



# AtlantecRF

Equipment and Components  
for the RF and Microwave Industry

## Components



[www.atlantecrf.com](http://www.atlantecrf.com)



## INTRODUCTION

AtlanTecRF supplies a wide range of microwave and RF components and equipment to the global marketplace. Our capability stretches from KHz to THz and many standard items are available from **stock**.

With over 30 years experience, we provide solutions to the aerospace, telecommunications, defence and scientific research sectors. Our product range includes standard and custom equipment, as well as multi-function modules and sub-assemblies.

Sound engineering principles, innovative solutions, quality manufacturing, top value products and excellent customer service are all key ingredients, available from our headquarters and R&D base in Braintree, England and via representatives and distributors worldwide.

New products are regularly released and details can be found on our website [www.atlantecrf.com](http://www.atlantecrf.com)



## RESEARCH & DEVELOPMENT

From our dedicated engineering centre the very latest technology is employed at an affordable cost to ensure our products have proven high reliability in service. Our design, test and measurement facilities include environmental and reliability chambers which are vital for the demanding requirements of the commercial, defence, aerospace and science sectors.



AtlanTecRF works closely with a number of UK and overseas universities on advanced scientific research in the areas of radio astronomy, particle physics and high energy physics as well as state-of-the-art communication technologies.



## OUR PRODUCT RANGE

From attenuators and amplifiers through couplers, connectors, isolators, power dividers to oscillators, switches, terminations and filters, there is a wealth of choice of components available, all bearing the AtlanTecRF stamp of value and quality, with stock delivery in many cases. Our capability stretches from KHz to THz.

Our comprehensive range of equipment and cable assemblies are also available and can be seen either on our website [www.atlantecrf.com](http://www.atlantecrf.com) or by contacting our knowledgeable worldwide sales team for copies of the relevant brochures.

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## Contents

# PC Programmable Sources

## ANS2 Series

- 45 MHz to 2500 MHz
- Frequency & Level Control
- Directly PC Programmable
- +10 dBm Output Power
- +/-1 ppm Stability
- Low Cost & Compact Size
- Wide Tuning Ranges
- Low Phase Noise
- Non-Volatile Memory
- Buffered RF Output
- Turn-key Operation



General Specifications	
Output Frequency	45 MHz to 2500 MHz in ranges
Frequency Stability	+/-1ppm max. over 0+50C
Internal Ref. Aging	+/-1ppm/year
Internal Ref. Accuracy	+/-1ppm @ +23 +/-1deg.C
Internal Ref. Frequency	10 MHz for 25, 50 & 100 KHz step models 9.6 MHz for 30 KHz step models
Internal Ref. Output	0 to +2dBm into 50 ohms
External Ref. Frequency	Up to 40 MHz depending on model
External Ref. Level	0.6-2.5 Vpp
External Ref. Impedance	600 ohms in parallel with 25pF
Reference Select	Miniature Toggle Switch
Output Power	+8dBm min., +10dBm typ.
Level Control Range	25dB min in 31 steps
Input Voltage	+17 to +24 V d.c. @ 110 mA
Operating Temperature	0+50C (see options)
Storage Temperature	-20+70C
Lock Time	2 to 6 msec typ.
Status LEDs (green)	RF On, Phase Lock, DC Applied
RF Output Connector	SMA female
Ref. Connector	SMA female
Input Power Connector	1.3 x 9.0mm centre positive jack
Data Connector	DB-9P
RF Output Modes	Continuous, Momentary & Toggled
Output Impedance	50 ohms
Size	90 x 70 x 19mm (excluding connectors)
Weight	170g
Housing	Aluminium with Black Epoxy Paint

The ANS2 series of programmable, synthesised RF signal sources feature both frequency and level control and, with a standard office PC, provide a turn-key solution to the provision of variable frequency sources for both systems and test equipment applications. Directly connecting to the PC parallel port, each unit can be set to frequencies within a typical 1.5:1 range and at levels up to +10dBm via an easy to use control panel software and the non-volatile memory enables the selected settings to be retained in the stand alone unit. Each unit contains a +/-1ppm stability reference TCXO but can also be used with an external reference. The sources are supplied complete with an 18V d.c. wall mount power supply, operating software and special interface cable.

#### Equipment Supplied as Standard:

- Synthesised Source
- Power Supply (Euro, UK or US style)
- Control Software (CD)
- Special Parallel Port Cable
- Operating Manual (CD)
- Spare DC Connector

#### Custom Options:

- Delete Power Supply
- Custom Frequency Range (subject to restrictions)
- Custom Step Size (subject to restrictions)
- Wider Temperature Range (-20+65C with +/-2ppm & +7dBm)
- Mounting Plate
- Instrument or Rack Mounting in Single or Multiple Units

#### PC Requirements:

- IBM compatible 386 or higher PC
- Running Windows 3.1 up to Windows XP
- 4-8 MB RAM
- 5MB Hard Disk Space
- CD Rom
- 640 x 480 Res. Monitor
- 25 Pin, D-Sub, EPP or SPP Parallel Port

Model No	Freq. Range (MHz)	Freq. Steps (KHz)	Freq. Stability (ppm)	Output Power typ. (dBm)	Harmonics (dBc)	Spurious (dBc)	Phase Noise typ.			Current @+18V d.c. (mA)
							@1KHz (dBc/Hz)	@10KHz (dBc/Hz)	@100KHz (dBc/Hz)	
ANS2-0045-025	45-65	25	±1	+10	-35	-60	-80	-100	-115	110
ANS2-0065-050	65-95	50	±1	+10	-35	-60	-80	-100	-115	110
ANS2-0080-050	80-120	50	±1	+10	-35	-60	-80	-100	-115	110
ANS2-0110-100	110-160	100	±1	+10	-35	-60	-80	-95	-110	110
ANS2-0160-100	160-220	100	±1	+10	-35	-60	-75	-85	-110	110
ANS2-0220-100	220-320	100	±1	+10	-35	-60	-75	-85	-110	110
ANS2-0320-100	320-500	100	±1	+10	-35	-60	-70	-80	-110	110
ANS2-0500-100	500-800	100	±1	+10	-35	-60	-70	-75	-110	110
ANS2-0800-030	800-1200	30	±1	+10	-35	-60	-65	-75	-110	110
ANS2-0800-100	800-1200	100	±1	+10	-35	-60	-65	-75	-110	110
ANS2-1000-100	1000-1500	100	±1	+10	-35	-60	-65	-75	-110	110
ANS2-1500-100	1500-2000	100	±1	+10	-35	-60	-60	-75	-110	110
ANS2-1700-100	1700-2200	100	±1	+10	-35	-60	-60	-70	-105	110
ANS2-2000-100	2000-2500	100	±1	+10	-35	-60	-60	-70	-105	110

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# PC Programmable Sources

## ANS3 Series

- 65 MHz to 5875 MHz
- Frequency & Level Control
- With Modulation/Trigger
- Directly PC Programmable - RS232
- 1KHz Steps
- 7dBm Output Power
- +/-1 ppm Stability
- Low Cost & Compact Size
- Wide Tuning Ranges
- Low Phase Noise
- Non-Volatile Memory



General Specifications (also see options)	
Output Frequency	65 MHz to 5875 MHz in ranges
Frequency Stability	+/-1ppm max. over 0+50C
Internal Ref. Aging	+/-1ppm max./year
Internal Ref. Accuracy	+/-1ppm @ +23 +/-2 deg.C
Internal Ref. Output	0 to +2dBm into 50 ohms
External Ref. Frequency	As Internal Reference
External Ref. Level	0.6-2.5 Vpp
External Ref. Impedance	600 ohms in parallel with 25pF
Reference Select	Miniature Toggle Switch
Output Power	+5dBm min, +7dBm typ.
Level Control Range	25dB min in 31 steps
Control Interface	Serial RS-232
Modulation Rate	1 KHz internal 50KHz max. external
Modulation Deviation	+/-1.25 MHz
Input Voltage	+8 to +12 V d.c. @ 300 mA
Operating Temperature	0+50C
Storage Temperature	-20+70C
Lock Time	2 to 6 msec. typ.
Status LED's (green)	RF On, Phase Lock, DC Applied
RF Output Connector	SMA female
Ref. Connector	SMA female
Trigger/Modulation Connector	SMA female
Input Power Connector	1.3 x 9.0mm centre positive jack
Data Connector	DB-9P
RF Output Modes	Continuous, Momentary & Toggled
Output Impedance	50 ohms
Size	90 x 70 x 19mm (excluding connectors)
Weight	170g
Housing	Aluminium with White Epoxy Paint

The ANS3 series of programmable, synthesised RF signal sources feature frequency and level control with modulation and, with a standard office PC, provide a turn-key solution to the provision of variable frequency sources for both systems and test equipment applications. Directly connecting to the PC serial port, each unit can be set to frequencies within ranges listed below and at levels up to 8dBm via an easy to use control panel software and the non volatile memory enables the selected settings to be retained in the stand alone unit. Each unit contains a +/-1ppm stability reference TCXO but can also be used with an external reference. The sources are supplied complete with a 9V d.c. wall mount power supply, operating software and special interface cable.

### Equipment Supplied as Standard:

- Synthesised Source
- Power Supply (Euro, UK or US style)
- Control Software (CD)
- Special Serial Port Cable
- Operating Manual (CD)
- Spare DC Connector

### Custom Options:

- Delete Power Supply
- Custom Frequency Range (subject to restrictions)
- Custom Step Size (subject to restrictions)
- Mounting Plate
- Instrument or Rack Mounting in Single or Multiple Units
- Extended Temperature Range

### PC Requirements:

- Pentium, Equivalent or Higher
- Running Windows 95 or higher, Windows 7 compatible
- 16 MB RAM
- 25 MB Hard Disk Space
- CD Rom
- 9 Pin, D-Sub, Serial Port

Model No	Freq. Range (MHz)	Freq. Steps (KHz)	Freq. Stability (ppm)	Int. Ref. Freq. (MHz)	Output Power typ. (dBm)	Harmonics (dBc)	Spurious (dBc)	Phase Noise			Current @+9V d.c. (mA) max.
								@1KHz (dBc/Hz)	@10KHz (dBc/Hz)	@100KHz (dBc/Hz)	
ANS3-0065-001	65-95	1.0	±1	5	+7	-35	-60	-67	-92.5	-115	300
ANS3-0120-001	120-160	1.0	±1	10	+7	-35	-60	-90	-96	-116	300
ANS3-0160-001	160-220	1.0	±1	10	+7	-35	-60	-90	-94	-117	300
ANS3-0220-001	220-350	1.0	±1	10	+7	-35	-60	-86	-90	-119	300
ANS3-0350-001	350-620	1.0	±1	10	+7	-35	-60	-73	-84	-108	300
ANS3-0500-001	500-800	1.0	±1	10	+7	-35	-60	-74	-80	-106.5	300
ANS3-0800-001	800-1200	1.0	±1	10	+7	-35	-60	-77	-80	-106	300
ANS3-1200-001	1200-2000	1.0	±1	10	+7	-35	-60	-73	-82	-105	300
ANS3-1750-001	1750-2500	1.0	±1	10	+7	-35	-60	-72	-82	-108	300
ANS3-2000-001	2000-3000	1.0	±1	10	+7	-35	-60	-73	-79	-101.5	300
ANS3-2400-001	2400-3400	1.0	±1	10	+7	-35	-60	-72	-78	-102	300
ANS3-3400-001	3400-3700	1.0	±1	10	+7	-35	-60	-70	-78	-109	300
ANS3-3700-001	3700-4200	1.0	±1	10	+7	-35	-60	-67	-75	-103	300
ANS3-5150-001	5150-5350	1.0	±1	10	+7	-35	-60	-67	-75	-103	300
ANS3-5470-001	5470-5875	1.0	±1	10	+7	-35	-60	-61	-71	-96	300

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## Miniature Synthesizers

### ASY Series

- Frequencies up to 25GHz
- Frequency Steps 1KHz typical
- 10MHz External or Internal Reference
- Frequency Control Serial RS485 or Ethernet
- Good Phase Noise
- Compact Size
- Non Volatile Memory



The ASY series are single phase-locked loop Frequency Synthesizers offering excellent performance combined with small size and a high degree of versatility for many applications in communications, radar and test instrumentation.

These high performing units are ready to use with a minimum of set-up and provide high value solutions, often from stock.

General Specifications	
Output Frequency	up to 12.5GHz fundamental and to 25GHz with X2 Multiplier
Frequency Steps	1KHz
Switching Speed	5msec max.
External Reference	10MHz typ. 0dBm +/-3dB
Frequency Stability & Accuracy (Ext. Ref.)	As Reference
Frequency Stability & Accuracy (Int. Ref.)	+/-0.5ppm (-10 to +70C)
Output Power	+13dBm min.
Output Power Variation (Freq. & Temp.)	3dB max.
Harmonics	-20dBc typ.
Spurious	-60dBc max.
VSWR	1.5:1 typ.
Operating Temperature	-10 to +70C
Storage Temperature	-40 to +85C
Input Voltage	+5.0 Vdc min to +5.5 Vdc max.
Input Current	650mA max.
Lock Alarm	TTL High for Locked
Standard Frequency Control	Serial RS485
Optional Frequency Control	mBed Ethernet Control Board with Virtual Control Panel
RF Connector	SMA Female
Digital & DC connection	BD9 Male
Size	2.50" x 2.50" x 0.63"

Phase Noise (dBc/Hz) typical								
Offset Frequency (Hz)	Frequency Range (GHz)							
	0.8-2GHz	1-2GHz	1.495-3.3	4-8GHz	8.8-10.3	8-12.5	9-8-10.95	11.5-13.5
100	-70	-80	-80	-75	-70	-65	-65	-65
1K	-90	-105	-90	-90	-85	-80	-75	-75
10K	-95	-115	-95	-95	-90	-80	-80	-80
100K	-95	-115	-95	-95	-90	-90	-85	-80
1M	-120	-135	-120	-120	-115	-115	-115	-115

**Examples of Standard Models**

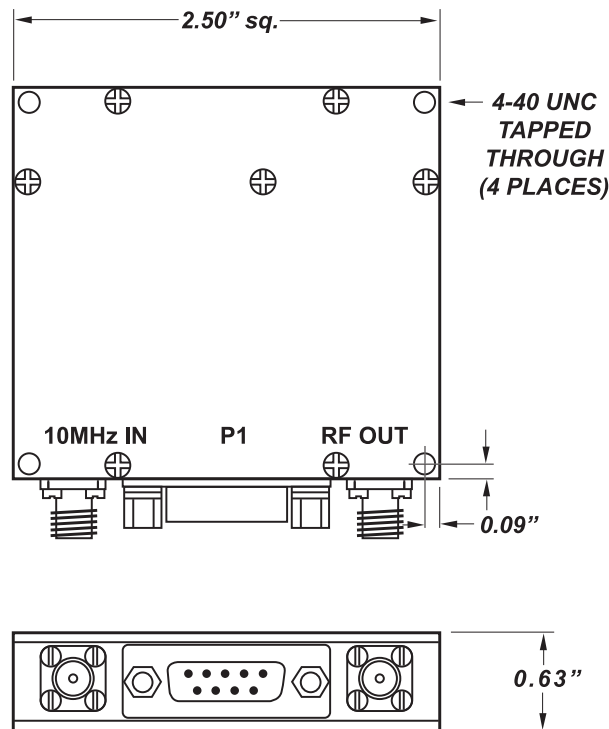
Model No	Frequency Range (GHz)
ASY-0080-0200-10	0.8-2.0
ASY-0149-0330-10	1.495-3.30
ASY-0200-0800-10	2.0-8.0
ASY-0300-0600-10	3.0-6.0
ASY-0400-0800-10	4.0-8.0
ASY-0500-1000-10	5.0-10.0
ASY-0800-1200-10	8.0-12.0
ASY-0880-1030-10	8.80-10.30
ASY-0980-1095-10	9.80-10.95
ASY-1150-1350-10	11.50-13.50

**Model Numbering System**

<b>ASY -XXXX</b>	<b>-XXXX</b>	<b>-XX</b>
Start	End	Internal/External
Frequency	Frequency	Reference
in GHz	in GHz	10 = External
0200 = 2.00GHz	0800 = 8.00GHz	10MHz Reference
		INT = Internal
		TCXO Reference

Other Frequency Ranges available in half octave, full octave or octave plus bands with no NRE.

Please ask for a quotation by part number.



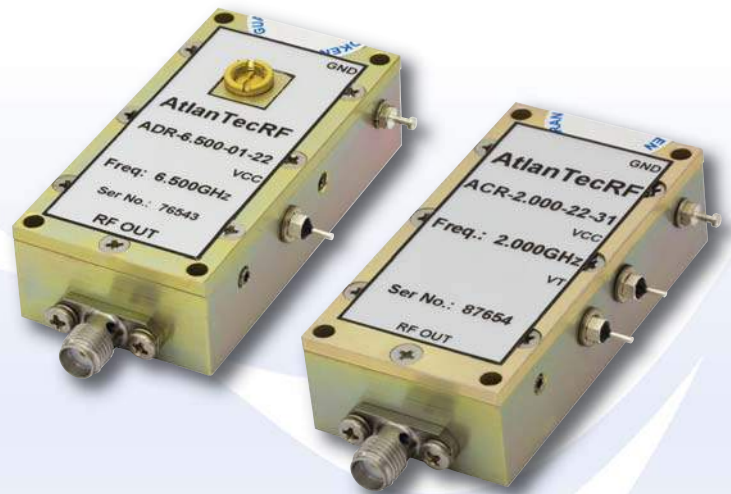
Dimensions in inches.

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Stabilised Oscillators

## CRO & DRO

- 400 MHz to 14 GHz
- Fundamental Frequency (CRO or DRO)
- Small Size
- Low Phase Noise
- Low Microphonics
- Low Current
- Custom Design



General Specifications (also see options)	
Output Frequency (fixed) (see options for tuning)	400 MHz to 14.0 GHz
Frequency Stability	
400 MHz to 3.4 GHz (CRO)	+/-10ppm/degC max.
3.4 GHz to 14.0 GHz (DRO)	+/-5ppm/degC max.
Output Power	+13dBm min. (see options)
Output Power Stability	+/-2dB max
Harmonics	-20dBc max.
Spurious	-80dBc max.
Frequency Pulling	+/-1 MHz max. @ 1.7:1VSWR
Frequency Pushing	+/-1 MHz/V max.
Input Voltage	+15V d.c. (see options)
Input Current	125mA max. (for +13dBm)
Mechanical Tuning (DRO only)	1% typ.
Operating Temperature	0+50C standard (see options)
Storage Temperature	-40+85C

The ACR and ADR series of fundamental frequency stabilised oscillators utilise coaxial resonators (CRO) to 3.4 GHz and dielectric resonators (DRO) to 14 GHz. Circuit design uses SMT devices including Si bipolar active devices up to 3.4 GHz and GaAs FET active devices above 3.4 GHz. The output contains a buffer amplifier for improved ruggedness, higher output power and a wider range of load VSWR. DRO types have an external tuning screw for factory set up and limited mechanical tuning.

Frequencies above 14 GHz are available - please contact us for more information.

Offset Frequency (Hz)	Phase Noise (dBc/Hz) typical					
	Output Frequency (GHz)					
	0.6	1.5	3	4	10	14
1K	-95	-85	-75	-75	-70	-65
10K	-115	-105	-95	-95	-90	-85
100K	-135	-125	-115	-115	-110	-105
1M	-140	-140	-135	-135	-120	-115

### Options:

00 - Standard

### Operating Temperature

01 - -10+60C

02 - -20+70C

03 - -40+85C

### Output Power

11 - +16dBm min. up to 10 GHz

12 - +15dBm min. up to 6 GHz

### D.C. Supply

21 - Input Voltage +12V d.c.

22 - Regulated +11 to +16V d.c.

23 - +28V d.c.

### Electrical Tuning

31- Electrical Tuning for 0 - 12V

400 MHz to 3.4GHz (CRO) 0.5% typ.

3.4 GHz to 14.0GHz (DRO) 0.2% typ.

### Custom Options:

- Higher Output Frequency to 30 GHz (multiplied)
- Higher Output Power to +30dBm (amplified)
- Lower Harmonics (filtered)
- Custom Sizes
- Instrument or Rack Mount Housing with Power Supply

### Model Numbers:

Examples:

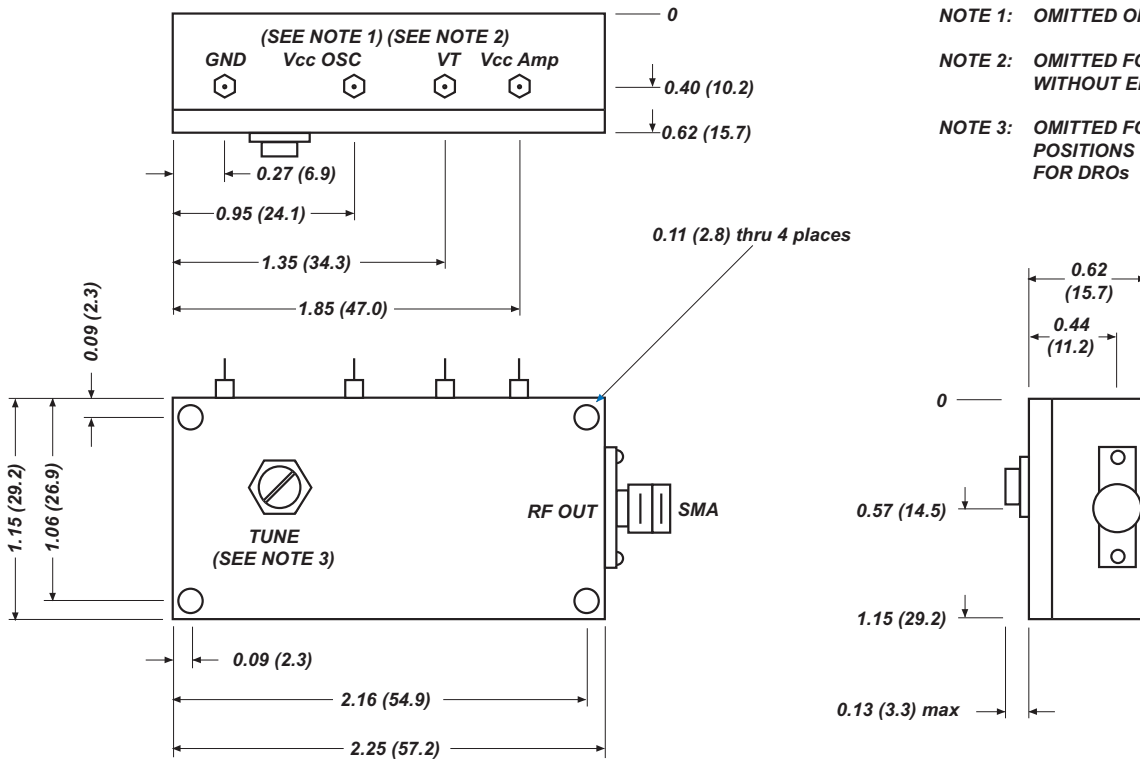
ACR-1.750-00 1.75 GHz CRO with standard specifications

ADR-9.050-02-11-23 9.05 GHz DRO with -20+70C, +16dBm and +28V.



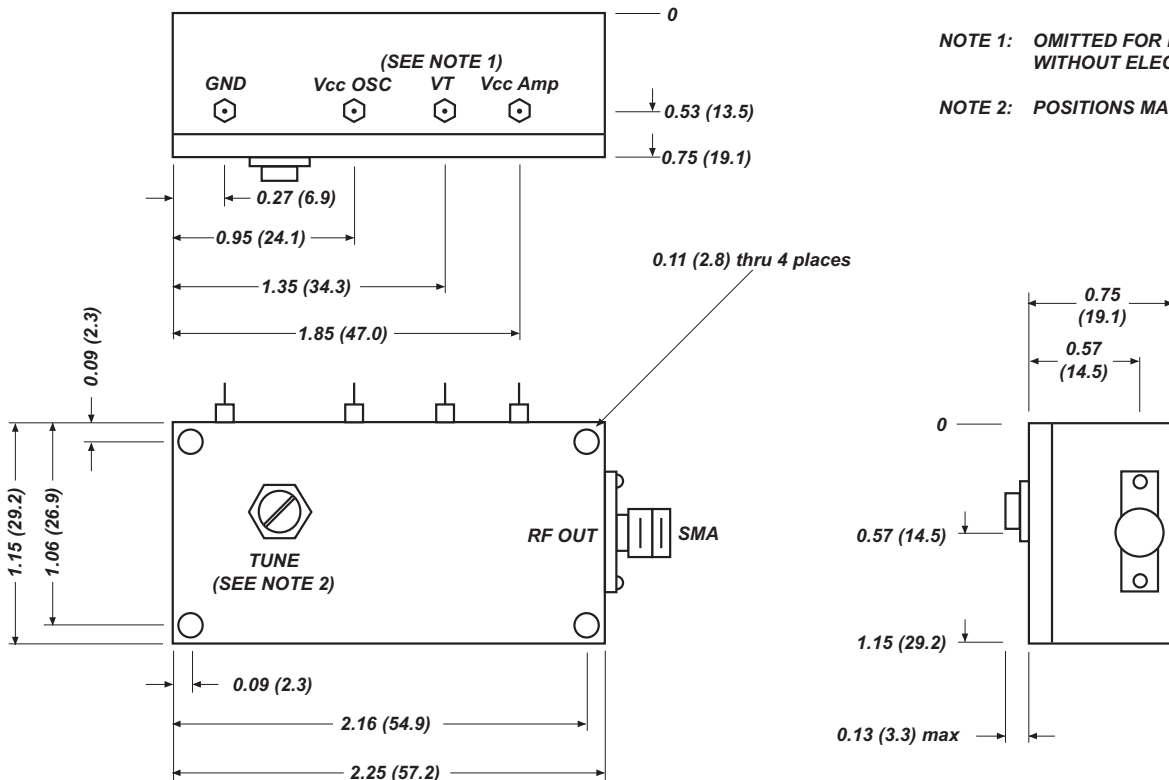
## OUTLINE E

USED ON: CROs: 0.4 TO 3.4 GHz  
DROs: 6.0 TO 14.0 GHz



## OUTLINE F

USED ON: DROs: 3.4 TO 6.0 GHz



All dimensions are inches (mm)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Phase Locked Oscillators

## Internal Reference APL - 02 Series

- 400 MHz to 14 GHz
- Fundamental Frequency (CRO or DRO)
- Internal Reference
- Small Size
- Low Phase Noise
- Low Microphonics
- Low Current
- Custom Design



General Specifications (also see options)	
Output Frequency	400 MHz to 14.0 GHz
Frequency Stability	+/-5ppm max. over 0+50C (see options)
Output Power	+13dBm min. (see options)
Output Power Stability	+/-2dB max
Harmonics	-20dBc max.
Ref. Related Spurious	-70dBc max.
Divided Ref. Related Spurious	-50dBc (400 MHz - 3.4 GHz)
Other Spurious	-80dBc max.
Load VSWR	2.5:1 max.
Input Voltage	+11 to +16V d.c. (see options)
Input Current	300mA max. (for +13dBm)
Operating Temperature	0+50C standard (see options)
Storage Temperature	-40+85C
Lock Alarm	TTL high for locked
RF Output Connector	SMA Female
Ref. Monitor Connector	SMA Female

The APL - 02 series of fundamental frequency phase locked oscillators utilise coaxial resonators (CRO) to 3.4 GHz and dielectric resonators (DRO) to 14 GHz in a phase locked loop with an internal crystal reference. Circuit design uses SMT devices including Si bipolar active devices up to 3.4 GHz and GaAs FET active devices above 3.4 GHz. The output contains a buffer amplifier for improved ruggedness, higher output power and a wider range of load VSWR. The PLOs also have a reference monitor output. DRO types have an external tuning screw for factory set up only.

Frequencies above 14 GHz are available - please contact us for more information.

Phase Noise (dBc/Hz) typical See Note 1						
Offset Frequency (Hz)	Output Frequency (GHz)					
	0.6	1.5	3	4	10	14
100	-80	-73	-66	-64	-56	-53
1K	-115	-105	-100	-95	-90	-85
10K	-130	-125	-115	-110	-100	-95
100K	-135	-125	-115	-115	-110	-105
1M	-140	-140	-135	-135	-120	-115

### Note 1

Phase noise specifications are dependent upon the frequency and type of the internal reference. For a more detailed specification at your desired output frequency and stability, please contact the factory.

### Options:

00 - Standard, based on 50 MHz internal crystal.

### Frequency Stability/Temperature

- 01 - +/-5ppm max. over -10+60C
- 02 - +/-5ppm max. over -20+70C
- 03 - +/-10ppm max. over -40+85C
- 04 - +/-2ppm max. over +10+40C

### Output Power

- 11 - +15dBm min. up to 10.0 GHz
- 12 - +15dBm min. up to 6.0 GHz

### D.C. Supply

- 21 - Input Voltage +12V d.c.
- 22 - Regulated +11 to +16V d.c.
- 23 - +28V d.c

### Custom Options:

- Higher Output Frequency to 40 GHz (multiplied)
- Higher Output Power to +30dBm (amplified)
- Lower Harmonics (filtered)
- Lock Alarm - Open Collector
- Custom Sizes
- Instrument or Rack Mount Housing with Power Supply

### Model Numbers:

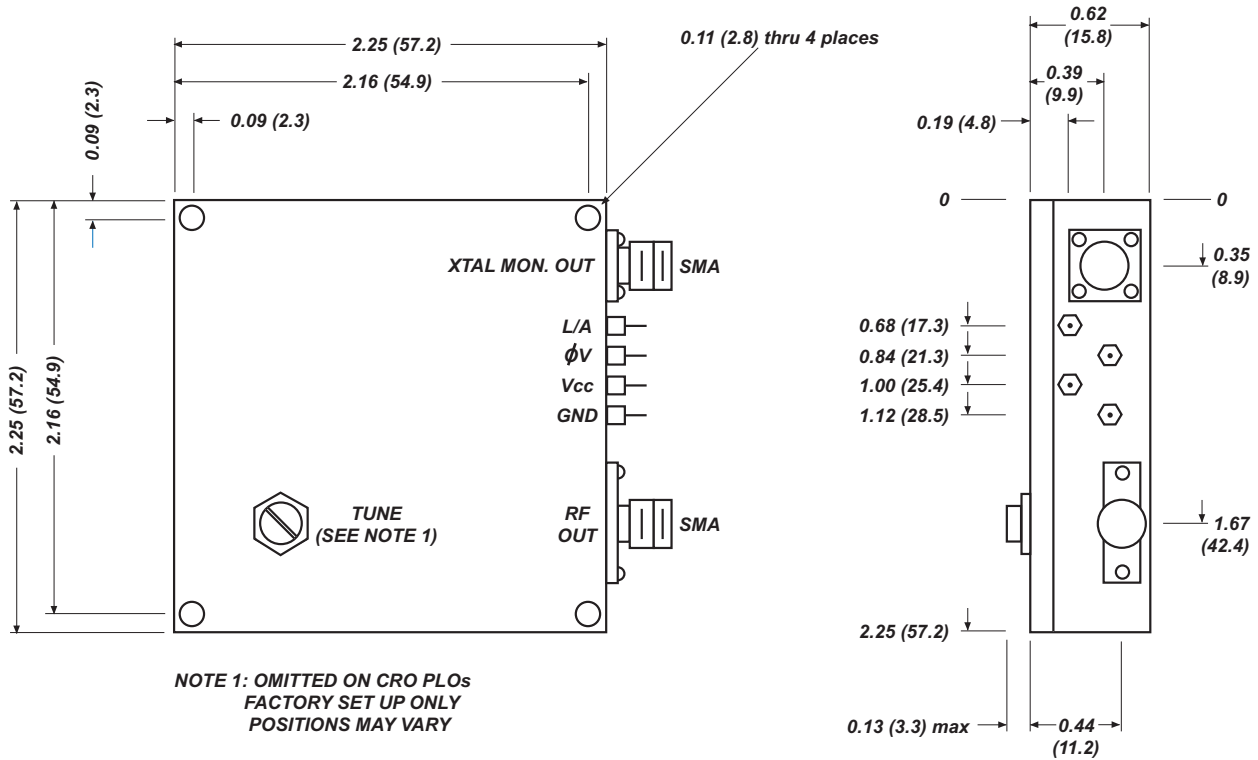
Examples:

APL-02-13.050-00 13.05 GHz PLO with standard specifications

APL-02-9.750-02-11-23  
9.75GHz PLO with +/-5ppm over -20+70C, +15dBm and +28V.

