Coaxial Isolator (CI) Series:

Part No. Example

5.9 - 6.4 ghZ

5964C I 343

'C' = Circulator
' I ' = Isolator

Port A; N Female
Port B; N Male
Port C; N Female

- **Multiple Junction Units are available in bands listed.**
- **Specifications indicate typical performance per junction in multiple configurations.**
- **Contact the factory to discuss your special configuration requirements.**
- **Units may be configured with connectors or termination on any port by specifying port location A,B, & C from the following table.**

Connector Type	No.
SMA Female	1
SMA Male	2
N Female*	3
N Male*	4
Termination**	5

* Up to 18.0 GHz only.
** STD. Termination, 2WCW

Frequency Range (GHz):	Isolation dB Min:	Ins. Loss dB Max:	VSWR (MAX):	Length:	Width:	Height:	Basic Part Number
.290-.375	18	0.5	1.28	2.43	2.38	1.0	2937CI
.375-.500	18	0.5	1.28	2.00	2.00	1.0	3750CI
.500-.650	20	0.5	1.25	1.63	1.50	.75	5065CI
.650-.850	20	0.5	1.25	1.63	1.50	.75	6585CI
.850-1.10	20	0.5	1.25	1.75	1.50	1.0	8511CI
.960-1.22	20	0.5	1.25	1.25	1.25	.63	9612CI
1.25-1.60	20	0.5	1.25	1.25	1.25	.63	1216CI
2.2-2.4	28	0.2	1.08	1.38	1.43	.69	2224CI
2.7-2.9	28	0.2	1.08	1.10	1.10	.63	2729CI
3.7-4.2	28	0.2	1.08	1.00	1.00	.63	3742CI
4.4-5.0	23	0.2	1.15	1.00	1.00	.63	4450CI
5.4-5.9	23	0.2	1.15	1.00	1.00	.63	5459CI
5.9-6.4	23	0.2	1.15	1.00	1.00	.63	5964CI
7.0-12.4	18	0.5	1.35	0.87	1.00	.63	7012CI
7.9-8.4	23	0.3	1.15	0.75	0.87	.63	7984CI
8.5-9.6	20	0.3	1.25	0.50	0.93	.50	8596CI
10.7-11.7	23	0.2	1.15	0.50	0.93	.50	10727CI
11.7-12.2	23	0.2	1.15	.50	0.93	.50	11722CI
12.2-12.7	23	0.2	1.15	0.50	0.93	.50	12227CI
14.0-14.5	23	0.2	1.15	0.50	0.93	.50	14045CI
16.0-18.0	20	0.3	1.25	0.50	0.93	.50	16018CI
18.0-20.0	18	0.4	1.35	0.38	0.90	.50	18020CI

Coaxial Circulator (CC) Series:

Part No. Example

2.0 - 4.0 GHz

2040**CC**111

'C' = Circulator
' I ' = Isolator

Port A; N Female
Port B; N Male
Port C; N Female

- **Multiple Junction Units are available in bands listed.**
- **Specifications indicate typical performance per junction in multiple configurations.**
- **Contact the factory to discuss your special configuration requirements.**
- **Units may be configured with connectors or termination on any port by specifying port location A,B, & C from the following table.**

Connector Type	No.
SMA Female	1
SMA Male	2
N Female*	3
N Male*	4
Termination**	5

* Up to 18.0 GHz only.
** STD. Termination, 2WCW

Frequency Range (GHz):	Isolation dB Min:	Ins. Loss dB Max:	VSWR (MAX):	Length:	Width:	Height:	Basic Part Number
.290-.375	18	0.5	1.28	2.43	2.38	1.0	2937CC
.375-.500	18	0.5	1.28	2.00	2.00	1.0	3750CC
.500-.650	20	0.5	1.25	1.63	1.50	.75	5065CC
.650-.850	20	0.5	1.25	1.63	1.50	.75	6585CC
.850-1.10	20	0.5	1.25	1.75	1.50	1.0	8511CC
.960-1.22	20	0.5	1.25	1.25	1.25	.63	9612CC
1.25-1.60	20	0.5	1.25	1.25	1.25	.63	1216CC
2.2-2.4	28	0.2	1.08	1.38	1.43	.69	2224
2.7-2.9	28	0.2	1.08	1.10	1.10	.63	2729
3.7-4.2	28	0.2	1.08	1.00	1.00	.63	3742
4.4-5.0	23	0.2	1.15	1.00	1.00	.63	4450
5.4-5.9	23	0.2	1.15	1.00	1.00	.63	5459
5.9-6.4	23	0.2	1.15	1.00	1.00	.63	5964
7.0-12.4	18	0.5	1.35	0.87	1.00	.63	7012
7.9-8.4	23	0.3	1.15	0.75	0.87	.63	7984
8.5-9.6	20	0.3	1.25	0.50	0.93	.50	8596
10.7-11.7	23	0.2	1.15	0.50	0.93	.50	10727
11.7-12.2	23	0.2	1.15	.50	0.93	.50	11722
12.2-12.7	23	0.2	1.15	0.50	0.93	.50	12227
14.0-14.5	23	0.2	1.15	0.50	0.93	.50	14045
16.0-18.0	20	0.3	1.25	0.50	0.93	.50	16018
18.0-20.0	18	0.4	1.35	0.38	0.90	.50	18020

High-Performance, Right-Angle ISO-Adaptors(CIA):

