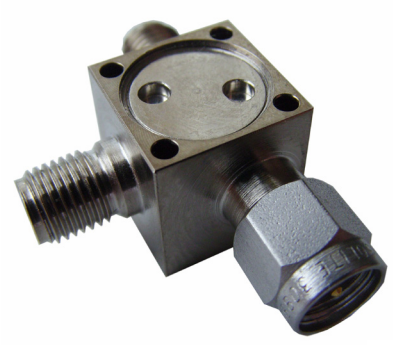
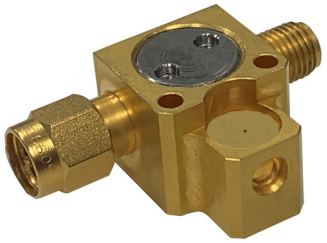
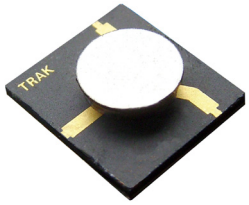
smiths interconnect

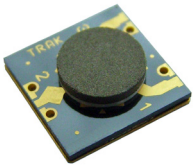
X-BAND PASSIVE COMPONENTS

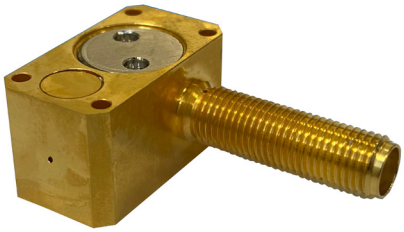
X-Band Microstrip Isolators, Circulators and Coaxial Components

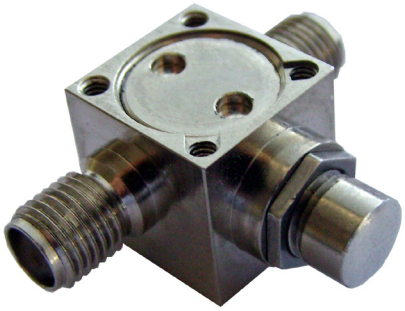




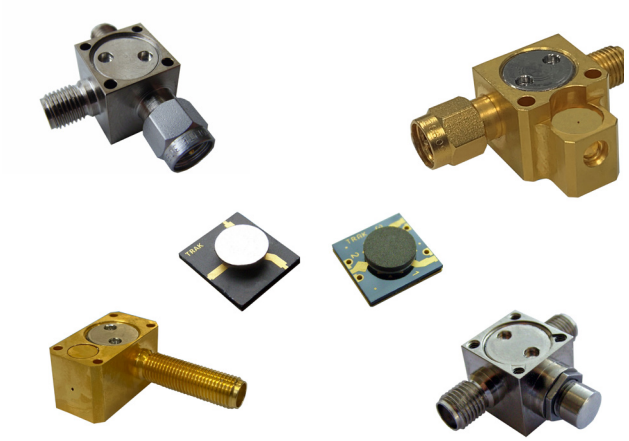








X-Band Passive Components



Broad range of X-band passive components for space and defence applications

Smiths Interconnect's broad range of X-Band passive components are specifically designed for space and defence applications. Building on five decades of experience, our X-Band coaxial and microstrip components are compact, high performance and space qualified. Several products of this offering are also used in terrestrial defence applications.

Each device is optimised to operate over broad assigned frequency bands under the most rigorous conditions. The designs have been tested in accordance with customer specifications and qualified using a comprehensive suite of test facilities available in the company's state-of-the-art test and qualification laboratory in Dundee, Scotland. Qualification comprises thermal shock and cycling, sine/random vibration, mechanical shock and, where appropriate, continuous waveform and peak power under TVAC, critical power and seeded multipaction. Summary and qualification data reports are available to prospective customers.

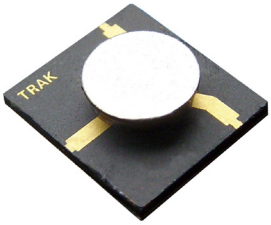
Smiths Interconnect product offering includes coaxial, stripline and microstrip space qualified isolators, circulators and terminations operating in assigned bands from UHF to Ka-band for coaxial and from S to Ka-bands for microstrip components.

