The content:

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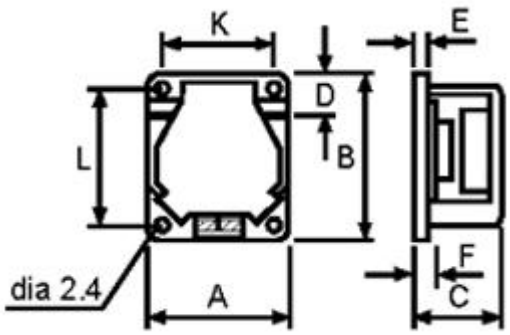
info@ferrite-quasar.ru

1. Microstrip Isolators & Circulators

1.1. Lumped Element Isolators and Circulators

Model name	Frequency range (MHz)	Bandwidth %, min	Insertion loss dB, max	Isolation dB, min	VSWR max	Operation power, W(max)
2IMS17-1	180÷200	10	0.7	18	1.3	60
2IMS23-1	220÷250	10	0.7	20	1.3	15
2IMS25-1	220÷270	10	0.7	18	1.3	60
2IMS27-1	250÷280	10	0.7	20	1.3	15
2IMS28-1	260÷300	10	0.7	20	1.3	15
2IMS29-1	280÷310	10	0.7	20	1.3	15
2IMS30-1	290÷320	10	0.7	20	1.3	15
2IMS33-1	320÷350	10	0.7	20	1.3	15
2IMS36-1	350÷390	10	0.7	20	1.3	15
2IMS40-1	390÷430	10	0.7	20	1.3	15
2IMS44-1	430÷470	10	0.7	20	1.3	15
2IMS49-1	470÷520	10	0.7	20	1.3	15
2IMS54-1	520÷570	10	0.7	20	1.3	15
2IMS57-1	540÷600	10	0.7	20	1.3	15
2IMS59-1	570÷630	10	0.7	20	1.3	15
2IMS68-1	630÷740	10	0.7	20	1.3	15
2IMS78-1	730÷850	15	0.7	20	1.3	15
2IMS91-1	850÷990	20	0.7	20	1.3	15
3IMS10-1	960÷1120	20	0.7	20	1.3	10
3IMS12-1	1140÷1330	20	0.7	20	1.3	10

NOTES:
1. Operating temperature: -30 to +70°C.
2. Average reverse power - 4 W.



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Outlines (all dimensions are in millimeters)

Model	A	B	C	D	E	F	K	L
2IMS17-1	32	50	18	12	2.0	3.1	27	45
2IMS23-1	32	50	17	12	2.0	3.1	27	45
2IMS25-1	32	50	18	12	2.0	3.1	27	45
2IMS27-1	32	50	17	12	2.0	3.1	27	35
2IMS28-1	32	50	17	12	2.0	3.1	27	45
2IMS29-1	32	50	17	12	2.0	3.1	27	35
2IMS30-1	32	40	17	12	2.0	3.1	27	45
2IMS33-1	32	40	17	12	2.0	3.1	27	35
2IMS36-1	30	36	16	12	2.0	3.1	27	45
2IMS40-1	30	36	16	12	2.0	3.1	27	35
2IMS44-1	30	36	16	12	2.0	3.1	27	45
2IMS49-1	30	36	16	12	2.0	3.1	27	35
2IMS54-1	24	30	15	12	2.0	3.1	27	45
2IMS57-1	24	30	15	12	2.0	3.1	27	35
2IMS59-1	24	30	15	11	2.0	3.1	25	31
2IMS68-1	24	30	15	8	1.5	2.5	19	25
2IMS78-1	24	30	15	8	1.5	2.5	19	25
2IMS91-1	24	30	15	8	1.5	2.5	19	25
3IMS10-1	18	24	14	8	1.5	2.5	19	25
3IMS12-1	18	24	14	8	1.5	2.5	19	25

1.2. **Broadband Isolators & Circulators**

Model name	Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Temperature range °C	Dimensions, (mm)
3IMS60-8G	4.0÷8.0	16	0.7	1.4	2	-60 to +85	24x30x8.5
3IMS90-8G	6.0÷12.0	16	0.8	1.4	2	-60 to +85	15x24x8.5
4IMS13-8G	9.0÷18.0	16	0.9	1.4	2	-60 to +85	12x15x7.5

NOTES:
1. On request can be made Circulators for the same size.

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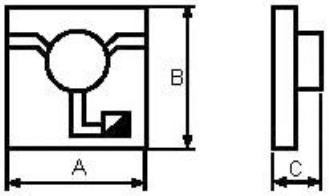
1.3. **Substrate Type Isolators**



Model name	Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Substrate thickness, (mm)	Dimensions, AxBxC (mm)
3IMM23-1	2.1÷2.4	20	0.5	1.3	2	1	1.0	20x20x5
3IMM25-1	2.3÷2.7	20	0.5	1.3	2	1	1.0	17.5x17x5
3IMM34-1	3.3÷3.6	18	0.6	1.5	2	1	1.0	12x15x5
3IMM38-1	3.4÷4.2	20	0.4	1.25	2	1	1.0	12x15x5
3IMM39-1	3.7÷4.2	20	0.5	1.3	2	1	1.0	12x15x5
3IMM46-1	4.5÷4.8	20	0.5	1.3	3	1	1.0	10.7x11x4
3IMM54-1	4.9÷5.9	20	0.5	1.3	2	1	1.0	10x9x5
3IMM58-1	5.0÷6.5	20	0.5	1.3	3	1	1.0	10.7x8.8x4.5
3IMM60-1	5.8÷7.2	20	0.5	1.35	3	1	0.635	9x10x5
3IMM62-1	5.65÷6.85	20	0.5	1.25	2	1	0.635	12.7x8x5
3IMM65-1	5.6÷7.4	20	0.5	1.25	2	1	0.635	10.6x9x4.5
3IMM66-1	6.4÷7.0	20	0.5	1.3	1	1	0.635	10x9x4.5
3IMM66-2	5.6÷7.4	20	0.5	1.3	1	1	0.635	10x9x5.0
3IMM67-1	6.4÷7.40	20	0.5	1.3	3	1	0.635	10x9x5
3IMM78-1	7.1÷8.6	20	0.5	1.3	1	1	0.635	9x10x5
3IMM78-2	7.1÷8.5	20	0.5	1.25	1	1	0.635	10x9x4.5
3IMM79-1	6.9÷8.9	17	0.6	1.35	1	1	0.635	10x9x5
3IMM80-1	7.1÷8.9	17	0.5	1.25	1	1	0.635	10x9x5
3IMM81-1	7.7÷9.0	17	0.6	1.3	2	1	0.635	10x9x5
3IMM85-1	8.0÷9.0	19	0.5	1.3	4	1	0.635	10x7x5
3IMM95-1	8.4÷10.7	18	0.5	1.3	4	1	0.635	10x9x5
3IMM96-1	9.0÷10.7	20	0.5	1.3	2	1	0.635	7x7x5
3IMM97-2	9.0÷10.5	17	0.6	1.35	2	1	0.635	6.35x6.35x4.5
4IMM10-1	9.8÷10.2	20	0.5	1.3	2	1	0.635	7x7x4.5
4IMM10-2	9.0÷10.5	20	0.5	1.25	2	1	0.635	6.35x6.35x4.5
4IMM11-1	10.0÷12.0	18	0.5	1.35	1	1	0.635	7x7x4.5
4IMM12-1	10.5÷11.5	20	0.5	1.3	2	1	0.635	7x7x4.5
4IMM12-2	10.5÷13.0	18	0.5	1.25	2	1	0.635	7x7x4.5
4IMM13-1	12.0÷14.0	18	0.5	1.3	3	1	0.635	7x7x4.5
4IMM13-2	11.7÷14.5	18	0.5	1.25	1	1	0.635	7x7x4
4IMM14-1	12.7÷15.5	20	0.6	1.3	2	1	0.635	7x7x4.5
4IMM14-2	13.5÷15.5	20	0.5	1.25	2	1	0.635	7x7x4
4IMM14-4	13.0÷14.5	18	0.6	1.3	1	1	0.635	7x7x3
4IMM14-5	13.75÷14.75	20	0.5	1.25	1	1	0.635	7x7x4
4IMM15-1	14.0÷15.6	17	0.6	1.35	1	1	0.5	7x7x4.5
4IMM15-2	14.5÷15.4	20	0.5	1.25	2	1	0.5	7x7x4
4IMM16-1	13.0÷16.7	18	0.7	1.35	1	1	0.5	7x7x4.5
4IMM16-2	15.7÷16.2	18	0.6	1.3	1	1	0.5	7x7x4
4IMM16-3	15.9÷16.1	20	0.7	1.35	1	1	0.5	6x6x4
4IMM17-1	16.5÷17.5	18	0.5	1.3	1	1	0.5	7x7x3
4IMM18-1	17.7÷19.7	20	1.0	1.3	2	0.4	0.38	6x6x2.5
4IMM19-1	16.85÷20.5	18	0.7	1.35	2	0.4	0.25	6x6x2.3
4IMM19-2	17.7÷19.7	20	0.7	1.35	2	0.4	0.25	6x6x4
4IMM20-1	18.7÷21.7	20	0.9	1.35	2	0.4	0.38	6x6x2.5

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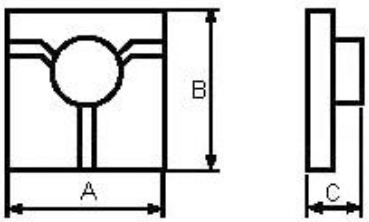
Model name	Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Substrate thickness, (mm)	Dimensions, AxBxC (mm)
4IMM20-2	18.8÷22.0	18	1.0	1.3	2	0.4	0.38	6x6x2.5
4IMM21-1	20.0÷22.5	18	0.8	1.35	2	0.4	0.38	6x6x2.5
4IMM22-1	21.2÷23.6	20	0.9	1.25	2	0.4	0.38	6x6x2.5
4IMM22-2	20.0÷22.5	20	0.8	1.25	2	0.4	0.38	6x6x2.5
4IMM22-3	21.2÷23.6	20	0.9	1.3	2	0.4	0.38	6x6x2.5
4IMM22-5	21.8÷23.8	20	1.0	1.25	2	0.4	0.25	5x7x2.3
4IMM24-1	22.5÷25.0	18	0.8	1.35	2	0.4	0.25	6x6x2.3
4IMM24-2	22.0÷25.0	20	0.9	1.3	2	0.4	0.25	6x6x2.5
4IMM25-1	24.5÷26.5	18	0.9	1.25	1	0.4	0.25	6x6x2.5
4IMM28-1	26.3÷29.7	20	1.0	1.3	1	0.4	0.25	6x6x2.5
4IMM29-1	29.0÷31.0	20	0.9	1.35	1	0.4	0.25	5x5x2.5
4IMM29-2	27.0÷32.0	17	1.2	1.35	1	0.4	0.25	6x5x2.3
4IMM30-1	28.5÷31.5	20	1.0	1.35	1	0.4	0.25	6x5x2.5
4IMM30-2	28.0÷32.0	20	0.9	1.3	1	0.4	0.25	5x5x2.3
4IMM30-3	29.6÷30.6	20	0.9	1.3	1	0.4	0.25	5x5x2.3
4IMM31-1	29.5÷31.0	20	0.9	1.3	1	0.4	0.25	5x5x2.3
4IMM32-1	29.0÷32.0	20	1.0	1.35	1	0.4	0.25	6x5x2.5
4IMM32-3	31.5÷33.5	20	0.9	1.3	2	1	0.25	6x5x2.7
4IMM33-1	33.0÷36.0	20	1.0	1.35	1	0.4	0.2	5x5x2.3
4IMM34-1	33.6÷34.4	20	0.8	1.3	1	0.4	0.2	5x5x2.3
4IMM35-1	34.5÷36.0	20	1.0	1.35	1	0.4	0.2	5x5x2.3
4IMM35-2	34.5÷35.5	20	1.0	1.35	1	0.4	0.2	5x5x2.3
4IMM35-3	34.0÷37.0	18	1.2	1.3	1	0.4	0.2	5x5x2.3
4IMM35-4	34.0÷36.0	18	0.9	1.3	1	0.4	0.2	3.7x5.8x2.3
4IMM35-5	34.0÷36.0	18	0.9	1.3	1	0.4	0.2	5.8x3.7x2.5
4IMM35-8	33.5÷36.5	20	1.0	1.35	1	0.4	0.2	5x5x2.3
4IMM36-1	34.7÷38.3	17	1.1	1.35	1	0.4	0.2	5x5x2.3
4IMM37-1	35.0÷38.0	20	1.0	1.25	1	0.4	0.2	5x5x2.3
4IMM38-1	37.0÷40.0	20	1.1	1.35	1	0.4	0.2	5x5x2.3
4IMM39-1	37.0÷40.0	20	1.0	1.25	1	0.4	0.2	5x5x3.2
4IMM39-2	37.0÷40.0	20	0.9	1.35	2	0.5	0.2	3.3x6.5x2.3
4IMM42-1	41.0÷44.0	20	1.1	1.35	1	0.4	0.2	5x5x2.3
4IMM47-1	46.0÷48.0	20	1.2	1.5	1	0.4	0.2	5x5x2.3
4IMM55-1	54.5÷56.5	20	1.2	1.5	1	0.4	0.2	5x5x2.3
4IMM57-1	56.5÷58.5	20	1.2	1.5	1	0.4	0.15	2x5.5x2.2
4IMM60-1	59.0÷61.0	20	1.2	1.5	1	0.4	0.15	2x5.5x2.2
4IMM76-1	75.0÷77.0	18	1.6	1.5	0.5	0.1	0.12	2x7x2.2
4IMM94-1	93.5÷94.5	18	1.6	1.5	0.4	0.1	0.11	1x5.5x0.11