Model Number:	Frequency Range (GHz):	WaveGuide:	Input Flange:	Output Conn.:	Isololation (dB MIN):	VSWR (MAX):	Ins. Loss (dB MAX):
430CIA10	2.20-2.30	WR430	UG437B/U	SMA FEM	23	1.15:1	0.15
340CIA10	2.20-2.30	WR340	CPR340G	SMA FEM	23	1.15:1	0.15
284CIA10	2.90-3.20	WR284	CPR284G	SMA FEM	23	1.15:1	0.20
229CIA10	3.70-4.20	WR229	CPR229G	SMA FEM	25	1.10:1	0.15
187CIA10	4.40-5.00	WR187	UG407/U	SMA FEM	23	1.15:1	0.20
187CIA11	5.40-5.90	WR187	CPR187G	SMA FEM	23	1.15:1	0.20
187CIA12	7.25-7.75	WR112	CPR137G	SMA FEM	23	1.15:1	0.25
112CIA10	7.90-8.40	WR112	UG138/U	SMA FEM	21	1.20:1	0.20
90CIA10	9.00-10.0	WR90	UG135/U	SMA FEM	23	1.15:1	0.20
75CIA10	11.7-12.2	WR75	UG597/U	SMA FEM	20	1.25:1	0.50
62CIA10	14.0-15.0	WR62	M3922/53-008	SMA FEM	23	1.15:1	0.35
51CIA10	17.7-19.7	WR5	UG1665/U	SMA FEM	20	1.20:1	0.40

M-Wave Design Corporation
www.mwavedesign.com
996 Lawrence Dr. #206, Newbury Park, CA 91320

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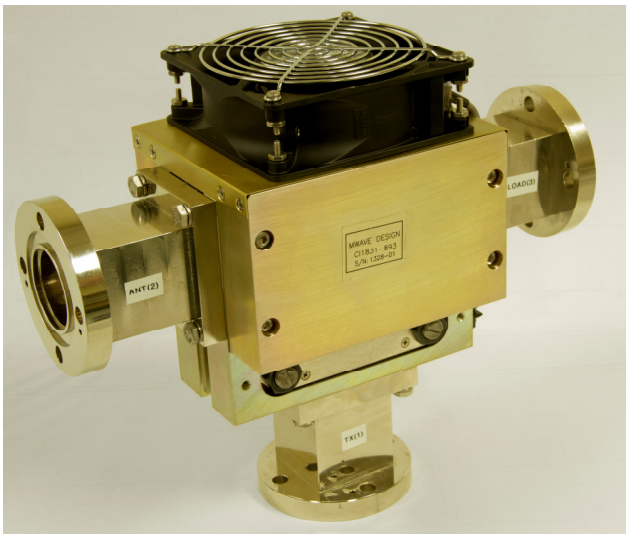

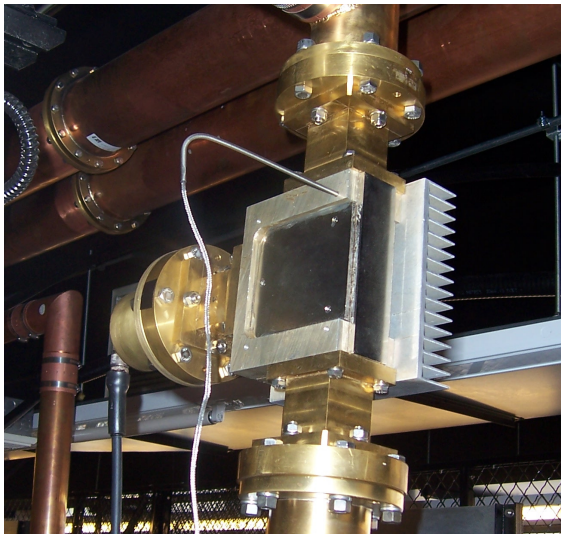

M Wave Design Corporation is proud to announce our line of "IBOC" circulators for iBiquity tm terrestrial digital FM broadcast installations. The CC1xxx-xxx is a robust yet compact series of circulators covering the 88- 108 MHz broadcast band that will protect your digital transmitter from analog FM intermodulation distortion and damage. Mounted between the combiner and the transmitter with a monitored dummy reject load these rugged circulators have a calculated MTBF of > 500,000 hours. They will handle up to 10 Kw peak and 3.5 Kw average RF power and are standard with 1 5/8" interfaces (also available with 3 1/8", 7/8" EIA, 7/16 DIN, and N connectors).

Contact the factory for specifics on your requirement.

Do you have Power?
We can handle it!

M WAVE DESIGN CORPORATION

Introducing M-Wave Design's catalog high power (non-ITAR) octave circulator line.

M Wave Model#	Frequency Range	Std. Connectors	Power, Peak	Power, Average
3750HPC333	.375– .500 MHz	'N' Female	10.0 Kilowatts	1000 Watts
0510HPC333	.500– 1.0 GHz	'N' Female	1.0 Kilowatt	250 Watts
1020HPC333	1.0– 2.0 GHz	'N' Female	3.0 Kilowatts	300 Watts
2040HPC333	2.0-4.0 GHz	'N' Female	4.0 Kilowatts	300 Watts
4080HPC333	4.0-8.0 GHz	'N' Female	4.0 Kilowatts	250 Watts
8012HPC333	8.0– 12.0 GHz	'N' Female	1.0 Kilowatt	150 Watts
1218HPC111	12.0– 18.0 GHz	'SMA' Female	500 watts	50 watts

This line of circulators is perfect for lab test, or rugged field environments when protection is needed for VSWR sensitive transmitters. Supplied with standard connectors shown above , or can be fitted with other connector/ termination (isolator) configurations. For more specific applications, higher peak and average power units are available (> 100 Kw peak). All units require cold plate mounting for full power operation. Consult the factory for specific interface drawings, mounting patterns and other options available.

M Wave Design Corporation

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E-mail: info@mwavedesign.com

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We can handle it!