Features & Benefits

- Broad band operation allowing maximum performance in radar and signal processing applications
- Temperature stable, space qualified products available with qualification data
- In-house facilities to test average, peak and multipaction/critical power, mechanical shock and sine/random vibration
- Sample data and test reports available to assist the design and qualification process
- ITAR free

Low power microstrip circulators

C6786/A, C7696/A, C7291/A and C94118/A



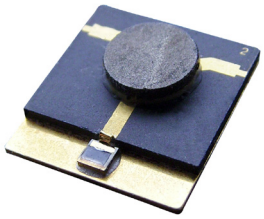
The C6786/A, C7696/A, C7291/A and C94118/A low power microstrip circulators were designed to be used in a next generation GEO HTTP satellite and in a filter demultiplexer application. They are intended to be used within a hybrid construction and must be wire bonded into the user's circuit. Key performance requirements include electrical performance and operating bandwidth.

Specifications

Low Power Microstrip	Performance			
Part Number	**C6786/A**	**C7696/A**	**C7291/A**	**C94118/A**
Function	Circulator	Circulator	Circulator	Circulator
ICD	B108439	B108421	B108418	B108424
Non-operating	-65 to +180C	-65 to +180C	-65 to +180C	-65 to +180C
Acceptance	-45 to +85C	-45 to +85C	-45 to +85C	-45 to +85C
Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Operating Frequency	6.7 to 8.6 GHz	7.7 to 9.6 GHz	7.2 to 9.1 GHz	9.4 to 11.8 GHz
Insertion Loss	0.35dB	0.35dB	0.35dB	0.35dB
Return Loss	20 dB min	20 dB min	20 dB min	20 dB min
Isolation	not applicable	not applicable	not applicable	not applicable
Power handling	2W CW	2W CW	2W CW	2W CW
Mass	<0.5g nom	<0.5g nom	<0.5g nom	<0.5g nom
Resistance to case	>1 M Ohm	>1 M Ohm	>1 M Ohm	>1 M Ohm
Port arrangement	T	T	T	T
Environment	Space, hybrid application	Space, hybrid application	Space, hybrid application	Space, hybrid application

Low power microstrip isolators

I7696/A, I94118/A and I104124/A



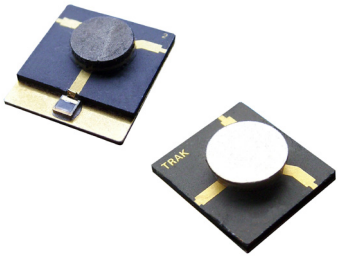
The I7696/A, I94118/A and I104142/A low power microstrip isolators were designed to be in a next generation GEO HTTP satellite and used in a filter demultiplexer application. These low power microstrip isolators are intended to be used within a hybrid construction and must be wire bonded into the user's circuit. Key performance requirements include electrical performance and operating bandwidth.

Specifications

Low Power Microstrip	Performance		
Part Number	**I7696/A**	**I94118/A**	**I104124/A**
Function	Isolator	Isolator	Isolator
ICD	B108433	B108436	B108439
Non-operating	-65 to +180C	-65 to +180C	-65 to +180C
Acceptance	-45 to +85C	-45 to +85C	-45 to +85C
Impedance	50 Ohms	50 Ohms	50 Ohms
Operating Frequency	7.3 to 9.6 GHz	9.4 to 11.8 GHz	10.4 to 12.4 GHz
Insertion Loss	0.35dB	0.35dB	0.35dB
Return Loss	20 dB min	20 dB min	20 dB min
Isolation	20 dB min	20 dB min	20 dB min
Power handling	2W CW	2W CW	2W CW
Mass	<0.5g nom	<0.5g nom	<0.5g nom
Resistance to case	50 Ohms nom	50 Ohms nom	50 Ohms nom
Port arrangement	T	T	T
Environment	Space, hybrid application	Space, hybrid application	Space, hybrid application

Low power microstrip isolators and circulators

I80120/A, I82124/A and C82124/A



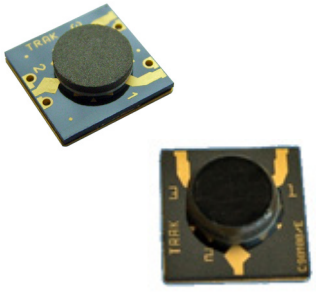
The I80120/A, I82124/A and C82124/A broadband, low power microstrip isolators and circulator were designed and qualified to be used LEO radarsats. They are intended to be used within a hybrid construction and must be wire bonded into the user's circuit. Some devices are partially magnetically shielded while others are not. If partial magnetic shielding is desired this must be incorporated at the design phase. Note that most devices produced for these types of application are arranged so that their ports are arranged in a T configuration.

