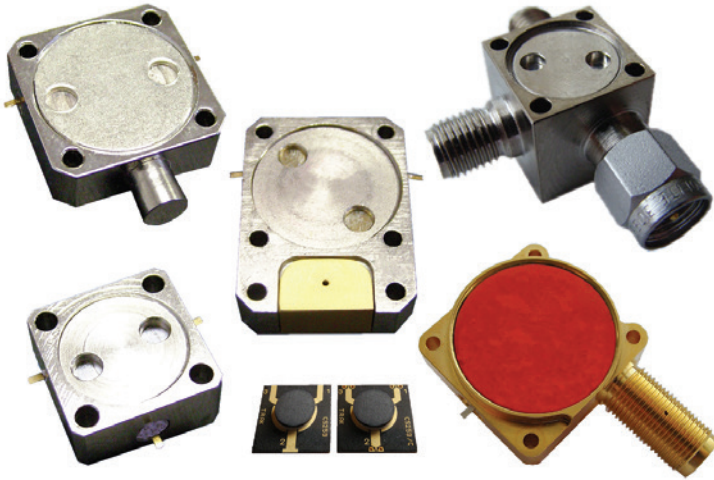


Ferrite Series

Isolators & Circulators



Smiths interconnect's ferrite product portfolio is specifically designed for high reliability applications in defense, aerospace & space.

The circulator's primary function is to stop energy from being reflected back to the source. It does this by circulating microwave energy like a traffic roundabout manages traffic.

When the antenna match is poor, the transmit power reflects back into the isolator. To prevent this power from reaching the amplifier an isolator routes the reflected power into an absorbing load. The load must handle the full reverse AVERAGE power at the highest operating temperature/altitude with a factor safety.

The load may need to be cooled to maintain its reliability and performance

The isolation is the VSWR of the load under worst case condition.

The diagram on the following page explains the function of isolator/circulator in an amplifier circuit.

Designed for
High Reliability Defense,
Aerospace and Space
Applications

Features and Benefits

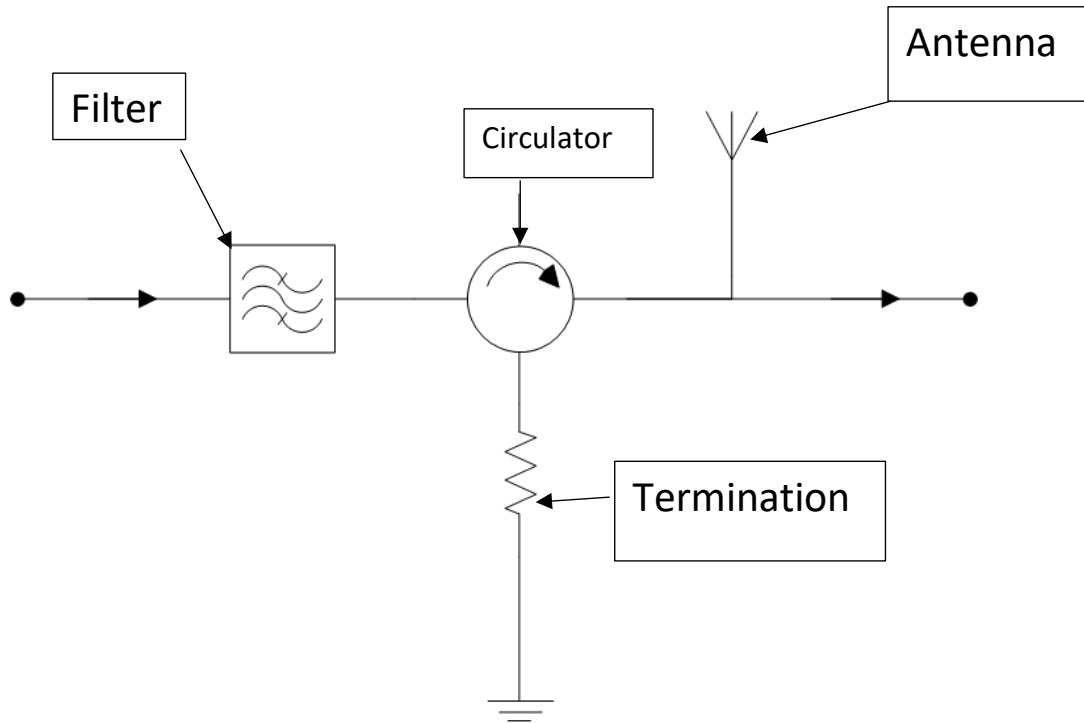
- High reliability, MTBF greater than 18 years
- Extremely low insertion loss over temperature and power
- In-house facility for environmental testing
- Qualification data and report available
- Integrated housing & connector for low loss and EMI shielding
- Multiple connector configurations on coaxial units

