



Limiters

Detectors

Switches, Switch Matrices

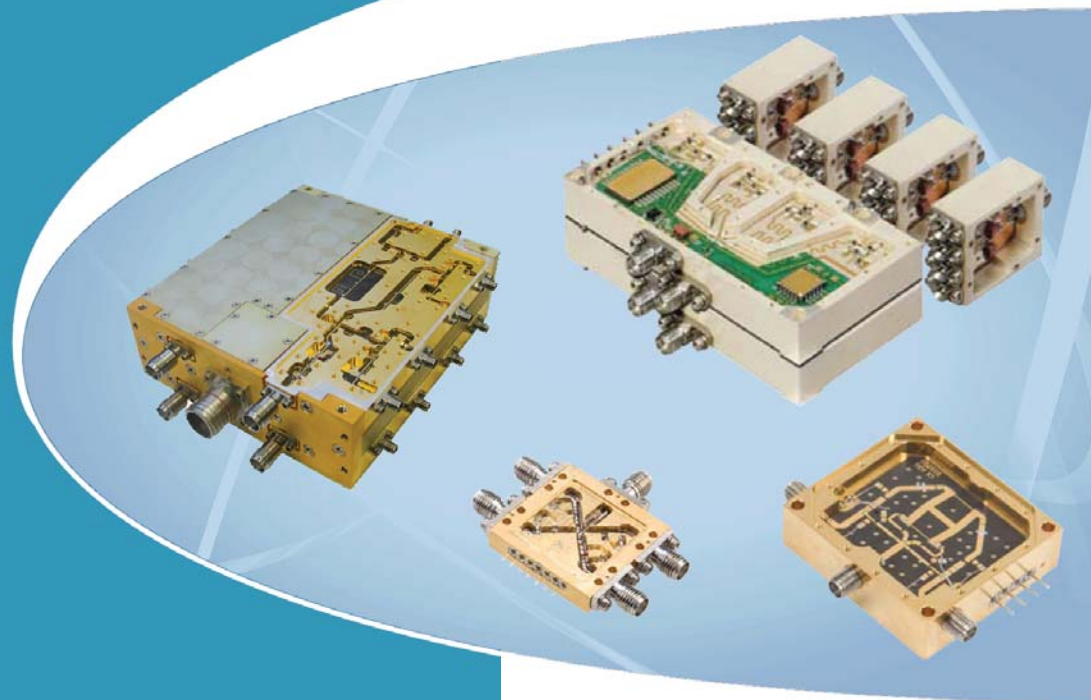
Attenuators

Phase Shifters


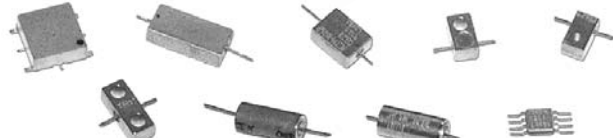




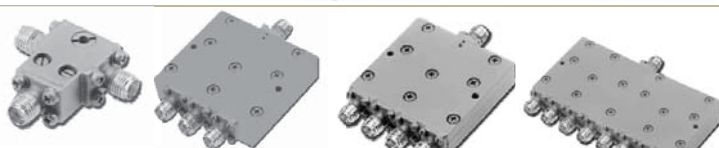

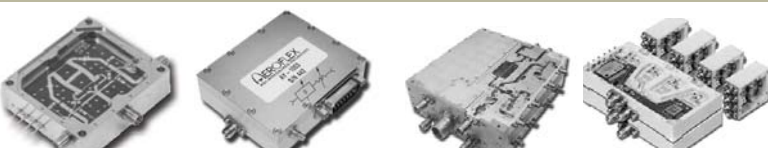
Directional Couplers

Power Dividers

Integrated Assemblies



**RF / Microwave
Components & Subsystems
2011**

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Aeroflex Control Components (ACC) – formed in September 2010 from the merger of Advanced Control Components and Aeroflex / KDI-IP – is a supplier of high-performance solid-state RF and microwave components and sub-systems serving the military, aerospace, commercial and instrumentation markets.



ACC's 49,000 square foot facility is located in Eatontown, New Jersey, to serve our US and International customers. Resources include comprehensive in-house design, manufacturing and test capabilities to 40GHz. All manufacturing and test operations are performed in our state-of-the-art production facility. ACC has an ISO-9001:2008 accredited quality system and as part of our commitment to continuous improvement, all employees participate in comprehensive training programs, keeping pace with industry innovations. We are proud to have achieved approved-supplier status on many military and space programs such as Predator, MRAP, F-16, AEGIS, THAAD and dozens more.

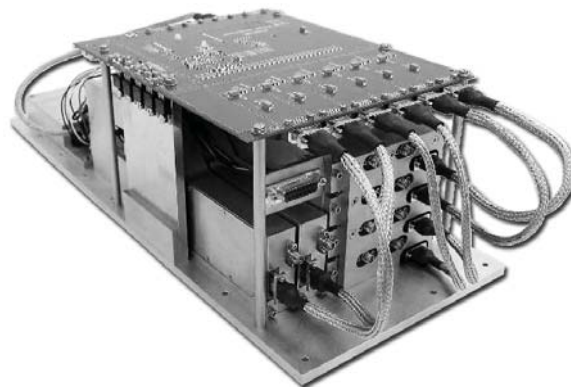
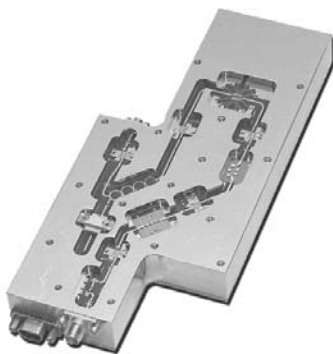
Our team of design engineers has extensive experience in passive and active component design and sub-system integration. By utilizing the latest and most advanced CAD software, we offer comprehensive design, test, and manufacturing solutions.

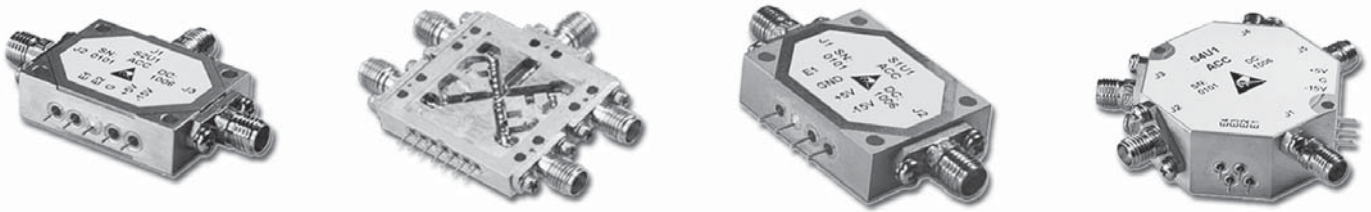
Aeroflex Control Components is your source for the following standard products

- Attenuators – Digital, Voltage Variable and Current Controlled
- Detectors – Schottky and Tunnel Detectors up to 40GHz
- Directional Couplers – Stripline Couplers in 6dB, 10dB, 20dB and 30dB Coupling Values
- Limiters – Low Leakage and High Power Surface mount and coaxial to 40GHz
- Phase Shifters – Digital, Voltage Variable and Current Controlled
- Power Dividers – 2 way, 4 way, 6 way and 8 way Products up to 18GHz
- Switches – SPST to SP6T and Transfer switches 0.01 to 18GHz
- High Power T/R Switches – 0.01 to 6GHz up to 200W CW

Our custom capabilities include

- Custom PIN diode and GaAsFET based switches and switch assemblies
- Custom Integrated Assemblies with complete design, manufacturing and test to 40GHz



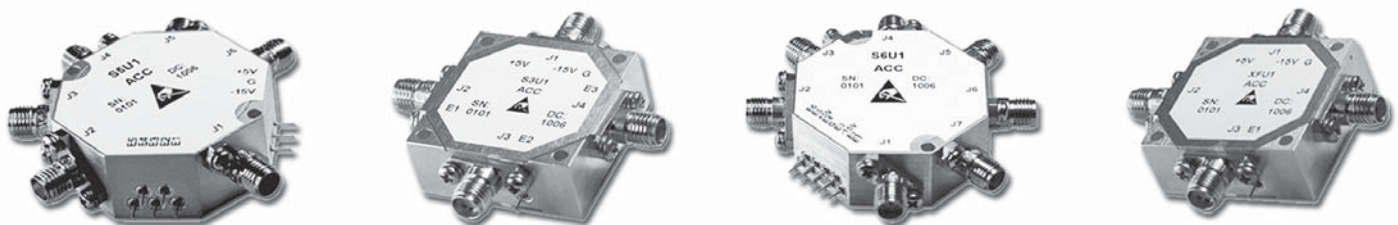


Over 2700 standard components available for delivery in 30 days or less. Including single pole, single - throw switches through single pole, six throw switches, transfer switches, broad band switches and phase trimmers.

For Product Availability See Pages

Single Pole, Single - Throw Switches	Page 32,33
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Single Pole, Three - Throw Switches	Page 36,37
Single Pole, Four - Throw Switches	Page 38,39
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Single Pole, Six - Throw Switches	Page 42,43
Transfer Switches	Page 44,45
Broad Band Switches	Page 46,47
Phase Trimmer	Page 71

A library of standard and custom configurations are available to help you design the best jamming or transmitting system you can imagine with over 2,700 catalog switches available in 30 days or less. Call or visit our website for details.





Pin Diode Limiters

PIN diode limiters are built to protect sensitive circuit elements such as receiver front ends or detectors. They reduce high power inputs to a low level that can protect critical components in the RF chain. Limiters may be categorized as conventional or feedback types. The family of conventional limiters typically exhibits leakage levels up to +20dBm with recovery times less than 40nsec. These models handle up to 100W peak power levels and cover the frequency range from 100MHz to 40GHz. The limiters one dB compression is around +11 dBm. Custom models with higher power handling are available.

Features

- Low Insertion Loss
- Low Leakage Power Circuit Protection
- High CW Power Handling
- Hermetically Sealed Modules
- Assorted Package Styles
- Custom Designs Available

PIN DIODE LIMITERS									
Frequency Range (GHz)	Part Number	Peak Input Power (W)	CW Input Power (Watts)	Maximum Flat Leakage (Peak Power) (+dBm)	Maximum Flat Leakage (CW Power) (+dBm)	Maximum Insertion Loss (dB)	Maximum VSWR	Standard Case Styles	Optional Case Styles
0.1 - 1.1	ACLM-4538	100	2	20	18	0.4	1.4:1	C3	C36,C37,M22
0.5 - 2	ACLM-4530	100	2	20	18	0.4	1.4:1	C3	C36,C37,M22
0.1 - 4	ACLM-4637	100	2	20	17	0.5	1.4:1	C3	C36,C37,M22
1 - 4	ACLM-4581	100	2	20	17	0.5	1.4:1	C3	C36,C37,M22
2 - 4	ACLM-4531	100	2	20	17	0.5	1.4:1	C3	C36,C37,M22
0.5 - 6	ACLM-4700	100	2	20	17	0.7	1.5:1	C3	C36,C37,M22
2 - 8	ACLM-4540	100	2	20	17	1.0	1.5:1	C3	C36,C37,M22
0.5 - 8	ACLM-4606	100	2	20	17	1.0	1.5:1	C3	C36,C37,M22
1 - 8	ACLM-4597	100	2	20	17	1.0	1.5:1	C3	C36,C37,M22
4 - 8	ACLM-4532	100	2	20	17	1.0	1.5:1	C3	C36,C37,M22
2 - 12	ACLM-4535	100	2	21	18	1.5	1.6:1	C3	C36,C37,M22
8 - 12	ACLM-4533	100	2	21	18	1.5	1.6:1	C3	C36,C37,M22
0.5 - 18	ACLM-4601	100	1	21	18	1.8	1.9:1	C36	C37,M22
2 - 18	ACLM-4537	100	1	21	18	1.8	1.9:1	C36	C37,M22
8 - 18	ACLM-4539	100	1	21	18	1.8	1.9:1	C36	C37,M22
18 - 26	ACLM-4765	100	1	23	21	2.5	2.0:1	C36	C37,M22
18 - 40.0	ACLM-4776	100	1	23	20	4.0	2.5:1	C43	-

NOTES

1. Typically CW leakage is measured at mid-band with 1W input.
2. Higher power handling available. Contact the factory to discuss specific requirements.
3. Power handling is linearly derated from full power at +25°C to zero power at +150°C.

SCREENING

Standard Screening:

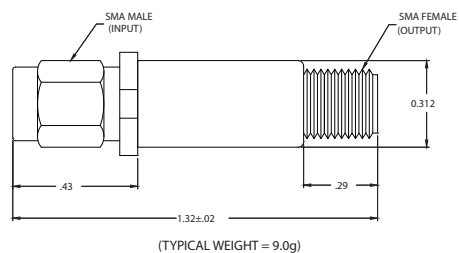
Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

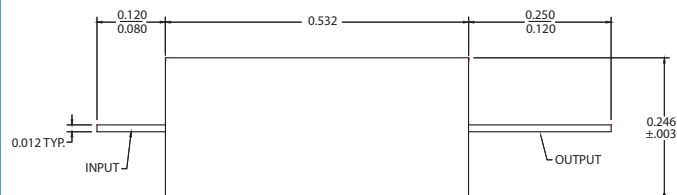
Internal Visual per MIL-STD-883, Method 2017
 Stabilization Bake per MIL-STD-883, Method 1008
 Temperature Cycle per MIL-STD-883, Method 1010
 Constant Acceleration per MIL-STD-883, Method 2001
 Burn-in per MIL-STD-883, Method 1015
 Leak Test per MIL-STD-883, Method 1014
 External Visual per MIL-STD-883, Method 2009

Pin Diode Limiters

OUTLINE CASE STYLE C3

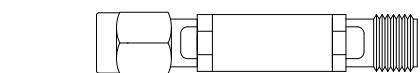
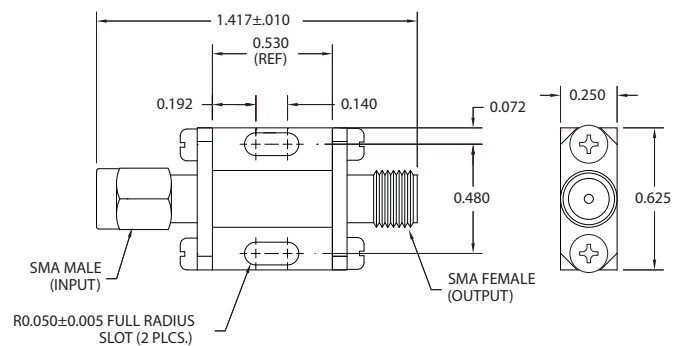


OUTLINE CASE STYLE M22



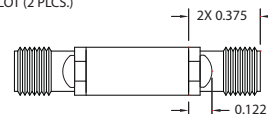
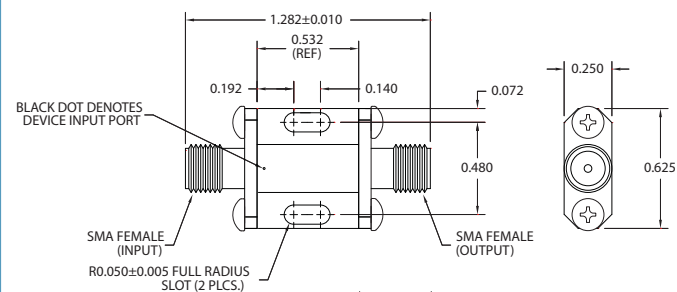
(TYPICAL WEIGHT = 1.55g)

OUTLINE CASE STYLE C36



(TYPICAL WEIGHT = 13.0g)

OUTLINE CASE STYLE C37



(TYPICAL WEIGHT = 13.0g)

PART NUMBER ORDERING INFORMATION

Example:	ACLM-4533C3R1K
ACLM-4533:	Conventional limiter, 8 - 12GHz
C3:	Package type
R:	Reversed Connectors (Omit for standard configuration)
1K:	1kW peak power handling (Omit for standard 100W peak power handling)



Pin Diode Low Leakage Limiters

Low Leakage limiters are designed to have lower threshold and leakage levels than those of conventional limiters in order to protect more sensitive components. They incorporate input PIN diode limiters which are biased by a quasi-active driver. Most circuits include DC blocks, which are required for proper operation.

In some very low frequency models, it is not possible to include DC blocks. The application must be such that no low impedance DC path from the center conductor to ground exists outside the unit. The limiter threshold (1dB compression) is typically +5dBm.

Low Leakage limiters will also handle peak power levels above 100W (1usec pulse width, 0.001 duty cycle, and 1kHz repetition rate). Peak leakages are higher than CW leakages as they are with conventional limiters. This becomes exaggerated at frequencies below 2GHz.

Features

- Low Insertion Loss
- Low Leakage Power Circuit Protection
- High CW Power Handling
- Hermetically Sealed Modules
- Assorted Package Styles
- Custom Designs Available

PIN DIODE LOW LEAKAGE LIMITERS

Frequency Range (GHz)	Part Number	Peak Input Power (W)	CW Input Power (Watts)	Maximum Flat Leakage (CW Power) (+dBm)	Maximum Insertion Loss (dB)	Maximum VSWR	Standard Case Styles	Optional Case Styles
0.02 - 0.1	ACLM-4885F	100	1	15	0.5	1.7:1	C3	C36,C37,M10,M22
0.1 - 0.2	ACLM-4769F	100	1	11	0.5	1.7:1	C3	C36,C37,M10,M22
0.02 - 0.5	ACLM-4594F	100	3	13.5	0.4	1.3:1	C3	C36,C37,M10,M22
0.03 - 1	ACLM-4675F	100	3	13.5	0.3	1.3:1	C3	C36,C37,M10,M22
0.1 - 1	ACLM-4786F	100	2	13.5	0.3	1.3:1	C3	C36,C37,M10,M22
0.1 - 2	ACLM-4800F	100	2	13.5	0.5	1.3:1	C3	C36,C37,M10,M22
0.5 - 2	ACLM-4650F	100	2	13.5	0.5	1.4:1	C3	C36,C37,M10,M22
1 - 2	ACLM-4586F	100	2	13.5	0.5	1.3:1	C3	C36,C37,M10,M22
2 - 4	ACLM-4732F	100	2	13.5	0.6	1.4:1	C3	C36,C37,M22
0.5 - 6	ACLM-4700F	100	2	13.5	0.8	1.5:1	C3	C36,C37,M22
0.5 - 8	ACLM-4759F	100	2	13.5	1.0	1.7:1	C3	C36,C37,M22
2 - 8	ACLM-4504F	100	2	13	0.8	1.5:1	C3	C36,C37,M22
4 - 8	ACLM-4572F	100	2	13	1.0	1.8:1	C3	C36,C37,M22
0.4 - 12	ACLM-4727F	100	2	13	1.5	1.8:1	C3	C36,C37,M22
8 - 12	ACLM-4571F	100	2	13	1.5	1.8:1	C3	C36,C37,M22
1 - 18	ACLM-4618F	100	2	13	2.4	2.4:1	C36	C37,M22
2 - 18	ACLM-4619F	100	2	13	2.4	2.2:1	C36	C37,M22
6 - 18	ACLM-4616F	100	2	13	2.4	2.2:1	C36	C37,M22
8 - 18	ACLM-4797F	100	2	13	2.4	2.2:1	C36	C37,M22
18 - 26.5	ACLM-4809F	100	2	15	2.8	2.0:1	C36	C37,M22

NOTES

1. Typically CW leakage is measured at mid-band with 1W input.
2. Higher power handling available. Contact the factory to discuss specific requirements.
3. Power handling is linearly derated from full power at +25°C to zero power at +150°C.

SCREENING

Standard Screening:

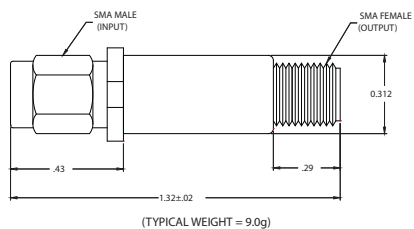
Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

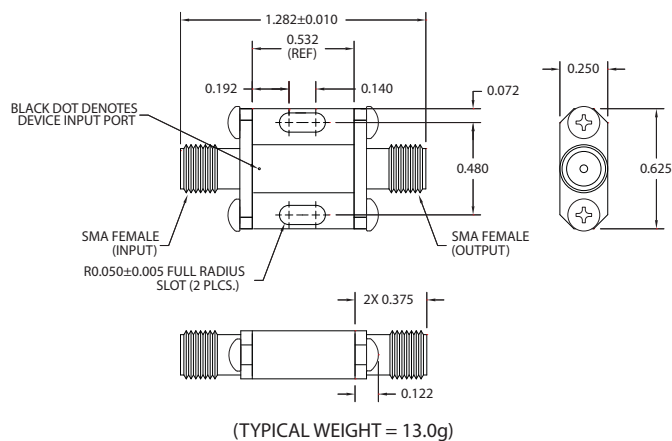
Internal Visual per MIL-STD-883, Method 2017
 Stabilization Bake per MIL-STD-883, Method 1008
 Temperature Cycle per MIL-STD-883, Method 1010
 Constant Acceleration per MIL-STD-883, Method 2001
 Burn-in per MIL-STD-883, Method 1015
 Leak Test per MIL-STD-883, Method 1014
 External Visual per MIL-STD-883, Method 2009

Pin Diode Low Leakage Limiters

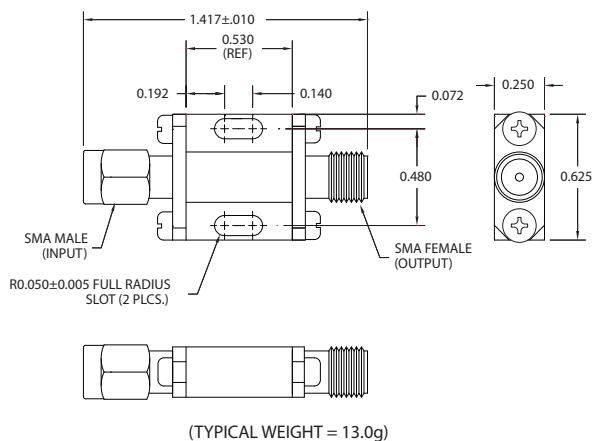
OUTLINE CASE STYLE C3



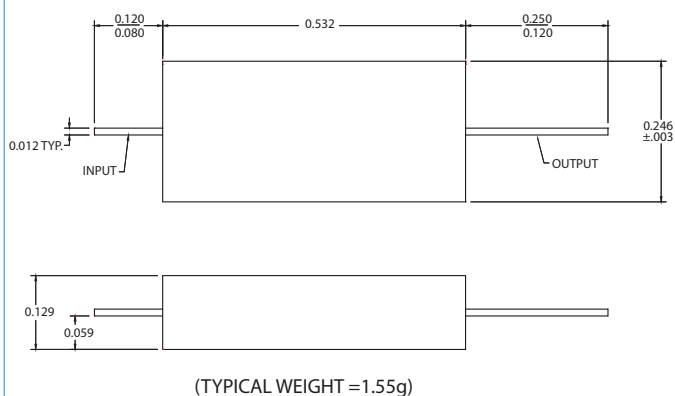
OUTLINE CASE STYLE C37



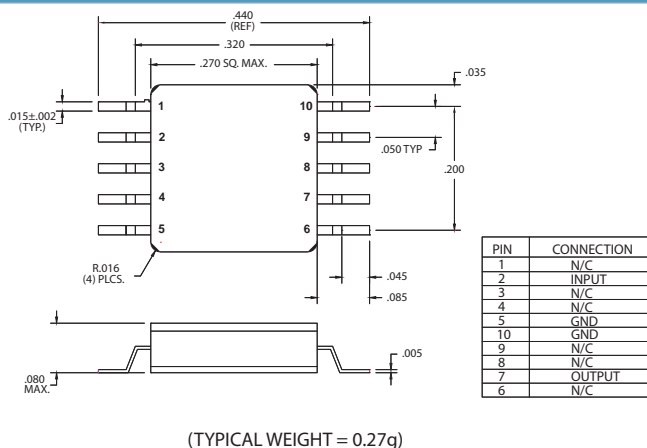
OUTLINE CASE STYLE C36



OUTLINE CASE STYLE M22



OUTLINE CASE STYLE M10



PART NUMBER ORDERING INFORMATION

Example:	ACLM-4504FC3R1K
ACLM-4504F:	Low Leakage limiter, 2 - 8GHz
C3:	Package type
R:	Reversed Connectors (Omit for standard configuration)
1K:	1kW peak power handling (Omit for standard 100W peak power handling)



Coaxial High Power Limiters

This series of high power limiters was developed to protect sensitive receiver circuits from close proximity threats (e.g. high power radar or communication transmitters). The standard models handle up to 60W CW while the higher power models can handle up to 100W CW. All models handle 1000W peak and exhibit low insertion loss and leakage levels. The limiters are available in either type N (male-to-male) or SMA connector versions

Features

- Low Insertion Loss
- Low Leakage Power Circuit Protection
- High CW Power Handling
- Assorted Package Styles

COAXIAL HIGH POWER LIMITERS								
Frequency Range (MHz)	Part Number	Peak Input Power (KW)	CW Input Power (Watts)	Maximum Flat Leakage (CW Power) (+dBm)	Maximum Insertion Loss (dB)	Maximum VSWR	Standard Case Styles	Optional Case Styles
0.5 - 30	ACLM-4869	1	60	14	0.1	1.25:1	C46	C24,C25,C88,C89,M70
30 - 100	ACLM-4870	1	60	14	0.1	1.25:1	C46	C24,C25,C88,C89,M70
10 - 500	ACLM-4827	1	60	14	0.1	1.25:1	C46	C24,C25,C88,C89,M70
100 - 500	ACLM-4930	1	60	14	0.2	1.25:1	C46	C24,C25,C88,C89,M70
100 - 1000	ACLM-4871	1	60	14	0.2	1.28:1	C46	C24,C25,C88,C89,M70
200 - 1000	ACLM-4903	1	60	14	0.2	1.28:1	C46	C24,C25,C88,C89,M70
1200 - 1400	ACLM-4603	1	60	14	0.25	1.25:1	C46	C24,C25,C88,C89,M70
2 - 1500	ACLM-4932	1	60	14	0.25	1.25:1	C46	C24,C25,C88,C89,M70
200 - 1500	ACLM-4904	1	60	14	0.25	1.25:1	C46	C24,C25,C88,C89,M70
0.1 - 2000	ACLM-4897	1	60	14	0.3	1.25:1	C46	C24,C25,C88,C89,M70
1 - 2000	ACLM-4874	1	60	14	0.3	1.25:1	C46	C24,C25,C88,C89,M70
20 - 2000	ACLM-4924	1	60	13	0.35	1.25:1	C46	C24,C25,C88,C89,M70
500 - 2000	ACLM-4947	1	60	14	0.35	1.25:1	C46	C24,C25,C88,C89,M70
1000 - 2000	ACLM-4851	1	60	14	0.35	1.25:1	C46	C24,C25,C88,C89,M70
2 - 2500	ACLM-4918	1	60	13	0.38	1.25:1	C46	C25,C25,C88,C89,M70
0.1 - 3000	ACLM-4896	1	60	13	0.4	1.25:1	C46	C24,C25,C88,C89,M70
500 - 3000	ACLM-4829	1	60	13	0.5	1.25:1	C46	C24,C25,C88,C89,M70
2000 - 3000	ACLM-4828	1	60	13	0.5	1.25:1	C46	C24,C25,C88,C89,M70
600 - 3100	ACLM-4891	1	60	13	0.5	1.25:1	C46	C24,C25,C88,C89,M70
2700 - 3100	ACLM-4852	1	60	13	0.5	1.25:1	C46	C24,C25,C88,C89,M70
3000 - 3700	ACLM-4905	1	60	13	0.8	1.9:1	C46	C24,C25,C88,C89,M70
2000 - 4000	ACLM-4943	1	60	13	1.2	2.0:1	C46	C24,C25,C88,C89,M70

*All models rated for 60W CW are available as 100W CW versions. The part number requires the suffix "H" added following the part number to indicate higher power rating. Refer to part number ordering information for details.

NOTES

1. Test conditions: Full rated power for 30 seconds.
2. Insertion loss is slightly higher for the high power versions.
3. Most models are broadband and will operate beyond the frequency ranges shown.
4. Typical leakage is 3dB below the maximum shown.
5. Power handling is linearly derated from full power at +25°C to zero power at +150°C.
6. All models require external DC blocks for proper operation.

SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017

Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Stabilization Bake per MIL-STD-883, Method 1008

Temperature Cycle per MIL-STD-883, Method 1010

Constant Acceleration per MIL-STD-883,

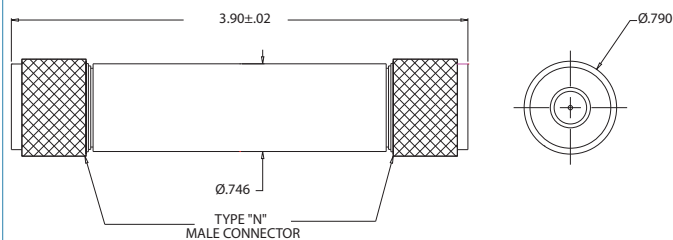
Method 2001

Burn-in per MIL-STD-883, Method 1015

External Visual per MIL-STD-883, Method 2009

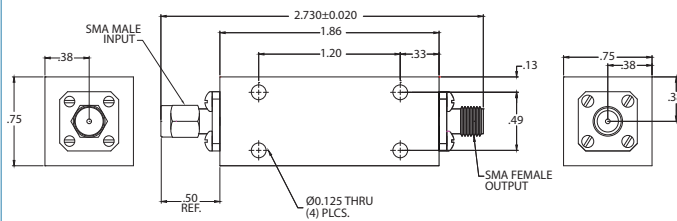
Coaxial High Power Limiters

OUTLINE CASE STYLE C24



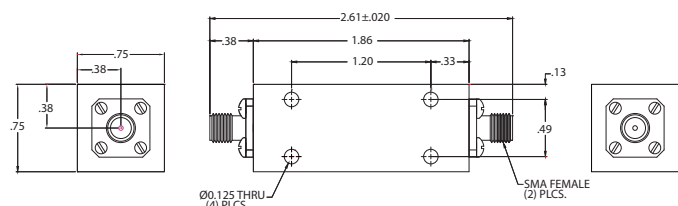
(TYPICAL WEIGHT = 96.0g)

OUTLINE CASE STYLE C25



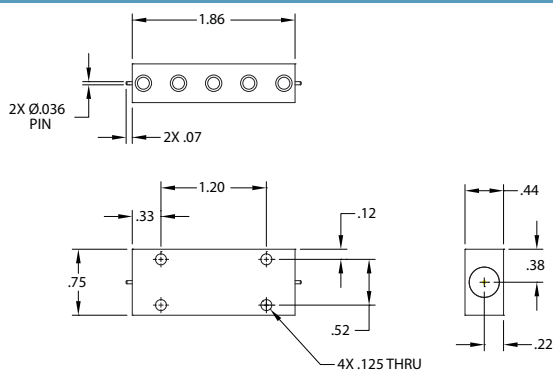
(TYPICAL WEIGHT = 46.0g)

OUTLINE CASE STYLE C46



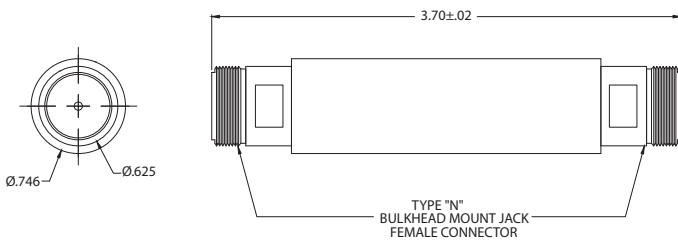
(TYPICAL WEIGHT = 46.0g)

OUTLINE CASE STYLE M70



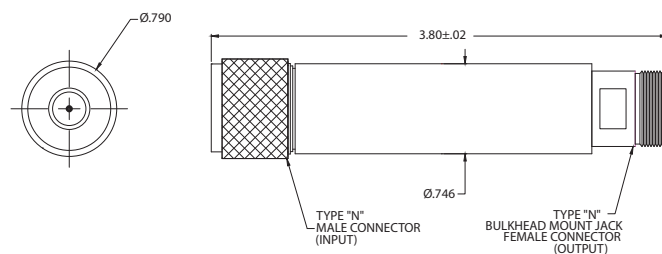
(TYPICAL WEIGHT = 23.27g)

OUTLINE CASE STYLE C88



(TYPICAL WEIGHT = 76.09g)

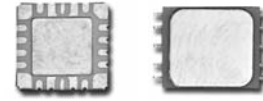
OUTLINE CASE STYLE C89



(TYPICAL WEIGHT = 85.81g)

PART NUMBER ORDERING INFORMATION

Example:	ACLM-4924HC46
ACLM-4924:	High Power Limiter, 20 - 2000MHz
H:	100W CW Power Handling (omit for standard 60 W CW Power Handling)
C46:	Package type



Surface Mount Limiters

This series of surface mount limiters was developed to offer higher power handling than our conventional limiters in a small compact design. Covering the band from 20 – 6000 MHz these devices can limit input power levels of 10W CW over the operating temperature range of -55C to +85C. Peak power handling is rated to 1kW with a 1us pulse width and a 0.1% duty cycle. Typical leakage levels are less than 12.5dBm (measured at 1W input). These units are available in both drop-in and surface mount packages. Coaxial configurations are available upon request

Features

- Low Insertion Loss
- Low Leakage Power Circuit Protection
- High CW Power Handling
- Hermetically Sealed Modules

SURFACE MOUNT LIMITERS

Frequency Range (GHz)	Part Number	Peak Input Power (W)	CW Input Power (Watts)	Maximum Flat Leakage (CW Power) (+dBm)	Maximum Insertion Loss (dB)	Maximum VSWR	Standard Case Styles	Optional Case Styles
0.02 – 3.0	ACLM-4812F	1000	10	12.5	1.0	1.4:1	M17	M16, M22
0.02 – 6.0	ACLM-4748F	1000	10	12.5	1.0	1.4:1	M17	M22
2.0 – 6.0	ACLM-4805F	1000	10	12.5	1.0	1.4:1	M17	M22
0.02 - 1.0	ACLM-4866F	1000	10	12.5	0.7	1.4:1	M17	M16, M22

NOTES

1. Typically CW leakage is measured at mid-band with 1W input.
2. Power handling is rated from -55°C to +85°C.

PART NUMBER ORDERING INFORMATION

Example:	ACLM-4812FM16
ACLM-4812:	10 W Limiter, 20 - 6000MHz
M16:	Package type

SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017
 Stabilization Bake per MIL-STD-883, Method 1008
 Temperature Cycle per MIL-STD-883, Method 1010
 Constant Acceleration per MIL-STD-883, Method 2001
 Burn-in per MIL-STD-883, Method 1015
 Leak Test per MIL-STD-883, Method 1014
 External Visual per MIL-STD-883, Method 2009

Surface Mount Limiters

OUTLINE CASE STYLE M15

(TYPICAL WEIGHT = 0.27g)

PIN	CONNECTION	PIN	CONNECTION
1	GND	10	GND
2	INPUT	9	OUTPUT
3	INPUT	8	OUTPUT
4	GND	7	GND
5	GND	6	GND

OUTLINE CASE STYLE M22

(TYPICAL WEIGHT = 1.55g)

OUTLINE CASE STYLE M17

ATTENTION:
THIS IS A TOP VIEW (AS MOUNTED)
(TYPICAL WEIGHT = 0.18g)

PINOUT MATRIX			
PIN	FUNCTION	PIN	FUNCTION
1	N/C	9	N/C
2	GND	10	N/C
3	RF INPUT	11	GND
4	GND	12	OUTPUT
5	N/C	13	GND
6	N/C	14	N/C
7	N/C	15	N/C
8	N/C	16	N/C

NOTE: FOR BEST ELECTRICAL PERFORMANCE BASE AND CORNER TAB MUST BE GROUNDED



Bias Coaxial Schottky Detectors

High sensitivity and superior electrical and environmental reliability characterize these module detectors. They are hermetically sealed and contain internal RF matching, DC return, and RF bypass capacitor. In addition, the video port can be protected from static or transient voltages. This feature prevents damage due to handling (usually static) or system video transients. Models may be chosen for broadband RF performance or for optimized narrow bands. They may be used in microstrip or stripline applications for power monitoring, broadband ECM receivers, radar equipment, beacon or multi-channel receivers.