M WAVE DESIGN CORPORATION

Introducing M-Wave Design's catalog high power (non-ITAR) octave circulator line.

M Wave Model#	Frequency Range	Std. Connectors	Power, Peak	Power, Average
3750HPC333	.375– .500 MHz	'N' Female	10.0 Kilowatts	1000 Watts
0510HPC333	.500– 1.0 GHz	'N' Female	1.0 Kilowatt	250 Watts
1020HPC333	1.0– 2.0 GHz	'N' Female	3.0 Kilowatts	300 Watts
2040HPC333	2.0-4.0 GHz	'N' Female	4.0 Kilowatts	300 Watts
4080HPC333	4.0-8.0 GHz	'N' Female	4.0 Kilowatts	250 Watts
8012HPC333	8.0– 12.0 GHz	'N' Female	1.0 Kilowatt	150 Watts
1218HPC111	12.0– 18.0 GHz	'SMA' Female	500 watts	50 watts

This line of circulators is perfect for lab test, or rugged field environments when protection is needed for VSWR sensitive transmitters. Supplied with standard connectors shown above , or can be fitted with other connector/ termination (isolator) configurations. For more specific applications, higher peak and average power units are available (> 100 Kw peak). All units require cold plate mounting for full power operation. Consult the factory for specific interface drawings, mounting patterns and other options available.

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Website: www.mwavedesign.com
E-mail: info@mwavedesign.com

Junction Isolator/ Circulator (IJ/CJ) Series:

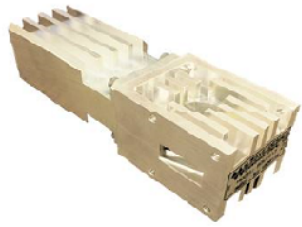
- Fabricated from 6061 -T6 Aluminum with MIL-C-5541 finish.
- All models feature threaded flange holes, non-locking helical insets available.
- All part numbers are available as circulators by switching 'C' in place of 'I' in model series number. Circulator width will be less size stated for isolators
- Typical operating temperature: -54 degrees C through 85 degrees C
- RF Power:

  1KW Peak, 10W AVG. (Forward), 2W(Reverse)

  Model Series:37IJ - 75IJ
- RF Power:

  1KW Peak, 5W AVG. (Forward), 2W(Reverse)

  Model Series:51IJ - 28IJ



WR Number:	Frequency(GHz):	Isolation dB(MIN):	INS Loss dB(MAX):	VSWR (MAX):	Legnth(inches)	Width(inches):	Height(inches):	Weight(OZ) (MAX):	Flang Type
137	5.90-6.40	28	.25	1.10	3.25	4.50	1.55	16	CMR
137	7.25-7.75	28	.25	1.10	3.25	4.50	1.55	16	CMR
137	7.90-8.40	28	.25	1.10	3.25	4.50	1.55	16	CMR
112	7.25-7.75	28	.25	1.15	1.87	3.25	1.87	18	UG13
112	7.90-8.40	28	.25	1.10	1.87	3.25	1.87	18	UG13
112	8.50-9.60	28	.25	1.10	1.87	3.25	1.87	18	UG13
90	8.00-10.50	20	.30	1.20	1.63	2.38	1.63	16	UG13
90	8.50-9.60	28	.25	1.10	1.63	2.38	1.63	16	UG13
90	10.0-12.4	20	.30	1.20	1.63	2.38	1.63	16	UG13
75	10.0-12.5	20	.30	1.20	1.50	2.25	1.50	12	WR7
75	10.7-11.7	28	.25	1.10	1.50	2.25	1.50	12	WR7
75	11.7-12.2	28	.25	1.10	1.50	2.25	1.50	12	WR7
75	10.7-12.2	25	.30	1.15	1.50	2.25	1.50	12	WR7
75	14.4-14.5	28	.25	1.10	1.50	2.25	1.50	12	WR7
75	11.7-14.5	25	.30	1.15	1.50	2.75	1.50	12	WR7
75	12.5-15.0	20	.30	1.20	1.50	2.25	1.50	12	WR7
62	12.4-15.0	20	.30	1.20	1.31	2.13	1.31	6.0	UG16
62	14.5-15.5	20	.30	1.20	1.31	2.13	1.31	6.0	UG16
62	14.5-15.5	25	.25	1.15	1.31	2.13	1.31	6.0	UG16
62	16.0-18.0	20	.30	1.20	1.31	2.13	1.31	6.0	UG16
51	16.5-20.5	23	.30	1.15	1.31	2.13	1.31	6.0	WR5
42	18.0-22.0	20	.30	1.20	0.87	1.50	0.87	4.0	UG59
42	18.5-19.5	25	.25	1.15	0.87	1.50	0.87	4.0	UG59
42	21.0-25.0	20	.30	1.20	0.87	1.50	0.87	4.0	UG59
42	24.0-26.5	20	.30	1.20	0.87	1.50	.87	4.0	UG59
28	26.5-32.0	18	.50	1.30	.75	1.50	.75	2.0	UG59
28	31.0-36.0td>	18	.50	1.30	.75	1.50	.75	2.0	UG59
28	34.5-35.5	25	.40	1.20	.75	1.25	.75	2.0	UG59
28	35.0-40.0	18	.50	1.30	.75	1.50	.75	2.0	UG59

Junction Isolator/ Circulator (IJ/CJ) Series:

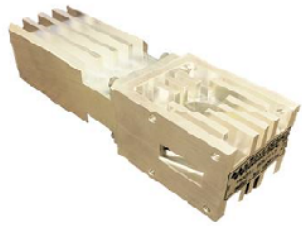
- Fabricated from 6061 -T6 Aluminum with MIL-C-5541 finish.
- All models feature threaded flange holes, non-locking helical insets available.
- All part numbers are available as circulators by switching 'C' in place of 'I' in model series number. Circulator width will be less size stated for isolators
- Typical operating temperature: -54 degrees C through 85 degrees C
- RF Power:

