ~ 2.2	2	2.0x1.25	0.4	20±0.5	18	18
New	DC25T10	2.3~ 2.7	2	2.0x1.25	0.2	10±0.6	20	20
New	DC25T20	2.3~ 2.7	2	2.0x1.25	0.2	20±0.6	20	20
New	DC35T10	3.2 ~ 3.7	2	2.0x1.25	0.3	10±0.5	18	20
New	DC35T20	3.2 ~ 3.7	2	2.0x1.25	0.3	20±0.6	18	20
New	DC55T20	4.4 ~ 6.3	2	2.0x1.25	0.5	20±0.8	16	16
New	DC07F02	0.69 ~ 1.0	25	5.08x3.18	0.3	2.1±0.2	17	19
New	DC09F05	0.7 ~ 1.0	25	5.08x3.18	0.25	5±0.3	16.5	19
New	DC09F20	0.7 ~ 1.0	25	5.08x3.18	0.14	20±1.0	14.5	10
New	DC19F05	1.7 ~ 2.3	25	5.08x3.18	0.15	5±0.3	20	20
New	DC19F20	1.4 ~ 2.7	25	5.08x3.18	0.3	20±1.5	16	16.5
New	DC20F02	1.8 ~ 2.2	24	5.08x3.18	0.25	1.85±0.2	16.7	18
New	DC20F30	1.4 ~ 2.7	100	5.08x3.18	0.3	30.5±1.5	16	15.6
New	DC25F02	2.3 ~ 2.7	20	5.08x3.18	0.35	2±0.20	16	16
New	DC25F04	2.3 ~ 2.7	25	5.08x3.18	0.25	4±0.30	18	20
New	DC25F05	2.1 ~ 2.8	20	5.08x3.18	0.25	5.0±0.5	20	20
New	DC30F30	2.3 ~ 3.8	100	5.08x3.18	0.1	30±1.5	20	18
	DC0900P05	0.8 ~ 1.0	25	6.35x5.08	0.35	5.0±0.5	14	17

Part No.	Freq.Range (GHz) fL- fU	Power (W)	Size L×W (mm)	Insertion Loss (dB)	Mean Coupling (dB)	Directivity (dB)	Return (dB)
DC0900P30	0.8 ~ 1.0	225	6.35×5.08	0.1	30±1.5	17.5	20.8
DC0900P10	0.8 ~ 1.0	25	6.35×5.08	0.4	10.0±0.80	11	14.1
DC1900P05	1.7 ~ 2.0	35	6.35×5.08	0.25	5±0.30	20	20
DC1900P05H	1.7 ~ 2.0	70	6.35×5.08	0.18	5±0.40	20	20.8
DC1400P10	1.2 ~ 1.7	80	6.35×5.08	0.25	10±1.0	20	20.8
DC1900P10	1.7 ~ 2.0	20	6.35×5.08	0.25	10±0.50	20	20.8
DC1900P20	1.7 ~ 2.0	25	6.35×5.08	0.2	20±2.5	16	15.5
DC1900P30	1.7 ~ 2.0	225	6.35×5.08	0.2	29±1.5	20	19.5
DC2100P05	2.0 ~ 2.3	30	6.35×5.08	0.25	5±0.30	20	20
DC2100P05H	2.0 ~ 2.3	70	6.35×5.08	0.18	5±0.30	21	23.1
DC2100P10	2.0 ~ 2.3	20	6.35×5.08	0.25	10±0.55	19	19.1
DC2100P18	1.85 ~ 2.22	25	6.35×5.08	0.15	18±0.5	30	23.1
DC2100P20	2.0 ~ 2.3	25	6.35×5.08	0.31	20±1.5	18	19.7
DC2300P18	2.25 ~ 2.5	25	6.35×5.08	0.15	18±0.50	30	23.1
DC2500P02	2.3 ~ 2.7	60	6.35×5.08	0.35	2±0.50	20	17.7
DC2500P05	2.3 ~ 2.7	60	6.35×5.08	0.35	5±0.40	19	20
DC2500P10	2.3 ~ 2.7	20	6.35×5.08	0.25	10±0.75	18	20.1
DC2500P20	2.3 ~ 2.7	25	6.35×5.08	0.16	20±1.5	16	22.1
DC3500P20	3.3 ~ 3.8	45	6.35×5.08	0.2	20±1.00	20	20.8
DC0900A05	0.8 ~ 1.0	250	14.22×8.89	0.19	5.0±0.35	21	21.2
DC0900A10	0.8 ~ 1.0	225	14.22×8.89	0.18	10.0±0.50	20	20.8
DC0900A20	0.8 ~ 1.0	150	14.22×8.89	0.18	20.0±0.70	20	20
DC0900A30	0.8 ~ 1.0	150	14.22×8.89	0.18	30.0±1.50	20	20.8
DC1500A10	1.0 ~ 2.0	60	14.22×8.89	0.15	10±1.0	20	20.8
DC1500A20	1.0 ~ 2.0	160	14.22×8.89	0.15	20±1.50	20	20.8
DC1500A30	1.0 ~ 2.0	120	14.22×8.89	0.16	30±2.4	12	20.8
DC1900A05	1.7 ~ 2.0	200	14.22×8.89	0.19	5.0±0.25	22	23.1
DC1900A10	1.7 ~ 2.0	175	14.22×8.89	0.15	10±0.40	20	20.8
DC1900A20	1.7 ~ 2.0	150	14.22×8.89	0.15	20.0±0.80	20	23.1
DC1900A30	1.7 ~ 2.0	120	14.22×8.89	0.21	30.0±1.50	18	20.8
DC2100A05	2.0 ~ 2.3	125	14.22×8.89	0.18	5.0±0.25	20	19.7
DC2100A10	2.0 ~ 2.3	175	14.22×8.89	0.2	10±0.20	25	23
DC2100A20	2.0 ~ 2.3	120	14.22×8.89	0.15	20.0±0.60	22	20.8
DC2100A30	2.0 ~ 2.3	120	14.22×8.89	0.13	30±1.0	17	20.8
DC0300L20	0.19 ~ 0.4	100	16.51×12.19	0.14	20.1±1.50	15.7	23
DC0350M20	0.35 ~ 0.47	20	10.16×5.08	0.1	19.8±2.0	19	24
DC0850M20	0.7 ~ 1.0	20	10.16×5.08	0.1	19.8±2.0	19	24
DC0900M30	0.8 ~ 1.0	20	10.16×5.08	0.1	26.5±0.4	15	16.5
DC3500M10	3.3 ~ 3.7	22	10.16×5.08	0.25	10.5±0.80	20	20.8
DC3500M20	3.3 ~ 3.8	80	10.16×5.08	0.2	20±1.00	21	20.8
DC0450E20	0.35~ 0.52	100	14.22×5.08	0.2	20.0±1.0	18	17.7
DC0900E20	0.8 ~ 1.0	200	14.22×5.08	0.1	20±1.0	22	21
DC2500E10	2.3 ~ 2.7	145	14.22×5.08	0.14	10±0.50	20	21.2
DC0900B30	0.8 ~ 1.0	355	25.4×12.7	0.1	29.8±1.0	25	24.9

# High Performance Passive RF IC 高性能无源射频IC

## • 2-way 0° Power Divider IC

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2-way 0° Power Divider

### Features

- Built with leading edge RF IC design technology
- Passive RF IC, no need external DC power supply
- No need external 100 ohm resistor
- Low Loss & Low VSWR
- High isolation
- Excellent amplitude & phase balance
- Ultra small size: 2.0 x 2.0 mm
- Excellent repeatability
- Average Power: 2 Watts @ divider, 1 Watts @ combiner
- Tape & Reel

### Applications

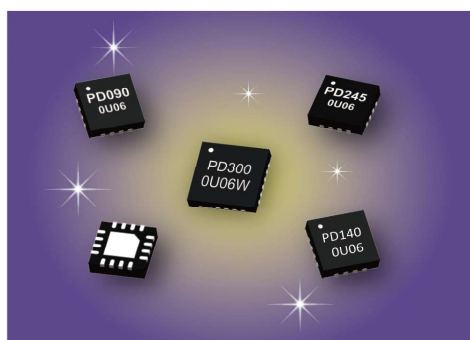
- Onboard information system (Blue link, E-call Box)
- Vehicle Cell Phone Signal Booster
- Real Time Location System
- RFID reader, active tag, antenna
- Small & mini repeater, LTE home repeater
- Wireless communications
- Satellite Communications
- GNSS receiver, GNSS boards

Part No.	Freq. Range (MHz)	Power (W) as a divider	Power (W) as a combiner	Package LxW (mm)	Insertion loss (dB)	Amplitude Balance (dB)	Phase Balance (deg)	Isolation (dB)	Input VSWR (:1)	Output VSWR (:1)
PD0500U03-210	280-610	2	1	DFN2X2	0.6	±0.1	±0.5	12~20	1.4	1.2
PD0900U03-070	800-1000	2	1	DFN2X2	0.4	±0.1	±0.5	20	1.2	1.12
PD1500U03-140	1350-1650	2	1	DFN2X2	0.35	±0.1	±0.5	20	1.2	1.2
PD1500U03W	1000-2000	2	1	DFN2X2	0.7	±0.1	±0.5	10~20	1.5	1.45
PD1850U03-080	1650-2050	2	1	DFN2X2	0.4	±0.1	±0.5	20	1.2	1.17
PD2150U03-090	1900-2350	2	1	DFN2X2	0.4	±0.1	±0.5	20	1.2	1.17
PD2450U03-100	2200-2650	2	1	DFN2X2	0.4	±0.1	±0.5	20	1.2	1.18
PD3550U03-110	3300-3800	2	1	DFN2X2	0.4	±0.1	±0.5	20	1.2	1.2
PD1700U03W	600-2900	2	1	QFN3X3	0.7	±0.1	±0.5	11~27	1.2~1.6	1.1~1.6

Wide band 2-way 0° Power Divider (QFN & Die) *New*

Part No.	Freq. Range (MHz)	Power (W) as a divider	Power (W) as a combiner	Package LxW (mm)	Insertion loss (dB)	Amplitude Balance (dB)	Phase Balance (deg)	Isolation (dB)	Input VSWR (:1)	Output VSWR (:1)
PD0715U03W	1800~12500	2.5	1.25	Die or QFN4X4	2.0	±0.4	±5	10	1.45	1.45
PD1425U03W	2000~26500	2.5	1.25	Die or QFN4X4	1.5	±0.4	±1	10	1.65	1.55
PD2275U03W	3000~42500	2.5	1.25	Die or QFN4X4	2.2	±0.5	±1	10	1.90	1.50
PD3350U03W	700~6000	2.5	1.25	Die or QFN5X5	1.5	±0.3	±1	10	1.65	1.30

## • 4-way 0° Power Divider IC 4路功分器IC 集成电路布图设计知识产权



4-way 0° Power Divider

### Features

- Built with leading edge RF IC design technology
- Passive RF IC, no need external DC power supply
- No need external 100 ohm resistor
- Small size (3x3 mm QFN package)
- Very low loss
- Tight amplitude balance
- High isolation
- Low VSWR
- Good repeatability
- Tape & Reel
- Power handling: 2 Watts as a divider, 0.5 Watts as a combiner

### Applications

- Vehicle Cell Phone Signal Booster
- Satellite Communications
- GNSS receiver, GNSS boards

Part No.	Freq. Range (MHz)	Power (W) as a divider	Power (W) as a combiner	Package LxW (mm)	Insertion loss (dB)	Amplitude Balance (dB)	Phase Balance (deg)	Isolation (dB)	Input VSWR (:1)	Output VSWR (:1)
PD0900U06-150	820~960	2	0.5	QFN3X3	0.8	±0.20	±1.5	22	1.3	1.2
PD1400U06-524	1200~1650	2	0.5	QFN3X3	0.8~1.1	±0.50	±2.0	14~32	1.6	1.4
PD1850U06-160	1700~2000	2	0.5	QFN3X3	0.8	±0.35	±1.5	21	1.35	1.25
PD2200U06-170	1700~2700	2	0.5	QFN3X3	0.6~1.1	±0.35	±2.0	12~35	1.8	1.6
PD2450U06-180	2300~2700	2	0.5	QFN3X3	0.7	±0.40	±2.0	18	1.35	1.25