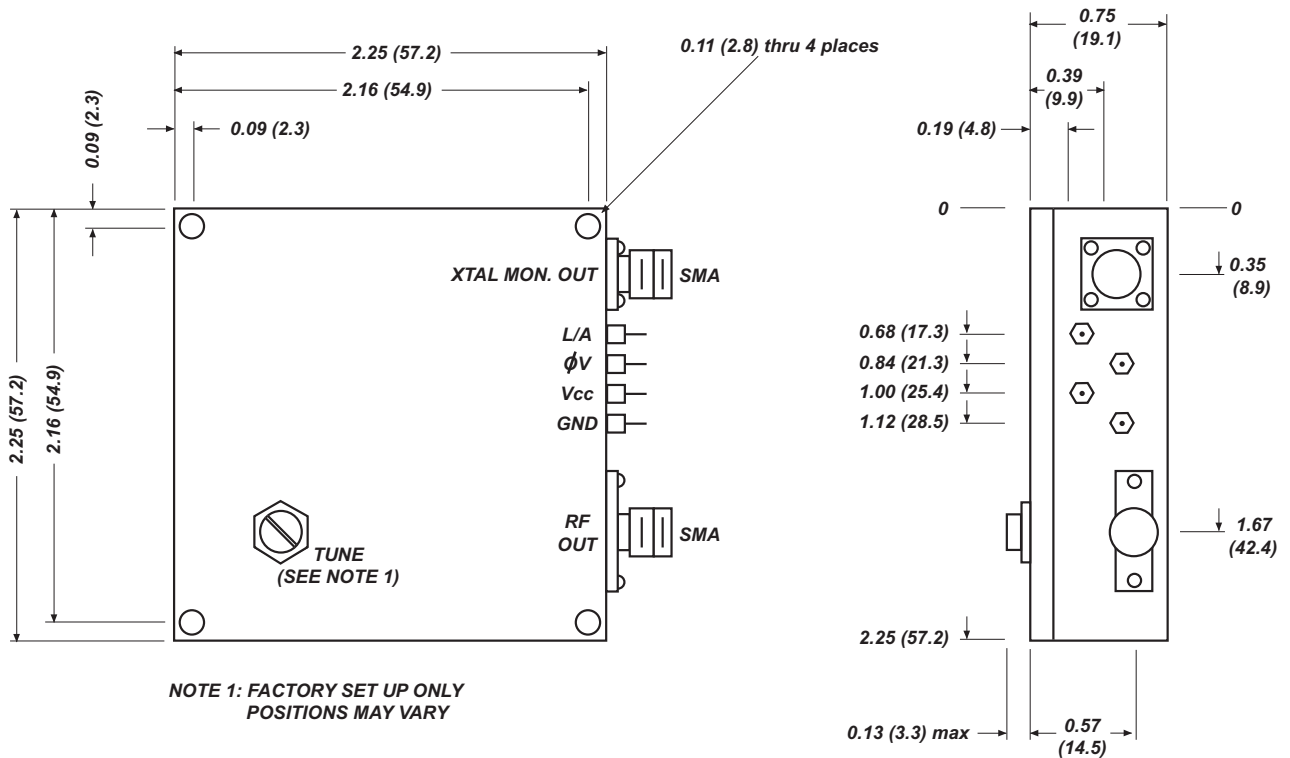
# OUTLINE A

USED ON: CRO - PLOs: 0.4 TO 3.4 GHz  
DRO - PLOs: 6.0 TO 14.0 GHz



# OUTLINE B

USED ON: DRO - PLOs: 3.4 TO 6.0 GHz



All dimensions are inches (mm)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Phase Locked Oscillators

## External Reference APL - 03 Series

- 400 MHz to 14 GHz
- Fundamental Frequency (CRO or DRO)
- External Reference
- Small Size
- Low Phase Noise
- Low Microphonics
- Low Current
- Custom Design



General Specifications (also see options)	
Output Frequency	400 MHz to 14.0 GHz
Reference Frequency	10 MHz for Output Frequency 0.4-3.4 GHz (see notes) 25-200 MHz for Output Frequency 3.4-14.0 GHz (see notes)
Frequency Stability	Reference dependent
Output Power	+13dBm min. (see options)
Output Power Stability	+/-2dB max
Harmonics	-20dBc max.
Ref. Related Spurious	-70dBc max.
Divided Ref. Related Spurious	-50dBc (400 MHz - 3.4 GHz)
Other Spurious	-80dBc max.
Load VSWR	2.5:1 max.
Input Voltage	+11 to +16V d.c. (see options)
Input Current	300mA max. (for +13dBm)
Operating Temperature	0+50C standard (see options)
Storage Temperature	-40+85C
Lock Alarm	TTL high for locked
RF Output Connector	SMA Female
Ref. Monitor Connector	SMA Female

The APL - 03 series of fundamental frequency phase locked oscillators utilise coaxial resonators (CRO) to 3.4 GHz and dielectric resonators (DRO) to 14 GHz in a phase locked loop for use with an external reference. Circuit design uses SMT devices including Si bipolar active devices up to 3.4 GHz and GaAs FET active devices above 3.4 GHz. The output contains a buffer amplifier for improved ruggedness, higher output power and a wider range of load VSWR. DRO types have an external tuning screw for factory set up only.

Frequencies above 14 GHz are available - please contact us for more information.

Offset Frequency (Hz)	Phase Noise (dBc/Hz) typical					
	Output Frequency (GHz)					
	0.6	1.5	3	4	10	14
100	Reference Dependent - See Notes					
1K	Reference Dependent - See Notes					
10K	Reference Dependent - See Notes					
100K	-135	-125	-115	-115	-110	-105
1M	-140	-140	-135	-135	-120	-115

### Reference Frequency Notes:

The output frequency must be an integral multiple of the reference frequency.

Reference level required 0+/-3dBm

At offset frequencies up to 100 Hz, the output phase noise is degraded from that of the reference oscillator by approximately  $20\log N + 3\text{dB}$ , where N is the ratio of the output to the reference frequency.

### Options:

00 - Standard

### Operating Temperature

01 - -10+60C

02 - -20+70C

03 - -40+85C

### Output Power

11 - +15dBm min. up to 10.0 GHz

12 - +15dBm min. up to 6.0 GHz

### D.C. Supply

21 - Input Voltage +12V d.c.

22 - Regulated +11 to +16V d.c.

23 - +28V d.c.

### Custom Options:

- Higher Output Frequency to 40 GHz (multiplied)
- Higher Output Power to +30dBm (amplified)
- Lower Harmonics (filtered)
- Lock Alarm - Open Collector
- Custom Sizes
- Instrument or Rack Mount Housing with Power Supply

### Model Numbers:

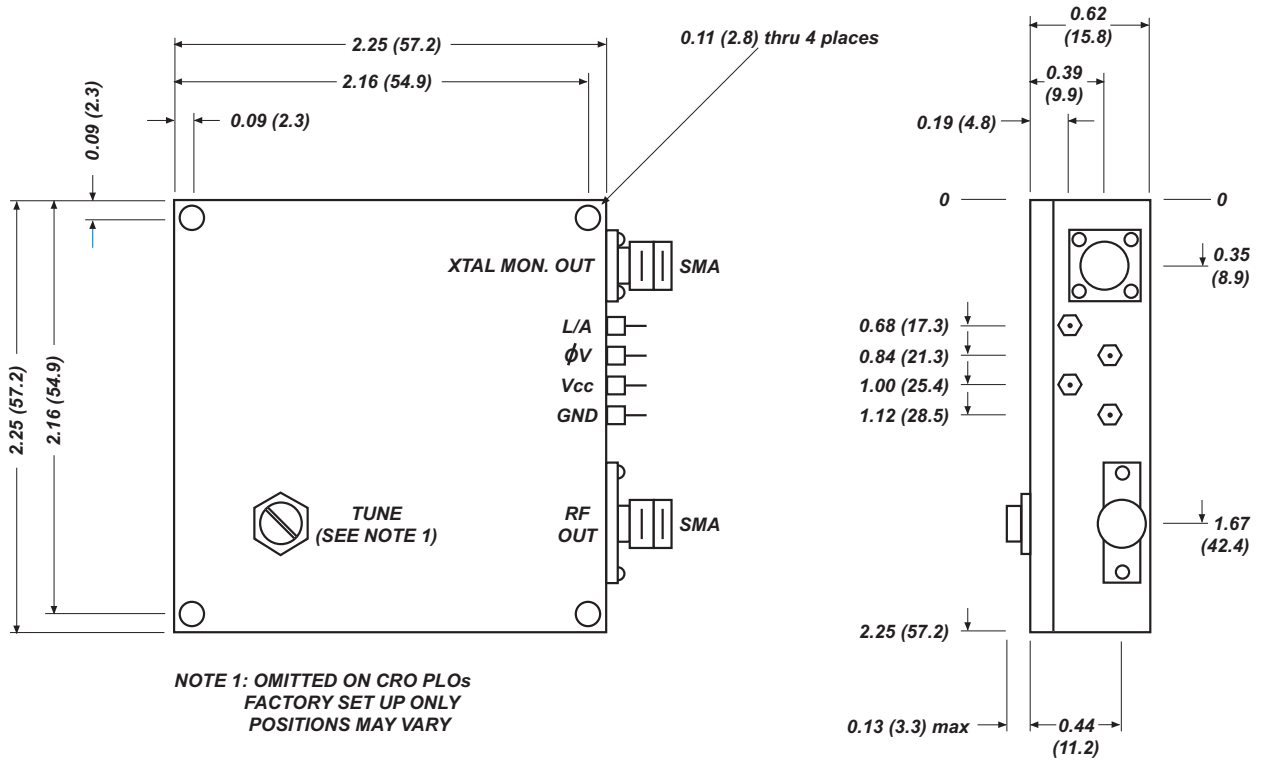
Examples:

APL-03-13.050-50-00 13.05 GHz  
PLO with standard specifications and 50 MHz ref.

APL-03-9.750-50-02-11-23 9.75 GHz  
PLO with 50 MHz ref.,  
-20+70C, +15dBm and +28V

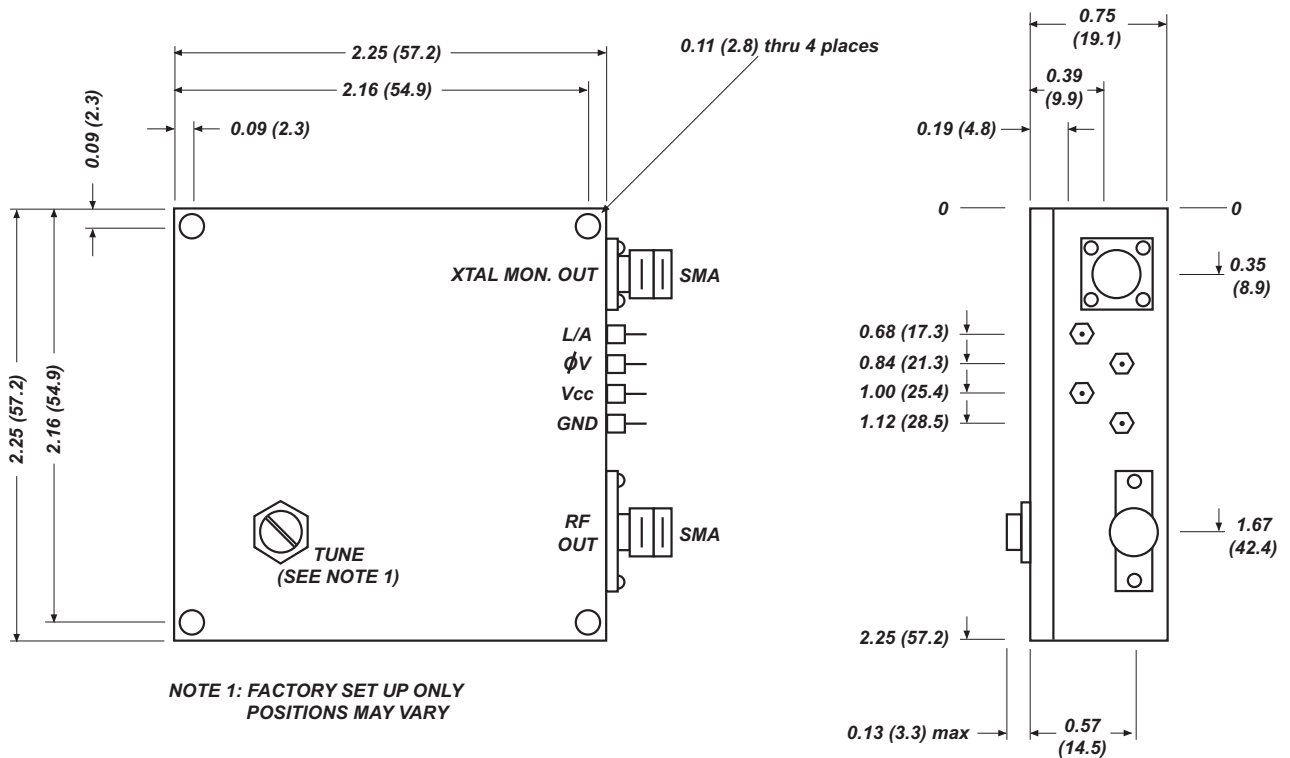
# OUTLINE A

USED ON: CRO - PLOs: 0.4 TO 3.4 GHz  
DRO - PLOs: 6.0 TO 14.0 GHz



# OUTLINE B

USED ON: DRO - PLOs: 3.4 TO 6.0 GHz



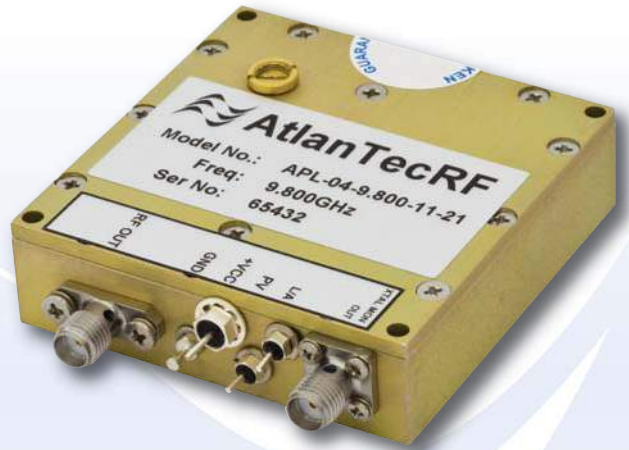
All dimensions are inches (mm)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Phase Locked Oscillators

## Internal TCXO Reference APL - 04 Series

- 400MHz to 14GHz
- +/-1ppm Stability -20 +70C
- Fundamental Frequency (CRO or DRO)
- Small Size
- Low Phase Noise
- Low Microphonics
- Low Current
- Internal Voltage Regulator



The APL - 04 series of fundamental frequency phase locked oscillators utilise coaxial resonators (CRO) to 3.4 GHz and dielectric resonators (DRO) to 14GHz in a phase locked loop with an internal TCXO reference. Circuit design uses SMT devices including Si bipolar active devices up to 3.4 GHz and GaAs FET active devices above 3.4 GHz. The output contains a buffer amplifier for improved ruggedness, higher output power and a wider range of load VSWR. The PLOs also have a reference monitor output. DRO types have an external tuning screw for factory set up only.

General Specifications (also see options)	
Output Frequency	400 MHz to 14.0 GHz
Frequency Stability	+/-1ppm max. over -20 +70C
Output Power	+13dBm min. (see options)
Output Power Stability	+/-2dB max
Harmonics	-20dBc max.
Ref. Related Spurious	-70dBc max.
Divided Ref. Related Spurious	-50dBc (400 MHz to 3.4 GHz)
Other Spurious	-80dBc max.
Load VSWR	2.5:1 max.
Input Voltage	+11 to +16V d.c. (see options)
Input Current	300mA max. (for +13dBm)
Operating Temperature	-20+70C standard
Storage Temperature	-40+85C
Lock Alarm	TTL high for locked
RF Output Connector	SMA Female
Ref. Monitor Connector	SMA Female

Phase Noise (dBc/Hz) typical See Note 1						
Offset Frequency (Hz)	Output Frequency (GHz)					
	0.6	1.5	3.0	4.0	10.0	14.0
100	-76	-75	-66	-64	-56	-53
1K	-80	-78	-76	-95	-90	-85
10K	-115	-110	-100	-110	-100	-95
100K	-122	-120	-118	-115	-110	-105
1M	-132	-130	-128	-135	-120	-115

**Note 1**

Phase noise specifications are dependent upon the frequency and type of the internal reference. For a more detailed specification at your desired output frequency and stability, please contact the factory.

**Options:**

- 00 - Standard, based on 50 MHz internal TCXO.
- 01 - Non Standard TCXO Frequency

**Output Power**

- 11 - +15dBm min. up to 10 GHz
- 12 - +20dBm min. up to 1.5 GHz

**D.C. Supply**

- 21 - Input Voltage +12V d.c.
- 22 - Regulated +11 to +16V d.c.
- 23 - +28V d.c.

**Custom Options:**

- Higher Output Frequency to 40 GHz (multiplied)
- Higher Output Power to +30dBm (amplified)
- Lower Harmonics (filtered)
- Lock Alarm - Open Collector
- Custom Sizes
- Instrument or Rack Mount Housing with Power Supply

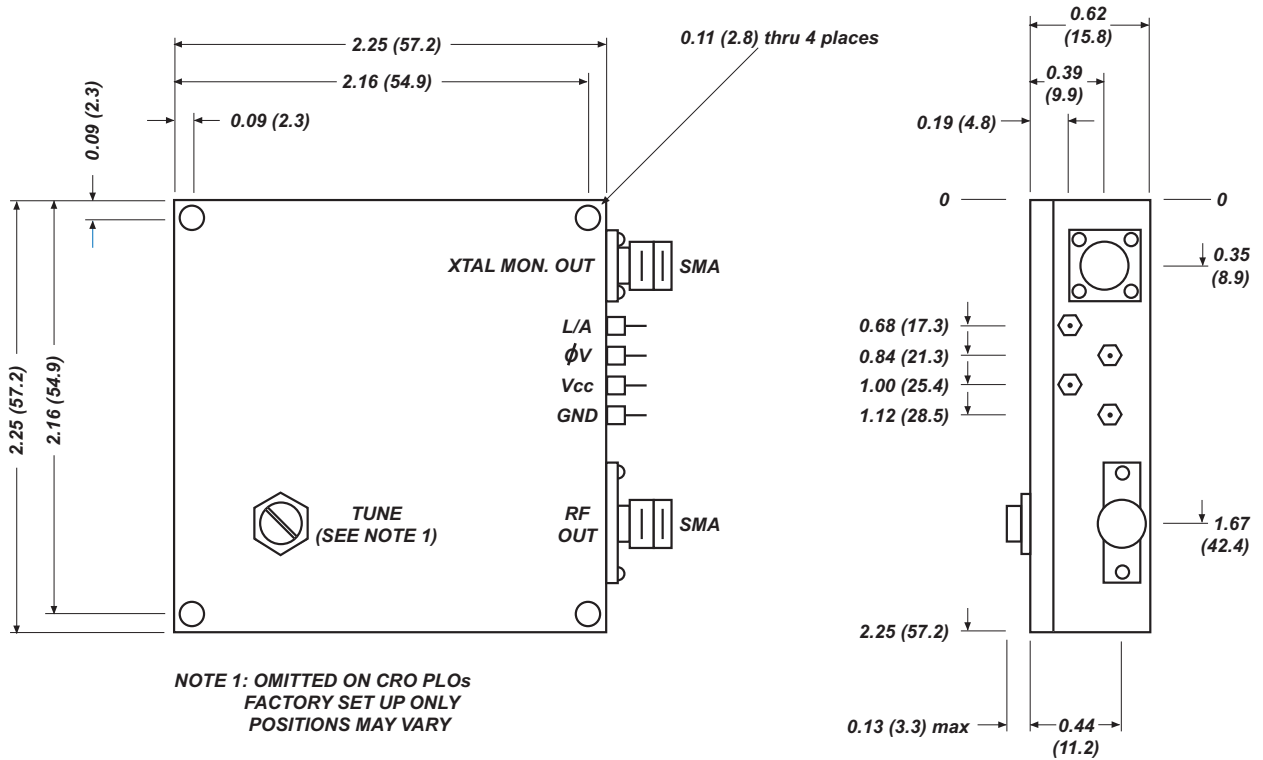
**Model Numbers:**

- Examples:
- APL-04-13.050-22  
13.05 GHz PLO with standard specifications
  - APL-04-9.750-11-23  
9.75 GHz PLO +15dBm and +28V.

Frequency	Outline
0.4 - 3.4 GHz	A
3.4 - 6.0 GHz	B
6.0 - 14.0 GHz	A

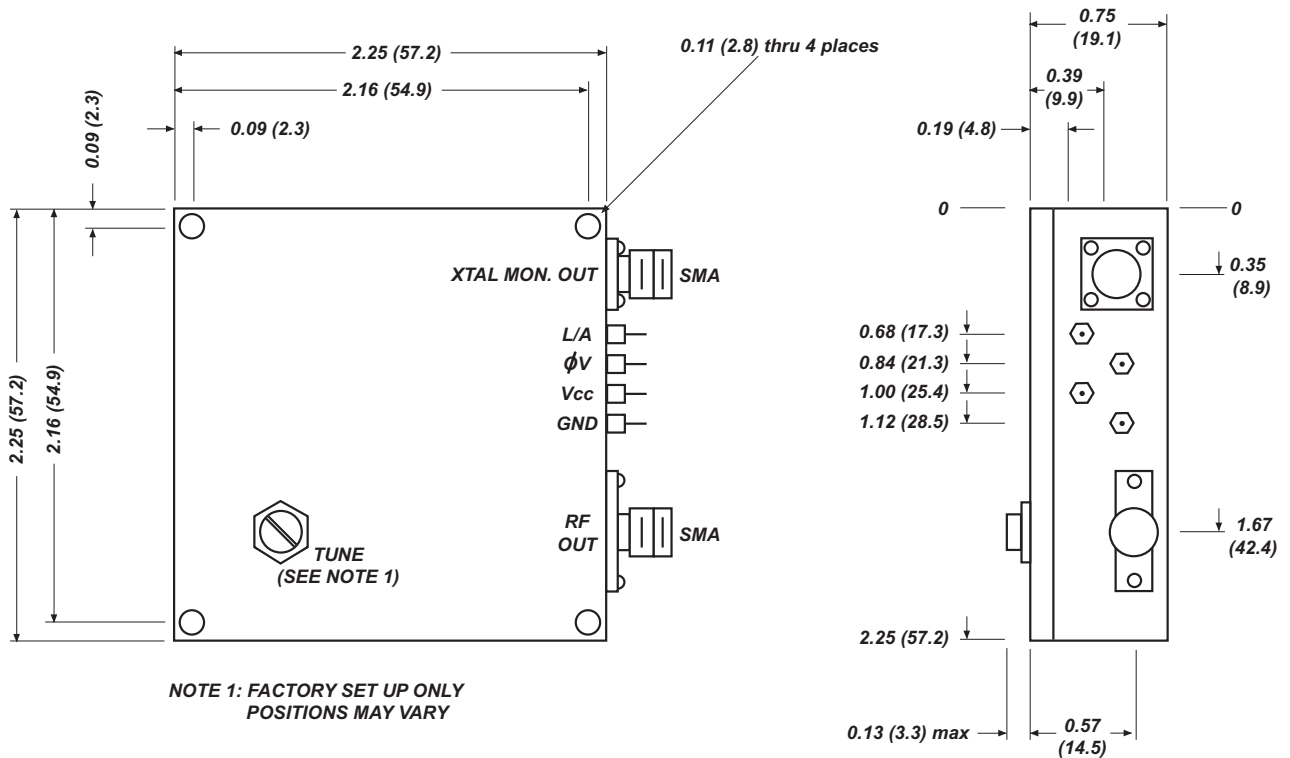
# OUTLINE A

USED ON: CRO - PLOs: 0.4 TO 3.4 GHz  
DRO - PLOs: 6.0 TO 14.0 GHz



# OUTLINE B

USED ON: DRO - PLOs: 3.4 TO 6.0 GHz



All dimensions are inches (mm)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Phase Locked Oscillators With Translator

## 5MHz or 10MHz External Reference APL-05 Series

- 3.4 GHz to 14 GHz
- Fundamental Frequency (DRO)
- External Reference
- Small Size
- Low Phase Noise
- Low Microphonics
- Low Current
- Custom Design



The APL - 05 series of fundamental frequency phase locked oscillators utilise dielectric resonators (DRO) to 14 GHz in dual phase locked loops for use with an external 5MHz or 10MHz reference. Circuit design uses GaAs FET active devices. The output contains a buffer amplifier for improved ruggedness, higher output power and a wider range of load VSWR. External tuning screw is for factory set up only.

General Specifications (also see options)	
Output Frequency	3.4 GHz to 14.0 GHz
Reference Frequency	5 MHz or 10 MHz
Frequency Stability	Reference dependent
Output Power	+13dBm min. (see options)
Output Power Stability	+/-2dB max
Harmonics	-20dBc max.
Ref. Related Spurious	-70dBc max.
Other Spurious	-80dBc max.
Load VSWR	2.5:1 max.
Input Voltage	+11 to +16V d.c. (see options)
Input Current	400mA max. (for +13dBm)
Operating Temperature	0+50C standard (see options)
Storage Temperature	-40+85C
Lock Alarm	TTL high for locked
RF Output Connector	SMA Female
Ref. Monitor Connector	SMA Female

Phase Noise (dBc/Hz) typical and based on 50MHz internal crystal				
Offset Frequency (Hz)	Output Frequency (GHz)			
	3	4	10	14
100	Reference Dependent - See Notes			
1K	-100	-95	-90	-85
10K	-115	-110	-100	-95
100K	-115	-115	-110	-105
1M	-135	-135	-120	-115

### Reference Frequency Notes:

Reference level required 0+/-3dBm

At offset frequencies up to 100Hz, the output phase noise is degraded from that of the reference oscillator by approximately  $20\log N + 6\text{dB}$ , where N is the ratio of the output to the reference frequency.

### Options:

00 - Standard

### Operating Temperature

01 - -10+60C

02 - -20+70C

03 - -40+85C

### Output Power

11 - +16dBm min. up to 10.0 GHz

12 - +20dBm min. up to 6.0 GHz

### D.C. Supply

21 - Input Voltage +12V d.c.

22 - Regulated +11 to +16V d.c.

23 - +28V d.c.

### Custom Options:

- Higher Output Frequency to 30 GHz (multiplied)
- Higher Output Power to +30dBm (amplified)
- Lower Harmonics (filtered)
- Lock Alarm - Open Collector
- Custom Sizes
- Instrument or Rack Mount Housing with Power Supply

### Model Numbers:

Examples:

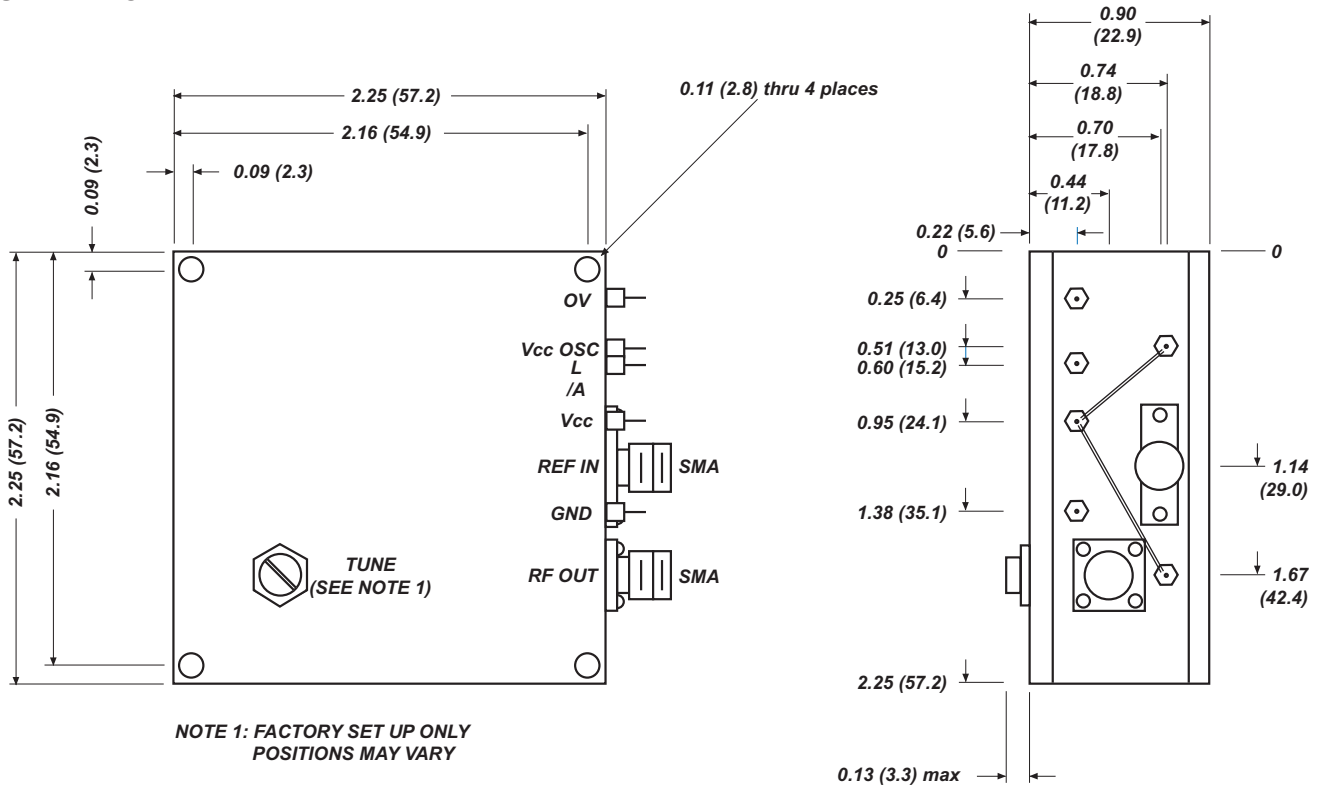
APL-05-13.050-10-00 13.05 GHz PLO with standard specifications and 10MHz ref.