Specifications

Low Power Microstrip	Performance		
Part Number	**I80120/A**	**I82124/A**	**C82124/A**
Function	Isolator	Isolator	Circulator
ICD	B107207	B107303	B108418
Non-operating	-65 to +180C	-65 to +180C	-65 to +180C
Acceptance	-25 to +85C	-25 to +85C	-25 to +85C
Impedance	50 Ohms	50 Ohms	50 Ohms
Operating Frequency	8.0 to 12.0GHz	8.2 to 12.4GHz	8.2 to 12.4GHz
Insertion Loss	0.60dB	0.60dB	0.60dB
Return Loss	14 dB min	14 dB min	14 dB min
Isolation	14 dB min	14 dB min	N/A
Power handling	4W CW	4W CW	4W CW
Mass	<0.6g nom	<0.6g nom	<0.6g nom
Resistance to case	50 Ohms nom	50 Ohms nom	50 Ohms nom
Port arrangement	T	T	T
Environment	Space, hybrid application	Space, hybrid application	Space, hybrid application

High power microstrip circulators

C89107/H, C85105/D and C90100/J



The C89107/H, C85105/D and C90100/J high power microstrip circulators are designed to be used for ground-based radars. They are intended to be used within a hybrid construction and must be wire bonded into the user's circuit. Some devices are partially magnetically shielded while others are not. If partial magnetic shielding is desired this must be incorporated at the design phase. Note that most devices produced for TRM applications are designed so that their ports are arranged in a Y configuration (devices used in Solid State Power Amplifiers tend to be arranged with their ports arranged in a T configuration). All high-power devices are guaranteed to be unconditionally linear under the worst-case operating conditions.

Specifications

High Power Microstrip	Performance		
Part Number	**C89107/H**	**C85105/D**	**C90100/J**
Function	Circulator	Circulator	Circulator
ICD	B107207	B104993	B108418
Non-operating	-55 to +180C	-55 to +180C	-55 to +180C
Acceptance	-20 to +80C	-20 to +80C	-20 to +80C
Impedance	50 Ohms	50 Ohms	50 Ohms
Operating Frequency	8.9 to 10.7GHz	9.0 to 10.0GHz	9.0 to 10.0GHz
Insertion Loss	0.30dB max	0.60dB	0.45dB max
Return Loss	20dB min	19dB min	20dB min
Isolation	N/A	N/A	N/A
Power handling	10W CW	50W CW	20W CW
Mass	0.5g nom	0.5g nom	0.5g nom
Resistance to case	>1 MOhm	>1 MOhm	>1 MOhm
Port arrangement	Y	Y	Y
Interface	Co-planar waveguide	Co-planar waveguide	Microstrip
Environment	Space, hybrid application	Space, hybrid application	Space, hybrid application

High power microstrip isolators

I90102/D and I7286/A

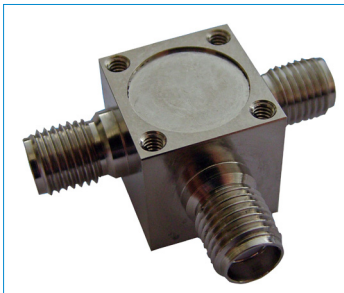
The I90102/D and I7286/A high power microstrip isolators were designed to be used for space based applications radars. They are intended to be used within a hybrid construction and must be wire bonded into the user's circuit. Some devices are partially magnetically shielded while others are not. If partial magnetic shielding is desired this must be incorporated at the design phase. Note that most isolators produced for SSPA applications are designed so that their ports are arranged in a T configuration while devices used in TRms tend to be arranged with their ports in a Y configuration. All high-power devices are guaranteed to be unconditionally linear under the worst-case operating conditions.