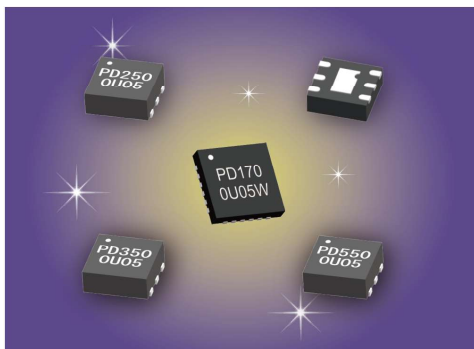
Wide band 4-way 0° Power Divider *New*

Part No.	Freq. Range (MHz)	VSWR (:1), Typ.	Isolation (dB), Typ.	Insertion Loss (dB) above 6.0 dB, Typ.	Phase Unbalance (deg), Typ.	Amplitude Unbalance (dB), Typ.	Die Size (mm <sup>2</sup> )	Package
PD3000U06W	2000~4000	<1.5	>20dB	<1.5	<10	<0.3	3x2.5x0.1	Die or QFN4X4
PD1200U06W	6000~18000	<1.5	>18dB	<2	<10	<0.3	3x2.5x0.1	Die or QFN4X4



## • 3-way 0° Power Divider IC

New 三路功分器IC



### Features

- Built with leading edge RF IC design technology
- Passive RF IC, no need external DC power supply
- No need external 100 ohm resistor
- Small size (4×4 mm or 2×2 mm)
- Very low loss
- Tight amplitude balance
- High isolation
- Low VSWR
- Good repeatability
- Tape & Reel
- Power handling: 2 Watts as a divider, 0.5 Watts as a combiner

### 3-way 0° Power Divider

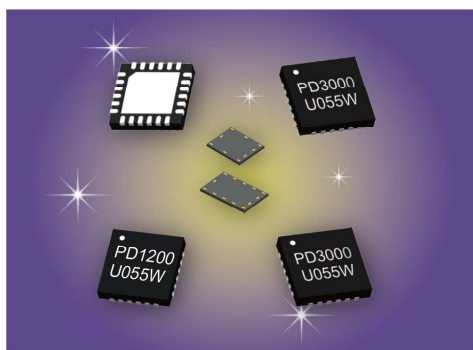
Part No.	Freq. Range (MHz)	VSWR(:1), Typ.	Isolation (dB), Typ.	Insertion Loss (dB) above 4.77 dB, Typ.	Phase Unbalance (deg), Typ.	Amplitude Unbalance (dB), Typ.	Die Size(mm <sup>2</sup> )	Package
PD1500U05	1200~1800	<1.7	>14	<0.7	<3	<0.1	0.8x1.2	Die or DFN2X2
PD2050U05	1600~2500	<1.8	>13	<0.9	<4	<0.2	0.8x1.2	Die or DFN2X2
PD2500U05	2000~3000	<1.7	>17	<0.9	<4	<0.2	0.8x1.2	Die or DFN2X2
PD2900U05	2300~3500	<1.5	>15	<0.9	<7	<0.3	0.8x1.2	Die or DFN2X2
PD3800U05	3100~4500	<1.5	>16	<0.9	<7	<0.3	0.8x1.2	Die or DFN2X2
PD6500U05	5500~7500	<1.6	>16	<0.9	<9	<0.3	0.8x1.2	Die or DFN2X2
PD7000U05	6000~8000	<1.5	>17	<0.8	<10	<0.3	0.8x1.2	Die or DFN2X2
PD8750U05	7500~10000	<1.7	>18	<1.2	<12	<0.3	0.8x1.2	Die or DFN2X2
PD1050U05	9000~12000	<1.5	>20	<1.2	<15	<0.3	0.8x1.2	Die or DFN2X2
PD2500U05	2300~2700	<1.4	>16	<0.8	<5	<0.2	0.8x1.2	Die or DFN2X2
PD3500U05	3200~3700	<1.5	>15.5	<0.7	<5	<0.2	0.8x1.2	Die or DFN2X2
PD5500U05	4400~6050	<1.78	>16	<1.2	<5	<0.2	0.8x1.2	Die or DFN2X2

### Wide band 3-way 0° Power Divider

Part No.	Freq. Range (MHz)	VSWR(:1), Typ.	Isolation (dB), Typ.	Insertion Loss (dB) above 4.77 dB, Typ.	Phase Unbalance (deg), Typ.	Amplitude Unbalance (dB), Typ.	Die Size(mm <sup>2</sup> )	Package
PD1700U05W	700~2700	<1.5	>20dB	<1.5	<10	<0.3	3x2.5x0.1	Die or QFN4X4
PD3000U05W	2000~4000	<1.5	>20dB	<1.5	<10	<0.3	3x2.2x0.1	Die or QFN4X4
PD1200U05W	6000~18000	<1.5	>18dB	<2	<10	<0.3	3x2.2x0.1	Die or QFN4X4

## • Wide band 5-way 0° Power Divider IC

New 宽带五路功分器IC



### Features

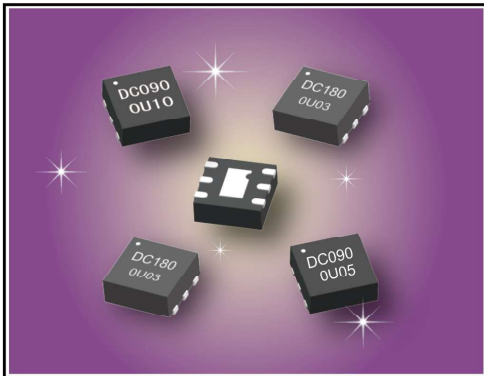
- Built with leading edge RF IC design technology
- Passive RF IC, no need external DC power supply
- No need external 100 ohm resistor
- Small size (4×4 mm QFN package)
- Very low loss
- Tight amplitude balance
- High isolation
- Low VSWR
- Good repeatability
- Tape & Reel
- Power handling: 2 Watts as a divider, 0.5 Watts as a combiner

### Wide band 5-way 0° Power Divider

Part No.	Freq. Range (MHz)	VSWR(:1), Typ.	Isolation (dB), Typ.	Insertion Loss (dB) above 7.0 dB, Typ.	Phase Unbalance (deg), Typ.	Amplitude Unbalance (dB), Typ.	Die Size(mm <sup>2</sup> )	Package
PD3000U07W	2000~4000	<1.8	>15dB	<1.5	<10	<0.3	3.5x2.5x0.1	Die or QFN4X4
PD1200U07W	6000~18000	<1.8	>15dB	<2	<10	<0.3	3.5x2.5x0.1	Die or QFN4X4

## • Directional Coupler IC 定向耦合器 IC

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### Features

- Built with leading edge RF IC design technology
- Passive RF IC, no need external DC power supply
- Wide Freq range 350-4000MHz
- Very Low Loss & Low VSWR
- Excellent directivity
- Broad frequency coverage
- High isolation
- Good repeatability
- Power handling : 4 or 5 watts
- Small size (2x2mm)
- Tape & Reel

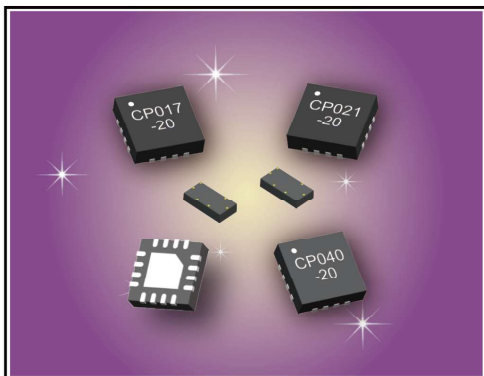
### Applications

- RFID reader, active tag, antenna
- Small & mini repeater, LTE home repeater
- Feed-forward amplifier
- Signal Sampling

Part No.	Freq. Range (MHz)	Power (W)	Plastic LxW(mm)	Coupling (dB)	Insertion loss (dB)	VSWR (:1)	Directivity (dB)
DC0410U20-060	350~410	5	2x2	19.5~18.3	0.11	1.06	20.2
	410~470	5	2x2	18.3~17	0.11	1.06	19.7
DC0850U20-122	730~800	5	2x2	21.5~20.7	0.10	1.06	28.1
	800~870	5	2x2	20.7~20.0	0.10	1.06	28.9
	870~970	5	2x2	20.0~19.1	0.10	1.06	29.5
DC0900U05	830~880	5	2x2	4.7~4.8	0.25	1.03	25.2
	880~930	5	2x2	4.5~4.6	0.25	1.03	24.8
DC0900U10-053	750~850	5	2x2	10~10.9	0.17	1.05	18.7
	850~950	5	2x2	9.2~10	0.16	1.05	19
	950~1050	5	2x2	8.4~9.2	0.18	1.05	19.3
DC1800U05-050	1700~1850	5	2x2	4.6~5.1	0.22	1.12	18.5
	1850~2050	5	2x2	4.2~4.6	0.18~0.21	1.14	19.4
	2050~2200	5	2x2	3.8~4.2	0.18	1.15	20.1
DC1800U10-123	1700~1850	4	2x2	10.7	0.25	1.04	32
	1850~2050	4	2x2	10~10.4	0.26	1.04	34
	2050~2200	4	2x2	9.5	0.29	1.03	36
DC4000U10-120	1700~2700	4	2x2	12.5~14.5	0.55	1.28	19
	2700~4000	4	2x2	11	0.85	1.25	25

## • Wide band Directional Coupler IC

New 宽带定向耦合器 IC 集成电路布图设计知识产权



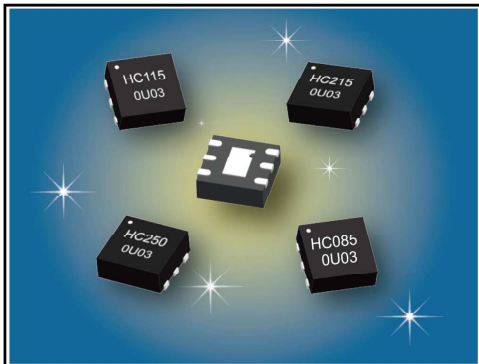
### 特性:

- 使用砷化镓工艺制作
- 小尺寸
- 工作在宽带或者超宽带频率范围
- 耦合量平坦度好
- 隔离度高

型号	工作频率	耦合量	定向型	驻波		插入损耗	芯片尺寸	封装形式
Model Number	Freq. (MHz)	Coupling(dB), Typ.	Directivity(dB), Typ.	VSWR(:1), Typ.		Insertion Loss (dB), Typ.	Die Size (mm <sup>2</sup> )	Package
				I/O	CPL			
DC1700U20	700~2700	20±2	17	1.1	1.3	0.3	1.2x1.0x0.1	Die or QFN3X3
DC1700U25	700~2700	25±2	17	1.1	1.3	0.3	1.2x1.0x0.1	Die or QFN3X3
DC2125U20	450~3800	20±2	17	1.1	1.3	0.3	1.2x1.0x0.1	Die or QFN3X3
DC2125U25	450~3800	25±2	17	1.1	1.3	0.3	1.2x1.0x0.1	Die or QFN3X3
DC4000U20	2000~6000	20±2	17	1.1	1.3	0.3	2.2x1.3x0.1	Die or QFN3X3
DC4000U25	2000~6000	25±2	17	1.1	1.3	0.3	2.2x1.3x0.1	Die or QFN3X3
DC1200U20	6000~18000	20±3	15	1.2	1.5	0.7	2.0x1.3x0.1	Die or QFN3X3
DC1200U25	6000~18000	25±3	15	1.2	1.5	0.7	2.0x1.3x0.1	Die or QFN3X3
DC3075U20	18000~43500	20±3	15	1.2	1.5	0.7	1.6x1.3x0.1	Die or QFN3X3
DC3075U25	18000~43500	25±3	15	1.2	1.5	0.7	1.6x1.3x0.1	Die or QFN3X3

## • 3dB 90° Coupler IC 3dB 90° 电桥 IC

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### Features

- Built with leading edge RF IC design technology
- Passive RF IC, no need external DC power supply
- Low Loss & Low VSWR
- High isolation
- Excellent amplitude & phase balance
- Ultra small size: 2.0 x 2.0 mm
- Excellent repeatability
- Tape & Reel

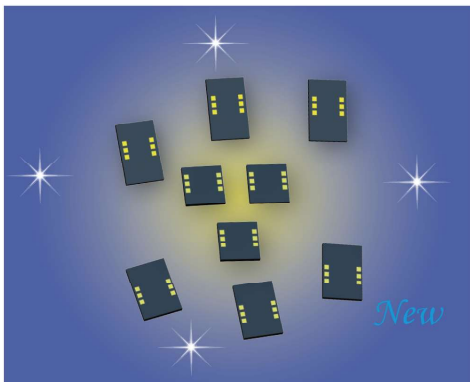
### Applications

- GPS antenna, Beidou antenna, Satellite antenna, Aviation antenna, Measuring antenna
- RFID reader, active tag, antenna
- Small & mini repeater, LTE home repeater
- Phase shifter / Attenuator
- Balanced amplifier / LNA configurations
- Modulators
- Mixers
- Power combining /dividing