APL-05-3.750-5-02-11-23 3.75 GHz PLO with 5MHz ref., -20+70C, +16dBm and +28V.



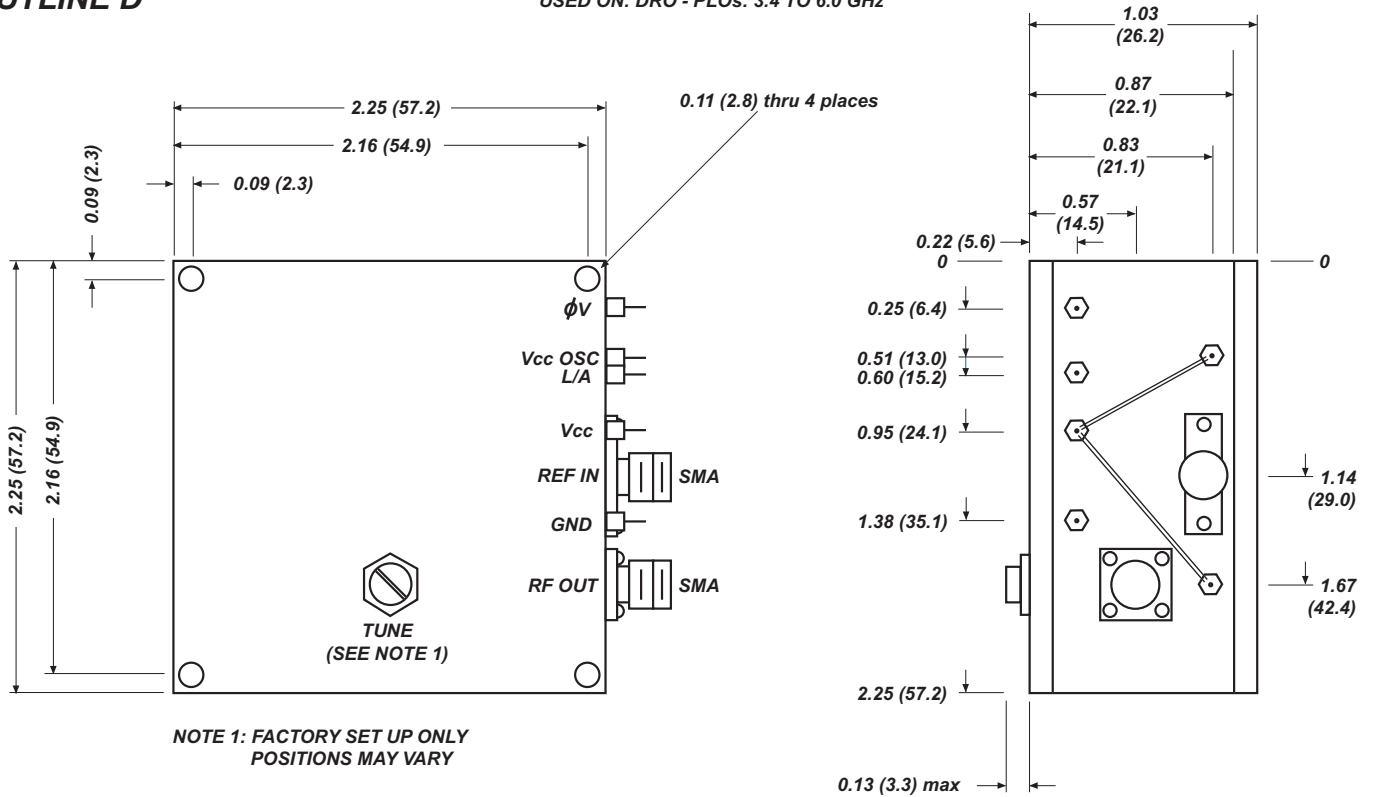
# OUTLINE C

DRO - PLOs: 6.0 TO 14.0 GHz



# OUTLINE D

USED ON: DRO - PLOs: 3.4 TO 6.0 GHz



All dimensions are inches (mm)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Phase Locked Oscillators

## High Stability Internal Reference APL - 06 Series

- 400 MHz to 14 GHz
- Very High Stability
- Fundamental Frequency (CRO or DRO)
- Internal Reference (OCXO)
- Low Phase Noise
- Low Microphonics
- Low Current
- Custom Design



General Specifications (also see options)	
Output Frequency	400 MHz to 14.0 GHz
Frequency Stability	+/-0.05ppm max. over -20+60C +/-0.005ppm/day typ. at despatch +/-0.5ppm/year max.
Output Power	+13dBm min. (see options)
Output Power Stability	+/-2dB max
Harmonics	-20dBc max.
Ref. Related Spurious	-70dBc max.
Other Spurious	-80dBc max.
Load VSWR	2.5:1 max.
Input Voltage	+15V d.c. (see options)
Input Current	600mA max. (for +13dBm)
Operating Temperature	-20+60C
Storage Temperature	-40+85C
Lock Alarm	TTL high for locked
RF Output Connector	SMA Female
Ref. Monitor Connector	SMA Female

The APL - 06 series of fundamental frequency phase locked oscillators utilise coaxial resonators (CRO) to 3.4 GHz and dielectric resonators (DRO) to 14 GHz in a phase locked loop with an internal high stability OCXO reference. Circuit design uses SMT devices including Si bipolar active devices up to 3.4 GHz and GaAs FET active devices above 3.4 GHz. The output contains a buffer amplifier for improved ruggedness, higher output power and a wider range of load VSWR. The PLOs also have an OCXO reference monitor output. DRO types have an external tuning screw for factory set up only.

Phase Noise (dBc/Hz) typical						
Offset Frequency (Hz)	Output Frequency (GHz)					
	0.6	1.5	3	4	10	14
10	-63	-55	-49	-47	-39	-36
100	-93	-85	-79	-77	-69	-66
1K	-117	-109	-103	-101	-93	-90
10K	-125	-117	-111	-109	-101	-98
100K	-135	-125	-115	-115	-110	-105
1M	-140	-140	-135	-135	-120	-115

### Options:

00 - Standard, based on 50 MHz internal OCXO.

### Output Power

11 - +16dBm min. up to 10.0 GHz

12 - +20dBm min. up to 6.0 GHz

### D.C. Supply

21 - Input Voltage +12V d.c.

22 - Regulated +11 to +16V d.c.

23 - +28V d.c.

### Custom Options:

- Higher Output Frequency to 30 GHz (multiplied)
- Higher Output Power to +30dBm (amplified)
- Lower Harmonics (filtered)
- Lock Alarm - Open Collector
- Custom Sizes
- Instrument or Rack Mount Housing with Power Supply

### Model Numbers:

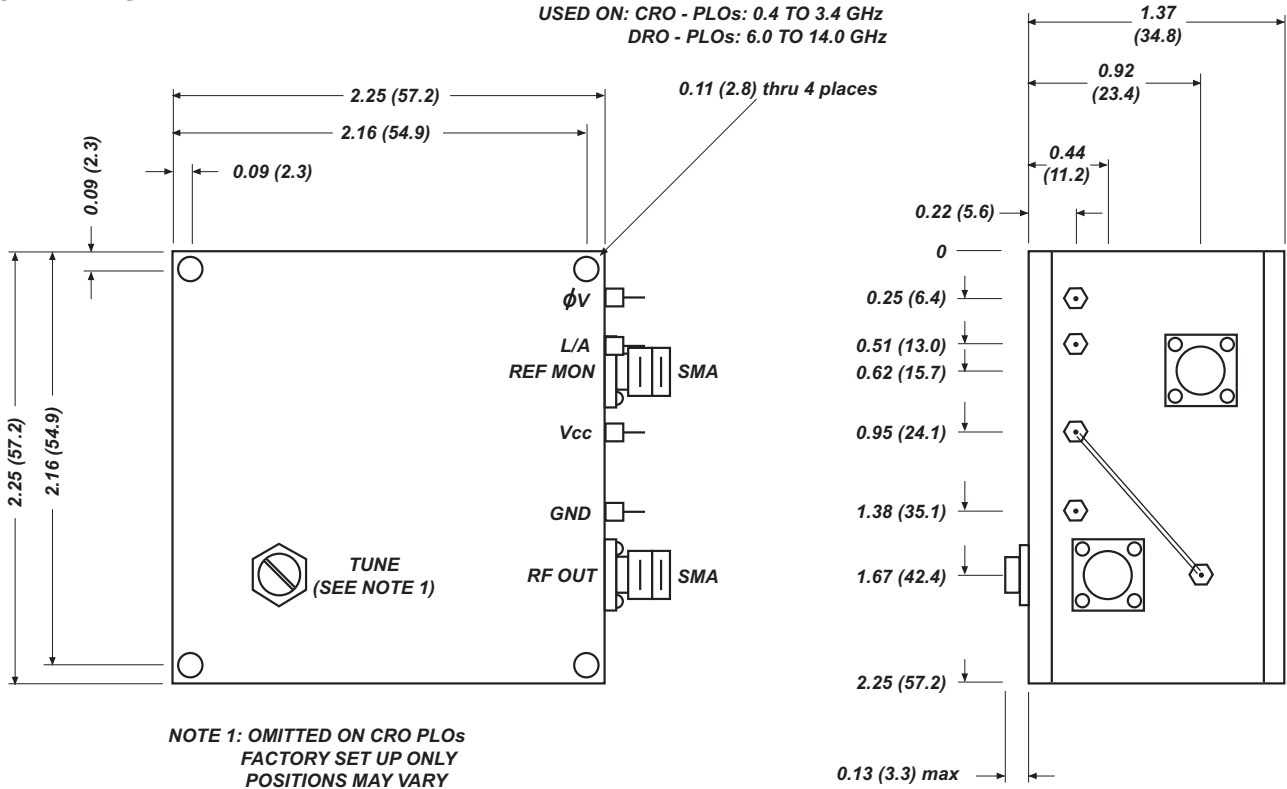
Examples:

APL-06-13.050-00 13.05 GHz PLO with standard specifications

APL-06-9.750-11-23 9.75 GHz PLO with +16dBm and +28V.

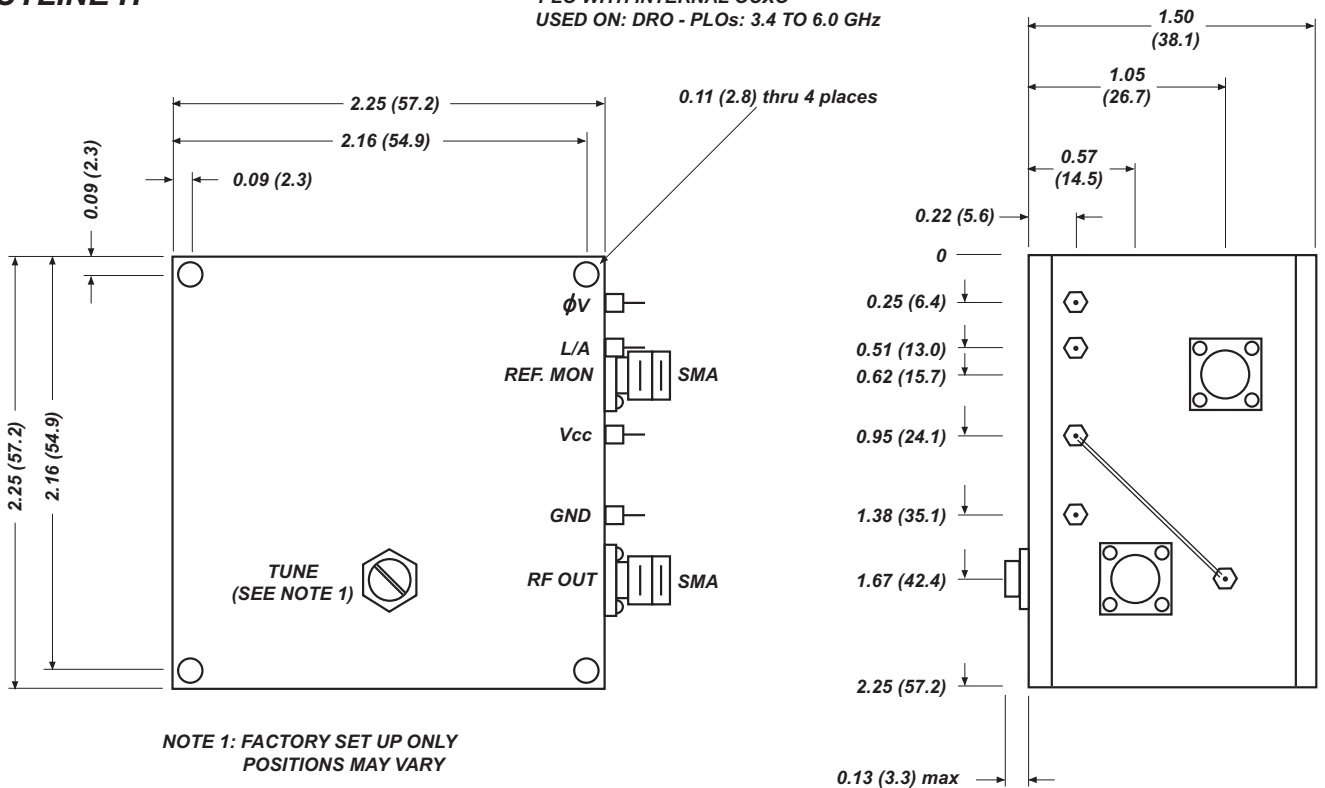
## OUTLINE G

PLO WITH INTERNAL OCXO  
 USED ON: CRO - PLOs: 0.4 TO 3.4 GHz  
 DRO - PLOs: 6.0 TO 14.0 GHz



## OUTLINE H

PLO WITH INTERNAL OCXO  
 USED ON: DRO - PLOs: 3.4 TO 6.0 GHz



All dimensions are inches (mm)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Wide Band Amplifiers

## AOX Series

- 1-20GHz in Frequency Ranges
- Ultra Wide Temperature Range -269 to +100C
- 27dB Typical Gain
- Flat Response
- Low Voltage
- Low Cost
- UK Manufacture

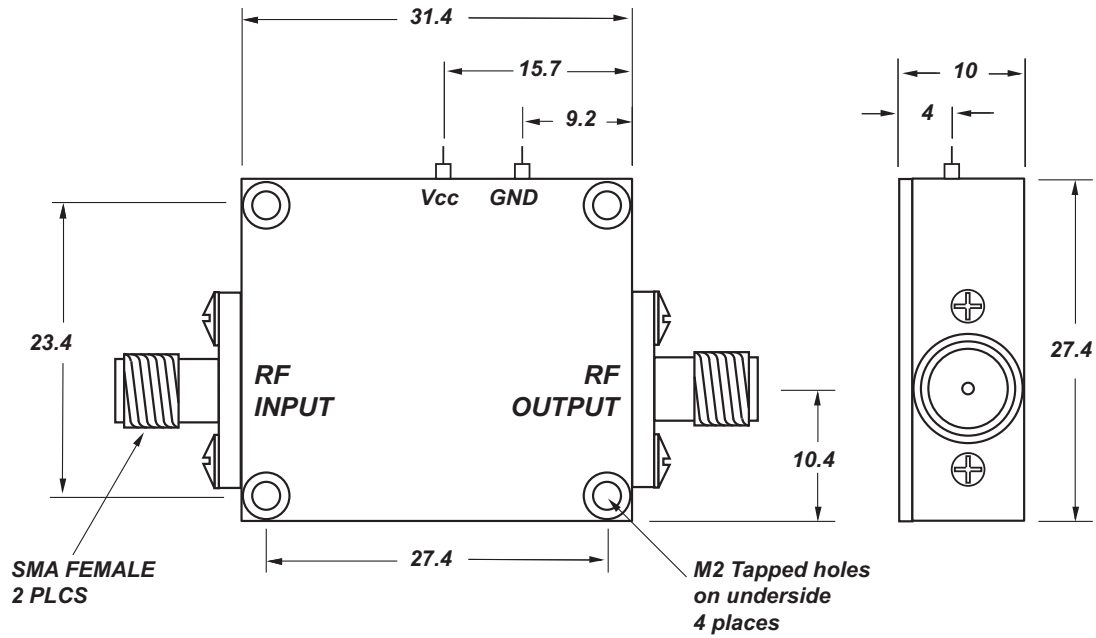


General Specifications	
Frequency Ranges Over	1.0-20.0GHz
Operating Temperature Range:-	
Model AOX-XXXXXX	-20 +85C Ambient Conditions
Model AOX-XXXXXX-H	-55 +85C Ambient Conditions
Protected Environment	4 - 358K
Short Term Maximum	+100C
DC Supply	+5V to +8V
Current @ +25C	140mA typ. at +5V 150mA max. at +8V
RF Connector	SMA Female, Stainless Steel MIL-C-39012
DC Connector	Filtercon & Ground Post
Housing	Aluminium Alloy
Finish	Alochrom 1200
Dimensions	31.5 x 27.5 x 10.0 mm (1.24 x 1.08 x 0.39 ins.)

The AOX series are a range of miniature, versatile, small signal, low noise amplifier modules having a multi-octave bandwidth and a very wide operating temperature range. The MIC design utilises GaAs PHEMT distributed amplifier MMIC technology, together with proprietary matching circuits within a robust light-weight aluminium alloy housing fitted with SMA Female connectors. The amplifier modules are suitable for applications in telecommunications, satcoms, radar, countermeasures, EMC, test and measurement, radio astronomy and other highly demanding commercial and military systems.

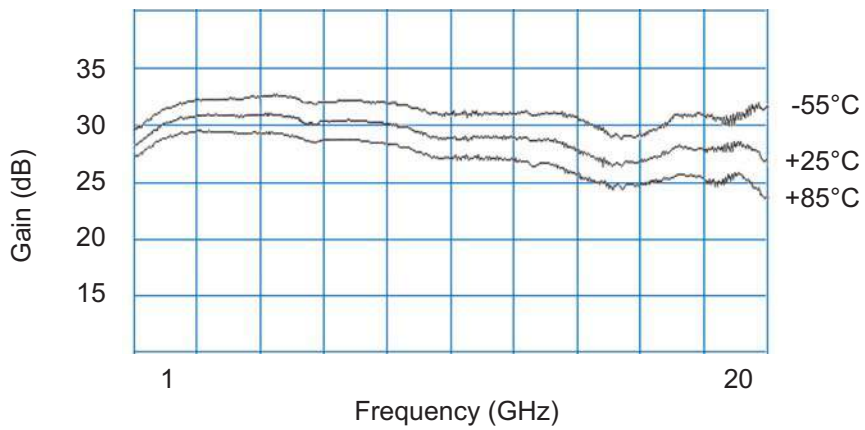
Specifications over Operating Temperature Range -20 to +85C

Model No.	Frequency Range (GHz)	Small Signal Gain (dB)		Gain Variation (+/-dB) typ.	Noise Figure (dB) typ.	Output Power at 1dB GCP (dBm)		VSWR (:1) max.	
		typ.	min.			typ.	min.	In	Out
AOX-010020	1.0-2.0	28.0	25.0	1.25	4.5	12.0	8.0	2.5	2.0
AOX-010040	1.0-4.0	28.0	25.0	1.25	4.5	14.0	11.0	2.5	2.0
AOX-010120	1.0-12.0	28.0	25.0	1.25	4.5	14.0	11.0	2.5	2.0
AOX-010200	1.0-20.0	27.0	22.0	2.5	7.5	14.0	8.0	2.5	2.8
AOX-020040	2.0-4.0	28.0	25.0	0.75	3.5	13.0	10.0	2.0	2.0
AOX-020060	2.0-6.0	28.0	25.0	0.75	3.5	14.0	11.0	2.0	2.0
AOX-020080	2.0-8.0	28.0	25.0	0.75	3.5	14.0	11.0	2.0	2.0
AOX-020180	2.0-18.0	27.0	22.0	2.0	5.5	13.0	10.0	2.0	2.8
AOX-030060	3.0-6.0	28.0	25.0	0.75	3.5	14.0	11.0	2.0	2.0
AOX-030120	3.0-12.0	28.0	25.0	1.0	3.5	14.0	11.0	2.0	2.0
AOX-030150	3.0-15.0	26.0	22.0	2.0	4.0	13.0	10.0	2.0	2.8
AOX-040080	4.0-8.0	28.0	25.0	0.75	3.0	14.0	11.0	2.0	2.0
AOX-040120	4.0-12.0	28.0	25.0	1.25	3.5	14.0	11.0	2.0	2.0
AOX-040180	4.0-18.0	26.0	22.0	2.0	5.5	13.0	10.0	2.0	2.8
AOX-060120	6.0-12.0	28.0	25.0	1.25	3.5	13.0	10.0	2.0	2.0
AOX-060180	6.0-18.0	27.0	22.0	2.5	5.5	13.0	10.0	2.0	2.8
AOX-060200	6.0-20.0	27.0	22.0	2.5	7.5	13.0	9.0	2.0	2.8
AOX-080180	8.0-18.0	26.0	22.0	2.5	5.5	13.0	10.0	2.0	2.8
AOX-120180	12.0-18.0	26.0	22.0	2.0	5.5	13.0	10.0	2.0	2.8
AOX-120200	12.0-20.0	26.0	22.0	2.0	7.5	13.0	9.0	2.0	2.8
AOX-150200	15.0-20.0	26.0	22.0	2.0	7.5	13.0	9.0	2.0	2.8

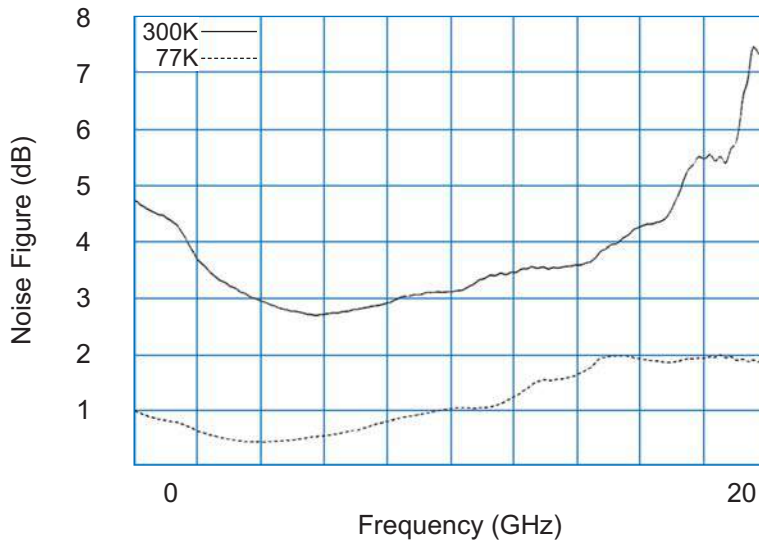


All dimensions in mm

Typical Gain Variation with Frequency  
Model AOX-010200



Typical Noise Figure Variation with Frequency  
Model AOX-010200



We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## Miniature Amplifiers - Drop In

- 1.8 - 26.0 GHz
- Miniature Size
- Cascadable
- Removable Connectors
- High Reliability
- Open / Short Protected
- Internal Voltage Regulator
- Reverse Voltage Protected
- Unconditionally Stable
- 2 Year Warranty

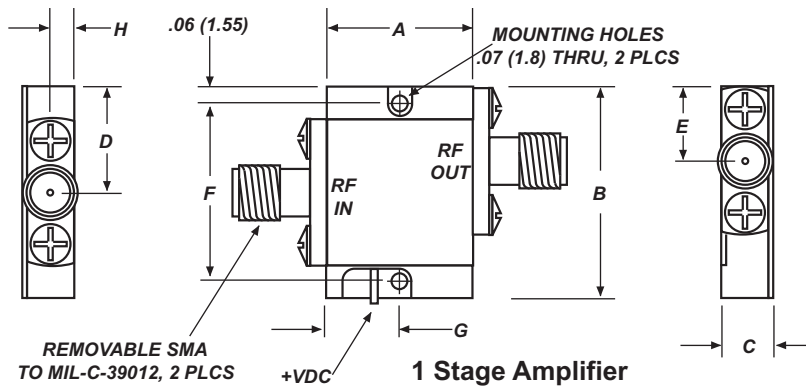


The AGM series of miniature amplifiers utilise thin film and MMIC technology to provide very versatile and reliable gain modules for microwave applications in communications, radar and defence equipment. Each amplifier can be used either as a modular unit with the SMA female connectors fitted or inserted directly into a microwave assembly with the connectors removed. In addition to the standard models listed, custom units can be offered to meet the requirements of specific applications.

Specification Temperature +25C, Operating temperature -55+85C Baseplate.

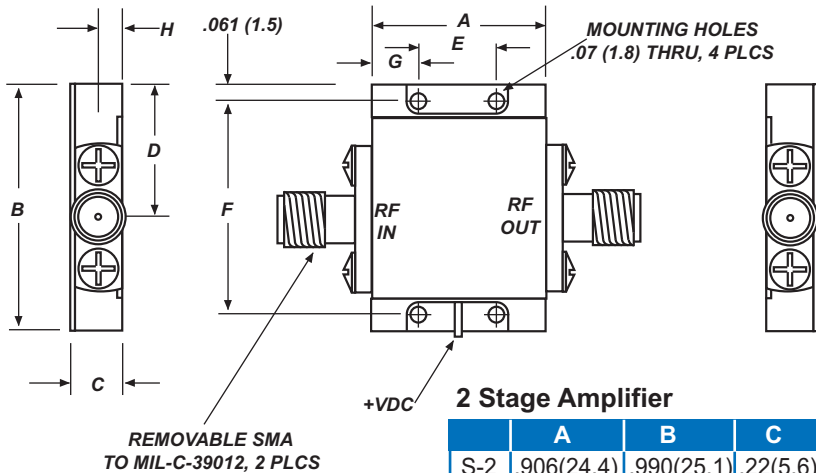
Custom frequency ranges, specifications and configurations are also available.