1.4. **Substrate Type Circulators**



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Model name	Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power W(max)	Substrate thickness (mm)	Dimensions AxBxC (mm)
3CMM24-1	2.4÷2.5	20	0.5	1.3	10	1.0	20x20x4
3CMM25-1	2.3÷2.7	18	0.5	1.3	15	1.0	20x20x4
3CMM30-1	2,9÷3,1	18	0.6	1.3	10	1.0	Ø15x4
3CMM41-2	3.4÷4.8	18	0.6	1.3	50	1.0	Ø12x4.8
3CMM52-1	5.1÷5.3	18	0.5	1.3	3	1.0	10x8x4
3CMM53-1	5.2÷5.4	20	0.5	1.25	10	1.0	10x8x4
3CMM54-1	4.9÷5.9	20	0.5	1.3	3	1.0	10x9x4.5
3CMM57-1	5.6÷5.8	18	0.5	1.3	3	1.0	10x8x4
3CMM60-1	5.6÷6.4	18	0.6	1.35	2	1.0	10x9x4.5
3CMM66-1	6.4÷7.0	20	0.5	1.3	5	0.635	10x9x4.5
3CMM66-2	5.6÷7.4	20	0.5	1.3	2	0.635	10x9x5
3CMM67-1	6.5÷6.9	20	0.5	1.3	3	0.635	10x9x4.5
3CMM78-1	7.1÷8.5	18	0.5	1.3	2	0.635	10x9x5
3CMM78-1C	7.1÷8.5	20	0.5	1.25	1	0.635	10x9x5
3CMM80-1	7.1÷8.9	17	0.5	1.35	4	0.635	10x9x5
3CMM95-1	8.4÷10.7	18	0.5	1.3	10	0.635	10x9x5
3CMM95-2	8.9÷10-1	20	0.5	1.3	15	0.635	8.4x7.6x4
4CMM13-1	12.7÷13.3	20	0.6	1.3	5	0.635	7x7x4
4CMM14-1	14,0÷14,5	19	0.6	1.35	10	0.38	7x6x4
4CMM18-1	17,7÷19,7	20	0.8	1.35	2	0.38	6x6x2.5
4CMM20-1	19,0÷21,0	20	0.9	1.35	2	0.38	6x6x2.5
4CMM22-1	21,2÷23,6	20	1	1.35	2	0.38	6x6x2.5
4CMM24-1	23.9÷24.3	20	1	1.35	2	0.38	6x6x2.3
4CMM24-2	23.0÷25.0	20	1	1.35	2	0.25	6x6x2.3
4CMM33-1	32.5÷33.5	20	0.8	1.3	1	0.2	4.5x4.5x2.3
4CMM35-1	34.0÷36.0	20	1	1.3	1	0.2	4.5x4.5x2.3
4CMM37-1	35.0÷38.0	20	1.0	1.3	1	0.2	4.5x4.5x2.3
4CMM38-1	37.0÷39.0	20	1.1	1.3	1	0.2	4.5x4.5x2.3
4CMM39-1	37.0÷40.0	20	1	1.25	1	0.2	4.5x4.5x2.3
4CMM44-1	43.5÷45.5	20	1.2	1.35	1	0.2	4.5x4.5x2.3
4CMM60-1	59.0÷61.0	20	1.2	1.5	1	0.15	2x3.5x2.3
4CMM76-1	76.0÷78.0	18	1.3	1.4	1	0.12	2x3x2.2
4CMM94-1	93.5÷94.5	20	1.6	1.5	0.4	0.11	1x1.5x0.11

NOTES:
1. Many other types of appliances are available. If you can not find what you are looking for, Email us your requirement by clicking here: gorobets@ferrite-quasar.ru; info@ferrite-quasar.ru
2. Items marked with a " * " have operating peak power

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1.5. **Metal Carrier Type Isolators & Circulators**

			Module 84 4 holes ⌀2,5 35 30 20 25 7	Module 82 4 holes Ø2,5 35 30 15 20 6.75
Module 80 4 holes ⌀2,5 30 25 15 20 6,5	Module 78 4 holes ⌀2,5 28 23 10 15 9	Module 70 4 holes ⌀2,5 25 20 10 15 9	Module 68 4 holes ⌀2 20 16 11 15 7,2	Module 66 4 holes ⌀2 24,1 19,7 7,6 7,6 12,7
Module 65 4 holes ⌀2,5 24 19 7,7 12,7 9	Module 62 23 20 12 2,5 8,5	Module 61 4 holes ⌀2,5 20 15 7 12 6,5	Module 52 17 13 10,7 2,5 5,5	Module 51 19 14 9 2,5 7,5
Module 50 hole ⌀2,4 19 13,75 8 9 2 3 7,5	Module 45 hole ⌀2,4 15,5 11 6 7 2 5,5	Module 44 4 holes ⌀1,7 13,2 10,4 7,1 4,84 4,3	Module 43 4 holes ⌀1,8 17 14 7,4 10,2 7	Module 42 21,5 17,5 7 2,5 7

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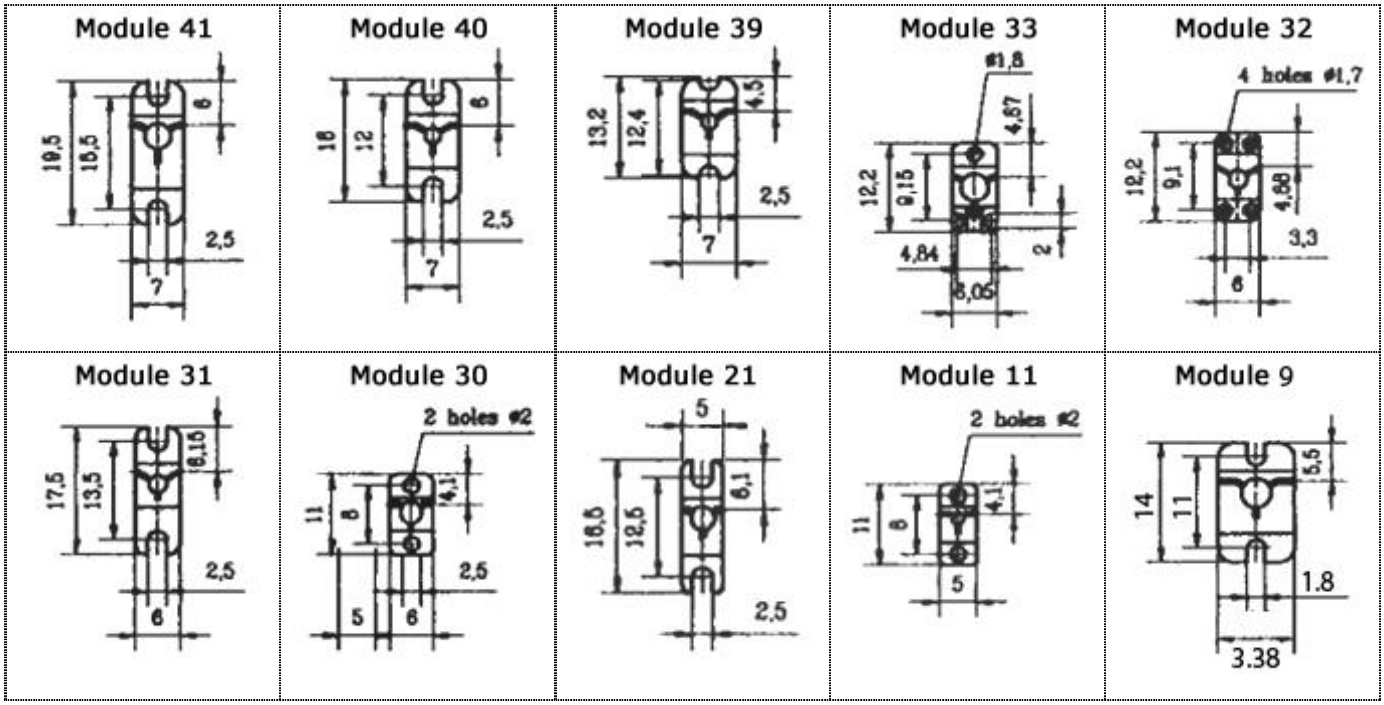

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
9	35.0÷38.0	20	1.1	1.35	1	0.4	-30 to +70°C
9	37.0÷40.0	20	1.0	1.35	1	0.4	-30 to +70°C
9	39.0÷40.5	20	1.0	1.35	1	0.4	-30 to +70°C

Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
11	30.0÷31.0	20	0.9	1.35	1	0.4	-30 to +70°C
11	32.4÷37.6	20	1.0	1.35	1	0.4	-30 to +70°C
11	32.8÷34.8	20	1.0	1.30			b
11	34.0÷36.0	20	1.0	1.30			-10 to +60°C, b
11	34.4÷35.4	20 19	1.0 1.1	1.30 1.35			room -10 to +60°C, b
11	34.5÷35.5	20	1.0	1.30			b/e
11	35.0÷37.0	20	1.0	1.35			-10 to +6, b0°C
11	35.0÷38.0	20	1.1	1.35	1	0.4	B
11	36.6÷38.4	20	1.0	1.35			-30 to +70°C, b
11	37.0÷40.0	20	1.0	1.35	1	0.4	-30 to +70°C
11	38.0÷42.0	20	1.3	1.35			B
11	39.0÷40.5	20	1.0	1.35	1	0.4	-30 to +70°C
11	40.0÷43.0	20	1.3	1.35			-30 to +70°C
11	43.0÷46.0	20	1.2	1.35	1	0.4	-30 to +70°C

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Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
21	17.7÷19.7	20	0.8	1.35	2	0.4	-30 to +70°C
21	20.2÷21.2	18	0.8	1.30			p
21	21.2÷23.6	20	0.8	1.25			-10 to +50°C, b
21	22.5÷23.15	18	0.8	1.30			p
21	22.8÷25.2	18	0.8	1.30			p
21	23.0÷25.0	20	0.8	1.30			-10 to +60°C, b
21	23.2÷24.8	18	0.8	1.30			p
21	24.0÷24.5	20	0.9	1.30			-40 to +70°C, b
21	24.0÷24.8	20	0.8	1.25			-30 to +60°C, b
21	24.5÷26.5	20	0.8	1.30	1	0.4	-30 to +70°C
21	24.5÷26.5	20	0.9	1.30			+25
		19	1.0	1.30			-40 to +70°C, b
21	24.0÷27.0	17	1.0	1.40			
21	25.2÷27.2	18	0.8	1.30			e
21	25.2÷27.2	20	0.9	1.30			+25
		18	1.0	1.35			-30 to +70°C, b
21	25.4÷26.5	23	0.8	1.30			+25
		20	0.9	1.30			-40 to +70°C, b
21	25.4÷26.5	20	0.8	1.30			-10 to +50°C, b
21	25.5÷27.5	18	0.8	1.30			p
21	26.0÷27.0	17	0.8	1.30			
21	26.0÷31.0	18	1.0	1.35	1	0.4	-30 to +70°C
21	26.0÷31.0	17	1.2	1.35			-40 to +70°C, e
21	27.0÷29.0	20	1.0	1.35			-10 to +60°C, b
21	27.0÷30.0	20	0.9	1.30			-10 to +50°C, b
21	27.0÷30.0	20	1.1	1.30			-10 to +60°C, b
21	27.0÷30.0	19	0.9	1.35			-30 to +70°C
21	27.0÷30.0	18	1.1	1.35			-30 to +70°C
21	27.0÷31.0	20	1.0	1.35			room
		19	1.1	1.40			-30 to +70°C, b
21	27.0÷32.0	18	1.1	1.35			-30 to +60°C, b
		17	1.2	1.40			
21	27.3÷31.0	18	1.0	1.35			-10 to +60°C, b
21	27.3÷31.0	18	1.0	1.35			+15 to +35°C
		16	1.2	1.40			-40 to +85°C, b
21	27.5÷28.1	20	0.9	1.30			-40 to +70°C