Features

- Static Protection
- High Sensitivity
- Small Size

BIASED COAXIAL SCHOTTKY DETECTORS

Frequency Range (MHz)	Part Number	Minimum Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical (2) TSS (dBm)	Nominal Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.1 - 1	ACSP-2517N	2000	0.28	-52	270	C3	C8,C15, C32
0.1 - 2	ACSP-2538N	2000	0.3	-52	270	C3	C8,C15, C32
0.5 - 2	ACSP-2501N	2000	0.3	-53	75	C3	C8,C15, C32
1 - 4	ACSP-2630N	2000	0.3	-53	39	C3	C8,C15, C32
2 - 4	ACSP-2502N	2000	0.2	-53	20	C3	C8,C15, C32
2 - 6	ACSP-2546N	2000	0.3	-53	12	C3	C8,C15, C32
1 - 6	ACSP-2656N	2000	0.5	-53	12	C3	C8,C15, C32
4 - 8	ACSP-2503N	2000	0.3	-53	12	C3	C8,C15, C32
0.5 - 12	ACSP-2658N	2000	1.3	-52	75	C3	C8,C15, C32
1 - 12	ACSP-2762N	2000	1.5	-51	20	C3	C8,C15, C32
2 - 12	ACSP-2507N	2000	1.1	-53	12	C3	C8,C15, C32
8 - 12	ACSP-2504N	2100	0.4	-53	12	C3	C8,C15, C32
0.5 - 18	ACSP-2572N	1800	1.5	-52	12	C3	C15, C32
1 - 18	ACSP-2759N	1500	1.25	-50	20	C3	C15, C32
2 - 18	ACSP-2506N	1800	1.5	-51	12	C3	C15, C32
6 - 18	ACSP-2523N	1800	1.0	-51	12	C3	C15, C32
12 - 18	ACSP-2505N	2000	0.6	-52	12	C3	C15, C32

NOTES

1. Available in both negative and positive polarities, substitute "N" or "P" in part number.
2. Tangential Signal Sensitivity (TSS) is a measure of low level sensitivity with respect to noise. It is measured using a video amplifier with a 2MHz bandwidth and a 3dB noise figure.
3. Video capacitance is used for RF bypass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown are needed.
4. Video protection is available on most models. This feature helps to prevent damage to the detector diode from incidents occurring at the video port. Transient electromagnetic spikes, static contact, or voltage surges can easily damage a detector diode. A video protection diode will clamp the voltage at a value less than the detector breakdown voltage. NOTE: Inclusion of this protection will cause the output voltage to compress and clamp. This occurs at about +10dBm input to the detector. If operation above +10dBm is required then the output protection should be modified or excluded. Contact the factory for assistance.
5. Zero bias schottky versions are available for most of listed biased schottky models with only minor differences in specifications.
 - The zero bias schottky has an impedance of several thousand ohms.
 - Zero bias schottky detectors exhibit less sensitive TSS due to the high diode impedance (typically a 3dB reduction).
 - The temperature performance of the zero bias schottky is poor when operating at low input power levels. This difference becomes small at high levels (above 0dBm input power). The part number of zero bias versions includes a "Z" following the polarity indicator.

EACH DETECTOR MODEL CONTAINS

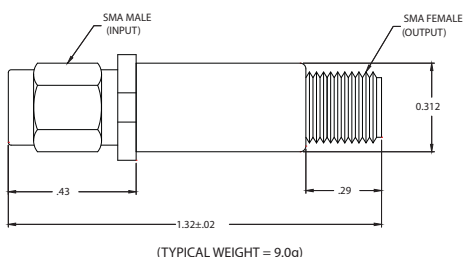
- Input Impedance Matching
- DC return
- RF bypass capacitor
- Detector diode
- Video protection diode

APPLICATIONS

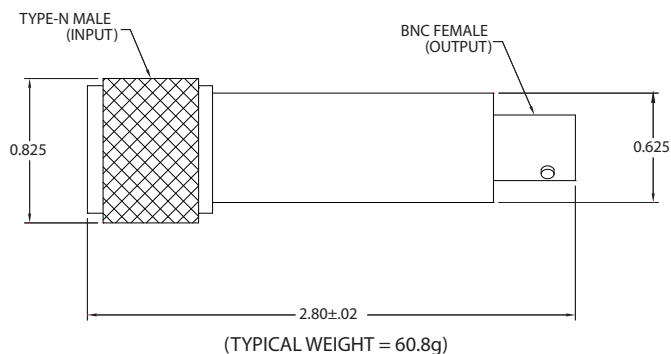
- Transmitter Monitoring
- Radar Equipment
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

Bias Coaxial Schottky Detectors

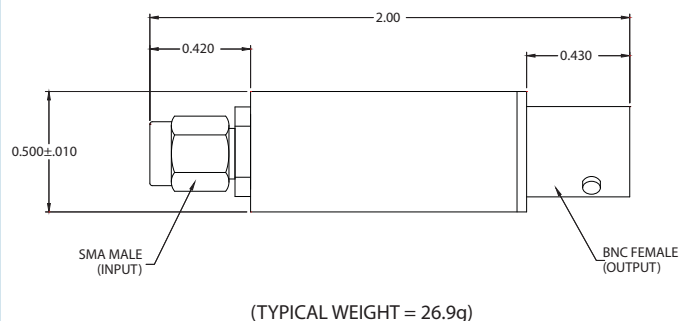
OUTLINE CASE STYLE C3



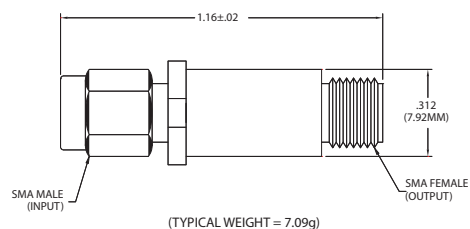
OUTLINE CASE STYLE C8



OUTLINE CASE STYLE C15



OUTLINE CASE STYLE C32



SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017
 Stabilization Bake per MIL-STD-883, Method 1008
 Temperature Cycle per MIL-STD-883, Method 1010
 Constant Acceleration per MIL-STD-883, Method 2001
 Burn-in per MIL-STD-883, Method 1015
 Leak Test per MIL-STD-883, Method 1014
 External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

Example: ACSP-2503NZC3V-20

ACSP-2503: Biased Coaxial Schottky Detector, 4 - 8GHz

N: Negative output polarity

Z: Zero bias version (Omit for biased version)

V: Add Video Protection

20: 20 pF custom output capacitance (Omit for standard value)



Bias Coaxial Schottky Detectors (with Internal Pads or Resistors)

This family of padded input detectors allows for higher input power read and better VSWR than pure biased schottky units. They come in a variety of package styles. Module versions for microstrip or stripline applications are also available.

Features

- Static Protection
- High Sensitivity
- Small Size

BIASED COAXIAL SCHOTTKY DETECTORS

Frequency Range (MHz)	Part Number	Minimum Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical VSWR	Nominal Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.005 - 0.05	ACSP-2531N	750	0.1	2.0:1	1000	C3	C8,C15
0.05-0.5	ACSP-2543N	1600	0.3	2.0:1	270	C3	C8,C15
0.001 - 1	ACSP-2609N	1800	0.2	2.0:1	470	C3	C8,C15
0.1 - 1	ACSP-2761N	1200	0.2	2.0:1	1000	C3	C8,C15
0.01 - 4	ACSP-2755N	1800	0.4	2.0:1	270	C3	C8,C15
0.01 - 4	ACSP-2655N	600	0.4	1.25:1	270	C3	C8,C15
4 - 8	ACSP-2602N	600	0.3	1.5:1	10	C3	C8,C15,C32
8 - 12	ACSP-2667N	750	0.5	1.9:1	10	C3	C8,C15,C32
0.01 - 20	ACSP-2644N	500	1.0	1.8:1	12	C3	C15,C32
0.01 - 20	ACSP-2643N	900	1.5	2.8:1	75	C3	C15,C32

NOTES

1. Standard output polarity is negative. If positive output is required, substitute "P" for "N" in part number.
2. Measured into an open circuit load $\geq 10k$ ohm).
3. VSWR measured at or below -20dBm input power level
4. Video capacitance is used for RF by pass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown is needed.
5. Standard bias is 100 microamps.
6. Zero bias schottky versions are available for most of the listed bias schottky models with only minor differences in specifications.
 - The zero bias schottky has an impedance of several thousand ohms.
 - Zero bias schottky detectors exhibit less sensitive TSS due to the high diode impedance (typically 3dB reduction).
 - The temperature performance of the zero bias schottky is poor when operating at low input power levels. This difference becomes small at high levels (above 0 dBm input power). The part number of zero bias versions includes a "z" following the polarity indicator.

EACH DETECTOR MODEL CONTAINS

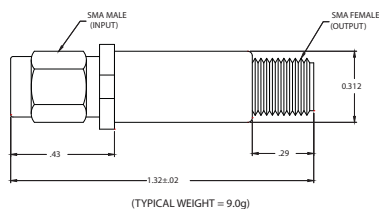
- Input Impedance Matching
- DC return
- RF bypass capacitor
- Detector diode

APPLICATIONS

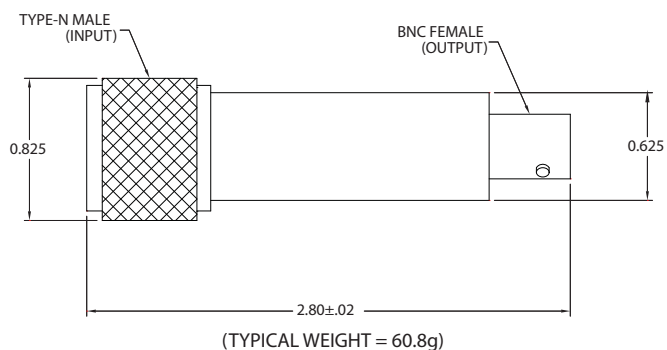
- Transmitter Monitoring
- Radar Equipment
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers
- Amplitude Comparator Systems and Discriminators

Bias Coaxial Schottky Detectors (with Internal Pads or Resistors)

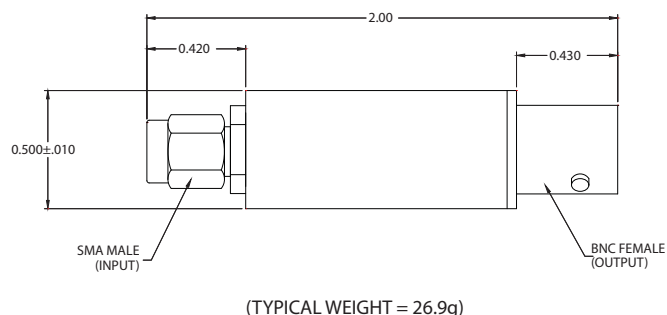
OUTLINE CASE STYLE C3



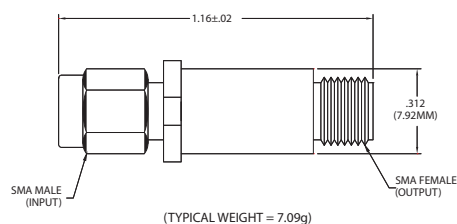
OUTLINE CASE STYLE C8



OUTLINE CASE STYLE C15



OUTLINE CASE STYLE C32



SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017
Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017
Stabilization Bake per MIL-STD-883, Method 1008
Temperature Cycle per MIL-STD-883, Method 1010
Constant Acceleration per MIL-STD-883, Method 2001
Burn-in per MIL-STD-883, Method 1015
Leak Test per MIL-STD-883, Method 1014
External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

Example: ACSP-2503NZC3V-20
ACSP-2503: Biased Coaxial Schottky Detector, 4 - 8GHz
N: Negative output polarity
Z: Zero bias version (Omit for biased version)
V: Add Video Protection
20: 20 pF custom output capacitance (Omit for standard value)



Bolt Channel Schottky Detectors

Static protection and easy mounting are important features of these high sensitivity detectors. They offer excellent octave or broadband RF performance and rugged construction for harsh environments. The static protection virtually eliminates damage due to handling or from video transients. The Bolt Channel package allows for very simple and reliable screw-on mounting. The modified package saves additional space by eliminating one thru hole. The standard output polarity is positive. Negative output versions are available with slightly lower sensitivity.

Features

- Microstrip or Stripline Compatible
- Static Protection
- High Sensitivity
- Small Size
- Easy Mounting

BOLT CHANNEL SCHOTTKY DETECTORS

Frequency Range (MHz)	Part Number	Minimum Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical VSWR	Nominal Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.95 - 1.25	ACSM-2036P	2000	0.2	-53	20	M51	-
1 - 1.5	ACSM-2155P	1700	0.25	-52	75	M51	-
2 - 6	ACSM-2030P	2000	0.3	-53	12	M51	-
2 - 12	ACSM-2032P	2000	1.0	-52	12	M51	-
2 - 18	ACSM-2031P	1700	1.3	-51	12	M51	-
8 - 18	ACSM-2033P	1700	1.0	-51	12	M51	-
12 - 18	ACSM-2034P	1800	0.75	-51	12	M51	-
17 - 18	ACSM-2139P	1700	0.5	-51	9	M51	-

NOTES

1. Available in both negative and positive polarities, substitute "N" or "P" in part number.
2. Tangential Signal Sensitivity (TSS) is a measure of low level sensitivity with respect to noise. It is measured using a video amplifier with a 2MHz bandwidth and a 3dB noise figure.
3. Video capacitance is used for RF bypass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown are needed.
4. Video protection is available on most models. This feature helps to prevent damage to the detector diode from incidents occurring at the video port. Transient electromagnetic spikes, static contact, or voltage surges can easily damage a detector diode. A video protection diode will clamp the voltage at a value less than the detector breakdown voltage. NOTE: Inclusion of this protection will cause the output voltage to compress and clamp. This occurs at about +10dBm input to the detector. If operation above +10dBm is required then the output protection should be modified or excluded. Contact the factory for assistance.
5. Zero bias schottky versions are available for most of listed biased schottky models with only minor differences in specifications.
 - The zero bias schottky has an impedance of several thousand ohms.
 - Zero bias schottky detectors exhibit less sensitive TSS due to the high diode impedance (typically a 3dB reduction).
 - The temperature performance of the zero bias schottky is poor when operating at low input power levels. This difference becomes small at high levels (above 0dBm input power). The part number of zero bias versions includes a "Z" following the polarity indicator.

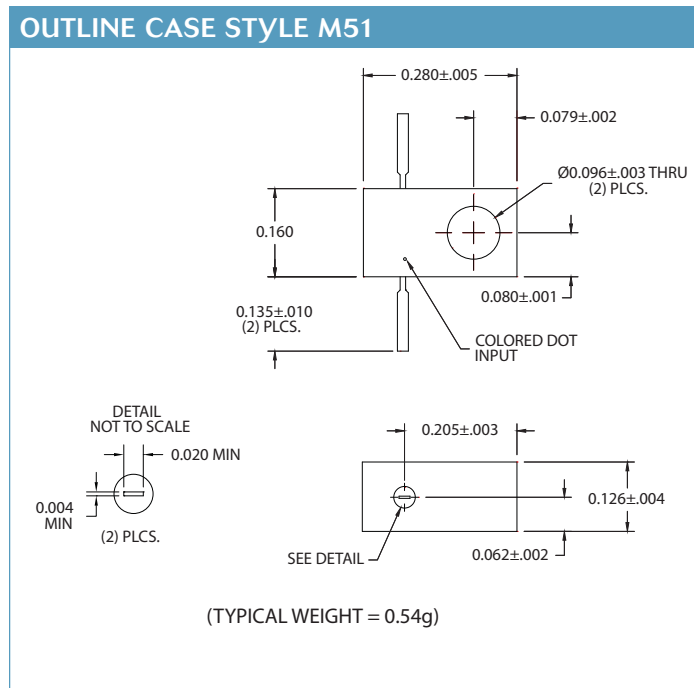
EACH DETECTOR MODEL CONTAINS

- Input Impedance Matching
- DC return
- RF bypass capacitor
- Detector diode

APPLICATIONS

- Transmitter Monitoring
- Radar Equipment
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

Bolt Channel Schottky Detectors



SCREENING

Standard Screening:

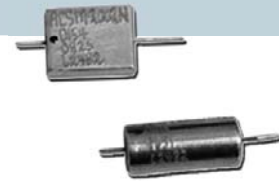
Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017
 Stabilization Bake per MIL-STD-883, Method 1008
 Temperature Cycle per MIL-STD-883, Method 1010
 Constant Acceleration per MIL-STD-883, Method 2001
 Burn-in per MIL-STD-883, Method 1015
 Maximum Input Power: +20dBm Leak Test per MIL-STD-883, Method 1014
 External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

Example:	ACSM-2033PZM51V-20
ACSM-2033:	Bolt Channel Schottky Detector, 8 -18GHz
P:	Positive output polarity
Z:	Zero bias version (Omit for biased version)
V:	Add Video Protection
20:	20 pF custom output capacitance (Omit for standard value)



Schottky Diode Module Detectors

High sensitivity and superior electrical and environmental reliability characterize these module detectors. They are hermetically sealed and contain internal RF matching, DC return, and RF bypass capacitor. In addition, the video port can be protected from static or transient voltages. This feature prevents damage due to handling (usually static) or system video transients. Models may be chosen for broadband RF performance or for optimized narrow bands. They may be used in microstrip or stripline applications for power monitoring, broadband ECM receivers, radar equipment, beacon or multi-channel receivers.

Features

- Static Protection
- High Sensitivity
- Small Size
- Environmental specifications are standard.

SCHOTTKY DIODE MODULE DETECTORS

Frequency Range (MHz)	Part Number	Minimum Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical VSWR	Nominal Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.1 - 1	ACSM-2035N	2000	0.25	-52	270	M12*	M17, M47
0.5 - 2	ACSM-2001N	2000	0.4	-53	75	M12*	M17, M47
1 - 2	ACSM-2066N	2000	0.2	-53	20	M12*	M17,M47,M51
0.5 - 4	ACSM-2108N	2000	0.4	-53	20	M12*	M17,M43,M51
1 - 4	ACSM-2038N	2000	0.4	-53	20	M12*	M17,M51
2 - 4	ACSM-2002N	2000	0.4	-53	20	M12*	M17,M51
1 - 8	ACSM-2075N	2000	0.5	-53	20	M12*	M17
2 - 8	ACSM-2014N	2000	0.5	-53	20	M12*	M17
4 - 8	ACSM-2003N	2000	0.4	-53	20	M12*	M17 ,M51
2 - 12	ACSM-2007N	2000	0.9	-52	20	M12*	M17
8 - 12	ACSM-2004N	2000	0.65	-52	12	M12*	M17
1 - 18	ACSM-2047N	1800	1.0	-51	20	M12*	M17
2 - 18	ACSM-2006N	1800	1.0	-51	12	M12*	M17
8 - 18	ACSM-2015N	1800	0.7	-52	12	M12*	M17
12 - 18	ACSM-2005N	2000	0.6	-52	12	M12*	M17

*Application note regarding drop in modules.

NOTES

1. Available in both negative and positive polarities, substitute "N" or "P" in part number.
2. Tangential Signal Sensitivity (TSS) is a measure of low level sensitivity with respect to noise. It is measured using a video amplifier with a 2MHz bandwidth and a 3dB noise figure.
3. Video capacitance is used for RF bypass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown are needed.
4. Video protection is available on most models. This feature helps to prevent damage to the detector diode from incidents occurring at the video port. Transient electromagnetic spikes, static contact, or voltage surges can easily damage a detector diode. A video protection diode will clamp the voltage at a value less than the detector breakdown voltage. NOTE: Inclusion of this protection will cause the output voltage to compress and clamp. This occurs at about +10dBm input to the detector. If operation above +10dBm is required then the output protection should be modified or excluded. Contact the factory for assistance.
5. Zero bias schottky versions are available for most of listed biased schottky models with only minor differences in specifications.
 - The zero bias schottky has an impedance of several thousand ohms.
 - Zero bias schottky detectors exhibit less sensitive TSS due to the high diode impedance (typically a 3dB reduction).
 - The temperature performance of the zero bias schottky is poor when operating at low input power levels. This difference becomes small at high levels (above 0dBm input power). The part number of zero bias versions includes a "Z" following the polarity indicator.

EACH DETECTOR MODEL CONTAINS

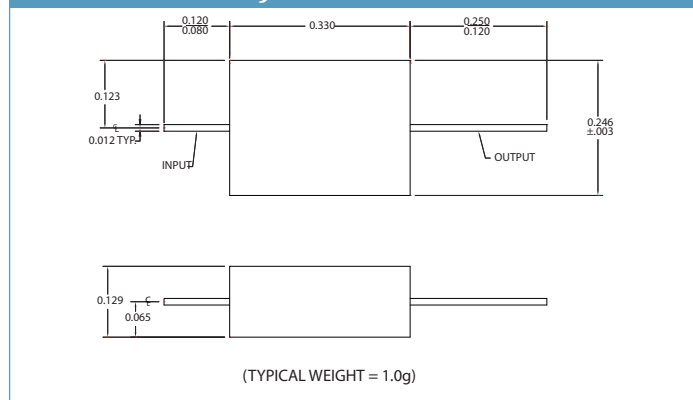
- Input Impedance Matching
- DC return
- RF bypass capacitor
- Detector diode

APPLICATIONS

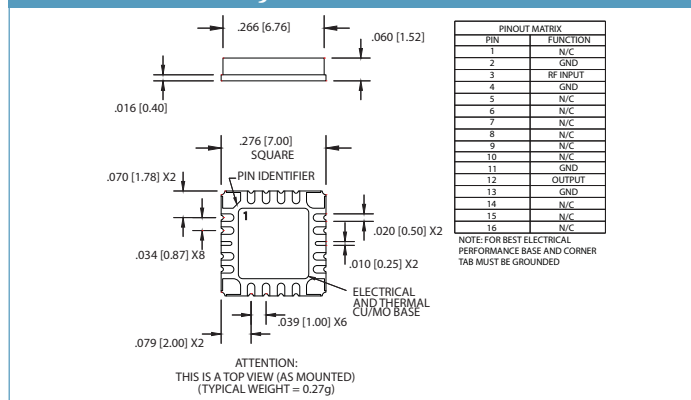
- Transmitter Monitoring
- Radar Equipment
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

Schottky Diode Module Detectors

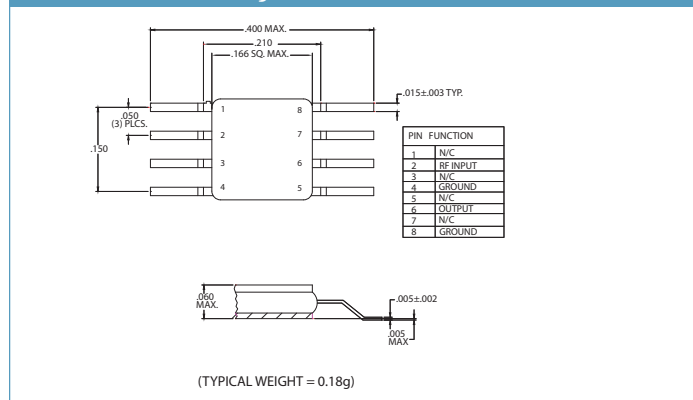
OUTLINE CASE STYLE M12



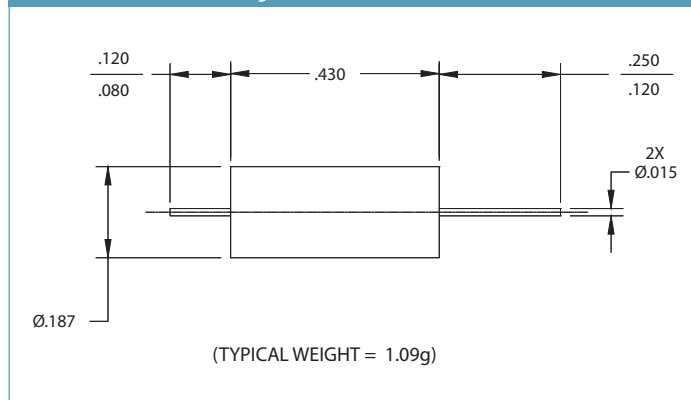
OUTLINE CASE STYLE M17



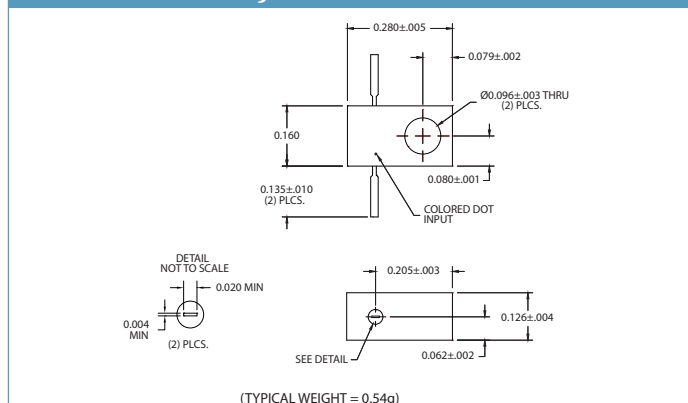
OUTLINE CASE STYLE M47



OUTLINE CASE STYLE M43



OUTLINE CASE STYLE M51



SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017
 Stabilization Bake per MIL-STD-883, Method 1008
 Temperature Cycle per MIL-STD-883, Method 1010
 Constant Acceleration per MIL-STD-883, Method 2001
 Burn-in per MIL-STD-883, Method 1015
 Leak Test per MIL-STD-883, Method 1014
 External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

Example: ACSM-2015NZM51X20

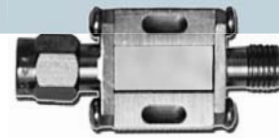
ACSM-2015: Schottky Module Detector,
 8 -18GHz

N: Negative output polarity

Z: Zero bias version (Omit for biased version)

X: No video protection

20: 20 pF custom output capacitance (Omit for standard value)



Maximally Flat Schottky Detectors

These schottky diode detectors are designed for optimum output voltage flatness vs. input frequency. Excellent flatness performance is maintained up through +15dBm input power.

Many forms of detectors exhibit uneven expansion and unacceptable flatness at higher power levels. Our design minimizes this effect making the detectors more useful and accurate as broadband power monitors

Features

- Exceptional Temperature Stability
- Low Video Resistance (110Ω typical)
- Broadband Performance
- No Bias Required

ACSP-2154 (1 -18 GHz) MAXIMALLY FLAT SCHOTTKY DETECTOR

Nominal Output Voltage	Flatness vs Frequency (+/-dB)	VSWR	Maximum RF Input Power (dBm)	Standard Case Styles	Optional Case Styles
12mV @ -20dBm	0.5dB @ -20dBm	2:1 @ -20dBm	+20	M22	C36,C37
100mV @ -10dBm	0.7dB @ -10dBm	3:1 @ -10dBm			
500mV @ 0dBm	0.7dB @ 0dBm	4.5:1 @ 0dBm			
1V @ +5dBm	1.0dB @ +5dBm				

EACH DETECTOR MODEL CONTAINS

- DC return
- RF bypass capacitor
- Detector diode

APPLICATIONS

- Transmitter Monitoring
- Radar Equipment
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

SCREENING

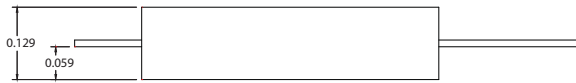
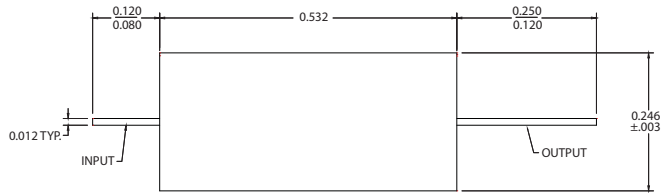
- Internal Visual per MIL-STD-883, Method 2017
- Temperature Cycle: -65°C to +100°C, 10 cycles
- Optional High-Rel Screening (Ref MIL-PRF-38534):
- Internal Visual per MIL-STD-883, Method 2017
- Stabilization Bake per MIL-STD-883, Method 1008
- Temperature Cycle per MIL-STD-883, Method 1010
- Constant Acceleration per MIL-STD-883, Method 2001
- Burn-in per MIL-STD-883, Method 1015
- Leak Test per MIL-STD-883, Method 1014
- External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

- Example: ACSP-2154PM22
- ACSP-2154: Maximally Flat Schottky Detector, 1 -18GHz
- P: Positive output polarity
- M22: Package

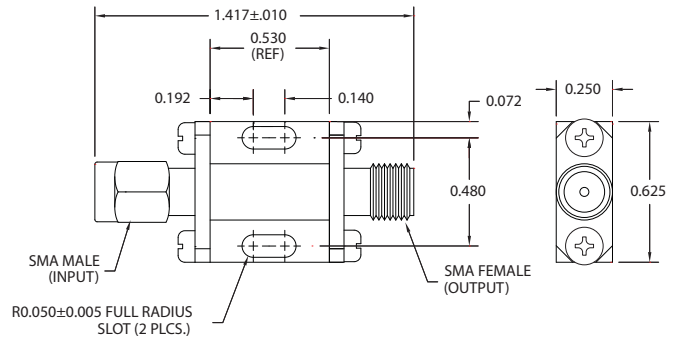
Maximally Flat Schottky Detectors

OUTLINE CASE STYLE M22



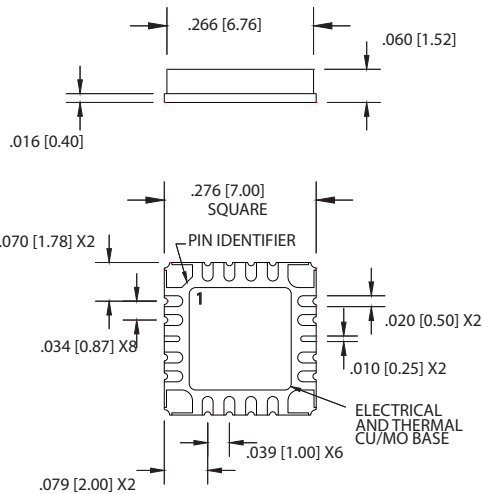
(TYPICAL WEIGHT = 1.55g)

OUTLINE CASE STYLE C36



(TYPICAL WEIGHT = 13.0g)

OUTLINE CASE STYLE M17

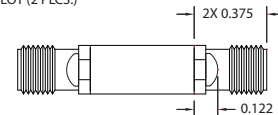
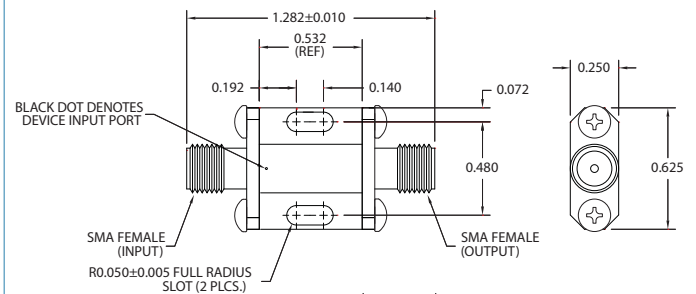


ATTENTION:
THIS IS A TOP VIEW (AS MOUNTED)
(TYPICAL WEIGHT = 0.18g)

PINOUT MATRIX			
PIN	FUNCTION	PIN	FUNCTION
1	N/C	9	N/C
2	GND	10	N/C
3	RF INPUT	11	GND
4	GND	12	OUTPUT
5	N/C	13	GND
6	N/C	14	N/C
7	N/C	15	N/C
8	N/C	16	N/C

NOTE: FOR BEST ELECTRICAL PERFORMANCE BASE AND CORNER TAB MUST BE GROUNDED

OUTLINE CASE STYLE C37



(TYPICAL WEIGHT = 13.0g)



Padded Zero Bias Schottky Detectors

Detectors with internal attenuators are often requested. They are typically used in circuits where an improved RF match is needed or where the power levels applied are higher than is typical for low level detectors. Frequently, they are used in laboratory applications with associated instruments such as broadband power leveling or monitoring. These detectors are all zero bias, making them convenient to use.

Features

- Superior Flatness vs. Frequency
- Wide Frequency Range
- Improved Return Loss
- Higher Power Handling

PADDED ZERO BIAS SCHOTTKY DETECTORS

Frequency Range (GHz)	Part Number	Flatness vs Frequency (+/-dB)	TSS (dBm)	Internal Attenuation (dB)	Low Level Sensitivity (mV/mW)	Standard Case Styles	Optional Case Styles
2 - 4	ACSP-2579NZ	0.2	-45	6	500	C3	C8,C15
0.01 - 8	ACSP-2539NZ	0.5	-45	6	500	C3	C8,C15,C32
7.9 - 8.4	ACSP-2518NZ	0.1	-45	6	500	C3	C8,C15,C32
7.9 - 8.4	ACSP-2519NZ	0.1	-48	3	1000	C3	C8,C15,C32
0.01 - 12.4	ACSP-2663NZ	0.5/octave	-45	6	500	C3	C8,C15,C32
0.01 - 18	ACSP-2544NZ	0.5/octave	-45	6	500	C3	C15,C32
0.01 - 18	ACSP-2551NZ	0.5/octave	-44	7	400	C3	C15,C32
5 - 18	ACSP-2521NZ	0.5/octave	-44	6	500	C3	C15,C32
0.01 - 20	ACSP-2643NZ	0.5/octave	-46	3	1000	C3	C15,C32
0.01 - 20	ACSP-2644NZ	1.0	-44	7	500	C3	C15,C32

NOTES

1. Available in both negative and positive polarities, substitute "N" or "P" in part number.
2. Measured into an open circuit load (>10k ohm).
3. Video protection is available on most models. This feature helps to prevent damage to the detector diode from incidents occurring at the video port. Transient electromagnetic spikes, static contact, or voltage surges can easily damage a detector diode. A video protection diode will clamp the voltage at a value less than the detector breakdown voltage. NOTE: Inclusion of this protection will cause the output voltage to compress and clamp. This occurs at about +10dBm input to the detector. If operation above +10dBm is required then the output protection should be modified or excluded. Contact the factory for assistance.