Part No.	Freq.Range (MHz) fL- fU	Power (W)	Plastic L×W (mm)	Insertion Loss (dB)	Amplitude Balance (dB)	Phase Balance (deg)	Isolation (dB)	Return Loss (dB)
HC0850U03-010	820-900	4	DFN2X2	0.3	±0.45	±1.0	25	25
HC0925U03-020	880-960	4	DFN2X2	0.3	±0.3	±1.5	27	29
HC1150U03-190	1120-1260	4	DFN2X2	0.35	±0.7	±1.0	30	30
HC1650U03-200	1550-1750	4	DFN2X2	0.35	±0.6	±1.0	35	28
HC1850U03-030	1750-1950	4	DFN2X2	0.25	±0.5	±1.0	25	32
HC2150U03-040	2050-2250	4	DFN2X2	0.25	±0.5	±1.0	30	28
HC2500U03-050	2300-2650	4	DFN2X2	0.35	±0.5	±1.0	24	22
HC2500U03-055	2300-2650	4	DFN2X2	0.35	±0.5	±1.0	30	25
HC3550U03-060	3300-3800	4	DFN2X2	0.4	±0.4	±6.0	20	18
HC0064U03	48-80	4.5	Die or QFN5x5	0.5	±0.85	±4.0	20	15
HC0095U03	70-120	4.5	Die or QFN5x5	0.5	±0.80	±4.0	20	15
HC0150U03	110-190	4.5	Die or QFN5x5	0.5	±0.70	±4.0	20	15
HC0230U03	180-280	4.5	Die or QFN5x5	0.5	±0.90	±4.0	20	15

## • Gain Equalizers IC

New 均衡器 IC 集成电路版图设计知识产权



### Features

- Adopting International advanced GaAs technology
- Low VSWR
- Large range of equilibrium
- Die Package

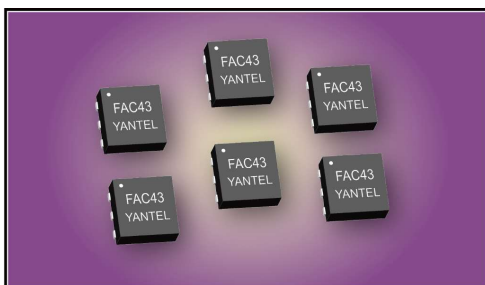
### Applications

- Broadband Microwave Modules;
- Radar
- EW, ECM, ECCM,
- T/R Components
- Equalizer is utilized as a compensation circuit to correct for a loss sloped by other elements within a circuit such as in amplifier stages

Part No.	Freq.Range (GHz)	Equilibrium quantity (dB)	Input Power (W)	Insertion Loss (dB)	Input VSWR (:1)	Output VSWR (:1)	impedance (ohm)	Package Size L×W×H(mm)
E6003C-1323	1.3~2.3	3.3	1	0.2@2.3GHz	1.20	1.20	50	1.2×0.85×0.1
E6008C-1418A	14~18	2	1	0.65@18GHz	1.20	1.20	50	0.85×0.85×0.1
E6014C-218	2~18	4	1	0.7@18GHz	1.30	1.30	50	0.85×0.85×0.1
E6018C-212	2~12	4	1	0.5@18GHz	1.35	1.35	50	1.35×0.85×0.1

## • Fixed Attenuator IC

New 固定衰减片 IC 集成电路版图设计知识产权



### Features

- Small Size (2×2mm DFN package)
- Super Wide bandwidth, DC~43.5GHz
- Excellent VSWR, 1.3:1 typ.
- High Power Handling, 2W

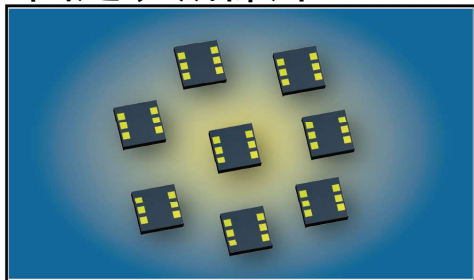


DC to 43.5 GHz, Up to 2W, 50Ω, 2×2mm DFN package, High attenuation accuracy, GaAs

Part Number	Attenuation (dB)	Attenuation Accuracy(typical) (dB)			VSWR:1(typical)		
		DC~18GHz	18~26.5GHz	26.5~43.5GHz	DC~18GHz	18~26.5GHz	26.5~43.5 GHz
FAC4300	0	±0.10	±0.13	±0.4	1.2	1.2	1.2
FAC4301	1	±0.10	±0.15	±0.4	1.2	1.2	1.3
FAC4302	2	±0.10	±0.2	±0.4	1.2	1.2	1.2
FAC4303	3	±0.10	±0.2	±0.4	1.2	1.2	1.25
FAC4304	4	±0.10	±0.2	±0.4	1.2	1.2	1.2
FAC4305	5	±0.10	±0.15	±0.25	1.2	1.2	1.3
FAC4306	6	±0.10	±0.15	±0.15	1.25	1.3	1.3
FAC4307	7	±0.15	±0.2	±0.2	1.25	1.35	1.35
FAC4308	8	±0.10	±0.15	±0.15	1.25	1.35	1.35
FAC4309	9	±0.10	±0.15	±0.15	1.3	1.35	1.4
FAC4310	10	±0.25	±0.25	±0.3	1.3	1.35	1.4
FAC4312	12	±0.15	±0.15	±0.15	1.2	1.3	1.3
FAC4315	15	±0.20	±0.2	±0.2	1.25	1.3	1.3
FAC4320	20	±0.20	±0.3	±0.5	1.1	1.2	1.45
FAC4325	25	±0.45	±0.2	±0.25	1.1	1.2	1.45
FAC4330	30	±0.15	±0.15	±0.15	1.15	1.2	1.4

## • Fixed Attenuator Die

New 固定衰减裸片 集成电路版图设计知识产权



### Features

- Adopting advance GaAs technology
- Excellent attenuation accuracy & phase balance
- High ESD level
- Low VSWR
- Die Package

DC to 43.5GHz, 0.8~2W, 50Ω, size(mm) : 0.6×0.6×0.1

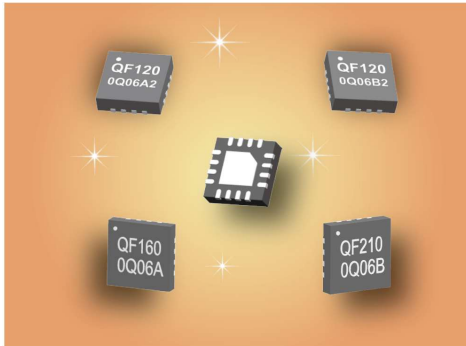
Part Number	Attenuation (dB)	Attenuation Accuracy(typical) (dB)			VSWR:1(typical)		
		DC~18GHz	18~26.5GHz	26.5~43.5GHz	DC~18GHz	18~26.5GHz	26.5~43.5 GHz
FAC4300D	0	±0.10	±0.13	±0.4	1.2	1.2	1.2
FAC4301D	1	±0.10	±0.15	±0.4	1.2	1.2	1.3
FAC4302D	2	±0.10	±0.2	±0.4	1.2	1.2	1.2
FAC4303D	3	±0.10	±0.2	±0.4	1.2	1.2	1.25
FAC4304D	4	±0.10	±0.2	±0.4	1.2	1.2	1.2
FAC4305D	5	±0.10	±0.15	±0.25	1.2	1.2	1.3
FAC4306D	6	±0.10	±0.15	±0.15	1.25	1.3	1.3
FAC4307D	7	±0.15	±0.2	±0.2	1.25	1.35	1.35
FAC4308D	8	±0.10	±0.15	±0.15	1.25	1.35	1.35
FAC4309D	9	±0.10	±0.15	±0.15	1.3	1.35	1.4
FAC4310D	10	±0.25	±0.25	±0.3	1.3	1.35	1.4
FAC4312D	12	±0.15	±0.15	±0.15	1.2	1.3	1.3
FAC4315D	15	±0.20	±0.2	±0.2	1.25	1.3	1.3
FAC4320D	20	±0.20	±0.3	±0.5	1.1	1.2	1.45
FAC4325D	25	±0.45	±0.2	±0.25	1.1	1.2	1.45
FAC4330D	30	±0.15	±0.15	±0.15	1.15	1.2	1.4

## • Quadrifilar IC (4-Phased Antenna Feeder)

### 四相位耦合器IC 集成电路布图设计知识产权

International Patent pending

Samples and EVB available now !



### Features

- Ultra small size: 3X3(mm)
- Excellent repeatability
- Excellent phase & amplitude balance
- Passive RF IC, no need external DC power supply
- With internal 50 ohm termination ( no need external termination )
- Built with leading edge RFIC design technology
- Have one Input port and four Output ports that have -6dB  $-(0^\circ, 90^\circ, 180^\circ, 270^\circ)$  of phase difference
- Quadrifilar Coupler, 4-Phased Antenna Feeder, Helicaled Antenna Feeder
- Tape & Reel
- RoHS & Reach Compliant

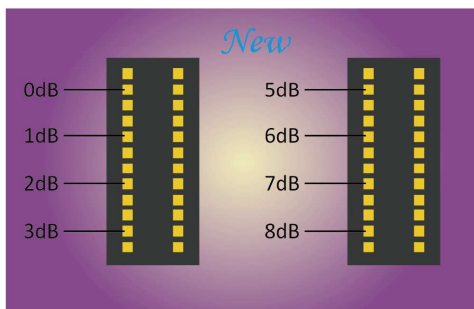
### Applications

- Realizing the World's Most Compact High Precision GNSS Antenna (GPS, BEIDOU, GALILEO, GLONASS)

Part No.	Freq. Range (MHz) fL-fU	Power (W)	Size LxW (mm)	Package type	Insertion Loss (dB)	Amplitude Balance (dB)	Phase Balance (degrees)	Isolation (dB)	Return Loss (dB)	Channel
QF0900Q06A	865~930	5	3x3	A	1.95	$\pm 0.6$	0~+6	9-20	7-13	
	910~930				1.5	$\pm 0.4$	0~+6	9-18	10-13	
QF0900Q06B	865~930	5	3x3	B	1.95	$\pm 0.6$	0~+6	9-20	7-13	
	910~930				1.5	$\pm 0.4$	0~+6	9-18	10-13	
QF1200Q06A	1165~1300	5	3x3	A	1.15	$\pm 0.5$	0~+9	9-17	11-40	
	1205~1278				1.05	$\pm 0.4$	0~+9	10-16	12-40	
QF1200Q06B	1165~1300	5	3x3	B	1.15	$\pm 0.5$	0~+9	9-17	11-40	
	1205~1278				1.05	$\pm 0.4$	0~+9	10-16	12-40	
QF1600Q06A	1520~1660	5	3x3	A	1.02	$\pm 0.9$	0~+8	9-18	11-27	
	1560~1620				0.94	$\pm 0.75$	0~+8	9-17	12-26	
QF1600Q06B	1520~1660	5	3x3	B	1.02	$\pm 0.9$	0~+8	9-18	11-27	
	1560~1620				0.94	$\pm 0.75$	0~+8	9-17	12-26	
QF2100Q06A	1980~2200	5	3x3	A	2	$\pm 0.9$	-8~+10	7-20	8-20	
	2090~2200				1.5	$\pm 0.9$	-8~+10	7-18	11-20	
QF2100Q06B	1980~2200	5	3x3	B	1.9	$\pm 1.0$	-9~+6	7-21	9-23	
	2079~2200				1.5	$\pm 1.0$	-9~+6	8-19	11-23	
QF2500Q06A	2400~2600	5	3x3	A	1.3	$\pm 0.5$	-10~+6	10	10	
QF2500Q06B	2400~2600	5	3x3	B	1.3	$\pm 0.5$	-10~+6	10	10	
QF1880Q06A	1165~1300	4	4x4	A	1.15	$\pm 0.5$	0~+9	9-17	11-40	Channel A
	1520~1660				1.02	$\pm 0.9$	0~+8	9-18	11-27	Channel B
	2400~2600				1.45	$\pm 0.9$	-10~+6	9	12	Channel C
QF2060Q06A	1520~1660	4	4x4	A	1.02	$\pm 0.9$	0~+8	9-18	11-27	Channel A
	1980~2200				1.5	$\pm 0.9$	-12~+5	7-20	10-24	Channel B
	2400~2600				1.45	$\pm 0.9$	-10~+6	9	12	Channel C
QF1400Q06A	1165~1300	4	4x4	A	1.15	$\pm 0.5$	0~+9	9-17	11-40	Channel A
	1520~1660				1.02	$\pm 0.9$	0~+8	9-18	11-27	Channel B

## • Variable Attenuator Die

New 可变衰减器组合 集成电路布图设计知识产权



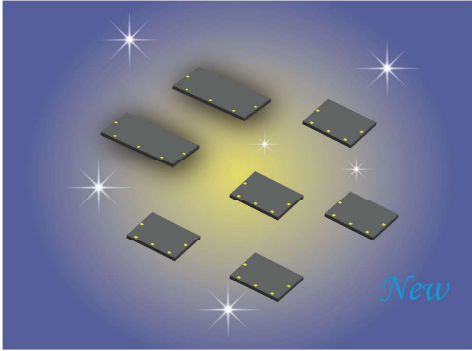
### Features

- Adopting advance GaAs technology
- Excellent attenuation accuracy & phase balance
- High ESD level
- Low VSWR
- Die Package