  1KW Peak, 10W AVG. (Forward), 2W(Reverse)

  Model Series:37IJ - 75IJ
- RF Power:

  1KW Peak, 5W AVG. (Forward), 2W(Reverse)

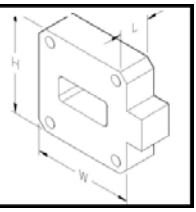
  Model Series:51IJ - 28IJ



WR Number:	Frequency(GHz):	Isolation dB(MIN):	INS Loss dB(MAX):	VSWR (MAX):	Legnth(inches)	Width(inches):	Height(inches):	Weight(OZ) (MAX):	Flang Type
137	5.90-6.40	28	.25	1.10	3.25	4.50	1.55	16	CMR
137	7.25-7.75	28	.25	1.10	3.25	4.50	1.55	16	CMR
137	7.90-8.40	28	.25	1.10	3.25	4.50	1.55	16	CMR
112	7.25-7.75	28	.25	1.15	1.87	3.25	1.87	18	UG13
112	7.90-8.40	28	.25	1.10	1.87	3.25	1.87	18	UG13
112	8.50-9.60	28	.25	1.10	1.87	3.25	1.87	18	UG13
90	8.00-10.50	20	.30	1.20	1.63	2.38	1.63	16	UG13
90	8.50-9.60	28	.25	1.10	1.63	2.38	1.63	16	UG13
90	10.0-12.4	20	.30	1.20	1.63	2.38	1.63	16	UG13
75	10.0-12.5	20	.30	1.20	1.50	2.25	1.50	12	WR7
75	10.7-11.7	28	.25	1.10	1.50	2.25	1.50	12	WR7
75	11.7-12.2	28	.25	1.10	1.50	2.25	1.50	12	WR7
75	10.7-12.2	25	.30	1.15	1.50	2.25	1.50	12	WR7
75	14.4-14.5	28	.25	1.10	1.50	2.25	1.50	12	WR7
75	11.7-14.5	25	.30	1.15	1.50	2.75	1.50	12	WR7
75	12.5-15.0	20	.30	1.20	1.50	2.25	1.50	12	WR7
62	12.4-15.0	20	.30	1.20	1.31	2.13	1.31	6.0	UG16
62	14.5-15.5	20	.30	1.20	1.31	2.13	1.31	6.0	UG16
62	14.5-15.5	25	.25	1.15	1.31	2.13	1.31	6.0	UG16
62	16.0-18.0	20	.30	1.20	1.31	2.13	1.31	6.0	UG16
51	16.5-20.5	23	.30	1.15	1.31	2.13	1.31	6.0	WR5
42	18.0-22.0	20	.30	1.20	0.87	1.50	0.87	4.0	UG59
42	18.5-19.5	25	.25	1.15	0.87	1.50	0.87	4.0	UG59
42	21.0-25.0	20	.30	1.20	0.87	1.50	0.87	4.0	UG59
42	24.0-26.5	20	.30	1.20	0.87	1.50	.87	4.0	UG59
28	26.5-32.0	18	.50	1.30	.75	1.50	.75	2.0	UG59
28	31.0-36.0td>	18	.50	1.30	.75	1.50	.75	2.0	UG59
28	34.5-35.5	25	.40	1.20	.75	1.25	.75	2.0	UG59
28	35.0-40.0	18	.50	1.30	.75	1.50	.75	2.0	UG59

Miniature Flange Isolator (IF) Series:

- Fabricated from 6061-T6 Aluminum with Mil-C-5541 finish
- Operating Temperature: -40 degrees Celcius to 85 degrees Celcius typical
- RF power: 1KW peak, 10W AVG. (FWD) 2 KW AVG. (REV)
- Tapped Flange holes standard specify clearance holes if required
- All units feature magnetic shielding
- Specify center frequency and bandwidth upon order placement



WR Number:	Frequency (GHz):	Band Width x100 (MHz):	Isolation dB (MIN):	INS Loss dB (MAX):	VSWR (MAX):	Legnth (inches)	Width (inches):	Height (inches):	Weight (OZ)(MAX):	Flange Type:
112	7.05-10.0	1	25	0.4	1.20	.625	2.25	1.88	2.8	UG138/U
112	7.05-10.0	2	20	0.5	1.30	.625	2.25	1.88	2.8	UG138/U
90	8.20-12.4	1	23	0.4	1.20	.500	1.90	1.63	2.3	UG135/U
90	8.20-12.4	2	20	0.5	1.25	.500	1.90	1.63	2.3	UG135/U
75	10.0-15.0	1	23	0.4	1.20	.500	1.75	1.50	1.9	WR75
75	10.0-15.0	2	20	0.5	1.25	.500	1.75	1.50	1.9	WR75
62	12.4-18.0	1	25	.4	1.15	.500	1.63	1.32	1.5	UG1665/U
62	12.4-18.0	2	20	.5	1.20	.500	1.63	1.32	1.5	UG1665/U
42	18.0-26.5	3	25	.3	1.15	.675	1.50	0.88	1.7	UG597/U
42	18.0-26.5	6	20	.4	1.20	.675	1.50	0.88	1.7	UG597/U
28	26.5-40.0	5	28	0.3	1.15	.500	1.25	0.75	1.2	UG599/U
28	26.5-40.0	5	25	0.4	1.20	.500	1.25	0.75	1.2	UG599/U
28	26.5-40.0	5	20	0.5	1.25	.500	1.25	0.75	1.2	UG599/U

Fulband Isolator and Circulator (FBI & FBC) Series:

Part No. Example

2.0 - 4.0 GHz

2040**CC**111

'C' = Circulator
' I ' = Isolator

Port A; N Female
Port B; N Male
Port C; N Female

- Multiple Junction Units are available in bands listed.
- Specifications indicate typical performance per junction in multiple configurations.
- Contact the factory to discuss your special configuration requirements.
- Units may be configured with connectors or termination on any port by specifying port location A,B, & C from the following table.