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21	27.5÷28.5	17	1.0	1.33			
21	27.5÷31.0	20	1.1	1.30			-10 to +60°C
21	27.5÷33.4	20	1.1	1.35			room
		19	1.5	1.40			-10 to +70°C, b
21	28.0÷30.0	20	1.1	1.30			p
21	29.0÷30.0	18	1.0	1.30			p
21	29.0÷31.0	20	1.1	1.35			
21	29.0÷31.0	20	0.9	1.30			+25
		19	1.0	1.30			-10 to +60°C
21	29.7÷30.8	20	1.0	1.25			room
		20	1.1	1.30			-30 to +70°C, b
21	30.0÷31.0	20	1.0	1.30			-10 to +60°C, b
21	30.0÷31.0	20	0.9	1.30			+15 to +35°C
		18	1.0	1.35			-40 to +85°C, b
21	30.0÷32.0	18	0.7	1.30			-30 to +70°C, b
21	30.0÷32.0	19	0.9	1.30			-10 to +70°C, b
21	30.0÷32.0	18	1.1	1.30			-30 to +60°C, b
21	30.0÷32.0	18	1.1	1.35			-40 to +70°C, e
21	30.2÷30.9	20	0.8	1.35			e
21	31.0÷33.0	20	1.1	1.30			p
21	31.0÷34.0	20	1.0	1.35	1	0.4	+25
		18	1.1	1.40			-30 to +70°C, b
21	31.5÷32.5	20	1.1	1.30			p
21	32.0÷33.0	20	0.9	1.30			-30 to +60°C, b
21	32.0÷36.0	18	1.2	1.35			-10 to +60°C, b
21	32.0÷38.0	17	1.2	1.35			room
		16	1.3	1.40			-10 to +60°C, b
21	33.0÷35.0	21	0.9	1.30			+25
		19	1.1	1.35			-40 to +70°C, b
21	33.0÷36.0	20	1.1	1.35			-10 to +60°C, b
21	33.0÷36.0	20	1.0	1.30			room
		18	1.1	1.35			-30 to +60°C, b
21	33.0÷36.0	17	1.2	1.35			-30 to +70°C, b
21	33.0÷36.0	18	1.2	1.40			-45 to +85°C, b
21	33.4÷34.0	20	1.1	1.30			p

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Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
21	33.5÷35.5	17	1.2	1.35			b
21	33.5÷36.5	20	1.1	1.30			p
21	33.5÷36.5	19	1.0	1.35			-40 to +75°C, e
21	34.0÷36.0	20	1.0	1.35			-40 to +75°C, e
21	34.0÷36.0	20	1.3	1.35			-20 to +85°C, b
21	34.0÷36.0	19	1.2	1.35			-40 to +75°C, b
21	34.5÷35.6	18	1.3	1.35			-40 to +70°C, b
21	35.0÷36.0	20	1.0	1.30			-10 to +70°C, b
21	35.0÷37.0	20	1.0	1.30			p
21	36.6÷38.4	20	1.0	1.35			-30 to +70°C, b
21	37.5÷39.5	20	1.0	1.30			p

Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
30	21.0÷24.0	20	1.0	1.35	2	0.4	
30	27.1÷29.3	20	1.0	1.30	1	0.4	

Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
31	15.5÷17.0	18	0.8	1.30			
31	16.0÷21.0	17	1.0	1.35			b
31	17.0÷17.5	22	0.7	1.25			
31	17.0÷21.0	17	1.0	1.40			-10 to +50°C, b
31	17.0÷22.0	17	0.9	1.35			-10 to +50°C, b
31	17.1÷18.9	18	0.8	1.30			
31	17.2÷17.8	21	0.7	1.25			p
31	17.3÷18.4	20	0.7	1.35	2	0.4	
31	17.5÷21.5	18	0.6	1.35			0 to +40°C
31	17.7÷19.7	19	1.0	1.30			-30 to +60°C, b
31	17.7÷19.9	20	0.8	1.35	2	0.4	
31	17.7÷20.2	20	0.8	1.30			-10 to +60°C, b
31	17.7÷20.2	18	1.0	1.30			-20 to +60°C, b
31	17.7÷20.7	18	1.0	1.35			-10 to +60°C, b
31	17.7÷21.2	20	0.9	1.30			room
		18	1.0	1.35			-10 to +60°C, b
31	17.7÷21.2	20	0.8	1.30			-10 to +50°C, b
31	17.7÷21.2	17	0.8	1.33			e

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Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
31	18.0÷21.2	17	0.8	1.33			p
31	18.1÷24.0	15	2.5	1.42			
31	18.1÷21.2	17	0.8	1.33			p
31	18.3÷20.2	20	0.8	1.30			-10 to +50°C
		18	0.9	1.35			-40 to +70°C
31	18.4÷24.1	20	1.1	1.30			-10 to +60°C, b
31	18.5÷20.5	19	0.8	1.35			p
31	19.5÷19.8	20	0.8	1.25			e
31	19.5÷20.5	20	0.8	1.25			e
31	19.5÷22.5	20	1.0	1.35			-10 to +70°C, b
31	19.6÷21.6	18	0.8	1.35			e
31	19.6÷21.6	19	1.0	1.30			-30 to +60°C, b
31	19.6÷21.6	20	0.8	1.30	2	0.4	+25
		18	0.8	1.35			-30 to +70°C, b
31	19.7÷20.2	20	0.8	1.30			-10 to +60°C, b
31	19.8÷20.3	20	0.8	1.30			
31	19.8÷20.2	20	0.8	1.30			p
31	19.8÷21.7	18	0.7	1.30			-30 to +60°C, b
31	20.0÷22.0	18	1.0	1.30			p
31	20.2÷21.2	18	1.0	1.30			p
31	20.6÷21.2	20	0.9	1.35			
31	21.2÷23.6	18	1.0	1.30			e
31	21.2÷23.6	20	0.8	1.35	2	0.4	-30 to +70°C
31	21.2÷23.6	18	0.9	1.30			-30 to +60°C, b
31	22.0÷27.0	20	1.1	1.30			-10 to +60°C, b
31	22.7÷24.3	18	1.0	1.30			p
31	23.0÷25.0	17	1.2	1.33			p
31	23.5÷24.5	20	1.0	1.30			b
31	24.0÷24.5	20	0.9	1.30			-40 to +70°C, b
31	24.0÷24.5	20	0.9	1.30			-40 to +100°C, b
31	24.5÷26.5	20	0.8	1.3	1	0.4	-10 to +60°C, b
31	25.0÷26.5	20	0.7	1.25			-10 to +70°C, b
31	25.0÷27.0	20	0.9	1.30			room
		20	1.0	1.35			-40 to +70°C, b
31	25.0÷27.0	20	1.0	1.30			-30 to +60°C, b

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Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
31	25.0÷27.0	20	1.1	1.30			-30 to +60°C, b
31	25.0÷27.0	20	0.9	1.3			-30 to +70°C, b
31	25.5÷27.5	20	0.9	1.30	1	0.4	
31	27.0÷29.0	20	0.85	1.25			-10 to +50°C, b
31	27.3÷29.5	20	1.0	1.3	1	0.4	
31	28.5÷28.8	20	0.9	1.35			e
31	29.0÷31.0	20	1.0	1.3			-30 to +60°C, b
31	29.3÷31.3	20	0.9	1.3	1	0.4	
31	29.5÷30.0	20	0.9	1.35			
31	29.5÷31.0	19	0.9	1.35			-30 to +65°C, e
31	29.5÷31.0	20	1.0	1.3			-10 to +60°C, b
31	29.5÷30.5	20	0.9	1.30			-10 to +50°C, b
		18	1.0	1.35			-30 to +60°C, b
31	29.5÷31.5	20	1.0	1.29			b
31	29.6÷30.2	20	0.9	1.35			
31	30.0÷31.0	20	1.0	1.35			-40 to +60°C, b

Carrier module	Frequency range, (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
32	21.2÷23.6	20	0.8	1.3	10	0.4	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
33	17.2÷18.7	20	0.8	1.3	5	-	-30 to +70°C
33	19.8÷20.2	20	0.8	1.25			-10 to +50°C, b

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
39	9.9÷10.4	20	0.5	1.25			b
39	12.2÷13.0	19	0.6	1.25			
39	12.4÷13.15	19	0.6	1.25			b
39	12.4÷13.5	20	0.5	1.25	5	1	
39	13.0÷13.8	19	0.6	1.25			
39	13.15÷13.90	20	0.5	1.25	5	1	-30 to +70°C
39	13.80÷14.60	19	0.6	1.25			
39	13.90÷14.65	20	0.5	1.25	5	1	
39	14.0÷14.5	20	0.6	1.25			
39	14.60÷15.40	19	0.6	1.25			
39	14.65÷15.40	20	0.5	1.25	5	1	-30 to +70°C

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40	9.5÷11.0	18	0.6	1.30			
40	9.5÷11.5	18	0.7	1.30			b
40	9.5÷11.6	17	0.7	1.37			p
40	9.5÷11.6	18	0.6	1.30			room
		15	1.0	1.50			-55 to +85°C, b
40	10.0÷12.1	17	0.7	1.37			p
40	10.0÷13.0	20	0.4	1.25			
40	10.5÷12.6	18	0.65	1.30			p
40	10.5÷13.0	18	0.7	1.30			-10 to +50°C, b
40	10.5÷13.0	17	0.8	1.35			-30 to +70°C, b
40	10.6÷12.6	18	0.65	1.30			p
40	10.7÷12.75	20	0.5	1.25			room
		18	0.6	1.30			-10 to +70°C, b
40	10.8÷11.2	23	0.4	1.25			e
40	10.9÷12.8	19	0.5	1.30			p
40	11.7÷13.2	19	0.5	1.30			p
40	11.7÷14.5	18	0.5	1.25			-30 to +70°C, b
40	12.25÷12.75	23	0.4	1.20			b
40	12.3÷13.2	19	0.6	1.25			b
40	12.4÷13.1	20	0.5	1.25	2	1	
40	12.5÷12.6	20	0.4	1.25			p
40	13.15÷13.9	19	0.6	1.25			b
40	13.2÷14.0	19	0.6	1.25			b
40	13.5÷15.1	19	0.5	1.25			e
40	13.5÷15.1	20	0.4	1.25			room
		18	0.5	1.30			-30 to +65°C, b
40	13.5÷15.5	18	0.5	1.25			-30 to +70°C, b
40	13.5÷15.5	20	0.4	1.25			-30 to +65°C, b
40	13.75÷14.5	20	0.5	1.25			-10 to +50°C, b
40	13.9÷14.65	19	0.6	1.25			b
40	13.9÷14.7	19	0.6	1.25			b

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40	14.0÷14.5	20	0.4	1.25			e
40	14.0÷15.0	17	0.6	1.35			-32 to +63°C, b
40	14.0÷17.0	18	0.7	1.35			-40 to +85°C, b
40	14.2÷15.4	20	0.4	1.25			-30 to +70°C, e
40	14.2÷15.4	18	0.5	1.3	2	1	-30 to +70°C
40	14.2÷15.5	20	0.5	1.25			
40	14.5÷15.5	20	0.5	1.25			
40	14.5÷16.5	20	0.5	1.25			+25
		18	0.6	1.30			-30 to +70°C, b
40	14.5÷17.0	20	0.6	1.25			b
40	14.5÷17.0	19	0.7	1.35			-40 to +85°C, b
40	14.6÷15.5	19	0.6	1.25			b
40	14.65÷15.4	19	0.6	1.25			b
40	14.75÷15.25	20	0.5	1.25			-40 to +70°C, b
40	15.0÷18.0	18	0.6	1.30			-10 to +50°C, b
40	15.0÷18.4	18	0.7	1.30			+25°C
		14	0.8	1.35			-10 to +55°C
		17	0.8	1.40			-10 to +70°C, b
		15	0.8	1.50			-55 to +85°C
		16	0.8	1.40			-55 to +55°C
40	15.15÷16.25	20	0.5	1.30			-30 to +50°C, b
40	15.85÷16.35	20	0.5	1.25			e
40	15.9÷16.1	20	0.5	1.25			p
40	16.0÷17.0	20	0.5	1.20			-40 to +85°C, b
40	16.0÷18.0	20	0.6	1.25			-30 to +65°C, b
40	16.0÷18.0	20	0.7	1.30			-30 to +60°C, b
40	16.2÷17.2	20	0.6	1.30			-10 to +60°C, b