Applications

- Power amplifiers
- Satellite communication
- Up and Down converters
- Transmit & receive modules

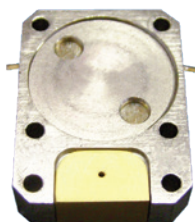
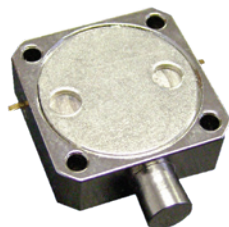
Technical Characteristics

Amplifier Circuit



Technical Characteristics

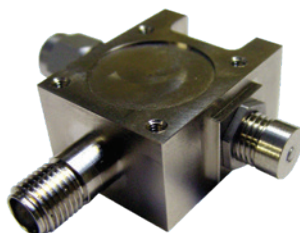
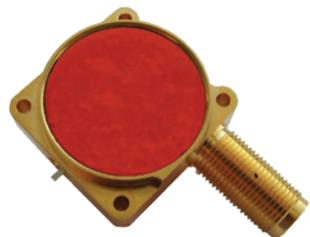
Drop In Isolators & Circulators



Frequency	Insertion Loss (dB max)	Isolation (dB min)	Return Loss (dB min)	Size (mm)
1.20 to 1.30	0.30	21.0	21.0	25.4 x 25.4 x 13.0
1.20 to 1.40	0.30	21.0	21.0	25.4 x 25.4 x 13.0
1.50 to 1.70	0.30	21.0	21.0	25.4 x 25.4 x 13.0
2.00 to 2.20	0.30	21.0	21.0	25.4 x 25.4 x 13.0
2.10 to 2.30	0.30	21.0	21.0	25.4 x 25.4 x 13.0
2.20 to 2.40	0.30	21.0	21.0	25.4 x 25.4 x 13.0
2.40 to 2.60	0.30	23.0	23.0	25.4 x 25.4 x 13.0
2.70 to 3.10	0.30	21.0	21.0	19.0 x 19.0 x 13.0
3.20 to 4.20	0.40	19.0	19.0	19.0 x 19.0 x 13.0
3.40 to 3.70	0.30	21.0	21.0	19.0 x 19.0 x 13.0
3.70 to 4.20	0.35	20.0	20.0	19.0 x 19.0 x 13.0
4.00 to 6.00	0.40	20.0	20.0	13.0 x 13.0 x 13.0
4.40 to 4.90	0.30	23.0	23.0	13.0 x 13.0 x 13.0
5.20 to 5.90	0.30	21.0	21.0	13.0 x 13.0 x 13.0
5.70 to 7.10	0.40	20.0	20.0	13.0 x 13.0 x 13.0
6.50 to 18.0	0.60	16.0	16.0	13.0 x 13.0 x 13.0
8.00 to 10.0	0.30	21.0	21.0	13.0 x 13.0 x 13.0
8.00 to 12.0	0.40	19.0	19.0	13.0 x 13.0 x 13.0
10.7 to 12.8	0.30	23.0	23.0	13.0 x 13.0 x 13.0
12.7 to 14.5	0.30	23.0	23.0	13.0 x 13.0 x 13.0
17.3 to 18.1	0.30	23.0	23.0	13.0 x 13.0 x 13.0
18.0 to 20.0	0.30	23.0	23.0	13.0 x 13.0 x 13.0
18.0 to 20.5	0.30	23.0	23.0	13.0 x 13.0 x 13.0
18.0 to 22.0	0.40	20.0	20.0	13.0 x 13.0 x 13.0
18.0 to 26.5	0.60	17.0	17.0	13.0 x 13.0 x 13.0
18.3 to 20.5	0.30	23.0	23.0	13.0 x 13.0 x 13.0
20.0 to 21.0	0.30	23.0	23.0	13.0 x 13.0 x 13.0
20.5 to 21.5	0.30	23.0	23.0	13.0 x 13.0 x 13.0
21.0 to 22.5	0.30	23.0	23.0	13.0 x 13.0 x 13.0
23.0 to 25.0	0.40	20.0	20.0	13.0 x 13.0 x 13.0