Connector Type	No.
SMA Female	1
SMA Male	2
N Female*	3
N Male*	4
Termination**	5

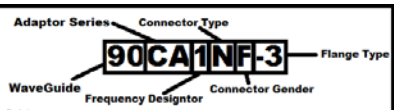
* Up to 18.0 GHz only.
** STD. Termination, 2WCW

Basic Model Number:	Frequency Range(GHz):	Isolation(dB MIN):	INS Loss(dB MAX):	VSWR(MAX):	PWR HNDLG(Watts CW):	Size(W, L, H):
0510	0.500-1.00	16	1.0	1.40:1	200	5.88, 5.66, 1.10
05511	0.550-1.10	17	0.7	1.35:1	200	5.37, 5.25, 1.10
0714	0.700-1.40	17	0.7	1.45:1	100	4.50, 4.50, 1.00
0816	0.800-1.60	16	1.0	1.40:1	100	4.00, 4.00, 1.00
1020	1.00-2.00	18	0.5	1.30:1	100	3.00, 2.98, 1.00
1530	1.500-3.00	18	0.5	1.30:1	75	2.32, 2.37, 0.75
2040	2.00-4.00	20	0.4	1.25:1	75	1.75, 1.75, 0.63
2060	2.00-6.00	20	0.4	1.25:1	75	1.75, 1.75, 0.63
2650	2.60-5.20	20	0.4	1.25:1	75	1.31, 1.38, 0.63
3060	3.00-6.00	20	0.4	1.25:1	75	1.62, 1.72, 0.69
3570	3.50-7.00	20	0.4	1.25:1	50	1.38, 1.47, 0.63
4080	4.00-8.00	20	0.4	1.25:1	50	0.88, 1.03, 0.63
5010	5.00-10.0	20	0.4	1.25:1	50	1.00, 1.12, 0.63
7014	7.00-14.0	18	.5	1.30:1	200	0.75, 0.88, 0.50
8016	8.00-16.0	17	.7	1.35:1	200	0.63, 0.80, 0.54
8018	8.00-18.0	16	.8	1.45:1	200	0.63, 0.80, 0.54

High Power 4 Port Duplexer (DPI) Series:

Model Number:	Frequency Range (GHz):	Specifications:	Power AVG:	RF Watts Peak:	WaveGuide:	Lenght (inches):
187DPI10	4.9-5.1	20/0.4/1.15:1	1K	750K	WR187	22.0
159DPI10	5.4-5.9	20/0.4/1.15:1	1K	500K	WR159	16.50
137DPI10	5.9-7.2	20/0.4/1.15:1	950	400K	WR137	14.90
112DPI10	8.9-9.5	20/0.4/1.15:1	900	350K	WR112	13.50
90DPI10	8.6-9.6	20/0.4/1.15:1	1K	750K	WR90	11.50
62DPI10	16.5-17.5	20/0.4/1.15:1	500	150K	WR62	8.00
28DPI10	24.0-37.0	20/0.4/1.15:1	300	10K	WR28	5.00

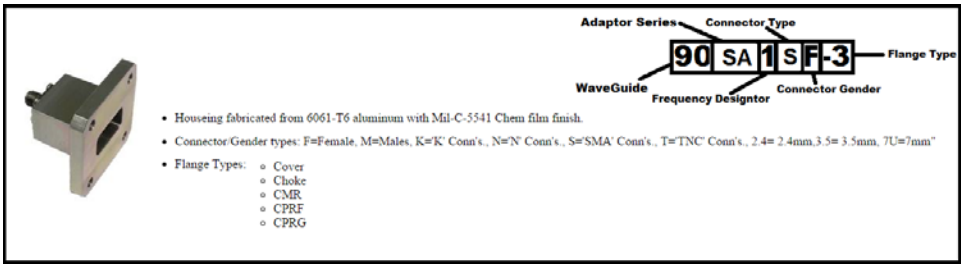
Coaxial Adaptor (CA) Series:



- Housesing fabricated from 6061-T6 aluminum with Mil-C-5541 Chem film finish.
- Connector/Gender types: F=Female, M=Males, K='K' Conn's., N='N' Conn's., S='SMA' Conn's., T='TNC' Conn's., 2.4= 2.4mm,3.5= 3.5mm, 7U=7mm"
- Flange Types:
  - Cover
  - Choke
  - CMR
  - CPRF
  - CPRG