Specifications

High Power Microstrip	Performance	
Part Number	**I90102/D**	**I7286/A**
Function	Isolator	Isolator
ICD	B106207	B108430
Non-operating	-55 to +180C	-55 to +180C
Acceptance	-20 to +80C	-20 to +80C
Impedance	50 Ohms	50 Ohms
Operating Frequency	9.0 to 10.2GHz	7.2 to 8.6GHz
Insertion Loss	0.40 max	0.35dB max
Return Loss	20dB min	20dB min
Isolation	20dB min	20dB min
Power handling	10W CW	20W CW
Mass	0.5g nom	0.5g nom
Resistance to case	50 Ohms nom	50 Ohms nom
Port arrangement	T	T
Interface	Microstrip	Microstrip
Environment	Space, hybrid application	Space, hybrid application

Low power coaxial isolators

I70105/A, I62104/A, I71121/A and I71121/A



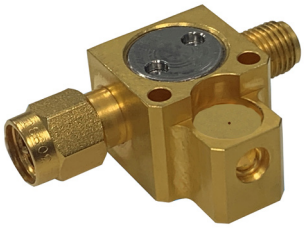
The I70105/A, I62104/A, I71121/A and I71121/A coaxial isolators were designed to be used for space-based frequency converters and receivers. Key requirements include electrical characteristics over a broad operating bandwidth, and exceptional EMC performance. These low power coaxial isolators can be supplied with any combination of SMA(m) and (f) connectors. Ports can be arranged with the load on any port. Note that these devices are also available as circulators.

Specifications

Low Power Coaxial	Performance			
Part Number	I70105/A	I62104/A	I71121/A	I71121/A
Function	Isolator	Isolator	Isolator	Isolator
ICD	C105628	B108503	B108463	C106873
Non-operating	-45 to +125C	-45 to +125C	-45 to +125C	-45 to +125C
Acceptance	-30 to +80C	-30 to +80C	-30 to +80C	-30 to +80C
Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Operating Frequency	7.0 to 10.5GHz	6.2 to 10.4GHz	7.6 to 11.8GHz	8.0 to 12.2 GHz
Insertion Loss	0.35dB	0.35dB	0.35dB	0.35dB
Return Loss	21 dB min	18 dB min	21 dB min	20 dB min
Isolation	21 dB min	18 dB min	21 dB min	20 dB min
EMC	80dB1	80dB1	80dB1	80dB1
Power handling	2W CW	2W CW	2W CW	2W CW
Mass	20g nom (mounting feet add 2f)	20g nom (mounting feet add 2f)	20g nom (mounting feet add 2f)	20g nom (mounting feet add 2f)
Resistance to case	50 Ohms nom	50 Ohms nom	50 Ohms nom	50 Ohms nom
Interface	SMA	SMA	SMA	SMA
Environment	Space	Space	Space	Space

High power coaxial isolators

I7090/B, I8085/H and I8084/B



The I7090/B, I8085/H and I8084/B high power coaxial isolators were designed and space qualified to be used on the outputs stages of Solid State Power Amplifiers. These devices are used during space critical missions including launch and payload deployment and feature CVD terminations produced by Smiths Interconnect. Devices are available finished with Nickel plating however Au plating is recommended to maximize multipaction margin. Key performance requirements include power handling under partial pressures and qualification data is available.

Specifications

Low Power Coaxial	Performance		
Part Number	I7090/B	I8085/H	I8084/B
Function	Isolator	Isolator	Isolator
ICD	B104322	B109126	B107732
Non-operating	-45 to +125C	-45 to +125C	-45 to +125C
Acceptance	-30 to +85C	-30 to +85C	-30 to +85C
Impedance	50 Ohms	50 Ohms	50 Ohms
Operating Frequency	7.0 to 9.0GHz	8.0 to 8.5GHz	8.0 to 8.5GHz
Insertion Loss	0.50dB max	0.35dB max	0.25dB max
Return Loss	19 dB min	21 dB min	23 dB min
Isolation	19 dB min	21 dB min	23 dB min
EMC	80dBi	80dBi	80dBi
Power handling [fwd & rev]	20W CW	10W CW	15W CW
MP margin	+6dB min by test	+7dB min by test	+6dB min by test
Mass	25g nom	27g nom	55g nom
Interface	SMA to SMA	Tab to SMA	Pin to TNC
Environment	Space	Space	Space