Technical Characteristics

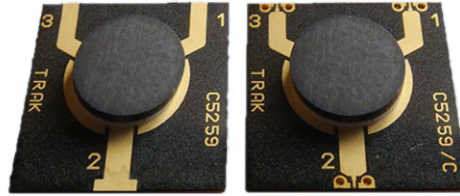
Coaxial Isolators & Circulators



Satellite Band	Operating Band (GHz)	Insertion Loss (dB max)	Return Loss (dB min)	Isolation Loss (dB min)
K-Band	22.0 to 24.0	0.35	23.0	23.0
K-Band	18.0 to 22.0	0.35	23.0	23.0
K-Band	18.0 to 20.0	0.35	23.0	23.0
K-Band	18.0 to 22.0	0.40	23.0	23.0
K-Band	17.0 to 20.0	0.35	23.0	23.0
Ku-Band	12.7 to 14.8	0.30	23.0	23.0
Ku-Band	10.7 to 12.8	0.30	23.0	23.0
Ku-Band	10.0 to 15.0	0.40	21.0	21.0
X-Band	8.0 to 12.0	0.40	21.0	21.0
X-Band	8.0 to 10.0	0.30	23.0	23.0
C-Band	5.7 to 7.1	0.30	23.0	23.0
C-Band	5.0 to 6.0	0.30	23.0	23.0
C-Band	4.5 to 5.0	0.30	23.0	23.0
C-Band	3.4 to 4.2	0.30	23.0	23.0
S-Band	2.0 to 2.2	0.30	23.0	23.0
L-Band	1.2 to 1.4	0.25	23.0	23.0

Technical Characteristics

Microstrip Isolators & Circulators



Operating Band (GHz)	Insertion Loss (dB max)	Return Loss (dB min)	Isolation Loss (dB min)	Application	Notes
Operating over typically a 100C range					
3.4 to 4.2	0.30	21.0	21.0	Space & Defence	Circulator
5.0 to 6.0	0.30	21.0	21.0	Defence	Isolator
5.2 to 5.9	0.30	21.0	21.0	Space & Defence	Circulator
5.7 to 7.1	0.30	21.0	21.0	Space	Circulator & Isolator
5.8 to 6.5	0.30	21.0	21.0	Space & Defence	Circulator & Isolator
7.8 to 8.5	0.30	21.0	21.0	Space & Defence	Circulator & Isolator
8.0 to 12.0	0.30	15.0	15.0	Space & Defence	Circulator & Isolator
8.5 to 9.6	0.30	21.0	21.0	Defence	Circulator & Isolator
8.9 to 10.7	0.30	21.0	21.0	Space & Defence	Circulator
9.0 to 10.0	0.30	21.0	21.0	Space & Defence,	Circulator & Isolator
9.5 to 11.5	0.30	21.0	21.0	Space & Defence	Circulator & Isolator
10.0 to 12.0	0.30	15.0	15.0	Space & Defence	Circulator
10.0 to 12.0	0.40	14.0	14.0	Space & Defence	Circulator & Isolator
10.7 to 12.8	0.40	20.0	20.0	Space & Defence	Circulator & Isolator
12.7 to 14.5	0.40	20.0	20.0	Space	Isolator
15.0 to 17.0	0.50	20.0	20.0	Defence	Circulator
24.0 to 27.0	0.50	19.0	19.0	Space	Isolator

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