Part No.	Attenuation	Freq. Range (MHz) fL-fU	Attenuation Accuracy (dB)			Input Return Loss (dB)			Output Return Loss (dB)		
			(Min.)	(typical)	(Max.)	(Min.)	(typical)	(Max.)	(Min.)	(typical)	(Max.)
FAC1368C-150N	0/1/2/3	DC-26.5GHz	0	0.2	0.3	-30	-25	-30	-25		
		26.5GHz-43.5GHz	0.3	0.35	0.4	-25	-20	-25	-20		
FAC1368C-150P	5/6/7/8	DC-26.5GHz	0	0.2	0.3	-25	-20	-25	-20		
		26.5GHz-43.5GHz	0	0.2	0.3	-20	-17	-20	-17		

## ● Filter IC

New 滤波器 IC 集成电路布图设计知识产权



### 低通滤波器

特性:

- 使用硅或砷化镓工艺制作
- 具有低插损
- 高谐波抑制
- 小尺寸

### 带通滤波器

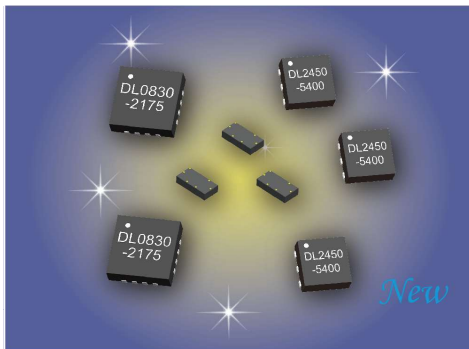
特性:

- 使用硅或砷化镓工艺制作
- 具有更好的噪声抑制
- 低频滤波性能好

型号	通带频率(3dB带宽)		回波损耗	插入损耗	带外衰减	芯片尺寸	封装形式
	Freq. (GHz)		RL(dB)	IL(dB)	RJ(dB)	Die Size(mm <sup>3</sup> )	Package
Model Number	Min	Max	TYP	TYP	TYP		
LPF100 (低通)	DC	1	15	0.3	>20dB@>1.6GHz	2.0x1.5x0.1	Die or QFN3X3
LPF200 (低通)	DC	2	15	0.3	>20dB@>3.4GHz	1.6x1.0x0.1	Die or QFN3X3
LPF300 (低通)	DC	3	15	0.3	>20dB@>4.5GHz	1.5x1.0x0.1	Die or QFN3X3
LPF400 (低通)	DC	4	15	0.3	>20dB@>5.7GHz	1.5x1.0x0.1	Die or QFN3X3
LPF500 (低通)	DC	5	15	0.3	>20dB@>7.3GHz	1.4x1.0x0.1	Die or QFN3X3
LPF600 (低通)	DC	6	15	0.3	>20dB@>8.1GHz	1.3x1.0x0.1	Die or QFN3X3
BPF013 (带通)	1	1.5	15	1.5	>20dB@<0.8GHz	2.5x1.5x0.1	Die or QFN3X3
					>20dB@>1.8GHz		
BPF015 (带通)	1.2	1.7	15	1.5	>30dB@<0.8GHz	2.2x1.2x0.1	Die or QFN3X3
					>20dB@>2.1GHz		
BPF025 (带通)	2.3	2.7	15	1.5	>20dB@<1.9GHz	2.0x1.0x0.1	Die or QFN3X3
					>20dB@>3.6GHz		
BPF035 (带通)	3.3	3.8	15	1.5	>20dB@<2.5GHz	1.5x1.0x0.1	Die or QFN3X3
					>20dB@>4.4GHz		
BPF055 (带通)	4.9	6	15	1.5	>20dB@<4.0GHz	1.3x1.0x0.1	Die or QFN3X3
					>20dB@>7.0GHz		

## ● Diplexer IC

New 双工器 IC 集成电路布图设计知识产权

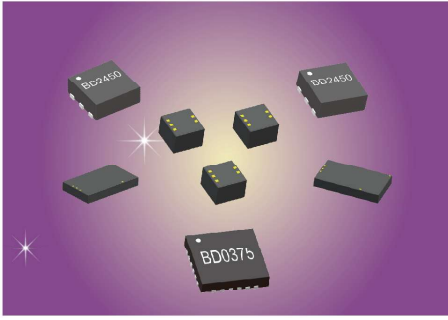


特性:

- 使用硅或砷化镓工艺制作
- 双工器用于集合不同频段的信号，并馈于一个宽带天线
- 同时具有带外抑制和输出端口带内隔离等功能
- 无线局域网双频天线与双工器结合，用于替代 2.4GHz 和 5GHz 的两个单频天线，有效节约空间并降低成本。

Part No.	Freq.Range(MHz)	IL(dB)	RL(dB)	ISO(dB)	RJ(dB @MHz)	Size(mm <sup>3</sup> )
DL0830-2175	700~960	1.0	25	20	30@1650	1.6x0.8x0.35 or QFN3x3
	1650~2700	0.7	20	20	20@960	
DL2450-5400	2400~2500	0.6	20	35	20@4800	0.8x0.8x0.35 or DFN2x2
	4900~5900	0.7	15	15	20@2500	

# Balun IC 巴伦IC



### 特性:

- 使用硅或砷化镓工艺制作
- 具有较好的幅度平衡度
- 具有较好的相位平衡度
- 体积小

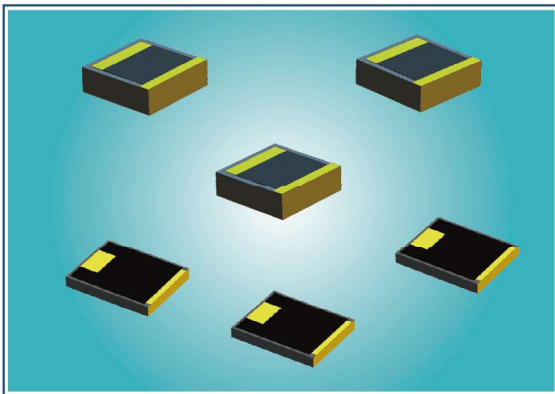
### 应用:

- WiMAX
- GPS
- UWB
- Bluetooth
- Zigbee
- GSM

### Balun Specifications

Part No.	Freq.Range(MHz)	L(dB)	RL(dB)	Unbalance		Size(mm <sup>3</sup> )
				Amp.(dB)	Pha.(deg)	
BD0375	250~500	1,3	12	0,1	2	2,5x1,5x0,35 or QFN4x4
BD2450	2400~2500	0,9	16	0,1	2	0,5x0,5x0,35 or DFN2x2

# Diamond Termination 金刚石负载 *New*



CVD Diamond Chip Terminations offer a unique combination of extreme high power ratings in very small packages. These terminatio may be used in applications up to 30 GHz and are ideal for applications with requirements for high power capability, broad frequency response, small footprint and light weight. The terminations are manufactured using all thin film construction and have a gold finish that it both wire bondable and solderable. This total thin film construction also makes them ideal for peak power applications. Select from tape and eel, bulk, or waffle packaging. These products are also lead free, RoHS compliant and S-level approved.

### Features

- Small Size - Light Weight
- Highest Thermal Performance Possible
- Excellent Peak Power Capability
- Rugged Passivated TaN Film
- Moisture Resistant
- Pure Gold input Pads
- Wire Bondable or Solderable
- High Power

### Applications

- Broadcast
- Higher Power Filters
- High Power Amplifiers
- Instrumentation
- Isolators
- Military
- Satellite Communications
- Phased Array Radar

Part No.	Nominal Impedance	Frequency Range	Input Power CW	VSWR (Max.)	SIZE(mm)
T1414D	50Ω	DC~20GHz	50 Watts	1,6	1,4*1,4*0,38
T3326D	50Ω	DC~14GHz	125 Watts	1,4	3,33*2,67*0,38

# Rotary Variable Attenuator 旋钮式可变衰减器 VAB Series (Step 步进式)

Patent product

China Patent No.: ZL 2008 1 0144258.3  
USA Patent No.: US 8,476,544 B2  
Japan Patent No.: 2011-524168  
Taiwan Patent No.: I 393347



## Features

- Input power: 2W, 5W
- Available in step adjusting
- Wide frequency range: DC ~2.7GHz
- Low VSWR, Low insertion loss
- Sealed structure moisture-proof & damp-proof, can be work outdoors in harsh condition
- Easy to operate, adjustment results visually readable
- Step series has locking devices within each attenuation, shock-proof capability
- Can reach over 10000 times adjustment.
- Easy to adjust, widely used in production line, or to be installed in the system & device for signal control

## Applications

- DAS POI
- Indoor Repeater
- Wireless Signal Coverage
- RF Labs

## Model Description (Step Variable Attenuator)

VAB      \*\*      \*\*      \*      \*      \*      \*  
Attenuation      Step value      Connector Type      Connector Position      Power      Impedance

Attenuation Range: 31 represents 0 ~ 31dB

Step value: 01 represents step value 1dB

Connector Type: SMA, N or BNC etc

Connector Position: "F" represents connectors is upsides, "R" represents connectors is rightsides

"L" represents connectors is leftsides, "D" represents connectors is undersides

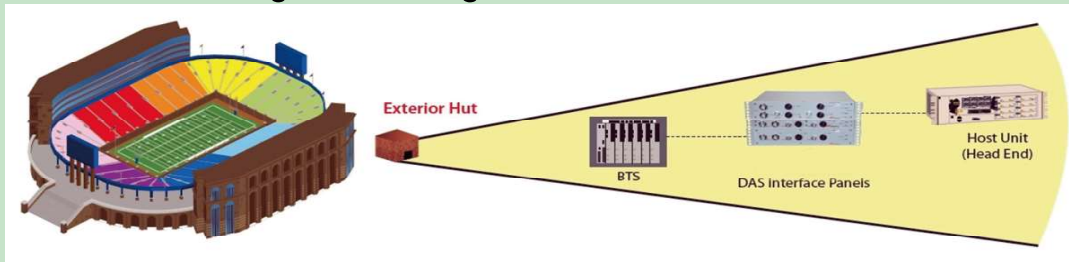
"A" or "S" or "B" represents back connectors, "no code" represents left and right connectors.

Power: 2 represents 2W, 5 represents 5W

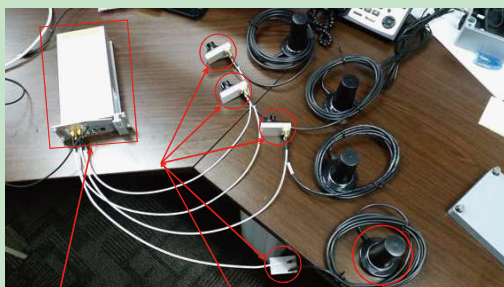
Impedance: Impedance: "B" represents 75 Ω impedance, "no code" represents 50 Ω impedance.

e.g.: VAB1101SA

## Wireless Signal Coverage in Offices/Hotels/Stadiums etc.



## Latest LTE Smartphone MIMO 4\*4 Antenna test system



Inserted Inside is the Latest LTE Smartphone with Four Antennas

Yantel VAB (Rotary Variable Attenuator)

Smartphone Antenna

## Innovative rear connector versions making the smallest and most compact P.O.I. systems





## SMA & N Type Single and Dual Concentric Series(back connectors)

- Frequency range: DC ~ 2.7GHz • Attenuation Range: 0-11(dB), 0-31(dB), 0-51(dB)
- Power rating: 2W or 5W • Impedance: 50Ω • Operating temperature: -40°C ~ +85°C

Model	Attenuation Range (dB)	Power (W)	Step Value (dB)	Attenuation Accuracy(dB) DC - 2.7GHz	Typ. VSWR:1			Insertion Loss at 0dB		Dimensions SMA type (unit:mm) W*H*L
					DC - 1GHz	1- 2GHz	2 - 2.7GHz	DC - 2GHz	2 - 2.7GHz	
VAB1101SA*	0~11	2 or 5	1	-0.5~+0.7	1.1	1.1	1.15	0.2	0.4	32*34.8*39
VAB3101SB*	0~31	2 or 5	1	±1	1.1	1.25	1.35	0.5	0.9	32*73.53*40
VAB3101SA*	0~31	2 or 5	1	±0.65	1.1	1.1	1.15	0.3	0.65	32*34.35*53.6
VAB3101SS*	0~31	2 or 5	1	-0.5~+0.8	1.1	1.15	1.2	0.5	0.65	34*34.1*57.2
VAB5101SA*	0~51	2 or 5	1	-0.65~+1	1.15	1.2	1.25	0.55	0.85	47.8*34.35*53
VAB1101NA*	0~11	2 or 5	1	+1.5	1.1	1.1	1.35	0.5	1.0	44*34.5*48.5
VAB3101NA*	0~31	2 or 5	1	+1.5	1.1	1.15	1.45	0.7	1.2	48*34.1*64