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Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
40	16.5÷17.8	19	0.7	1.25			e
40	16.5÷19.5	18	0.8	1.30			room
		16	0.9	1.40			-40 to +70°C, b
40	16.6÷17.75	20	0.6	1.35	5	2	
40	16.75÷17.25	20	0.5	1.25			e
40	19.0÷23.0	18	1.1	1.35			-10 to +60°C, b

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
41	8.4÷10.7	18	0.5	1.30			-30 to +65°C, e
41	8.5÷10.0	20	0.5	1.25			-10 to +50°C, b
41	8.9÷9.6	20	0.4	1.25			b
41	9.1÷9.3	20	0.4	1.25			-30 to +70°C
41	9.0÷10.0	20	0.5	1.30			-10 to +60°C, b
41	9.0÷10.5	18	0.6	1.30			-30 to +70°C
41	9.1÷10.1	20	0.5	1.30			-10 to +60°C, b
41	9.2÷10.0	20	0.4	1.22			-15 to +55°C, b
41	9.5÷9.7	18	0.5	1.25			p
41	9.5÷10.5	23	0.5	1.25			b
41	9.5÷10.5	18	0.5	1.25			e
41	9.5÷11.5	18	0.6	1.30			p
41	9.8÷10.2	20	0.5	1.25			p
41	10.0÷10.7	20	0.5	1.25			-30 to +70°C, b
41	10.0÷11.0	18	0.5	1.25			
41	10.0÷12.0	18	0.5	1.25			b
41	10.0÷12.0	20	0.5	1.25			-10 to +50°C, b
41	10.50÷10.55	20	0.4	1.25			-10 to +50°C, b
41	10.5÷12.0	18	0.5	1.25			b
41	10.65÷11.75	20	0.5	1.25			-40 to +70°C, p

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41	10.7÷11.7	20	0.5	1.25			-40 to +70°C, e
41	10.7÷11.7	20	0.5	1.25			room
		18	0.6	1.30			-10 to +60°C
41	10.7÷12.7	20	0.6	1.30			-10 to +60°C, b
41	10.7÷12.7	20	0.4	1.25			room
		18	0.5	1.35			-40 to +70°C, b
41	10.7÷12.8	20	0.5	1.25			p
41	10.8÷11.2	20	0.4	1.25			p
41	10.9÷12.8	20	0.5	1.25			-10 to +50°C, b
41	11.0÷13.0	18	0.7	1.25			
41	11.06÷12.06	20	0.5	1.30			-30 to +50°C, b
41	11.06÷12.06	20	0.5	1.30			+25°C
		18	0.7	1.35			-15 to +55°C, b
41	11.3÷11.7	20	0.4	1.30			e
41	11.5÷12.5	20	0.5	1.25			b
41	11.5÷13.8	20	0.5	1.30			b
41	11.6÷12.72	20	0.4	1.25			b
41	11.7÷12.75	20	0.5	1.30			b
41	11.7÷14.5	18	0.5	1.30			room
		16	0.7	1.40			-30 to +70°C, b
41	12.0÷13.7	18	0.7	1.30			-40 to +85°C, e
41	12.0÷14.4	17	0.75	1.33			p
41	12.25÷12.75	23	0.3	1.20			b
41	12.5÷13.0	20	0.4	1.25			p
41	12.5÷13.5	19	0.6	1.25			-40 to +85°C, e
41	12.5÷15.5	18	0.6	1.35	5	2	
41	12.6÷13.3	20	0.6	1.3	5	2	-30 to +70°C
41	12.7÷13.3	20	0.5	1.25			-40 to +70°C, p
41	12.7÷13.7	20	0.5	1.25			
41	12.7÷14.0	20	0.5	1.3	5	1	-30 to +70°C

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Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
41	12.7÷15.0	18	0.6	1.30			
41	12.85÷14.9	18	0.6	1.30			p
41	13.0÷15.0	18	0.6	1.30			-30 to +70°C, e
41	13.5÷14.5	18	0.6	1.25			e
41	13.5÷15.0	20	0.5	1.3	2	1	-30 to +70°C
41	13.5÷15.5	20	0.5	1.20			p
41	13.7÷14.7	18	0.6	1.25			e
41	13.75÷14.5	20	0.5	1.30			-40 to +70°C, e
41	13.75÷14.5	19	0.6	1.30			b
41	13.75÷14.5	19	0.5	1.25			-40 to +85°C, b
41	13.75÷14.75	18	0.6	1.25			
41	13.75÷17.30	18	0.6	1.35			-10 to +60°C, b
41	14.0÷14.5	20	0.5	1.25			e
41	14.0÷14.5	18	0.7	1.30			-40 to +85°C, e
41	14.0÷14.5	20	0.4	1.25			-40 to +70°C, b
41	14.0÷14.5	20	0.4	1.25			-55 to +100°C
		17	0.6	1.35			b
41	14.0÷14.55	17	0.8	1.30			-40 to +85°C
41	14.0÷15.0	18	0.6	1.30			e
41	14.0÷15.0	20	0.5	1.22			-10 to +70°C
		18	0.6	1.29			-40 to +85°C, b
41	14.0÷15.0	20	0.5	1.25			room
		17	0.6	1.35			-40 to +85°C, b
41	14.0÷15.5	18	0.6	1.25			-40 to +85°C, e
41	14.0÷15.5	20	0.4	1.25			room
		18	0.6	1.30			-10 to +60°C, b
41	14.0÷15.7	18	0.7	1.30			-40 to +85°C, e
41	14.0÷16.0	20	0.8	1.30			-40 to +70°C, e

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41	14.0÷16.0	18	0.6	1.40			-40 to +70°C, b
41	14.0÷17.0	17	0.7	1.35			-10 to +60°C, b
41	14.0÷18.0	18	0.7	1.35			-10 to +70°C, b
41	14.0÷18.0	17	0.8	1.35			room
		16	0.9	1.40			-10 to +60°C, b
41	14.1÷14.4	20	0.5	1.25			p
41	14.2÷15.4	18	0.6	1.30			-30 to +65°C, e
41	14.2÷15.4	20	0.5	1.25			-10 to +60°C, b
41	14.2÷15.4	20	0.4	1.25			-10 to +50°C, b
41	14.2÷15.7	18	0.7	1.30			p
41	14.4÷15.4	20	0.4	1.25			-10 to +50°C, b
41	14.4÷15.5	18	0.6	1.25			e
41	14.4÷15.5	18	0.7	1.30			b
41	14.4÷15.7	18	0.6	1.25			e
41	14.5÷15.5	20	0.5	1.25			-10 to +60°C, b
41	14.5÷15.5	19	0.6	1.30			-30 to +70°C, b
41	14.5÷15.5	16	0.6	1.40			-20 to +80°C, b
41	14.5÷16.0	18	0.7	1.30			p
41	15.0÷15.5	20	0.4	1.25			e
41	15.0÷15.5	20	0.5	1.25			-30 to +70°C, b
41	15.0÷17.0	18	0.7	1.30			p
41	15.0÷18.0	18	0.7	1.32			-10 to +70°C, b
41	15.0÷18.4	18	0.7	1.35			+25°C
		17	0.8	1.40			-10 to +70°C, b
		15	0.8	1.50			-55 to +85°C
		16	0.8	1.40			-55 to +55°C

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41	15.15÷16.25	20	0.6	1.30			+25°C
		18	0.7	1.35			-15 to +55°C, b
41	15.2÷18.2	18	0.7	1.32			e
41	15.2÷18.2	19	0.6	1.30			b
41	15.2÷18.2	14	1.1	1.50			-40 to +70°C, b
41	15.5÷17.0	20	0.5	1.30			-10 to +70°C
41	15.6÷16.8	20	0.6	1.30			-30 to +60°C, b
41	15.6÷17.0	20	0.6	1.25			e
41	15.7÷16.2	18	0.6	1.30			e
41	15.7÷17.7	18	0.6	1.30			-10 to +70°C
41	15.7÷17.7	20	0.6	1.30			-10 to +60°C, b
41	15.8÷16.2	18	0.6	1.30			p
41	15.9÷16.1	20	0.5	1.30			e
41	16.0÷17.0	18	0.6	1.25			-10 to +70°C
41	16.0÷17.3	18	0.6	1.25			b
41	16.0÷18.0	18	0.6	1.30			-10 to +50°C, b
41	16.0÷18.0	20	0.6	1.20			p
41	16.2÷17.2	20	0.6	1.30			-10 to +60°C, b
41	16.5÷19.5	18	0.8	1.30			room
		16	0.9	1.40			-40 to +70°C, b
41	16.62÷17.7	20	0.6	1.30	10	2	-30 to +70°C
41	16.7÷17.7	19	0.7	1.25			-10 to +70°C
41	17.0÷18.0	20	0.7	1.25			
41	17.25÷18.75	19	0.7	1.25			
41	17.3÷18.1	18	0.5	1.30			room
		17	0.6	1.35			-30 to +50°C, b
41	17.7÷19.7	20	0.8	1.35	2	0.4	-10 to +70°C
41	17.7÷19.7	19	0.7	1.25			
41	18.3÷19.1	19	0.7	1.25			

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Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
42	9.0÷10.5	18	0.6	1.30			e
42	9.0÷15.0	20	0.4	1.25			
42	12.5÷12.6	20	0.4	1.25			p
42	13.5÷15.0	18	0.7	1.30			e
42	13.75÷14.5	18	0.6	1.25			e
42	13.8÷14.7	18	0.6	1.25			p
42	14.0÷15.5	18	0.5	1.30			-55 to +70°C, b
42	14.0÷15.7	20	0.5	1.30			b
42	14.1÷14.4	20	0.4	1.25			p
42	14.35÷15.4	18	0.5	1.25			
42	14.4÷15.35	18	0.5	1.25			
42	14.4÷15.4	18	0.5	1.25			
42	14.4÷15.7	18	0.5	1.25			
42	15.0÷15.5	20	0.4	1.25			e

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
43	8.4÷10.7	20	0.8	1.35	10	1	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
44	14.75÷15.2	18	0.6	1.35	10	2	
44	14.2÷15.35	20	0.6	1.3	10	1	
44	17.7÷19.7	20	0.8	1.35	10	0.2	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
45	15.5÷17.5	15	0.7	1.4	10	-	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
50	8.4÷10.7	18	0.5	1.3	10	-	

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Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
51	6.3÷6.6	20	0.5	1.22			-10 to +70°C, e
51	6.3÷6.6	20	0.5	1.25			b
51	6.5÷8.5	18	0.5	1.30			b
51	6.8÷8.2	20	0.5	1.25			room
		18	0.6	1.30			-10 to +70°C, b
51	6.9÷8.1	18	0.6	1.30			-10 to +70°C
51	6.9÷8.1	20	0.5	1.30	1	1	
51	7.0÷9.0	18	0.5	1.30			b
51	7.1÷7.9	20	0.5	1.25			e
51	7.1÷8.0	20	0.5	1.25			
51	7.2÷7.8	20	0.5	1.25			p
51	7.2÷8.5	19	0.6	1.25			b
51	7.25÷7.75	20	0.5	1.25			room
		16	0.9	1.40			-66 to +55°C, b
51	7.4÷8.4	20	0.5	1.25			-10 to +70°C, e
51	7.4÷8.4	18	0.5	1.30			b
51	7.5÷9.5	19	0.5	1.30			b
51	7.7÷8.5	20	0.4	1.25			-10 to +50°C, b
51	7.8÷8.2	20	0.4	1.30			e
51	7.9÷8.4	20	0.5	1.25			
51	7.9÷8.4	19	0.5	1.25			b
51	8.0÷8.5	20	0.5	1.20			
51	8.0÷9.0	20	0.5	1.20			p
51	8.0÷9.5	20	0.5	1.25			
51	8.0÷10.0	19	0.5	1.30			b
51	8.0÷11.0	17	0.6	1.35			room
		16	0.8	1.40			-10 to +60°C, b
51	8.0÷12.0	16	0.6	1.40			-20 to +80°C, b
51	8.0÷12.0	17	0.8	1.40			b