Model No	Frequency Range (GHz)	Gain (dB) min.	Gain Flatness (±dB) max.	Output at 1dB GCP (dBm) min.	Noise Figure (dB) max.	VSWR		Input Voltage (Vdc)	Input Current (mA)	Fig
						Input max.	Output typ.			
AGM-1001	1.8-2.4	9.0	0.75	15.0	5.0	2.0:1	1.8:1	9-15	65	S-1
AGM-1002	2.0-6.0	15.0	0.75	16	3.5	2.0:1	1.8:1	9-15	65	S-1
AGM-1003	4.0-8.0	7.0	0.75	27	7.0	2.0:1	1.8:1	12-15	230	C-1
AGM-1004	4.0-8.0	12.0	0.75	20	3.5	2.0:1	1.8:1	9-15	80	C-1
AGM-1005	8.0-12.0	10.0	0.75	20	5.0	2.0:1	1.8:1	9-15	80	X-1
AGM-1006	8.0-12.0	10.0	0.75	12	2.5	2.0:1	1.8:1	9-15	100	X-1
AGM-1007	9.0-10.0	9.0	0.75	10	2.5	2.0:1	1.5:1	9-15	60	X-1
AGM-1008	12.0-18.0	8.5	0.75	20	5.0	2.0:1	1.8:1	9-15	80	X-1
AGM-1009	13.75-14.50	9.0	0.50	20	5.0	2.0:1	1.5:1	9-15	80	X-1
AGM-1010	18.0-26.0	4.5	0.75	10	5.0	2.0:1	1.8:1	9-15	80	X-1
AGM-2001	2.0-4.0	22.0	1.00	9	2.7	2.0:1	1.8:1	9-15	100	S-2
AGM-2002	3.7-4.2	14.0	1.00	30	8.0	2.0:1	1.8:1	12-15	900	S-2
AGM-2003	4.4-5.0	14.0	1.00	30	8.0	2.0:1	1.8:1	12-15	900	C-2
AGM-2004	5.3-5.9	14.0	1.00	30	8.0	2.0:1	1.8:1	12-15	900	C-2
AGM-2005	5.9-6.4	14.0	1.00	30	8.0	2.0:1	1.8:1	12-15	900	C-2
AGM-2006	5.9-6.4	27.0	0.75	20	5.0	2.0:1	1.5:1	9-15	160	C-2
AGM-2007	6.4-7.2	14.0	1.00	30	8.0	2.0:1	1.8:1	12-15	900	C-2
AGM-2008	7.1-7.7	14.0	1.00	30	8.0	2.0:1	1.8:1	12-15	900	C-2
AGM-2009	7.25-7.75	25.0	1.00	10	4.5	2.0:1	1.5:1	9-15	150	C-2
AGM-2010	7.0-11.0	15.0	1.00	10	6.0	2.0:1	1.8:1	9-15	180	X-2
AGM-2011	8.0-12.0	16.0	1.00	17	4.5	2.0:1	1.8:1	9-15	240	X-2
AGM-2012	8.0-12.0	24.0	1.00	20	5.0	2.0:1	1.8:1	9-15	160	X-2
AGM-2013	12.0-18.0	18.0	1.00	20	6.0	>2.0:1	1.8:1	9-15	180	X-2
AGM-2014	13.75-14.5	18.0	0.75	20	5.0	2.0:1	1.5:1	9-15	160	X-2
AGM-3001	2.0-4.0	40.0	1.50	20	3.0	2.0:1	1.8:1	9-15	400	S-3
AGM-3002	2.0-4.0	48.0	1.50	19	3.0	2.0:1	1.8:1	9-15	220	S-3
AGM-3003	4.0-8.0	32.0	1.50	20	4.0	2.0:1	1.8:1	9-15	325	C-3
AGM-3004	4.0-8.0	45.0	1.50	19	4.0	2.0:1	1.8:1	9-15	220	C-3
AGM-3005	5.9-6.4	40.0	1.00	20	5.0	2.0:1	1.5:1	9-15	250	C-3
AGM-3006	8.0-10.0	33.0	1.50	10	4.0	2.0:1	1.8:1	9-15	160	X-3
AGM-3007	8.0-12.0	35.0	1.50	20	5.0	2.0:1	1.8:1	9-15	250	X-3
AGM-3008	10.5-15.0	20.0	1.50	20	5.0	2.0:1	1.8:1	9-15	225	X-3
AGM-3009	12.7-13.2	20.0	1.00	13	2.7	2.0:1	1.5:1	9-15	200	X-3
AGM-3010	12.4-18.0	24.0	1.50	17	4.5	2.0:1	1.8:1	9-15	220	X-3
AGM-3011	13.75-14.5	20.0	1.00	20	5.0	2.0:1	1.5:1	9-15	225	X-3
AGM-3012	13.75-14.5	27.0	1.00	18	5.0	1.5:1	1.4:1	9-15	175	X-3



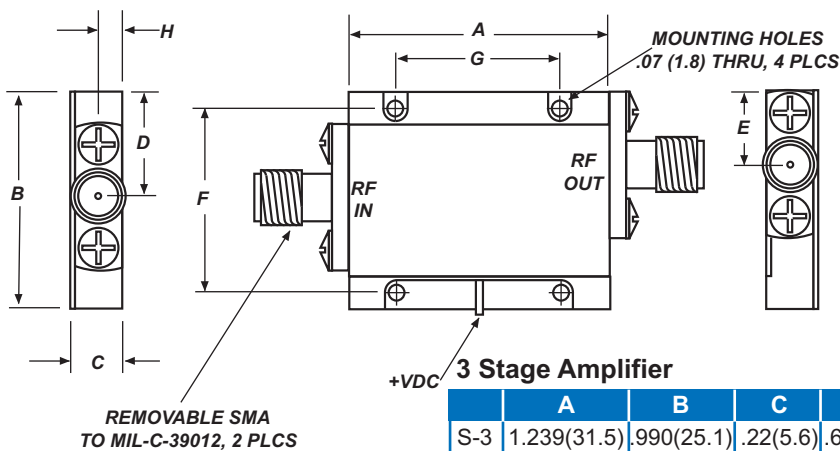
**1 Stage Amplifier**

	A	B	C	D	E	F	G	H
S-1	.57(14.5)	.99(25.1)	.22(5.6)	.63(16.0)	.27(6.9)	.86(21.8)	.29(7.4)	.10(2.5)
C-1	.57(14.5)	.96(24.4)	.22(5.6)	.52(13.2)	.31(7.9)	.83(21.1)	.29(7.4)	.10(2.5)
X-1	.50(12.7)	.78(19.8)	.22(5.6)	.38(9.7)	.27(6.9)	.65(16.5)	.25(6.4)	.10(2.5)



**2 Stage Amplifier**

	A	B	C	D	E	F	G	H
S-2	.906(24.4)	.990(25.1)	.22(5.6)	.630(16.0)	.334(8.5)	.868(22.0)	.286(7.3)	.10(2.5)
C-2	.906(24.4)	.956(24.3)	.22(5.6)	.524(13.3)	.334(8.5)	.834(21.2)	.234(6.0)	.10(2.5)
X-2	.760(19.3)	.766(19.5)	.22(5.6)	.381(9.7)	.260(6.6)	.654(16.6)	.250(6.4)	.10(2.5)



**3 Stage Amplifier**

	A	B	C	D	E	F	G	H
S-3	1.239(31.5)	.990(25.1)	.22(5.6)	.630(16.0)	.270(6.9)	.868(21.9)	.667(16.9)	.10(2.5)
C-3	1.239(31.5)	.960(24.4)	.22(5.6)	.524(13.3)	.312(25.4)	.834(21.2)	.667(16.9)	.10(2.5)
X-3	1.02(25.9)	.776(19.7)	.22(5.6)	.381(9.7)	.275(7.0)	.654(16.6)	.520(13.2)	.10(2.5)

All dimensions are in inches (mm).

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Miniature Drop-In Amplifier with MIL-883 Screening AGM-1005-15

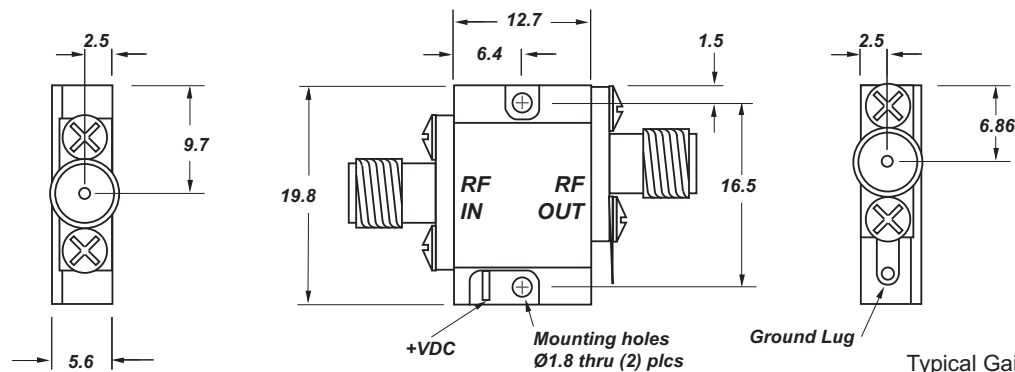
- Frequency 8.0-12.0GHz
- Screened to MIL-883
- Removable SMA Connectors
- Cascadeable
- Miniature size
- Flat Response



AGM-1005-15 is a miniature amplifier utilising thin film and MMIC technology to provide a very versatile and reliable gain module for microwave applications in communications, radar and defence equipment. It can be used either as a modular unit with the SMA female connectors fitted or inserted directly into a microwave assembly with the connectors removed.

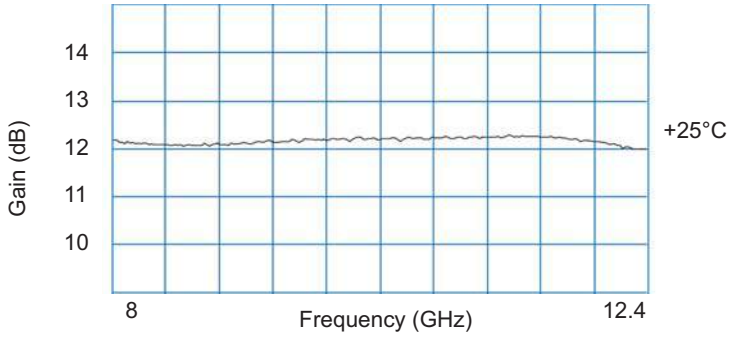
Electrical Specifications over -55 to +85C	
Frequency	8.0-12.0GHz
Gain	10dB min., 12dB typ.
Gain Flatness	+/-0.75dB max.
Pout 1dBcp	18.5dBm min.
Noise Figure	5.0dB max.
	4.0dB max. @ +25C typ.
VSWR	2.0:1 max.
DC Power	+15VDC @ 100mA typ.
Connectors	SMA Female (removable)
Operating Temperature	-55 to +85C

MIL-883 Screening	
Pre-cap Inspection	MIL-STD-883, Condition 2017
Stabilisation Bake	+125C, 24 Hours
Temperature Cycle	MIL-STD-883, Condition 1015, -55 to +125C, 10 Cycles
Burn-In	MIL-STD-883, Condition 1015, +85C, 168 Hours
Acceleration	MIL-STD-833, Condition 2001.2, Y1 axis 1000g
Vibration	20-20,000Hz @ 0.05g <sup>2</sup> /Hz
Gross Leak Test	
Final Electric Test	
Final Mechanical Inspection	



All dimensions in mm

Typical Gain Variation with Frequency



We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.



# Mast Head Amplifier

## Model No. AMH-1001

Model AMH-1001 is a low noise amplifier designed for tower mounted telemetry applications. Featuring a weatherproof housing and comes complete with mounting u-bolts for easy installation on ranges and at remote locations



### General Specifications

Frequency Range	1435-1540MHz (L-Band)
Gain	25dB min., 30dB typ.
Noise Figure	0.5dB max.
Output Power 1dB GCP @ +25C	10dBm min., 12dBm typ.
DC Supply	+12V (via Output Type N Connector)
Current	150mA max., 65mA typ.
VSWR Input/Output	1.5:1 max.
Operating Temperature	-20 to +60C
Connectors Input/Output	Type N Female
Weatherproof Housing	195 (L) x 127 (W) x 77 (H) mm

Typical Performance Data @ +25C

Frequency (GHz)	Gain (dB)	P-1dB (dBm)	Input VSWR	Output VSWR
1.4350	30.80		1.19	1.29
1.4875	30.90	12.70	1.24	1.28
1.5400	30.70		1.32	1.41

### Option - 01 Additional Filtering

Stopband Frequency	DC-1.2GHz
Stopband Frequency	1.7-5.0GHz min.
Stopband Attenuation	50dB min.
<b>Option - 02 Fitting Kit for 2" Mast Mounting</b>	

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# High Power Amplifiers

- 0.3KHz - 3.0GHz
- Wide Band
- Excellent Linearity
- Low Distortion
- High Dynamic Range
- High Efficiency
- Small Size

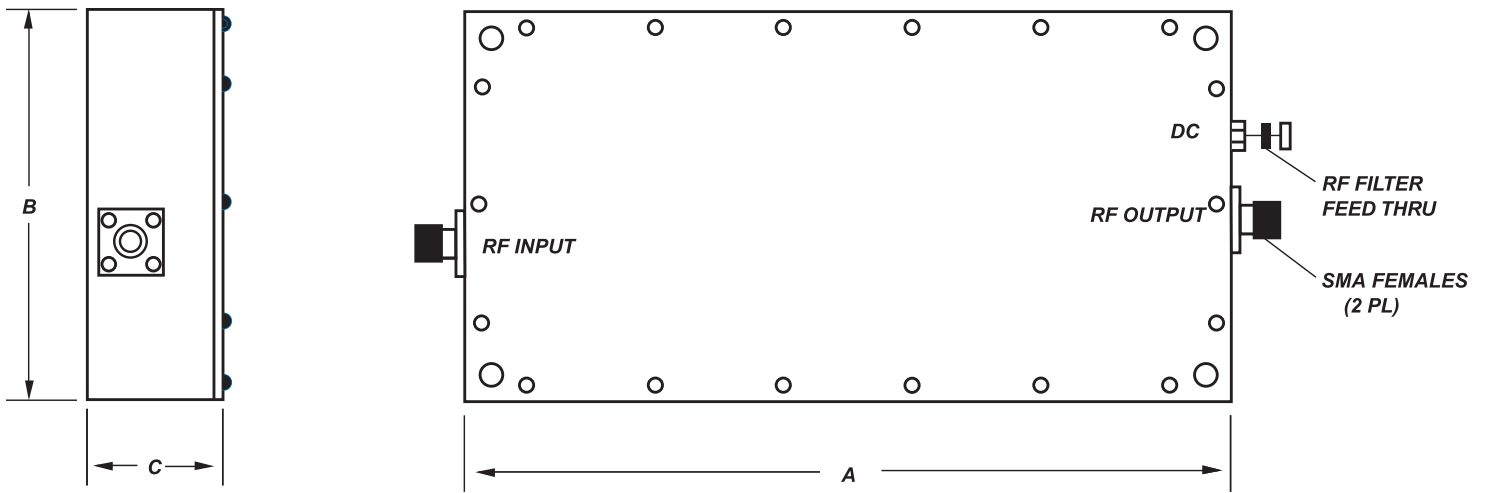


The AHP series of high power RF amplifiers utilise GaAs FET and Silicon MOSFET technology in class A and AB linear designs to provide high RF output power over wide frequency bands with low distortion and high efficiency. These amplifiers are particularly suited to applications in RFI/EMC testing, broadcasting, communications, cellular radio, satcom, EMC, laboratory testing and TWT replacement. In addition to the standard models listed, custom units can be offered to meet the requirements of specific applications.

Individual data sheets with guaranteed performance are available for all models.

General Electrical Specifications	
Impedance	50 ohms
Spurious	-70dBc typ.
Output VSWR	2.0:1 typ.
Operating Environment	
Operating Case Temperature	0 to +50C
Except Models:-	
AHP-10499-00 & AHP-10499-1-00	-10 to +60C
Storage Temperature	-30 +100C
Humidity	95% non-condensing
<b>Options</b>	
19" Rack Mounting with Forced Cooling	
Alternative RF Connectors	
Custom Frequency Ranges	
Extended Temperature Range	
Gain Control	
Reverse Polarity Protection	
Thermal Overload Protection	
Input Power Protection	

Model No.	Frequency Range (MHz)	Saturated Power (Watts) typ.	Linear Power (Watts) typ.	Gain (dB) typ.	Small Signal Gain Flatness (+/-dB) typ.	3rd Order Intercept IP3 (dBm) typ.	Harmonics (dBc) 2nd/3rd typ.	Volts (VDC) typ.	Current (A) typ.	Input VSWR (:1) max.	RF Connectors Female In / Out
AHP-10519-00	0.1-200	100	50	53	1	56	-23/-45	28	7	1.45	SMA
AHP-10505-00	0.53-1.7	250	200	65	0.5	60	-30	28	13	1.4	N
AHP-10520-00	3-90	100	50	45	1	57	-40/-24	28	7	1.3	SMA
AHP-10507-00	10-1000	2	1	11	1	36	-28	28	300mA	1.5	SMA
AHP-10508-00	10-1000	2	1	23	1	38	-36	28	750mA	1.5	SMA
AHP-10500-00	20-500	50	30	43	0.8	54	-28	28	6.8	2.0	SMA
AHP-10547-00	20-520	60	40	45	1	54	-20/-30	28	8.6	1.6	SMA
AHP-10503-00	27-100	150	100	50	0.5	58	-32	28	8	1.5	SMA in / N out
AHP-10499-00	30-88	100	80	13	1	57	-20	28	5	2.0	BNC
AHP-10499-1-00	30-88	100	80	13	1	57	-40/-20	25	9	1.5	BNC
AHP-10506-00	88-108	200	180	67	0.5	57	-27	28	10.3	1.4	N
AHP-10504-00	100-500	200	154	53	1	58	-27	28	17	2.0	SMA in / N out
AHP-10514-00	112-137	100	100	55	0.3	60	-24	28	5.4	1.3	SMA
AHP-10515-00	150-250	25	20	48	1	52	-30	28	1.9	1.3	SMA
AHP-10516-00	225-400	20	15	15	0.5	52	-23	24	1.6	1.5	SMA
AHP-10512-00	380-420	10 PEP	10	38	1	50	-19	24	1.5	2.0	SMA
AHP-10513-00	380-420	20 PEP	20	15	1	52	-31	28	3.2	2.0	SMA
AHP-10511-00	400-1000	70	50	48	0.5	55	-40	28	8.5	1.55	SMA
AHP-10501-00	500-1000	50	20	49	1	54	-40	28	6.8	1.7	SMA
AHP-10510-00	500-1000	80	50	48	0.5	55	-50	28	7.2	1.45	SMA
AHP-10518-00	500-1000	150	100	58	1	58	-28	28	17	2.0	SMA in / N out
AHP-10502-00	500-1000	150	100	50	1	58	-30	28	16	2.0	SMA in / N out
AHP-10530-00	800-3000	1.6	1	38	2	47	-30/-50	12.5	525mA	2.0	SMA in / out
AHP-10525-00	700-960	400	300	55	0.5	64	-50	28	47	1.4	SMA in / N out
AHP-10509-00	800-960	80	50	48	0.5	55	-50	28	8.2	1.45	SMA
AHP-10551-00	1100-1600	10	6.4	24	1	52	-35	13	2.9	2.0	SMA in / out



Model No.	Dimensions (inches)			Dimensions (mm)		
	A	B	C	A	B	C
AHP-10519-00	10.2	7.4	1.5	259.08	187.96	38.1
AHP-10505-00	8.0	4.9	1.25	203.2	124.46	31.75
AHP-10520-00	3.0	8.0	1.25	76.2	203.2	31.75
AHP-10507-00	2.0	1.6	0.075	50.8	40.64	1.91
AHP-10508-00	3.5	1.6	0.75	88.9	40.64	19.05
AHP-10500-00	9.75	7.3	6.5	247.65	185.42	165.1
AHP-10547-00	5.3	2.5	1.05	134.62	63.5	26.67
AHP-10503-00	8.5	4.0	1.263	215.9	101.6	32.08
AHP-10499-00	3.7	10.8	4.4	93.98	274.32	111.76
AHP-10499-1-00	3.7	10.8	4.4	93.98	274.32	111.76
AHP-10506-00	8.0	4.9	1.25	203.2	124.46	31.75
AHP-10504-00	11.25	9.925	1.94	285.75	252.1	49.28
AHP-10514-00	5.0	3.35	1.4	127.0	85.09	35.56
AHP-10515-00	2.20	4.0	0.86	55.88	101.6	21.84
AHP-10516-00	2.20	4.0	0.86	55.88	101.6	21.84
AHP-10512-00	2.20	4.0	0.86	55.88	101.6	21.84
AHP-10513-00	2.20	4.0	0.86	55.88	101.6	21.84
AHP-10511-00	9.75	7.3	6.5	247.65	185.42	165.1
AHP-10501-00	9.75	7.3	6.5	247.65	185.42	165.1
AHP-10510-00	9.75	7.3	6.5	247.65	185.42	165.1
AHP-10518-00	9.0	6.125	1.25	228.6	155.58	31.75
AHP-10502-00	11.25	9.925	1.94	285.75	252.1	49.28
AHP-10530-00	2.50	4.7	0.57	63.5	119.38	14.48
AHP-10525-00	12.0	10.75	1.3	304.8	273.05	33.02
AHP-10509-00	9.75	7.3	6.5	247.65	185.42	165.1
AHP-10551-00	3.0	7.27	0.56	76.2	184.66	14.22

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Multi-Octave Battery Powered Amplifier Model BOX-010200

- Battery Powered
- Ultra Broad Band 1GHz - 20GHz
- High Gain 25dB typ.
- Flat Response
- Low Noise
- Low Cost
- High Versatility
- UK Manufacture

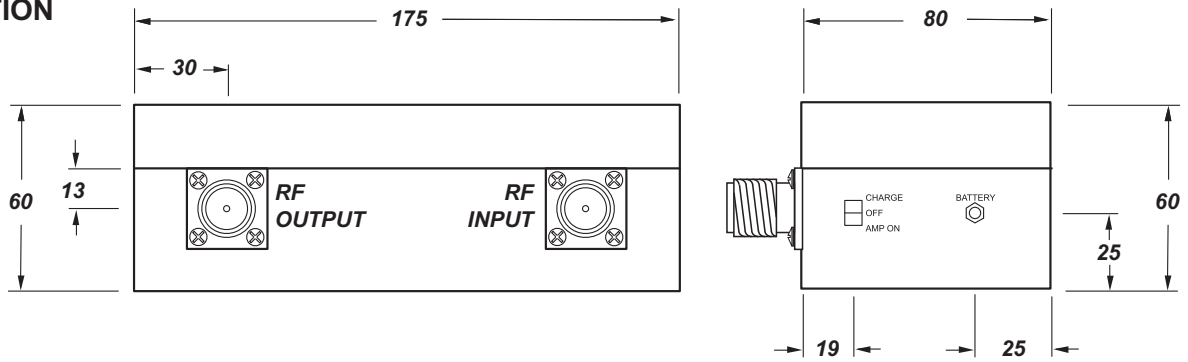


General Specifications	
Frequency Range	1.0-20.0GHz
Operating Temperature Range:- Model BOX-010200	0 +50C Ambient Conditions
RF Connector	Type N, Stainless Steel MIL-C-39012
Connectors:- Standard	Male Input, Female Output
Optional	Type N Male or Female SMA Male or Female
Housing	Die-cast Aluminium Alloy
Finish	Matt Black
Dimensions	175 x 80 x 60 mm (6.89 x 3.15 x 2.36 ins.)
Tripod Mounting Point	1/4" UNC Threaded Hole in Base

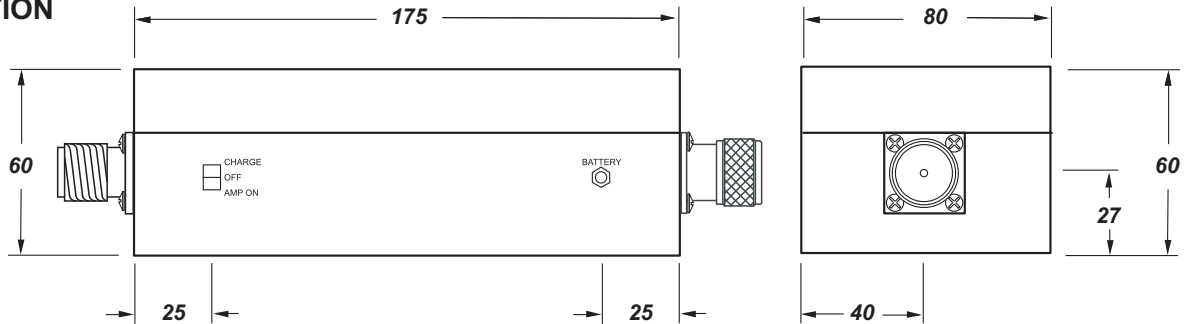
Model BOX-010200 is a self-contained, battery powered, versatile, small signal, low noise amplifier having a multi-octave bandwidth from 1 to 20GHz. The MIC design utilises GaAs PHEMT distributed amplifier MMIC technology, together with proprietary matching circuits within a robust die-cast aluminium alloy housing which also contains a rechargeable NiMH battery. A battery charger is supplied with each unit. The amplifier is fitted with type N connectors, male input and female output as standard. The main applications include EMC testing, remote antenna site testing, portable communications, satcoms, countermeasures and radar equipment.

Parameter	Typ.	Min.	Max.
Small Signal Gain @ +25C	25dB	21dB	
Gain Variation over any 50MHz	0.15dB		
over any 500MHz	0.50dB		
over 1-20GHz			+/-2.5dB
Noise Figure @ +25C	3.0dB @ 5GHz 5.0dB @ 15GHz		
Output Power 1dB GCP @ +25C	+11dBm @ 1GHz +14dBm @ 5GHz +14dBm @ 10GHz +13dBm @ 15GHz +12dBm @ 20GHz	+8dBm @ 1GHz +11dBm @ 5GHz +11dBm @ 10GHz +10dBm @ 15GHz +9dBm @ 20GHz	
Output Power Saturated @ +25C	+12dBm @ 1GHz +15dBm @ 5GHz +15dBm @ 10GHz +14dBm @ 15GHz +13dBm @ 20GHz		
Third order Intercept @ +25C	+28dBm @ 1GHz +20dBm @ 5GHz		
Input VSWR	2.0:1		2.5:1
Output VSWR	2.5:1		3.0:1
Supply to Charger	Frequency 50/60Hz	80V	230V
Battery Run Time	24 hours		
Battery Standby Time	28 days		

## RADIAL CONFIGURATION



## AXIAL CONFIGURATION



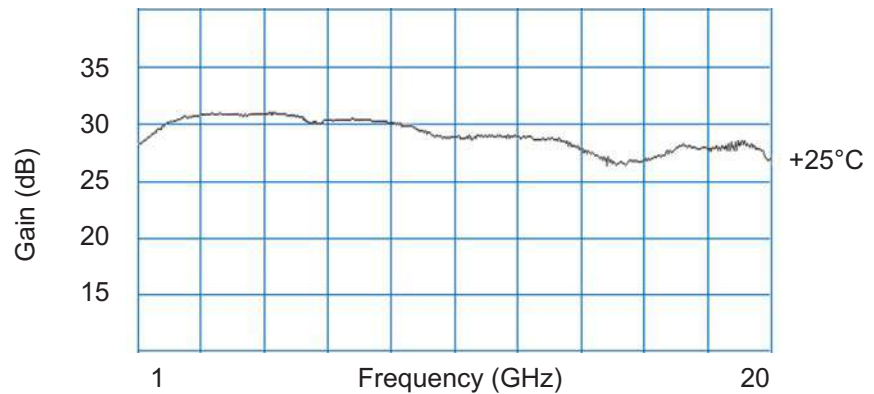
All dimensions in mm

Model Number  
BOX-010200 - X - YY - ZZ

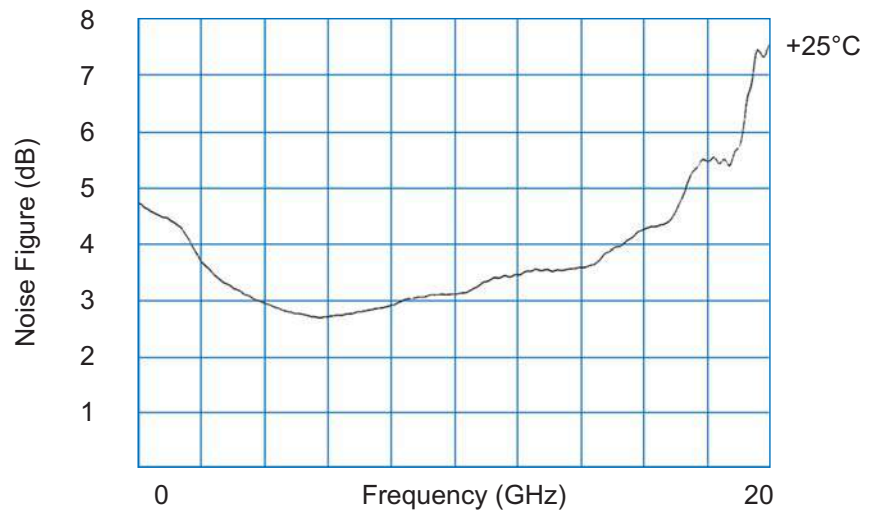
Configuration  
A = Axial  
R = Radial

Input Connectors  
Output Connectors  
NM = Type N Male  
NF = Type N Female  
SM = SMA Male  
SF = SMA Female

Typical Gain Variation with Frequency



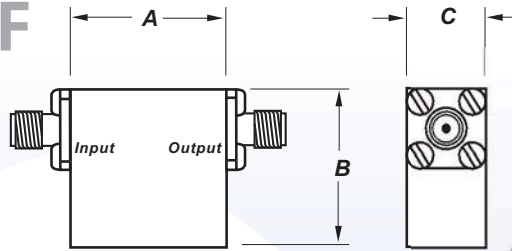
Typical Noise Figure Variation with Frequency



We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Coaxial Isolators

- 800 MHz - 23 GHz
- Octave & Standard Bands
- Compact Design
- Internal Load
- Fast Delivery
- SMA Connectors



Dimension B Includes Load



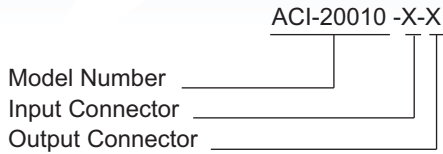
The ACI-20000 series of coaxial isolators are designed for low power applications in communications, test and measurement and scientific research applications requiring good RF performance in a compact and economic package.

General Specifications	
Isolator Load	Internal 50 ohm
Housing Material	Aluminium Alloy
Magnet Cover Plates	Nickel Plated Steel
Connectors	Gold Plated
Standard Connectors	SMA Female
Connector Options	SMA Male

**Also available:**

- Higher Input Power and Load Rating
- 3 Port Standard Band Circulators to 23 GHz, ACC-20000 Series
- Narrow Band High Performance Isolators & Circulators
- Waveguide Isolators and Circulators to 40 GHz
- Drop-In and Microstrip Isolators and Circulators to 26 GHz

**Part Numbering**



Connector Types  
 SF =SMA Female  
 SM=SMA Male  
 BF =BMA Female  
 BM=BMA Male

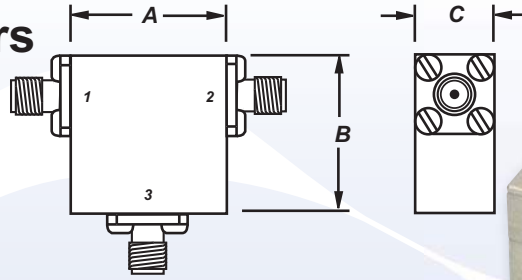
Custom frequency ranges, specifications and configurations may also be reviewed for quotation. These are often just as economic as standard models but may not be in stock. To obtain a quotation for a custom isolator please provide details of the specification required as follows: Frequency Range, Isolation, Insertion Loss, VSWR, Input Power, Load Rating, Temperature Range, Input & Output Connectors plus any additional relevant parameters.