EACH DETECTOR MODEL CONTAINS

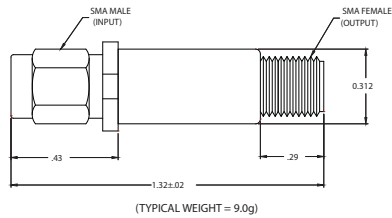
- DC return
- RF bypass capacitor
- Detector diode

APPLICATIONS

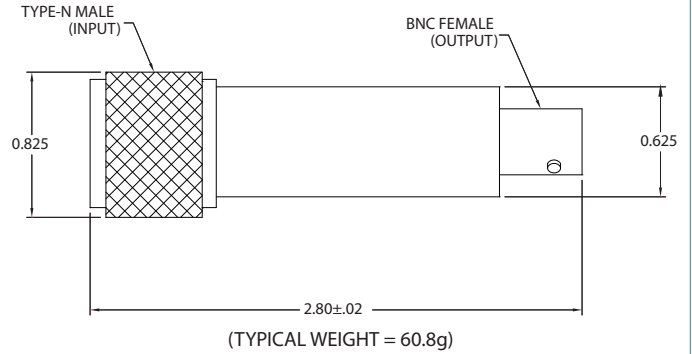
- Transmitter Monitoring
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators
- Laboratory Test Equipment

Padded Zero Bias Schottky Detectors

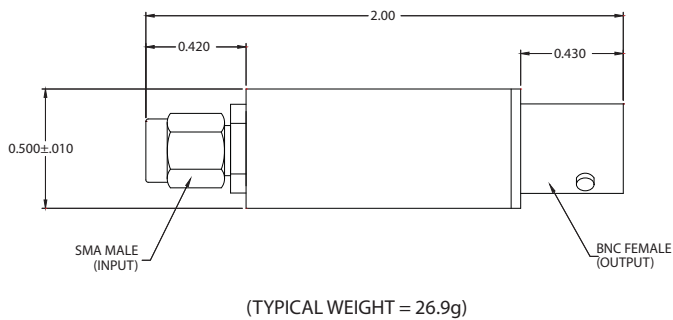
OUTLINE CASE STYLE C3



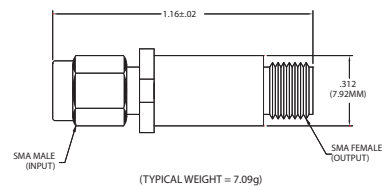
OUTLINE CASE STYLE C8



OUTLINE CASE STYLE C15



OUTLINE CASE STYLE C32



SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017
 Stabilization Bake per MIL-STD-883, Method 1008
 Temperature Cycle per MIL-STD-883, Method 1010
 Constant Acceleration per MIL-STD-883, Method 2001
 Burn-in per MIL-STD-883, Method 1015
 Leak Test per MIL-STD-883, Method 1014
 External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

Example: ACSP-2663NZC3
 ACSP-2663: Bolt Channel Schottky Detector, 8 -18GHz
 N: Negative output polarity
 Z: Zero bias version (Omit for biased version)
 C3: Package



Coaxial Tunnel Diode Detectors

Superior performance and high reliability are designed into these detectors. They offer extremely stable output voltage over wide temperature excursions, typically $\pm 0.15\text{dB}$ from -65°C to $+100^\circ\text{C}$ at 1GHz and approx. $\pm 0.3\text{dB}$ at 18GHz. No bias is required for operation. Designs are available, in selected frequency bands, from 100MHz (or lower) to 18GHz. Typical output impedance is in the range of 95Ω to 125Ω . This allows for fast pulsed video response and use in wide bandwidth requirements. Video bandwidths may be modified by selection of the RF bypass capacitor and load value. Square law typically ranges from TSS up to -17dBm . The upper limit can be raised as high as -13dBm with selected load values. The output polarity is usually negative but can be made positive if requested.

Features

- Exceptional Temperature Stability
- Low Video Resistance (112Ω typical)
- Flat Output vs. Frequency Over Broadband Performance
- Very Fast Pulse Response
- No Bias Required
- Flexible Design Options
- Environmental specifications are standard.

COAXIAL TUNNEL DIODE DETECTORS

Frequency Range (GHz)	Part Number	Minimum Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical TSS (dBm)	Typical VSWR	Nominal Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.1 - 0.5	ACTP-1523N	800	0.3	-51	2.5:1	270	C3	C8,C15,C62
0.1 - 1	ACTP-1572N	900	0.4	-51	2.5:1	270	C3	C8,C15,C62
0.5 - 1	ACTP-1524N	800	0.2	-51	2.5:1	39	C3	C8,C15
0.1 - 2	ACTP-1629N	900	0.35	-51	2.3:1	75	C3	C8,C15,C62
0.5 - 2	ACTP-1501N	800	0.35	-51	2.3:1	39	C3	C15
1 - 2	ACTP-1525N	800	0.25	-51	2.5:1	20	C3	C15
0.1 - 4	ACTP-1573N	800	0.3	-51	2.3:1	75	C3	C8,C15,C62
2 - 4	ACTP-1502N	800	0.2	-51	2.3:1	20	C3	C15
2 - 6	ACTP-1514N	800	0.5	-51	2.3:1	20	C3	C32,C5,C15
1 - 12	ACTP-1663N	700	0.85	-50	2.5:1	20	C3	C8,C15,C62
2 - 8	ACTP-1555N	750	0.5	-51	2.5:1	20	C3	C8,C15
4 - 8	ACTP-1503N	750	0.4	-51	2.5:1	9	C3	C32
4 - 8	ACTP-1648N	650	0.4	-50	2.0:1	12	C3	C8, 15
6 - 12	ACTP-1583N	750	0.4	-50	2.5:1	12	C3	C8,C15
8 - 12	ACTP-1504N	700	0.4	-50	2.4:1	9	C3	-
2 - 18	ACTP-1528N	650	1.0	-50	2.8:1	12	C3	C32
0.5 - 18	ACTP-1584N	600	1.3	-50	3.0:1	20	C3	C32,C15
1 - 18	ACTP-1625N	650	1.1	-50	2.7:1	20	C3	C32,C15
6 - 18	ACTP-1563N	600	0.9	-50	2.8:1	12	C3	C32,C15
7 - 18	ACTP-1662N	650	1.0	-50	2.7:1	12	C3	C32
8 - 18	ACTP-1506N	650	0.7	-50	2.3:1	12	C3	-
12 - 18	ACTP-1505N	700	0.4	-51	2.1:1	9	C3	-

NOTES

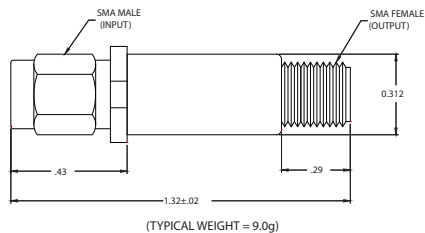
1. Available in both negative and positive polarities, substitute "N" or "P" in part number.
2. Diode values can be changed to alter the level of sensitivity. As sensitivity is increased, VSWR will degrade. VSWR will improve as sensitivity is lowered. Flatness and TSS will also be influenced by these changes. If your applications require something special, please contact the factory.
3. Tangential Signal Sensitivity (TSS) is a measure of low level sensitivity with respect to noise. It is measured using a video amplifier with a 2MHz bandwidth and a 3dB noise figure.
4. VSWR measured at or below -20dBm input power level.
5. Video capacitance is used for RF bypass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown are needed.

APPLICATIONS

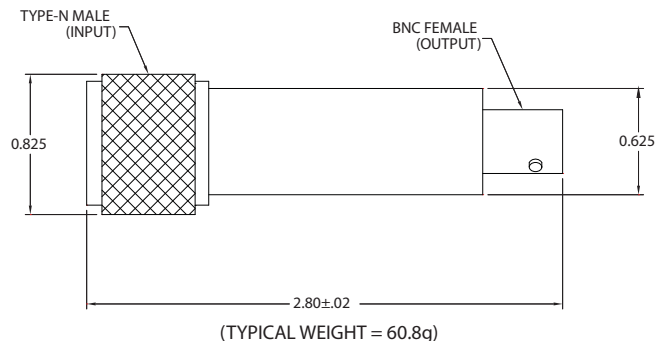
- Transmitter Monitoring
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

Coaxial Tunnel Diode Detectors

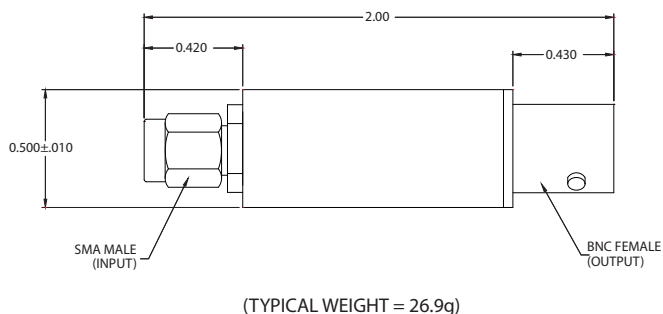
OUTLINE CASE STYLE C3



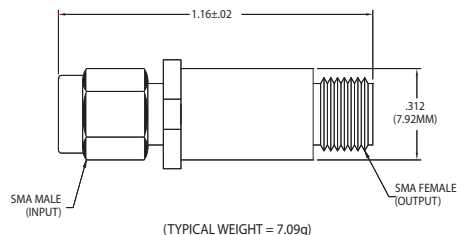
OUTLINE CASE STYLE C8



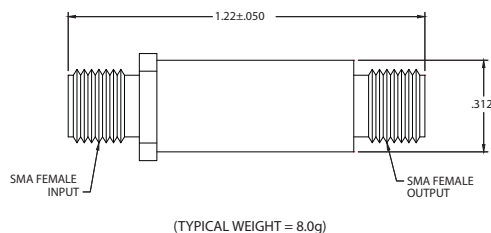
OUTLINE CASE STYLE C15



OUTLINE CASE STYLE C32



OUTLINE CASE STYLE C62



SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017

Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017

Stabilization Bake per MIL-STD-883, Method 1008

Temperature Cycle per MIL-STD-883, Method 1010

Constant Acceleration per MIL-STD-883, Method 2001

Burn-in per MIL-STD-883, Method 1015

External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

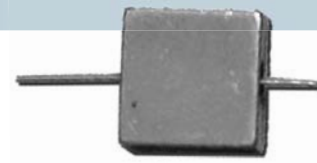
Example: ACTP-1555NC3-12

ACTP-1555: Coaxial Tunnel Diode Detector, 2 -8GHz

N: Negative output polarity

C3: Package

12: 12pF custom video capacitance
(Omit for standard value)



Tunnel Diode Detectors

The detectors listed are standard products. There are many possible variations, which can be selected as options. Package configurations can be changed if desired. Performance characteristics may be modified to meet special requirements (e.g. the sensitivity might be moved higher or lower with a corresponding effect on VSWR). RF bypass capacitance values can be selected on some models. Contact the factory for special needs.

Features

- Exceptional Temperature Stability
- Low Video Resistance (112Ω typical)
- Flat Output vs. Frequency Over Broadband Performance
- Very Fast Pulse Response
- No Bias Required
- Flexible Design Options

TUNNEL DIODE DETECTORS

Frequency Range (GHz)	Part Number	Minimum Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical TSS (dBm)	Typical VSWR	Nominal Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.005 - 0.5	ACTM-1078N	800	0.2	-50	2.2:1	1000	M12*	M35
0.05 - 0.5	ACTM-1155N	700	0.3	-49	2.2:1	470	M12*	M35
0.01 - 0.75	ACTM-1080N	800	0.3	-50	2.4:1	1000	M12*	M35
0.1 - 1	ACTM-1037N	900	0.2	-51	2.3:1	270	M12*	M34
0.01 - 2	ACTM-1069N	400	0.3	-49	1.5:1	1000	M12*	M35
0.1 - 2	ACTM-1071N	900	0.2	-51	2.0:1	75	M12*	M35
0.5 - 2	ACTM-1001N	900	0.25	-51	2.5:1	75	M12*	M34,M47
1 - 2	ACTM-1013N	850	0.2	-51	1.9:1	20	M12*	M34,M35,M47,M51
0.1 - 4	ACTM-1073N	800	0.25	-50	2.0:1	75	M12*	—
0.5 - 4	ACTM-1054N	800	0.35	-51	2.0:1	39	M12*	M34,M35,M47,M51
2 - 4	ACTM-1002N	850	0.35	-51	2.0:1	39	M12*	M34,M35,M47,M51
0.1 - 6	ACTM-1017N	700	0.35	-50	2.2:1	75	M12*	—
2 - 6	ACTM-1006N	900	0.4	-51	2.5:1	20	M12*	M51
2 - 8	ACTM-1007N	750	0.5	-50	2.5:1	20	M12*	M51
4 - 8	ACTM-1003N	800	0.35	-51	1.9:1	20	M12*	M51
8 - 12	ACTM-1012N	650	0.4	-50	2.0:1	12	M12*	M51
0.5 - 18	ACTM-1020N	600	1.25	-49	3.3:1	20	M12*	—
2 - 18	ACTM-1009N	650	1.0	-50	3.0:1	20	M12*	—
6 - 18	ACTM-1058N	700	1.0	-49	2.5:1	9	M12*	M51
8 - 18	ACTM-1066N	700	0.9	-49	2.5:1	9	M12*	—
1 - 20	ACTM-1144N	600	1.3	-49	3.0:1	20	M12*	M51

*Application note regarding drop in modules.

NOTES

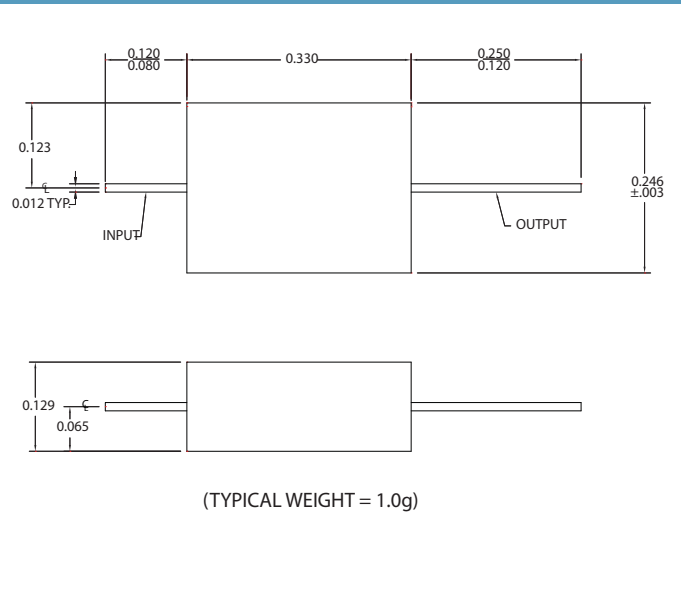
1. Available in both negative and positive polarities, substitute "N" or "P" in part number.
2. Diode values can be changed to alter the level of sensitivity. As sensitivity is increased, VSWR will degrade. VSWR will improve as sensitivity is lowered. Flatness and TSS will also be influenced by these changes. If your applications require something special, please contact the factory.
3. Tangential Signal Sensitivity (TSS) is a measure of low level sensitivity with respect to noise. It is measured using a video amplifier with a 2MHz bandwidth and a 3dB noise figure.
4. VSWR measured at or below -20dBm input power level.
5. Video capacitance is used for RF bypass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown are needed.

APPLICATIONS

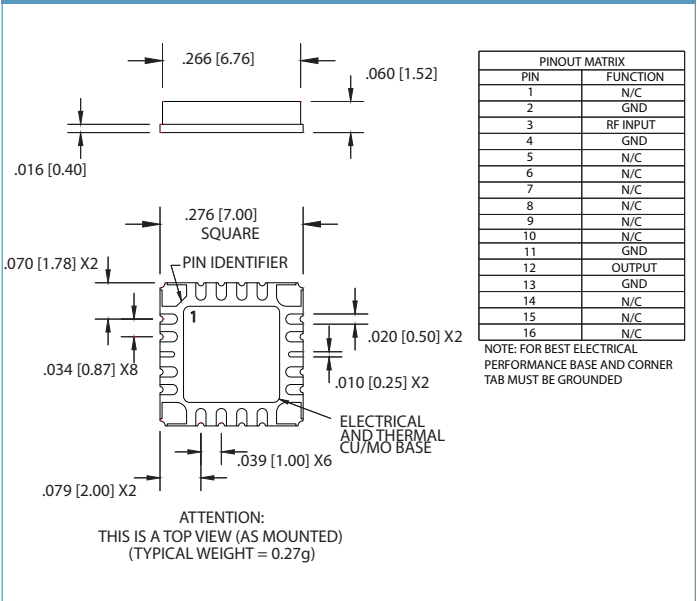
- Transmitter Monitoring
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

Tunnel Diode Detectors

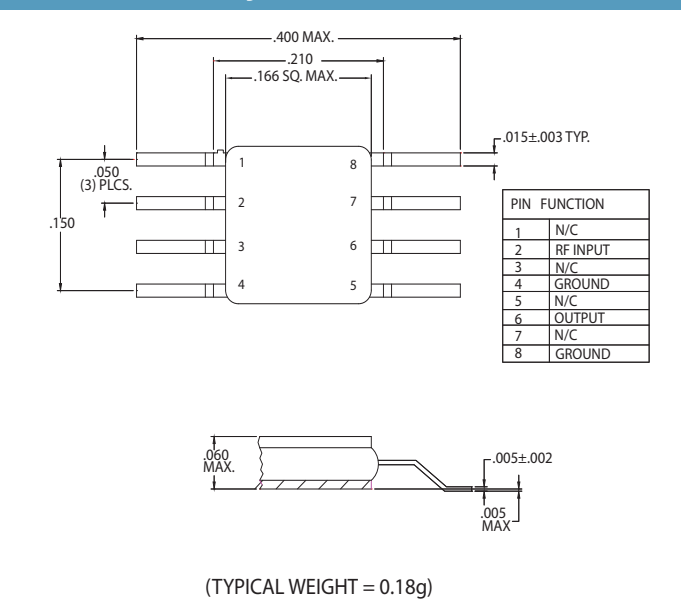
OUTLINE CASE STYLE M12



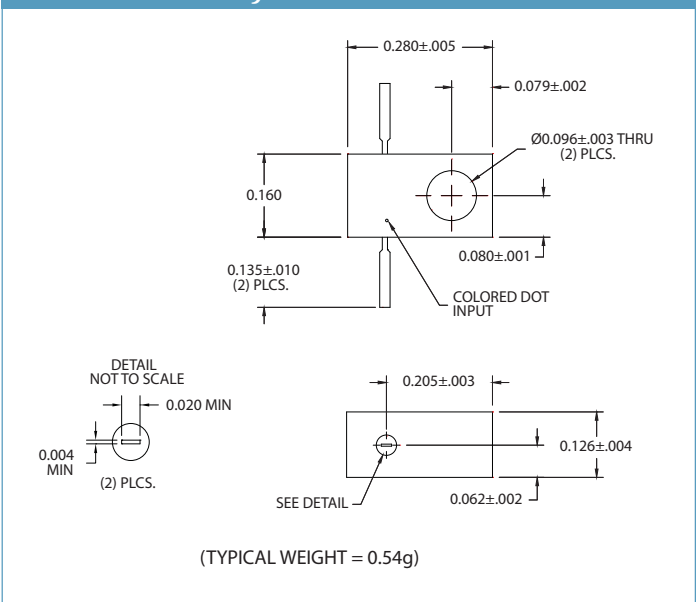
OUTLINE CASE STYLE M17



OUTLINE CASE STYLE M47



OUTLINE CASE STYLE M51



SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017
Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017
Stabilization Bake per MIL-STD-883, Method 1008
Temperature Cycle per MIL-STD-883, Method 1010
Constant Acceleration per MIL-STD-883, Method 2001
Burn-in per MIL-STD-883, Method 1015
External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

Example: ACTM-1002NM12-20
ACTP-1002: Coaxial Tunnel Diode Module, 2 -4GHz
N: Negative output polarity
M12: Package
20: 20pF custom video capacitance (Omit for standard value)



High Frequency Tunnel Detectors

Exceptional thermal stability and flatness vs. frequency characterize these tunnel detectors from Aeroflex Control Components, Inc. Several models are available which operate over all or a portion of the frequency range of 18 to 40 GHz. The temperature stability is +/- 0.3dB over the range of -65°C to +100°C. The typical output impedance is 115Ω. This allows for extremely fast video response when operating in the square law range, typically -20dBm or lower. The input power rating is +14dBm maximum.

Features

- Exceptional Temperature Stability
- Low Video Resistance (115Ω typical)
- Broadband Performance
- No Bias Required

HIGH FREQUENCY TUNNEL DETECTORS

Frequency Range (GHz)	Part Number	Flatness vs Frequency (+/-dB)	Minimum Output Voltage (mV)	Standard Case Styles	Optional Case Styles
18 - 26	ACTP-1799N	0.5	4	C36	C37,M61
18 - 30	ACTP-1796N	0.5	4	C7	C63,M61
26 - 36	ACTP-1798N	1	4	C7	C63,M61
36 - 39	ACTP-1797N	0.4	4	C7	C63M61
18 - 40	ACTP-1795N	1	4	C7	C63,M61

SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017

Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017

Stabilization Bake per MIL-STD-883, Method 1008

Temperature Cycle per MIL-STD-883, Method 1010

Constant Acceleration per MIL-STD-883, Method 2001

Burn-in per MIL-STD-883, Method 1015

External Visual per MIL-STD-883, Method 2009

EACH DETECTOR MODEL CONTAINS

DC return

RF bypass capacitor

Detector diode

APPLICATIONS

Transmitter Monitoring

Missile Guidance Systems

Input to Low-Noise Amplifiers

Broadband Or Narrowband ECM Receivers

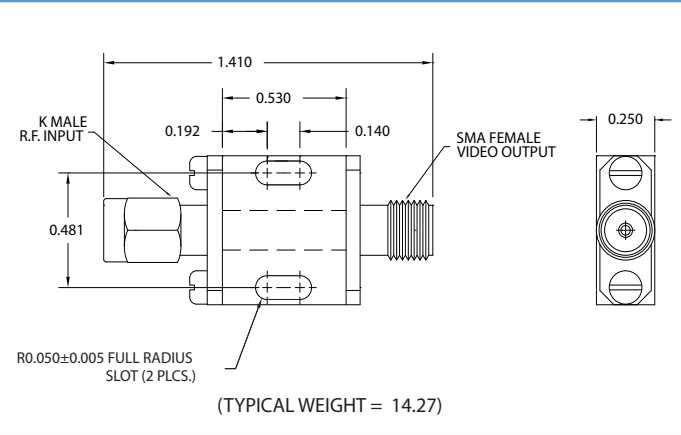
Power and Signal Monitors

Doppler Radar and Beacon Receivers

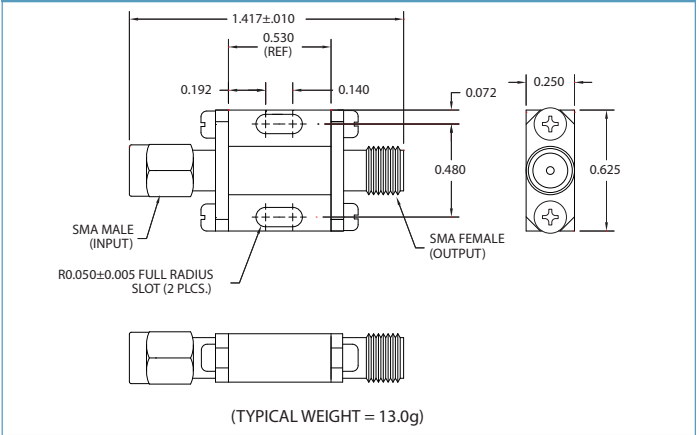
Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

High Frequency Tunnel Detectors

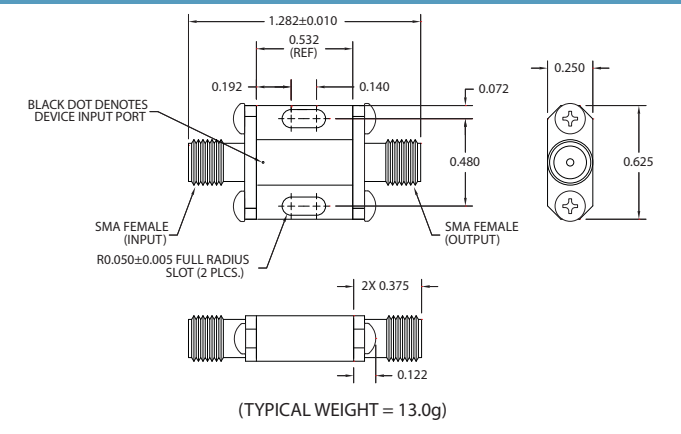
OUTLINE CASE STYLE C7



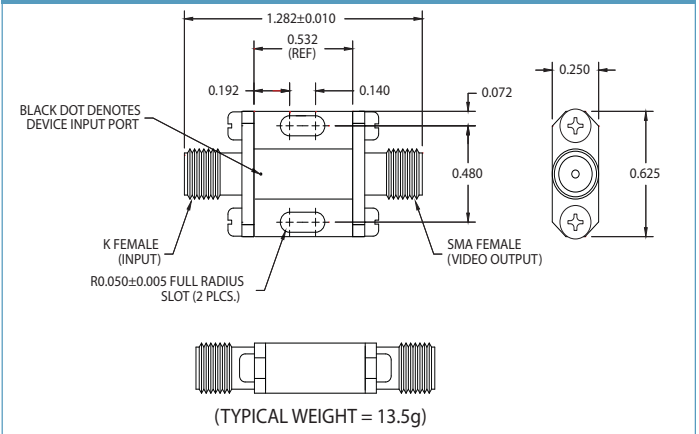
OUTLINE CASE STYLE C36



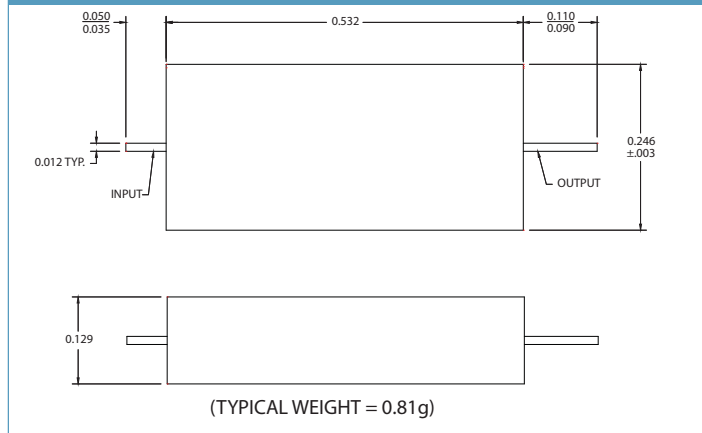
OUTLINE CASE STYLE C37



OUTLINE CASE STYLE C63

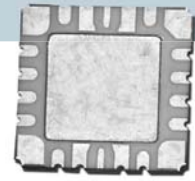


OUTLINE CASE STYLE M61



PART NUMBER ORDERING INFORMATION

Example: ACTP-1795NC7
 ACTP-1795: High Frequency Tunnel Diode Detector, 18 -40GHz
 N: Negative output polarity
 C7: Package



Surface Mount Detectors

Aeroflex Control Components offers a series of tunnel detectors built in surface mount modules. These modules include complete detector circuits with DC returns and RF bypass capacitors. Options include input pads or limiters to modify the operational range or offer input protection. The small size of surface mount packages allows for easier design and lower cost. They offer high reliability and are hermetically sealed, making them ideal for operation in harsh environments. Thermal stability is one of the prime advantages of tunnel diode detectors. Frequencies range from 10MHz to 4GHz. The output will not vary more than +/-0.15dB over the temperature range of -65°C to +100°C at these low frequencies. They have high sensitivity without any bias needed for operation. Standard output polarity is negative, but positive polarity output is an option.

Features

- Thermal Stability
- Small Size
- No Bias Required
- Low Video Impedance

SURFACE MOUNT DETECTORS

Frequency Range (GHz)	Part Number	Minimum Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical VSWR	Standard Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.01 - 0.5	ACTM-1114N	800	0.3	2.3:1	270	M47	M10, M17
0.25 - 0.75	ACTM-1133N	900	0.2	2.3:1	270	M47	M10, M17
0.5 - 1	ACTM-1146N	1000	0.2	2.3:1	270	M47	M10, M17
0.5 - 2	ACTM-1136N	1000	0.2	2.3:1	75	M47	M10, M17
1 - 2	ACTM-1137N	1000	0.2	2.3:1	75	M47	M10, M17
0.1 - 4	ACTM-1129N	900	0.4	2.3:1	270	M47	M10, M17
2 - 4	ACTM-1130N	900	0.3	2.3:1	12	M47	M10, M17

NOTES

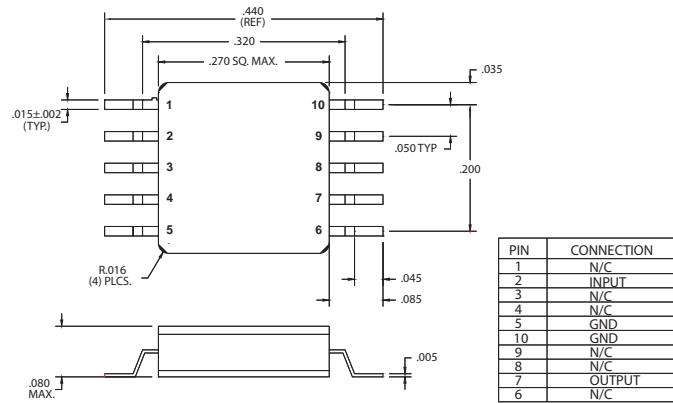
1. Available in both negative and positive polarities, substitute "N" or "P" in part number.
2. Diode values can be changed to alter the level of sensitivity. As sensitivity is increased, VSWR will degrade. VSWR will improve as sensitivity is lowered. Flatness and TSS will also be influenced by these changes. If your applications require something special, please contact the factory.
3. VSWR measured at or below -20dBm input power level.
4. Video capacitance is used for RF bypass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown are needed.