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51	8.0÷12.0	16	0.8	1.40			room
		14	1.2	1.60			-40 to +85°C, b
51	8÷11	17	0.6	1.35	10	3	
51	8.1÷8.3	20	0.4	1.25			
51	8.15÷8.4	20	0.4	1.25			
51	8.2÷8.9	20	0.5	1.25			-10 to +50°C, b
51	8.4÷10.0	18	0.5	1.25			
51	8.4÷10.7	18	0.6	1.30			b
51	8.5÷9.5	20	0.5	1.22			b
51	8.5÷9.6	20	0.4	1.25			b
51	8.5÷9.6	20	0.5	1.25			room
		18	0.7	1.30			-30 to +60°C, b
51	8.5÷9.6	20	0.5	1.30			-10 to +50°C, b
51	8.5÷9.6	20	0.5	1.25			-30 to +65°C, e
51	8.5÷10.0	20	0.5	1.30			room
		18	0.6	1.35			-40 to +70°C, e
51	8.5÷10.5	20	0.5	1.25	10	1	
51	8.5÷10.5	18	0.7	1.35			e
51	8.5÷10.5	17	0.8	1.40			-54 to +95°C, b
51	8.5÷10.5	20	0.6	1.30			b
51	8.5÷11.5	18	0.6	1.30			e
51	8.5÷11.5	17	0.6	1.35			-10 to +70°C, b
51	8.6÷9.3	18	0.6	1.30			p
51	8.6÷10.5	20	0.5	1.30			room
		17	0.8	1.40			-55 to +95°C
51	8.7÷9.2	18	0.5	1.25			
51	8.7÷10.5	20	0.5	1.25			-54 to +95°C
51	8.8÷9.6	20	0.5	1.25			-30 to +65°C, e

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51	8.8÷9.6	20	0.5	1.25			-30 to +65°C, b
51	8.9÷9.3	20	0.4	1.25			
51	9.0÷9.5	20	0.5	1.25			-10 to +60°C, b
51	9.0÷10.0	20	0.5	1.22			b
51	9.0÷11.0	16	0.55	1.40			b
51	9.1÷10.5	17	0.5	1.25			b
51	9.2÷9.8	20	0.45	1.22			p
51	9.4÷9.8	20	0.45	1.22			p
51	9.5÷9.8	20	0.4	1.25			b
51	9.5÷10.5	20	0.4	1.25			b
51	9.5÷10.5	20	0.5	1.3	10	3	
51	9.8÷10.6	20	0.4	1.25			-40 to +70°C, p
51	10.0÷10.8	20	0.6	1.30			b
51	10.1÷10.7	20	0.4	1.25			e

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
52	5,0÷5,9	20	0.5	1.30	2	1	
52	6,0÷6,5	20	0.5	1.25	10	3	
52	5,85÷6,72	20	0.5	1.25	10	3	
52	5,8÷6,9	20	0.5	1.30	2	1	
52	6,4÷7,6	20	0.5	1.25	2	1	
52	6,8÷8,0	20	0.5	1.30	2	1	
52	8,0÷8,4	20	0.5	1.25	2	1	
52	8,0÷9,0	20	0.5	1.30	2	1	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
61	4.8÷5.6	20	0.5	1.25	10	3	
61	5.2÷6.2	20	0.5	1.30	20	-	
61	5.0÷6.2	18	0.5	1.30	25	-	
61	5.0÷6.5	18	0.6	1.30	10	2	
61	5.6÷6.7	20	0.5	1.30	10	3	
61	5.8÷7.2	20	0.5	1.30	8	4	
61	7.1÷8.6	20	0.5	1.30	10	0.5	
61	6.9÷8.9	17	0.6	1.35	10	1	
61	7.7÷9.4	18	0.6	1.30	10	1	

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Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
62	3,4÷4,2	20	0.5	1.25	2	1	
62	3.4÷4.2	20	0.5	1.25			+25
		18	0.6	1.30			-10 to +70°C, b
62	3,6÷4,2	20	0.6	1.30	10	1	
62	4,5÷5,8	18	0.5	1.35	2	1	
62	4,6÷5,5	18	0.5	1.35	2	1	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
65	4.4÷5.1	20	0.5	1.30	10	3	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
68	3.0÷3.45	20	0.5	1.30	10	3	
68	3.6÷4.2	20	0.5	1.30	10	3	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
70	3.1÷3.6	18	0.6	1.25	10	1	
70	3.0÷4.2	18	0.6	1.30	10	1	
70	3.4÷4.2	20	0.6	1.25	10	1	
70	3.7÷4.1	20	0.5	1.30	10	2	
70	4.9÷5.9	20	0.5	1.30	10	1	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
78	2.8÷3.5	18	0.6	1.30	10	3	

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Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
80	1.78÷2.02	20	0.5	1.25	15	3	
80	2.0÷2.3	20	0.5	1.25	10	1	
80	1.9÷2.5	18	0.7	1.30	10	3	
80	2.15÷2.50	20	0.5	1.25	10	1	
80	2.2÷2.6	20	0.5	1.25	10	3	
80	2.1÷2.7	17	0.6	1.35	15	-	
80	2.3÷2.7	20	0.5	1.25	10	3	
80	2.5÷3.0	18	0.6	1.25	10	1	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
82	1.6÷2.0	18	0.6	1.30	10	5	

Carrier module	Frequency range (GHz)	Isolation dB, min.	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Reverse power, W(max)	Code
84	1.7÷2.4	18	0.6	1.30	10	5	

NOTES:
1.The same range of frequencies can be realized in different sizes.
2. All dimensions are in millimeters.
3. For modules 80, 70, 68, 65, 61, 50, 45, 44, 43 and 33 devices can be execute in two versions: Isolators and Circulators. For everyone else - only the Isolators.

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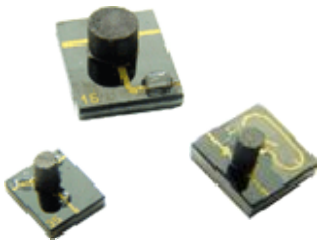
1.6. **Metal Backed Type Isolators and Circulators**

- **Isolators** (Ferrite substrate on steel carriers)



Isolators 3IMBS

Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions AxBxC (mm)	Code
2.1÷2.4	20	0.5	1.3	2		20x20x5	
2.3÷2.7	18	0.7	1.3	1	1	20x20x6	room
	16	0.9	1.4				-10 to +60C, b
2.35÷2.45	21	0.5	1.28	2	0.25	17.5x17x5	p
2.49÷2.7	20	0.5	1.25	1	1	20x20x6	-30 to +70C
2.7÷3.5	20	0.6	1.3	10	2	15x17x6	-30 to +70C
3.1÷3.4	20	0.5	1.3	4	1	15x17x5	-30 to +70C
3.05÷3.5	20	0.5	1.3	4	1	15x17x5	-30 to +70C
3.9÷4.4	18	0.6	1.3	2	0.25	15x17x5	
4.1÷4.3	20	0.5	1.25	1	1	12x12x5.3	room
	18	0.7	1.3				-10 to +50C, b
4.2÷4.4	20	0.4	1.25	1	1	12x15x5.5	-10 to +50C, b
4.4÷5.0	20	0.5	1.25	5	5	12.7x16x5.5	+25
	18	0.7	1.35				-30 to +70C, b
4.9÷5.2	20	0.5	1.25	0.5	0.25	10x9x4.5	-10 to +60C, b
5.0÷5.2	20	0.5	1.25	1	0.25	12x12x5	p
5.2÷5.9	20	0.5	1.3	2	0.25	10.6x9x5	p
5.4÷5.9	20	0.4	1.25	2	2	10x9x5.5	+25
	18	0.5	1.3				-10 to +60C, b
5.6÷7.4	18	0.6	1.3	2	1	10x9x5.5	b-p
5.8÷6.2	20	0.5	1.25	0.25	0.25	10.7x9x5	-20 to +65C, b
5.8÷6.7	20	0.5	1.25	1	0.25	12x11x6	-40 to +70C
5.9÷6.4	20	0.5	1.25	0.5	0.25	10x9x4.5	-10 to +60C, b
6.3÷6.5	20	0.4	1.25	1	1	10x9x5	+25
	18	0.6	1.30				-40 to +80C, b

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6.4÷7.13	20	0.5	1.3	4	1	12x12x2.8	-30 to +70C
6.425÷7.125	20	0.5	1.2	4	1	11.94x11.94 x2.79	-30 to +70C
6.5÷7.5	20	0.5	1.25	3	20	10.7x14x3.8	-10 to +50C
	17	0.7	1.35				-55 to +85C, b
6.7÷7.1	20	0.5	1.25	1	1	12x11x6	-40 to +70C, b
7.1÷8.5	20	0.5	1.25	1	0.25	10x9x5	room
	16	0.6	1.30				-10 to +60C, b
7.1÷8.8	16	0.5	1.40	10	1	10x9x5.5	-10 to +70C, b
7.9÷8.4	20	0.6	1.25	1	1	10x9x5	room
	16	0.5	1.30				-40 to +70C, b
8.0÷8.5	18	0.6	1.30	1	1	7x7x3.5	-10 to +50C, b
8.0÷9.0	20	0.5	1.25	10	0.2	7x7x5	
8.0÷9.0	20	0.5	1.25		0.25	10x7x5	+15 to +35C
	18	0.7	1.30				-40 to +70C
8.0÷11.5	18	0.6	1.30	8		9x13.5x5	room
	17	0.7	1.40				-10 to +70C
8.0÷12.0	17	0.8	1.35	5	1	9x9x5	+25
	15	1.0	1.50				-30 to +60C, b
8.3÷9.7	16	0.8	1.40	0.25	0.25	7x7x3.2	
8.5÷9.5	19	0.5	1.25	10	1	7x11x5.5	-10 to +70C, b
8.5÷9.6	20	0.5	1.25	0.25	0.25	7x7x3.2	b
8.5÷10.5	20	0.5	1.25	1	1	9x13x4.5	+25
	18	0.6	1.30				-30 to +60C, b
8.5÷11.5	20	0.5	1.25	1	1	10x9x4.5	+25
	18	0.6	1.30				-30 to +60C, b
9.0÷9.6	20	0.5	1.25	10	1	7x11x5.5	-10 to +70C, b
9.0÷10.0	20	0.5	1.30	10	1	7x12x3.5	-10 to +50C
	18	0.7	1.35				-30 to +80C, b
9.0÷10.0	20	0.5	1.25	10	1	7x11x5.5	-10 to +70C, b
9.0÷10.0	20	0.4	1.25	0.1	0.1	7x7x5.5	-10 to +60C, b
9.0÷10.5	20	0.5	1.25	10	2	8x8x5.5	room
	18	0.7	1.30				-40 to +85C
9.0÷10.5	20	0.5	1.25		0.25	7x7x4.5	+15 to +35C
	18	0.7	1.30				-40 to +70C, b