Model Number:	Frequency Range (GHz):	VSWR (MAX):	Length (inches):	Conn./Gender Available:	Flanges Available:
229CA1XX	3.30-4.90	1.25:1	2.25	NF,SF,TF,7U	3,4,5
229CA2XX	3.70-4.20	1.10:1	2.25	NF&M,SF&M	3,4,5
187CA1XX	3.95-585	1.25:1	1.88	NF,SF,TF,7U	1,3,4,5
187CA2XX	4.40-5.00	1.10:1	1.88	NF&M,SF&M	1,3,4,5
159CA1XX	4.90-7.05	1.25:1	1.50	NF,SF,TF,7U	1,3,4,5
159CA2XX	5.90-6.40	1.15:1	1.50	NF&M,SF&M	1,3,4,5
137CA1XX	5.85-8.20	1.25:1	1.25	NF,SM,TF,7U	1,3,4,5
137CA2XX	5.90-6.40	1.10:1	1.25	NF&M,SF&M	1,3,4,5
137CA3XX	7.25-7.75	1.10:1	1.25	NF&M,SF&M	1,3,4,5
137CA4XX	7.90-8.40	1.10:1	1.25	NF&M,SF&M	1,3,4,5
112CA1XX	7.05-10.0	1.25:1	1.13	NF,SF,3.5F,7U	1,3
112CA2XX	7.25-7.75	1.10:1	1.13	NF&M,SF&M	1,3
112CA3XX	7.90-8.40	1.10:1	1.13	NF&M,SF&M	1,3
112CA4XX	8.50-9.60	1.10:1	1.13	NF&M,SF&M	1,3
102CA1XX	7.00-11.0	1.25:1	1.13	NF,SF,3.5F,7U	1
90CA1XX	8.20-12.4	1.15:1	1.00	NF,SF,3.5F,7U	1,3
90CA2XX	8.50-9.60	1.10:1	1.00	NF&M,SF&M	1,3
75CA1XX	10.00-15.00	1.20:1	1.00	NF,SF,3.5F,7U	1
75CA2XX	10.2-12.7	1.10:1	1.00	NF&M,SF&M	1
75CA3XX	11.7-14.5	1.10:1	1.00	NF&M,SF&M	1
62CA1XX	12.4-18.0	1.20:1	1.00	NF,SF,3.5F,7U	1
62CA2XX	12.7-14.5	1.10:1	1.00	NF&M,SF&M	1
62CA3XX	16.00-18.00	1.10:1	1.00	NF&M,SF&M	1
51CA1XX	15.00-22.00	1.20:1	0.75	KF,SF	1
51CA2XX	16.50-20.50	1.10:1	0.75	KF&M,SF	1
42CA1XX	18.00-26.50	1.25:1	0.69	K,SF,2.4F	1
42CA2XX	18.00-22.00	1.20:1	0.69	KF&M,SF,2.4F	1
34CA1XX	22.00-33.00	1.25:1	0.63	KF,2.4F	1
28CA1XX	26.50-40.00	1.30:1	0.56	KF&M,2.4F	1
28CA2XX	26.50-32.00	1.20:1	0.56	KF&M,2.4F	1
28CA3XX	31.00-36.00	1.20:1	0.56	KF&M,2.4F	1
28CA4XX	34.50-35.50	1.10:1	0.56	KF&M,2.4F	1
28CA5XX	36.00-40.00	1.20:1	0.56	KF&M,2.4F	1

Straight Adaptor (SA) Series:



Connector Type	Number
SMA Female	1
SMA Male	2
N Female(Up to 18GHz ONLY)	3
N Male(Up to 18GHz ONLY)	4
Termination(STD. Termination, 2WCW)	5

Model Number:	Frequency Range(GHz):	VSWR(MAX):	Length(inches):	Connector Gender Available:	Flanges Available:
229SA1XX	3.30-4.90	1.25:1	2.25	NF,SF,TF,7U	3,4,5
229SA2XX	3.70-4.20	1.10:1	2.25	NF&M,SF&M	3,4,5
187SA1XX	3.95-5.85	1.25:1	1.88	NF,SF,TF,7U	1,3,4,5
187SA2XX	4.40-5.00	1.10:1	1.88	NF&M,SF&M	1,3,4,5
159SA1XX	4.90-7.05	1.25:1	1.50	NF,SF,TF,7U	1,3,4,5
159SA2XX	5.90-6.40	1.15:1	1.50	NF&M,SF&M	1,3,4,5
137SA1XX	5.85-8.20	1.25:1	1.25	NF,SM,TF,7U	1,3,4,5
137SA2XX	5.90-6.40	1.10:1	1.25	NF&M,SF&M	1,3,4,5
137SA3XX	7.25-7.75	1.10:1	1.25	NF&M,SF&M	1,3,4,5
137SA4XX	7.90-8.40	1.10:1	1.25	NF&M,SF&M	1,3,4,5
112SA1XX	7.05-10.0	1.25:1	1.13	NF,SF,3.5F,7U	1&3
112SA2XX	7.25-7.75	1.10:1	1.13	NF&M,SF&M	1&3
112SA3XX	7.90-8.40	1.10:1	1.13	NF&M,SF&M	1&3
112SA4XX	8.50-9.60	1.10:1	1.13	NF&M,SF&M	1&3
102SA1XX	7.00-11.00	1.25:1	1.13	NF,SF,3.5F,7U	1
90SA1XX	8.20-12.4	1.15:1	1.00	NF,SF,3.5F,7U	1&3
90SA2XX	8.50-9.60	1.10:1	1.00	NF&M,SF&M	1&3
75SA1XX	10.00-15.00	1.20:1	1.00	NF,SF,3.5F,7U	1
75SA2XX	10.20-12.70	1.10:1	1.00	NF&M,SF&M	1
75SA3XX	11.70-14.50	1.10:1	1.00	NF&M,SF&M	1
62SA1XX	12.40-18.00	1.20:1	1.00	NF,SF,3.5F,7U	1
62SA2XX	12.70-14.50	1.10:1	1.00	NF&M,SF&M	1
62SA3XX	16.00-18.00	1.10:1	1.00	NF&M,SF&M	1
51SA1XX	15.00-22.00	1.25:1	.75	NF&M,SF&M	1
51SA2XX	16.50-20.50	1.15:1	.75	NF&M,SF&M	1
62SA3XX	18.00-26.50	1.30:1	.69	NF&M,SF&M	1
51SA1XX	15.00-22.00	1.25:1	.75	KF,SF	1
51SA2XX	16.50-20.50	1.15:1	.75	KF&M,SF	1
42SA1XX	18.00-26.50	1.30:1	.69	KF,SF,2.4F	1
42SA2XX	18.00-22.00	1.25:1	.69	NF&M,SF&M	1
34SA1XX	22.00-33.00	1.30:1	.63	KF,2.4F	1
28SA1XX	26.50-32.00	1.30:1	.56	KF&M,2.4F	1
28SA2XX	31.00-36.00	1.25:1	.56	KF&M,2.4F	1
28SA3XX	34.00-36.00	1.10:1	.56	KF&M,2.4F	1
28SA4XX	36.00-40.00	1.25:1	.56	KF&M,2.4F	1

