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CIRCULATORS and ISOLATORS








A circulator is sometimes called a “duplexer,” because it duplexes two signals into one channel.

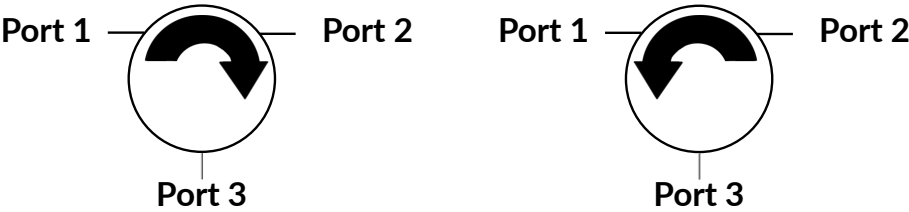
Circulators make a great antenna interface for a transmit/receive system. Energy can be made to flow from the transmitter (port 1) to the antenna (port 2) during transmit, and from the antenna (port 2) to the receiver (port 3) during receive. Circulators have low electrical losses and can be made to handle huge power loads, well into kilowatts. They usually operate over no more than an octave bandwidth, and are purely an RF component.

Waveguide circulators and isolators have by far the best electrical characteristics. You can specify insertion loss down to less than 0.2 dB in some cases! Coax circulators and isolators might have losses between 0.5 and 1.0 dB.















By terminating one port, a circulator becomes an isolator, which has the property that energy flows on one direction only. They isolate components in a chain, so that bad VSWRs don't contribute to gain ripple, or lead to instabilities. An isolator is a non-reciprocal, passive network.

COAXIAL CIRCULATORS

PHOTO	TYPE PART #	FREQUENCY RANGE	ISOLATION (MIN.)	IL (MAX)	VSWR (MAX)	POWER	POWER (MAX)
	SMA HSC0810S	800 MHz to 1.0 GHz	20 dB	0.50 dB	1.30:1	250 WATTS	750 WATTS
	N HSC0810N	800 MHz to 1.0 GHz	20 dB	0.40 dB.	1.25:1	250 WATTS	750 WATTS
	SMA HSC0102S	1.0 to 2.0 GHz	18 dB	0.50 dB	1.30:1	50 WATTS	75 WATTS
	SMA HSC1722S	1.70 to 2.20 GHz	20 dB	0.40 dB	1.25:1	150 WATTS	500 WATTS
	N HSC1722N	1.70 to 2.20 GHz	20 dB	0.40 dB	1.25:1	150 WATTS	500 WATTS
	SMA HSC2040	2.0 to 4.0 GHz	18 dB	0.50 dB	1.30:1	20 WATTS	30 WATTS
	SMA HSC2060	2.0 to 6.0 GHz	14 dB	0.80 dB	1.50:1	20 WATTS	30 WATTS
	SMA HSC4080	4.0 to 8.0 GHz	20 dB	0.40 dB	1.25:1	20 WATTS	30 WATTS
	SMA HSC6018	6.0 to 18.0 GHz	14 dB	1.00 dB	1.50:1	10 WATTS	30 WATTS
	SMA HSC8012	8.0 to 12.4 GHz	20 dB	0.50 dB	1.25:1	25 WATTS	500 WATTS
	SMA HSC1218	12.0 to 18.0 GHz	20 dB	0.50 dB	1.25:1	10 WATTS	30 WATTS
	SMA HSC1826	18.0 to 26.5 GHz	18 dB	0.80 dB	1.40:1	10 WATTS	30 WATTS



COAXIAL ISOLATORS

PHOTO	TYPE PART #	FREQUENCY RANGE	ISOLATION (MIN.)	IL (MAX)	VSWR (MAX)	REFLECTIVE POWER	POWER	POWER (MAX)
	SMA HSI0810S	800 MHz to 1.0 GHz	20 dB	0.50 dB	1.25:1	10 WATTS	250 WATTS	750 WATTS
	N HSI0810N	800 MHz to 1.0 GHz	20 dB	0.40 dB.	1.25:1	10 WATTS	250 WATTS	750 WATTS
	SMA HSI0102S	1.0 to 2.0 GHz	18 dB	0.50 dB	1.30:1	10 WATTS	50 WATTS	75 WATTS
	SMA HSI1722S	1.70 to 2.20 GHz	20 dB	0.40 dB	1.25:1	10 WATTS	150 WATTS	500 WATTS
	N HSI1722N	1.70 to 2.20 GHz	20 dB	0.40 dB	1.25:1	10 WATTS	200 WATTS	500 WATTS
	SMA HSI2040S	2.0 to 4.0 GHz	18 dB	0.40 dB	1.30:1	2 WATTS	20 WATTS	30 WATTS
	SMA HSI2060	2.0 to 6.0 GHz	14 dB	0.80 dB	1.50:1	2 WATTS	20 WATTS	30 WATTS
	SMA HSI4080	4.0 to 8.0 GHz	20 dB	0.40 dB	1.25:1	2 WATTS	20 WATTS	30 WATTS
	SMA HSI6018	6.0 to 18.0 GHz	14 dB	1.00 dB	1.50:1	2 WATTS	10 WATTS	30 WATTS
	SMA HSI8012	8.0 to 12.4 GHz	20 dB	0.40 dB	1.25:1	2 WATTS	25 WATTS	500 WATTS
	SMA HSI1218	12.0 to 18.0 GHz	20 dB	0.50 dB	1.25:1	2 WATTS	10 WATTS	30 WATTS
	SMA HSI1826	18.0 to 26.5 GHz	18 dB	0.80 dB	1.40:1	2 WATTS	10 WATTS	30 WATTS
	SMA HSI2640	26.0 to 40.0 GHz	14 dB	1.00 dB	1.50:1	2 WATTS	5 WATTS	30 WATTS
	SMA HSI2731	27.0 to 31.0 GHz	20 dB	0.60 dB	1.25:1	2 WATTS	5 WATTS	30 WATTS

WAVEGUIDE FULL BAND ISOLATORS

PHOTO	TYPE PART #	FREQUENCY RANGE	ISOLATION (MIN.)	IL (MAX)	POWER (MAX)	FLANGE MATERIAL
	WR-08 HWFBI08-ER	90 to 140 GHz	20 dB	3..2 dB	0.75 WATTS	UG-387/U-M Round Gold Plated Brass
	WR-10 HWFBI10-ER	75 to 110 GHz	27 dB	2.5 dB	1.0 WATTS	UG-387/U-M Round Gold Plated Brass
	WR-12 HWFBI12-ER	60 to 90 GHz	27 dB	2.0 dB	1.0 WATTS	UG-387/U Round Gold Plated Brass
	WR-15 HWFBI15-ER	50 to 75 GHz	27 dB	1.8 dB	1.5 WATTS	UG-385/U Round Gold Plated Brass
	WR-19 HWFBI19-ER	40 to 60 GHz	27 dB	1.8 dB	1.5 WATTS	UG-383/U Round Gold Plated Brass
	WR-22 HWFBI22-ER	33 to 50 GHz	27 dB	1.8 dB	1.5 WATTS	UG-383/U Round Gold Plated Brass
	WR-28 HWFBI28-ES	26.5 to 40 GHz	25 dB	1.8 dB	1.5 WATTS	UG-599/U Square Gold Plated Brass