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Isolators 4IMBS

Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions, AxBxC (mm)	Code
10.0÷12.0	20	0.6	1.35	10	0.2	7x7x5.0	
10.6÷11.8	20	0.6	1.35	10	0.2	7x7x5.0	p
10.7÷12.7	20	0.4	1.25	1	1	7x6x5.5	room
	18	0.5	1.30				-30 to +60C
10.7÷12.7	20	0.4	1.25	3	1	7x7x3.8	room
	18	0.5	1.30				-20 to +70C
10.9÷12.8	20	0.5	1.25	1	1	7x7x4.5	-10 to +50C
11.2÷12.2	20	0.6	1.35	10	0.2	7x7x5.0	P
11.5÷11.9	18	0.6	1.35	1	1	7x7x4.5	-55 to +95C
11.5÷11.9	18	0.6	1.35	1	1	6.3x6.3x4.5	-55 to +95C
11.5÷11.9	18	0.6	1.35	1	1	6x6x4.5	-55 to +95C
11.7÷12.5	20	0.5	1.25	5	5	7x7x3.76	p
11.7÷14.5	20	0.6	1.30	1	0.25	7x7x6	-40 to +70C
11.5÷13.5	20	0.5	1.25	1	1	6x7x5.5	-30 to +70C
12.0÷12.7	20	0.5	1.25	0.25	0.25	7x7x5	-20 to +65C, b
12.2÷12.75	20	0.5	1.25	0.25	0.25	7x7x5	-20 to +65C, b
12.5÷14.0	20	0.5	1.25	1	1	7x7x3.8	-10 to +60C, b
12.75÷14.5	20	0.5	1.25		0.5	7x7x4.0	room
	18		1.30				-30 to +70C, b
13.0÷15.0	20	0.6	1.30	1	0.25	7x7x6.0	-40 to +70C
13.0÷13.6	18	0.6	1.35	1	1	7x7x4.6	-55 to +95C
13.0÷13.6	18	0.6	1.35	1	1	6x6x4.5	-55 to +95C
13.5÷14.75	20	0.4	1.22		2	7x7x3.3	-30 to +75C, b
13.75÷14.5	20	0.5	1.25	1	1	6x6x4	-10 to +60C, b
13.75÷14.5	18	0.6	1.30	1	1	6x7x4	-40 to +65C, b
14.0÷15.0	18	0.5	1.30	5	5	6x7.5x3.5	room
	17	0.6	1.35				-40 to +85C, b
14.0÷15.6	20	0.5	1.25	1	1	7x7x4.0	+25C,
	18	0.6	1.30				-30 to +60C, b
14.5÷15.6	20	0.5	1.25	1	1	6x7x5.5	-30 to +70C
14.0÷18.0	17	0.8	1.35	0.5	0.5	7x7x3.8	room
	16	0.9	1.40				-10 to +60C, b

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15.0÷16.0	20	0.6	1.30	1	1	7x7x3.0	-10 to +60C, b
15.0÷16.0	20	0.6	1.30	1	1	7x7x3.7	-10 to +50C, b
15.0÷17.0	20	0.8	1.30	1	1	7x7x3.0	-10 to +60C, b
15.0÷17.0	19	0.7	1.30	1	1	7x7x3.7	-10 to +50C, b
	18	0.8	1.35				-20 to +70C
15.0÷18.0	18	0.6	1.35	3	10	7x11x4.0	-10 to +50C
	16	0.8	1.45				-55 to +85C, b
15.5÷16.5	19	0.6	1.25	1	0.3	7x7x4.5	
15.6÷16.8	20	0.6	1.30		0.25	7x7x4	-30 to +60C, b
16.0÷17.0	18	0.7	1.30	2	1	7x7x4.5	e -30 to +70C
16.0÷18.0	18	0.8	1.35		1	7x7x3.7	-10 to +60C, b
16.2÷17.2	20	0.6	1.30	1	1	6x7x5.5	-10 to +60C, b
16.5÷17.5	20	0.7	1.30	1	1	7x7x3.0	-10 to +60C, b
16.5÷17.5	20	0.6	1.30	1	1	7x7x3.7	-10 to +50C, b
16.9÷17.3	19	0.65	1.30	2	1	7x7x4.5	-40 to +70C, b
17.0÷17.5	20	0.6	1.30	1	1	7x7x4.5	
17.0÷25.0	16	1.3	1.50	1	1	6x6x3.3	b
17.0÷25.0	16	1.3	1.50	1	1	7x7x4.5	b
17.3÷18.4	18	0.7	1.30	1	1	6x6x3.7	b -10 to +70C
17.5÷19.7	20	0.8	1.30	1	1	6x6x3.8	-10 to +60C, b
18.0÷18.7	20	0.8	1.30	2	2	7x7x4.5	
18.0÷23.0	17	1.0	1.35		0.5	6x6x3.7	-10 to +50C, b
18.0÷26.5	16	1.3	1.50	1	1	6x6x3.3	b
18.0÷26.5	16	1.3	1.50	1	1	7x7x4.5	b
19.0÷21.0	18	0.8	1.30	2	1	5x7x4.0	
19.0÷21.0	20	0.8	1.30		0.25	6x6x3.7	-10 to +60C, b
19.0÷21.0	20	0.8	1.25	1	0.4	5.0x7.0x3.2	-30 to +70C
19.0÷21.5	18	0.85	1.35	2	1	5x7x4.0	-30 to +70C
		1.0	1.40				-40 to +70C, b
19.0÷21.5	20	0.8	1.30	2	1	6x6x3.7	b
19.0÷21.5	18	0.8	1.25	5	2	5.0x7.0x3.2	-30 to +70C
19.4÷21.4	20	0.9	1.30		1	6x6x3.7	+15 to +35C
	18	1.1	1.35				-40 to +70C, b

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19.5÷20.5	18	0.8	1.30	2	1	5x7x4	p
19.5÷23.0	18	1.0	1.30	1	1	6x6x3.3	-10 to +50C, b
19.6÷20.7	18	0.8	1.30	2	1	5x7x4.0	p
19.7÷20.1	18	0.7	1.35	1	1	6x6x3.5	0 to +85C, b
19.7÷20.2	18	0.8	1.30	2	1	5x7x4.0	p
20.2÷21.2	18	0.8	1.30	1	1	6x6x4.0	p
21.0÷23.0	20	0.8	1.30	1	1	6x6x3.3	-10 to +50C, b
21.1÷21.3	18	0.9	1.30	2	2	6x6x3.3	-10 to +50C, b
21.6÷22.2	20	0.8	1.30		0.25	6x6x4.0	room
	19	1.0	1.35				-40 to +70C, b
21.6÷22.5	20	1.0	1.30		0.25	6x6x3.7	-10 to +60C, b
21.9÷24.1	20	1.0	1.30		0.5	6x5x3.7	-10 to +50C, b
22.0÷23.0	20	0.7	1.30	1	1	6x6x3.7	room
	18	0.8	1.35				-40 to +85C, b
22.0÷24.0	20	0.9	1.30		0.25	6x6x3.7	-10 to +60C, b
22.0÷25.0	20	1.1	1.30		1	6x6x3.0	-10 to +60C, b
22.0÷24.0	20	0.9	1.30	1	1	6x6x3.2	-10 to +60C, b
22.5÷25.3	18	0.8	1.35	2	0.4	6x6x3.3	-30 to +70C
23.0÷25.0	18	1.1	1.35	1	1	6x6x3.3	-40 to +70C, b
23.0÷25.0	20	0.8	1.30	1	1	6x6x3.7	-10 to +60C, b
23.0÷29.0	20	1.1	1.30		1	6x6x3.0	-10 to +60C, b
23.1÷23.6	20	0.9	1.25		0.5	6x6x3.4	-30 to +70C, b
24.0÷28.5	20	1.1	1.30	1	1	6x5x2.8	b
24.0÷30.0	20	1.1	1.30	1	0.4	6x5x2.8	-30 to +70C
24.0÷30.0	20	1.1	1.30	1	1	6x5x3.3	-10 to +50C, b
24.0÷30.0	17	1.2	1.35	1	1	6x5x3.7	-40 to +70C, b
24.0÷30.0	20	1.1	1.30	1	1	6x5x2.8	b
24.5÷26.5	17	0.6	1.40	10	1	5x5.5x3.5	-55 to +85C, b
25.0÷26.0	20	0.8	1.30	7.5	2	6x6.0x2.9	room
	20	0.9	1.35				-40 to +70C, b
25.0÷26.0	20	0.9	1.30	1	1	6x5x3.0	-10 to +60C, b
25.0÷26.1	20	0.9	1.30	3	1	6x6x2.9	-40 to +50C
25.0÷27.0	20	0.9	1.25		0.25	6x5.0x2.9	b
25.0÷27.0	20	0.8	1.25	1	2	6x5.0x2.9	room
	20	1.0	1.30				-20 to +60C, b

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Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions, AxBxC (mm)	Code
25.0÷27.5	21 18	0.8 1.0	1.30 1.35	3	10	6x6x3.8	-10 to +50Cb -55 to +85C, b
25.2÷28.2	20	1.1	1.30		0.5	6x5x3.7	-10 to +60C, b
26.0÷30.0	18	1.1	1.30	1	1	6x5x3.0	-40 to +50C
26.5÷40.0	15	1.7	1.50	1	1	6x6x2.9 5x5x2.9	b
27.0÷29.0	20	1.0	1.30	2CW		5x5x3.0	b
27.25÷31.7	20	0.8	1.30	1	0.4	5x5x4	-30 to +70C
28.0÷30.0	20	1.1	1.30	1	1	5x5x2.9	p
28.0÷32.0	18	1.1	1.35	2	1	6x6x2.9	
29.0÷30.0	23	0.9	1.30	4	4	5x5x2.9	room
29.0÷31.0	20	1.0	1.30	1	1	6x5x2.9	-10 to +70C, b
29.0÷31.0	20	1.0	1.35	1	1	5x5x3.6	-30 to +60C, b
29.2÷31.2	20	0.9	1.30	1	1	5x5x2.9	-10 to +50C, b
29.6÷30.6	20	0.9	1.35	1	0.4	5x5x2.8	-30 to +70C
29.5÷31.5	20	0.9	1.30	1	1	5.0x5.0x3.3	-30 to +70C
30.0÷31.0	20 18	1.0 1.1	1.30 1.35		2	5x5x2.9	room -30 to +70C, b
30.0÷32.0	20	1.0	1.30	1	1	5x5x3.0	-10 to +50C, b
30.0÷36.0	17	1.1	1.35		1	5x5x2.9	-10 to +60C, b
30.0÷40.0	16	1.4	1.60		2	5x5x2.9	-10 to +50C, b
31.0÷32.0	20	0.9	1.30		0.5	5x5x2.9	-10 to +60C, b
31.0÷33.0	20	1.0	1.35	1	0.25	5x5x2.9	p
31.0÷33.0	20	1.0	1.35	1	1	5x5x3.6	-30 to +60C, b
31.0÷34.0	20	1.0	1.35	1	1	6x5x2.9	-30 to +65C, b
31.0÷41.0	16	1.7	1.50	1	1	6x6x3.3	b
31.5÷32.5	20 19	1.0 1.1	1.30 1.35	1	1	5x5x2.9	room -30 to +60C, b
31.5÷34.1	20	1.1	1.35	1	1	5x5x3.6	-30 to +60C, b
31.5÷36.0	20 18	1.1 1.3	1.35 1.45	2	2	5x5x3.0	room -40 to +70C, b
31.5÷36.0	18 17	1.1 1.2	1.35 1.40		1.2	5x5x2.8	0 to +50C -30 to +60C
32.0÷33.0	20	0.9	1.30	1	0.2	5x5x3.3	-30 to +60C, b

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Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions, AxBxC (mm)	Code
32.0÷34.0	20	0.9	1.35	2	1	6x5x2.9	-30 to +70C, b
32.0÷34.0	20	1.0	1.30	1	1	5x5x2.8	-10 to +60C
	18	1.1	1.35				-40 to +70C, b
32.0÷35.0	20	1.0	1.35	2	1.0	5x5x3.3	-10 to +60C, b
32.0÷38.0	17	1.2	1.35	0.5	0.5	5x5x2.9	room
	16	1.3	1.40				-10 to +60C, b
32.0÷38.0	17	1.4	1.40	4	4	5x5x3.1	b
32.5÷35.5	20	1.0	1.35	5		5x5x3.3	-10 to +60C, p
32.8÷34.8	20	0.9	1.35	2	1	5x5x3.0	b
33.0÷35.0	18	1.2	1.30	1	0.2	4.5x4.5x2.3	
33.0÷36.0	20	1.1	1.35		2	5x5x2.9	room
	18	1.3	1.40				-30 to +70C, b
33.0÷37.0	20	1.2	1.35	2	2	5x5.5x4.0	p
33.0÷38.0	19	1.3	1.35		0.25	5x5x3.2	0 to +60C, b
33.0÷38.0	18	1.2	1.30	4	2.4	5x5x3	-40 to +70C
33.0÷45.0	16	1.8	1.50	1	1	5x5x3.3	b
33.3÷34.1	20	1.1	1.30	1	1	5x5x2.9	room
	19	1.2	1.35				-30 to +60C, b
33.5÷35.6	20	1.1	1.35		0.25	5x5x3.2	0 to +60C, b
33.5÷36.2	20	1.0	1.30		0.25	5x5x2.9	-40 to +70C, b
34.0÷36.0	20	1.0	1.35	1	0.4	5x5x3.3	-30 to +70C
34.0÷36.0	20	1.0	1.35		2	5x5x3.6	-30 to +60C, b
34.0÷36.0	18	1.1	1.30	4	2	4.5x4.5x3.0	-40 to +70C, b
34.5÷35.5	20	1.0	1.35	1	0.4	5x5x2.8	-30 to +70C
34.5÷35.5	20	1.0	1.35	0.25	0.25	5x5x3.6	-30 to +60C, b
34.7÷38.3	17	1.1	1.35	1	0.25	5x5x3.2	
35.0÷36.0	20	0.9	1.25	10	2	5x5x2.9	+25
	19	1.0	1.30				-30 to +70C, b
35.5÷36.0	20	0.9	1.30	1	1	5x5x3.2	-30 to +70C, b
35.5÷38.0	20	1.1	1.35	1	0.4	5x5x3.3	-30 to +70C
35.5÷38.0	17	1.1	1.35	1	0.25	5x5x3.2	-40 to +85C
35.0÷38.0	20	0.9	1.25	10	2	5x5x2.9	-25
	19	1.0	1.30				-30 to +70C, b
35.0÷39.0	18	1.2	1.30	2	2	5x5x3.3	b