## SMA & N Type Single Dial Series(left and right connectors)

- Frequency range: DC ~ 2.7GHz • Attenuation Range: 0-11(dB), 0-31(dB), 0-51(dB)
- Power rating: 2W or 5W • Impedance: 50Ω • Operating temperature: -40°C ~ +85°C

Model	Attenuation Range (dB)	Power (W)	Step Value (dB)	Attenuation Accuracy(dB) DC - 2.7GHz	Typ. VSWR:1			Insertion Loss at 0dB		Dimensions SMA type (unit:mm) W*H*L
					DC - 1GHz	1- 2GHz	2 - 2.7GHz	DC - 2GHz	2 - 2.7GHz	
VAB1101S**	0~11	2 or 5	1	+1.5	1.1	1.1	1.35	0.5	1.0	41*35.15*42.5
VAB3101S**	0~31	2 or 5	1	-0.5~+0.8	1.1	1.15	1.2	0.5	0.65	34.8*34.35*53
VAB5101S**	0~51	2 or 5	1	-0.65~+1.0	1.15	1.2	1.25	0.55	0.85	49.4*34.35*52
VAB1101N**	0~11	2 or 5	1	+1.5	1.1	1.1	1.35	0.5	1.0	44*39.2*48.5
VAB3101N**	0~31	2 or 5	1	-0.5~+1	1.1	1.1	1.15	0.3	0.65	38.2*39*54
VAB5101N**	0~51	2 or 5	1	-0.65~+1.5	1.15	1.2	1.25	1.25	1.4	51.8*39*53

## SMA Type Single and Dual Concentric Series

- Frequency range: DC ~ 2.7GHz • Attenuation Range: 0-11(dB) or 0-31(dB)
- Power rating: 2W or 5W • Impedance: 50Ω • Operating temperature: -40°C ~ +85°C

Model	Attenuation Range (dB)	Power (W)	Step Value (dB)	Attenuation Accuracy (dB)		Typ. VSWR:1			Insertion Loss at 0dB		Dimensions SMA type (unit:mm) W*H*L
				DC~2.5GHz	DC~2.7GHz	DC~1GHz	1~2GHz	2~2.7GHz	DC~2GHz	2~2.7GHz	
VAB1101SF**	0~11	2 or 5	1	±0.5	-0.5~+0.7	1.1	1.1	1.15	0.2	0.4	32*37.35*39
VAB3101SF**	0~31	2 or 5	1	±0.7	-0.7~+0.9	1.15	1.2	1.25	0.3	0.6	32*80*39

# Non-abrupt Change Variable Attenuator 无突变可变衰减器

VAS Series, Step 步进式 (DC ~ 6GHz)

International patent product

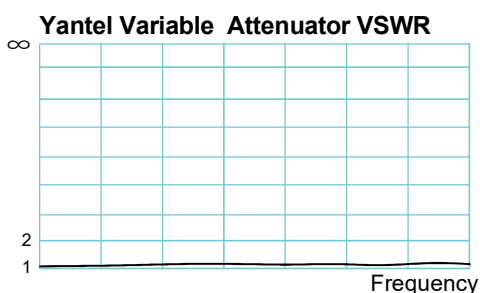
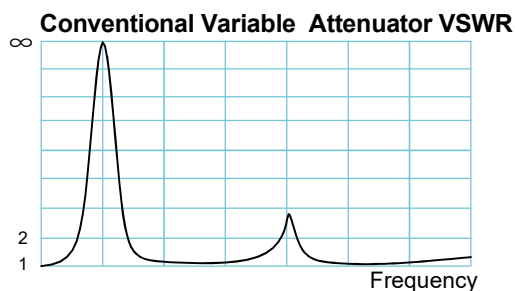
China Patent No.: CN 2008 8 0001111

USA Patent No.: US 8,212,648 B2

EU Patent No.: EP2190116A4



■ Abrupt change of reflection occurs in conventional variable attenuator when adjusting attenuation, resulted in RF Power Amplifier being burnt.



## Features

- Using advanced microstrip technology, ultra-small size
- High RF performance, ultra-competitive price
- Wide frequency range: DC to 6 GHz
- Low VSWR :1.1 ~ 1.5
- Low attenuation tolerance, low insertion loss.
- Adjusting the transmitting (receiving) distance of RF signal precisely. Adjusting accuracy is limited to 5cm.
- Wide attenuation values available are 1, 2, 3, 4, 5, 6, 8, 9, 10 and 12 dB.
- High adjustment accuracy
- Power rating: 2W, 5W
- Impedance: 50Ω or 75Ω
- Switch repeatability avg.>10000 operations(5000 cycles) per switch.
- PC(Polycarbonate) switch, operating temperature up to 120 °C
- It adopts an innovative technology, and thus it eliminates sudden big reflection in attenuators when attenuation is being adjusted, preventing the preliminary RF circuit(such as power amplifier) from being burnt, and keeping the system stable.
- Attenuation values are adjustable in power-on state, test data can be read continuously, no interruption.
- Connector Type: SMA, N, F, BNC etc. available
- Connector Position: Back Connectors or Left & right Connectors

## Applications

- DAS POI
- Indoor Repeater
- Wireless Signal Coverage
- Mobile communication repeater station system
- Signal emitter inside buildings
- WLAN repeater station system
- Radar
- Lab test

## Model Description

VAS <sup>\*\*</sup>Type <sup>\*\*</sup>Attenuation Range <sup>\*\*</sup>Step Values <sup>\*</sup>Connector Type

Max. Power <sup>\*</sup>Connector Option <sup>\*</sup>Connector Position <sup>\*</sup>Impedance

Notes:

Type: 06 represents type number.

Attenuation Range: Maximum attenuation

Connector Type: SMA, N, F, BNC etc.

Max. Power: 2 and 5 are available, currently 2W and 5W are available.

Connector Option: "1" represents Female/Female, "2" represents Male/Female, "3" represents Male/Male.

Connector Position: "A" represents back connectors, without "A" represents left and right connectors.

Impedance: "B" represents 75Ω impedance, "no code" represents 50Ω impedance.

# Specifications:

- N Type, DC~3GHz, 2W or 5W
- SMA Type, DC~4GHz or DC~5.8GHz, 2W or 5W

06 Series

Model	Attenuation Range (dB)	Step Values (dB)	Attenuation Accuracy Full Scale (dB)		Typical VSWR(:1)		Max. VSWR(:1)		Insertion Loss at 0 dB		Connector Type SMA/N/F/BNC Size (mm) for SMA/N	Package Type	
			DC ~ 3GHz	DC~3GHz	3~6GHz	DC~3GHz	3~6GHz	3GHz	L*W*H	Left & right Connectors		Back Connectors	
<b>2 switches, DC~6GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup>, N type available</b>													
VAS060903S2**	0 to 9	3	0~+1.2	1.3	1.5	1.35	1.6	0.65			51.1*23*10.5/ 81.4*32*16.0		
VAS061806S2**	0 to 18	6	0~+0.8	1.15	1.3	1.2	1.5	0.4					
VAS062010S2**	0 to 20	10	0~+1.0	1.1	1.3	1.1	1.5	0.4					
<b>3 switches, DC~6GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup>, N type available</b>													
VAS062103S2**	0 to 21	3	0~+1.2	1.15	1.35	1.2	1.5	0.5			57.3*23*10.5/ 87.6*32*16.0		
VAS062505S2**	0 to 25	5	0~+1.1	1.15	1.35	1.2	1.5	0.5					
VAS063010S2**	0 to 30	10	0~+1.0	1.1	1.3	1.2	1.5	0.5					
<b>4 switches, DC~6GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup>, N type available</b>													
VAS061501S2**	0 to 15	1	0~+1.55	1.15	-	1.35	-	1.0			54.4*23*20.9/ 65.5*23*10.5/ 95.8*32*16.0		
VAS061501S5**	0 to 15	1	0~+1.75	1.25	-	1.45	-	1.1					
VAS061501S5A*	0 to 15	1	0~+1.75	1.25	-	1.45	-	1.1					
VAS062402S2**	0 to 24	2	0~+1.4	1.1	1.3	1.2	1.5	0.7					
VAS063003S2**	0 to 30	3	0~+1.0	1.15	1.35	1.2	1.5	0.7					
VAS063505S2**	0 to 35	5	0~+0.9	1.15	1.35	1.3	1.5	0.7					
VAS064010S2**	0 to 40	10	0~+1.0	1.1	1.15	1.2	1.3	0.7					
<b>6 switches, DC~6GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup>, N type available</b>													
VAS0404H5S21**	0 to 4.5	0.1	0~+1.0	1.25	-	1.3	-	0.7			87.9*25*10.5/ 70.2*27*22.4/ 118.2*32*16.0		
VAS068P4P2S2**	0 to 8.4	0.2	0~+2.0	1.2	1.8	1.3	1.5	1.2					
VAS0625HS2**	0 to 25.5	0.5	0~+2.0	1.3	1.5	1.35	1.6	1.2					
VAS063501S2**	0 to 35	1	0~+2.0	1.25	-	1.45	-	1.3					
VAS063501S5**	0 to 35	1	0~+2.0	1.25	-	1.45	-	1.3					
VAS064001S5**	0 to 40	1	0~+2.0	1.25	-	1.45	-	1.3					
VAS064501S2**	0 to 45	1	0~+2.0	1.25	-	1.45	-	1.3					
VAS064402S2**	0 to 44	2	0~+1.8	1.2	1.4	1.3	1.5	1.2					
VAS064503S2**	0 to 45	3	0~+1.5	1.2	1.4	1.3	1.5	1.2					
VAS065505S2**	0 to 55	5	0~+2.0	1.15	-	1.3	1.5	1.3					
VAS066010S2**	0 to 60	10	-1.5~+2.0	1.2	-	1.4	-	1.4					
<b>9 switches, DC~6GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup>, N type available</b>													
VAS0636P2**	0 to 36.4	0.2	0~+3.5	1.2	1.4	1.3	1.5	1.8			116.5*25*10.5/ 146.8*32*16.0		
VAS0655HS2**	0 to 55.5	0.5	0~+2.0	1.2	1.4	1.3	1.6	1.8					
VAS036501F**	0 to 65	1	0~+2.0	1.5	-	1.8	-	1.2					
VAS066501S2**	0 to 65	1	0~+3.5	1.3	-	1.5	-	2.0					
VAS067402S2**	0 to 74	2	0~+2.0	1.15	1.35	1.2	1.5	1.8					
VAS067203S2**	0 to 72	3	0~+3.5	1.2	1.4	1.3	1.6	2.3					
VAS068505S2**	0 to 85	5	0~+2.0	1.2	1.4	1.3	1.6	1.8					
VAS069010S2**	0 to 90	10	0~+3.0	1.2	1.3	1.3	1.5	2.0					
<b>12 switches, DC~6GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup>, N type available</b>													
VAS069501S2**	0 to 95	1	0~+3.0	1.15	-	1.35	-	2.5			117.6*27*22.4/ 128.8*27*11.7		
VAS069501S5**	0 to 95	1	±2.5	1.2	-	1.4	-	1.5					
VAS0610001S2**	0 to 100	1	0~+3.0	1.15	-	1.35	-	2.5					
VAS0610001S2A*	0 to 100	1	0~+3.0	1.15	-	1.35	-	2.5					
VAS0611001S2**	0 to 110	1	±3.0	1.15	-	1.35	-	2.2					
<b>* Plastic screw driver for adjusting attenuation</b>													

- N Type, DC~5.8GHz, High attenuation accuracy, 2W or 5W
- SMA Type, DC~5.8GHz, High attenuation accuracy, 2W or 5W