Adaptor Attenuator (AA) Series:

Model Number:	Frequency Range (GHz):	VSWR (MAX):	Connector Type:	Length (inches):	Mating Flange:
229AA17U	3.30-4.90	1.08:1	APC-7	7.50	CMR229
229AA2NF	3.30-4.90	1.10:1	N Female	7.50	CMR229
229AA3SF	3.30-4.90	1.10:1	SMA Female	7.50	CMR229
187AA17U	3.95-5.85	1.08:1	APC-7	6.50	CMR187
187AA2NF	3.95-5.85	1.10:1	N Female	6.50	CMR187
187AA3SF	3.95-5.85	1.10:1	SMA Female	6.50	CMR187
159AA27U	4.90-7.05	1.10:1	APC-7	6.00	CMR159
159AA2NF	4.90-7.05	1.12:1	N FEMALE	6.00	CMR159
159AA2SF	4.90-7.05	1.12:1	SMA FEMALE	6.00	CMR159
137AA17U	5.85-8.20	1.08:1	APC-7	5.50	CMR137
137AA1NF	5.85-8.20	1.10:1	N FEMALE	5.50	CMR137
137AA1SF	5.85-8.20	1.10:1	SMA FEMALE	5.50	CMR137
112AA17U	7.05-10.0	1.08:1	APC-7	5.00	UG138/U
112AA1NF	7.05-10.0	1.10:1	N FEMALE	5.00	UG138/U
112AA1SF	7.05-10.0	1.10:1	SMA FEMALE	5.00	UG138/U
102AA17U	7.00-11.0	1.10:1	APC-7	4.00	UG1493/U
102AA1NF	7.00-11.0	1.12:1	N FEMALE	4.00	UG1493/U
102AA1SF	7.00-11.0	1.12:1	SMA FEMALE	4.00	UG1493/U
90AA17U	8.20-12.4	1.08:1	APC-7	3.50	UG135/U
90AA17U	8.20-12.4	1.08:1	K FEMALE	3.50	UG135/U
90AA17U	8.20-12.4	1.10:1	N FEMALE	3.50	UG135/U
90AA17U	8.20-12.4	1.10:1	SMA FEMALE	3.50	UG135/U

Low Power Load (L) Series:

- Housing fabricated from 6061-T6 Aluminium with MIL- C-5541 Chem Film Finish
- Flange Types:
  - Cover
  - Choke
  - CMR
  - CPRF
  - CPRFG

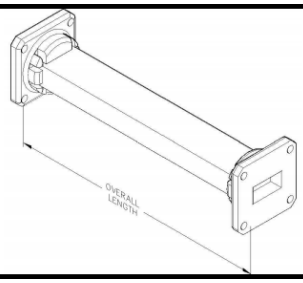
Model Number:	Frequency Range (GHz):	VSWR (MAX):	RF Power (MAX):	Length (inches):	Flanges Available:
229L1X-X	3.30-4.90	1.03:1	5WCW	7.50	1-5
229L2X-X	3.30-4.90	1.06:1	5WCW	6.00	1-5
187L1X-X	3.95-9.85	1.03:1	4WCW	6.50	1-5
187L2X-X	3.95-9.85	1.06:1	4WCW	5.00	1-5
159L1X-X	4.90-7.05	1.03:1	3WCW	6.00	1,3,4
159L2X-X	3.95-9.85	1.06:1	3WCW	4.00	1,3,4
137L1X-X	5.85-8.20	1.03:1	3WCW	5.50	1-5
187L2X-X	5.85-8.20	1.06:1	3WCW	5.50	1-5
112L1X-X	7.05-10.0	1.03:1	2WCW	5.00	1-5
112L2X-X	7.05-10.0	1.06:1	2WCW	2.50	1-5
112L3X-X	7.05-10.0	1.20:1	2WCW	1.13	1-5
102L1X-X	7.00-11.0	1.03:1	2WCW	4.00	1
90L1X-X	8.20-12.4	1.03:1	2WCW	3.50	1-5
90L2X-X	8.20-12.4	1.06:1	2WCW	2.00	1-5
90L3X-X	8.20-12.4	1.15:1	2WCW	0.94	1-5
75L1X-X	10.0-15.0	1.03:1	2WCW	3.50	1,2
75L2X-X	10.0-15.0	1.06:1	2WCW	2.00	1,2
75L3X-X	10.0-15.0	1.20:1	2WCW	0.94	1,2
62L1X-X	12.4-18.0	1.03:1	2WCW	3.50	1,2
62L2X-X	12.4-18.0	1.06:1	2WCW	2.00	1,2
62L3X-X	12.4-18.0	1.20:1	2WCW	0.94	1,2
51L1X-X	15.0-22.0	1.03:1	1WCW	3.00	1,2
51L2X-X	15.0-22.0	1.06:1	1WCW	2.00	1,2
51L3X-X	15.0-22.0	1.20:1	2WCW	0.75	1,2
42L1X-X	18.0-26.5	1.03:1	.5WCW	2.50	1,2
42L2X-X	18.0-26.5	1.06:1	.5WCW	1.75	1,2
42L3X-X	18.0-26.5	1.20:1	2WCW	0.69	1,2
34L1X-X	22.0-33.0	1.03:1	.5WCW	3.75	1
34L2X-X	22.0-33.0	1.06:1	.5WCW	2.25	1
28L1X-X	26.5-40.0	1.03:1	.5WCW	2.00	1,2
628L2X-X	26.5-40.0	1.06:1	.5WCW	1.50	1,2
28L3X-X	26.5-40.0	1.30:1	2WCW	0.56	1,2