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35.0÷39.0	17	1.3	1.40	2	2	5x5.5x4.0	-40 to +70C
35.0÷40.0	19	1.2	1.35	1	1	5x5x3.0	-10 to +60C
36.5÷37.3	20	1.0	1.35	1.5	1	5x5x3.0	-30 to +60C
36.6÷38.4	17	1.1	1.35	1	0.25	5x5x3.2	p
37.0÷40.0	20	1.0	1.31	1	0.5	5x5x3.3	b
37.5÷39.0	18	1.2	1.30	2	2	5x5x3.3	b
37.5÷39.5	20	1.0	1.35	1	1	5x5x3.3	room
	18	1.1	1.35				-30 to +70C, b
38.0÷40.0	17	1.1	1.35	2	1	5x5x4.0	
38.0÷42.0	17	1.1	1.35	2	1	5x5x4.0	
38.5÷41.5	20	1.1	1.35	2	1	5x5x3.0	room
	18	1.3	1.40				-30 to +70C, b
39.8÷40.2	20	1.1	1.30	1	1	5x5x2.8	-30 to +70C, b
40.5÷42.5	17	1.2	1.35	1	0.25	5x5x3.2	
40.5÷42.5	20	1.2	1.35	1	1	5x5x3.0	-10 to +60C, b
41.0÷43.0	17	1.2	1.35	1	0.25	5x5x3.2	-40 to +85C, b
41.0÷43.0	18	1.3	1.30	1	1	5x5x3.0	-10 to +50C, b
42.1÷42.3	20	0.9	1.30	2	0.5	5x5x3.2	-40 to +85C, b
43.0÷46.0	20	1.2	1.35	1	0.4	5x5x3.3	-30 to +70C
44.0÷45.2	20	0.3	1.20	2	2.0	5x5x2.8	-10 to +60C
54.2÷55.3	20	1.1	1.35	1	0.25	2x5.5x2.8	-30 to +70C
56.5÷58.5	20	1.1	1.35	1	0.25	2x5.5x2.8	-30 to +70C
59.0÷61.0	20	1.1	1.35	1	0.25	2x5.5x2.8	-30 to +70C

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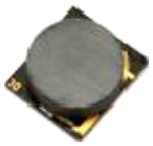
- **Circulators** (Ferrite substrate on steel carriers)



Circulators 3CMBS

Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions, AxBxC (mm)	Code
2.3÷2.7	18 16	0.7 0.9	1.30 1.40	1	1	20x20x6	room -10 to +60, b
3.6÷6.2	16 15	0.8 0.9	1.40 1.50	1	1	12x12x5.5	room -10 to +60, b
4.4÷5.0	20	0.5	1.25	1	1	10.6x9x5.4	room
4.4÷5.0	20 18	0.5 0.6	1.30	1	1	12x9x5.4	room -10 to +60, b
4.8÷5.5	20 17	0.5 0.7	1.25 1.35	8		10x9x4.5	room -30 to +85, b
5.0÷5.9	19	0.6	1.30	15	15	15x17x5.0	High Power p
5.2÷5.95	20	0.5	1.25	1		10.6x9x5	-30 to +70C
5.2÷5.95	20	0.5	1.30	10	10	9.5x9.5x5	
5.3÷5.9	20 17	0.5 0.7	1.25 1.35	5	5	10x10x4.5	b -55 to +85
5.3÷5.9	22 17	0.5 0.7	1.17 1.35	5	5	12x12x4.5	b -55 to +85
5.6÷6.4	18	0.6	1.30	2	2	10x9x5.5	0 to +50
5.6÷7.4	18	0.6	1.30	2	2	10x9x5.5	0 to +50
5.7÷5.9	20	0.5	1.25	1	1	10x9x4.5	0 to +50, b
5.8÷7.2	20	0.5	1.25	1	0.25	12x11x6	-40 to +70
6.0÷7.0	19	0.5	1.25	20	20	12x11x6	e -30 to +70
6.0÷12.0	16	1.0	1.40	5		13.5x13.5x5.5	-30 to +70C
7.0÷9.0	17	0.6	1.35	1	1	10x9x5	b -40 to +70
7.0÷9.0	18	0.6	1.30	1	1	10x9x5.5	e -40 to +70
7.1÷8.5	18	0.5	1.30	3		10x9x5	-20 to +70
8.0÷9.0	20	0.5	1.25	20	20	7x7x5	High Power

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8.0÷10.5	20 18	0.6 0.8	1.25 1.30	5		6x6x4.5	room -10 to +70, b
8.0÷11.5	18 17	0.6 0.7	1.30 1.40	8		9x9x5	room -10 to +70C
8.0÷12.0	18	0.7	1.30	20		10x10x8	-10 to +60C, b
8.4÷10.7	18 16	0.5 0.7	1.30 1.40	10		7x7x5	+15 to +35C -20 to +90, b
8.4÷10.7	20 17	0.5 0.7	1.22 1.35	10		9x9x5	+15 to +35C -20 to +90, b
8.5÷10.0	20 17	0.5 0.7	1.25 1.40	1		9x9x5	+25uy777777777C -40 to +85C, b
8.5÷10.5	18 17	0.5 0.6	1.30 1.35	6	6	9x10x4.7	+25C 30 to +60C, b
8.5÷10.5	18 17	0.6 0.7	1.30 1.35	20		10x10x8	+25C 0 to +50C, b
8.7÷10.5	18	0.4	1.30	10		7x7x4	-30 to +70C
8.8÷10.2	18	0.5	1.30	10	1	7x7x4.5	-30 to +70C
8.9÷10.7	20 18	0.4 0.5	1.25 1.30	3		7x7x4.5	room -35 to +70C
9.0÷10.0	18	0.4	1.30	10		7x7x2.3	-30 to +70C
9.0÷10.0	20	0.5	1.25	20		10x10x4.0	room
9.0÷10.0	20	0.5	1.25	20	1	7x7x5.0	High Power
9.0÷10.0	20 18	0.5 0.6	1.25 1.30	6	6	7x7x4.7	+25C -40 to +60C, b
9.0÷10.0	20	0.6	1.25	20	20	8.9x12.1x5.0	High Power
9.0÷10.0	19 17	0.4 0.65	1.25 1.33	10	0.2	6x6x5.0	+25C -30 to +60C, b
9.0÷10.0	19 17	0.4 0.65	1.25 1.33	10	0.2	6x6x4.0	+25C -30 to +60C, b
9.0÷10.0	20 18	0.6 0.8	1.25 1.30	5		6x6x2.5	room -10 to +70C, b
9.0÷10.0	20 18	0.4 0.5	1.25 1.30	10		10x6x5.0	room -10 to +60C, b

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9.0÷10.5	20	0.5	1.25	10	0.2	7x7x5.0	room
	18	0.6	1.30				-30 to +60C
9.0÷11.0	20	0.5	1.25	10		10x9x5.5	room
	18	0.6	1.30				-10 to +60C, b
9.0÷11.0	20	0.5	1.25	10	10	10x9x4.5	room
	18	0.6	1.30				-10 to +60C, b
9.1÷9.6	20	0.5	1.22	1	1	7x7x5.0	
9.2÷9.5	20	0.5	1.25	5		7x7x5.0	b
9.2÷9.6	20	0.5	1.25	20	20	7x7x5.0	High Power
9.2÷10.0	17	0.5	1.43	3		7x7x2.5	b
9.2÷10.0	20	0.4	1.22	10	10	7x7x4.3	-15 to +55C, b
9.25÷10.25	20	0.5	1.30	10		7x7x5	-30 to +70C
9.5÷11.5	20	0.5	1.22	1	0.2	7x7x5.0	p

Circulators 4CMBS

Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions, AxBxC (mm)	Code
10.0÷12.0	18	0.6	1.30	10	2	7x7x5.0	-10 to +60C
10.6÷11.8	20	0.6	1.35	10	0.2	7x7x5.0	p
10.7÷12.7	20	0.4	1.25	3	1	7x7x3.8	room
	18	0.5	1.30				-20 to +70C
11.5÷13.5	19	0.5	1.25	1	1	7x7x3.76	
11.7÷12.75	20	0.5	1.25	5	5	7x7x3.76	-10 to +60C
12.0÷13.5	20	0.6	1.30	5	5	7x7x6.0	0 to +85C
13.5÷14.5	19	0.5	1.25	10.2	10.2	7x7x3.76	High Power
13.75÷14.5	19	0.5	1.25	10		7x7x4.5	-40 to +85C, b
14.0÷14.5	19	0.5	1.25	1	1	7x7x3.76	
6.0÷18.0	12	1.4	1.7	5		12x10.5x6	-30 to +70C
8.0÷18.0	16	1.0	1.4	5		12x12x5.5	-30 to +70C
14.0÷18.0	19	0.5	1.25	1	1	7x7x3.76	
14.4÷15.4	19	0.5	1.25	1	1	7x7x3.76	
15.0÷17.0	18	0.6	1.30	2		5x5x3.5	-55 to +95C, b

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15.5÷17.5	18 16	0.5 0.6	1.30 1.40	15	2.5	7x7x3.7	-20 to +70C
15.0÷18.0	18	0.7	1.35	1	1	7x7x4.5	b
15.2÷18.2	18	0.6	1.25	1	1	6x6x4.5	room
15.5÷16.5	19	0.6	1.25	4	1	7x7x4.5	-30 to +60C, b
15.5÷17.9	19	0.6	1.35	10	10	7x9x5	e
16.6÷17.6	19 17	0.6 0.7	1.25 1.35	1	1	7x7x3	-30 to +60C, b
16.8÷17.4	20	0.6	1.30	10		6x6x3.5	-40 to +70C, b
17.0÷17.5	20	0.6	1.30	4	1	7x7x4.5	
17.5÷18.5	18	0.7	1.30	4	4	6x6x3.7	b -10 to +70C
19.0÷21.0	18	0.8	1.30	2	1	5x5x4	
22.0÷23.0	20 18	0.7 0.8	1.30 1.35	1	1	6x6x3.7	room -40 to +85C, b
22.0÷24.0	19	0.8	1.25	2	0.2	6x6x3.5	-10 to +70C, b
22.0÷25.0	20	0.9	1.30	1	1	6x6x3.7	-10 to +60C, b
22.5÷25.0	18	0.8	1.30	2		6x6x3.3	-30 to +70C
23.0÷25.0	18	0.8	1.30	2	0.2	6x6x4.0	b
23.0÷25.0	18	0.9	1.30	2	0.2	6x6x3.7	-30 to +60C, b
23.0÷27.0	17	1.2	1.35	1	1	6x6x3.3	-40 to +70C, b
23.0÷27.0	18	0.9	1.30	2		6x6x3.7	-10 to +60C, b
23.0÷28.0	20	0.9	1.30	1	1	6x6x3.4	b
23.5÷24.5	20	0.9	1.30	10		6x6x3.7	-10 to +50C, b
23.5÷24.5	20	1.1	1.25	1	1	6x6x3.7	b
23.8÷24.8	20	1.0	1.30		0.01	6x6x3.0	b
24.0÷24.3	20	0.8	1.22	1	1	6x6x3.2	-10 to +60C, b
24.0÷26.0	20	0.8	1.30	2		6x6x3.7	-10 to +60C, b
24.0÷30.0	18	1.2	1.30	1	1	6x5x2.9	-10 to +50C, b
24.0÷30.0	20	1.3	1.35	1	1	5x5x3.5	b
24.0÷30.0	18	1.2	1.30	1	1	6x5x3.3	-10 to +50C, b
25.0÷27.0	20	0.9	1.30	2		6x6x2.9	-30 to +70C, b
25.0÷27.0	18	0.9	1.35	1	1	6x5x2.9	b
26.0÷30.0	18	1.1	1.30	1	1	6x5x3.0	-10 to +50C, b
27.0÷29.0	20	1.0	1.30	2CW		4.5x4.5x3.0	b