Model No	Frequency Range (GHz)	Isolation (dB)	Insertion Loss (dB)	VSWR :1	Forward Power (Watts)	Load Rating (Watts)	Operating Temperature (deg. C)	Dimensions (mm)		
								A	B	C
ACI-20010	0.8-1.2	18	0.60	1.30	20	5	-30+65	50	54	24
ACI-20020	0.95-1.45	16	0.70	1.40	20	5	-30+65	40	50	21
ACI-20030	0.95-1.95	14	0.70	1.55	20	10	-20+55	64	76	26
ACI-20040	1.0-2.0	15	0.80	1.50	10	2	0+50	70	80	21
ACI-20050	1.2-1.7	20	0.60	1.20	20	5	-30+65	34	39	22
ACI-20060	1.7-2.4	20	0.50	1.20	20	5	-30+65	32	39	20
ACI-20070	2.0-4.0	18	0.60	1.35	5	1	-10+65	32	34	18
ACI-20080	2.2-2.7	20	0.50	1.20	20	5	-30+65	32	39	20
ACI-20090	2.5-3.5	20	0.60	1.25	20	5	-10+40	28	36	19
ACI-20100	2.7-3.2	20	0.40	1.20	20	5	-30+65	25	29.5	15
ACI-20110	3.0-6.0	17	0.60	1.40	10	2	-10+55	25.4	34.5	13
ACI-20120	3.4-4.2	20	0.40	1.20	5	1	-10+65	16	26	15
ACI-20130	4.0-8.0	18	0.60	1.35	5	1	-25+65	20	26	14
ACI-20140	5.8-6.5	23	0.30	1.20	5	1	-35+65	16	26	13
ACI-20150	5.85-6.725	20	0.40	1.20	5	1	-10+60	16	26	15
ACI-20160	6.0-12.0	18	0.60	1.35	5	1	-30+65	12	20	13
ACI-20170	7.25-7.75	23	0.30	1.20	5	1	-30+65	12	20	13
ACI-20180	7.9-8.4	23	0.30	1.20	5	1	-30+65	12	20	13
ACI-20190	8.0-9.5	20	0.35	1.20	10	1	-10+60	12	20	13
ACI-20200	8.0-12.0	18	0.50	1.35	5	1	-30+65	12	20	13
ACI-20210	8.0-16.0	18	0.60	1.35	5	1	-30+65	12	20	13
ACI-20220	8.0-18.0	16	1.00	1.40	5	1	-30+65	15	23	13
ACI-20230	8.5-9.6	23	0.35	1.20	5	1	0+70	12	20	13
ACI-20235	9.9-10.9	24	0.4	1.15	5	1	0+60	12	20	13
ACI-20240	10.0-15.0	20	0.50	1.30	5	1	-20+60	12	20	13
ACI-20250	10.7-12.75	23	0.40	1.20	5	1	-30+65	12	20	13
ACI-20260	12.0-18.0	17	0.50	1.30	5	1	-20+60	12	20	13
ACI-20270	13.75-14.5	23	0.40	1.20	5	1	-30+65	12	20	13
ACI-20280	15.0-18.0	20	0.50	1.30	20	5	-30+65	12	20	13
ACI-20290	17.3-18.4	20	0.50	1.25	10	2	-30+65	12	20	13
ACI-20300	21.2-23.6	20	0.50	1.25	5	2	-30+65	13	19	10

Specifications listed in the table are typical across the whole frequency range of each model. Max./min. specifications over any specific frequency range may differ and could be significantly better over narrow bands. For a guaranteed specification over your desired frequency range, together with a detailed mechanical outline, please contact the factory. We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Coaxial Circulators

- 800 MHz - 23 GHz
- Octave & Standard Bands
- Compact Design
- Internal Load
- Fast Delivery
- SMA Connectors



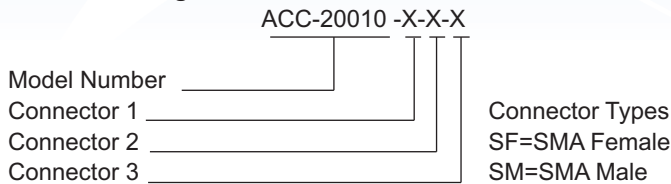
The ACC-20000 series of coaxial circulators are designed for low power applications in communications, test and measurement and scientific research applications requiring good RF performance in a compact and economic package.

General Specifications	
Housing Material	Aluminium Alloy
Magnet Cover Plates	Nickel Plated Steel
Connectors	Gold Plated
Standard Connectors	SMA Female
Connector Options	SMA Male

**Also available:**

- Higher Input Power
- Standard Band Isolators to 23 GHz, ACI-20000 Series
- Narrow Band High Performance Isolators & Circulators
- Waveguide Isolators and Circulators to 40 GHz
- Drop-In and Microstrip Isolators and Circulators to 26 GHz

**Part Numbering**



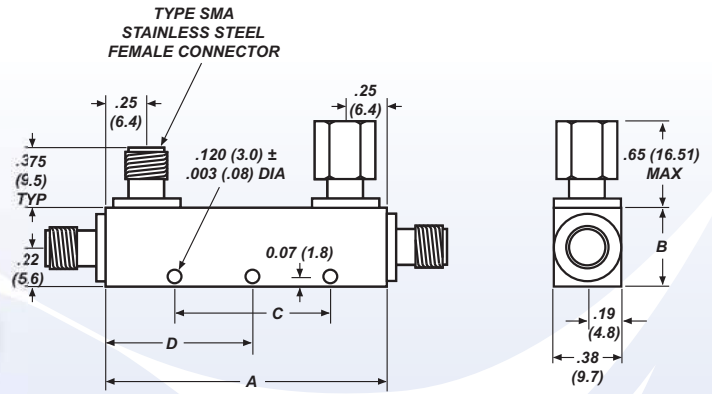
Custom frequency ranges, specifications and configurations may also be reviewed for quotation. These are often just as economic as standard models but may not be in stock. To obtain a quotation for a custom circulator please provide details of the specification required as follows: Frequency Range, Isolation, Insertion Loss, VSWR, Input Power, Temperature Range, Connectors plus any additional relevant parameters.

Model No	Frequency Range (GHz)	Isolation (dB)	Insertion Loss (dB)	VSWR :1	Forward Power (Watts)	Operating Temperature (deg. C)	Dimensions (mm)		
							A	B	C
ACC-20010	0.8-1.2	18	0.60	1.30	20	-30+65	50	50	24
ACC-20020	0.95-1.45	18	0.50	1.25	20	-30+65	68	68	28
ACC-20030	0.95-1.95	15	0.60	1.40	20	-20+55	80	80	28
ACC-20040	1.0-2.0	15	0.70	1.40	30	0+50	70	80	21
ACC-20050	1.2-1.7	20	0.60	1.20	20	-30+65	34	34	22
ACC-20060	1.7-2.4	20	0.50	1.20	20	-30+65	32	32	20
ACC-20070	2.0-4.0	18	0.60	1.35	5	-10+65	32	32	18
ACC-20080	2.2-2.7	20	0.50	1.20	20	-30+65	32	32	20
ACC-20090	2.5-3.5	20	0.60	1.25	20	-10+40	28	28	19
ACC-20100	2.7-3.2	20	0.40	1.20	20	-30+65	25	25	15
ACC-20110	3.0-6.0	17	0.60	1.40	10	-10+55	25.4	25.4	13
ACC-20120	3.4-4.2	20	0.40	1.20	5	-10+65	16	16	15
ACC-20130	4.0-8.0	18	0.60	1.35	5	-25+65	20	20	14
ACC-20140	5.8-6.5	23	0.30	1.20	5	-35+65	16	16	13
ACC-20150	5.85-6.725	20	0.40	1.20	5	-10+60	16	16	15
ACC-20160	6.0-12.0	18	0.60	1.35	5	-30+65	12	12	13
ACC-20170	7.25-7.75	23	0.30	1.20	5	-30+65	12	12	13
ACC-20180	7.9-8.4	23	0.30	1.20	5	-30+65	12	12	13
ACC-20190	8.0-9.5	20	0.35	1.20	10	-10+60	12	12	13
ACC-20200	8.0-12.0	18	0.50	1.35	5	-30+65	12	12	13
ACC-20210	8.0-16.0	18	0.60	1.35	5	-30+65	12	12	13
ACC-20220	8.0-18.0	16	1.00	1.40	5	-30+65	15	15	13
ACC-20230	8.5-9.6	23	0.35	1.20	5	0+70	12	12	13
ACC-20240	10.0-15.0	20	0.50	1.30	5	-20+60	12	12	13
ACC-20250	10.7-12.75	23	0.40	1.20	5	-30+65	12	12	13
ACC-20260	12.0-18.0	17	0.50	1.30	5	-20+60	12	12	13
ACC-20270	13.75-14.5	23	0.40	1.20	5	-30+65	12	12	13
ACC-20280	15.0-18.0	20	0.50	1.30	20	-30+65	12	12	13
ACC-20290	17.3-18.4	20	0.50	1.25	10	-30+65	12	12	13
ACC-20300	21.2-23.6	20	0.50	1.25	5	-30+65	13	13	10

Specifications listed in the table are typical across the whole frequency range of each model. Max./min. specifications over any specific frequency range may differ and could be significantly better over narrow bands. For a guaranteed specification over your desired frequency range, together with a detailed mechanical outline, please contact the factory. We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Directional Couplers - Octave Band

- 0.5 - 18.0 GHz
- Miniature Size
- High Directivity
- Low VSWR
- RF Shielded
- Robust Construction



General Specifications	
Design	Stripline
Circuit	PTFE Based
Housing	Aluminium
Connectors	SMA to MIL-C-39012
Temperature	-55 +105C
Finish	Paint

FIG	A	B	C	D
1	3.10 (78.8)	0.50 (12.7)	1.50 (38.1)	N/A
2	3.10 (78.8)	0.55 (14.0)	1.50 (38.1)	N/A
3	1.78 (45.2)	0.50 (12.7)	0.94 (23.9)	N/A
4	1.78 (45.2)	0.55 (14.0)	0.94 (23.9)	N/A
5	1.16 (29.5)	0.50 (12.7)	0.34 (8.6)	N/A
6	1.16 (29.5)	0.55 (14.0)	0.34 (8.6)	N/A
7	1.00 (25.4)	0.50 (12.7)	N/A	0.50 (12.7)
8	1.00 (25.4)	0.55 (14.0)	N/A	0.50 (12.7)
9	1.00 (25.4)	0.60 (15.3)	N/A	0.50 (12.7)

All dimensions are in inches (mm).

Custom frequency ranges, specifications and configurations are also available.

(1) Includes frequency sensitivity

Model No	Frequency (GHz)	Coupling (1) (dB)	Frequency Sensitivity (dB)	Insertion Loss (dB) max.		Directivity (dB) min.	VSWR max.		Power			Fig.
				excl. coupled power	True		Pri. Line	Sec. Line.	avg. incident (watts)	avg. reflected (watts)	Peak (kW)	
A3202-6	0.5-1	6 ± 1.00	± 0.60	0.20	1.80	25	1.15	1.15	50	2	3	1
A3202-10	0.5-1	10 ± 1.25	± 0.75	0.20	0.80	25	1.10	1.10	50	5	3	1
A3202-20	0.5-1	20 ± 1.25	± 0.75	0.15	0.20	25	1.10	1.10	50	50	3	1
A3202-30	0.5-1	30 ± 1.25	± 0.75	0.15	0.20	25	1.10	1.10	50	50	3	2
A3203-6	1.0-2.0	6 ± 1.00	± 0.60	0.20	1.80	25	1.15	1.15	50	2	3	3
A3203-10	1.0-2.0	10 ± 1.25	± 0.75	0.20	0.80	25	1.10	1.10	50	5	3	3
A3203-20	1.0-2.0	20 ± 1.25	± 0.75	0.15	0.20	25	1.10	1.10	50	50	3	3
A3203-30	1.0-2.0	30 ± 1.25	± 0.75	0.15	0.20	25	1.10	1.10	50	50	3	4
A3204-6	2.0-4.0	6 ± 1.00	± 0.60	0.20	1.80	22	1.15	1.15	50	2	3	5
A3204-10	2.0-4.0	10 ± 1.25	± 0.75	0.20	0.80	22	1.15	1.15	50	5	3	5
A3204-20	2.0-4.0	20 ± 1.25	± 0.75	0.15	0.20	22	1.15	1.15	50	50	3	5
A3204-30	2.0-4.0	30 ± 1.25	± 0.75	0.15	0.20	22	1.15	1.15	50	50	3	6
A3245-6	2.6-5.2	6 ± 1.00	± 0.60	0.20	1.80	20	1.25	1.25	50	2	3	7
A3245-10	2.6-5.2	10 ± 1.25	± 0.75	0.20	0.80	20	1.25	1.25	50	5	3	7
A3245-20	2.6-5.2	20 ± 1.25	± 0.75	0.20	0.25	20	1.25	1.25	50	50	3	7
A3245-30	2.6-5.2	30 ± 1.25	± 0.75	0.20	0.20	20	1.25	1.25	50	50	3	8
A3205-6	4.0-8.0	6 ± 1.00	± 0.60	0.25	1.90	20	1.25	1.25	50	2	3	7
A3205-10	4.0-8.0	10 ± 1.25	± 0.75	0.25	0.90	20	1.25	1.25	50	5	3	7
A3205-20	4.0-8.0	20 ± 1.25	± 0.75	0.25	0.30	20	1.25	1.25	50	50	3	7
A3205-30	4.0-8.0	30 ± 1.25	± 0.75	0.25	0.25	20	1.25	1.25	50	50	3	8
A3206-6	7.0-12.4	6 ± 1.00	± 0.50	0.30	2.00	17	1.30	1.30	50	2	3	7
A3206-10	7.0-12.4	10 ± 1.00	± 0.50	0.30	1.00	17	1.30	1.30	50	5	3	7
A3206-20	7.0-12.4	20 ± 1.00	± 0.50	0.30	0.35	17	1.30	1.30	50	50	3	7
A3206-30	7.0-12.4	30 ± 1.00	± 0.50	0.30	0.30	17	1.30	1.30	50	50	3	9
A3267-6	7.5-16.0	6 ± 1.00	± 0.60	0.60	2.20	15	1.35	1.40	50	2	2	7
A3267-10	7.5-16.0	10 ± 1.25	± 0.75	0.60	1.20	15	1.35	1.40	50	5	2	7
A3267-20	7.5-16.0	20 ± 1.25	± 0.75	0.60	0.55	15	1.35	1.40	50	50	2	9
A3267-30	7.5-16.0	30 ± 1.25	± 0.75	0.60	0.50	15	1.35	1.40	50	50	2	9
A3207-6	12.4-18.0	6 ± 1.00	± 0.50	0.60	2.20	12	1.35	1.40	50	2	1	7
A3207-10	12.4-18.0	10 ± 1.00	± 0.50	0.60	1.20	12	1.35	1.40	50	5	1	7
A3207-20	12.4-18.0	20 ± 1.00	± 0.50	0.50	0.55	15	1.35	1.40	50	50	1	9
A3207-30	12.4-18.0	30 ± 1.00	± 0.50	0.50	0.50	15	1.35	1.40	50	50	1	9

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.



## Directional Couplers - Broadband

- 0.5 - 18.0 GHz
- Miniature Size
- High Directivity
- Low VSWR
- RF Shielded
- Robust Construction



General Specifications	
Design	Stripline
Circuit	PTFE Based
Housing	Aluminium
Connectors	SMA to MIL-C-39012 N & TNC Optional
Temperature	-55 +105C
Finish	Paint

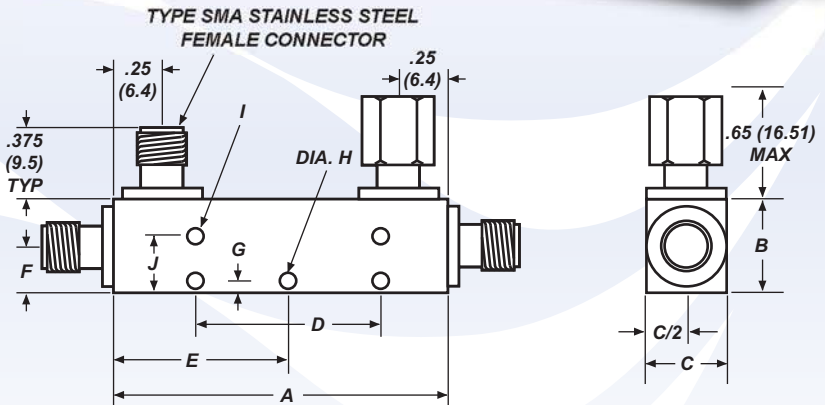


FIG	A	B	C	D	E	F	G	H	I	J
1	3.60 (91.5)	0.53 (13.5)	0.38 (9.7)	2.60 (66.0)	N/A	0.22 (5.6)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
2	3.60 (91.5)	0.60 (15.2)	0.38 (9.7)	2.60 (66.0)	N/A	0.22 (5.6)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
3	2.90 (73.7)	0.68 (17.3)	0.38 (9.7)	2.00 (50.8)	N/A	0.34 (8.6)	0.15 (3.8)	0.15 (3.8)	N/A	N/A
4	2.90 (73.7)	0.60 (15.2)	0.38 (9.7)	2.00 (50.8)	N/A	0.22 (5.6)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
5	1.78 (45.2)	0.68 (17.3)	0.38 (9.7)	0.88 (22.4)	N/A	0.34 (8.6)	0.15 (3.8)	0.15 (3.8)	N/A	N/A
6	1.88 (47.8)	0.60 (15.2)	0.38 (9.7)	1.00 (25.4)	N/A	0.22 (5.6)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
7	1.22 (31.0)	0.55 (14.0)	0.38 (9.7)	0.38 (9.7)	N/A	0.22 (5.6)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
8	1.22 (31.0)	0.60 (15.2)	0.38 (9.7)	0.38 (9.7)	N/A	0.22 (5.6)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
9	1.00 (25.4)	0.50 (12.7)	0.38 (9.7)	N/A	0.50 (12.7)	0.22 (5.6)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
10	4.40 (111.8)	0.60 (15.2)	0.38 (9.7)	3.40 (86.4)	N/A	0.24 (6.1)	0.07 (1.8)	0.12 (3.0)	N/A	N/A
11	3.47 (88.1)	0.70 (17.8)	0.38 (9.7)	2.00 (50.8)	N/A	0.26 (6.6)	0.10 (2.5)	0.12 (3.0)	N/A	N/A
12	3.47 (88.1)	0.70 (17.8)	0.50 (12.7)	2.00 (50.8)	N/A	0.26 (6.6)	0.10 (2.5)	0.12 (3.0)	(3)	0.34 (8.6)
13	2.10 (53.3)	0.70 (17.8)	0.38 (9.7)	1.00 (25.4)	N/A	0.26 (6.6)	0.10 (2.5)	0.12 (3.0)	N/A	N/A
14	2.09 (53.1)	0.70 (17.8)	0.50 (12.7)	1.00 (25.4)	N/A	0.26 (6.6)	0.10 (2.5)	0.12 (3.0)	(3)	0.34 (8.6)
15	1.36 (34.5)	0.60 (15.2)	0.38 (9.7)	0.50 (12.7)	N/A	0.26 (6.6)	0.09 (2.3)	0.12 (3.0)	N/A	N/A
16	1.36 (34.5)	0.66 (16.8)	0.38 (9.7)	0.50 (12.7)	N/A	0.26 (6.6)	0.09 (2.3)	0.12 (3.0)	N/A	N/A

Custom frequency ranges, specifications and configurations are also available.

Specification Temperature +25C

(1) Includes frequency sensitivity

(2) Coupling relative to output power

(3) 2-56NC-2B x 0.12 deep

Model No	Frequency (GHz)	Coupling (1) (dB)	Frequency Sensitivity (dB)	Insertion Loss (dB) max.		Directivity (dB) min.	VSWR max.		Power			Fig.
				excl. coupled power	True		Pri. Line	Sec. Line.	avg. incident (watts)	avg. reflected (watts)	Peak (kW)	
A2023-6	0.5-2.0	6 ± 1.00	± 0.75	0.35	2.00	23	1.20	1.20	50	2	3	1
A2023-10	0.5-2.0	10 ± 1.00	± 0.75	0.35	0.90	23	1.20	1.20	50	5	3	1
A2023-20	0.5-2.0	20 ± 1.00	± 0.75	0.35	0.40	23	1.20	1.20	50	50	3	2
A4224-10	0.6-4.0	10 ± 1.00	± 0.75	0.40	0.90	18	1.25	1.30	50	5	3	10
A2034-6	1.0-4.0	6 ± 1.00	± 0.50	0.35	2.00	23	1.20	1.20	50	2	3	3
A2034-10	1.0-4.0	10 ± 1.00	± 0.50	0.35	0.90	23	1.20	1.20	50	5	3	3
A2034-20	1.0-4.0	20 ± 1.00	± 0.50	0.40	0.45	23	1.20	1.20	50	50	3	4
1-12.4 12.4-18												
A4238-10	1.0-18.0(2)	10 ± 1.00	± 0.50	0.90	1.50	15 12	1.40	1.50	25	5	1	11
A4238-16	1.0-18.0(2)	16 ± 1.00	± 0.50	0.80	0.90	15 12	1.40	1.50	25	20	1	12
A4238-20	1.0-18.0(2)	20 ± 1.00	± 0.50	0.80	0.90	15 12	1.40	1.50	25	25	1	12
A2045-6	2.0-8.0	6 ± 1.00	± 0.30	0.50	2.20	20	1.25	1.25	50	2	3	5
A2045-10	2.0-8.0	10 ± 1.00	± 0.30	0.35	1.00	20	1.25	1.25	50	5	3	5
A2045-20	2.0-8.0	20 ± 1.00	± 0.40	0.40	0.45	20	1.25	1.25	50	50	3	6
2-12.4 12.4-18												
A4248-6	2.0-18.0(2)	6 ± 1.00	± 0.50	0.90	2.00	15 12	1.40	1.50	25	2	1	13
A4248-10	2.0-18.0(2)	10 ± 1.00	± 0.50	0.80	1.30	15 12	1.40	1.50	25	5	1	13
A4248-16	2.0-18.0(2)	16 ± 1.00	± 0.50	0.80	0.90	15 12	1.35	1.40	25	20	1	14
A4248-20	2.0-18.0(2)	20 ± 1.00	± 0.50	0.80	0.90	15 12	1.35	1.40	25	25	1	14
A2056-6	4.0-12.4	6 ± 1.00	± 0.30	0.50	2.20	17	1.30	1.30	50	2	2	7
A2056-10	4.0-12.4	10 ± 1.00	± 0.30	0.50	1.20	17	1.30	1.30	50	5	2	7
A2056-20	4.0-12.4	20 ± 1.00	± 0.40	0.50	0.55	17	1.30	1.30	50	50	2	8
4-12.4 12.4-18												
A4258-6	4.0-18.0	6 ± 1.00	± 0.50	0.90	2.00	15 12	1.35	1.40	25	2	1	15
A4258-10	4.0-18.0	10 ± 1.00	± 0.50	0.80	1.00	15 12	1.35	1.40	25	5	1	15
A4258-20	4.0-18.0	20 ± 1.00	± 0.50	0.60	0.70	15 12	1.40	1.40	25	25	1	16
A2068-10	7.0-18.0	10 ± 1.25	± 0.75	0.60	1.10	15	1.35	1.40	50	5	1	9

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Directional Couplers - Multi-Octave

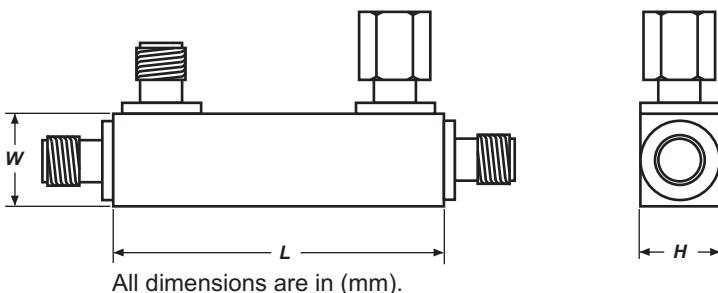
- 0.5 – 18.0 GHz
- 6, 10, 20, 30 dB
- Multi-Octave
- Miniature Size
- Flat Response
- Very Cost Effective



General Specifications	
Impedance	50 ohms
Circuit	PTFE Based
Housing	Aluminium
Finish	Matt Paint
Connectors	SMA Female to MIL-C-39012
Outline Drawings	Available on request
Operating Temperature	-40+70C
Environment	MIL-E-5400

Model No	Frequency (GHz)	Coupling (dB)	Frequency sensitivity (dB) max.	Directivity (dB) min.	VSWR max.	Insertion Loss (dB) max. (1)	Power Handling (Watts) avg. (2) A / B	Size (LxWxH) mm
BDC-005020-06	0.5-2	6 ± 1	± 0.7	20	1.2	0.5	4/50	133x15x11
BDC-005020-10	0.5-2	10 ± 1	± 0.7	20	1.2	0.5	10/50	133x15x11
BDC-005020-20	0.5-2	20 ± 1	± 0.7	20	1.2	0.4	50	133x15x11
BDC-005020-30	0.5-2	30 ± 1	± 0.7	20	1.2	0.4	50	133x15x11
BDC-008025-06	0.8-2.5	6 ± 1	± 0.7	20	1.2	0.5	4/50	85x15x11
BDC-008025-10	0.8-2.5	10 ± 1	± 0.7	20	1.2	0.5	10/50	85x15x11
BDC-008025-20	0.8-2.5	20 ± 1	± 0.7	20	1.2	0.4	50	85x15x11
BDC-008025-30	0.8-2.5	30 ± 1	± 0.7	20	1.2	0.4	50	85x15x11
BDC-010040-06	1-4	6 ± 1	± 0.7	20	1.2	0.5	4/50	73x15x11
BDC-010040-10	1-4	10 ± 1	± 0.7	20	1.2	0.5	10/50	73x15x11
BDC-010040-20	1-4	20 ± 1	± 0.7	20	1.2	0.4	50	73x15x11
BDC-010040-30	1-4	30 ± 1	± 0.7	20	1.2	0.4	50	73x15x11
BDC-020080-06	2-8	6 ± 1	± 1.0	20	1.2	0.5	4/50	43x15x11
BDC-020080-10	2-8	10 ± 1	± 1.0	20	1.2	0.5	10/50	43x15x11
BDC-020080-20	2-8	20 ± 1	± 1.0	20	1.2	0.4	50	43x15x11
BDC-020080-30	2-8	30 ± 1	± 1.0	20	1.2	0.4	50	43x15x11
BDC-040180-10	4-18	10 ± 1	± 1.0	12	1.5	0.8	10/50	33x15x11
BDC-040180-20	4-18	20 ± 1	± 1.0	12	1.5	1.0	50	33x15x11
BDC-040180-30	4-18	30 ± 1	± 1.0	12	1.5	1.0	50	33x15x11
BDC-020180-10	2-18	10 ± 1	± 1.0	12	1.6	1.5	10/50	43x15x11
BDC-020180-20	2-18	20 ± 1	± 1.0	10	1.6	1.2	50	43x15x11
BDC-020180-30	2-18	30 ± 1	± 1.0	10	1.6	1.2	50	43x15x11

TYPICAL OUTLINE



All dimensions are in (mm).

Notes

- (1) Excludes Coupled Power Loss
- (2) A/B  
A = Power Handling into infinite VSWR  
B = Power Handling into 1.5:1 VSWR

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Communication Band Couplers

- 0.5 – 4.0GHz
- Type N Connectors
- Cellular & Satcom IF
- Flat Response
- Rugged Design
- Very Cost Effective



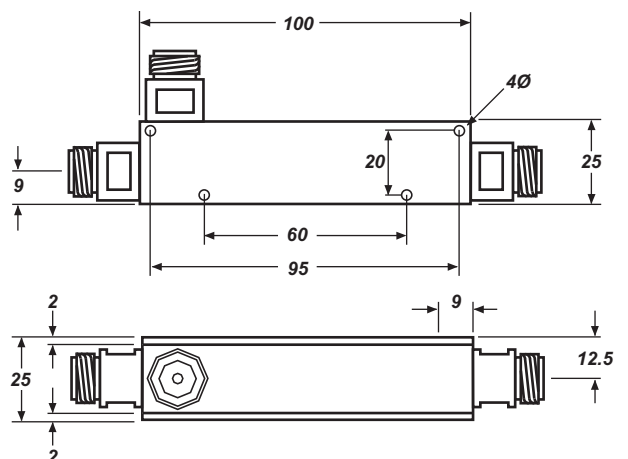
General Specifications	
Impedance	50 ohms
Circuit	PTFE Based
Housing	Aluminium
Finish	Matt Paint
Connectors	Type N Female
Operating Temperature	-30+70C

Model No	Frequency (GHz)	Coupling (dB)	Frequency sensitivity (dB) max.	VSWR max.	Insertion Loss (dB) max. (1)	Directivity (dB) min.	Power Handling (watts) avg. (2) A / B	Size (LxWxH) mm
BCC-005020-10	0.5 - 2.0	10 ± 0.8	± 0.7	1.25	0.9	20	10 / 50	150x25x25
BCC-005020-20	0.5 - 2.0	20 ± 1.0	± 0.7	1.25	0.4	20	100	150x25x25
BCC-008025-6	0.8 - 2.5	6 ± 0.8	± 0.7	1.25	0.5	20	5 / 50	100x25x25
BCC-008025-10	0.8 - 2.5	10 ± 0.8	± 0.7	1.25	0.5	20	10 / 50	100x25x25
BCC-008025-20	0.8 - 2.5	20 ± 1	± 0.7	1.25	0.4	20	100	100x25x25
BCC-008025-30	0.8 - 2.5	30 ± 1	± 0.7	1.25	0.4	20	100	100x25x25
BCC-010040-10	1.0 - 4.0	10 ± 0.8	± 0.7	1.30	0.5	20	10 / 50	100x25x25
BCC-010040-20	1.0 - 4.0	20 ± 1.0	± 0.7	1.30	0.5	18	100	100x25x25
BCC-010040-30	1.0 - 4.0	30 ± 1.0	± 0.7	1.30	0.5	18	100	100x25x25

### Notes

- (1) Excludes Coupled Power Loss  
 (2) A/B  
 A = Power Handling into infinite VSWR  
 B = Power Handling into 1.5:1 VSWR

### TYPICAL OUTLINE



All dimensions in mm

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Directional Couplers - High Power

- 0.5 - 12.0 GHz
- 600W C.W.
- 10kW Peak
- RF Shielded
- Robust Construction



General Specifications	
Input Power	600W C.W. Standard 1000W C.W. Custom
Design	Stripline
Circuit	PTFE Based
Housing	Aluminium
Connectors	to MIL-C-39012
Main Line	Standard Type N Female Options Type N Male SC Male or Female 7/16 Male or Female
Coupled Port	Standard SMA Female Options SMA Male
Temperature	-55 +85C
Finish	Paint

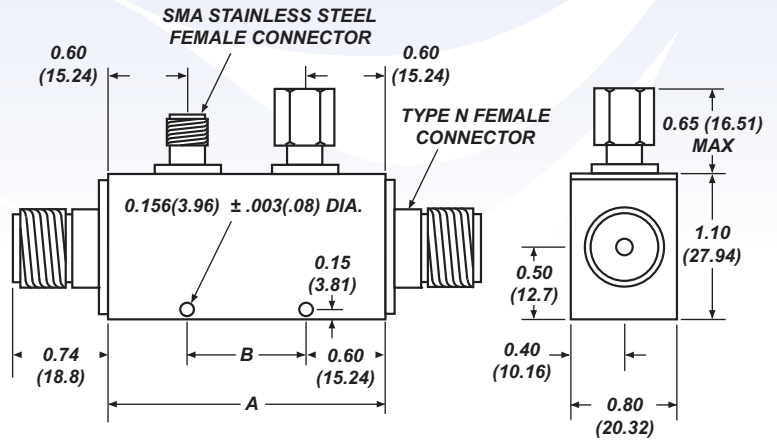


FIG	A	B
1	2.00 (50.8)	0.80 (20.3)
2	2.50 (63.5)	1.30 (33.0)
3	3.00 (76.2)	1.80 (45.7)
4	3.50 (88.9)	2.30 (58.4)
5	3.85 (97.8)	2.65 (67.3)
6	6.00 (152.4)	4.80 (121.9)

All dimensions are in inches (mm).

Custom frequency ranges, specifications and configurations are also available.