APPLICATIONS

- Transmitter Monitoring
- Missile Guidance Systems
- Input to Low-Noise Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

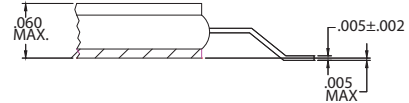
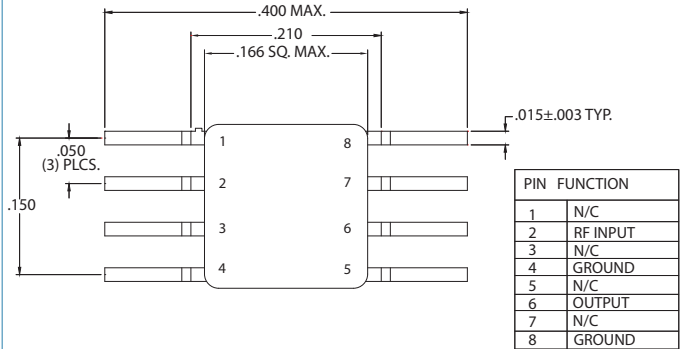
Surface Mount Detectors

OUTLINE CASE STYLE M10



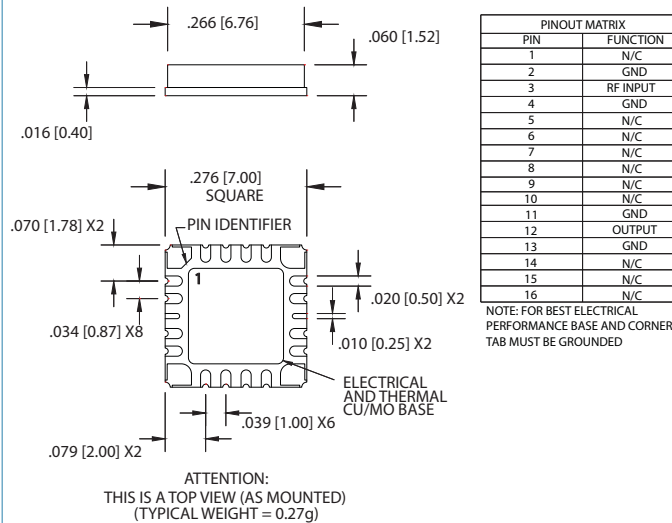
(TYPICAL WEIGHT = 0.27g)

OUTLINE CASE STYLE M47



(TYPICAL WEIGHT = 0.18g)

OUTLINE CASE STYLE M17



SCREENING

Standard Screening:

Internal Visual per MIL-STD-883, Method 2017

Temperature Cycle: -65°C to +100°C, 10 cycles

Optional High-Rel Screening (Ref MIL-PRF-38534):

Internal Visual per MIL-STD-883, Method 2017

Stabilization Bake per MIL-STD-883, Method 1008

Temperature Cycle per MIL-STD-883, Method 1010

Constant Acceleration per MIL-STD-883, Method 2001

Burn-in per MIL-STD-883, Method 1015

Leak Test per MIL-STD-883, Method 1014

External Visual per MIL-STD-883, Method 2009

PART NUMBER ORDERING INFORMATION

Example: ACTM-1130NM47-20

ACTM-1130: Surface Mount Tunnel Detector, 2 -4GHz

N: Negative output polarity

M47: Package

20: 20pF custom video capacitance
(Omit for standard value)

Single-Pole, Single-Throw Switches

NOTES

DC Bias (Standard)	+5V ±0.5V @ 50mA max -15V ±3V @ 50mA max
DC Bias (-5 option)	+5V ±0.5V @ 60mA max -5V ±0.5V @ 60mA max
DC Bias (-12 option)	+15V ±3V @ 50mA max -15V ±3V @ 50mA max
Control	TTL 0 = Low Loss TTL 1 = Isolation
Absorptive switch	50 ohm terminations at both RF ports (in isolation mode)

Switching speed is defined as 50%TTL to 90% (t-on) and 50%TTL to 10%RF (t-off)

PART NUMBER ORDERING INFORMATION

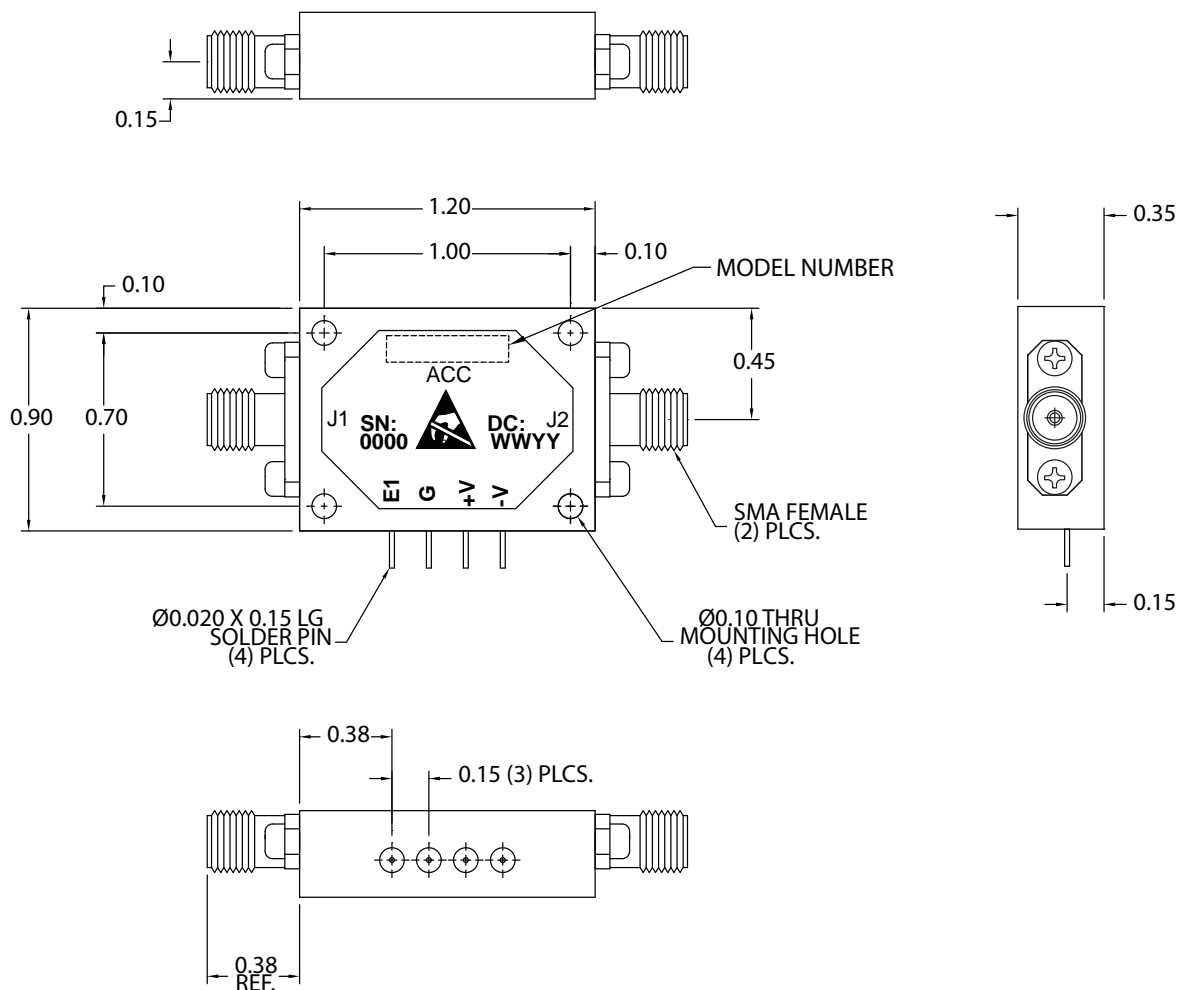
Add "-RC" suffix	RoHS-compliant
Add "-H" suffix	Hermetic seal
Add "-5" suffix	±5V DC supplies
Add "-5-RC" suffix	±5V DC supplies, RoHS-compliant
Add "-5-H" suffix	±5V DC supplies, Hermetic seal
Add "-12" suffix	±12V to 18V DC supplies
Add "-12-RC" suffix	±12V to 18V DC supplies, RoHS-compliant
Add "-12-H" suffix	±12V to 18V DC supplies, Hermetic seal

*For Screening Specifications, Environmental specifications and Custom Options, please refer to page 46.

MECHANICAL SPECIFICATIONS

Case Style	S1 Outline
Finish	Gold Plate per MIL-G-45204
Bias & Control Pins	ø0.02" x 0.15" long
Weight	20g max
Mounting	ø0.10" through holes (4) places

OUTLINE CASE STYLE S1





Single-Pole, Two-Throw Switches

The S2 series of single pole, two throw PIN diode switches span the frequency range of 10MHz to 18GHz and available with with absorptive or reflective inputs. The switches are available in a wide variety of standard frequency ranges from cost-effective narrowband to high-performance broadband. Each switch incorporates a TTL-compatible driver for convenient system integration and operates from +5V and -12V to -18VDC power supplies. All switches incorporate DC blocks at the RF ports. Standard screened switches incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The switches are also available with hermetic seal and high-rel screening for military and aerospace applications.

Applications

- EW Systems
- Communications Systems
- Antenna Selectors
- Test Equipment
- Electronic Simulators
- Filter Selectors

REFLECTIVE SWITCHES					ABSORPTIVE SWITCHES				Switching Speed (nsec max)	MAX RF (W CW)
Frequency Range (GHz)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)		
0.01 – 0.1	S2H1R	0.8	1.5	75	S2H1	0.9	1.5	80	250	1
0.01 – 0.5	S2H2R	0.9	1.5	75	S2H2	1.0	1.5	80	250	1
0.01 – 1	S2H3R	1.2	1.5	75	S2H3	1.3	1.5	80	250	1
0.01 – 2	S2H4R	1.8	1.6	75	S2H4	1.9	1.6	80	250	1
0.01 – 4	S2H5R	2.6	1.8	75	S2H5	2.7	1.8	80	250	1
0.01 – 6	S2H6R	2.8	1.9	75	S2H6	2.9	1.9	80	250	1
0.1 – 0.5	S2V1R	0.9	1.5	80	S2V1	1.0	1.5	80	250	1
0.1 – 1	S2V2R	1.2	1.5	80	S2V2	1.3	1.5	80	250	1
0.1 – 2	S2V3R	1.8	1.6	80	S2V3	1.9	1.6	80	250	1
0.1 – 4	S2V4R	2.6	1.8	75	S2V4	2.9	1.8	80	250	1
0.1 – 8	S2V5R	3.2	2.0	70	S2V5	3.3	2.0	75	250	1
0.1 – 10	S2V6R	3.5	2.0	70	S2V6	3.6	2.0	75	250	1
0.5 – 1	S2U1R	1.0	1.5	80	S2U1	1.1	1.5	80	100	1
0.5 – 2	S2U2R	1.4	1.6	80	S2U2	1.5	1.6	80	100	1
0.5 – 4	S2U3R	2.0	1.8	75	S2U3	2.1	1.8	80	100	1
0.5 – 6	S2U4R	2.2	1.9	75	S2U4	2.3	1.9	75	100	1
0.5 – 12	S2U5R	2.6	2.0	70	S2U5	2.8	2.0	70	100	0.5
0.5 – 18	S2U6R	3.0	2.0	65	S2U6	3.2	2.0	65	100	0.5
1 – 2	S2L1R	0.9	1.5	80	S2L1	1.0	1.5	85	100	1
1 – 4	S2L2R	1.2	1.6	80	S2L2	1.3	1.6	85	100	1
1 – 8	S2L3R	1.9	1.8	75	S2L3	2.0	1.8	80	100	1
1 – 10	S2L4R	2.0	2.0	70	S2L4	2.1	2.0	75	100	0.5
1 – 12	S2L5R	2.1	2.0	65	S2L5	2.2	2.0	70	100	0.5
1 – 14	S2L6R	2.4	2.0	65	S2L6	2.6	2.0	70	100	0.5
1 – 18	S2L7R	2.9	2.0	60	S2L7	3.1	2.0	65	100	0.5
2 – 4	S2S1R	1.1	1.6	70	S2S1	1.2	1.6	75	100	1
2 – 6	S2S2R	1.4	1.7	70	S2S2	1.5	1.7	75	100	1
2 – 8	S2S3R	1.8	1.8	70	S2S3	1.9	1.8	75	100	1
2 – 10	S2S4R	1.9	1.8	65	S2S4	2.1	1.8	70	100	0.5
2 – 12	S2S5R	2.1	1.9	65	S2S5	2.2	1.9	70	100	0.5
2 – 16	S2S6R	2.7	2.0	60	S2S6	2.9	2.0	65	100	0.5
2 – 18	S2S7R	2.9	2.0	60	S2S7	3.1	2.0	65	100	0.5
4 – 8	S2C1R	1.7	1.6	70	S2C1	1.9	1.6	75	100	1
4 – 10	S2C2R	1.8	1.7	65	S2C2	2.1	1.7	70	100	1
4 – 12	S2C3R	2.0	1.8	65	S2C3	2.2	1.8	70	100	0.5
4 – 16	S2C4R	2.6	2.0	60	S2C4	2.9	2.0	65	100	0.5
4 – 18	S2C5R	2.8	2.0	60	S2C5	3.0	2.0	65	100	0.5
6 – 10	S2C6R	1.9	1.7	65	S2C6	2.1	1.7	70	100	1
6 – 12	S2C7R	2.0	1.8	65	S2C7	2.2	1.8	70	100	0.5
6 – 18	S2C8R	2.8	2.0	60	S2C8	3.0	2.0	65	100	0.5
8 – 10	S2X1R	1.8	1.7	65	S2X1	2.1	1.7	70	100	0.5
8 – 12	S2X2R	1.9	1.8	65	S2X2	2.2	1.8	70	100	0.5
8 – 18	S2X3R	2.8	2.0	60	S2X3	3.0	2.0	65	100	0.5
10 – 18	S2K1R	2.8	2.0	60	S2K1	3.0	2.0	65	100	0.5
12 – 18	S2K2R	2.8	2.0	60	S2K2	3.0	2.0	65	100	0.5

Single-Pole, Two-Throw Switches

NOTES

DC Bias (Standard)	+5V ±0.5V @ 80mA max -15V ±3V @ 50mA max
DC Bias (-5 option)	+5V ±0.5V @ 100mA max -5V ±0.5V @ 60mA max
DC Bias (-12 option)	+15V ±3V @ 80mA max -15V ±3V @ 50mA max
Control Standard	TTL 0 = Low Loss TTL 1 = Isolation E1 controls J2 – J1 E2 controls J3 – J1
Single Bit Control (-1 option) (E2=N/C)	E1=0: J2 – J1 low loss, J3 – J1 isolation E1=1: J3 – J1 low loss, J2 – J1 isolation
Absorptive switch	50 ohm terminations at both RF ports (in isolation mode)

Switching speed is defined as 50%TTL to 90% (t-on) and 50%TTL to 10%RF (t-off)

*For Screening Specifications, Environmental specifications and Custom Options, please refer to page 46.

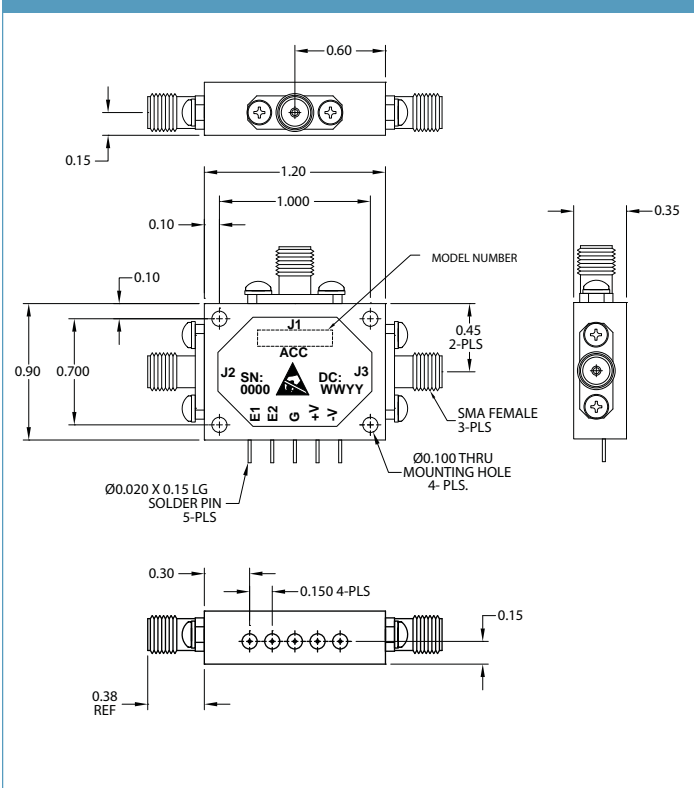
PART NUMBER ORDERING INFORMATION

Add "-RC" suffix	RoHS-compliant
Add "-H" suffix	Hermetic seal
Add "-5" suffix	±5V DC supplies
Add "-5-RC" suffix	±5V DC supplies, RoHS-compliant
Add "-5-H" suffix	±5V DC supplies, Hermetic seal
Add "-12" suffix	±12V to 18V DC supplies
Add "-12-RC" suffix	±12V to 18V DC supplies, RoHS-compliant
Add "-12-H" suffix	±12V to 18V DC supplies, Hermetic seal
Add "-1" suffix	Single bit logic control
Add "-1-RC" suffix	Single bit logic control, RoHS-compliant
Add "-1-H" suffix	Single bit logic control, Hermetic seal
Add "-1-5" suffix	Single bit logic control, ±5V DC supplies
Add "-1-5-RC" suffix	Single bit logic control, ±5V DC supplies, RoHS-compliant
Add "-1-5-H" suffix	Single bit logic control, ±5V DC supplies, Hermetic seal
Add "-1-12" suffix	Single bit logic control, ±12V to 18V DC supplies
Add "-1-12-RC" suffix	Single bit logic control, ±12V to 18V DC supplies, RoHS compliant
Add "-1-12-H" suffix	Single bit logic control, ±12V to 18V DC supplies, Hermetic seal

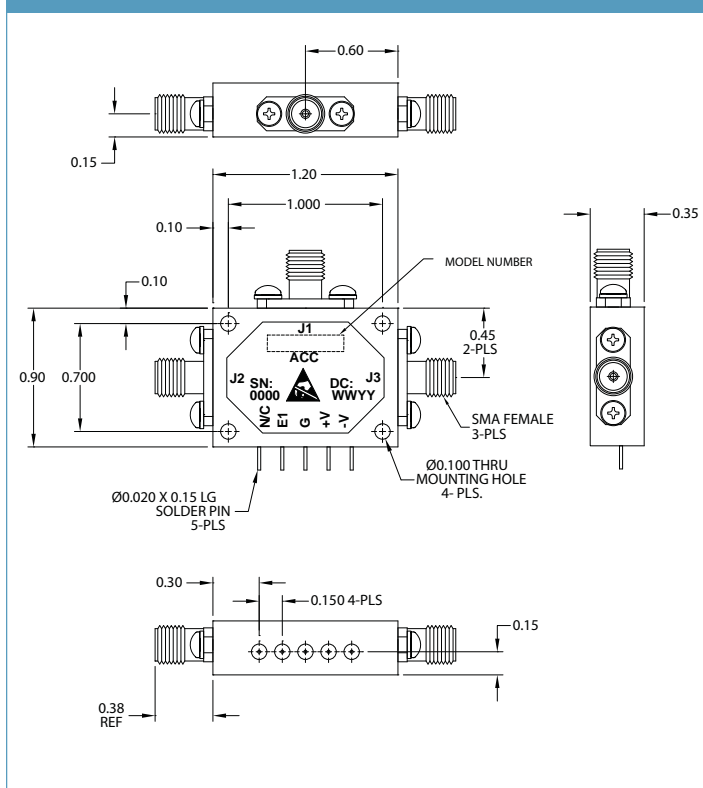
MECHANICAL SPECIFICATIONS

Case Styles	S2 Outline (Two bit control) S2-1 Outline (Single bit control)
Finish	Gold Plate per MIL-G-45204, Chem film per MIL-C-5541
Connectors	SMA Female per MIL-C-39012
Bias & Control Pins	Ø0.02" x 0.15" long
Weight	20g max
Mounting	Ø0.10" through holes (4) places

OUTLINE CASE STYLE S2



OUTLINE CASE STYLE S2-1





Single-Pole, Three-Throw Switches

The S3 series of single pole, three throw PIN diode switches span the frequency range of 10MHz to 18GHz and are available with absorptive or reflective inputs. The switches are available in a wide variety of standard frequency ranges from cost-effective narrowband to high-performance broadband. Each switch incorporates a TTL-compatible driver for convenient system integration and operates from +5V and -12V to -18V DC power supplies. All switches incorporate DC blocks at the RF ports. Standard screened switches incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The switches are also available with hermetic seal and high-rel screening for military and aerospace applications.

Applications

- EW Systems
- Communications Systems
- Antenna Selectors
- Test Equipment
- Electronic Simulators
- Filter Selectors

Frequency Range (GHz)	REFLECTIVE SWITCHES				ABSORPTIVE SWITCHES				Switching Speed (nsec max)	MAX RF (W CW)
	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)		
0.01 – 0.1	S3H1R	0.9	1.5	75	S3H1	1.0	1.5	80	250	1
0.01 – 0.5	S3H2R	1.0	1.5	75	S3H2	1.1	1.5	80	250	1
0.01 – 1	S3H3R	1.3	1.5	75	S3H3	1.4	1.5	80	250	1
0.01 – 2	S3H4R	1.9	1.6	75	S3H4	2.0	1.6	80	250	1
0.01 – 4	S3H5R	2.7	1.8	75	S3H5	2.8	1.8	80	250	1
0.01 – 6	S3H6R	2.9	1.9	75	S3H6	3.0	1.9	80	250	1
0.1 – 0.5	S3V1R	1.0	1.5	80	S3V1	1.1	1.5	80	250	1
0.1 – 1	S3V2R	1.3	1.5	80	S3V2	1.4	1.5	80	250	1
0.1 – 2	S3V3R	1.9	1.6	80	S3V3	2.0	1.6	80	250	1
0.1 – 4	S3V4R	2.7	1.8	75	S3V4	3.0	1.8	80	250	1
0.1 – 8	S3V5R	3.4	2.0	70	S3V5	3.5	2.0	75	250	0.5
0.1 – 10	S3V6R	3.7	2.0	70	S3V6	3.8	2.0	75	250	0.5
0.5 – 1	S3U1R	1.1	1.5	80	S3U1	1.2	1.5	80	100	1
0.5 – 2	S3U2R	1.5	1.6	80	S3U2	1.6	1.6	80	100	1
0.5 – 4	S3U3R	2.1	1.8	75	S3U3	2.2	1.8	80	100	1
0.5 – 6	S3U4R	2.3	1.9	70	S3U4	2.4	1.9	75	100	1
0.5 – 12	S3U5R	2.7	2.0	65	S3U5	2.8	2.0	70	100	0.5
0.5 – 18	S3U6R	3.2	2.0	60	S3U6	3.4	2.0	65	100	0.5
1 – 2	S3L1R	1.0	1.5	80	S3L1	1.1	1.5	85	100	1
1 – 4	S3L2R	1.3	1.6	80	S3L2	1.4	1.6	85	100	1
1 – 8	S3L3R	2.0	1.8	75	S3L3	2.1	1.8	80	100	0.5
1 – 10	S3L4R	2.1	2.0	70	S3L4	2.2	2.0	75	100	0.5
1 – 12	S3L5R	2.3	2.0	65	S3L5	2.4	2.0	70	100	0.5
1 – 14	S3L6R	2.6	2.0	65	S3L6	2.8	2.0	70	100	0.5
1 – 18	S3L7R	3.1	2.0	60	S3L7	3.3	2.0	65	100	0.5
2 – 4	S3S1R	1.2	1.6	70	S3S1	1.4	1.6	75	100	1
2 – 6	S3S2R	1.5	1.7	70	S3S2	1.6	1.7	75	100	1
2 – 8	S3S3R	1.9	1.8	70	S3S3	2.0	1.8	75	100	0.5
2 – 10	S3S4R	2.0	1.8	65	S3S4	2.2	1.8	70	100	0.5
2 – 12	S3S5R	2.3	1.9	65	S3S5	2.4	1.9	70	100	0.5
2 – 16	S3S6R	2.9	2.0	60	S3S6	3.1	2.0	65	100	0.5
2 – 18	S3S7R	3.1	2.0	60	S3S7	3.3	2.0	65	100	0.5
4 – 8	S3C1R	1.8	1.6	70	S3C1	2.0	1.6	75	100	0.5
4 – 10	S3C2R	1.9	1.7	65	S3C2	2.2	1.7	70	100	0.5
4 – 12	S3C3R	2.2	1.8	65	S3C3	2.4	1.8	70	100	0.5
4 – 16	S3C4R	2.8	2.0	60	S3C4	3.1	2.0	65	100	0.5
4 – 18	S3C5R	3.0	2.0	60	S3C5	3.2	2.0	65	100	0.5
6 – 10	S3C6R	2.0	1.7	65	S3C6	2.2	1.7	70	100	0.5
6 – 12	S3C7R	2.2	1.8	65	S3C7	2.4	1.8	70	100	0.5
6 – 18	S3C8R	3.0	2.0	60	S3C8	3.2	2.0	65	100	0.5
8 – 10	S3X1R	1.9	1.7	65	S3X1	2.2	1.7	70	100	0.5
8 – 12	S3X2R	2.1	1.8	65	S3X2	2.4	1.8	70	100	0.5
8 – 18	S3X3R	3.0	2.0	60	S3X3	3.2	2.0	65	100	0.5
10 – 18	S3K1R	3.0	2.0	60	S3K1	3.2	2.0	65	100	0.5
12 – 18	S3K2R	3.0	2.0	60	S3K2	3.2	2.0	65	100	0.5

Single-Pole, Three-Throw Switches

NOTES

DC Bias (Standard)	+5V ±0.5V @ 120mA max -15V ±3V @ 50mA max
DC Bias (-5 option)	+5V ±0.5V @ 150mA max -5V ±0.5V @ 60mA max
DC Bias (-12 option)	+15V ±3V @ 120mA max -15V ±3V @ 50mA max
Control	TTL 0 = Low Loss TTL 1 = Isolation E1 controls J2 – J1 E2 controls J3 – J1 E3 controls J4 – J1

Absorptive switch: Internal 50Ω terminations at J2, J3, and J4 (in isolation mode).

Switching speed is defined as 50%TTL to 90% (t-on) and 50%TTL to 10%RF (t-off)

PART NUMBER ORDERING INFORMATION

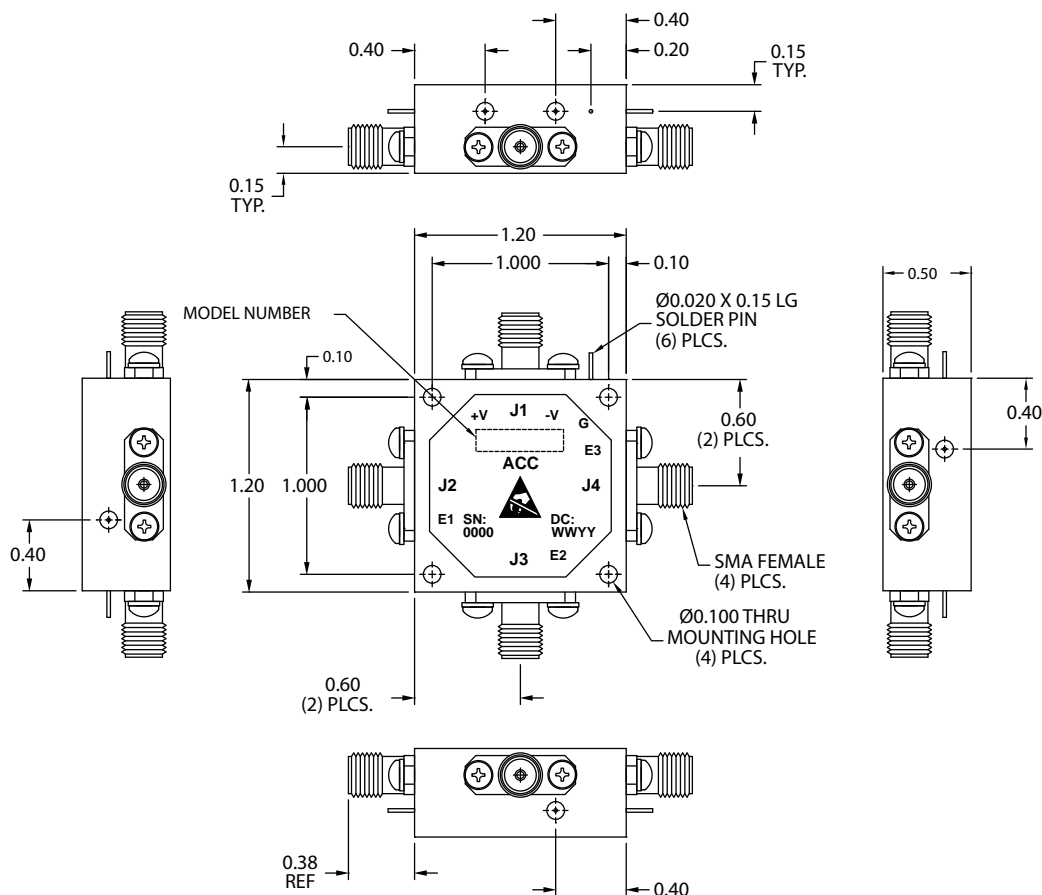
Add "-RC" suffix	RoHS-compliant
Add "-H" suffix	Hermetic seal
Add "-5" suffix	±5V DC supplies
Add "-5-RC" suffix	±5V DC supplies, RoHS-compliant
Add "-5-H" suffix	±5V DC supplies, Hermetic seal
Add "-12" suffix	±12V to 18V DC supplies
Add "-12-RC" suffix	±12V to 18V DC supplies, RoHS-compliant
Add "-12-H" suffix	±12V to 18V DC supplies, Hermetic seal

*For Screening Specifications, Environmental specifications and Custom Options, please refer to page 46.

MECHANICAL SPECIFICATIONS

Case Styles	S3 Outline
Finish	Gold plate per MIL-G-45204, Chem film per MIL-C-5541
Connectors	SMA Female per MIL-C-39012
Bias & Control Pins	ø0.02" x 0.15" long
Weight	35g max
Mounting	ø0.10" through holes (4) places

OUTLINE CASE STYLE S3





Single-Pole, Four-Throw Switches

The S4 series of single pole, four throw PIN diode switches span the frequency range of 10MHz to 18GHz and are available with absorptive or reflective inputs. The switches are available in a wide variety of standard frequency ranges from cost-effective narrowband to high-performance broadband. Each switch incorporates a TTL-compatible driver for convenient system integration and operates from +5V and -12V to -18V DC power supplies. All switches incorporate DC blocks at the RF ports. Standard screened switches incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The switches are also available with hermetic seal and high-rel screening for military and aerospace applications.

Applications

- EW Systems
- Communications Systems
- Antenna Selectors
- Test Equipment
- Electronic Simulators
- Filter Selectors

Frequency Range (GHz)	REFLECTIVE SWITCHES				ABSORPTIVE SWITCHES				Switching Speed (nsec max)	MAX RF (W CW)
	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)		
0.01 – 0.1	S4H1R	1.0	1.5	75	S4H1	1.1	1.5	80	250	1
0.01 – 0.5	S4H2R	1.1	1.5	75	S4H2	1.2	1.5	80	250	1
0.01 – 1	S4H3R	1.4	1.5	75	S4H3	1.5	1.5	80	250	1
0.01 – 2	S4H4R	2.0	1.6	75	S4H4	2.1	1.6	80	250	1
0.01 – 4	S4H5R	2.8	1.8	75	S4H5	2.9	1.8	80	250	1
0.01 – 6	S4H6R	3.0	1.9	75	S4H6	3.1	1.9	80	250	1
0.1 – 0.5	S4V1R	1.1	1.5	80	S4V1	1.2	1.5	80	250	1
0.1 – 1	S4V2R	1.4	1.5	80	S4V2	1.5	1.5	80	250	1
0.1 – 2	S4V3R	2.0	1.6	80	S4V3	2.1	1.6	80	250	1
0.1 – 4	S4V4R	2.8	1.8	75	S4V4	2.9	1.8	80	250	1
0.1 – 8	S4V5R	3.5	2.0	70	S4V5	3.6	2.0	75	250	0.5
0.1 – 10	S4V6R	3.8	2.0	70	S4V6	3.9	2.0	75	250	0.5
0.5 – 1	S4U1R	1.2	1.5	80	S4U1	1.3	1.5	80	100	1
0.5 – 2	S4U2R	1.6	1.6	80	S4U2	1.7	1.6	80	100	1
0.5 – 4	S4U3R	2.2	1.8	75	S4U3	2.3	1.8	80	100	1
0.5 – 6	S4U4R	2.5	1.9	70	S4U4	2.6	1.9	75	100	0.5
0.5 – 12	S4U5R	2.8	2.0	65	S4U5	3.0	2.0	70	100	0.5
0.5 – 18	S4U6R	3.4	2.0	60	S4U6	3.6	2.0	65	100	0.5
1 – 2	S4L1R	1.1	1.5	80	S4L1	1.2	1.5	85	100	1
1 – 4	S4L2R	1.4	1.6	80	S4L2	1.5	1.6	85	100	1
1 – 8	S4L3R	2.1	1.8	75	S4L3	2.2	1.8	80	100	0.5
1 – 10	S4L4R	2.2	2.0	70	S4L4	2.3	2.0	75	100	0.5
1 – 12	S4L5R	2.5	2.0	65	S4L5	2.6	2.0	70	100	0.5
1 – 14	S4L6R	2.8	2.0	65	S4L6	3.0	2.0	70	100	0.5
1 – 18	S4L7R	3.3	2.0	60	S4L7	3.7	2.0	65	100	0.5
2 – 4	S4S1R	1.3	1.6	70	S4S1	1.4	1.6	75	100	1
2 – 6	S4S2R	1.6	1.7	70	S4S2	1.7	1.7	75	100	0.5
2 – 8	S4S3R	2.0	1.8	70	S4S3	2.2	1.8	75	100	0.5
2 – 10	S4S4R	2.1	1.8	65	S4S4	2.3	1.8	70	100	0.5
2 – 12	S4S5R	2.5	1.9	65	S4S5	2.6	1.9	70	100	0.5
2 – 16	S4S6R	3.1	2.0	60	S4S6	3.3	2.0	65	100	0.5
2 – 18	S4S7R	3.3	2.0	60	S4S7	3.7	2.0	65	100	0.5
4 – 8	S4C1R	1.9	1.6	70	S4C1	2.2	1.6	75	100	0.5
4 – 10	S4C2R	2.0	1.7	65	S4C2	2.3	1.7	70	100	0.5
4 – 12	S4C3R	2.4	1.8	65	S4C3	2.6	1.8	70	100	0.5
4 – 16	S4C4R	3.0	2.0	60	S4C4	3.3	2.0	65	100	0.5
4 – 18	S4C5R	3.2	2.0	60	S4C5	3.4	2.0	65	100	0.5
6 – 10	S4C6R	2.1	1.7	65	S4C6	2.3	1.7	70	100	0.5
6 – 12	S4C7R	2.4	1.8	65	S4C7	2.6	1.8	70	100	0.5
6 – 18	S4C8R	3.2	2.0	60	S4C8	3.4	2.0	65	100	0.5
8 – 10	S4X1R	2.0	1.7	65	S4X1	2.3	1.7	70	100	0.5
8 – 12	S4X2R	2.3	1.8	65	S4X2	2.6	1.8	70	100	0.5
8 – 18	S4X3R	3.2	2.0	60	S4X3	3.4	2.0	65	100	0.5
10 – 18	S4K1R	3.2	2.0	60	S4K1	3.4	2.0	65	100	0.5
12 – 18	S4K2R	3.2	2.0	60	S4K2	3.4	2.0	65	100	0.5

Single-Pole, Four-Throw Switches

NOTES

DC Bias (Standard) +5V ±0.5V @ 160mA max
-15V ±3V @ 50mA max

DC Bias (-5 option) +5V ±0.5V @ 200mA max
-5V ±0.5V @ 60mA max

DC Bias (-12 option) +15V ±3V @ 160mA max
-15V ±3V @ 50mA max

Control Standard TTL 0 = Low Loss
TTL 1 = Isolation
E1 controls J2 – J1
E2 controls J3 – J1
E3 controls J4 – J1
E4 controls J5 – J1

Two-line control: (-2 option) E2 E1 Low loss path
0 0 J2 – J1
0 1 J3 – J1
1 0 J4 – J1
1 1 J5 – J1

Absorptive switch: Internal 50Ω terminations at J2, J3, J4 and J5 (in isolation mode).

Switching speed is defined as 50%TTL to 90% (t-on) and 50%TTL to 10%RF (t-off)

PART NUMBER ORDERING INFORMATION

Add "-RC" suffix RoHS-compliant

Add "-H" suffix Hermetic seal

Add "-5" suffix ±5V DC supplies

Add "-5-RC" suffix ±5V DC supplies, RoHS-compliant

Add "-5-H" suffix ±5V DC supplies, Hermetic seal

Add "-12" suffix ±12V to 18V DC supplies

Add "-12-RC" suffix ±12V to 18V DC supplies, RoHS-compliant

Add "-12-H" suffix ±12V to 18V DC supplies, Hermetic seal

Add "-2" Two-bit logic control

Add "-2-RC" suffix Two-bit logic control, RoHS-compliant

Add "-2-H" suffix Two-bit logic control, Hermetic seal

Add "-2-5" suffix: Two-bit logic control, ±5V DC supplies

Add "-2-5-RC" suffix Two-bit logic control, ±5V DC supplies, RoHS-compliant

Add "-2-5-H" suffix Two-bit logic control, ±5V DC supplies, Hermetic seal

Add "-2-12" suffix Two-bit logic control, ±12V to 18V DC supplies

Add "-2-12-RC" suffix Two-bit logic control, ±12V to 18V DC supplies, RoHS-compliant

Add "-2-12-H" suffix Two-bit logic control, ±12V to 18V DC supplies, Hermetic seal

*For Screening Specifications, Environmental specifications and Custom Options, please refer to page 46.