07 Series

Model	Attenuation Range (dB)	Step Values (dB)	Attenuation Accuracy Full Scale (dB)		Typical VSWR(:1)		Max. VSWR(:1)		Insertion Loss at 0 dB		Connector Type SMA/N/F/BNC Size (mm) for SMA/N	Package Type
			DC~4GHz	4~5.8GHz	DC~4GHz	4~5.8GHz	DC~4GHz	4~5.8GHz	DC~4GHz	4~5.8GHz		
<b>4 switches, DC~5.8GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup></b>												
VAS071501*5**	0 to 15	1	-1.0~+2.0	0~+4.5	1.20	1.30	1.65	1.2	2.0		46.4*23*11.15(SMA) 47*28*19.5(N)	
VAS072402*5**	0 to 24	2	-1.1~+2.1	0~+6.5	1.20	1.30	1.40	1.65	0.8	1.25		
VAS073505*5**	0 to 35	5	-1.1~+2.1	0~+6.5	1.20	1.30	1.40	1.65	0.8	1.25		
VAS074010*5**	0 to 40	10	-1.2~+3.0	0~+6.5	1.30	1.30	1.65	1.65	0.8	1.25		
<b>6 switches, DC~5.8GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup></b>												
VAS073501*2**	0 to 35	1	0~+3.0	0~+6.0	1.20	1.35	1.45	1.65	1.7	3.2	62.2*25*11.65(SMA) 63*28*19.5(N)	
VAS073501*5**	0 to 35	1	-1.0~+3.5	0~+7.0	1.20	1.30	1.40	1.65	1.4	1.5		
VAS074402*5**	0 to 44	2	-1.6~+3.5	4.0~+10	1.25	1.30	1.50	1.65	1.2	2.0		
VAS074503*5**	0 to 45	3	-1.5~+4.5	0~+10	1.30	1.40	1.60	1.75	1.0	1.5		
VAS0725H*2**	0 to 25.5	0.5	0~+3.5	0~+6.0	1.20	1.35	1.45	1.65	1.7	3.2		
<b>7 switches, DC~5.8GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup></b>												
VAS074501*2**	0 to 45	1	-0.3~+3.5	-6.0~+6.0	1.20	1.30	1.50	1.55	2.2	3.5	70.9*28*19.5(N)	
VAS074501*5**	0 to 45	1	-1.0~+3.0	0~+6.0	1.25	1.35	1.50	1.65	1.8	3.2		
<b>9 switches, DC~5.8GHz, Average Power 2W or 5W, Impedance 50Ω or 75Ω<sup>①</sup></b>												
VAS076501*2**	0 to 65	1	0~+3.5	-2.0~+7.0	1.10	1.25	1.35	1.55	2.6	4.2	85.5*25*11.65(SMA) 86.6*28*19.5(N)	
VAS076501*5**	0 to 65	1	-1~+3.0	-1.0~+6.0	1.25	1.35	1.50	1.70	1.5	2.5		
VAS077402*2**	0 to 74	2	0~+3.5	-2.0~+7.0	1.10	1.25	1.35	1.60	2.6	4.2		
VAS077402*5**	0 to 74	2	-2~+3.5	-2.0~+7.0	1.10	1.25	1.50	1.70	1.5	2.5		
VAS079010*2**	0 to 90	10	0~+3.0	-5.0~+5.0	1.10	1.25	1.35	1.55	3.0	5.5		
VAS079010*5**	0 to 90	10	-2~+3.0	-5.0~+5.0	1.10	1.25	1.50	1.70	1.5	2.5		

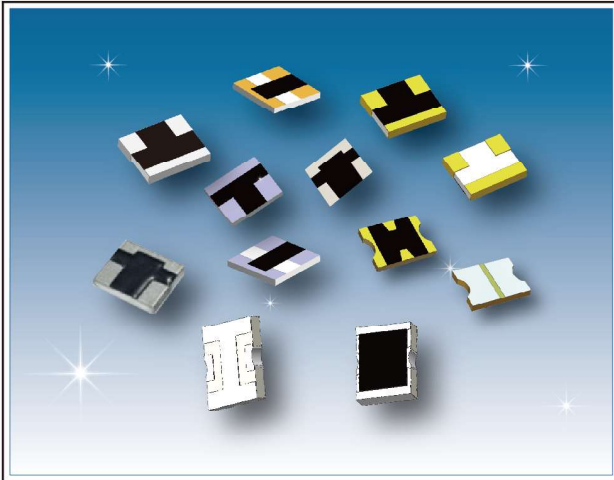
Note: ① For detailed specifications of 75 ohm attenuator, please check with our sales representatives. ② Custom attenuation value is available.

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## Fixed Attenuator Chip 固定衰减片



### Features

- Frequency range: DC to 3GHz, DC to 6GHz, DC to 10GHz, DC to 12.4GHz, DC to 18GHz, DC to 26.5GHz
- Laser trimmed
- Material in Al<sub>2</sub>O<sub>3</sub>, BeO or AlN
- Attenuation: 1dB to 30dB
- Input power: 100mW~400W
- High attenuation accuracy
- Low VSWR
- Temperature stable -55°C to +150°C
- Power: 2W or 5W

### Applications

- Communications
- Radar
- Point to Point base station
- Broadcast television
- Digital transmission

### Specifications

**DC to 6GHz, 2W, 5W, 50Ω, thick film, size(mm): 3.10×3.70×0.53 Al<sub>2</sub>O<sub>3</sub>(2w), BeO(5w) or AlN(5w) \* :A,Planar \* :B,Triple wrap**

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)			VSWR:1 (typical)		
		DC~2GHz	2~4GHz	4~6GHz	DC~2GHz	2~4GHz	4~6GHz
FAC0601*	1	±0.2	+0.3	+0.5	1.10	1.20	1.30
FAC0602*	2	±0.2	+0.5	+0.8	1.10	1.20	1.30
FAC0603*	3	±0.2	+0.5	+0.8	1.10	1.20	1.30
FAC0606*	6	±0.2	+0.5	+0.8	1.10	1.20	1.30
FAC0610*	10	±0.2	+0.3	+0.5	1.10	1.20	1.30

**DC to 10GHz, 100mW, 50Ω, thick film, size(mm): 1.25×2.00×0.45**

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)				VSWR:1 (typical)			
		DC~4GHz	4~6GHz	6~8GHz	8~10GHz	DC~4GHz	4~6GHz	6~8GHz	8~10GHz
FAC1001	1	±0.3	+0.5	+0.6	+1.0	1.15	1.20	1.25	1.40
FAC1002	2	±0.3	+0.5	+0.6	+1.0	1.15	1.20	1.25	1.40
FAC1003	3	±0.3	+0.5	+0.6	+1.0	1.15	1.20	1.25	1.40
FAC1006	6	±0.3	+0.5	+0.6	+1.0	1.15	1.20	1.25	1.40
FAC1010	10	±0.3	+0.6	+0.7	+1.0	1.15	1.20	1.25	1.40

**DC to 12.4GHz, 300mW, 50Ω, thick film, size(mm): 1.52×1.90×0.28**

\* : A,Planar \* : B,Triple wrap

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)				VSWR:1 (typical)			
		DC~3GHz	3~6GHz	6~8.5GHz	8.5~12.4GHz	DC~3GHz	3~6GHz	6~8.5GHz	8.5~12.4GHz
FAC1201*	1	±0.3	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1202*	2	±0.3	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1203*	3	±0.3	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1206*	6	±0.3	+0.5	+0.75	+1.0	1.05	1.15	1.25	1.40
FAC1210*	10	±0.3	+0.5	+0.75	+1.0	1.05	1.20	1.25	1.40

**DC to 12.4GHz, 2W, 50Ω, thin film, gold terminal, wrap ground terminal, size(mm): 3.10×3.68×0.41**

\* : A, for wire-bonding \* : B, for lead free reflow \* : C, for triple wrap

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)				VSWR:1 (typical)			
		DC~3GHz	3~6GHz	6~8.5GHz	8.5~12.4GHz	DC~3GHz	3~6GHz	6~8.5GHz	8.5~12.4GHz
FAC1201P*	1	±0.3	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1202P*	2	±0.3	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1203P*	3	±0.3	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1206P*	6	±0.3	+0.5	+0.75	+1.0	1.05	1.15	1.25	1.40
FAC1210P*	10	±0.3	+0.5	+0.75	+1.0	1.05	1.20	1.25	1.40

# Fixed Attenuator Chip

## 固定衰减片

**DC to 18GHz, 200mW, 50Ω, thin film, gold terminal, wrap ground terminal, size(mm): 1.52×1.90×0.41**  
 \* : A, for wire-bonding \* : B, for lead free reflow \* : C, for triple wrap

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)				VSWR:1 (typical)			
		DC ~ 4GHz	4~8GHz	8~12.4GHz	12.4~18GHz	DC~4GHz	4~8GHz	8~12.4GHz	12.4~18GHz
FAC1801*	1	±0.5	+0.5	+0.5	+0.8	1.05	1.10	1.15	1.40
FAC1802*	2	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1803*	3	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1804*	4	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1806*	6	±0.5	+0.5	+0.75	+1.0	1.05	1.15	1.25	1.40
FAC1810*	10	±0.5	+0.5	+0.75	+1.0	1.05	1.20	1.25	1.40

**DC to 18GHz, 2W, 50Ω, thin film, gold terminal, wrap ground terminal, size(mm): 3.10×3.68×0.41**  
 \* : A, for wire-bonding \* : B, for lead free reflow

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)				VSWR:1 (typical)			
		DC ~ 4GHz	4~8GHz	8~12.4GHz	12.4~18GHz	DC~4GHz	4~8GHz	8~12.4GHz	12.4~18GHz
FAC1801P*	1	±0.5	+0.5	+0.5	+0.8	1.05	1.10	1.15	1.40
FAC1802P*	2	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1803P*	3	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1804P*	4	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC1806P*	6	±0.5	+0.5	+0.75	+1.0	1.05	1.15	1.25	1.40
FAC1810P*	10	±0.5	+0.5	+0.75	+1.0	1.05	1.20	1.25	1.40

**DC to 20GHz, 200mW, 50Ω, thick film, wrap ground terminal**

\* : A, for wire-bonding(Wrap ground) ; Size(mm): 1.52×1.81×0.38 \* : B, for lead free reflow(Triple wrap); Size(mm): 1.52×1.91×0.38

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)				VSWR:1 (typical)			
		DC~8.5GHz	8.5~12.4GHz	12.4~18GHz	18~26.5GHz	DC~8.5GHz	8.5~12.4GHz	12.4~18GHz	18~26.5GHz
FAC2001*	1	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC2002*	2	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC2003*	3	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC2006*	6	±0.5	+0.5	+0.75	+1.0	1.05	1.15	1.25	1.40
FAC2010*	10	±0.5	+0.5	+0.75	+1.0	1.05	1.20	1.25	1.40

**DC to 26.5GHz, 200mW, 50Ω, thin film, gold terminal, wrap ground terminal, size(mm): 1.52×1.90×0.28**

\* : A, for wire-bonding \* : B, for lead free reflow

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)				VSWR:1 (typical)			
		DC~8.5GHz	8.5~12.4GHz	12.4~18GHz	18~26.5GHz	DC~8.5GHz	8.5~12.4GHz	12.4~18GHz	18~26.5GHz
FAC2601*	1	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC2602*	2	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC2603*	3	±0.5	+0.5	+0.5	+1.0	1.05	1.10	1.15	1.40
FAC2606*	6	±0.5	+0.5	+0.75	+1.0	1.05	1.15	1.25	1.40
FAC2610*	10	±0.5	+0.5	+0.75	+1.0	1.05	1.20	1.25	1.40

**16 to 36GHz, 100mW,**

**50Ω,for wire-bonding,Size(mm) : 3.05×1.65×0.28(mm) ;**

Part No.	Attenuation (dB)	Typical Attenuation Accuracy(dB)	VSWR:1 (typical)
		16~36GHz	16~36GHz
FAC3601*	1	±1.0	1.30
FAC3602*	2	±1.0	1.30
FAC3603*	3	±1.0	1.30
FAC3606*	6	±1.0	1.35
FAC3610*	10	±1.0	1.35



## Fixed Attenuator 固定衰减器

Patent Product

China Patent No.: CN 2009 1 0006333

USA Patent No.: US 8,100,721 B2



### Features

- Frequency range from DC to 18GHz
- Attenuation from 1dB to 40dB
- Input power: 2W, 5W, 25W, 50W, 80W, 100W, 150W
- High attenuation accuracy
- Low VSWR
- Stainless steel or brass
- Ceramic chip
- Low cost-high performance

### Applications

- Communications
- Digital transmission
- Radar
- Broadcast television
- Test

### Model Description

FATXXXXXXXX

- X – Material: (no code)=Brass, (S)=Stainless steel
- X – power handling: 2W, 5W, 25W, 50W, 100W
- X – connector type: B-SMB, S-SMA, Q-QMA, M-MCX, C-MMCX, B-BNC or N- N type connector
- XX – attenuation: \*\*dB
- XX – frequency range: 06 represents DC to 6GHz  
18 represents DC to 18GHz

suffix "M" refers to the miniature size type

Example: Model No. FAT0603S2 is fixed attenuator DC-6GHz, 3dB, SMA type, 2W, Brass.