Specification Temperature +25C

Model No	Frequency (GHz)	Coupling (1) (dB)	Frequency sensitivity (dB)	Insertion Loss (dB) max.	Directivity (dB) min.	VSWR max. Primary Line	Fig.
A2323 - C (2)	0.5 - 2	C ± 1.0 (2)	± 0.75	0.2	18	1.20	6
A2303 - C (2)	1 - 2	C ± 1.0 (2)	± 0.75	0.2	18	1.15	4
A3333 - C (2)	1 - 4	C ± 1.0 (2)	± 0.70	0.2	15	1.20	5
A2336 - 35	1 - 11	35 ± 1.5	± 1.50	0.2	15	1.30	5
A3334 - C (2)	1.5 - 4.5	C ± 1.0 (2)	± 0.60	0.2	18	1.20	4
A2304 - C (2)	2 - 4	C ± 1.0 (2)	± 0.75	0.2	18	1.15	2
A3345 - C (2)	2 - 8	C ± 1.0 (2)	± 0.60	0.2	16	1.30	3
A2345 - C (2)	2.6 - 5.2	C ± 1.0 (2)	± 0.75	0.2	18	1.25	2
A2305 - C (2)	4 - 8	C ± 1.0 (2)	± 0.75	0.2	17	1.30	1
A2356 - C (2)	5 - 11	C ± 1.0 (2)	± 0.50	0.2	15	1.30	1
A2306 - C (2)	7 - 11	C ± 1.0 (2)	± 0.50	0.2	16	1.30	1
A3356 - C (2)	4 - 12	C ± 1.0 (2)	± 0.60	0.2	15	1.30	2

(1) Includes frequency sensitivity (2) Coupling C to be selected in range 30 to 50dB

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## 90° Hybrid 3dB Couplers

- 0.5 - 18.0 GHz
- Miniature Size
- High Isolation
- Low VSWR
- RF Shielded



General Specifications	
Design	Stripline
Circuit	PTFE Based
Housing	Aluminium
Connectors	SMA to MIL-C-39012
Temperature	-55 +105C
Finish	Paint

Model No	Frequency (GHz)	Coupling (1) (dB)	Frequency sensitivity (dB)	Isolation (dB) min.	VSWR max.	Power avg. (Watts)	Power Peak (KW)	Fig.
A7202	0.5 - 1	3.1 ± 0.6	± 0.5	28	1.10	50	3	B4
A7203	1 - 2	3.1 ± 0.6	± 0.5	28	1.10	50	3	B5
A7204	2 - 4	3.1 ± 0.6	± 0.5	22	1.20	50	3	A1
A7246	2 - 8	3.3 ± 0.8	± 0.4	17	1.30	30	3	B6
A7245	2.6 - 5.2	3.1 ± 0.6	± 0.5	20	1.25	50	3	A2
A7205	4 - 8	3.2 ± 0.7	± 0.5	18	1.30	50	3	A2
A7256	4 - 12.4	3.3 ± 0.8	± 0.4	15	1.50	20	2	B7
A7206	6 - 12.4	3.2 ± 0.7	± 0.5	18	1.35	50	3	A2
A7267	7.5 - 16	3.4 ± 0.9	± 0.6	15	1.45	40	2	A3
A7207	12 - 18	3.4 ± 1.0	± 0.7	15	1.50	40	1	A3

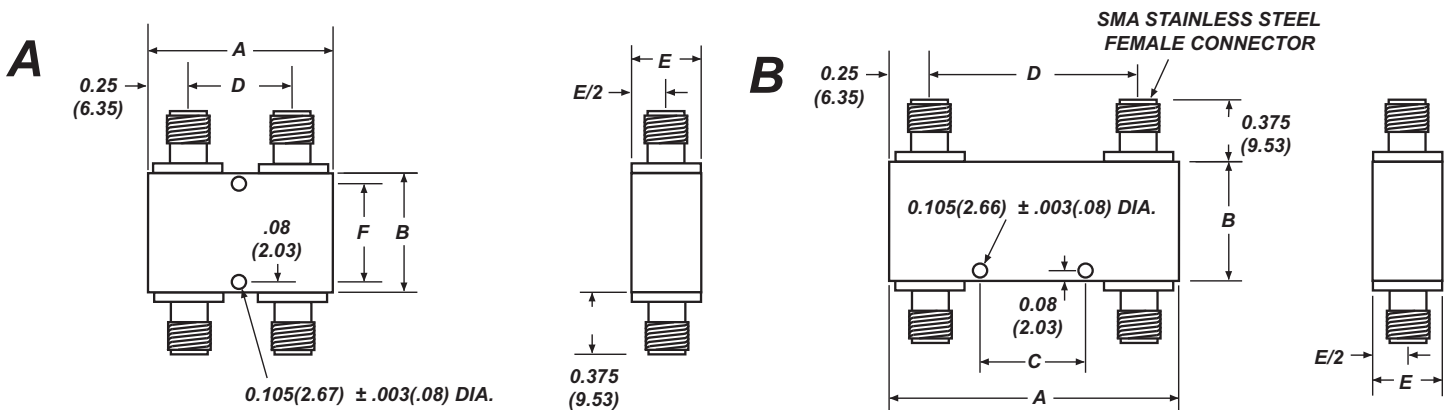
(1) Includes frequency sensitivity.

Specification Temperature +25C

FIG	A	B	C	D	E	F
A1	1.15 (29.2)	0.50 (12.7)	N/A	0.66 (16.8)	0.38 (9.7)	0.32 (8.1)
A2	1.00 (25.4)	0.50 (12.7)	N/A	0.50 (12.7)	0.38 (9.7)	0.32 (8.1)
A3	1.00 (25.4)	0.58 (14.7)	N/A	0.50 (12.7)	0.38 (9.7)	0.39 (9.9)
B4	3.06 (77.7)	0.50 (12.7)	1.37 (34.79)	2.56 (65.0)	0.38 (9.7)	N/A
B5	1.78 (45.2)	0.50 (12.7)	0.50 (12.7)	1.28 (32.5)	0.38 (9.7)	N/A
B6	2.60 (66.0)	0.75 (19.1)	1.26 (32.00)	2.10 (53.3)	0.44 (11.2)	N/A
B7	1.72 (43.7)	0.60 (15.2)	0.50 (12.7)	1.22 (31.0)	0.50 (12.7)	N/A

All dimensions are in inches (mm).

Custom frequency ranges, specifications and configurations are also available.



We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## Two-Way Power Dividers

- 0.5 - 18.0 GHz
- Miniature Size
- Flat Response
- High Isolation
- RF Shielded
- Robust Construction



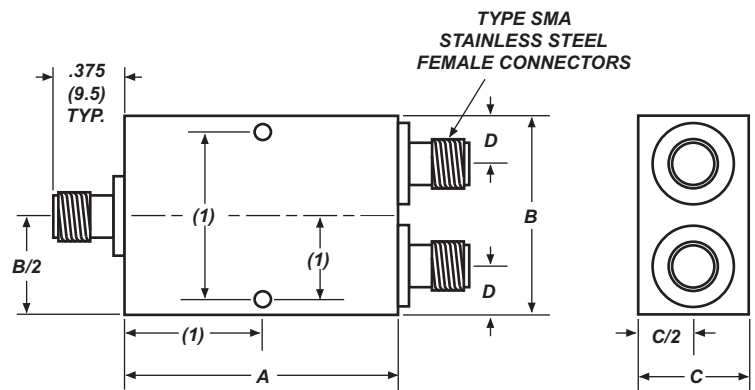
General Specifications	
Design	Wilkinson, Stripline
Circuit	PTFE Based
Housing	Aluminium
Connectors	SMA Female to MIL-C-39012
Temperature	-55 +105C
Finish	Paint

Model No	Frequency (GHz)	Isolation (dB) min.	VSWR (max.)		Insertion Loss (dB) max.	Amplitude Bal. (dB) max.	Phase Bal (deg.) max.	Average Power Load VSWR			Fig.
			Input	Output				1.2	2.0	∞	
A8202-2	0.5-1.0	22	1.20	1.10	0.20	0.2	2.0	30	20	3	4
A8475-2	0.5-2.0	22	1.25	1.15	0.40	0.2	2.0	30	20	3	4
A8203-2	1.0-2.0	22	1.25	1.20	0.25	0.2	3.0	30	20	3	2
A8477-2	1.0-4.0	21	1.30	1.20	0.40	0.2	2.0	30	10	1	3
A8478-2	1.0-12.4	15	1.60	1.40	1.20	0.4	6.0	30	10	1	3
A8204-2	2.0-4.0	20	1.30	1.25	0.30	0.2	4.0	30	10	1	2
A8245-2	2.0-8.0	20	1.35	1.25	0.40	0.2	4.0	30	10	1	3
A8248-2	2.0-18.0	18	1.40	1.40	1.00	0.2	5.0	30	10	1	5
A8242-2	3.0-5.0	20	1.30	1.30	0.35	0.2	4.0	30	10	1	2
A8205-2	4.0-8.0	20	1.30	1.25	0.35	0.2	4.0	30	10	1	1
A8480-2	6.0-18.0	16	1.50	1.40	0.80	0.4	6.0	30	10	1	1
A8206-2	7.0-12.4	20	1.30	1.35	0.40	0.2	4.0	30	10	1	1
A8268-2	8.0-18.0	20	1.35	1.40	0.60	0.2	5.0	30	10	1	1
A8338-2	10.75-14.5	20	1.20	1.20	0.60	0.2	3.0	30	10	1	1
A8267-2	12.0-18.0	20	1.35	1.40	0.60	0.2	5.0	30	10	1	1

Custom frequency ranges, specifications and configurations are also available.

Specification Temperature +25C

FIG	A	B	C	D
1	1.00 (25.4)	1.00 (25.4)	0.50 (12.7)	0.25 (6.4)
2	1.50 (38.1)	1.50 (38.1)	0.50 (12.7)	0.25 (6.4)
3	2.00 (50.8)	1.50 (38.1)	0.50 (12.7)	0.25 (6.4)
4	1.50 (38.1)	2.50 (63.5)	0.50 (12.7)	0.75 (19.1)
5	1.62 (41.1)	1.00 (25.4)	0.38 (9.6)	0.25 (6.4)



(1) For the position of mounting holes, please request control drawing.

All dimensions are in inches (mm).

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## Four-Way Power Dividers

- 0.5 - 18.0 GHz
- Miniature Size
- Flat Response
- High Isolation
- RF Shielded
- Robust Construction



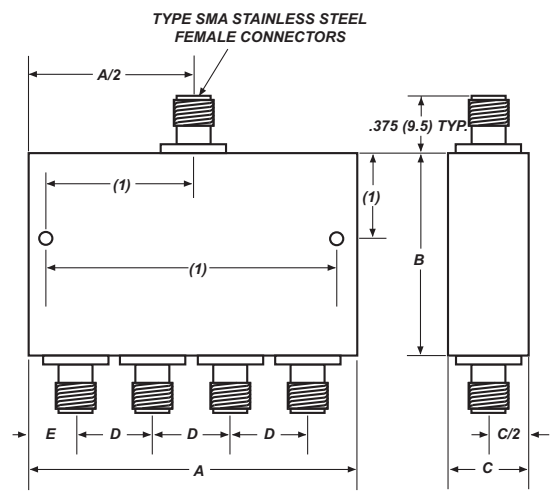
General Specifications	
Design	Wilkinson, Stripline
Circuit	PTFE Based
Housing	Aluminium
Connectors	SMA Female to MIL-C-39012
Temperature	-55 +105C
Finish	Paint

Model No	Frequency (GHz)	Isolation (dB) min.	VSWR (max.)		Insertion Loss (dB) max.	Amplitude Bal. (dB) max.	Phase Bal. (deg.) max.	Average Power Load VSWR			Fig.
			Input	Output				1.2	2.0	∞	
A8202-4	0.5 - 1	20	1.30	1.20	0.40	0.40	4.0	30	20	3	7
A8475-4	0.5 - 2	20	1.30	1.20	0.60	0.30	5.0	30	20	3	7
A8203-4	1 - 2	20	1.60	1.35	0.60	0.30	5.0	30	20	3	5
A8477-4	1 - 4	18	1.40	1.25	0.80	0.40	5.0	30	10	1	5
A8478-4	1.0 - 12.4	15	1.55	1.45	1.50	0.70	7.0	30	10	1	7
A8204-4	2 - 4	18	1.50	1.50	0.60	0.40	5.0	30	10	1	4
A8245-4	2 - 8	18	1.60	1.50	1.00	0.30	4.0	30	10	1	8
A8248-4	2 - 18	15	1.60	1.50	2.00	0.60	6.0	30	10	1	6
A8242-4	3 - 5	20	1.35	1.30	0.50	0.30	4.0	30	10	1	2
A8205-4	4 - 8	20	1.40	1.25	0.50	0.30	4.0	30	10	1	3
A8480-4	6 - 18	15	1.55	1.45	1.00	0.60	6.0	30	10	1	3
A8206-4	7 - 12.4	16	1.50	1.50	1.00	0.60	6.0	30	10	1	1
A8268-4	8 - 18	18	1.50	1.50	1.50	0.60	6.0	30	10	1	3
A8338-4	10.7 - 14.5	20	1.25	1.25	1.50	0.40	5.0	30	10	1	3
A8267-4	12 - 18	18	1.50	1.50	1.50	0.60	6.0	30	10	1	3

Custom frequency ranges, specifications and configurations are also available.

Specification Temperature +25C

FIG	A	B	C	D	E
1	2.75 (69.9)	1.28 (32.5)	0.50 (12.7)	0.69 (17.5)	0.34 (8.6)
2	2.75 (69.9)	1.78 (45.2)	0.50 (12.7)	0.69 (17.5)	0.34 (8.6)
3	2.00 (50.8)	2.00 (50.8)	0.38 (9.6)	0.50 (12.7)	0.25 (6.4)
4	2.65 (67.3)	2.20 (55.9)	0.50 (12.7)	0.65 (16.5)	0.35 (8.9)
5	2.75 (69.9)	2.50 (63.5)	0.38 (9.6)	0.69 (17.5)	0.34 (8.6)
6	2.00 (50.8)	2.85 (72.4)	0.38 (9.6)	0.50 (12.7)	0.25 (6.4)
7	3.60 (91.4)	3.40 (86.4)	0.50 (12.7)	1.00 (25.4)	0.30 (7.6)
8	3.50 (88.9)	2.75 (69.9)	0.50 (12.7)	1.00 (25.4)	0.25 (6.4)



(1) For the position of mounting holes, please request control drawing.

All dimensions are in inches (mm).

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## Eight-Way Power Dividers

- 0.5 - 18.0 GHz
- Miniature Size
- Flat Response
- High Isolation
- RF Shielded
- Robust Construction



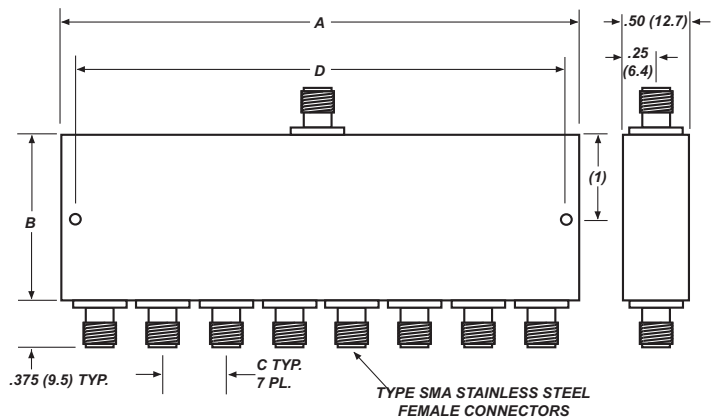
General Specifications	
Design	Wilkinson, Stripline
Circuit	PTFE Based
Housing	Aluminium
Connectors	SMA Female to MIL-C-39012
Temperature	-55 +105C
Finish	Paint

Model No	Frequency (GHz)	Isolation (dB) min.	VSWR (max.)		Insertion Loss (dB) max.	Amplitude Bal. (dB) max.	Phase Bal. (deg.) max.	Average Power Load VSWR			Fig.
			Input	Output				1.2	2.0	∞	
A8202-8	0.5 - 1	18	1.35	1.30	0.70	0.45	5.0	30	20	1	1
A8475-8	0.5 - 2	18	1.35	1.25	0.80	0.45	5.0	30	10	1	1
A8203-8	1 - 2	18	1.65	1.40	0.80	0.35	5.0	30	10	1	3
A8477-8	1 - 4	16	1.40	1.30	0.80	0.45	5.0	30	10	1	3
A8478-8	1 - 12.4	14	1.60	1.50	1.80	1.00	10.0	30	10	1	1
A8204-8	2 - 4	18	1.60	1.60	0.80	0.45	5.0	30	10	1	3
A8245-8	2 - 8	16	1.65	1.60	1.40	0.60	5.0	30	10	1	6
A8248-8	2 - 18	14	1.80	1.70	3.40	0.80	8.0	30	10	1	3
A8242-8	3 - 5	18	1.45	1.35	0.80	0.30	5.0	30	10	1	1
A8205-8	4 - 8	17	1.50	1.50	1.40	0.60	8.0	30	10	1	5
A8480-8	6 - 18	14	1.60	1.50	1.40	1.00	8.0	30	10	1	1
A8206-8	7 - 12.4	15	1.70	1.70	1.30	0.60	9.0	30	10	1	2
A8268-8	8 - 18	15	1.80	1.70	2.20	1.00	10.0	30	20	1	4
A8338-8	10.7 - 14.5	18	1.25	1.25	2.20	1.00	10.0	30	10	1	4
A8267-8	12 - 18	15	1.80	1.70	2.20	1.00	10.0	30	10	1	2

Custom frequency ranges, specifications and configurations are also available.

Specification Temperature +25C

FIG	A	B	C	D
1	4.50 (114.3)	3.00 (76.2)	0.50 (12.7)	4.25 (106.7)
2	4.00 (101.6)	2.00 (50.8)	0.50 (12.7)	3.75 (95.3)
3	4.00 (101.6)	4.00 (101.6)	0.50 (12.7)	3.75 (95.3)
4	4.00 (101.6)	3.00 (76.2)	0.50 (12.7)	3.75 (95.3)
5	5.20 (132.1)	2.45 (62.2)	0.60 (15.2)	4.95 (125.7)
6	4.00 (101.6)	5.0 (127.0)	0.50 (12.7)	3.75 (95.3)



(1) For the position of mounting holes, please request control drawing.

All dimensions are in inches (mm).

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

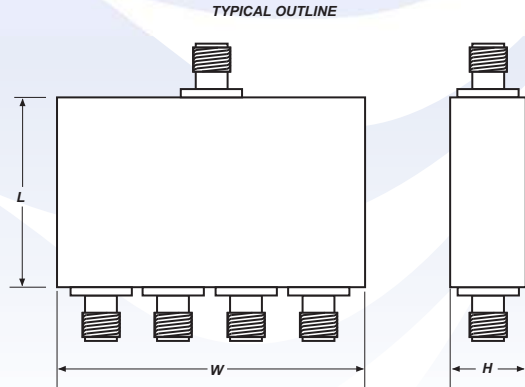


# Broadband Power Dividers



- 0.5 - 18 GHz
- 2, 4 & 8 Way
- Octave & Multi-Octave
- Miniature Size
- High Isolation
- Very Cost Effective

General Specifications	
Impedance	50 ohms
Power as a Divider	10 watts into 1.2:1 Load VSWR
Power as a Combiner	2 watts max
Design	Wilkinson, Stripline
Circuit	PTFE Based
Housing	Aluminium
Finish	Matt Paint
Connectors	SMA Female to MIL-C-39012
Outline Drawings Available on request	
Operating Temperature	-40 to +70C



Model No.	No. of Ways	Frequency Range (GHz)	Insertion Loss (dB) max.	Input VSWR max.	Output VSWR max.	Isolation (dB) min.	Amp. Bal. (+/- dB)	Phase Bal. (+/- deg)	Size (LxWxH) mm
BPD-010080-2	2	1-8	1.20	1.35	1.30	18	0.30	6	41 x 28 x 10
BPD-020180-2	2	2-18	1.20	1.50	1.50	16	0.30	5	47 x 24 x 10
BPD-010124-2	2	1-12.4	1.50	1.40	1.30	16	0.40	6	80 x 24 x 10
BPD-005060-2	2	0.5-6	0.80	1.40	1.30	18	0.20	3	150 x 29.4 x 10
BPD-005020-2	2	0.5-2	0.50	1.25	1.20	20	0.20	2	54 x 28 x 10
BPD-008025-2	2	0.8-2.5	0.40	1.30	1.20	20	0.20	2	35 x 28 x 10
BPD-010040-2	2	1-4	0.50	1.30	1.20	20	0.30	2	28 x 28 x 10
BPD-020080-2	2	2-8	0.60	1.30	1.20	20	0.30	4	28 x 28 x 10
BPD-040180-2	2	4-18	0.80	1.50	1.50	18	0.40	5	36 x 24 x 10
BPD-010020-2	2	1-2	0.35	1.20	1.15	20	0.20	2	28 x 28 x 10
BPD-020040-2	2	2-4	0.35	1.25	1.20	20	0.20	2	28 x 28 x 10
BPD-040080-2	2	4-8	0.50	1.25	1.20	20	0.30	3	28 x 28 x 10
BPD-060180-2	2	6-18	0.70	1.50	1.50	18	0.40	5	30 x 24 x 10
BPD-010080-4	4	1-8	2.20	1.50	1.40	15	0.35	6	70.5 x 56 x 10
BPD-020180-4	4	2-18	2.00	1.65	1.60	16	0.60	10	60 x 69 x 10
BPD-010124-4	4	1-12.4	2.80	1.60	1.30	16	0.50	7	90 x 75 x 10
BPD-005060-4	4	0.5-6	1.60	1.50	1.40	18	0.30	4	153 x 72 x 10
BPD-005020-4	4	0.5-2	1.00	1.25	1.20	20	0.30	3	76 x 56 x 10
BPD-008025-4	4	0.8-2.5	0.70	1.30	1.20	20	0.30	6	50 x 56 x 10
BPD-010040-4	4	1-4	1.10	1.30	1.20	20	0.30	4	43 x 56 x 10
BPD-020080-4	4	2-8	1.40	1.40	1.30	18	0.40	4	50 x 56 x 10
BPD-040180-4	4	4-18	1.60	1.60	1.50	18	0.50	8	60 x 50.5 x 10
BPD-010020-4	4	1-2	0.60	1.25	1.25	20	0.30	3	43 x 56 x 10
BPD-020040-4	4	2-4	0.40	1.25	1.20	22	0.30	3	43 x 56 x 10
BPD-040080-4	4	4-8	1.00	1.30	1.25	20	0.30	3	43 x 56 x 10
BPD-060180-4	4	6-18	1.30	1.60	1.50	18	0.50	8	45 x 50.5 x 10
BPD-010080-8	8	1-8	2.80	1.80	1.80	16	0.30	8	80 x 108 x 10
BPD-020180-8	8	2-18	3.00	1.80	1.80	15	0.80	10	95 x 148.5 x 10
BPD-005060-8	8	0.5-6	2.50	1.80	1.80	18	0.30	6	191 x 136 x 10
BPD-005020-8	8	0.5-2	1.50	1.40	1.20	20	0.30	3	103 x 108 x 10
BPD-008025-8	8	0.8-2.5	1.30	1.40	1.25	20	0.50	8	75 x 108 x 10
BPD-010040-8	8	1-4	1.50	1.35	1.25	20	0.40	4	63 x 108 x 10
BPD-020080-8	8	2-8	1.80	1.60	1.30	18	0.70	7	63 x 108 x 10
BPD-010020-8	8	1-2	1.00	1.30	1.20	20	0.40	5	63 x 108 x 10
BPD-020040-8	8	2-4	0.80	1.30	1.20	20	0.40	5	63 x 108 x 10
BPD-040080-8	8	4-8	1.20	1.50	1.25	18	0.40	4	63 x 108 x 10
BPD-060180-8	8	6-18	2.20	1.80	1.50	18	0.80	10	57.5 x 101.5 x 10

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

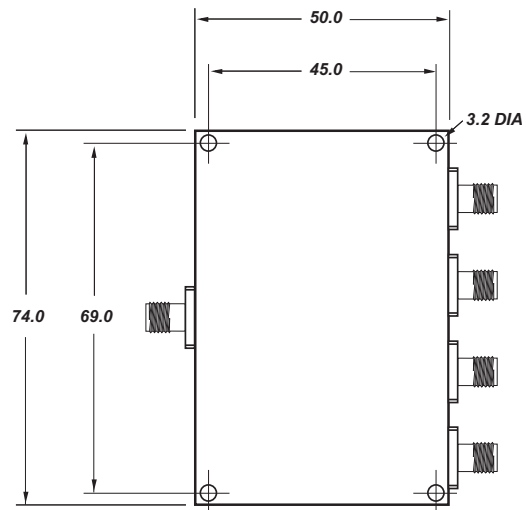
# High Isolation Power Dividers BPI Series

- Frequencies in Range 10.7-14.5GHz
- 40dB Isolation between Channels
- 1.25:1 Output VSWR
- Compact Size
- 50 Watts Forward Power



These High Isolation Power Dividers incorporate ferrite junction isolators within the branches of a Wilkinson divider structure to provide greater than 40dB isolation between output channels, combined with excellent VSWR.

General Specifications	
Isolation between Channels	40dB min.
Reverse Isolation	20dB min.
Insertion Loss	1.5dB max.
Input VSWR	1.5:1 max.
Output VSWR	1.25:1 max.
Power	50 Watts CW
Operating Temperature	-55 to +85C
Impedance	50 ohms
Connectors	SMA Female
Finish	Paint
Size	50 x 74 x 15 mm (excluding connectors)



All dimensions are in mm

Model No	Frequency Range (GHz)
BPI-107-129-4	10.7-12.95
BPI-119-127-4	11.9-12.75
BPI-137-145-4	13.75-14.5

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## Attenuators SMA & 2.92mm

- 0.5 - 2 Watts
- DC - 40.0 GHz
- 0.5 - 60 dB
- Miniature Size
- Flat Response
- Stainless Steel



General Specifications	
Impedance	50 ohms
Body: Plain & Hex	Stainless Steel
Connectors:	SMA or 2.92mm to MIL-C-39012
	Stainless Steel
	AA03-xxBR SMA Gold Plated Brass
Operating Temperature	-55 +125C
	(AA03-xxBR -40 +80C)
Power Derating:	Linear to +125C

Model No (Note 1)	Freq Range (GHz)	Standard Attenuation Values (dB)	Atten Steps (dB)	Attenuation Accuracy (+/- dB)					VSWR max. (Note 2)	Average Power (watts)		Figs	Conn. Type
				0-6 (dB)	7-20 (dB)	21-30 (dB)	31-40 (dB)	41-60 (dB)		25C	125C		
AA03-xxBR	DC-3.0	1-10, 12, 15, 20, 30	1.0	0.3	0.3	0.5	-	-	1.20	1.0	-	9 & 10	SMA
AA06-xx	DC-6.0	0-10, 12, 15, 20, 30	1.0	0.3	0.5	0.75	-	-	1.20	2.0	0.5	1 & 2	SMA
AA06-xxH	DC-6.0	0-12, 15, 20, 30	1.0	0.5	0.5	0.75	-	-	1.20 (0-6dB)	2.0	0.5	3	SMA
									1.25 (7-12dB)	1.30 (15, 20dB)	1.35 (30dB)		
AA18-xxH	DC-18.0	0-10, 12, 15, 20, 30	1.0	0.3	0.5	0.75	-	-	1.35	2.0	0.5	1 & 2	SMA
AA23-xx	DC-23.0	0-10, 12, 15, 20, 30	1.0	0.4	0.6	0.80	-	-	1.40	2.0	0.5	1 & 2	SMA
AA26-xx	DC-26.5	0, 3, 6, 10, 20, 30	1.0	0.5	0.6	0.80	-	-	1.40	2.0	0.5	4 & 5	2.92mm
AA40-xx	DC-40.0	0, 3, 6, 10, 20, 30	1.0	0.8	1.0	1.00	-	-	1.40	0.5	0.1	6	2.92mm
AB02-xx	DC-2.5	0-10, 12, 15, 20, 30, 40, 50, 60	1.0	0.3	0.5	0.75	1.5	1.5	1.15	2.0	0.5	7 & 8	SMA
AB06-xx	DC-6.0	0-10, 12, 15, 20, 30, 40, 50, 60	1.0	0.3	0.5	0.75	1.5	1.5	1.20	2.0	0.5	7 & 8	SMA
AB18-xx	DC-18.0	0-10, 12, 15, 20, 30, 40, 50, 60	1.0	0.3	0.5	0.75	1.5	1.5	1.35	2.0	0.5	7 & 8	SMA

FIG	Atten. (dB)	Dimensions inches (mm)		Styles	
		Length L	Diameter D	Plain	Hex
1	0-12	0.86 (21.8)	0.28 (7.1)	Plain	Hex
2	13-30	0.99 (25.1)	0.28 (7.1)	Plain	Hex
3	0-30	0.86 (21.8)	0.28 (7.1)		Hex
4	0-12	0.88 (22.4)	0.28 (7.1)	Plain	Hex
5	13-30	1.01 (25.7)	0.28 (7.1)	Plain	Hex
6	0-30	0.88 (22.4)	0.28 (7.1)	Plain	Hex
7	0-30 & 40	1.21 (30.7)	0.36 (9.1)	Plain	
8	31-60 (except 40)	1.49 (37.8)	0.36 (9.1)	Plain	
9	1-20	0.83 (21)	0.31 (7.8)	Plain	
10	30	1.02 (26)	0.31 (7.8)	Plain	

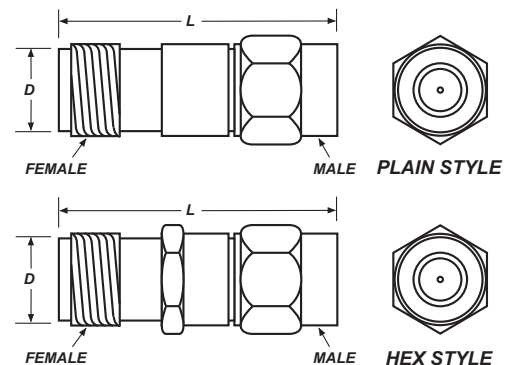
### Options:

- For Hex version use suffix "H" after model no.
- For single sex versions use suffix "M" (Male) or "F" (Female) after model no.
- Dimensions are for Male/Female connectors. Please ask for size of single sex versions.
- Between connector series attenuators.
- Custom frequency ranges, specifications and configurations are also available.

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

### Notes

- (1) For complete part number add attenuation value in place of -XX, e.g. AA06-10 for 10dB.
- (2) Max VSWR is shown at highest operating frequency. VSWR is lower at lower frequencies.