MECHANICAL SPECIFICATIONS

Case Styles S4 Outline (Standard logic)
S4-2 Outline (Two-bit logic)

Finish Gold plate per MIL-G-45204

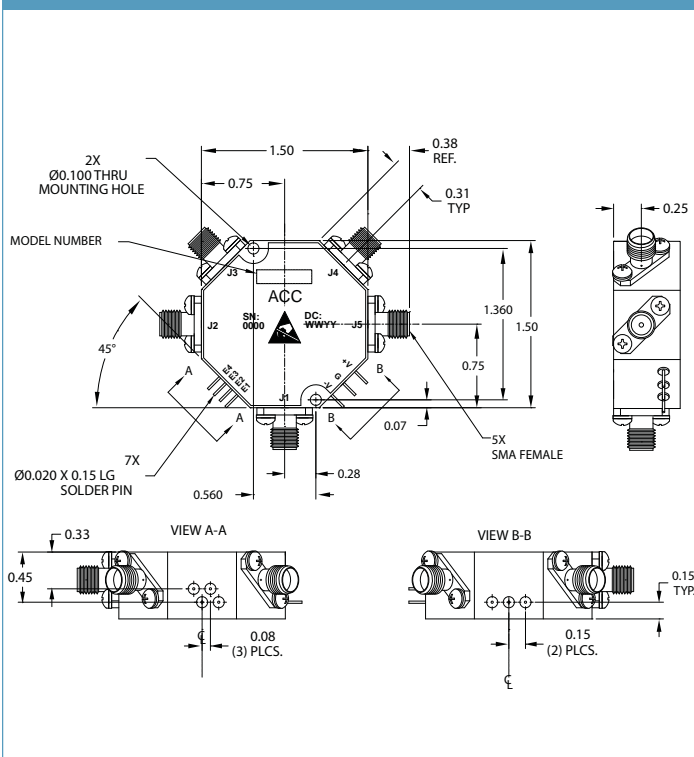
Connectors SMA Female per MIL-C-39012

Bias & Control Pins ø0.02" x 0.15" long

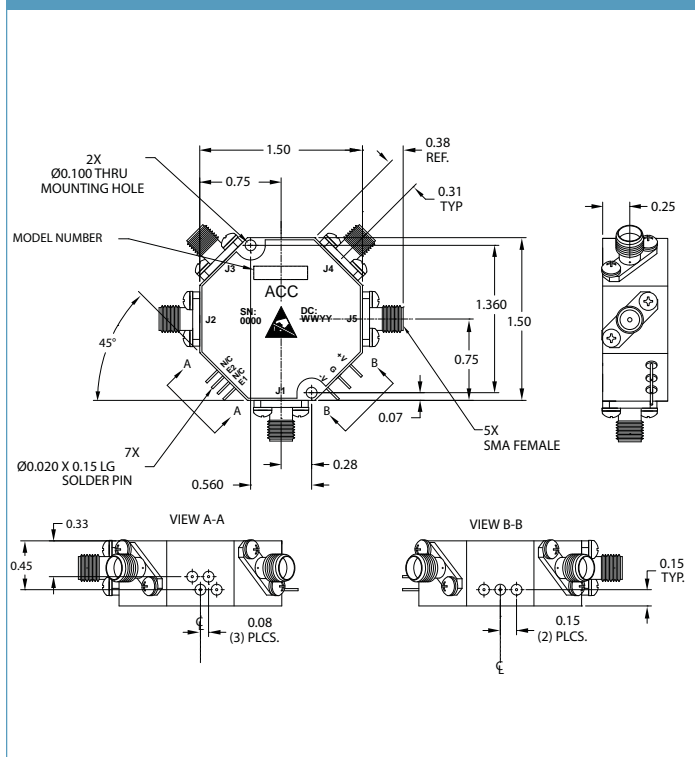
Weight 60g max

Mounting ø0.10" through holes (2) places

OUTLINE CASE STYLE S4



OUTLINE CASE STYLE S4-2





Single-Pole, Five-Throw Switches

The S5 series of single pole, five throw PIN diode switches span the frequency range of 10MHz to 18GHz and are available with absorptive or reflective inputs. The switches are available in a wide variety of standard frequency ranges from cost-effective narrowband to high-performance broadband. Each switch incorporates a TTL-compatible driver for convenient system integration and operates from +5V and -12V to -18V DC power supplies. All switches incorporate DC blocks at the RF ports. Standard screened switches incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The switches are also available with hermetic seal and high-rel screening for military and aerospace applications.

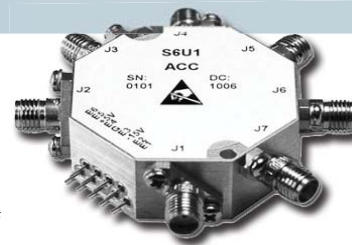
Applications

- EW Systems
- Communications Systems
- Antenna Selectors
- Test Equipment
- Electronic Simulators
- Filter Selectors

Frequency Range (GHz)	REFLECTIVE SWITCHES				ABSORPTIVE SWITCHES				Switching Speed (nsec max)	MAX RF (W CW)
	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)		
0.01 – 0.1	S5H1R	1.1	1.5	75	S5H1	1.2	1.5	80	250	1
0.01 – 0.5	S5H2R	1.2	1.5	75	S5H2	1.3	1.5	80	250	1
0.01 – 1	S5H3R	1.5	1.5	75	S5H3	1.6	1.5	80	250	1
0.01 – 2	S5H4R	2.1	1.6	75	S5H4	2.2	1.6	80	250	1
0.01 – 4	S5H5R	2.9	1.8	75	S5H5	3.0	1.8	80	250	1
0.01 – 6	S5H6R	3.1	1.9	75	S5H6	3.2	1.9	80	250	1
0.1 – 0.5	S5V1R	1.2	1.5	80	S5V1	1.3	1.5	80	250	1
0.1 – 1	S5V2R	1.5	1.5	80	S5V2	1.6	1.5	80	250	1
0.1 – 2	S5V3R	2.1	1.6	80	S5V3	2.2	1.6	80	250	1
0.1 – 4	S5V4R	2.9	1.8	75	S5V4	3.0	1.8	80	250	1
0.1 – 8	S5V5R	3.6	2.0	70	S5V5	3.8	2.0	75	250	0.5
0.1 – 10	S5V6R	3.9	2.0	70	S5V6	4.0	2.0	75	250	0.5
0.5 – 1	S5U1R	1.3	1.5	80	S5U1	1.4	1.5	80	100	1
0.5 – 2	S5U2R	1.7	1.6	80	S5U2	1.8	1.6	80	100	1
0.5 – 4	S5U3R	2.3	1.8	75	S5U3	2.4	1.8	80	100	1
0.5 – 6	S5U4R	2.6	1.9	70	S5U4	2.8	1.9	75	100	0.5
0.5 – 12	S5U5R	3.0	2.0	65	S5U5	3.2	2.0	70	100	0.5
0.5 – 18	S5U6R	3.6	2.0	60	S5U6	3.8	2.0	65	100	0.5
1 – 2	S5L1R	1.2	1.5	80	S5L1	1.3	1.5	85	100	1
1 – 4	S5L2R	1.5	1.6	80	S5L2	1.6	1.6	85	100	1
1 – 8	S5L3R	2.2	1.8	75	S5L3	2.3	1.8	80	100	0.5
1 – 10	S5L4R	2.3	2.0	70	S5L4	2.4	2.0	75	100	0.5
1 – 12	S5L5R	2.7	2.0	65	S5L5	2.8	2.0	70	100	0.5
1 – 14	S5L6R	3.0	2.0	65	S5L6	3.2	2.0	70	100	0.5
1 – 18	S5L7R	3.5	2.0	60	S5L7	3.9	2.0	65	100	0.5
2 – 4	S5S1R	1.4	1.6	70	S5S1	1.5	1.6	75	100	1
2 – 6	S5S2R	1.7	1.7	70	S5S2	1.8	1.7	75	100	0.5
2 – 8	S5S3R	2.1	1.8	70	S5S3	2.3	1.8	75	100	0.5
2 – 10	S5S4R	2.2	1.8	65	S5S4	2.4	1.8	70	100	0.5
2 – 12	S5S5R	2.7	1.9	65	S5S5	2.8	1.9	70	100	0.5
2 – 16	S5S6R	3.3	2.0	60	S5S6	3.5	2.0	65	100	0.5
2 – 18	S5S7R	3.5	2.0	60	S5S7	3.9	2.0	65	100	0.5
4 – 8	S5C1R	2.0	1.6	70	S5C1	2.3	1.6	75	100	0.5
4 – 10	S5C2R	2.1	1.7	65	S5C2	2.4	1.7	70	100	0.5
4 – 12	S5C3R	2.6	1.8	65	S5C3	2.8	1.8	70	100	0.5
4 – 16	S5C4R	3.2	2.0	60	S5C4	3.5	2.0	65	100	0.5
4 – 18	S5C5R	3.4	2.0	60	S5C5	3.6	2.0	65	100	0.5
6 – 10	S5C6R	2.2	1.7	65	S5C6	2.4	1.7	70	100	0.5
6 – 12	S5C7R	2.6	1.8	65	S5C7	2.8	1.8	70	100	0.5
6 – 18	S5C8R	3.4	2.0	60	S5C8	3.6	2.0	65	100	0.5
8 – 10	S5X1R	2.1	1.7	65	S5X1	2.4	1.7	70	100	0.5
8 – 12	S5X2R	2.5	1.8	65	S5X2	2.8	1.8	70	100	0.5
8 – 18	S5X3R	3.4	2.0	60	S5X3	3.6	2.0	65	100	0.5
10 – 18	S5K1R	3.4	2.0	60	S5K1	3.6	2.0	65	100	0.5
12 – 18	S5K2R	3.4	2.0	60	S5K2	3.6	2.0	65	100	0.5

Single-Pole, Six-Throw Switches

The S6 series of single pole, six throw PIN diode switches span the frequency range of 10MHz to 18GHz and are available with absorptive or reflective inputs. The switches are available in a wide variety of standard frequency ranges from cost-effective narrowband to high-performance broadband. Each switch incorporates a TTL-compatible driver for convenient system integration and operates from +5V and -12V to -18V DC power supplies. All switches incorporate DC blocks at the RF ports. Standard screened switches incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The switches are also available with hermetic seal and high-rel screening for military and aerospace applications.



Applications

- EW Systems
- Communications Systems
- Antenna Selectors
- Test Equipment
- Electronic Simulators
- Filter Selectors

REFLECTIVE SWITCHES					ABSORPTIVE SWITCHES				Switching Speed (nsec max)	MAX RF (W CW)
Frequency Range (GHz)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)		
0.01 – 0.1	S6H1R	1.2	1.5	75	S6H1	1.3	1.5	80	250	1
0.01 – 0.5	S6H2R	1.3	1.5	75	S6H2	1.4	1.5	80	250	1
0.01 – 1	S6H3R	1.6	1.5	75	S6H3	1.7	1.5	80	250	1
0.01 – 2	S6H4R	2.2	1.6	75	S6H4	2.3	1.6	80	250	1
0.01 – 4	S6H5R	3.0	1.8	75	S6H5	3.1	1.8	80	250	0.5
0.01 – 6	S6H6R	3.2	1.9	75	S6H6	3.3	1.9	80	250	1
0.1 – 0.5	S6V1R	1.3	1.5	80	S6V1	1.4	1.5	80	250	1
0.1 – 1	S6V2R	1.6	1.5	80	S6V2	1.7	1.5	80	250	1
0.1 – 2	S6V3R	2.2	1.6	80	S6V3	2.3	1.6	80	250	1
0.1 – 4	S6V4R	3.0	1.8	75	S6V4	3.1	1.8	80	250	0.5
0.1 – 8	S6V5R	3.7	2.0	70	S6V5	3.8	2.0	75	250	0.5
0.1 – 10	S6V6R	4.0	2.0	70	S6V6	4.1	2.0	75	250	0.5
0.5 – 1	S6U1R	1.5	1.5	80	S6U1	1.5	1.5	80	100	1
0.5 – 2	S6U2R	1.8	1.6	80	S6U2	1.9	1.6	80	100	1
0.5 – 4	S6U3R	2.4	1.8	75	S6U3	2.5	1.8	80	100	0.5
0.5 – 6	S6U4R	2.7	1.9	70	S6U4	3.0	1.9	75	100	0.5
0.5 – 12	S6U5R	3.2	2.0	65	S6U5	3.4	2.0	70	100	0.5
0.5 – 18	S6U6R	3.8	2.0	60	S6U6	4.1	2.0	65	100	0.5
1 – 2	S6L1R	1.3	1.5	80	S6L1	1.4	1.5	85	100	1
1 – 4	S6L2R	1.6	1.6	80	S6L2	1.7	1.6	85	100	0.5
1 – 8	S6L3R	2.3	1.8	75	S6L3	2.4	1.8	80	100	0.5
1 – 10	S6L4R	2.4	2.0	70	S6L4	2.5	2.0	75	100	0.5
1 – 12	S6L5R	2.9	2.0	65	S6L5	3.0	2.0	70	100	0.5
1 – 14	S6L6R	3.2	2.0	65	S6L6	3.4	2.0	70	100	0.5
1 – 18	S6L7R	3.7	2.0	60	S6L7	4.1	2.0	65	100	0.5
2 – 4	S6S1R	1.5	1.6	70	S6S1	1.6	1.6	75	100	0.5
2 – 6	S6S2R	1.8	1.7	70	S6S2	1.9	1.7	75	100	0.5
2 – 8	S6S3R	2.2	1.8	70	S6S3	2.4	1.8	75	100	0.5
2 – 10	S6S4R	2.3	1.8	65	S6S4	2.5	1.8	70	100	0.5
2 – 12	S6S5R	2.9	1.9	65	S6S5	3.0	1.9	70	100	0.5
2 – 16	S6S6R	3.5	2.0	60	S6S6	3.7	2.0	65	100	0.5
2 – 18	S6S7R	3.7	2.0	60	S6S7	4.0	2.0	65	100	0.5
4 – 8	S6C1R	2.1	1.6	70	S6C1	2.4	1.6	75	100	0.5
4 – 10	S6C2R	2.2	1.7	65	S6C2	2.5	1.7	70	100	0.5
4 – 12	S6C3R	2.8	1.8	65	S6C3	3.0	1.8	70	100	0.5
4 – 16	S6C4R	3.4	2.0	60	S6C4	3.7	2.0	65	100	0.5
4 – 18	S6C5R	3.6	2.0	60	S6C5	3.9	2.0	65	100	0.5
6 – 10	S6C6R	2.3	1.7	65	S6C6	2.5	1.7	70	100	0.5
6 – 12	S6C7R	2.8	1.8	65	S6C7	3.0	1.8	70	100	0.5
6 – 18	S6C8R	3.6	2.0	60	S6C8	3.9	2.0	65	100	0.5
8 – 10	S6X1R	2.2	1.7	65	S6X1	2.5	1.7	70	100	0.5
8 – 12	S6X2R	2.7	1.8	65	S6X2	3.0	1.8	70	100	0.5
8 – 18	S6X3R	3.6	2.0	60	S6X3	3.9	2.0	65	100	0.5
10 – 18	S6K1R	3.6	2.0	60	S6K1	3.9	2.0	65	100	0.5
12 – 18	S6K2R	3.6	2.0	60	S6K2	3.9	2.0	65	100	0.5

Single-Pole, Six-Throw Switches

NOTES

DC Bias (Standard)	+5V ±0.5V @ 240mA max -15V ±3V @ 50mA max
DC Bias (-5 option)	+5V ±0.5V @ 300mA max -5V ±0.5V @ 60mA max
DC Bias (-12 option)	+5V ±0.5V @ 240mA max -15V ±3V @ 50mA max
Control Standard	TTL 0 = Low Loss TTL 1 = Isolation E1 controls J2 – J1 E2 controls J3 – J1 E3 controls J4 – J1 E4 controls J5 – J1 E5 controls J6 – J1 E6 controls J7 – J1
Three-line control: (-3 option)	E3 E2 E1 Low loss path 0 0 0 J2 – J1 0 0 1 J3 – J1 0 1 0 J4 – J1 0 1 1 J5 – J1 1 0 0 J6 – J1 1 0 1 J7 – J1 1 1 0 All off 1 1 1 All off

Absorptive switch: Internal 50Ω terminations at J2, J3, J4, J5, J6 and J7 (in isolation mode).

Switching speed is defined as 50%TTL to 90% (t-on) and 50%TTL to 10%RF (t-off)

*For Screening Specifications, Environmental specifications and Custom Options please refer to page 46.

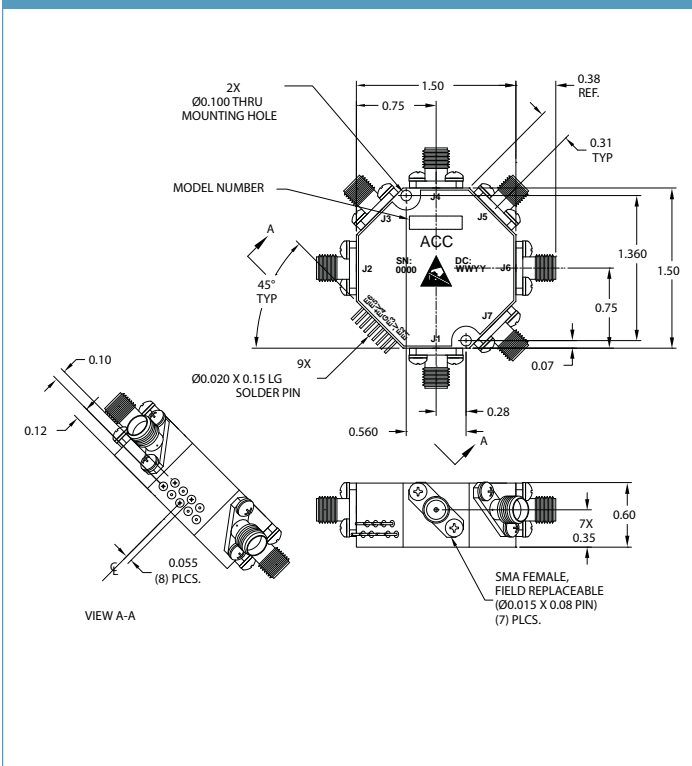
MECHANICAL SPECIFICATIONS

Case Styles	S6 Outline (Standard logic) S6-3 Outline (Three-bit logic)
Finish	Gold plate per MIL-G-45204
Connectors	SMA Female per MIL-C-39012
Bias & Control Pins	ø0.02" x 0.15" long
Weight	65g max
Mounting	ø0.10" through holes (2) places

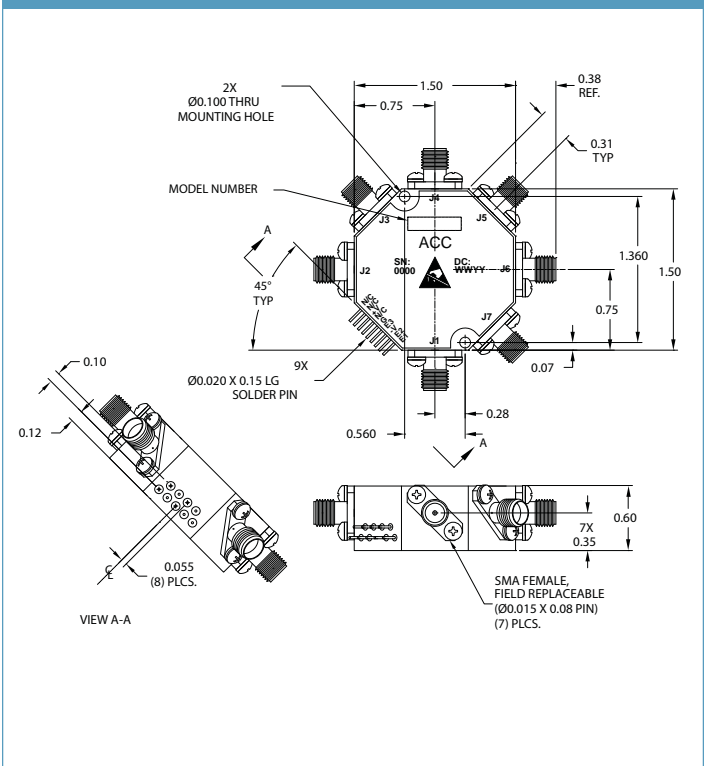
PART NUMBER ORDERING INFORMATION

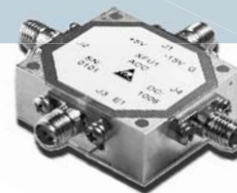
Add "-RC" suffix	RoHS-compliant
Add "-H" suffix	Hermetic seal
Add "-5" suffix	±5V DC supplies
Add "-5-RC" suffix	±5V DC supplies, RoHS-compliant
Add "-5-H" suffix	±5V DC supplies, Hermetic seal
Add "-12" suffix	±12V to 18V DC supplies
Add "-12-RC" suffix	±12V to 18V DC supplies, RoHS-compliant
Add "-12-H" suffix	±12V to 18V DC supplies, Hermetic seal
Add "-3" suffix	Three-bit logic control
Add "-3-RC" suffix	Three-bit logic control, RoHS-compliant
Add "-3-H" suffix	Three-bit logic control, Hermetic seal
Add "-3-5" suffix:	Three-bit logic control, ±5V DC supplies
Add "-3-5-RC" suffix	Three-bit logic control, ±5V DC supplies, RoHS-compliant
Add "-3-5-H" suffix	Three-bit logic control, ±5V DC supplies, Hermetic seal
Add "-3-12" suffix	Three-bit logic control, ±12V to 18V DC supplies
Add "-3-12-RC" suffix	Three-bit logic control, ±12V to 18V DC supplies, RoHS-compliant
Add "-3-12-H" suffix	Three-bit logic control, ±12V to 18V DC supplies, Hermetic seal

OUTLINE CASE STYLE S6



OUTLINE CASE STYLE S6-3





Transfer Switches

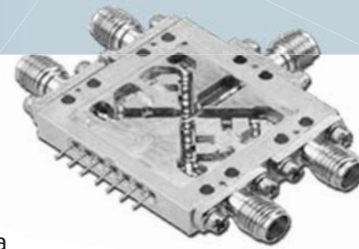
The XF series of PIN diode transfer switches span the frequency range of 10MHz to 18GHz. The switches are available in a wide variety of standard frequency ranges from cost-effective narrowband to high-performance broadband. Each switch incorporates a TTL-compatible driver for convenient system integration and operates from +5V and -12V to -18V DC power supplies. All switches incorporate DC blocks at the RF ports. Standard screened switches incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The switches are also available with hermetic seal and high-rel screening for military and aerospace applications.

Applications

- EW Systems
- Communications Systems
- Antenna Selectors
- Test Equipment
- Electronic Simulators
- Filter Selectors

TRANSFER SWITCHES

Frequency Range (GHz)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)	Switching Speed (nsec max)	MAX RF (W CW)
0.01 – 0.1	XFH1	0.8	1.5	80	250	1
0.01 – 0.5	XFH2	1.0	1.5	80	250	1
0.01 – 1	XFH3	1.3	1.5	80	250	1
0.01 – 2	XFH4	1.9	1.6	80	250	1
0.01 – 4	XFH5	2.7	1.8	80	250	1
0.01 – 6	XFH6	3.0	1.9	80	250	1
0.1 – 0.5	XFV1	1.0	1.5	80	250	1
0.1 – 1	XFV2	1.3	1.5	80	250	1
0.1 – 2	XFV3	1.9	1.6	80	250	1
0.1 – 4	XFV4	2.7	1.8	80	250	1
0.1 – 8	XFV5	3.4	2.0	75	250	1
0.1 – 10	XFV6	3.7	2.0	75	250	1
0.5 – 1	XFU1	1.1	1.5	80	100	1
0.5 – 2	XFU2	1.5	1.6	80	100	1
0.5 – 4	XFU3	2.1	1.8	75	100	1
0.5 – 6	XFU4	2.4	1.9	75	100	1
0.5 – 12	XFU5	2.8	2.0	70	100	0.5
0.5 – 18	XFU6	3.3	2.0	65	100	0.5
1 – 2	XFL1	1.0	1.5	80	100	1
1 – 4	XFL2	1.3	1.6	80	100	1
1 – 8	XFL3	2.0	1.8	80	100	1
1 – 10	XFL4	2.1	2.0	75	100	1
1 – 12	XFL5	2.2	2.0	70	100	0.5
1 – 14	XFL6	2.6	2.0	70	100	0.5
1 – 18	XFL7	3.1	2.0	65	100	0.5
2 – 4	XFS1	1.2	1.6	75	100	1
2 – 6	XFS2	1.5	1.7	75	100	1
2 – 8	XFS3	1.9	1.8	75	100	1
2 – 10	XFS4	2.0	1.8	70	100	1
2 – 12	XFS5	2.2	1.9	70	100	0.5
2 – 16	XFS6	2.9	2.0	65	100	0.5
2 – 18	XFS7	3.1	2.0	65	100	0.5
4 – 8	XFC1	1.9	1.6	75	100	1
4 – 10	XFC2	2.1	1.7	70	100	1
4 – 12	XFC3	2.2	1.8	70	100	0.5
4 – 16	XFC4	2.9	2.0	65	100	0.5
4 – 18	XFC5	3.0	2.0	65	100	0.5
6 – 10	XFC6	2.1	1.7	70	100	1
6 – 12	XFC7	2.2	1.8	70	100	0.5
6 – 18	XFC8	3.0	2.0	65	100	0.5
8 – 10	XFX1	2.1	1.7	70	100	0.5
8 – 12	XFX2	2.2	1.8	70	100	0.5
8 – 18	XFX3	3.0	2.0	65	100	0.5
10 – 18	XFK1	3.0	2.0	65	100	0.5
12 – 18	XFK2	3.0	2.0	65	100	0.5



Ultra Broadband Pin Diode Switches

The SWM Series pin diode switches operate over the full range 0.5GHz to 18GHz in a single unit. Aeroflex Control Components has integrated microstrip soft substrate with thick film hybrid drivers. The housing is epoxy sealed to meet the gross leak requirements of MIL-STD-883. The SMA connectors are removable.

REFLECTIVE SWITCHES					ABSORPTIVE SWITCHES					
Frequency Range (GHz)	Part Number	Insertion Loss (dB max)	VSWR (max) On Only	Isolation (dB min)	Part Number	Insertion Loss (dB max)	VSWR (max)	Isolation (dB min)	Switching Speed (nsec max)	MAX RF (W CW)
0.5 - 18	SWM-1100	2.6	1.8:1	50	SWM-1100A	2.6	1.8:1	50	100	1
0.5 - 18	SWM-1200	2.5	1.8:1	50	SWM-1200A	3.0	2.0:1	50	100	1
0.5 - 18	SWM-1300	3.0	2:1	60	SWM-1300A	3.5	2.0:1	60	100	1
0.5 - 18	SWM-1400	3.0	2:1	60	SWM-1400A	3.7	2.0:1	60	100	1

ELECTRICAL SPECIFICATIONS

DC Voltage (SWM-1100)	±5V ±0.5V @ ±75mA max
DC Voltage (SWM-1200)	±5V ±0.5V @ ±100mA max
DC Voltage (SWM-1300)	±5V ±0.5V @ ±125mA max
DC Voltage (SWM-1400)	±5V ±0.5V @ ±175mA max
Logic	TTL "0" enables thru path
Switching speed is defined as 50%TTL to 90% (t-on) and 50%TTL to 10%RF (t-off)	

*GENERAL SPECIFICATIONS AND NOTES

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-55°C to +85°C
Storage Temp	-65°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

SCREENING

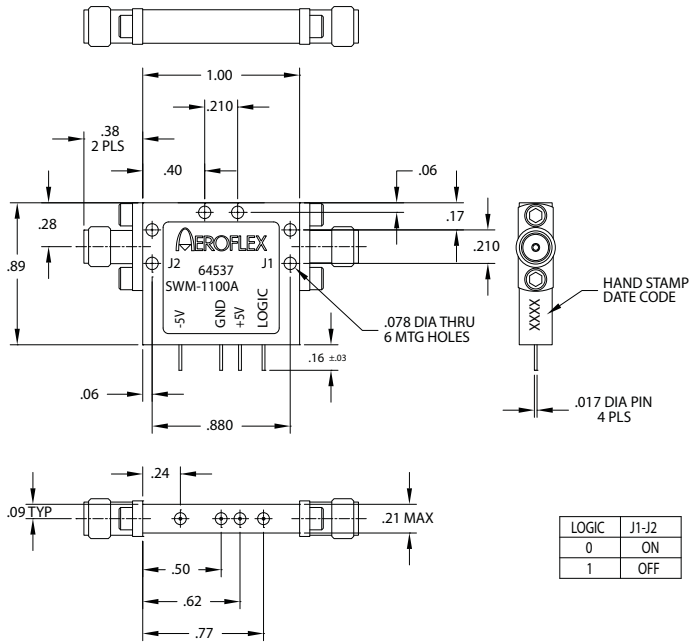
Internal Visual per MIL-STD-883, Method 2017
Temperature Cycle: -65°C to +100°C, 10 cycles
Hermetically-sealed switches are fine and gross leak checked per MIL-STD-883, Method 1014
Optional High-Rel screening available upon request. Contact the factory to discuss your screening requirements

CUSTOM OPTIONS – CONTACT FACTORY

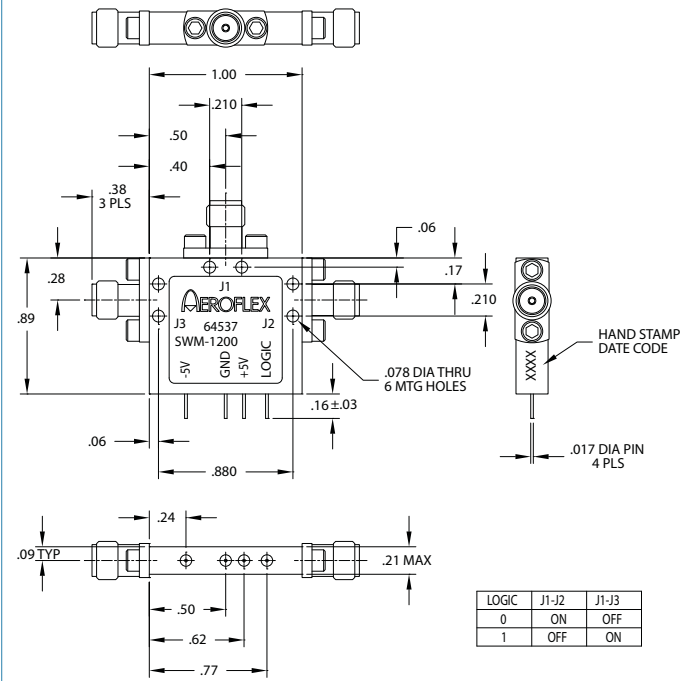
Gray epoxy paint per MIL-C-22750
Video transient suppression
GPO connectors
ECL logic input
Phase and amplitude matching
Other frequency ranges available from 1MHz to 26GHz
Reversed logic
Available without SMA connectors for drop-in applications
High-Rel screening

Ultra Broadband Pin Diode Switches

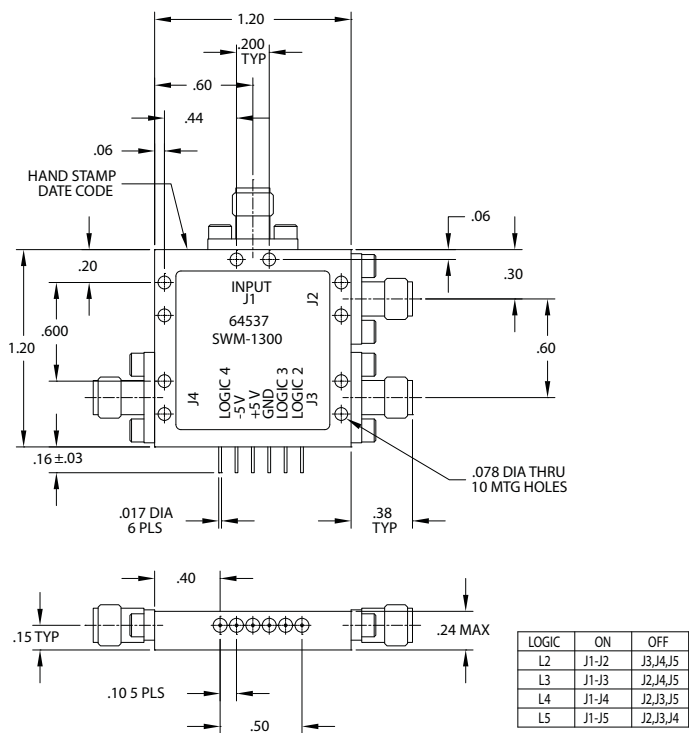
OUTLINE CASE STYLE SWM-1100



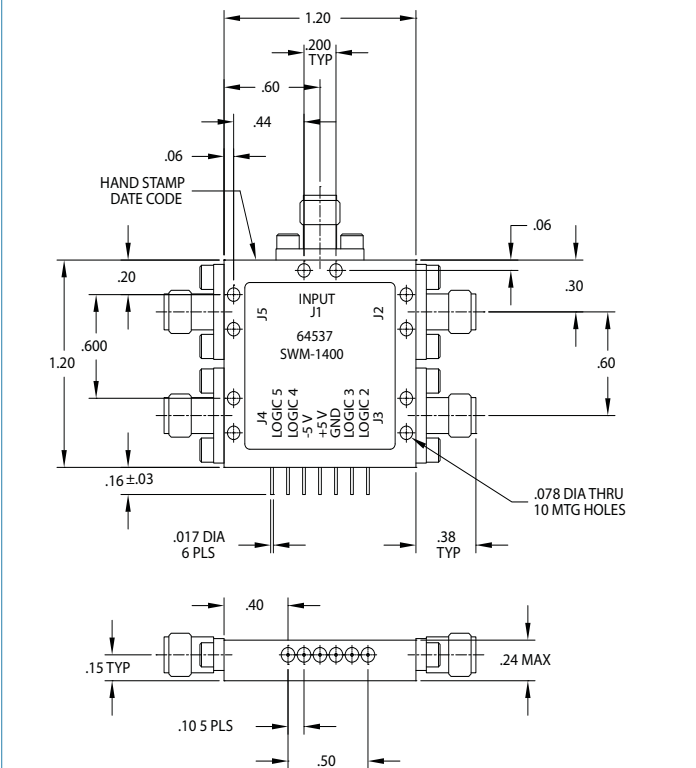
OUTLINE CASE STYLE SWM-1200



OUTLINE CASE STYLE SWM-1300



OUTLINE CASE STYLE SWM-1400





High Power T/R Switches

The ACC series of High Power T/R diode switches span the frequency range of 5MHz to 6GHz and are available with absorptive output on the RX port and reflective port on the TX side. The switches are available in a wide variety of standard frequency ranges. Each switch incorporates a TTL-compatible driver for convenient system integration and operates from +5V to +12v and -50V to -150V DC power supplies (depending on RF power requirements). All switches incorporate DC blocks at the RF ports. Some switches are also available with hermetic seal and high-rel screening for military and aerospace applications.