Straight Section (SS) Series:

- Aluminium Alloy fabrication with MIL-C-5541 Chem Film finish denoted by 'A' in part number
- Brass Alloy fabrication with corrosion resistance finsih denoted bt 'B' in part number
- Flange Types:

  1.Cover 2.Choke 3.CMR 4.CPRF 5.CPRG

- Optional Finish: Grey paint
- VSWR less than 1.05:1 Typical
- Legnths to 120 inches available to be specified by customer at time of order placement



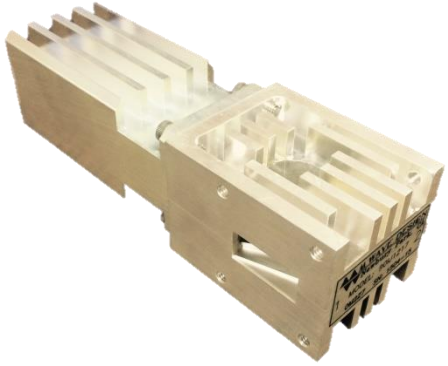
Model Number:	Frequency Range (GHz):	Flanges Available:
284SSXXX	2.60-3.95	1-5
229SSXXX	3.30-4.20	1-5
187SSXXX	3.95-5.85	1-5
159SSXXX	4.90-7.05	1,3,4
137SSXXX	5.85-8.20	1-5
112SSXXX	7.05-10.0	1-5
90SSXXX	8.20-12.4	1-5
75SSXXX	10.0-15.0	1,2
62SSXXX	12.4-18.0	1,2
51SSXXX	15.0-22.0	1,2
42SSXXX	18.0-26.5	1,2
34SSXXX	22.0-33.0	1
28SSXXX	26.5-40.0	1,2
22SSXXX	30.0-50.0	1
19SSXXX	40.0-60.0	1

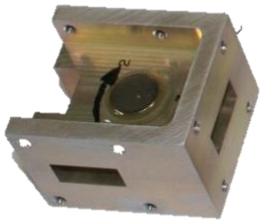
M WAVE DESIGN CORPORATION

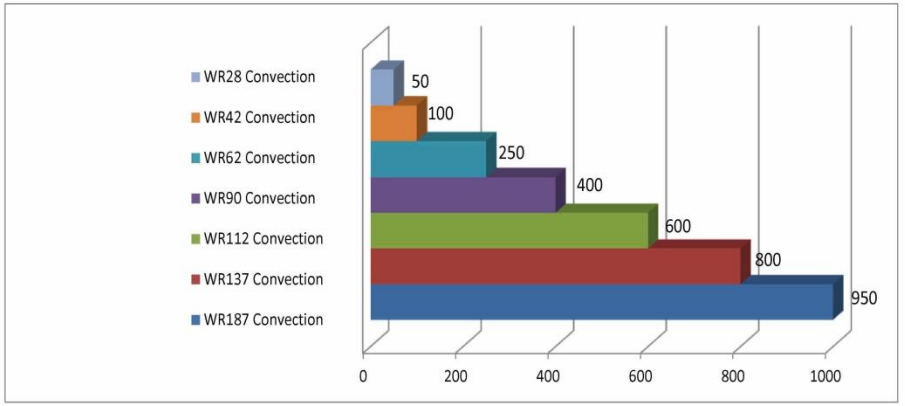
M Wave HP Circulator Ratings

Review of currently designed products for high peak & average power ratings

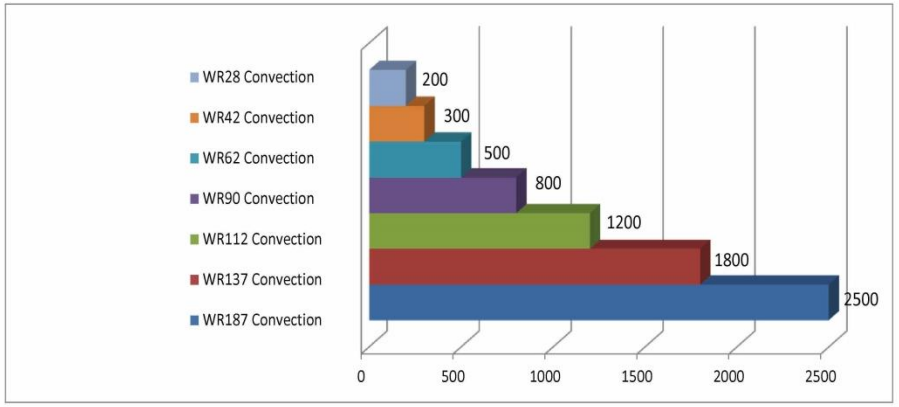
- **Average power ratings WR187 to WR28 waveguide**.
- Higher Average powers may be achieved with liquid cooling.
- Power ratings in Kw







Junction (3 port circulators)



Duplexers (4 port circulators)

M WAVE DESIGN CORPORATION

M Wave HP Circulator Ratings

Review of currently designed products for high peak & average power ratings

- **Peak power ratings WR28 to WR187 waveguide**.
- Power ratings with 1 atmosphere pressure (15 PSI).
- Higher peak powers may be achieved with more pressure.