Outline is a typical illustration only, for detailed outlines please consult factory

## Attenuators

### Type N, TNC, BNC, SMP

- 2 Watts
- DC - 26.5 GHz
- 1 - 60 dB
- Small Size
- Flat Response



General Specifications	
Impedance	50 ohms
Connectors	Type N, TNC, BNC, SMP to MIL-C-39012
Standard Configuration	Male Input/Female Output Single Sex Versions also available
Operating Temperature	-65 +125C (SMP -55 +85C)
Power Derating:	Linear to +125C

Model No.	Conn Type	Freq Range (GHz)	Standard Attenuation Values (dB)	Attenuation Accuracy (+/-dB)							VSWR max.	Average Power (watts)		Fig
				0-6 (dB)	7-12 (dB)	7-20 (dB)	13-20 (dB)	21-30 (dB)	31-40 (dB)	41-60 (dB)		25C	125C	
AN02-xx	N	DC-2.5	0-10, 12, 15, 20, 30, 40, 50, 60	0.3		0.5		0.75	1.5	1.5	1.25	2.0	0.5	1 & 2
AN06-xx	N	DC-6.0	0-10, 12, 15, 20, 30, 40, 50, 60	0.3		0.5		0.75	1.5	1.5	1.20	2.0	0.5	1 & 2
AN12-xx	N	DC-12.4	0-10, 12, 15, 20, 30, 40, 50, 60	0.3		0.5		0.75	1.5	1.5	1.25	2.0	0.5	1 & 2
AN18-xx	N	DC-18.0	0-10, 12, 15, 20, 30, 40, 50, 60	0.3		0.5		0.75	1.5	1.5	1.35	2.0	0.5	1 & 2
AT18-xx	TNC	DC-18.0	0-10, 12, 15, 20, 30, 40, 50, 60	0.3		0.5		0.75	1.5	1.5	1.35	2.0	0.5	3 & 4
ANC04-xx	BNC	DC-4.0	0-10, 12, 15, 20, 30	0.3		0.5		0.75	-	-	1.25	2.0	0.5	5
ASM18-xx	SMP	DC-18.0	0-13, 20, 30	0.4	0.6	0.6	0.8	0.80	-	-	1.35	2.0	0.5	6 & 7
ASM26-xx	SMP	DC-26.5	0-4, 6, 10, 20, 30	0.6	0.8		1.2	1.20	-	-	1.45	2.0	0.5	6 & 7

#### Options:

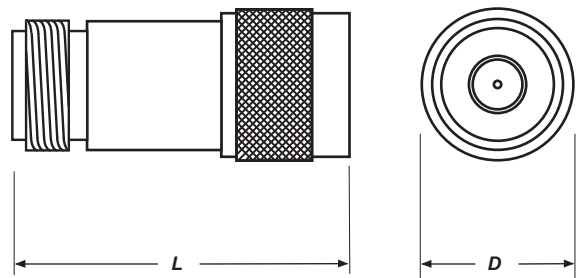
- For single sex versions use suffix "M" (Male) or "F" (Female) after model no.
- Dimensions are for Male/Female connectors. Please ask for size of single sex versions.

FIG	Conn Type	Atten. (dB)	Dimensions inches (mm)	
			Length L	Diameter D
1	N	0-30 & 40	1.76 (44.7)	0.62 (15.8)
2	N	31-60 (except 40dB)	2.04 (51.8)	0.62 (15.8)
3	TNC	0-30 & 40	2.07 (52.5)	0.56 (14.2)
4	TNC	31-60 (except 40dB)	2.35 (59.7)	0.56 (14.2)
5	BNC	0-30	1.36 (34.5)	0.50 (12.7)
6	SMP	0-12	0.61 (15.49)	0.25 (6.4)
7	SMP	13, 20, 30	0.74 (18.8)	0.25 (6.4)

#### Notes:

- (1) Attenuation values shown as 0-13dB are in 1dB increments.
- (2) Max. VSWR is shown at highest operating frequency, VSWR is lower at lower frequencies.
- (3) For complete part number add attenuation value in place of -xx, e.g. AN18-06 for 6dB.
- (4) For complete SMP part number add F for full detent (force to engage 15 lbs) or L for limited detent (force to engage 5 lbs). e.g. ASM18-03L for 3dB limited detent SMP Male/Female.

FEMALE CONNECTOR      MALE CONNECTOR



Outline is a typical illustration only, for detailed outlines please consult factory

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Attenuator Kits

## ASET Series

- Includes Attenuation Values 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20 & 30dB
- Frequency Options DC-6 GHz & DC-18 GHz
- SMA Male to SMA Female Stainless Steel Connectors
- Available from stock

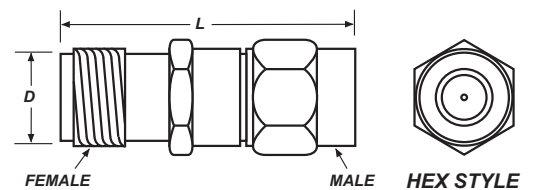
Our attenuator kits are offered as useful engineering aids, ideal for test and design applications in the laboratory. Provided in a convenient to use organised storage box with individual compartments for each attenuation value.



General Specifications	
Impedance	50 ohms
Hex Style Body	Stainless Steel
Connectors	SMA to MIL-C-39012
	Stainless Steel
Temperature Range	-55 +125C
Power Derating	Linear to +125C

Model No	Frequency Range (GHz)	Attenuation Values (dB)	Attenuation Accuracy (+/- dB)			VSWR (:1) max.	Average Power (watts)	
			0-6dB	7-20dB	30dB		25C	125C
ASET-06	DC-6.0	0-10, 15, 20, 30	0.5	0.5	0.75	1.20 (0-6dB)	2.0	0.5
						1.25 (7-10dB)		
						1.30 (15 & 20dB)		
						1.35 (30dB)		
ASET-18	DC-18.0	0-10, 15, 20, 30	0.3	0.5	0.75	1.35	2.0	0.5

Model No	Dimensions inches (mm)		Connector Type
	Diameter D	Length L	
ASET-06	0.28 (7.1)	0.86 (21.84)	SMA Male/Female
ASET-18	0.28 (7.1)	0.86 (21.8) 0-10dB	SMA Male/Female
		0.99 (25.1) 15, 20 & 30dB	



### Options

We will be pleased to consider other frequencies and connector types. Standard Kits come supplied with 1pc. of each attenuation value. Custom Kits are available with multiple numbers of the same dB value. Please specify quantities and dB values from 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20 & 30dB

Outline is a typical illustration only, for detailed outlines please consult factory

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Attenuators - Medium Power SMA

- 5 - 50 Watts
- DC - 18.0GHz
- 0 - 40 dB
- Convection Cooled



General Specifications	
Impedance	50 ohms
Body	Anodised Aluminium
Connectors	SMA Stainless Steel to MIL-C-39012
Standard Configuration	Male Input/Female Output Single Sex Versions also available
Operating Temperature	-65 +125C
Power Derating:	Linear to +125C

Model No	Freq Range (GHz)	Standard Attenuation Values (dB)	Attenuation Accuracy (+/- dB)				VSWR max.	Average Power (Watts)		Peak Power (Watts)	Fig
			0-6 (dB)	7-20 (dB)	21-30 (dB)	40 (dB)		25C	125C		
<b>5 Watts</b>											
AB06W5-xx	DC-6.0	0-10, 12, 15, 20, 30, 40	0.30	0.50	0.75	1.50	1.20	5.0	1.0	500	1
AB18W5-xx	DC-18.0	0-10, 12, 15, 20, 30, 40	0.30	0.50	0.75	1.50	1.35	5.0	1.0	500	1
<b>10 Watts</b>											
AB06W10-xx	DC-6.0	0-10, 12, 20, 30, 40	0.30	0.50	0.70	0.70	1.20	10.0	2.0	500	2
AB18W10-xx	DC-18.0	0-10, 12, 20, 30, 40	0.50	0.70	1.00	1.00	1.40	10.0	2.0	500	2
<b>25 Watts</b>											
AB06W25-xx	DC-6.0	3, 6, 10, 20, 30, 40	0.30	0.50	0.75	1.00	1.20	25.0	5.0	500	3
AB18W25-xx	DC-18.0	3, 6, 10, 20, 30, 40	0.75	1.00	1.25	1.50	1.40	25.0	5.0	500	3
<b>50 Watts</b>											
AB06W50-xx	DC-6.0	3, 6, 10, 20, 30, 40	0.75	0.75	0.75	1.00	1.25	50.0	10.0	500	4
AB18W50-xx	DC-18.0	3, 6, 10, 20, 30, 40	0.75	1.00	1.25	1.50	1.45	50.0	10.0	500	4

Fig	Dimensions inches (mm)			
	Length (L)	Diameter (D)	Width (W)	Height (H)
1	1.20 (30.5)	0.61 (15.49)	-	-
2	1.70 (43.2)	1.00 (25.40)	-	-
3	3.79 (96.3)	-	2.65 (67.31)	2.65 (67.31)
4	3.79 (96.1)	-	3.50 (88.90)	2.65 (67.31)

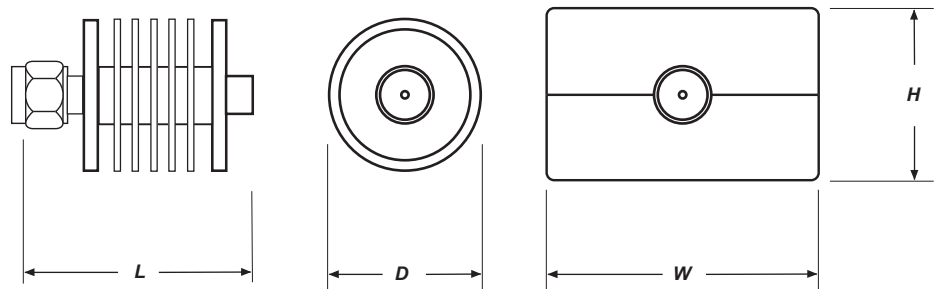
**Notes:**

- (1) Attenuation values shown as 0-10dB are in 1dB increments.
- (2) Max VSWR is shown at highest operating frequency, VSWR is lower at lower frequencies.
- (3) For complete part number add attenuation value in place of -xx, e.g. AB18W5-10 for 10dB.

**Options:**

- For single sex versions use suffix "M" (Male) or "F" (Female) after model no.
- Dimensions are for Male/Female connectors. Please ask for size of single sex versions.
- Higher power versions are also available, please consult factory.

Outline is a typical illustration only, the number of fins varies from model to model. For detailed outlines please consult factory



We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Attenuators - Medium Power

## Type N

- 5 - 50 Watts
- DC - 18.0GHz
- 0 - 40 dB
- Convection Cooled



General Specifications	
Impedance	50 ohms
Body	Anodised Aluminium
Connectors	Type N Stainless Steel to MIL-C-39012
Standard Configuration	Male Input/Female Output Single Sex Versions also available
Operating Temperature	-65 +125C
Power Derating:	Linear to +125C

Model No	Freq Range (GHz)	Standard Attenuation Values (dB)	Attenuation Accuracy (+/- dB)				VSWR max.	Average Power (Watts)		Peak Power (Watts)	Fig
			0-6 (dB)	7-20 (dB)	21-30 (dB)	40 (dB)		25C	125C		
<b>5 Watts</b>											
AN06W5-xx	DC-6.0	0-10, 12, 15, 20, 30, 40	0.30	0.50	0.75	1.50	1.20	5.0	1.0	500	1
AN18W5-xx	DC-18.0	0-10, 12, 15, 20, 30, 40	0.30	0.50	0.75	1.50	1.35	5.0	1.0	500	1
<b>10 Watts</b>											
AN06W10-xx	DC-6.0	0-10, 12, 20, 30, 40	0.30	0.50	0.70	0.70	1.20	10.0	2.0	500	2
AN18W10-xx	DC-18.0	0-10, 12, 20, 30, 40	0.50	0.70	1.00	1.00	1.40	10.0	2.0	500	2
<b>25 Watts</b>											
AN06W25-xx	DC-6.0	3, 6, 10, 20, 30, 40	0.30	0.50	0.75	1.00	1.20	25.0	5.0	500	3
AN18W25-xx	DC-18.0	3, 6, 10, 20, 30, 40	0.75	1.00	1.25	1.50	1.40	25.0	5.0	500	3
<b>50 Watts</b>											
AN06W50-xx	DC-6.0	3, 6, 10, 20, 30, 40	0.75	0.75	0.75	1.00	1.25	50.0	10.0	500	4
AN18W50-xx	DC-18.0	3, 6, 10, 20, 30, 40	0.75	1.00	1.25	1.50	1.45	50.0	10.0	500	4

Fig	Dimensions inches (mm)			
	Length (L)	Diameter (D)	Width (W)	Height (H)
1	1.90 (48.3)	0.827 (21.01) max.	-	-
2	2.41 (61.2)	1.00 (25.40)	-	-
3	4.50 (114.3)	-	2.65 (67.31)	2.65 (67.31)
4	4.50 (114.2)	-	3.50 (88.90)	2.65 (67.31)

### Notes:

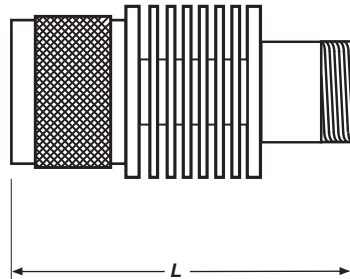
- (1) Attenuation values shown as 0-10dB are in 1dB increments.
- (2) Max VSWR is shown at highest operating frequency, VSWR is lower at lower frequencies.
- (3) For complete part number add attenuation value in place of -xx, e.g. AN18W5-10 for 10dB.

### Options:

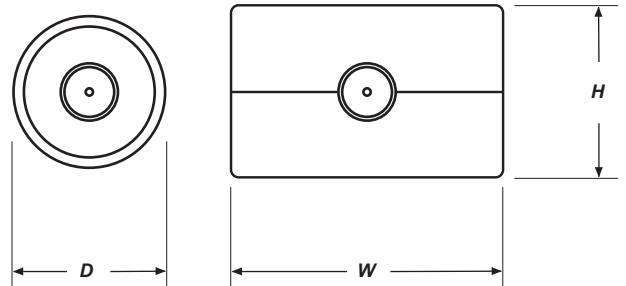
- For single sex versions use suffix "M" (Male) or "F" (Female) after model no.
- Dimensions are for Male/Female connectors. Please ask for size of single sex versions.
- Higher power versions are also available, please consult factory.

MALE CONNECTOR

FEMALE CONNECTOR



Outline is a typical illustration only, the number of fins varies from model to model. For detailed outlines please consult factory



We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Terminations

## SMA, 2.92mm & Type N

- 0.5 - 2 Watts
- DC - 40.0 GHz
- Miniature Size
- Low VSWR



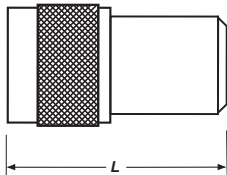
General Specifications	
Impedance	50 ohms
Connectors	SMA, 2.92mm Type N Stainless Steel to MIL-C-39012 * AS2591 Nickel Plated Brass
Operating Temperature	-65 +125C (2.92mm -45 +85C)

Model No	Freq Range (GHz)	Connector Type	VSWR (:1) max.							Input Power (Watts) avg.		Peak Power (Watts) max.	Fig
			DC-4 (GHz)	4-6 (GHz)	4-8 (GHz)	8-12.4 (GHz)	12.4-18 (GHz)	18-26.5 (GHz)	40 (GHz)	25C	125C		
TA06-M	DC-6.0	SMA Male	1.05	1.10		-	-	-	-	1.0	0	1000	1
TA06-F	DC-6.0	SMA Female	1.05	1.10		-	-	-	-	1.0	0	1000	2
TA18-M	DC-18.0	SMA Male	1.05		1.10	1.15	1.20	-	-	1.0	0	1000	1
TA18-F	DC-18.0	SMA Female	1.05		1.10	1.15	1.20	-	-	1.0	0	1000	2
AS2207	DC-18.0	SMA Male	1.05		1.10	1.15	1.20	-	-	1.0	0	250	3
AS2207B	DC-18.0	SMA Male	1.10	-	1.10	1.15	1.20	-	-	1	0	-	9
AS2207C	DC-18.0	SMA Male with Chain	1.05		1.10	1.15	1.20	-	-	1.0	0	250	3
TA26-M	DC-26.5	SMA Male	1.05		1.10	1.15	1.20	1.35	-	1.0	0	1000	1
TA26-F	DC-26.5	SMA Female	1.05		1.10	1.15	1.20	1.35	-	1.0	0	1000	2
TK40-M	DC-40.0	2.92mm Male				-	-	-	1.20	0.5	0.1 @ 85C		4
TK40-F	DC-40.0	2.92mm Female				-	-	-	1.20	0.5	0.1 @ 85C		5
TN06-M	DC-6.0	N Male	1.10	1.15		-	-	-	-	2.0	1.0	250	6
TN06-F	DC-6.0	N Female	1.10	1.15		-	-	-	-	2.0	1.0	250	7
TN18-M	DC-18.0	N Male	1.10		1.15	1.20	1.25	-	-	2.0	1.0	250	6
TN18-F	DC-18.0	N Female	1.10		1.15	1.20	1.25	-	-	2.0	1.0	250	7
AS2591*	DC-18.0	N Male	1.15		1.15	1.20	1.30	-	-	2.0	1.0	2500	8
AS2591C*	DC-18.0	N Male with Chain	1.15		1.15	1.20	1.30	-	-	2.0	1.0	2500	8

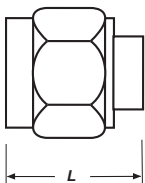
### Note

Max. VSWR is shown at highest operating frequency, VSWR is lower at lower frequencies

Type N



SMA or 2.92mm



Outlines are a typical illustration only.  
For detailed outlines please consult factory

Fig	Connector Type	Length inches (mm) (L)
1	SMA Male	0.42 (10.7)
2	SMA Female	0.54 (13.7)
3	SMA Male	0.33 (8.4)
4	2.92mm Male	0.58 (14.7)
5	2.92mm Female	0.62 (15.7)
6	N Male	1.17 (29.7)
7	N Female	1.26 (32.0)
8	N Male	1.32 (33.5)
9	SMA Male	0.35 (8.89)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.



# Terminations - Medium Power

## SMA

- 5 - 50 Watts
- DC - 18.0GHz
- Convection Cooled
- Low VSWR

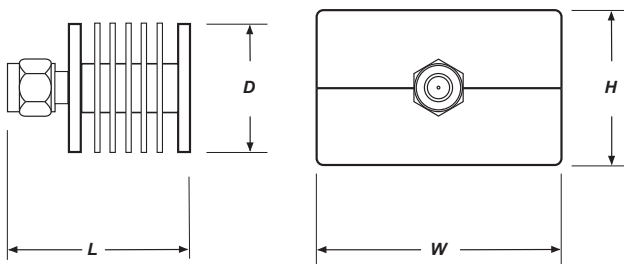


General Specifications	
Impedance	50 ohms
Housing	Anodised Aluminium
Connectors	SMA Stainless Steel to MIL-C-39012
Operating Temperature	-65C +125C

Model No	Frequency Range (GHz)	Connector Type	VSWR (:1) max.)				Input Power (Watts) avg.		Peak Power (Watts) max.	Fig
			DC-4GHz	4-6GHz	6-12.4GHz	12.4-18GHz	25C	125C		
<b>5 Watts</b>										
TA06W5-M	DC-6.0	SMA Male	1.10	1.15	-	-	5	1	500	1
TA06W5-F	DC-6.0	SMA Female	1.10	1.15	-	-	5	1	500	2
TA18W5-M	DC-18	SMA Male	1.10	1.15	1.20	1.25	5	1	500	1
TA18W5-F	DC-18	SMA Female	1.10	1.15	1.20	1.25	5	1	500	2
<b>10 Watts</b>										
			<b>DC-6GHz</b>		<b>6-12.4GHz</b>		<b>12.4-18GHz</b>			
TA06W10-M	DC-6.0	SMA Male	1.20		-	-	10	2	500	3
TA06W10-F	DC-6.0	SMA Female	1.20		-	-	10	2	500	4
TA18W10-M	DC-18	SMA Male	1.20		1.30	1.40	10	2	500	3
TA18W10-F	DC-18	SMA Female	1.20		1.30	1.40	10	2	500	4
<b>25 Watts</b>										
			<b>DC-6GHz</b>		<b>6-12.4GHz</b>		<b>12.4-18GHz</b>			
TA06W25-M	DC-6.0	SMA Male	1.20		-	-	25	0.5	500	5
TA06W25-F	DC-6.0	SMA Female	1.20		-	-	25	0.5	500	6
TA18W25-M	DC-18	SMA Male	1.20		1.30	1.40	25	0.5	500	5
TA18W25-F	DC-18	SMA Female	1.20		1.30	1.40	25	0.5	500	6
<b>50 Watts</b>										
			<b>DC-6GHz</b>		<b>6-12.4GHz</b>		<b>12.4-18GHz</b>			
TA06W50-M	DC-6.0	SMA Male	1.25		-	-	50	10	500	7
TA06W50-F	DC-6.0	SMA Female	1.25		-	-	50	10	500	8
TA18W50-M	DC-18	SMA Male	1.25		1.35	1.45	50	10	500	7
TA18W50-F	DC-18	SMA Female	1.25		1.35	1.45	50	10	500	8

### Option:

- Higher power versions are also available, please consult factory.



Outline is a typical illustration only, the number of fins varies from model to model.

For detailed outlines please consult factory

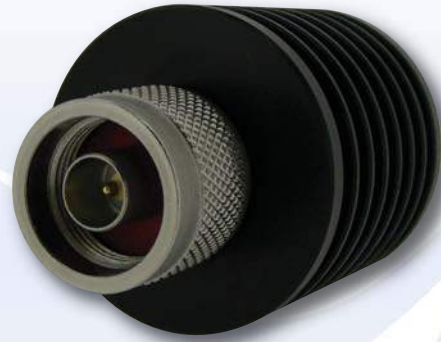
Fig	Connector	Dimensions inches (mm)			
		Length (L)	Diameter (D)	Width (W)	Height (H)
1	SMA Male	0.91 (23.1)	0.61 (15.5)		
2	SMA Female	0.78 (19.8)	0.61 (15.5)		
3	SMA Male	1.40 (35.6)	1.0 (25.4)		
4	SMA Female	1.27 (32.3)	1.0 (25.4)		
5	SMA Male	3.49 (88.6)		2.65 (67.31)	2.65 (67.31)
6	SMA Female	3.36 (85.3)		2.65 (67.31)	2.65 (67.31)
7	SMA Male	3.49 (88.6)		3.50 (88.90)	2.65 (67.31)
8	SMA Female	3.36 (85.3)		3.50 (88.90)	2.65 (67.31)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# Terminations - Medium Power

## Type N

- 5 - 50 Watts
- DC - 18.0GHz
- Convection Cooled
- Low VSWR

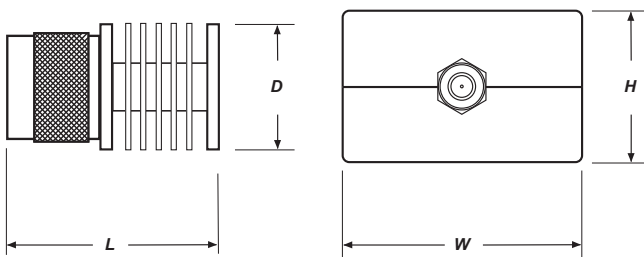


General Specifications	
Impedance	50 ohms
Housing	Anodised Aluminium
Connectors	Type N Stainless Steel to MIL-C-39012
Operating Temperature	-65C +125C

Model No	Frequency Range (GHz)	Connector Type	VSWR (:1) max.				Input Power (Watts) avg.		Peak Power (Watts) max.	Fig
			DC-4GHz	4-6GHz	6-12.4GHz	12.4-18GHz	25C	125C		
<b>5 Watts</b>										
TN06W5-M	DC-6.0	N Male	1.10	1.15	-	-	5	1	250	1
TN06W5-F	DC-6.0	N Female	1.10	1.15	-	-	5	1	250	2
TN18W5-M	DC-18	N Male	1.10	1.15	1.20	1.25	5	1	250	1
TN18W5-F	DC-18	N Female	1.10	1.15	1.20	1.25	5	1	250	2
<b>10 Watts</b>										
			<b>DC-6GHz</b>		<b>6-12.4GHz</b>	<b>12.4-18GHz</b>				
TN06W10-M	DC-6.0	N Male	1.20		-	-	10	2	250	3
TN06W10-F	DC-6.0	N Female	1.20		-	-	10	2	250	4
TN18W10-M	DC-18	N Male	1.20		1.30	1.40	10	2	250	3
TN18W10-F	DC-18	N Female	1.20		1.30	1.40	10	2	250	4
<b>25 Watts</b>										
			<b>DC-6GHz</b>		<b>6-12.4GHz</b>	<b>12.4-18GHz</b>				
TN06W25-M	DC-6.0	N Male	1.20		-	-	25	5	500	5
TN06W25-F	DC-6.0	N Female	1.20		-	-	25	5	500	6
TN18W25-M	DC-18	N Male	1.20		1.30	1.40	25	5	500	5
TN18W25-F	DC-18	N Female	1.20		1.30	1.40	25	5	500	6
<b>50 Watts</b>										
			<b>DC-6GHz</b>		<b>6-12.4GHz</b>	<b>12.4-18GHz</b>				
TN06W50-M	DC-6.0	N Male	1.25		-	-	50	10	500	7
TN06W50-F	DC-6.0	N Female	1.25		-	-	50	10	500	8
TN18W50-M	DC-18	N Male	1.25		1.35	1.45	50	10	500	7
TN18W50-F	DC-18	N Female	1.25		1.35	1.45	50	10	500	8

### Option:

- Higher power versions are also available, please consult factory.



Outline is a typical illustration only, the number of fins varies from model to model.

For detailed outlines please consult factory

Fig	Connector	Dimensions inches (mm)			
		Length (L)	Diameter (D)	Width (W)	Height (H)
1	N Male	1.15 (29.2)	0.61 (15.5)		
2	N Female	1.24 (31.5)	0.61 (15.5)		
3	N Male	1.64 (41.7)	1.0 (25.4)		
4	N Female	1.73 (43.82)	1.0 (25.4)		
5	N Male	3.74 (95.0)		2.65 (67.31)	2.65 (67.31)
6	N Female	3.82 (97.0)		2.65 (67.31)	2.65 (67.31)
7	N Male	3.74 (95.0)		3.50 (88.90)	2.65 (67.31)
8	N Female	3.82 (97.0)		3.50 (88.90)	2.65 (67.31)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## DC Blocks ADB Series

The ADB series of DC Blocks contain a capacitor in series with the conductors to prevent the flow of DC and audio frequencies whilst permitting RF signals to flow with minimum interference up to 40GHz.

Available in a choice of Inner, Outer and Inner-Outer types



General Specifications	
Impedance	50 ohms
Connectors	Passivated Stainless Steel
Conductors	Gold Plated Beryllium Copper

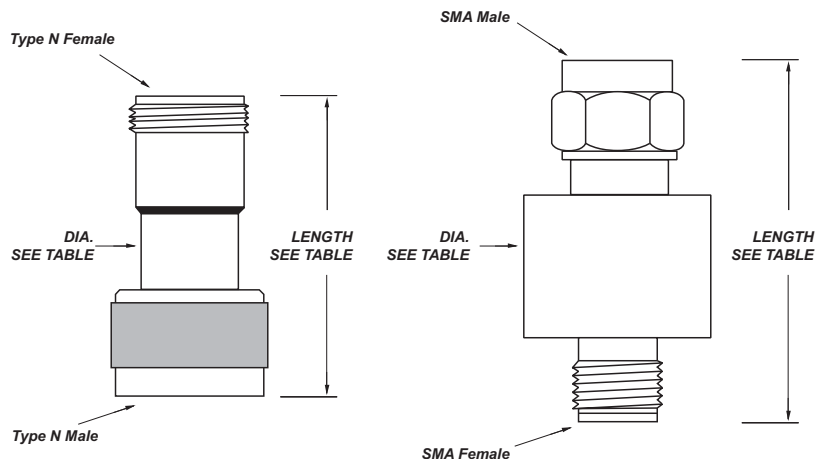
Model No.	Frequency Range	Connector Type	Block Type	Insertion Loss (dB) max.	VSWR (:1) max.	Voltage Rating (V) max.	Operating Temp. (C)	Size
ADB-18SMF-I	10MHz - 18GHz	SMA Male/Female	Inner Only	0.50	1.35	200	-65 to +125	1
ADB-18SMF-O	10MHz - 18GHz	SMA Male/Female	Outer Only	0.50	1.35	200	-65 to +125	2
ADB-18SMF-IO	10MHz - 18GHz	SMA Male/Female	Inner-Outer	0.50	1.35	200	-65 to +125	2
ADB-M-18SMF-I	10MHz - 18GHz	SMA Male/Female	Inner Only	0.50	1.35	200	-65 to +125	3
ADB-MH-18SMF-I as model ADB-M-18SMF-I above with 5/16 Hex Nut								
ADB-18NMF-I	10MHz - 18GHz	Type N Male/Female	Inner Only	0.60	1.35	200	-65 to +125	4
ADB-18NMF-O	10MHz - 18GHz	Type N Male/Female	Outer Only	0.60	1.35	200	-65 to +125	5
ADB-18NMF-IO	10MHz - 18GHz	Type N Male/Female	Inner-Outer	0.60	1.35	200	-65 to +125	5
ADB-26KMF-I	7KHz - 26.5GHz	2.9mm Male/Female	Inner Only	0.50 (250KHz-18GHz) 0.75 (18-26.5GHz)	1.35 (250KHz-18GHz) 1.50 (18-26.5GHz)	75	-35 to +85	3
ADB-26KMF-O	10MHz - 26.5GHz	2.9mm Male/Female	Outer Only	0.50	1.35	200	-65 to +125	6
ADB-26KMF-IO	10MHz - 26.5GHz	2.9mm Male/Female	Inner-Outer	0.75	1.35	200	-65 to +125	6
ADB-40KMF-I	10MHz - 40GHz	2.9mm Male/Female	Inner Only	0.75	1.45	200	-65 to +125	7
ADB-40KMF-O	10MHz - 40GHz	2.9mm Male/Female	Outer Only	0.50	1.45	200	-65 to +125	8
ADB-40KMF-IO	10MHz - 40GHz	2.9mm Male/Female	Inner-Outer	0.75	1.45	200	-65 to +125	9
ADB-M-40KMF-I	16KHz - 40GHz	2.9mm Male/Female	Inner Only	0.50 (100KHz-12.4GHz) 0.75 (12.4-32GHz) 1.25 (32-40GHz)	1.30 (250KHz-18GHz) 1.55 (18-32GHz) 1.65 (32-40GHz)	75	-35 to +85C	7
ADB-MH-40KMF-I as model ADB-M-40KMF-I above with 5/16 Hex Nut								

### Options:

Other Connector Configurations are available - Male to Male and Female to Female

Outlines are a typical illustration only. For detailed outlines please consult factory.