HIGH POWER T/R SWITCHES

Frequency Range (GHz)	Part Number	Insertion Loss		VSWR		Isolation		Switching Speed (µsec max)	RF POWER MAX RF (W CW ²)	Outline	Plating
		(dB max) RX Mode	(dB max) TX Mode	(Max) RX Mode	(Max) TX Mode	(dB max) RX Mode	(dB min) TX Mode				
.005 - .05	ACSW-5729	1.2	1.0	1.8:1	1.8:1	60	20	10	50	A	1
.05 - 0.5	ACSW-5730	1.2	1.0	1.8:1	1.8:1	60	20	10	50	A	1
.5 - 1.0	ACSW-5731	0.8	0.6	1.75:1	1.75:1	60	20	10	100	A	1
1.0 - 2.0	ACSW-5732	0.8	0.4	1.75:1	1.75:1	60	20	10	100	A	2
2.0 - 4.0	ACSW-5733	2.0	0.5	2.0:1	1.5:1	70	17	8	100	B	2
2.0 - 6.0	ACSW-5734	1.5	0.5	2.0:1	1.5:1	70 / 50 ¹	15	8	100	B	2

NOTES

1. 70dB @ 2 - 4 GHz, 50dB @ 4 - 6 GHz
2. Units are cold switching.

ELECTRICAL SPECIFICATIONS

DC Voltage +12V ±0.5V @ 100mA max

DC Voltage -100V ±3V @ 10mA max

TTL 0 TX MODE

TTL 1 RX MODE

J1 = COMMON

J2 = RX

J3 = TX

Switching speed is defined as 50%TTL to 90% (t-on) and 50%TTL to 10%RF (t-off)

MECHANICAL SPECIFICATIONS

Finish 1. Electroless Nickel per AMS2404E, Class 3, 250u inches Min.
2. Gold Plate per MIL-C-45204 Type III Grade A, 15 - 20 u inches over 2 Electrodes Nickel per MIL-C-26074 CLASS 3, 250 u inches Min.

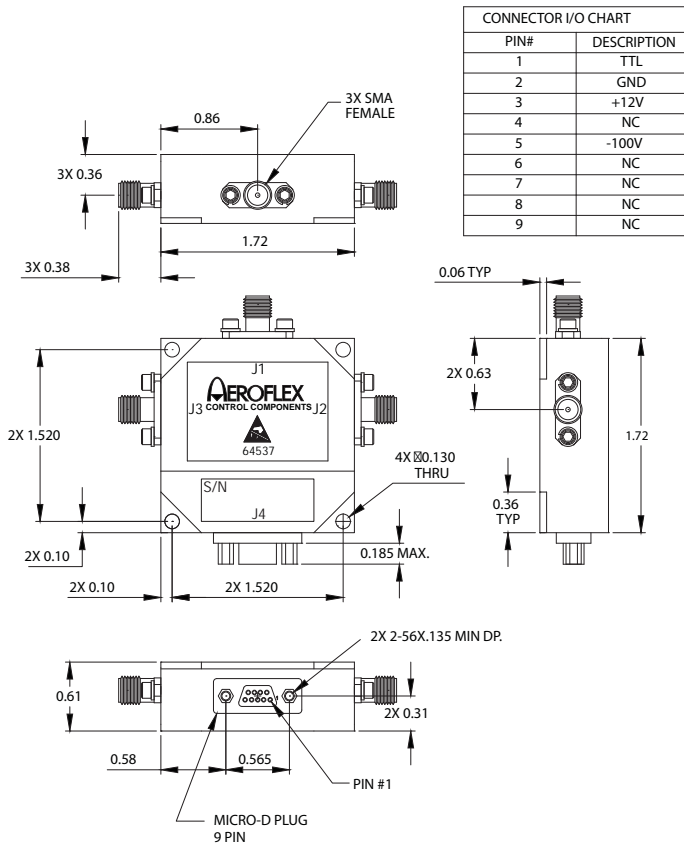
Connectors SMA FEMALE

Bias & Control MINATURE D TYPE

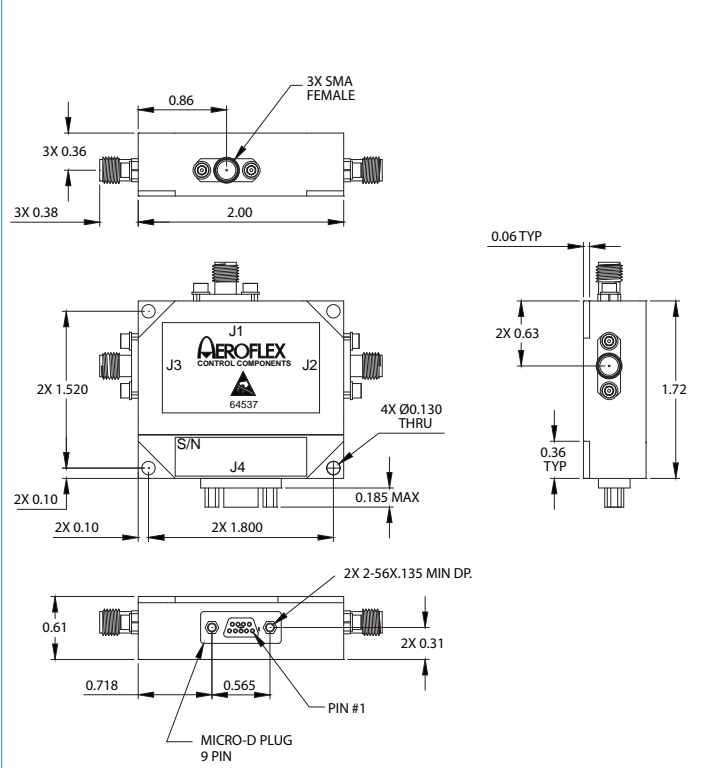
*For Screening Specifications , Environmental specifications and Custom Options please refer to page 46.

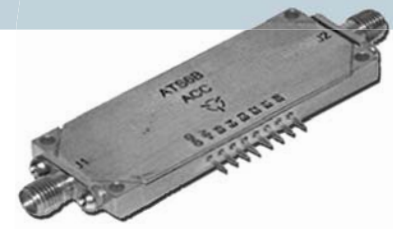
High Power T/R Switches

OUTLINE CASE STYLE A



OUTLINE CASE STYLE B





Standard Digital Attenuators

Aeroflex Control Components' line of switched-bit PIN diode digital attenuators offers precision, reliability, and repeatability for the most demanding applications. The AT series digital attenuators are available in convenient binary 4-, 5-, and 6-bit configurations with 0.5dB resolution and up to 63dB total attenuation. The attenuators require only a single +5V DC power supply and feature TTL-compatible control logic. All switches incorporate DC blocks at the RF ports. Standard screened devices incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The attenuators are also available with hermetic seal and high-rel screening for mil and space applications.

Applications

- EW Systems
- Communications Systems
- Automatic Gain Control
- Test Equipment
- Electronic Simulators
- Leveling Circuits

STANDARD DIGITAL ATTENUATORS

Frequency Range (GHz)	Part Number	Type	Total Attenuation (dB)	LSB (dB)	MSB (dB)	Insertion Loss (dB max)	VSWR (max)
1 – 2	ATL4A	4-BIT	7.5	0.5	4	2.5	1.5
	ATL4B	4-BIT	15	1	8	2.5	1.5
	ATL4C	4-BIT	30	2	16	2.5	1.5
	ATL4D	4-BIT	60	4	32	2.5	1.5
	ATL5A	5-BIT	15.5	0.5	8	2.8	1.5
	ATL5B	5-BIT	31	1	16	2.8	1.5
	ATL5C	5-BIT	62	2	32	2.8	1.5
	ATL6A	6-BIT	31.5	0.5	16	3.3	1.6
	ATL6B	6-BIT	63	1	32	3.3	1.6
2 – 4	ATS4A	4-BIT	7.5	0.5	4	2.9	1.6
	ATS4B	4-BIT	15	1	8	2.9	1.6
	ATS4C	4-BIT	30	2	16	2.9	1.6
	ATS4D	4-BIT	60	4	32	2.9	1.6
	ATS5A	5-BIT	15.5	0.5	8	3.1	1.6
	ATS5B	5-BIT	31	1	16	3.1	1.6
	ATS5C	5-BIT	62	2	32	3.1	1.6
	ATS6A	6-BIT	31.5	0.5	16	3.7	1.7
	ATS6B	6-BIT	63	1	32	3.7	1.7
4 – 6	ATC4A	4-BIT	7.5	0.5	4	3.2	1.7
	ATC4B	4-BIT	15	1	8	3.2	1.7
	ATC4C	4-BIT	30	2	16	3.2	1.7
	ATC4D	4-BIT	60	4	32	3.2	1.7
	ATC5A	5-BIT	15.5	0.5	8	3.5	1.7
	ATC5B	5-BIT	31	1	16	3.5	1.8
	ATC5C	5-BIT	62	2	32	3.5	1.8
	ATC6A	6-BIT	31.5	0.5	16	4.0	2.0
	ATC6B	6-BIT	63	1	32	4.0	2.0

CONTROL LOGIC TABLE

Part Number	E1	E2	E3	E4	E5	E6
ATL4A / ATS4A / ATC4A	0.5dB	1dB	2dB	4dB	N/C	N/C
ATL4B / ATS4B / ATC4B	1dB	2dB	4dB	8dB	N/C	N/C
ATL4C / ATS4C / ATC4C	2dB	4dB	8dB	16dB	N/C	N/C
ATL4D / ATS4D / ATC4D	4dB	8dB	16dB	32dB	N/C	N/C
ATL5A / ATS5A / ATC5A	0.5dB	1dB	2dB	4dB	8dB	N/C
ATL5B / ATS5B / ATC5B	1dB	2dB	4dB	8dB	16dB	N/C
ATL5C / ATS5C / ATC5C	2dB	4dB	8dB	16dB	32dB	N/C
ATL6A / ATS6A / ATC6A	0.5dB	1dB	2dB	4dB	8dB	16dB
ATL6B / ATS6B / ATC6B	1dB	2dB	4dB	8dB	16dB	32dB

Standard Digital Attenuators

ADDITIONAL ELECTRICAL SPECIFICATIONS

DC Bias:	+5V ±0.5V @ 130mA max (4-Bit models) +5V ±0.5V @ 160mA max (5-Bit models) +5V ±0.5V @ 190mA max (6-Bit models)
Switching Speed:	250nsec max (50%TTL-90%RF) 75nsec max (50%TTL-10%RF) 175nsec max (10%RF-90%RF) 25nsec max (90%RF-10%RF)
Operating RF Power:	1W CW max
Attenuation Accuracy:	+/-0.4dB (0-20dB attenuation) +/-2% (above 20dB attenuation)
Attenuation Flatness:	+/-0.5dB max
Logic Control:	TTL 0 = Low Loss TTL 1 = Attenuation

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-55°C to +85°C
Storage Temp	-65°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

MECHANICAL SPECIFICATIONS

Case Style	AT Outline
Finish	Gold plate per MIL-G-45204
Connectors	SMA Female per MIL-C-39012
Bias & Control Pins	ø0.02" x 0.15" long
Weight	19g max
Mounting	ø0.10" through holes (4) places

SCREENING

Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles
 Hermetically-sealed attenuators are fine and gross leak checked per MIL-STD-883, Method 1014
 Optional High-Rel screening available upon request. Contact the factory to discuss your screening requirements

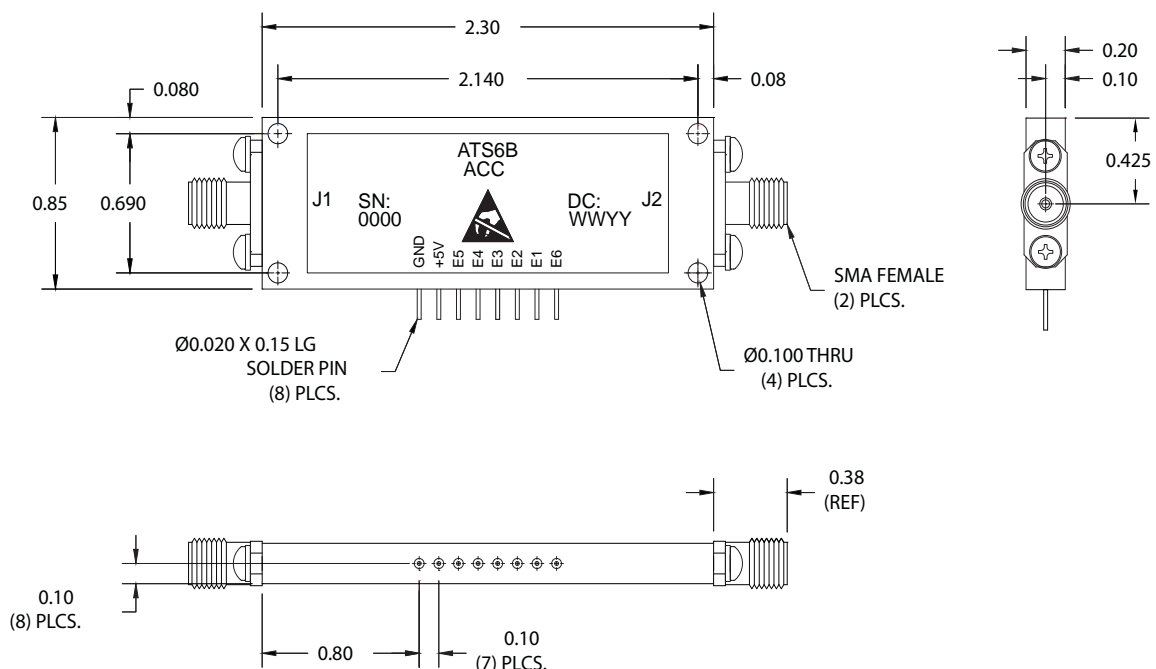
PART NUMBER ORDERING INFORMATION

ATxxx: Standard version
 ATxxx-RC: RoHS-compliant
 ATxxx-H: Hermetic seal

CUSTOM OPTIONS – CONTACT FACTORY

Gray epoxy paint per MIL-C-22750
 Video transient suppression
 GPO connectors
 ECL logic input
 Phase and amplitude tracking
 Other frequency ranges available from 1MHz to 26GHz
 Reversed logic
 Available without SMA connectors for drop-in applications
 High rel screening

OUTLINE CASE STYLE AT





Pin Diode Attenuators

The GT series PIN Diode attenuator is an 8 or 10 bit digitally controlled voltage variable attenuator optimized for low insertion loss while maintaining maximum attenuation range at best attenuation flatness. Using new linearization techniques and state of the art manufacturing practices, this attenuator family has unsurpassed attenuation linearity over temperature. Linearization over temperature is achieved using the latest microcontroller architecture.

With the highest performance density and most compact package available, this product family is ideally suited for high performance ESM, ECM, Instrumentation, Simulation and Synthesizer applications.

Applications

- Unsurpassed Attenuation Linearity over Frequency & Temperature
- 8 or 10 bit digital control
- Smooth transition between states
- Available in 32 or 64 dB Attenuation range
- Remotely programmable parallel or serial control interface

PIN DIODE ATTENUATORS

Part Number	Frequency Range (GHz)	Type	Attenuation Range (dB)	Switching Speed (usec)	Attenuation Flatness (dB)	Step Size LSB (dB)	P1dB Compression Point (dBm)	Insertion Loss (dB max)	VSWR (max)
GT-R502-32	0.5 -2.0	8-BIT	0 - 32	2.5	±1.5	0.125	10	3.5	2.0:1
GT-R502-64	0.5 -2.0	8-BIT	0 - 64	2.5	±1.5 to 32 ±2.5 to 64	0.250	10	3.5	2.0:1
GT-0206-32	2 - 6	8-BIT	0 - 32	2.5	±1.5	0.125	10	2.3	2.0:1
GT-0206-64	2 - 6	8-BIT	0 - 64	2.5	±1.5 to 32 ±2.5 to 64	0.250	10	2.3	2.0:1
GT-0218-32	2 - 18	8-BIT	0 - 32	2.5	±1.5	0.125	10	6.5	2.0:1
GT-0218-64	2 - 18	8-BIT	0 - 64	2.5	±3.25 to 32 ±4.25 to 64	0.250	10	6.5	2.0:1
GT-0618-32	6 - 18	8-BIT	0 - 32	2.5	±2.25	0.125	10	3.3	2.0:1
GT-0618-64	6 - 18	8-BIT	0 - 64	2.5	±2.25 to 32 ±3.75 to 64	0.250	10	3.3	2.0:1

CONTROL LOGIC TABLE

Bit Size	0.25	0.5	1	2	4	8	16	32	Attenuation State
Logic	0	0	0	0	0	0	0	0	Ref (Insertion Loss)
Logic	0	0	0	1	0	1	0	0	10 dB
Logic	0	0	0	0	1	0	1	0	20 dB
Logic	0	0	0	1	1	1	1	0	30 dB
Logic	0	0	0	0	0	1	0	1	40 dB
Logic	0	0	0	0	0	0	0	1	50 dB
Logic	0	0	0	0	1	1	1	1	60 dB
Logic	1	1	1	1	1	1	1	1	63.75 dB

CONNECTOR WIRING CHART

PIN	FUNCTION	PIN	FUNCTION
1	RETURN	12	N/C (b9*)
2	STROBE	13	N/C
3	b0	14	N/C
4	b1	15	+V
5	b2	16	RETURN
6	b3	17	-V
7	b4	18	N/C
8	b5	19	RETURN
9	b6	20	N/C
10	b7	21	N/C
11	N/C (b8*)		*Used on 10 bit option

NOTES:

1. Mean Attenuation = average attenuation over the frequency range at constant command.
2. Measurements at 0 dBm input power unless otherwise noted.
3. Attenuation range must be specified by adding a "32 or 64" to the end of the part number (eg. GT061832)
4. Standard Control Interface is 8 bit. Control interface is also available in 10 bit interface. Add suffix (10) after attenuation range suffix. Other custom options available upon request.

Pin Diode Attenuators

ADDITIONAL ELECTRICAL SPECIFICATIONS

DC Supply:	+5V \pm 0.5V @ +275mA -5V \pm 0.5V @ -50mA
Control:	8 Bits command 1 Strobe line Positive edge latched
Logic Levels:	TTL/HMOS
Attenuation Accuracy:	+/-0.15 dB or +/-1.5% whichever is greater
Attenuation Stability over Temperature:	+/-0.025 dB/°C

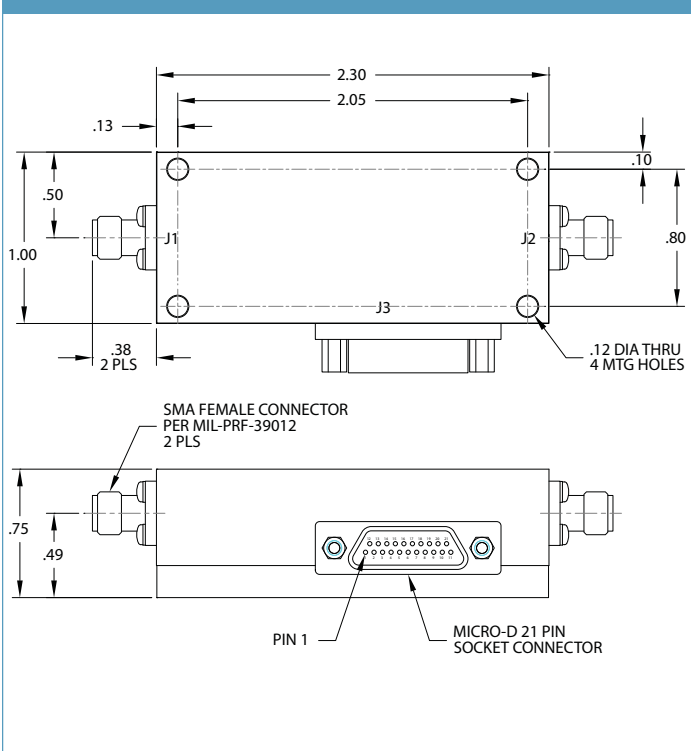
ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-30°C to +70°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

MECHANICAL SPECIFICATIONS

Case Style	GT Outline
Finish	Gold plate per MIL-G-45204
Connectors	SMA Female per MIL-C-39012
Bias & Control Pins	ϕ 0.02" x 0.15" long
Weight	90g max
Mounting	ϕ 0.12" through holes (4) places

OUTLINE CASE STYLE GT (Figure 1)



SCREENING

Internal Visual per MIL-STD-883, Method 2017
Temperature Cycle -65°C to +100°C, 10 cycles
Hermetically-sealed attenuators are fine and gross leak checked per MIL-STD-883, Method 1014; RF side only
Optional High-Rel screening available upon request
Contact the factory to discuss your screening requirements

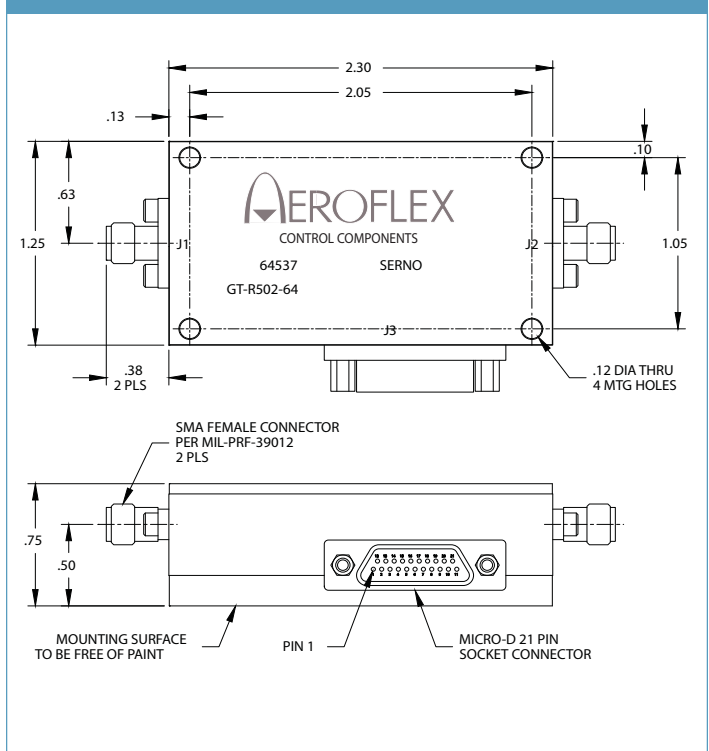
PART NUMBER ORDERING INFORMATION

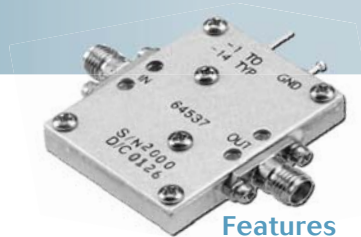
GT	Series
-0206	Frequency Range
-64	Attenuation Range (32) or (64)
-10	10 bits
-F	Free Running
-H	Hermetic Seal

CUSTOM OPTIONS – CONTACT FACTORY

Gray epoxy paint per MIL-C-22750
Video transient suppression
GPO connectors
ECL logic input
Phase and amplitude tracking
Other frequency ranges available from 1MHz to 26GHz
Reversed logic
Available without SMA connectors for drop-in applications
High-Rel screening

OUTLINE CASE STYLE GT (Figure 2)





Analog Diode Phase Shifters

An Analog Phase Shifter Continuously Changes the phase of a microwave signal by varying a DC voltage. Since the DC voltage applied to the diode is reverse bias, the current drain is negligible (typically less than 10 μ A). A Balanced stripline configuration keeps the VSWR and amplitude ripple to a minimum for all values of phase.

Features

- Octave bands up to 18GHz
- Fast Phase response as low as 10nS
- RF power operation 10mW peak/CW, RF power survival 100mW peak/CW
- Bias connection using pin or connector options
- Custom configurations available

CONTINUOUSLY VARIABLE

Frequency Range (GHz)	Part Number	Phase Shift (Degrees)	Insertion Loss Max (dB)	Amplitude Ripple Max (+/-dB)	VSWR Max	Outline
0.25 - 0.5	PQ-17	360	4.5	1.25	2	10
0.5 - 1.0	PQ-27	180	4	0.4	1.75	3
0.5 - 1.0	PQ-28	360	5	1.25	2	4
1 - 2	PQ-34	360	5.5	1.5	2	8
2 - 4	PQ-44	180	4	0.5	1.75	3
2 - 4	PQ-45	360	6	1.5	2	5
4 - 8	PQ-59	40	1.25	0.3	1.75	2
4 - 8	PQ-60	360	8	1.5	2	9
7 - 12	PQ-66	360	14	2	2.5	9
8 - 12	PQ-72	60	2	0.5	2	2
8 - 10	PQ-73	180	6	1	2	7

MECHANICAL OUTLINES

Outline	A'	B'	C'	D'	E'	F'	G'
1	2.75	2.25	1.38	2.05	2.25	0.53	3 PLS
2	1.25	2.00	0.63	1.80	0.75	0.25	3 PLS
3	5.00	2.00	N/A	1.80	4.50	0.25	4 PLS
4	7.75	2.50	N/A	2.30	7.25	0.25	4 PLS
5	6.50	2.00	N/A	1.80	6.00	0.25	4 PLS
6	2.00	2.00	1.00	1.80	1.50	0.25	3 PLS
7	3.00	2.00	1.50	1.80	2.50	0.25	3 PLS
8	6.50	2.50	N/A	2.30	6.00	0.25	4 PLS
9	5.00	2.00	N/A	1.80	4.50	0.50	4 PLS
10	7.75	2.50	N/A	2.30	7.25	0.75	4 PLS

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-30°C to +70°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

SCREENING

Internal Visual per MIL-STD-883, Method 2017

Temperature Cycle: -65°C to +100°C, 10 cycles

Hermetically-sealed phase shifters are fine and gross leak checked per MIL-STD-883, Method 1014

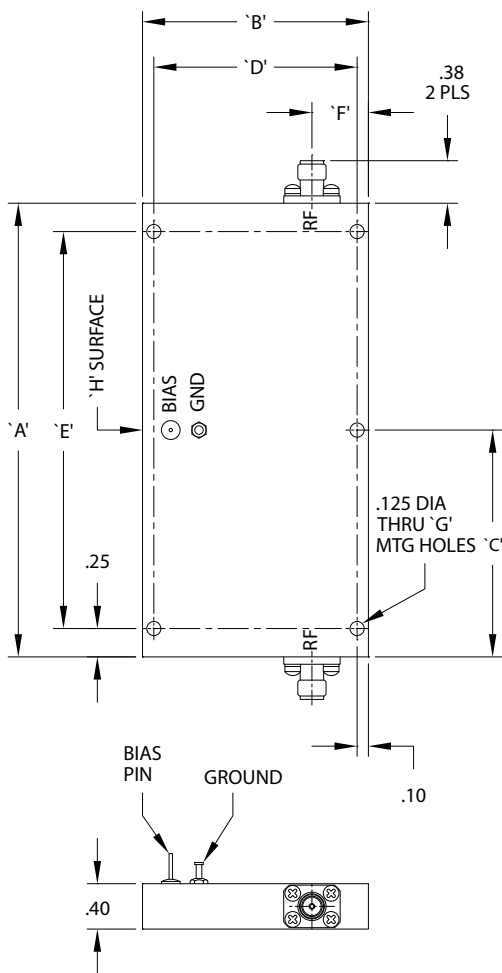
Optional High-Rel screening available upon request. Contact the factory to discuss your screening requirements

NOTES

1. Monotonicity is Guaranteed.
2. The Phase shift varies with frequency at any voltage setting. This variation, referenced to 0° at logic 0 for each frequency, is approximately $\pm 15\%$ for octave models, 10% for models with 25% bandwidth, and $\pm 7.5\%$ for models with 10% bandwidth. Phase flatness of the QQ-65 & QQ-74 is $\pm 25\%$.
3. A Connector, (SMA Female) is available in place of the bias pin at no extra charge. This will be placed at the center of the surface marked "H" on the drawing. This is the .38 x "A" surface. If a SMA Female is desired, add the suffix "C" to the model number (e.g., PQ-45C)
4. Linearization models available, call for outline and details.

Analog Diode Phase Shifters

OUTLINE CASE STYLE PQ



ADDITIONAL ELECTRICAL SPECIFICATIONS

DC Supply:	+5V \pm 0.5V @ +275mA -5V \pm 0.5V @ -50mA
Control:	8 Bits command 1 Strobe line Positive edge latched
Logic Levels:	TTL/HMOS
Attenuation Accuracy:	+/-0.15 dB or +/-1.5% whichever is greater
Attenuation Stability over Temperature:	+/-0.025 dB/°C

MECHANICAL SPECIFICATIONS

Case Style	PQ Outline
Connectors	SMA Female per MIL-C-39012
Control Connector	Micro-D 21 Pin
Bias & Control Pins	ϕ 0.02" x 0.15" long
Mounting	ϕ 0.10" through holes (4) places

CUSTOM OPTIONS – CONTACT FACTORY

- Gray epoxy paint per MIL-C-22750
- Video transient suppression
- GPO connectors
- ECL logic input
- Phase and amplitude tracking
- Other frequency ranges available from 1MHz to 26GHz
- Reversed logic
- Available without SMA connectors for drop-in applications
- High-Rel screening



Digitally Controlled Analog Phase Shifters

Aeroflex Control Components' digitally controlled Phase Shifters vary the phase of a Microwave signal in response to a TTL compatible logic input signal. The unit consists of an analog phase shifter, series PQ, plus a digital to analog converter. A balanced Strip line configuration keeps the VSWR and amplitude change to a minimum for all values of phase. Standard units operate with 8 BITS allowing 256 discrete values of phase. If 10 BITS are required add -10 to the model number (e.g., QQ-34-10) if 12 BITS are required add -12 to the model number (e.g., QQ-34-12)

Features

- 8 bit Digital logic standard
- Octave bands up to 18 GHz
- RF power operation 10mW peak/CW, RF power survival 100mW peak/CW
- Custom configurations available

8, 10 OR 12 BITS						
Frequency Range (GHz)	Part Number	Phase Shift (Degrees)	Insertion Loss Max (dB)	Amplitude Ripple Max (+/-dB)	VSWR Max	Outline
0.25 - 0.5	QQ-17	360	4.5	1.25	2	2
0.5 - 1.0	QQ-27	180	4	0.4	1.75	1
0.5 - 1.0	QQ-28	360	5	1.25	2	5
1 - 2	QQ-34	360	5.5	1.5	2	5
2 - 4	QQ-44	180	4	0.5	1.75	6
2 - 4	QQ-45	360	6	1.5	2	3
4 - 8	QQ-60	360	8	1.5	2	1
7 - 12	QQ-66	360	14	2	2.5	1
8 - 10	QQ-73	180	6	1	2	4

MECHANICAL OUTLINES							
Outline	A'	B'	C'	D'	E'	F'	G'
1	5.00	2.00	N/A	1.80	4.50	0.50	4 PLS
2	7.75	2.50	N/A	2.30	7.25	0.75	4 PLS
3	6.50	2.00	N/A	1.80	6.00	0.25	4 PLS
4	3.00	2.00	1.50	1.80	2.50	0.30	3 PLS
5	7.75	2.50	N/A	2.30	7.25	0.25	4 PLS
6	5.50	2.00	N/A	1.80	4.50	0.25	4 PLS

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-30°C to +70°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

SCREENING

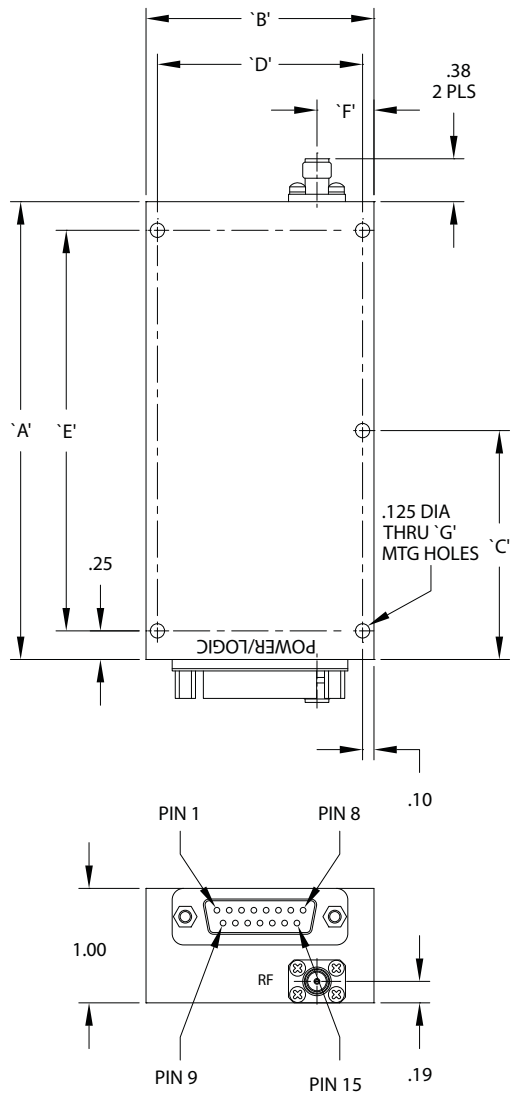
Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle: -65°C to +100°C, 10 cycles
 Hermetically-sealed phase shifters are fine and gross leak checked per MIL-STD-883, Method 1014
 Optional High-Rel screening available upon request. Contact the factory to discuss your screening requirements

NOTES

1. The voltages required are $\pm 15V @ 50mA$.
2. Switching speed on all models is 200nS.
3. Monotonicity is Guaranteed.
4. The Phase shift varies with frequency at any voltage setting. This variation, referenced to 0° at logic 0 for each frequency, is approximately $\pm 15\%$ for octave models, 10% for models with 25% bandwidth, and $\pm 7.5\%$ for models with 10% bandwidth. Phase flatness of the QQ-65 & QQ-74 is $\pm 25\%$.
5. Least Significant BIT = Total Phase Shift divided by the number of steps. 8 BITS = 256 steps.

Digitally Controlled Analog Phase Shifters

OUTLINE CASE STYLE QQ



ADDITIONAL ELECTRICAL SPECIFICATIONS

DC Supply:	+5V ±0.5V @ +275mA -5V ±0.5V @ -50mA
Control:	8 Bits command 1 Strobe line Positive edge latched
Logic Levels:	TTL/HMOS
Attenuation Accuracy:	+/-0.15 dB or +/-1.5% whichever is greater
Attenuation Stability over Temperature:	+/-0.025 dB/°C

MECHANICAL SPECIFICATIONS

Case Style	QQ Outline
Connectors	SMA Female per MIL-C-39012
Control Connector	Micro-D 21 Pin
Bias & Control Pins	ø0.02" x 0.15" long
Mounting	ø0.10" through holes (4) places

CUSTOM OPTIONS – CONTACT FACTORY

- Gray epoxy paint per MIL-C-22750
- Video transient suppression
- GPO connectors
- ECL logic input
- Phase and amplitude tracking
- Other frequency ranges available from 1MHz to 26GHz
- Reversed logic
- Available without SMA connectors for drop-in applications
- High-Rel screening



Hybrid Couplers

Aeroflex Control Components' Hybrid couplers, series QH and MH are available in 6dB, 10dB, 20dB, and 30dB coupling values. These units feature high directivity and low VSWR and are conservatively rated to ensure the most reliable service and performance. The directional couplers on this page are unequalled in terms of size and performance. The volume of these couplers make them ideally suited for applications involving high density packaging.