### Specifications

- DC to 6GHz, 2 Watts or 5 Watts, SMA(S), N type(N), QMA(Q), MCX(M), MMCX(C), BNC(B), Coaxial Fixed Attenuator

Model	Freq. Range (GHz) f <sub>L</sub> -f <sub>U</sub>	Attenuation (dB)	Attenuation Accuracy (dB)		VSWR (:1)				Power (Watt)
			DC - 3GHz	3 - 6GHz	DC - 2GHz	2 - 4GHz	4 - 6GHz	DC - 6GHz	
					Typical	Typical	Typical	Max.	
FAT0601 ***	DC-6	1	±0.45	±0.45	1.10	1.15	1.20	1.30	2
FAT0602 ***		2	±0.35	±0.35	1.10	1.15	1.20	1.30	
FAT0603 ***		3	±0.35	±0.35	1.10	1.15	1.20	1.30	
FAT0604 ***		4	±0.35	±0.35	1.10	1.15	1.20	1.30	
FAT0605 ***		5	±0.35	±0.35	1.10	1.15	1.20	1.30	
FAT0606 ***		6	±0.35	±0.35	1.10	1.15	1.20	1.30	
FAT0609 ***		9	±0.60	±0.60	1.10	1.15	1.20	1.30	
FAT0610 ***		10	±0.60	±0.60	1.10	1.15	1.20	1.30	
FAT0615 ***		15	±0.70	±0.70	1.10	1.15	1.20	1.30	
FAT0620 ***		20	±0.60	±0.60	1.10	1.15	1.20	1.35	
FAT0630 ***		30	±2.00	±2.00	1.10	1.15	1.20	1.35	

DC-6GHz Outline Dimensions (unit: mm&inch)

size for SMA 1-12(dB)	size for SMA 15-40(dB)	size for N 1-12(dB)	size for N 15-40(dB)

● DC to 6GHz, 2 Watts, SMA(S) type Miniature Size Coaxial Fixed Attenuator

Model	Freq. Range (GHz) $f_L-f_U$	Attenuation (dB)	Attenuation Accuracy (dB)		VSWR (:1)				Power (Watt)
			DC - 3GHz	3 - 6GHz	DC - 2GHz	2 - 4GHz	4 - 6GHz	DC - 6GHz	
					Typical	Typical	Typical	Max.	
FAT0601S2*M	DC-6	1	±0.2	±0.4	1.10	1.15	1.20	1.25	2
FAT0603S2*M		3	±0.2	±0.4	1.10	1.15	1.20	1.25	
FAT0606S2*M		6	±0.2	±0.3	1.10	1.15	1.20	1.25	
FAT0609S2*M		9	±0.2	±0.5	1.10	1.15	1.20	1.25	
FAT0610S2*M		10	±0.25	±0.5	1.10	1.15	1.20	1.25	
FAT0615S2*M		15	±0.55	±0.6	1.10	1.15	1.20	1.25	
FAT0620S2*M		20	±0.6	±0.6	1.10	1.15	1.20	1.25	
FAT0630S2*M		30	±0.6	±1.2	1.10	1.15	1.20	1.25	

DC-6GHz Outline Dimensions (unit: mm&inch)

size for SMA 1-12(dB)	size for SMA 15-40(dB)

● DC to 18GHz, 2 Watts, SMA(S) type Miniature Size Coaxial Fixed Attenuator

Model	Freq. Range (GHz) $f_L-f_U$	Attenuation (dB)	Attenuation Accuracy (dB) DC to 18GHz	VSWR (:1)				Power (Watt)
				DC - 6GHz	6 - 12GHz	12- 18GHz	DC - 18GHz	
				Typical	Typical	Typical	Max.	
FAT1801S2SM	DC-18	1	±0.40	1.15	1.25	1.30	1.35	2
FAT1802S2SM		2	±0.40	1.15	1.25	1.30	1.35	
FAT1803S2SM		3	±0.40	1.15	1.25	1.30	1.35	
FAT1804S2SM		4	±0.40	1.15	1.25	1.30	1.35	
FAT1805S2SM		5	±0.40	1.15	1.25	1.30	1.35	
FAT1806S2SM		6	±0.40	1.15	1.25	1.30	1.35	
FAT1808S2SM		8	±0.60	1.15	1.20	1.30	1.35	
FAT1809S2SM		9	±0.60	1.15	1.20	1.30	1.35	
FAT1810S2SM		10	±0.60	1.15	1.20	1.30	1.35	
FAT1815S2SM		15	±0.60	1.15	1.20	1.30	1.35	
FAT1820S2SM		20	±0.80	1.15	1.25	1.30	1.35	
FAT1830S2SM		30	±0.85	1.15	1.25	1.30	1.35	
FAT1840S2SM		40	±1.50	1.15	1.25	1.30	1.35	

DC-18GHz Outline Dimensions (unit: mm&inch)

size for SMA 1-12(dB)	size for SMA 15-40(dB)

● DC to 18GHz, 2 Watts or 5 Watts, SMA(S),N type(N), Coaxial Fixed Attenuator

Model	Freq. Range (GHz) $f_L-f_U$	Attenuation (dB)	Attenuation Accuracy (dB) DC to 18GHz	VSWR (:1)				Power (Watt)
				DC - 8GHz	8 - 12GHz	12- 18GHz	DC - 18GHz	
				Typical	Typical	Typical	Max.	
FAT1803***	DC-18	3	±0.3	1.15	1.20	1.30	1.50	2
FAT1806***		6	±0.5	1.15	1.20	1.30	1.50	
FAT1810***		10	±1.0	1.15	1.20	1.30	1.50	
FAT1820***		20	±1.2	1.15	1.20	1.30	1.50	
FAT1830***		30	±1.5	1.15	1.30	1.55	1.65	
FAT1840***		40	±1.5	1.15	1.30	1.55	1.65	

DC-18GHz Outline Dimensions (unit: mm&inch)

size for SMA 1-12(dB)	size for SMA 15-40(dB)	size for N 1-12(dB)	size for N 15-40(dB)

● DC to 3GHz, 5 Watts or 25 Watts, N(N) type Coaxial Fixed Attenuator

Model	Freq. Range (GHz) f <sub>L</sub> -f <sub>U</sub>	Attenuation (dB)	Attenuation Accuracy (dB)	VSWR (:1)				Power (Watt)
				DC - 1GHz		DC - 3GHz		
				DC to 3GHz	Typical	Typical	Typical	
FAT0340N5	DC-3	40	±0.75	1.10	1.15	1.20	1.25	5
FAT0350N5		50	±0.75	1.10	1.15	1.20	1.25	
FAT0360N5		60	±0.75	1.10	1.15	1.20	1.25	
FAT0370N5		70	±1.0	1.10	1.15	1.20	1.25	
FAT0380N5		80	±1.0	1.10	1.15	1.20	1.25	
FAT0390N5		90	±1.2	1.10	1.15	1.20	1.25	
FAT0303N25	DC-3	3	±0.70	1.15	1.25	1.30	1.35	25
FAT0306N25		6	±0.70	1.15	1.25	1.30	1.35	
FAT0310N25		10	±0.70	1.15	1.25	1.30	1.35	
FAT0320N25		20	±1.0	1.15	1.25	1.30	1.35	
FAT0330N25		30	±1.0	1.15	1.25	1.30	1.35	
FAT0340N25		40	±1.2	1.15	1.25	1.30	1.35	

DC-3GHz 5W Outline Dimensions (unit: mm&inch) DC-3GHz 25W Outline Dimensions (unit: mm&inch)

● DC to 3GHz, 50、80、100 or 150Watts, N(N) type Low PIM Coaxial Fixed Attenuator

Model	Freq. Range (GHz) f <sub>L</sub> -f <sub>U</sub>	Attenuation (dB)	Attenuation Accuracy (dB)	VSWR (:1)				Power (Watt)
				DC - 1GHz		DC - 3GHz		
				DC to 3GHz	Typical	Typical	Typical	
FAT0303N50	DC-3	3	±0.50	1.10	1.20	1.25	1.30	50
FAT0306N50		6	±0.50	1.10	1.20	1.25	1.30	
FAT0310N50		10	±0.50	1.10	1.20	1.25	1.30	
FAT0320N50		20	±0.50	1.10	1.20	1.25	1.30	
FAT0330N50		30	±0.60	1.10	1.20	1.25	1.30	
FAT0340N50		40	±0.60	1.10	1.20	1.25	1.30	
FAT0303N80	DC-3	3	±0.60	1.10	1.20	1.25	1.30	80
FAT0306N80		6	±0.60	1.10	1.20	1.25	1.30	
FAT0310N80		10	±0.60	1.10	1.20	1.25	1.30	
FAT0320N80		20	±1.0	1.15	1.25	1.30	1.35	
FAT0330N80		30	±1.0	1.15	1.25	1.30	1.35	
FAT0340N80		40	±1.0	1.15	1.25	1.30	1.35	
FAT0303N100	DC-3	3	±0.65	1.10	1.20	1.25	1.30	100
FAT0306N100		6	±0.65	1.10	1.20	1.25	1.30	
FAT0310N100		10	±0.75	1.15	1.20	1.30	1.35	
FAT0320N100		20	±0.75	1.15	1.20	1.30	1.35	
FAT0330N100		30	±0.8	1.15	1.20	1.30	1.35	
FAT0340N100		40	±1.0	1.15	1.20	1.30	1.35	
FAT0303N150	DC-3	3	±0.65	1.10	1.20	1.25	1.30	150
FAT0306N150		6	±0.65	1.10	1.20	1.25	1.30	
FAT0310N150		10	±0.75	1.15	1.25	1.30	1.35	
FAT0320N150		20	±0.75	1.15	1.25	1.30	1.35	
FAT0330N150		30	±1.0	1.15	1.20	1.30	1.35	
FAT0340N150		40	±1.0	1.15	1.25	1.30	1.35	

DC-3GHz **50W** Outline Dimensions (unit: mm&inch) DC-3GHz **80W** Outline Dimensions (unit: mm&inch)

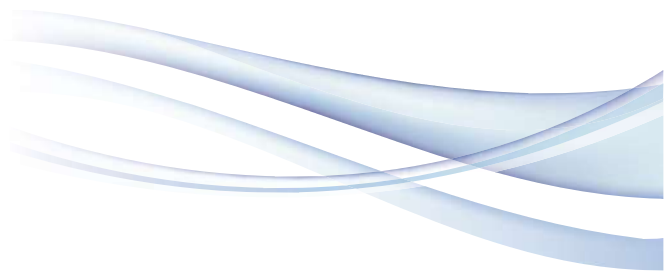
DC-3GHz **100W** Outline Dimensions (unit: mm&inch) DC-3GHz **150W** Outline Dimensions (unit: mm&inch)



# Drum/Rotary Variable Attenuator

## 旋鼓/旋钮式可变衰减器

### VAX Series (Step 步进式) *New*



#### Features


- Input power: 2W,5W,10W
- Available in step adjusting
- Wide frequency range: DC ~6.0GHz
- Low VSWR, Low insertion loss
- Sealed structure moisture-proof & damp-proof, can be work outdoors in harsh condition
- Easy to operate, adjustment results visually readable
- Step series has locking devices within each attenuation, shock-proof capability
- Can reach over 5000 times adjustment.
- Easy to adjust, widely used in production line, or to be installed in the system & device for signal control

#### Applications

- DAS POI
- Indoor Repeater
- Wireless Signal Coverage
- RF Labs


Single-circle Drum-type step attenuator

Model	Attenuation Range (dB)	Frequency Range	Step Value	VSWR (Max)	Nominal Impedance	Input Power CW
VAX0601P1	0-1	DC to 6GHz	0.1	1.5	50Ω	5W,10W
VAX061001	0-10	DC to 6GHz	1	1.5	50Ω	5W,10W
VAX069010	0-90	DC to 6GHz	10	1.5	50Ω	5W,10W




Dual-circle Drum-type step attenuator

Model	Attenuation Range (dB)	Frequency Range	Step Value	VSWR (Max)	Nominal Impedance	Input Power CW
VAX061101	0-11	DC to 6GHz	1	1.3	50Ω	5W,10W
VAX067001	0-70	DC to 6GHz	1	1.3	50Ω	5W,10W
VAX069001	0-90	DC to 6GHz	1	1.3	50Ω	5W,10W



Dual-circle Rotary step attenuator

Model	Attenuation Range (dB)	Frequency Range	Step Value	VSWR (Max)	Nominal Impedance	Input Power CW
VAB061101	0-11	DC to 6GHz	1	1.3	50Ω	5W,10W
VAB067001	0-70	DC to 6GHz	1	1.3	50Ω	5W,10W
VAB069001	0-90	DC to 6GHz	1	1.3	50Ω	5W,10W