Size	Dimensions inches (mm)	
	Dia (Ø)	Length (L)
1	.36 (9.1)	1.20 +/- .03 (30.5 +/- 0.8)
2	.50 (12.7)	1.20 +/- .03 (30.5 +/- 0.8)
3	.28 (7.11)	.855 +/- .02 (21.7 +/- 0.51)
4	.63 (16.0)	1.76 +/- .03 (44.7 +/- 0.8)
5	.50 (12.7)	1.91 +/- .03 (48.5 +/- 0.8)
6	.50 (12.7)	.86 +/- .02 (21.84 +/- 0.51)
7	.28 (7.11)	.86 +/- .05 (21.84 +/- 1.27)
8	.50 (12.7)	.86 +/- .03 (21.84 +/- 0.76)
9	.50 (12.7)	.86 +/- .05 (21.84 +/- 1.27)



We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

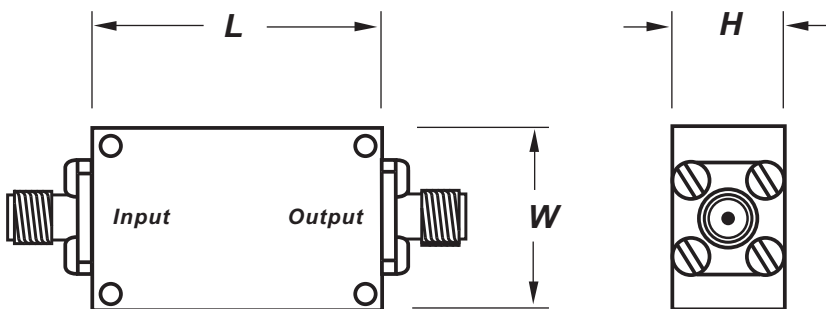
# High Pass Filters

- 3dB Cut Off Frequency in Range 1-12GHz
- Miniaturised Suspended Substrate
- Quasi-elliptical Function
- Excellent Temperature Stability
- Very Rugged Design



General Specifications	
Impedance	50 ohms
Circuit	Suspended Substrate
Housing	Rectangular
Finish	Matt Paint
Connectors	SMA Female to MIL-C-39012
Operating Temperature	-55 +85C
Storage Temperature	-55 +95C
Humidity	95% R.H.

Model No	3dB Cut Off Frequency (GHz)	Pass Band Frequency Range (GHz)	Insertion Loss (dB) max.	VSWR (:1) max.	Stopband Frequency (GHz)	Stopband Attenuation (dB) min.	Power Handling (Watts) avg.	Size (LxWxH) (mm)
AFH-01000	1	1.1 - 4	1.2	2	DC - 0.8	50	15	70.5x43x12
AFH-02000	2	2.2 - 11	1.2	2	DC - 1.6	50	15	37x33x12
AFH-03000	3	3.3 - 11	1.2	2	DC - 2.5	50	15	34x33x12
AFH-04000	4	4.4 - 11	1.2	2	DC - 3.3	50	15	32x25x12
AFH-05000	5	5.5 - 16	1.2	2	DC - 4.2	50	15	25.5x28x12
AFH-06000	6	6.6 - 17	1.2	2	DC - 5	50	15	27x25x12
AFH-07000	7	7.7 - 17	1.2	2	DC - 5.9	50	15	27x25x12
AFH-08000	8	8.8 - 18	1.2	2	DC - 6.75	50	15	23x25x12
AFH-09000	9	9.9 - 18	1.2	2	DC - 7.6	50	15	25.5x25x12
AFH-10000	10	11 - 18	1.2	2	DC - 8.4	50	15	28x25x12
AFH-11000	11	12.1 - 18	1.2	2	DC - 9.3	50	15	28x21x12
AFH-12000	12	13.2 - 18	1.2	2	DC - 10.2	50	15	25.5x22x12



All dimensions are in mm.

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

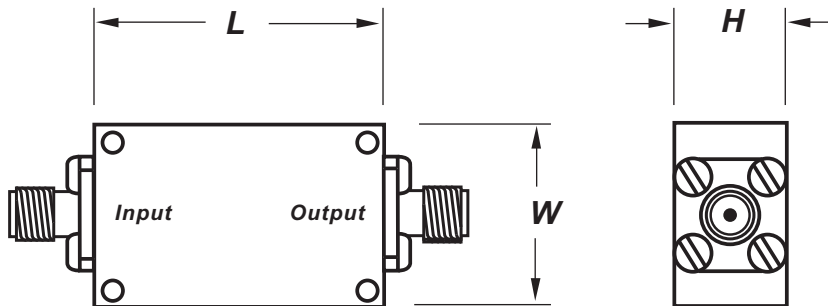
# Low Pass Filters

- 3dB Cut Off Frequency in Range 1 - 18GHz
- Miniaturised Suspended Substrate
- Quasi-elliptical Function
- High Temperature Stability
- Excellent Temperature Stability
- Very Rugged Design



General Specifications	
Impedance	50 ohms
Circuit	Suspended Substrate
Housing	Rectangular
Finish	Matt Paint
Connectors	SMA Female to MIL-C-39012
Operating Temperature	-55 +85C
Storage Temperature	-55 +95C
Humidity	95% R.H.

Model No	3dB Cut Off Frequency (GHz)	Pass Band Frequency Range (GHz)	Insertion Loss (dB) max.	VSWR (:1) max.	Stopband Frequency (GHz)	Stopband Attenuation (dB) min.	Power Handling (Watts) avg.	Size (LxWxH) (mm)
AFL-01000	1	DC - 0.9	1.2	2	1.16 - 3.5	50	15	100x60x12
AFL-02000	2	DC - 1.8	1.2	2	2.35 - 5.5	50	15	50x38x12
AFL-03000	3	DC - 2.7	1.2	2	3.45 - 7.5	50	15	48x32x12
AFL-04000	4	DC - 3.6	1.2	2	4.6 - 10	50	15	41x25x12
AFL-05000	5	DC - 4.5	1.2	2	5.8 - 12	50	15	33x25x12
AFL-06000	6	DC - 5.4	1.2	2	6.9 - 14	50	15	33x22x12
AFL-07000	7	DC - 6.3	1.2	2	8 - 15	50	15	32x22x12
AFL-08000	8	DC - 7.2	1.2	2	9.2 - 15.5	50	15	30x22x12
AFL-09000	9	DC - 8.1	1.2	2	10.6 - 16.5	50	15	25x22x12
AFL-10000	10	DC - 9	1.2	2	11.5 - 17	50	15	25x22x12
AFL-11000	11	DC - 9.9	1.2	2	12.7 - 17	50	15	25x22x12
AFL-12000	12	DC - 10.8	1.2	2	13.8 - 18	50	15	25x22x12
AFL-13000	13	DC - 11.7	1.2	2	15 - 18.5	50	15	23x19x12
AFL-14000	14	DC - 12.6	1.2	2	16.2 - 19.5	50	15	24x20x12
AFL-15000	15	DC - 13.5	1.2	2	17.3 - 21	50	15	24x20x12
AFL-16000	16	DC - 14.4	1.2	2	18.4 - 21.5	50	15	24x20x12
AFL-17000	17	DC - 15.3	1.2	2	19.6 - 22	50	15	24x20x12
AFL-18000	18	DC - 16.2	1.2	2	20.7 - 24	50	15	24x20x12



All dimensions are in mm.

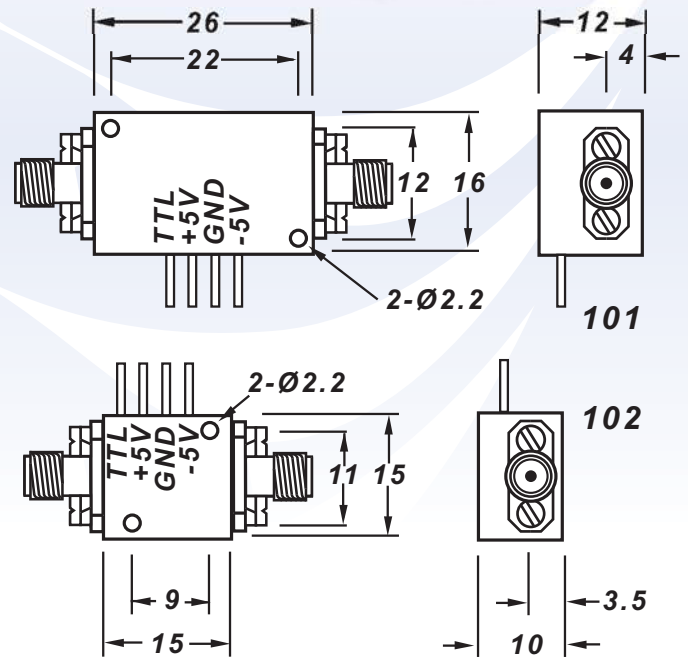
We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# PIN Diode Switches – SPST

- 0.02 – 18 GHz
- Single Pole Single Throw
- TTL Control
- Absorptive & Reflective
- Octave & Multi-octave
- High Isolation
- Low Insertion Loss



General Specifications	
Impedance	50 ohms
DC Bias	+5 +/-0.5V @ 30mA -5 +/-0.5V @ 30mA
Control	TTL "0" Low Loss TTL "1" Isolation
RF Connectors	SMA female to MIL-C-39012
Bias & Control	Solder Pins
Housing	Gold Plated Brass Standard or Passivated Aluminium Optional
Lid Sealing	Epoxy
Operating Temperature Range	-55 C to +85 C
Custom Options	Higher power, faster speed, higher isolation, non-TTL



Dimensions in mm

## Absorptive Switches

Model No	Frequency Range	Insertion Loss (dB)	VSWR	Isolation (dB)	Switching speed (nsec)	RF Power (W CW)	Package Choice
APS-1001-A	0.02 GHz - 0.5 GHz	1.4	1.5	80	100 - 500	0.2 - 1	101 / 102
APS-1002-A	0.02 GHz - 3 GHz	2.4	2.0	60	200	0.2	101 / 102
APS-1003-A	0.5 GHz - 1 GHz	1.5	1.5	80	100	0.2	101 / 102
APS-1004-A	1 GHz - 2 GHz	1.0	1.5	80	50	0.2	101 / 102
APS-1005-A	2 GHz - 4 GHz	1.6	1.5	80	50	0.2	101 / 102
APS-1006-A	2 GHz - 18 GHz	3.1	2.2	60	50	0.2	101 / 102
APS-1008-A	4 GHz - 8 GHz	2.0	1.6	60	50	0.2	101 / 102
APS-1009-A	8 GHz - 12 GHz	2.5	1.5	60	50	0.2 - 2	101 / 102
APS-1010-A	12 GHz - 18 GHz	3.2	2.0	60	50	0.2	101 / 102

## Reflective Switches

Model No	Frequency Range	Insertion Loss (dB)	VSWR	Isolation (dB)	Switching speed (nsec)	RF Power (W CW)	Package Choice
APS-1001-R	0.02 GHz - 0.5 GHz	1.2	1.5	80	100 - 500	0.2 - 1	101 / 102
APS-1002-R	0.02 GHz - 3 GHz	2.2	2.0	60	200	0.2	101 / 102
APS-1003-R	0.5 GHz - 1 GHz	1.3	1.5	80	100	0.2	101 / 102
APS-1004-R	1 GHz - 2 GHz	0.8	1.5	80	50	0.2	101 / 102
APS-1005-R	2 GHz - 4 GHz	1.2	1.5	80	50	0.2	101 / 102
APS-1006-R	2 GHz - 18 GHz	2.2	2.2	55	50	0.2 - 1	101 / 102
APS-1007-R	2 GHz - 18 GHz	2.4	2.2	80	50	0.2 - 1	101 / 102
APS-1008-R	4 GHz - 8 GHz	1.5	1.6	60	50	0.2	101 / 102
APS-1009-R	8 GHz - 12 GHz	1.8	1.7	60	50	0.2	101 / 102
APS-1010-R	12 GHz - 18 GHz	2.2	2.0	60	50	0.2	101 / 102

Specifications listed in the table are typical across the whole frequency range of each model.

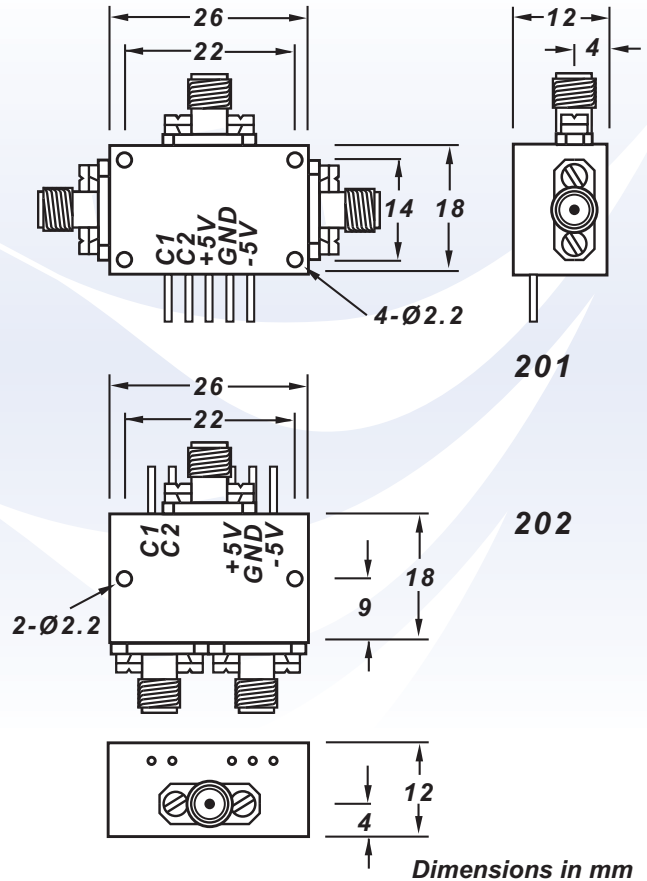
Max./min. specifications over any specific frequency range may differ and could be significantly better over narrow bands.

For a guaranteed specification over your desired frequency range, together with a detailed mechanical outline, please contact the factory.

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# PIN Diode Switches – SP2T

- 0.02 – 18 GHz
- Single Pole Two Throw
- TTL Control
- Absorptive & Reflective
- Octave & Multi-octave
- High Isolation
- Low Insertion Loss



General Specifications	
Impedance	50 ohms
DC Bias	+5 +/-0.5V @ 30mA -5 +/-0.5V @ 30mA
Control	TTL "0" Low Loss TTL "1" Isolation
RF Connectors	SMA female to MIL-C-39012
Bias & Control	Solder Pins
Housing	Gold Plated Brass Standard or Passivated Aluminium Optional
Lid Sealing	Epoxy
Operating Temperature Range	-55 C to +85 C
Custom Options	Higher power, faster speed, higher isolation, non-TTL

## Absorptive Switches

Model No	Frequency Range	Insertion Loss (dB)	VSWR	Isolation (dB)	Switching speed (nsec)	RF Power (W CW)	Package Choice
APS-2001-A	0.02 GHz - 0.5 GHz	1.5	1.5	80	100-500	0.2-1	201 / 202
APS-2002-A	0.02 GHz - 3 GHz	2.5	2.0	60	200	0.2	201 / 202
APS-2003-A	0.5 GHz - 1 GHz	1.6	1.5	80	100	0.2	201 / 202
APS-2004-A	1 GHz - 2 GHz	1.2	1.5	80	50	0.2	201 / 202
APS-2005-A	2 GHz - 4 GHz	1.8	1.5	80	50	0.2	201 / 202
APS-2006-A	2 GHz - 18 GHz	3.2	2.2	60	50	0.2	201 / 202
APS-2008-A	4 GHz - 8 GHz	2.0	1.6	60	50	0.2	201 / 202
APS-2009-A	8 GHz - 12 GHz	2.6	1.5	60	50	0.2	201 / 202
APS-2010-A	12 GHz - 18 GHz	3.2	2.0	60	50	0.2	201 / 202

## Reflective Switches

Model No	Frequency Range	Insertion Loss (dB)	VSWR	Isolation (dB)	Switching speed (nsec)	RF Power (W CW)	Package Choice
APS-2001-R	0.02 GHz - 0.5 GHz	1.3	1.5	80	100-500	0.2-1	201 / 202
APS-2002-R	0.02 GHz - 3 GHz	2.3	2.0	60	200	0.2	201 / 202
APS-2003-R	0.5 GHz - 1 GHz	1.4	1.5	80	100	0.2	201 / 202
APS-2004-R	1 GHz - 2 GHz	1.0	1.5	80	50	0.2	201 / 202
APS-2005-R	2 GHz - 4 GHz	1.3	1.5	80	50	0.2	201 / 202
APS-2006-R	2 GHz - 18 GHz	2.4	2.2	60	50	0.2	201 / 202
APS-2007-R	2 GHz - 18 GHz	2.6	2.2	80	50	0.2	201 / 202
APS-2008-R	4 GHz - 8 GHz	1.6	1.6	60	50	0.2	201 / 202
APS-2009-R	8 GHz - 12 GHz	2.0	1.7	60	50	0.2	201 / 202
APS-2010-R	12 GHz - 18 GHz	2.5	2.0	60	50	0.2	201 / 202

Specifications listed in the table are typical across the whole frequency range of each model.

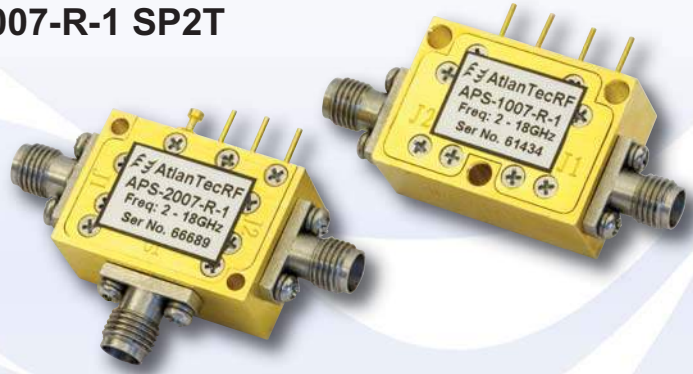
Max./min. specifications over any specific frequency range may differ and could be significantly better over narrow bands.

For a guaranteed specification over your desired frequency range, together with a detailed mechanical outline, please contact the factory.

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# PIN Diode Switch

Models: APS-1007-R-1 SPST & APS-2007-R-1 SP2T Reflective



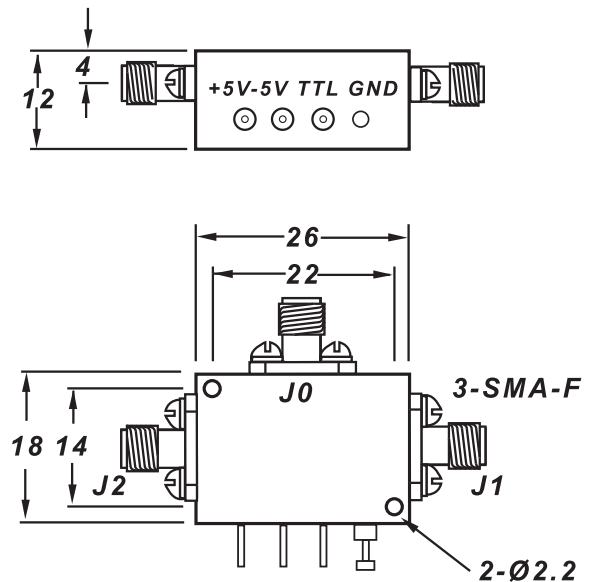
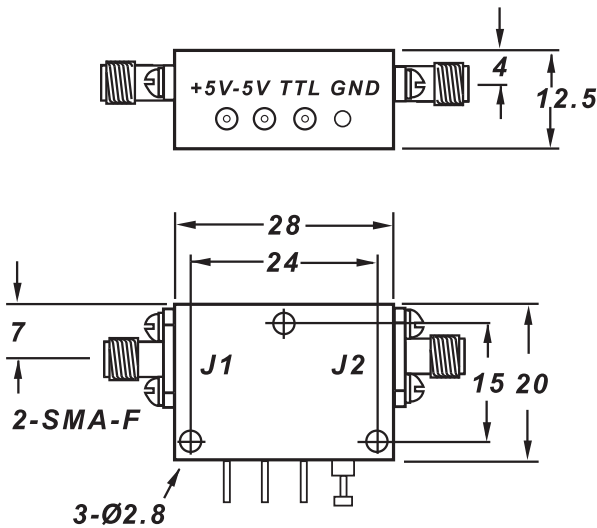
APS-1007-R-1 SPST Reflective

APS-2007-R-1 SP2T Reflective

Parameter	Minimum	Typical	Maximum	Units	Minimum	Typical	Maximum	Units
Frequency Range	2	-	18	GHz	2	-	18	GHz
Isolation	80	-	-	dB	80	-	-	dB
Insertion Loss			2.4	dB			3.0	dB
VSWR			2.2				2.2	
Switch Time			50	ns			50	ns
Operating Power			23	dBm			23	dBm
No Damage Power			1	W			1	W
Power Supply		+5V / -5V		V		+5V / -5V		V
Control Logic		Single TTL, "0"=ON, "1"=OFF 2.4V < "1" < 5V, 0V < "0" < 0.8V				TTL "1" → J0 to J2, "0" → J0 to J1 3.6V < "1" < 5V		
Operating Temp		-55C to +85C				-40C to +85C		
Finish		Gold Plated				Gold Plated		
Connectors		SMA Female Input/Output				SMA Female Input/Output		

Model: APS-1007-R-1 SPST Reflective

Model: APS-2007-R-1 SP2T Reflective



Dimensions in mm

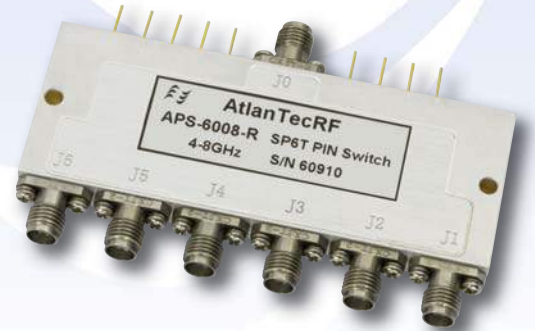
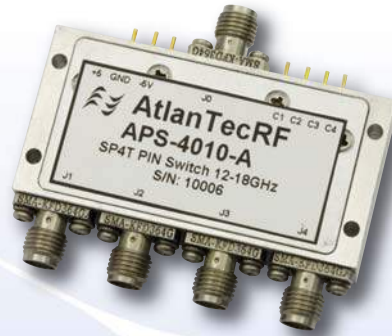
We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.



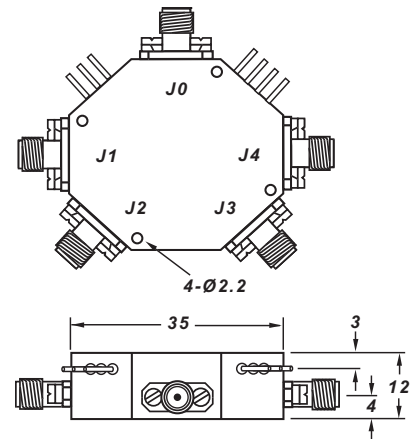
# PIN Diode Switches - Multi-Way

## Options: SP3T, SP4T, SP6T & SP8T

- Frequency Ranges: 0.02 - 18 GHz
- TTL Control
- Absorptive & Reflective
- Octave & Multi-Octave
- High Isolation
- Low Insertion Loss
- Standard Options : Single Pole Three Throw  
Single Pole Four Throw  
Single Pole Six Throw  
Single Pole Eight Throw  
Other Outputs Available

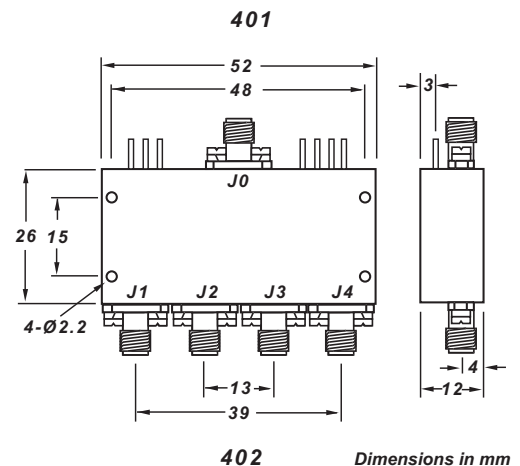


General Specifications	
Impedance	50 ohms
DC Bias	+5 +/-0.5V @ 30mA -5 +/-0.5V @ 30mA
Control	TTL "0" Low Loss TTL "1" Isolation
RF Connectors	SMA female to MIL-C-39012
Bias & Control	Solder Pins
Housing	Passivated Aluminium Standard or Gold Plated Brass Optional
Lid Sealing	Epoxy
Operating Temperature Range	-55 C to +85 C
Custom Options	Higher power, faster speed, higher isolation, non-TTL



Standard frequency ranges for both Absorptive and Reflective are:

Absorptive (GHz)	Reflective (GHz)
0.02 - 0.5	0.02 - 0.5
0.02 - 3.0	0.02 - 3.0
0.5 - 1.0	0.5 - 1.0
1.0 - 2.0	1.0 - 2.0
2.0 - 4.0	2.0 - 4.0
2.0 - 18.0 (3T & 4T only)	2.0 - 18.0 (3T & 4T only)
4.0 - 8.0	4.0 - 8.0
8.0 - 12.0	8.0 - 12.0
12.0 - 18.0 (3T & 4T only)	12.0 - 18.0 (3T only)



Dimensions in mm

For a guaranteed specification over your desired frequency range, together with a detailed mechanical outline, please contact us.

Outline is a typical illustration only.  
For detailed outlines, please contact us.

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

# CUSTOM COMPONENTS & WAVEGUIDE PRODUCTS

The wide range of RF, microwave and millimeter components offered by AtlantecRF represents only a small portion of our capability, which stretches from KHz to THz.

## Custom Components

We recognise that not every application can be satisfied with a standard product and, therefore, many of the components we supply are either variations of standard products or completely custom in design.

If the component required by your system does not appear here, or if you need to achieve a different function or superior performance, just contact your nearest AtlantecRF sales office for an initial engineering discussion.



**Mast Head and Portable Amplifiers**



**PIN Diode Digital Attenuators**



**Synthesisers**

## Waveguide Components

We also provide an extensive range of standard and custom waveguide components.

Many are in waveguide sizes from WR770 to WR3 and include, bends, twists, straight sections, flexible and twistable assemblies, couplers, tees, attenuators, adapters, antennas, horns, mixers, amplifiers, oscillators, phase shifters, isolators and circulators.

Whether your waveguide requirement is for narrow band or full waveguide band, high or low power, for use in a controlled or in a pressurised environment, just contact your nearest AtlantecRF sales office for details of available products.



**Waveguide to Coaxial Adapters**



**Gain Horns**



**Waveguide Circulators**

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.

## QUALITY ASSURANCE

### ISO-9001:2008

All of our materials, sub-contractors and suppliers are very carefully chosen to provide our customers with the value they need and expect. Our in-house systems and processes are all to ISO-9001:2008 and are constantly updated to accommodate today's challenges in product reliability.

### RoHS

AtlanTecRF is committed to meeting the requirements of the Directive 2002/95/EC of the European Parliament which took effect from July 1st 2006.

### WEEE Compliance

AtlanTecRF is a member of the WeeeCare Compliance Scheme (EA approved registration no. WEE/MP3538PZ/SCH) and therefore fulfil their obligations in accordance with the Waste Electrical and Electronic Equipment Regulations 2006.

## SERVICE & DELIVERY

**Excellent customer service** is paramount, with a personal approach being applied to every product enquiry and sale.

Technical support is available around the world through our UK head office and all of our carefully selected and technically competent sales offices and distributors.

We are willing to consider entering into **long term supply agreements** with our customers and provide a stocking scheme tailored to their production needs.

Much of our standard component offering can be delivered from **stock** in the DC to 50 GHz frequency range with same-day dispatch available.

## PLACING YOUR ORDER

AtlanTecRF is a brand name of Atlantic Microwave Ltd.

- Phone: +44 (0)1376 550220
- Email: [sales@atlantecrf.com](mailto:sales@atlantecrf.com)
- Fax: +44 (0)1376 552145
- Post: Atlantic Microwave Ltd, 40A Springwood Drive, Braintree, Essex CM7 2YN, UK

Please include your Quote reference, a contact name and phone number on the Purchase Order for any queries relating to your order.

## SALES INFORMATION

### Warranty

Atlantic Microwave Ltd. warrants that the goods will correspond with their specification at the time of delivery and will be free from defects in material and workmanship for a period of twelve months from the date of delivery. This warranty is subject to Atlantic Microwave Limited's standard terms and conditions.

### Specifications

Atlantic Microwave Ltd. reserves the right to change price and specifications of all products without notice, but will be pleased to consider control drawings on request.

### Payment Terms

*Approved accounts:* Within 30 days of date of invoice, via Direct Bank Transfer or cheque. Our bank details provided on request.

*Non-approved accounts:* Payment is due before delivery of goods, via Direct Bank Transfer, cheque, or credit/debit card (Visa, Mastercard, Maestro, Amex, Diners Club International and Discover all accepted).

### Delivery Dates

Atlantic Microwave Ltd. makes all reasonable efforts to meet the agreed delivery dates.

### Freight Charges

*UK orders:* Shipping costs are included in the price, as confirmed on the Atlantic Microwave Ltd Order Acknowledgement.

*International orders:* The Customer is responsible for shipping costs if exported outside the UK.

### International Taxes and Duties:

The Customer is responsible for payment of all international taxes and duties.

# Markets

AtlanTecRF products provide cutting edge technology to a diverse range of industries



Telecommunications



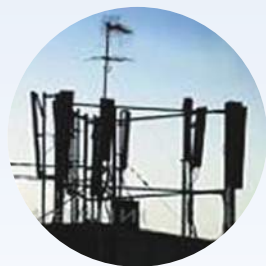
Broadcasting



Satellite Communications



Aerospace



Wireless



Radio Links



Defence



Scientific Research

## Sales locations in over 20 countries worldwide



[www.atlantecrf.com](http://www.atlantecrf.com)