QH SERIES 3dB 90° HYBRID

Frequency Range (GHz)	Part Number	Nominal Coupling (dB)	Max Deviation From Nominal Coupling (dB)	Max Insertion Loss (dB)	Min Iso. (dB)	VSWR Max	Phase Balance Degrees	"A" in	"B" in	"C" in	"D" in	"E" in	"F" in	"G" in
.025 - .05	QH-17	3.0 +.15/-0	±.40	0.15	22	1.15	±1.0	3.00	2.00	0.55	1.90	1.80	0.25	-
0.05 - 0.1	QH-18	3.0 +.15/-0	±.40	0.15	22	1.15	±1.0	3.00	2.00	0.55	1.90	1.80	0.25	-
2.0 - 8.0	QH-19	3.0 +.15/-0	±.40	0.15	22	1.15	±1.0	3.00	2.00	0.55	1.90	1.80	0.25	-
.05 - 1.0	QH-20	3.0 +.15/-0	±.40	0.15	22	1.15	±1.0	2.90	1.90	0.55	1.90	1.70	0.25	-
0.1 - 0.2	QH-21	3.0 +.15/-0	±.40	0.15	22	1.15	±1.0	2.15	1.60	1.08	-	1.40	0.25	-
0.2 - 0.4	QH-23	3.0 +.15/-0	±.40	0.15	22	1.15	±1.0	1.90	1.25	0.95	-	1.05	0.25	-
0.25 - 0.5	QH-26	3.0 +.15/-0	±.40	0.15	22	1.15	±1.0	1.65	1.15	0.82	-	0.95	0.25	-
0.5 - 1.0	QH-28	3.0 +.15/-0	±.40	0.15	22	1.20	±1.0	2.80	0.50	0.55	1.70	0.30	0.20	-
1.0 - 2.0	QH-31	3.0 +.15/-0	±.40	0.15	22	1.20	±2.0	1.65	0.50	0.82	-	0.30	0.20	-
1.0 - 2.0	QH-32	3.0 +.15/-0	±.40	0.15	22	1.20	±2.0	1.25	0.50	0.82	-	0.30	0.20	-
1.5 - 3.0	QH-33	3.0 +.20/-0	±.40	0.20	22	1.20	±2.5	1.25	0.50	0.63	-	0.30	0.20	-
1.5 - 3.0	QH-34	3.0 +.15/-0	±.45	0.20	22	1.20	±2.5	1.00	0.50	0.50	-	0.30	0.20	-
2.0 - 4.0	QH-36	3.0 +.20/-0	±.45	0.20	22	1.20	±2.5	1.00	0.50	0.50	-	0.30	0.20	-
2.6 - 5.2	QH-43	3.0 +.20/-0	±.45	0.20	20	1.25	±3.0	1.00	0.50	0.50	-	0.30	0.20	-
4.0 - 8.0	QH-45	3.0 +.25/-0	±.50	0.25	20	1.30	±3.0	0.90	0.50	0.45	-	0.30	0.20	-
7.0 - 11.0	QH-48	3.0 +.25/-0	±.50	0.25	20	1.30	±3.0	0.90	0.50	0.45	-	0.30	0.20	-
7.0 - 12.4	QH-51	3.0 +.35/-0	±.50	0.35	17	1.35	±4.0	0.95	0.50	0.48	-	0.30	0.20	-
12.0 - 18.0	QH-55	3.0 +.35/-0	±.50	0.35	17	1.35	±4.0	0.95	0.50	0.48	-	0.30	0.20	-
8.0 - 16.0	QH-57	3.0 +.50/-0	±.60	0.50	16	1.45	±5.0	0.95	0.50	0.48	-	0.30	0.20	-
12.0 - 18.0	QH-58	3.0 +.50/-0	±.60	0.50	16	1.50	±5.0	0.95	0.50	0.48	-	0.30	0.20	-
8.0 - 18.0	QH-88	3.0 +.50/-0	±.60	0.50	16	1.50	±5.0	0.95	0.50	0.48	-	0.30	0.20	-

MH SERIES 3dB 180° HYBRID

Frequency Range (GHz)	Part Number	Nominal Coupling (dB)	Max Deviation From Nominal Coupling (dB)	Max Insertion Loss (dB)	Min Iso. (dB)	VSWR Max	Phase Balance Degrees	"A" in	"B" in	"C" in	"D" in	"E" in	"F" in	"G" in
0.2 - 0.4	MH-22	3.0 +.25/-0	±.50	0.25	20	1.30	±4.0	4.00	3.00	0.20	0.26	3.80	0.25	0.25
0.25 - 0.5	MH-24	3.0 +.25/-0	±.50	0.25	20	1.30	±4.0	4.00	3.00	0.20	0.26	3.80	0.25	0.25
0.5 - 1.0	MH-29	3.0 +.25/-0	±.50	0.25	20	1.30	±4.0	3.25	1.70	0.20	1.30	3.05	0.40	0.28
1.0 - 2.0	MH-33	3.0 +.30/-0	±.50	0.30	18	1.30	±4.0	2.00	1.70	0.20	1.30	1.80	0.38	0.25
1.5 - 3.0	MH-36	3.0 +.30/-0	±.50	0.30	18	1.30	±4.0	2.00	2.50	2.25	0.50	0.50	-	-
2.0 - 4.0	MH-39	3.0 +.30/-0	±.55	0.30	18	1.35	±4.0	1.55	1.70	0.20	1.30	1.35	0.25	0.38
2.6 - 5.2	MH-42	3.0 +.35/-0	±.55	0.30	18	1.40	±4.0	1.25	1.70	0.20	1.30	1.05	0.25	0.25
4.0 - 8.0	MH-46	3.0 +.35/-0	±.60	0.35	17	1.45	±4.0	1.00	1.10	0.55	-	0.80	0.25	0.25
	MH-51	3.0 +.45/-0	±.60	0.45	17	1.50	±5.0	1.00	1.10	0.55	-	0.80	0.25	0.25
7.0 - 11.0	MH-52	3.0 +.45/-0	±.60	0.45	17	1.50	±5.0	1.00	1.10	0.55	-	0.80	0.25	0.25
7.0 - 12.4	MH-54	3.0 +.45/-0	±.60	0.45	15	1.50	±5.0	1.00	1.10	0.55	-	0.80	0.25	0.25
8.0 - 16.0	MH-58	3.0 +.45/-0	±.60	0.45	15	1.50	±5.0	1.00	1.10	0.55	-	0.80	0.25	0.25

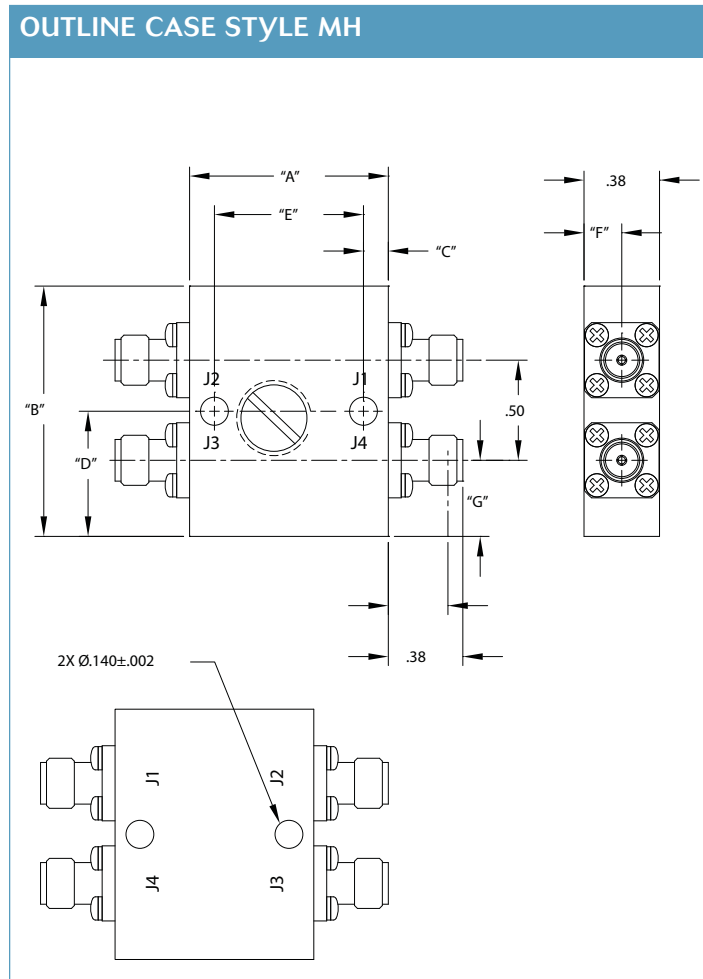
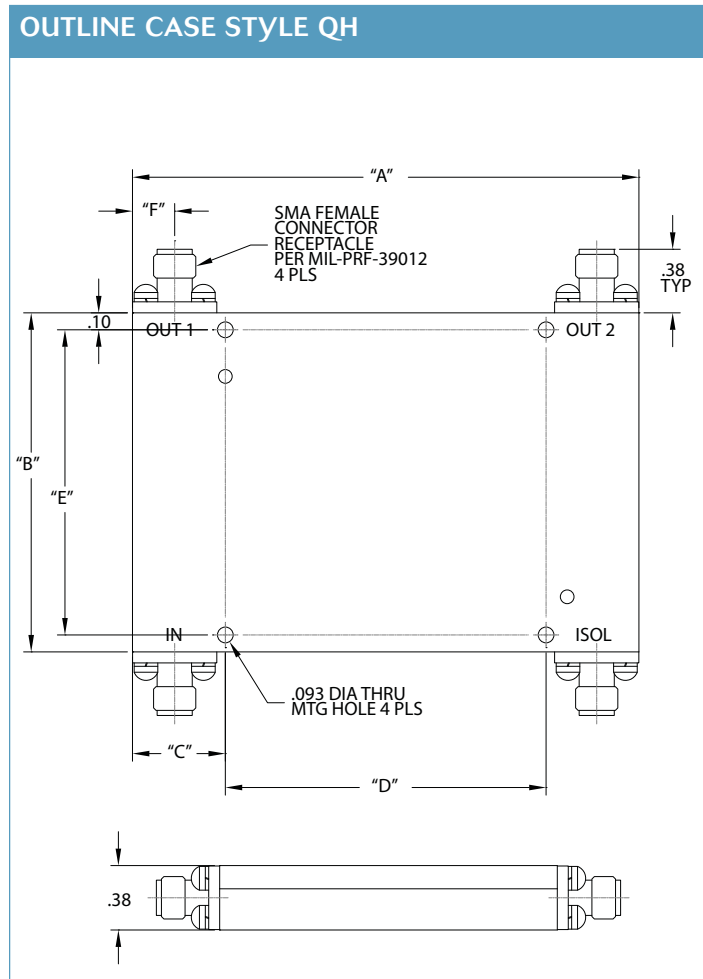
MECHANICAL SPECIFICATIONS

Case Style	QH or MH Outline
Connectors	SMA Female per MIL-C-39012
Control Connector	Micro-D 21 Pin
Bias & Control Pins	ø0.02" x 0.15" long
Mounting	ø0.10" through holes (4) places

SCREENING

Internal Visual	per MIL-STD-883, Method 2017
Temperature Cycle	-65°C to +100°C, 10 cycles
Hermetically-sealed hybrid couplers	are fine and gross leak checked per MIL-STD-883, Method 1014
Optional High-Rel screening	available upon request
Contact the factory	to discuss your screening requirements

Hybrid Couplers



ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-30°C to +70°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

CUSTOM OPTIONS – CONTACT FACTORY

Gray epoxy paint per MIL-C-22750
Video transient suppression
GPO connectors
ECL logic input
Phase and amplitude tracking
Other frequency ranges available from 1MHz to 26GHz
Reversed logic
Available without SMA connectors for drop-in applications
High rel screening



Directional Couplers

Aeroflex Control Components' miniature stripline couplers, series CA are available in 6dB, 10dB, 20dB, and 30dB coupling values. These units feature high directivity and low VSWR and are conservatively rated to ensure the most reliable service and performance. The directional couplers on this page are unequalled in terms of size and performance. The volume of these couplers make them ideally suited for applications involving high density packaging.

CA SERIES								
Frequency Range (GHz)	Part Number	Frequency Flatness (dB)	Min Directivity (dB)	Max Input /Output VSWR	Max Loss Above Coupling Loss (dB)	Max Peak Power (kW)	Max Avg. Power Watts	Outline
0.5 - 1.0	CA-51X	±0.75	20	1.2	0.15	3	50	1
0.5 - 2.0	CA-52X	±0.75	20	1.2	0.20	3	50	2
0.75 - 1.5	CA-55X	±0.75	20	1.2	0.20	3	50	3
0.8 - 2.5	CA-57X	±0.75	20	1.2	0.20	3	50	3
1.0 - 2.0	CA-59X	±0.75	20	1.2	0.20	3	50	4
1.5 - 3.0	CA-63X	±0.75	20	1.2	0.20	3	50	5
2.0 - 4.0	CA-67X	±0.75	20	1.25	0.20	3	40	6
2.0 - 8.0	CA-69X	±0.75	17	1.3	0.30	2	20	7
2.6 - 5.2	CA-71X	±0.75	20	1.25	0.25	3	40	8
4.0 - 8.0	CA-75X	±0.75	18	1.25	0.30	3	40	8
6.0 - 18.0	CA-77X	±0.75	14	1.45	0.55	2	20	8
7.0 - 12.4	CA-79X	±0.50	17	1.3	0.45	2	30	8
8.0 - 16.0	CA-83X	±0.70	15	1.4	0.50	2	30	8
8.0 - 18.0	CA-87X	±0.70	14	1.45	0.55	2	20	8
12.4 - 18.0	CA91X	±0.50	15	1.4	0.55	2	30	8

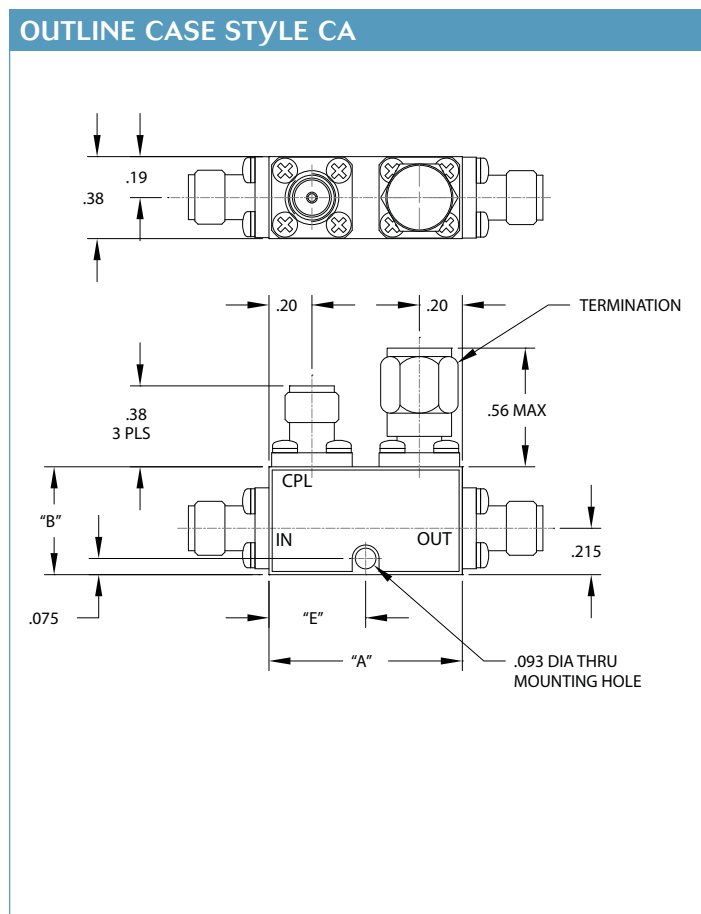
CA SERIES OUTLINES (inches)					
OUTLINE	A	B*	C	D	E
1	3.1	0.5	0.8	1.5	-
2	3.4	0.5	0.95	1.5	-
3	2.5	0.5	0.6	1.3	-
4	1.8	0.55	0.43	0.94	-
5	1.4	0.5	0.5	0.4	-
6	1.0	0.5	-	-	0.5
7	1.3	0.5	-	-	0.65
8	0.9	0.5	-	-	0.45

* Note 2

- ### NOTES
1. Rugged 4 hole connector construction insures superiority.
 2. For all 30dB couplers "B" dimension is .55 inches.
 3. 50 Ohm termination is supplied on each unit delivered. Power rating is 1 Watt at 25°C.
 4. Coupling includes frequency flatness & coupling measurement in reference to the input port. Coupling is standard on these units.

- ### SCREENING
- Internal Visual per MIL-STD-883, Method 2017
 - Temperature Cycle -65°C to +100°C, 10 cycles
 - Hermetically-sealed switches are fine and gross leak checked per MIL-STD-883, Method 1014
 - Optional High-Rel screening available upon request
 - Contact the factory to discuss your screening requirements

Directional Couplers

**ENVIRONMENTAL SPECIFICATIONS**

MIL-E-5400, MIL-STD-202, MIL-E-16400

Operating Temp -30°C to +70°C

Storage Temp -55°C to +125°C

Humidity MIL-STD-202F, M103, Cond B

Shock MIL-STD-202F, M213, Cond B

Altitude MIL-STD-202F, M105, Cond B

Vibration MIL-STD-202F, M204, Cond B

Thermal Shock MIL-STD-202F, M107, Cond A

Temperature Cycle MIL-STD-202F, M105C, Cond D

MECHANICAL SPECIFICATIONS

Case Style CA Outline

Connectors SMA Female per MIL-C-39012

Control Connector Micro-D 21 Pin

Bias & Control Pins $\varnothing 0.02$ " x 0.15" long

Weight 19g max

Mounting $\varnothing 0.10$ " through holes (4) places**PART NUMBER ORDERING INFORMATION**

Example: CA-516

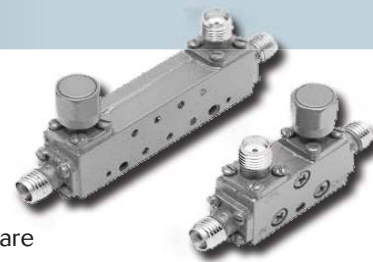
CA-51X: X in the part number represents coupling value

6: 6dB+/-1.0dB

1: 10dB+/-1.2dB

2: 20dB+/-1.2dB

3: 30dB+/-1.2dB



Dual Directional Couplers

Aeroflex Control Components' forward and reverse dual directional stripline couplers, are available in 6dB, 10dB, 20dB, and 30dB coupling values. These units feature high directivity and low VSWR and are conservatively rated to ensure the most reliable service and performance. The directional couplers on this page are unequalled in terms of size and performance. The volume of these couplers make them ideally suited for applications involving high density packaging.

CA SERIES						
Frequency Range (GHz)	Part Number	Minimum Directivity (dB)	Max Prim /Sec VSWR	Maximum Insertion Loss Above Coupling Loss (dB)	"L" inches (mm)	"H" inches (mm)
0.5 - 1.0	CLD-510-X	25	1.15	0.40	7.0 (177.8)	0.5 (12.7)
1.0 - 2.0	CLD-1020-X	23	1.15	0.40	7.6 (193.0)	0.5 (12.7)
1.5 - 3.0	CLD-1530-X	20	1.20	0.40	2.8 (71.1)	0.5 (12.7)
2.0 - 4.0	CLD-2040-X	20	1.20	0.40	2.4 (61.0)	0.5 (12.7)
4.0 - 8.0	CLD-4080-X	20	1.25	0.50	2.0 (50.8)	0.5 (12.7)
7.0 - 12.0	CLD-7012-X	17	1.30	0.80	2.0 (50.8)	0.5 (12.7)
12.4 - 18.0	CLD-1218-X	14	1.50	0.90	2.0 (50.8)	0.5 (12.7)

NOTES

1. Rugged 4 hole connector construction insures superiority.
2. For all 30dB couplers "B" dimension is .55 inches.
3. 50 Ohm termination is supplied on each unit delivered. Power rating is 1 Watt at 25°C.
4. Coupling includes frequency flatness & coupling measurement in reference to the input port. Coupling is standard on these units.

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400
Operating Temp -30°C to +70°C
Storage Temp -55°C to +125°C
Humidity MIL-STD-202F, M103, Cond B
Shock MIL-STD-202F, M213, Cond B
Altitude MIL-STD-202F, M105, Cond B
Vibration MIL-STD-202F, M204, Cond B
Thermal Shock MIL-STD-202F, M107, Cond A
Temperature Cycle MIL-STD-202F, M105C, Cond D

MECHANICAL SPECIFICATIONS

Case Style	CLD Outline
Connectors	SMA Female per MIL-C-39012
Control Connector	Micro-D 21 Pin
Bias & Control Pins	ø0.02" x 0.15" long
Mounting	ø0.10" through holes (4) places

SCREENING

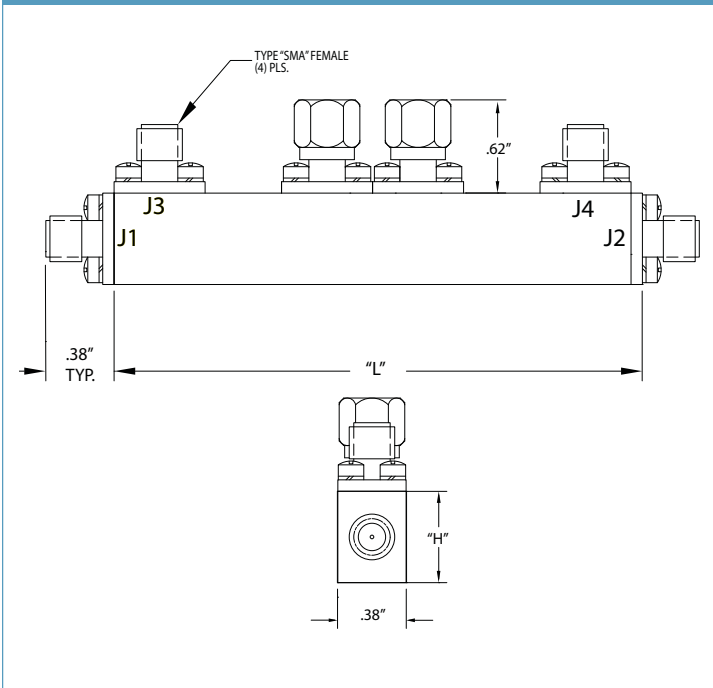
Internal Visual per MIL-STD-883, Method 2017
 Temperature Cycle -65°C to +100°C, 10 cycles
 Hermetically-sealed switches are fine and gross leak checked per MIL-STD-883, Method 1014
 Optional High-Rel screening available upon request
 Contact the factory to discuss your screening requirements

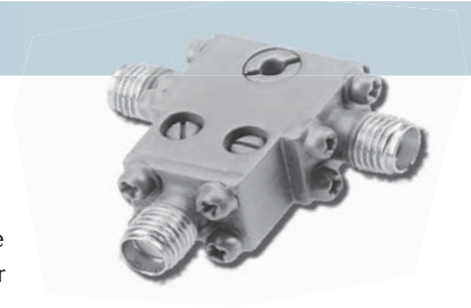
PART NUMBER ORDERING INFORMATION

Example:	CLD-1020-X
CLD-1020-X:	X in the part number represents coupling value
6:	6dB+/-1.0dB
10:	10dB+/-1.2dB
20:	20dB+/-1.2dB
30:	30dB+/-1.2dB

Directional Couplers

OUTLINE CASE STYLE CLD



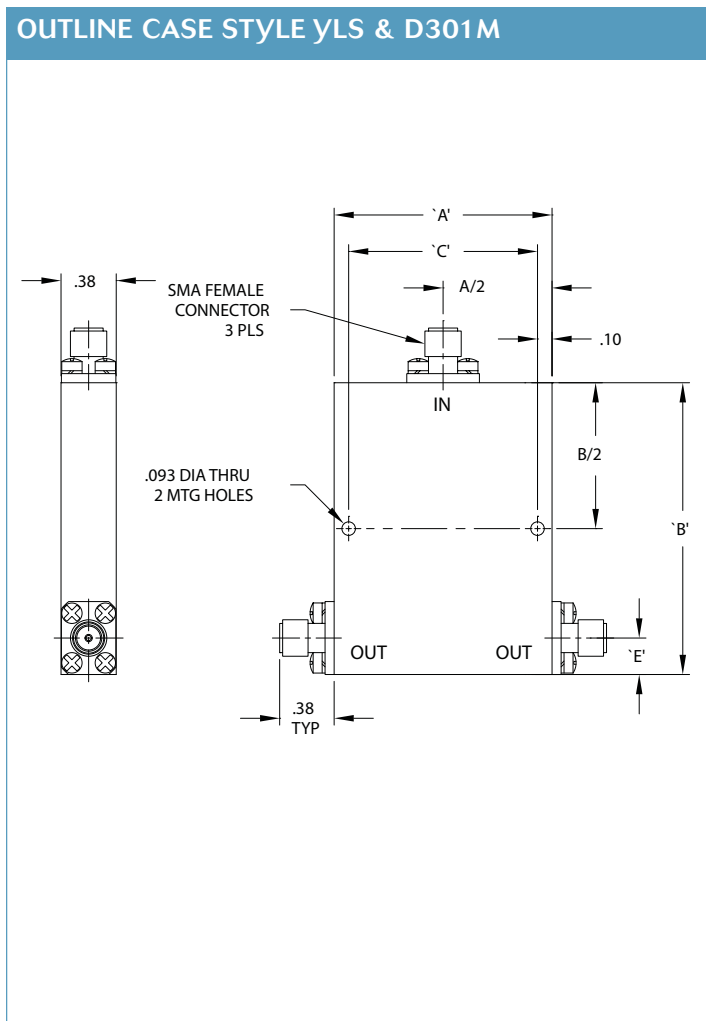
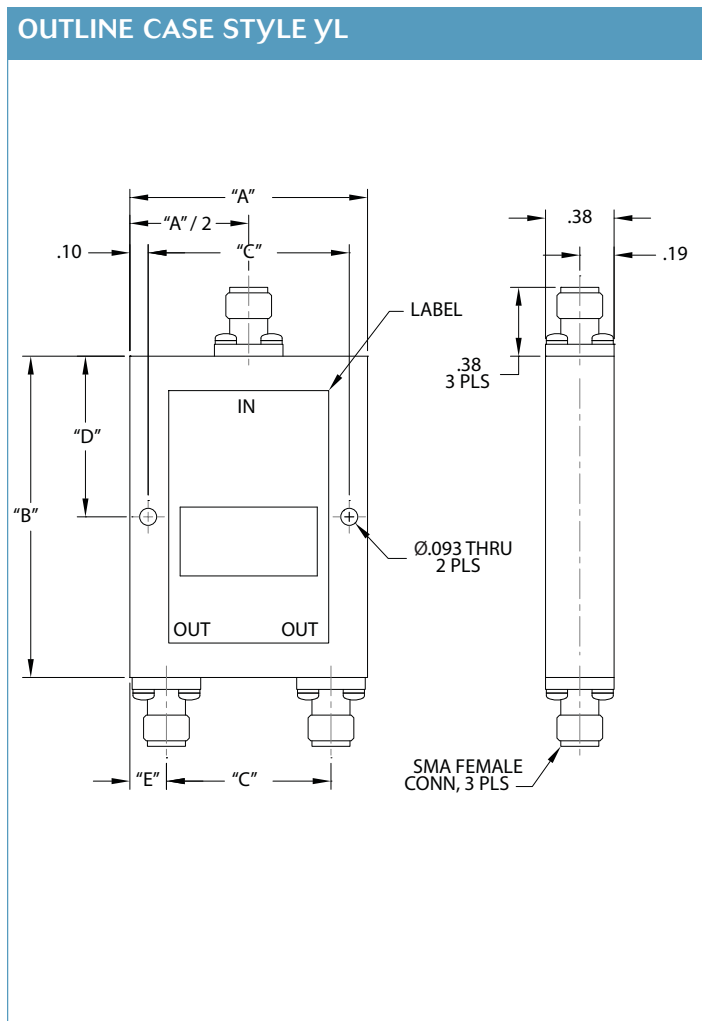


2 Way In-Phase Power Divider / Combiners

Available as 2 way standard products, these feature Wilkinson structures to optimize performance over selected bandwidths. Custom designs are also available in other configurations such as asymmetric and multi input/output applications.

YL & YLS SERIES											
Frequency Range (GHz)	Part Number	Max In/Out VSWR	Max Insertion Loss (dB)	Min Iso. (dB)	Phase Balance Degrees	Amp Balance (dB)	"A" in	"B" in	"C" in	"D" in	"E" in
0.5 - 1.0	YL-18	1.20 / 1.15	0.2	22	2	0.15	1.5	1.75	1.3	0.88	0.2
0.5 - 2.0	YL-70	1.25 / 1.20	0.5	20	2	0.2	1.3	1.75	1.1	0.88	0.2
0.75 - 1.5	YL-19	1.20 / 1.15	0.2	21	2	0.15	1.3	1.75	1.1	0.88	0.2
0.95 - 1.3	YL-80	1.20 / 1.15	0.2	23	2	0.1	1.15	1.25	0.95	0.63	0.2
1.0 - 2.0	YL-23	1.25 / 1.20	0.3	20	2	0.2	1	1.75	0.8	0.88	0.2
1.0 - 4.0	YL-71	1.30 / 1.20	0.5	20	2	0.2	1	1.75	0.8	0.88	0.2
1.5 - 3.0	YL-25	1.25 / 1.20	0.3	20	3	0.2	0.8	1.25	0.6	0.63	0.2
1.7 - 2.4	YL-82	1.25 / 1.20	0.2	23	2	0.1	0.85	0.82	0.65	0.38	0.2
2.0 - 4.0	YL-33	1.25 / 1.20	0.3	21	3	0.2	0.85	1	0.65	0.5	0.2
3.2 - 3.7	YL-42	1.25 / 1.20	0.3	21	3	0.2	0.85	1	0.65	0.5	0.2
3.6 - 4.3	YL-84	1.25 / 1.20	0.3	23	2	0.15	0.85	1	0.65	0.5	0.2
4.0 - 8.0	YL-48	1.30 / 1.25	0.4	18	4	0.3	0.85	0.75	0.65	0.3	0.2
5.7 - 6.5	YL-86	1.25 / 1.20	0.3	22	2	0.15	0.85	1	0.65	0.5	0.2
6.0 - 18.0	YL-74	1.50 / 1.40	1	16	6	0.4	0.85	0.82	0.65	0.38	0.2
7.0 - 14.0	YL-56	1.40 / 1.35	0.5	19	6	0.4	0.85	0.75	0.65	0.3	0.2
7.1 - 7.7	YL-88	1.30 / 1.25	0.4	22	3	0.15	0.85	0.75	0.65	0.3	0.2
1.0 - 12.4	YL-76	1.50 / 1.40	1	16	6	0.4	0.85	2.75	0.65	1.38	0.2
8.0 - 12.4	YL-90	1.40 / 1.35	0.6	18	3	0.2	0.85	0.82	0.65	0.38	0.2
14.0 - 16.0	YL-94	1.40 / 1.35	1.4	16	8	0.2	0.85	0.82	0.65	0.38	0.2
12.0 - 18.0	YL-92	1.50 / 1.40	0.7	18	6	0.3	0.85	0.82	0.65	0.38	0.2
2.0 - 18.0	YL-78	1.50 / 1.40	1.1	18	8	0.4	0.85	1.5	0.65	0.75	0.2
9.0 - 18.0	YL-58	1.45 / 1.40	0.7	19	8	0.4	0.85	0.82	0.65	0.38	0.2
0.225 - 2.5	D3225	1.5	1	13	3	0.25	0.26	1	-	-	-
0.75 - 1.5	YLS-19	1.20 / 1.15	0.2	21	2	0.15	1.3	1.75	1.1	0.88	0.2
1.5 - 3.0	YLS-25	1.25 / 1.20	0.3	21	3	0.2	0.8	1.25	0.6	0.63	0.2
2.0 - 4.0	YLS-33	1.25 / 1.20	0.3	21	3	0.2	0.85	1	0.65	0.5	0.2
4.0 - 8.0	YLS-48	1.30 / 1.25	0.4	20	4	0.3	0.85	0.75	0.65	0.3	0.2
7.0 - 14.0	YLS-56	1.40 / 1.35	0.5	19	6	0.4	0.85	0.82	0.65	0.38	0.2
0.5 - 2.0	YLS-70	1.25 / 1.15	0.4	22	2	0.2	1.3	1.75	1.1	0.88	0.2
3.6 - 4.3	YLS-80	1.20 / 1.15	0.2	23	2	0.1	1.15	1.25	0.95	0.63	0.2
3.6 - 4.3	YLS-84	1.25 / 1.20	0.3	23	2	0.15	0.85	1	0.65	0.5	0.2
8.0 - 12.4	YLS-90	1.35 / 1.30	0.5	20	3	0.2	0.85	0.82	0.65	0.38	0.2
12.0 - 18.0	YLS-92	1.50 / 1.40	0.7	18	6	0.3	0.85	0.82	0.65	0.38	0.2
D301M											
1.0 - 1.5		1.70 / 1.30	0.5	12	1	0.2	0.5	1.625	-	1.5	0.375
1.5 - 2.0		1.60 / 1.30	0.5	15	1	0.2					
2.0 - 4.0		1.50 / 1.30	0.4	20	1	0.2					
4.0 - 8.0		1.50 / 1.40	0.5	18	2	0.2					
8.0 - 12.0		1.50 / 1.40	0.8	16	3	0.2					
12.0 - 16.0		1.60 / 1.50	0.9	15	4	0.3					
16.0 - 18.0		1.70 / 1.60	1.2	12	7	0.4					

2 Way In-Phase Power Divider / Combiners



MECHANICAL SPECIFICATIONS

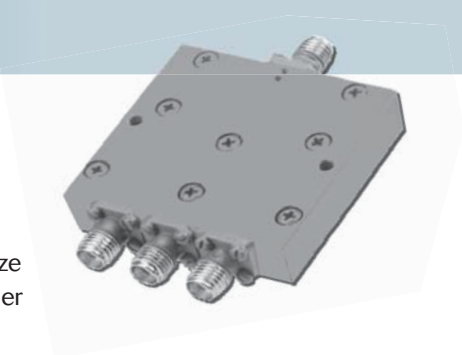
Case Style	YL Outline
Connectors	SMA Female per MIL-C-39012

NOTES

Please Contact the Factory for Custom Specifications

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-55°C to +85°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D



3 Way In-Phase Power Divider / Combiners

Available as 3 way standard products, these feature Wilkinson structures to optimize performance over selected bandwidths. Custom designs are also available in other configurations such as asymmetric and multi input/output applications.