# DIP Variable Attenuator

## 可变衰减器

### VAD Series, Step 步进式(DC ~ 2.5GHz)

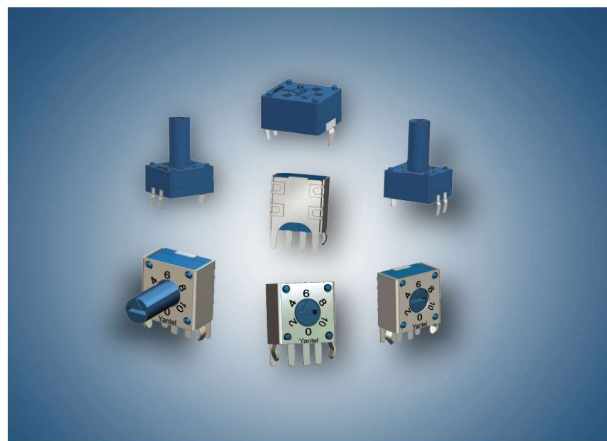
Patent Product

China Patent No.: CN 2008 1 0144258

USA Patent No.: US 8,476,544 B2

Japen Patent No.: 2011-524168

Taiwan Patent No.: I 393347



### Features

- Step variable
- Tube package, Ultra-small size, able to be mounted
- Wide frequency range: DC ~ 2.5GHz
- Low VSWR
- Low insertion loss
- High performance, competitive price
- Wide attenuation range
- Step attenuation values flexible and selectable
- Power handling: 125mW
- Impedance: 50Ω or 75Ω
- Operating temperature: -40°C ~ +105°C
- Compared with digital attenuators, zero distortion, no extra IP3, lower noise, higher reliability.
- At least 360 times (60 circles, 6 times as a circle) tuning operation
- Customized attenuation values available

### Part No. Description

VAD                                          
 Attenuation Range    Step value    Impedance    Package    shaft

e.g.: VAD0102BDH

**Attenuation Range** :01 represents 0~1dB,

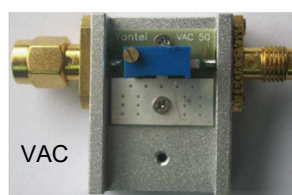
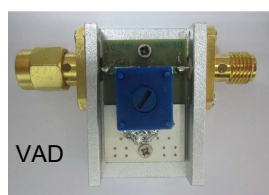
**Step value** :02 represents step value 0.2dB,

**Impedance**: "B" represents 75Ω impedance, "no code" represents 50Ω impedance.

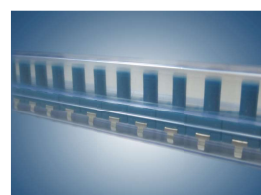
**Package**: "DL" represents lateral DIP package, "D" represents vertical DIP package.

**shaft**: "H" represents a handling shaft, "HH" represents a handling shaft with rotating cap,  
 "no code" represents without handling shaft.

	VADXXXXD (50Ω)	VADXXXXBD (75Ω)	VADXXXXDH (50Ω)	VADXXXXBDH (75Ω)	VADXXXXDHH (50Ω)	VADXXXXBDHH (75Ω)
<b>Vertical DIP Type</b>						
<b>Lateral DIP Type</b>						



Evaluation boards



Tube Package

## Step Type Spec.

• Frequency range: DC ~ 2.5GHz • Power rating: 125mW • Impedance: 50Ω or 75Ω Dimensions(mm):10X11X6

Part No.	Attenuation Range(dB)	Step Value (dB)	Impedance (Ω)	Typ.VSWR:1		Insertion Loss at 0 dB DC-2.5 GHz(dB)	Attenuation Accuracy(dB) DC-2.5GHz
				DC-2GHz	2GHz-2.5GHz		
VAD0102D**	0~1	0.2	50	1.25	1.35	0.4	1.2
VAD0203D**	0~1.8	0.3	50	1.25	1.35	0.4	1.2
VAD0204D**	0~2.0	0.4	50	1.25	1.35	0.4	1.3
VAD0305D**	0~2.5	0.5	50	1.25	1.35	0.4	1.5
VAD0305XD**	0~2.5	0.5	50	-	1.35	0.5(at 2.4GHz)	0.5(at 2.4GHz)
VAD0306D**	0~3	0.6	50	1.35	1.35	0.4	2.0
VAD0510D**	0~5	1	50	1.35	1.60	0.4	2.0
VAD0510XD**	0~5	1	50	-	1.45	0.5(at 2.4GHz)	0.5(at 2.4GHz)
VAD0815D**	0~7.5	1.5	50	1.40	1.65	0.4	2.0
VAD1020D**	0~10	2	50	1.40	1.65	0.4	2.0
VAD1020XD**	0~10	2	50	-	1.50	0.5(at 2.4GHz)	0.5(at 2.4GHz)
VAD1325D**	0~12.5	2.5	50	1.5 (at 1.0GHz)	-	0.4	±1.0 (at 1.0GHz)
VAD1530D**	0~15	3	50	1.5 (at 1.0GHz)	-	0.4	±1.0 (at 1.0GHz)
Application1A	0~15	1	50	1.5 (at 1.0GHz)	-	0.4	1.2 (at 1.0GHz)
Application2A	0~20	1	50	1.5 (at 1.0GHz)	-	0.4	1.2 (at 1.0GHz)
VAD0102BD**	0~1	0.2	75	1.35	1.30	0.4	1.0
VAD0203BD**	0~1.8	0.3	75	1.35	1.30	0.4	1.0
VAD0204BD**	0~2.0	0.4	75	1.35	1.30	0.4	1.7
VAD0305BD**	0~2.5	0.5	75	1.35	1.30	0.4	1.7
VAD0306BD**	0~3	0.6	75	1.35	1.30	0.4	1.7
VAD0510BD**	0~5	1	75	1.35	1.30	0.4	2.5
VAD0815BD**	0~7.5	1.5	75	1.35	1.30	0.4	1.7
VAD1020BD**	0~10	2	75	1.35	1.30	0.4	1.7
VAD1325BD**	0~12.5	2.5	75	1.30 (at 1.0GHz)	-	0.4	±0.5(at 1.0GHz)
VAD1530BD**	0~15	3	75	1.30 (at 1.0GHz)	-	0.4	±0.5(at 1.0GHz)
Application1B	0~15	1	75	1.45 (at 1.0GHz)	-	0.4	1 (at 1.0GHz)
Application2B	0~20	1	75	1.45 (at 1.0GHz)	-	0.4	1 (at 1.0GHz)

Option: VAD in DIP Package is available with a handling shaft. Part number with a suffix H represents VAD with a handling shaft. For example, VAD1530BDH is 0-15dB,3dB/step,75ohm,DIP,with handling shaft.

## Application Note:

Example 1:

You need 2 sets(pieces) of VAD,it can meet the attenuation range:0 to 17 dB by 1dB/step

VAD(A): 0,1,2,3,4,5dB;

VAD(B): 0, 6,12,12,12,12dB;

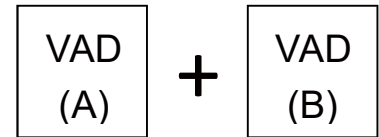
You can get the attenuation value are:A+B=M dB

Application 1: When A=0, 1, 2, 3, 4, or 5dB, B=0dB, then M=A+B=0, 1, 2, 3, 4 or 5dB;

Application 2: When A=0, 1, 2, 3, 4, or 5dB, B=6dB, then M=A+B=6, 7, 8, 9, 10 or 11dB;

Application 3: When A=0, 1, 2, 3, 4, or 5dB, B=12dB, then M=A+B=12, 13, 14, 15, 16 or 17dB;

Another choice is VAD(A): 0,1,2,3,4,5dB + VAD(B): 0, 3, 6, 9,12,15dB;



Example 2:

You need 2 sets(pieces) of VAD,it can meet the attenuation range:0 to 20 dB by 1dB/step

VAD(A): 0,1,2,3,4,5dB;

VAD(B): 0, 6,12,15,15,15dB;

You can get the attenuation value are:A+B=M dB

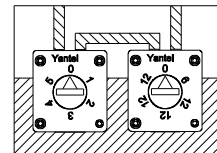
Application 1: When A=0, 1, 2, 3, 4, or 5dB, B=0dB, then M=A+B=0, 1, 2, 3, 4 or 5dB;

Application 2: When A=0, 1, 2, 3, 4, or 5dB, B=6dB, then M=A+B=6, 7, 8, 9, 10 or 11dB;

Application 3: When A=0, 1, 2, 3, 4, or 5dB, B=12dB, then M=A+B=12, 13, 14, 15, 16 or 17dB;

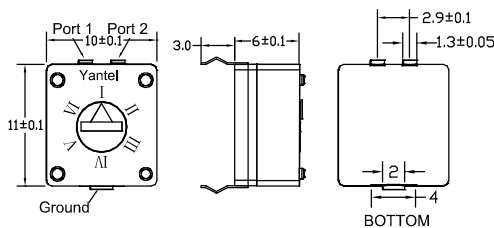
Application 4: When A=0, 1, 2, 3, 4, or 5dB, B=15dB, then M=A+B=15, 16, 17, 18, 19 or 20dB;

Another choice is VAD(A): 0,1,2,3,4,5dB + VAD(B): 0, 3, 6, 9,12,15dB;

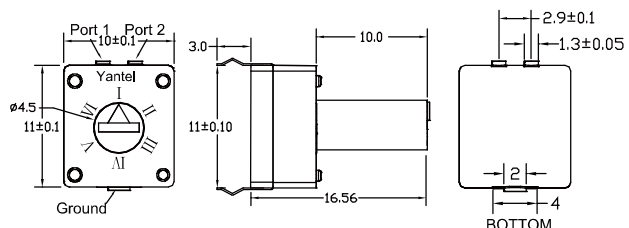


## Outline Dimensions (unit: mm)

VAD DIP Package



VAD DIP with handling shaft



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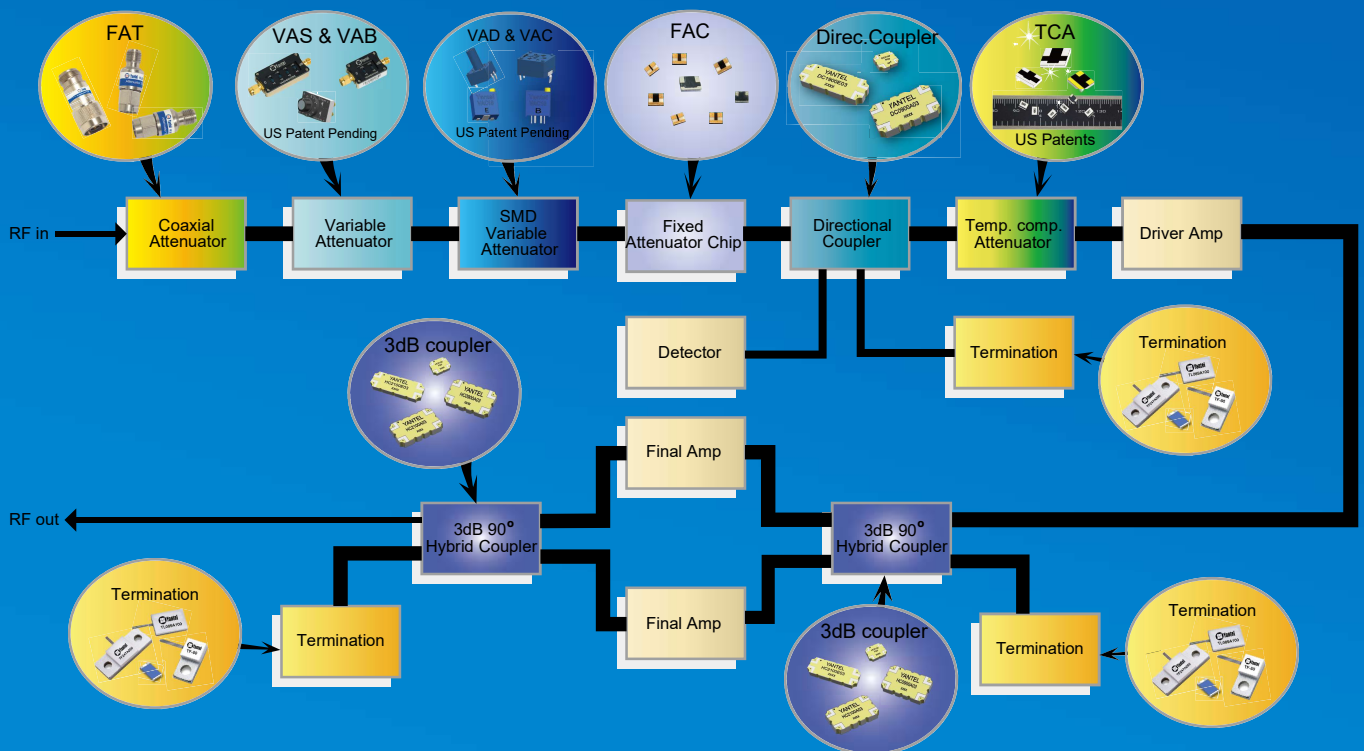
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*Key Patents Lead Microwave Tech*

## Passive Solutions of RF & Microwave Systems



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