YT SERIES

Frequency Range (GHz)	Part Number	Max In/Out VSWR	Max Insertion Loss (dB)	Min Iso. (dB)	Phase Balance Degrees	Amp Balance (dB)	"A" in	"B" in	"C" in	"D" in	"E" in
0.95 - 1.25	YT-18	1.25 / 1.20	0.5	20	2	0.2	2	5	1.8	4.6	0.4
1.2 - 1.4	YT-22	1.20 / 1.15	0.5	22	2	0.2	2	5	1.8	4.6	0.4
1.7 - 2.4	YT-23	1.30 / 1.25	0.5	20	2	0.2	2	3	1.8	2.6	0.4
5.2 - 6.0	YT-26	1.25 / 1.20	0.5	22	2	0.2	2	3	1.8	2.6	0.4
3.7 - 4.2	YT-41	1.30 / 1.25	0.5	20	2	0.2	2	3	1.8	2.6	0.4
5.4 - 5.9	YT-55	1.35 / 1.30	0.6	20	3	0.25	1.75	2	1.55	1.6	0.25
5.2 - 6.0	YT-56	1.35 / 1.30	0.6	18	3	0.25	1.75	2	1.55	1.6	0.25
6.8 - 8.5	YT-68	1.40 / 1.35	0.8	18	4	0.25	1.75	2	1.55	1.6	0.25
7.5 - 8.5	YT-71	1.35 / 1.30	0.6	20	3	0.25	1.75	2	1.55	1.6	0.25
8.4 - 9.7	YT-89	1.40 / 1.35	0.5	17	4	0.3	1.75	1.5	1.55	1.1	0.38
9.5 - 11.0	YT-92	1.45 / 1.40	0.5	17	4	0.3	1.75	1.5	1.55	1.1	0.38
11.0 - 14.0	YT-95	1.50 / 1.45	0.75	16	5	0.3	1.75	1.5	1.55	1.1	0.38
13.1 - 13.5	YT-94	1.35 / 1.30	0.65	20	3	0.25	1.75	1.5	1.55	1.1	0.38
15.0 - 18.0	YT-98	1.50 / 1.45	1.1	16	5	0.45	1.75	1.5	1.55	1.1	0.38

MECHANICAL SPECIFICATIONS

Case Style	YT Outline
Connectors	SMA Female per MIL-C-39012

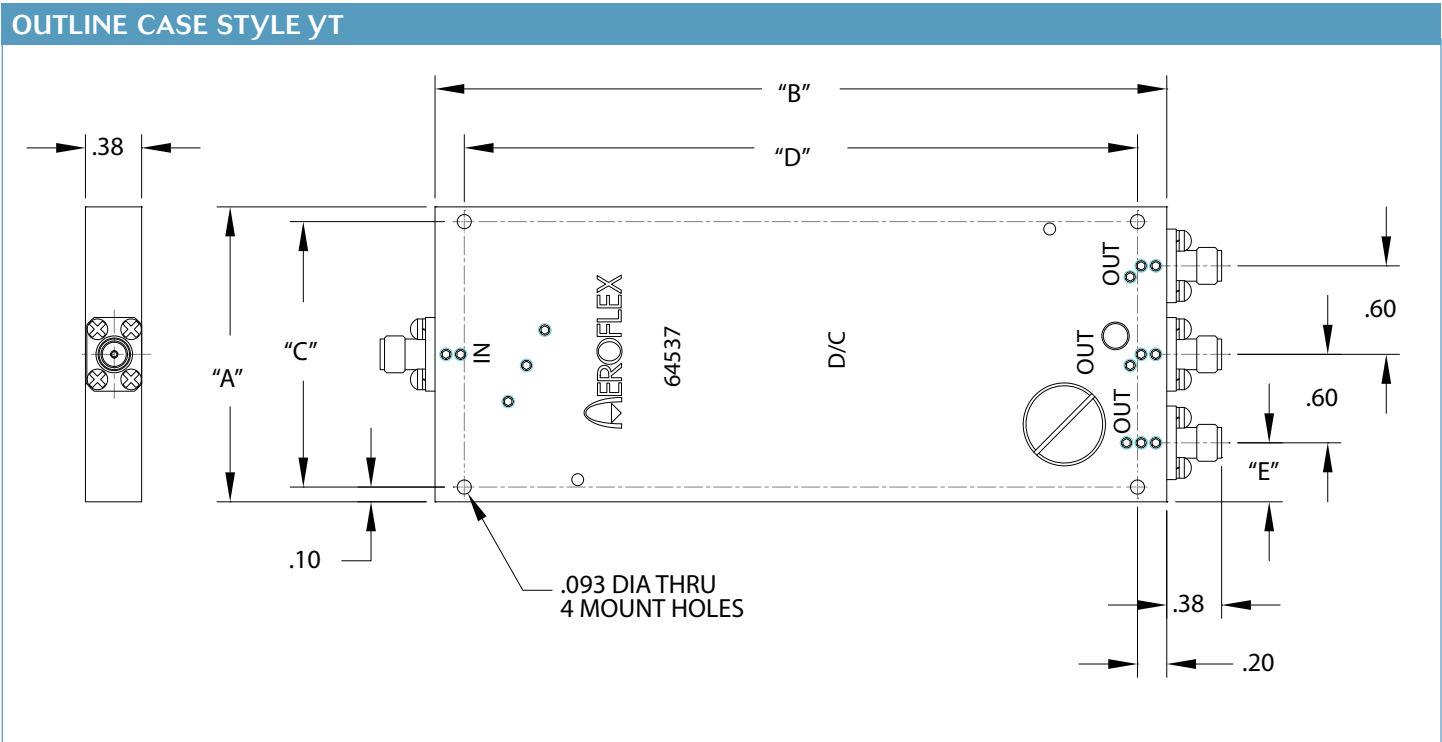
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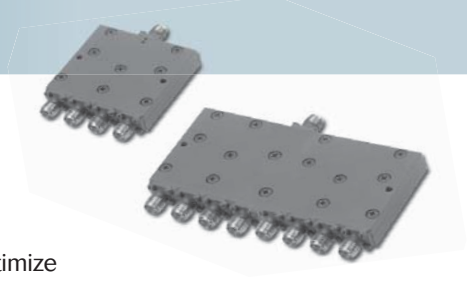
Please Contact the Factory for Custom Specifications

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-55°C to +85°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

3 Way In-Phase Power Divider / Combiners





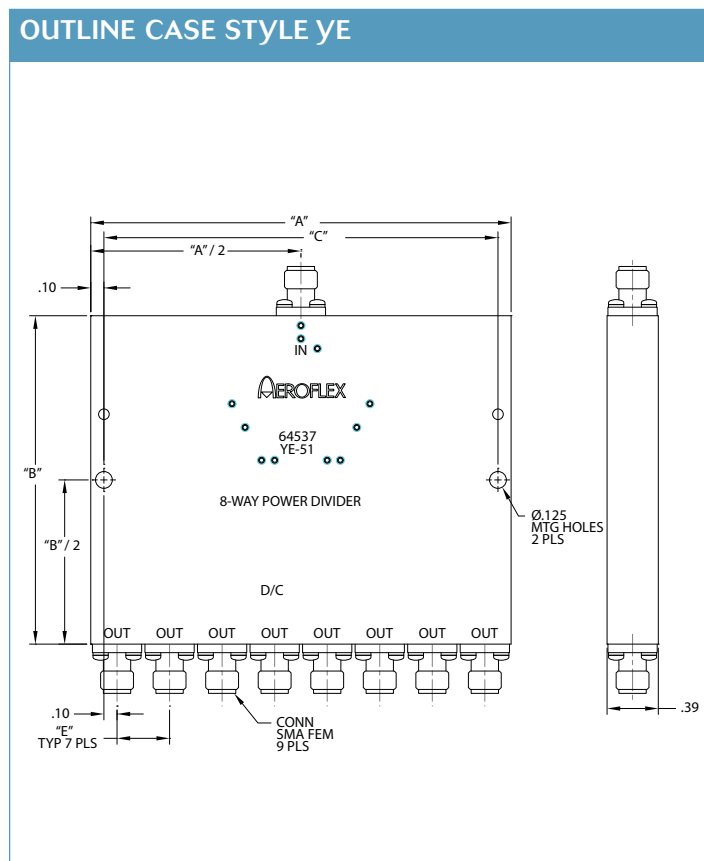
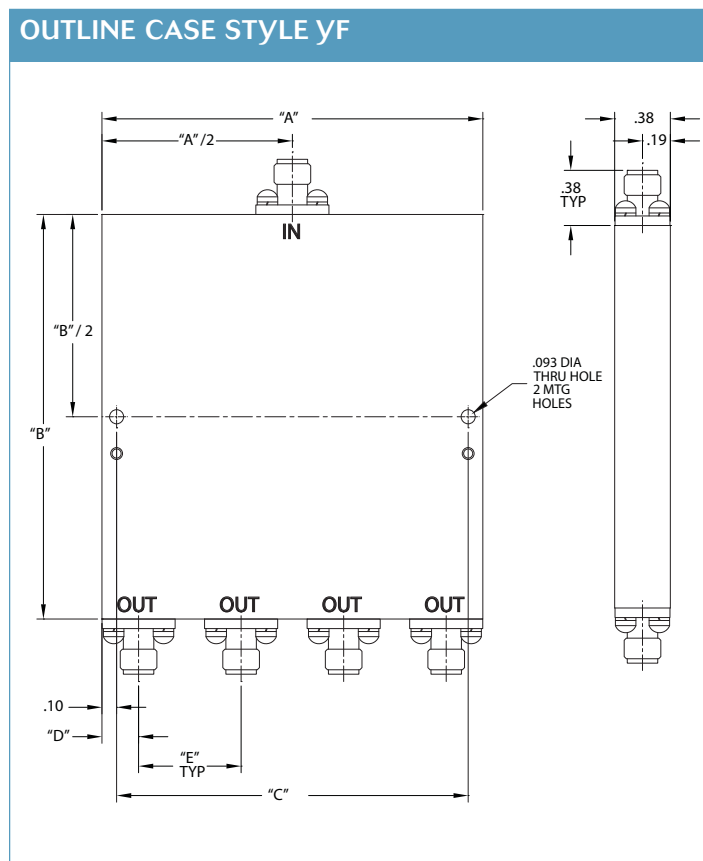
4 & 8 Way In-Phase Power Divider / Combiners

Available as 4 or 8 way standard products, these feature Wilkinson structures to optimize performance over selected bandwidths. Custom designs are also available in other configurations such as asymmetric and multi input/output applications.

YF SERIES 4 WAY											
Frequency Range (GHz)	Part Number	Max In/Out VSWR	Max Insertion Loss (dB)	Min Iso. (dB)	Phase Balance Degrees	Amp Balance (dB)	"A" in	"B" in	"C" in	"D" in	"E" in
0.5 - 1.0	YF-23	1.25 / 1.20	0.5	20	3	0.3	2	2.25	1.8	0.25	0.5
0.5 - 2.0	YF-51	1.40 / 1.30	1	18	4	0.4	2.6	2.75	2.4	0.25	0.7
0.75 - 1.5	YF-25	1.25 / 1.20	0.5	20	3	0.3	2.6	2.75	2.4	0.25	0.7
0.95 - 1.3	YF-33	1.25 / 1.20	0.4	21	3	0.1	2	2	1.8	0.25	0.5
1.0 - 2.0	YF-28	1.30 / 1.20	0.5	20	3	0.3	2	1.75	1.8	0.25	0.5
1.0 - 4.0	YF-54	1.45 / 1.35	1	18	4	0.4	1.6	2	1.4	0.2	0.4
1.5 - 3.0	YF-30	1.30 / 1.20	0.6	20	3	0.3	3.2	2.5	3	0.2	0.4
1.7 - 2.4	YF-35	1.30 / 1.25	0.5	21	3	0.2	2	2	1.8	0.25	0.5
2.0 - 4.0	YF-38	1.30 / 1.20	0.8	18	3	0.3	1.6	1.5	1.4	0.2	0.4
2.0 - 8.0	YF-55	1.50 / 1.40	1.2	16	5	0.5	2	2.25	1.8	0.25	0.5
3.7 - 4.3	YF-37	1.30 / 1.25	0.5	21	3	0.2	1.6	1.5	1.4	0.2	0.4
5.7 - 6.5	YF-42	1.30 / 1.25	0.6	20	3	0.2	1.6	1	1.4	0.5	0.4
4.0 - 8.0	YF-45	1.40 / 1.30	1	18	5	0.5	1.6	1.5	1.4	0.2	0.4
7.0 - 14.0	YF-46	1.50 / 1.40	1	18	7	0.6	1.6	1.75	1.4	0.2	0.4
8.0 - 12.4	YF-53	1.50 / 1.40	1	18	5	0.5	1.6	1.75	1.4	0.2	0.4
2.0 - 18.0	YF-57	1.70 / 1.50	2	14	10	0.7	1.6	2.9	1.4	0.2	0.4
6.0 - 18.0	YF-56	1.70 / 1.50	1.5	14	10	0.7	1.6	1.75	1.4	0.2	0.4
9.0 - 18.0	YF-49	1.70 / 1.50	1.3	15	8	0.7	1.6	1.75	1.4	0.2	0.4
12.0 - 18.0	YF-59	1.50 / 1.40	1.3	17	6	0.6	1.6	1.75	1.4	0.2	0.4
14.0 - 16.0	YF-60	1.45 / 1.40	1.2	17	6	0.4	1.6	1.75	1.4	0.2	0.4
D418M											
1.0 - 1.5		1.80 / 1.35	0.7	10	1	0.2	2	3.2	1.6	0.2	0.4
1.5 - 2.0		1.80 / 1.35	0.8	14	2	0.2					
2.0 - 4.0		1.80 / 1.45	1.0	17	4	0.3					
4.0 - 8.0		1.80 / 1.45	1.2	17	6	0.4					
8.0 - 12.0		1.70 / 1.45	1.4	17	10	0.5					
12.0 - 16.0		1.70 / 1.45	1.8	15	13	0.6					
16.0 - 18.0		1.80 / 1.45	2.0	12	15	0.6					

YE SERIES 8 WAY											
Frequency Range (GHz)	Part Number	Max In/Out VSWR	Max Insertion Loss (dB)	Min Iso. (dB)	Phase Balance Degrees	Amp Balance (dB)	"A" in	"B" in	"C" in	"D" in	"E" in
0.5 - 1.0	YE-09	1.35 / 1.30	0.7	20	3	0.35	4.5	2.75	4.3	0.5	0.5
1.0 - 2.0	YE-11	1.40 / 1.35	0.8	18	4	0.35	4	2.25	3.8	0.25	0.5
2.0 - 4.0	YE-21	1.45 / 1.40	1.1	17	4	0.35	3.2	2	3	0.2	0.4
2.0 - 8.0	YE-28	1.70 / 1.65	1.5	16	8	0.7	3.2	4	3	0.2	0.4
4.0 - 8.0	YE-41	1.60 / 1.55	1.4	16	7	0.6	3.2	2	3	0.2	0.4
1.7 - 2.4	YE-51	1.35 / 1.30	0.7	19	4	0.3	3.2	2.5	3	0.2	0.4
3.7 - 4.3	YE-61	1.35 / 1.30	0.7	19	5	0.3	3.2	2	3	0.2	0.4
5.7 - 6.5	YE-66	1.35 / 1.30	0.9	19	5	0.3	3.2	2	3	0.2	0.4
6.0 - 18.0	YE-68	2.00 / 1.90	2.3	13	15	1	3.2	2.85	3	0.2	0.4
8.0 - 12.4	YE-81	1.70 / 1.65	1.2	15	6	0.4	3.2	2.5	3	0.2	0.4
2.0 - 18.0	YE-88	2.00 / 1.90	3.2	13	15	1	3.2	3.75	3	0.2	0.4
12.0 - 18.0	YE-76	1.80 / 1.75	1.8	13	15	0.6	3.2	2.5	3	0.2	0.4
14.0 - 16.0	YE-86	1.60 / 1.50	1.6	14	10	0.5	3.2	1.5	3	0.2	0.4

4 & 8 Way In-Phase Power Divider / Combiners



MECHANICAL SPECIFICATIONS

Case Style	YE or YF Outline
Connectors	SMA Female per MIL-C-39012

NOTES

Please Contact the Factory for Custom Specifications

ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-55°C to +85°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D



Series D200M Divider / Combiner

The maximum power rating of the three internal resistors is 0.5 KW peak 0.25 W Avg. The internal resistors are arranged in a delta formation. When used as a divider, two branches of the delta each dissipate one quarter of the power at the input. Microminiature chip film resistors are used to optimize phase and amplitude balance performance.

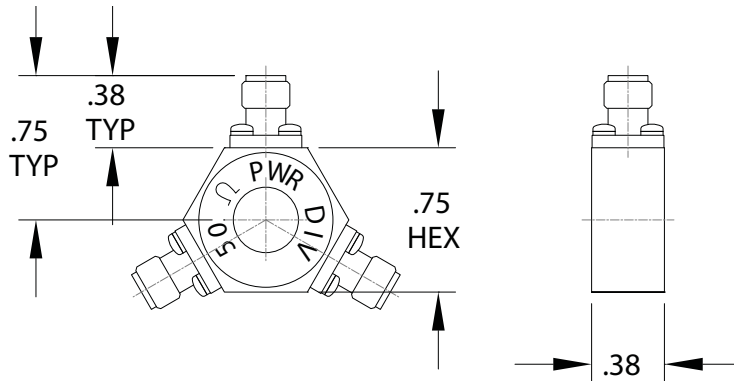
ENVIRONMENTAL SPECIFICATIONS

MIL-E-5400, MIL-STD-202, MIL-E-16400	
Operating Temp	-55°C to +85°C
Storage Temp	-55°C to +125°C
Humidity	MIL-STD-202F, M103, Cond B
Shock	MIL-STD-202F, M213, Cond B
Altitude	MIL-STD-202F, M105, Cond B
Vibration	MIL-STD-202F, M204, Cond B
Thermal Shock	MIL-STD-202F, M107, Cond A
Temperature Cycle	MIL-STD-202F, M105C, Cond D

D200M (MECHANICAL)

Frequency Range (GHz)	VSWR	Insertion Loss
DC - 2	1.35	6.5
2 - 4	1.50	7.0
4 - 18	1.70	7.5
Maximum Input Power:	.25 W	
Impedance:	50 Ohms	
Phase Balance:	±5 Degrees	
Amplitude Balance:	±0.25dB	
Maximum Load Isolation:	6dB	
Operating Temp:	-55°C to +125°C	

OUTLINE CASE STYLE D200



MATES WITH TYPE
SMA MALE CONN
PER MIL-PRF-39012
3 PLS

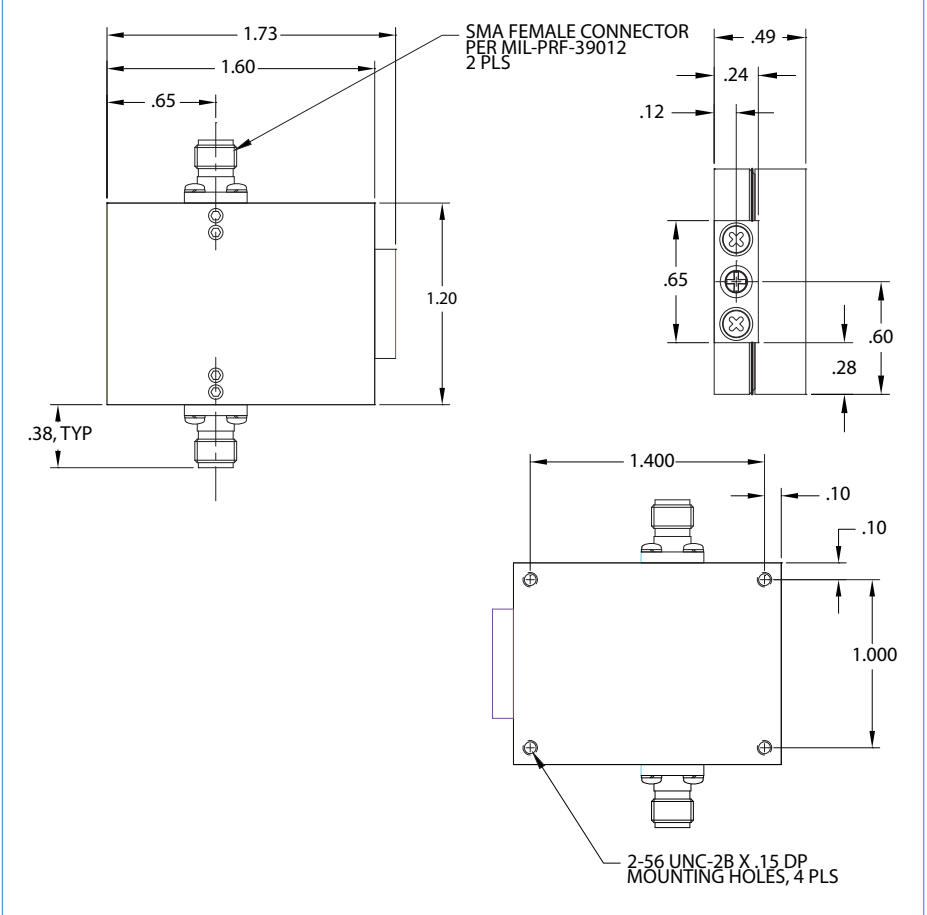


Continuously Variable Phase Trimmer

A Phase Trimmer continuously changes the phase of a microwave signal by varying an adjustment screw.

PV-18 (MECHANICAL)						
Frequency Range (GHz)	Phase Shift	Phase Adjustment	Insertion Loss	VSWR	RF Power	Operating Temp
1 - 18	20° minimum/ 25° Typ at 1GHz 360° minimum/ 450° Typ at 18GHz (At Maximum Adjustment)	The Phase is continuously adjustable with a 12 -15 turn screw	1dB maximum (1 - 8GHz) 1.5 maximum (8 - 18GHz)	1.5:1 maximum (1 - 8GHz) 1.9:1 maximum (8 - 18GHz)	3W CW and 3KW Peak Max operational	-55°C to +85°C

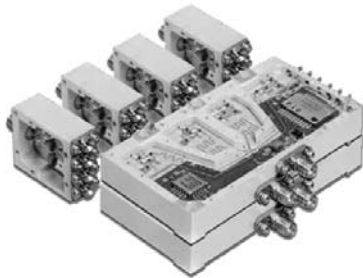
OUTLINE CASE STYLE PV



Integrated Microwave Products

Aeroflex Control Components' extensive experience in multifunction microwave assemblies including: High Power T/R Switches, Switch Matrices, Frequency Converters, Multipoint Antenna Steering Systems, and Switched Amplifiers. These are just some of the products we produce. Please Contact the factory for further assistance.

4 X 4 Switch / Combiner Matrix



Technical Features

- PIN Diode/ MMIC switch matrix features operation in popular radar bands.
- Multiple RF technologies including microstrip and lumped components for switches and power combiners provide dense modular packaging, with digital drive circuitry and multiple layer rf/digital PCB's
- RF cross-over connections eliminated with blind mate connectors and 90° rotation.
- Modular Construction

Time Delay Unit



Technical Features

- Ultra-Precise Switched Time Delay Units
- S-Band, L-Band, X-Band & Ku-Band
- 6 and 8 BIT Configurations
- Precise Phase & Attenuation
- Temperature Phase Compensated
- Controlled Constant Temperature surface
- Combination of switched microstrip and coaxial lines

Sub Elements

- PIN Switches
- Amplifier Modules
- Directional couplers
- Attenuators
- Digital logic

Application

- Phased Array and Aperture lens Antenna Systems
- Simulator Systems

Integrated Phase Shifter/Attenuator



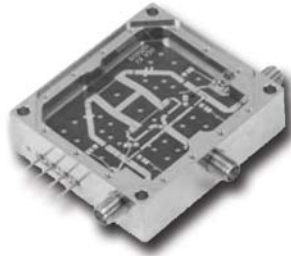
Technical Features

- Frequency in S-Band
- 360° Minimum Phase Shift
- 60dB Minimum Attenuation
- ± 15 Volts power supply
- Analog Phase control (5 to 15V)
- 11 BIT Digital Attenuation Control
- VSWR 1.5:1
- Typical insertion loss 10dB
- 0 to 70° C Operation
- Clam Shell design to allow independent control of Phase Shifter and Attenuator

Application

- Simulation Systems

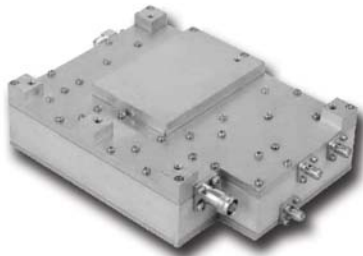
Antenna Switch



Technical Features

- Pin diode switch assembly
- Communication pins
- 1.9 - 2.5 and 6.4 - 7.0GHz
- Phase relationships provide horizontal and vertical polarization for microwave radio markets
- Vertical / Horizontal antenna switching
- High Isolator / low loss

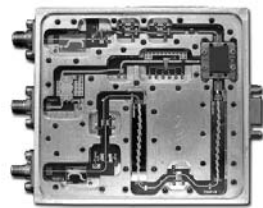
IFF Switch Assembly



Technical Features

- 4kWatt peak power
- 1030 to 1090 MHz
- Integral power monitor high directivity couplers
- Sum -Diff Switching
- Integral self test couplers
- Full range of IFF products for switching, detecting, filter duplexer T/ switching
- Mode V and Mode S operation

Ka-Band Upconverter



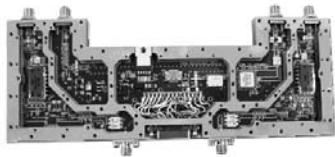
Technical Features

- Small, low power design
- Integrated digital attenuator for Gain control
- TX enable command
- BIT monitoring for LO, RF and IF
- Low spurious

Application

- UAV

Dual Downconverter



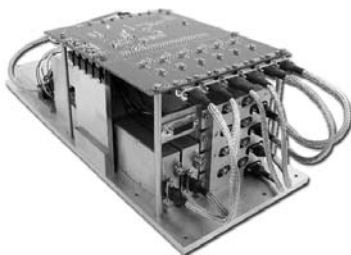
Technical Features

- Integrated PLL Synthesizer
- Built in Noise Circuitry for system testing
- Matched Amplitude and phase
- All surface mount design
- Wideband operation

Application

- UAV

4-12GHz Four Channel Compressive Receiver with Integral 2x4 Matrix Switch



Technical Features

- Modular design
- Integral Tunnel Diode detector circuitry
- CAN Bus Comm. architecture
- Integrated Temp sensors and BIT

Application

- Radio Astronomy

Switch Matrix 50 MHz to 3 GHz



Technical Features

- 8x2 non blocking
- 5Watts input power handling

Application

- Shipboard
- Multiple Antenna combining

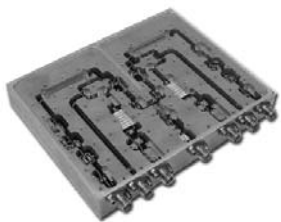
Switch Matrix Assembly



Technical Features

- EW band operation
- 3 Band combining for full EW antenna combining
- Cal port for in-system BIT testing
- +28v input with DC/DC converters for power efficiency
- High IP3 and 1dB compression
- Modular design
- RS-422 interface

Ka-Band Dual Down Converter



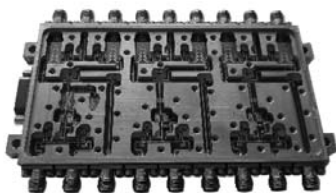
Technical Features

- Common Lo for phase matching
- Integrated TX enable
- BIT monitoring
- Temperature sensing

Application

- Radar systems

EW Tri-Band 3x3 Blocking Matrix Switch



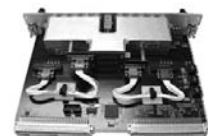
Technical Features

- Cal Input Ports
- Small low power design
- Integrated BIT detection
- Low Loss Wilkinson design

Application

- Airborne EW systems

EW Switch Matrix



Technical Features

- Full EW band
- Dual 1x10 Matrix
- Low Loss
- 6U VME design

Application

- UAV

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Terms and Conditions of Sale

- 1.) PRICE. Price is F.O.B. Shipping point.
- 2.) PAYMENT. Upon approval of credit, payment is due on or before 30 days after date shipped. Partial payment is required on the basis of partial shipments of the total order.
- 3.) DELIVERY. Estimates as to time of delivery are based on conditions prevailing at the offer date and apply from the date of receipt of a definitive contract or purchase order. All agreements as to delivery are subject to the contingencies of strikes, fires, accidents, or causes of delay beyond the control of AEROFLEX. Where a delay in delivery or failure to deliver is caused by factors beyond the control of AEROFLEX, such delay or failure to deliver shall not be deemed a breach or default of this Agreement and AEROFLEX shall have no liability for any damages, injury, costs or expenses incurred by the Buyer as a result of such delay or failure to deliver.
- 4.) ACCEPTANCE. Buyer shall be deemed to have accepted items sold hereunder when such items are delivered to the carrier for shipment to Buyer.
- 5.) RISK OF LOSS. The risk of loss for any items sold hereunder shall pass to Buyer at that time when such items are delivered to the carrier for shipment.
- 6.) NON CONFORMING DELIVERY. All claims for shortages or other non-conformity of delivery or of the items shipped must be made in writing within ten (10) days of Buyer's receipt of shipment. AEROFLEX shall have an unqualified right to cure any non-conformity. In no event shall AEROFLEX be liable for incidental or consequential damages arising from or relating to a non-conforming shipment. Buyer shall not return any items hereunder as non-conforming without the prior consent of AEROFLEX.
- 7.) Shipment shall be made using the carrier specified on the purchase order, with freight pre-paid and added to the invoices submitted to Buyer for payment or charged directly to buyer's account. When a carrier is not specified, shipment shall be made by the carrier selected at the discretion of AEROFLEX.
- 8.) WARRANTY. AEROFLEX warrants its products from its date of shipment and for the period of 1 year to be free from defects caused by faulty materials or poor workmanship, provided:
 - a.) AEROFLEX is notified in writing by Buyer of such defect prior to the expiration of the warranty period; and
 - b.) After receiving return authorization from AEROFLEX, the defective item is returned to AEROFLEX, Eatontown, New Jersey, with transportation charges prepaid by Buyer; and
 - c.) AEROFLEX's examination of such unit shall disclose to its satisfaction that such defect(s) exist and have not been caused by misuse, neglect, improper installation, improper storage, repair alteration or accident; and
 - d.) An Evaluation Fee will be charged to Buyer to cover inspection and testing costs for any item returned by Buyer under this paragraph which is found to be within specifications and/or otherwise not the responsibility of AEROFLEX under the terms and conditions of this paragraph or any other part of this Agreement.THE LIABILITY OF AEROFLEX UNDER THIS WARRANTY IS LIMITED TO REPLACING, REPAIRING, OR ISSUING A CREDIT, AT ITS OPTION, FOR ANY SUCH ITEM RETURNED BY BUYER UNDER THE TERMS OF THIS WARRANTY. IN NO EVENT SHALL AEROFLEX BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE. THIS IS THE SOLE WARRANTY MADE BY AEROFLEX. NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE BY AEROFLEX. AEROFLEX SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES.
- 9.) PRODUCT IMPROVEMENT AND/OR DESIGN CHANGES. AEROFLEX expressly reserves the right to make product improvements and/or design changes to any of its products without incurring any obligation or liability to make the same changes or improvements to any items sold previously.
- 10.) PRODUCT SPECIFICATIONS. Published specifications whether contained herein or in any other materials or documents distributed to Buyer by AEROFLEX do not become final or binding on AEROFLEX until approved by AEROFLEX. AEROFLEX expressly reserves the right to change or modify specifications at any time without prior notice.
- 11.) SPECIAL TOOLING. Any and all special tooling that is purchased, designed, or constructed by AEROFLEX, for the purpose of filling this order shall be and shall remain the property of AEROFLEX.

Terms and Conditions of Sale

12.) TAXES. Any state, local or use tax, or other governmental charge imposed upon the items sold hereunder shall be paid by the Buyer. Buyer shall also make any and all necessary reports and filings required in connection with any such taxes or charges. Failure of the Buyer to comply with the terms of this paragraph shall be a breach of this entire Agreement.

13.) ASSIGNMENT AND DELEGATION. Buyer may not assign any of its rights nor delegate any of its duties hereunder without the express written consent of AEROFLEX.

14.) SELLER'S AGENTS. The Buyer acknowledges that he has been advised that no agent, employee, or representative of the Seller has any authority to bind the Seller to any affirmation, promise, representation, or warranty is specifically set forth in this Agreement. It does not form a basis of this agreement and shall not be enforceable against the Seller.

15.) CANCELLATION. This Agreement may not be cancelled in whole or in part without the written consent of AEROFLEX. Such consent shall in no event be given unless Buyer pays to AEROFLEX, AEROFLEX's costs and expenses (including without limitation, the cost of materials, labor, engineering expense, overhead and all commitments to its suppliers and subcontractors) plus profit, all as determined by AEROFLEX.

16.) ENTIRE AGREEMENT. This Agreement states and constitutes the entire agreement between the parties, hereto and all prior communications, representations and agreements, written or oral between Buyer and AEROFLEX are superseded by this Agreement. No other statements, representation, covenant or warranty not contained herein shall be binding on AEROFLEX.

17.) AMENDMENT AND MODIFICATION. No provision, term or condition of this Agreement may be waived, modified, amended, varied or supplemented in any respect except in writing signed by an authorized representative of AEROFLEX. No invoice, purchase order, voucher or other documents or materials submitted to AEROFLEX by Buyer shall amend, modify, vary or supplement this Agreement. AEROFLEX's failure to object to any provision that conflicts with any provision, term or condition of this Agreement, whether contained in Buyer's purchase order or other documents or materials supplied to AEROFLEX by Buyer, shall not be construed as an acceptance thereof or as a waiver of any provision, term or condition contained herein.

18.) NO IMPLIED WAIVERS. The failure of either party at any time to require performance by the other of any provision hereof shall in no way affect the right to require performance at any time, thereafter, nor shall the waiver by either party of a breach of any provision hereof be taken or held to be a waiver of any succeeding breach of such provision or as a waiver of the provision itself.

19.) SEPARABILITY AND SAVINGS. If any part of this Agreement is held invalid under the laws of New Jersey; such part shall be waived and the balance of the Agreement shall continue in full force and effect.

20.) APPLICABLE LAW. Unless expressly modified or contradicted herein, all the rights and obligations of the parties shall be governed by the Uniform Commercial Code as enacted in the State of New Jersey.



Services & Certifications

- Hybrid micro-electronic assembly
- Wire Bonding & PCB assembly
- RF and microwave test to 40 GHz
- Product design
- ISO9001-2008 Certified

AEROFLEX
A passion for performance.



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

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