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Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions, AxBxC (mm)	Code
27.3÷30.0	20	1.0	1.35	1		6x5x3.3	-30 to +70C
28.0÷32.0	18	1.1	1.30	1	1	5x5x2.9	-10 to +50C, b
31.0÷33.0	18	1.0	1.40	4		5x5x3.5	-30 to +50C, b
31.0÷36.0	17	1.2	1.35	5		4.5x4.5x3.0	-10 to +60C, b
31.0÷36.0	18	1.2	1.35	2.5	2	4.5x4.5x2.3	-10 to +60C, b
31.5÷36.0	17 15	1.1 1.3	1.35 1.50	2	2	5x5x3.0	room -40 to +70C
31.5÷36.0	18 17	1.1 1.2	1.35 1.40		1	5x5x2.8	0 to +50C,b -30 to +60C
32.0÷36.0	16 14	1.1 1.3	1.40 1.60	10		5x5x2.9	-10 to +50C -40 to +85C,b
32.0÷36.0	18 17	1.0 1.2	1.30 1.35	1		4.5x4.5x3.2	-10 to +60C -40 to +70C,b
32.5÷35.5	18	1.1	1.30	5		4.5x4.5x3.7	0 to +50C,b
33.0÷33.5	20	1.0	1.25	5	0.5	5x5x2.3	draft p
33.0÷35.0	18	1.2	1.35	5	5	4.5x4.5x2.3	
33.0÷35.5	17	1.2	1.40	5	5	5x5x3.5	p
33.0÷36.0	18	1.1	1.30	1.2	1.2	4.5x4.5x3.0	-10 to +60C,b
33.0÷36.0	20	1.1	1.35	5	5	4.5x4.5x2.8	-60 to +85C,b
33.0÷37.0	18 17	1.0 1.2	1.30 1.35	4		4.5x4.5x3.2	-10 to +60C -40 to +70C, b
33.0÷37.0	18	1.2	1.35	5		4.5x4.5x3.5	
33.0÷38.0	18	1.2	1.35	4		4.5x4.5x3.3	b
33.4÷36.0	23	1.1	1.30	1	1	4.5x4.5x2.8	b
33.5÷34.5	17	1.2	1.40	6	6	4.5x4.5x3.5	p
33.5÷35.5	17	1.2	1.40	6	6	4.5x4.5x3.5	-60 to +85C
33.5÷35.6	18	1.1	1.30	6	6	4.5x4.5x2.4	-10 to +70C, b
34.0÷35.0	18	1.2	1.30	4	4	4.5x4.5x3.0	-40 to +70C,b
34.0÷36.0	20	1.0	1.30	2	1	5x5x2.9	
34.0÷36.0	20	1.0	1.30	3	3	4.5x4.5x3.3	-30 to +70C
34.0÷36.0	18	1.2	1.30	4	2	5x5x3.0	-40 to +70C, b
34.0÷36.0	20 18	1.0 1.2	1.30 1.35	2	2	4.5x4.5x3.0	room -40 to +75C, b
34.0÷36.0	20	1.0	1.35	2	2	4.5x4.5x3.3	-30 to +70C, b

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Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Dimensions, AxBxC (mm)	Code
34.5÷35.5	18 20	0.9 1.0	1.30 1.30	2	2	3.5x4.0x2.85	room -30 to +70C
34.5÷35.5	23	0.9	1.20	1	1	4.5x4.5x3.7	-30 to +70C, b
34.5÷35.5	20	1.0	1.35	2	2	4.5x4.5x3.3	-30 to +60C, b
34.7÷38.3	20	1.1	1.35	1		4.5x4.5x3.3	-30 to +70C
34.8÷35.2	18	1.0	1.30	1	1	4.5x4.5x2.9	-40 to +71C, b
35.0÷36.7	18 17	0.9 1.1	1.30 1.40	1		4.5x4.5x3.7	-40 to +85 -40 to +85
35.0÷38.0	20	1.1	1.35	1		4.5x4.5x3.3	-30 to +70C
35.0÷40.0	18	1.2	1.35	1	1	4.5x4.5x3.3	room
35.7÷36.7	18	0.9	1.3	2		4.5x4.5x3.7	-40 to +85, b
36.7÷37.0	20 18	0.9 1.1	1.25 1.35	1	1	4.5x4.5x3	room -40 to +85, b
36.5÷37.3	17	1.1	1.35	5		5x5x3.2	p
37.0÷40.0	20	1.1	1.35	1		4.5x4.5x3.3	-30 to +70C
37÷40	20	1.0	1.30	1	1	4.5x4.5x2.8	b
38÷40	20	1.0	1.30	2	1	5x5x3	-10 to +60
38.6÷40	18 17	0.9 1.0	1.30 1.35	2	2	4.5x4.5x3.1	room -10 to +60, b
40.5÷42.5	20 18	1.1 1.3	1.35 1.40	1	1	4.5x4.5x3.3	+25 -30 to +60, b
40.5÷43.5	20	1.2	1.30	1	1	5x5x2.8	-30 to +60, b
59.0÷61.0	20	1.1	1.35	1		2x3.5x2.8	-30 to +70C

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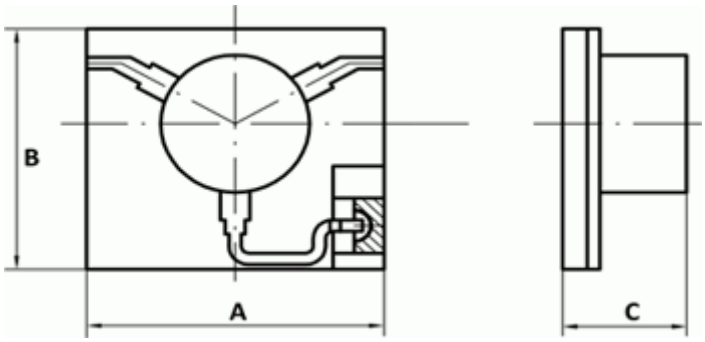
1.7. Broad band (Octave plus)

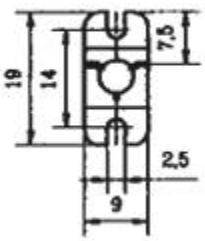
Model name	Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Temperature range °C	Dimensions, (mm)
4IMBS12-1WB	6.0÷18.0	12	1.4	1.7	5	-60 to +85	12x10.5x6
4CMBS12-1WB	6.0÷18.0	12	1.4	1.7	5	-60 to +85	12x10.5x6
4IMBS13-1WB	8.0÷18.0	16	1.0	1.4	5	-60 to +85	12x12x5.5
4CMBS13-1WB	8.0÷18.0	16	1.0	1.4	5	-60 to +85	12x12x5.5



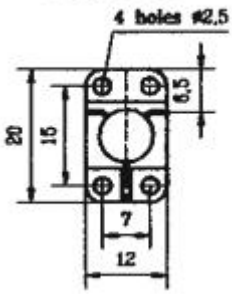
1.8. High Power Type Isolators and Circulators

- **High-power carrier type isolators**

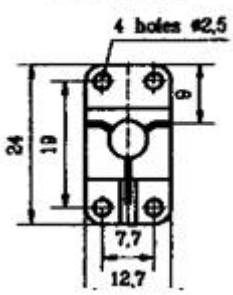
Module 51



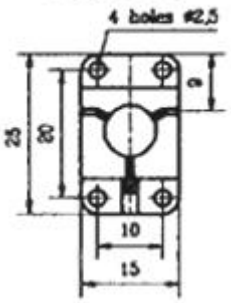
Module 61



Module 65



Module 70



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Model name	Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation power, W(max)	Terminal power, W(max)	Carrier module
3IMS40-2	3.4÷4.2	20	0.5	1.3	20	10	70
3IMS42-1P	4.0÷4.5	20	0.5	1.25	30	30	70
3IMS63-3P	5.8÷6.8	20	0.5	1.25	35	35	65
3IMS63-1P	5.7÷6.7	20	0.4	1.25	15	10	61
3IMS65-2	5.8÷7.2	18	0.6	1.3	25	3	61
3IMS67-1	6.4÷7.1	20	0.5	1.3	15	15	61
3IMS71-2	5.6÷8.5	18	0.8	1.35	10	10	61
3IMS73-P	6.7÷7.7	20	0.5	1.25	15	10	61
3IMS78-2	7.1÷8.5	20	0.5	1.3	10	10	61
3IMS83-P	7.5÷8.7	20	0.5	1.25	15	10	61
3IMS95-3	8.4÷10.7	18	0.6	1.3	15	10	51

High-power original carrier type isolators and circulators

Model name	Operating frequency range (GHz)	Isolation (dB) min	Insertion loss (dB) max	VSWR (50 Ω max)	Operation peak power, W(max)	Terminal aver. power, W(max)	Dimensions, (mm)
3CMS10-3	1.03÷1.09	20	0.5	1.3	10	20	30x40x10
3IMS11-1	0.960÷1.215	20	0.6	1.3	100	15	36x52x12
3CMS11-1	0.960÷1.215	19	0.6	1.3	100	25	36x42x12
3IMS13-1	1.20÷1.35	18	0.6	1.3	10	10	30x40x10
3CMS13-1	1.20÷1.35	18	0.6	1.3	10	25	30x40x10
3CMS14-1	1.22÷1.50	20	0.5	1.3	10	25	30x40x10
3IMS16-1	1,48÷1,72	20	0.5	1.3	10	4	24x30x8.7
3IMS28-5	2,70÷2,90	20	0.5	1.25	10	10	15x30x5.5
3IMS28-3P	2,70÷2,90	20	0.5	1.25	30	10	15x32x5.5
3IMS28-6	2,70÷2,90	20	0.5	1.25	50	10	20x30x9.0

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2. Drop-in Isolators & Circulators

2.1. **Drop-in Isolators**

Model name	Frequency range (GHz)	Insertion loss dB	Isolation dB	VSWR max	Oper. temp. °C	Average power W	Reverse power W
2IDS46-2	0.400÷0.600[1]	0.5	20	1.3	0 to +60	60	60
2IDS53-1	0.470÷0.580	0.6	20	1.25	-20 to +80	200	100
2IDS64-1	0.570÷0.710	0.5	20	1.25	-20 to +80	200	100
2IDS78-1	0.700÷0.862	0.5	20	1.20	-20 to +80	200	100
2IDS83-1	0.800÷1.000[2]	0.4	19	1.25	-50 to +70	60	60
2IDS94-5	0.925÷0.960	0.3	28	1.15	-30 to +80	50	50
3IDS14-2	1.400÷1.550	0.5	18	1.3	-10 to +70	5	5
3IDS15-1	1.420÷1.525	0.5	19	1.25	0 to +50	50	20
3IDS15-4	1.350÷1.850	0.8	15	1.5	-50 to +70	50	50
3IDS16-1	1.620÷1.661	0.4	20	1.25	0 to +50	30	10
3IDS16-2	1.620÷1.661	0.5	17	1.35	0 to +50	30	10
3IDS19-1	1.860÷1.990	0.6	17	1.35	-30 to +70	50	20
3IDS26-2	2.50÷2.70	0.6	20	1.3	-10 to +60	15	15
3IDS30-1	2.90÷3.10	0.5	19	1.25	-10 to +60	15	15

NOTES: 1. Devices operate within full bandwidth, except 1) - bandwidth 20 MHz, 2) - bandwidth 25 MHz.

Outlines (all dimensions are in millimeters)

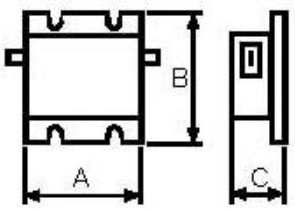

Fig. 2

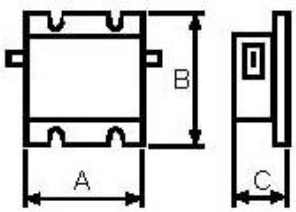

Fig. 2

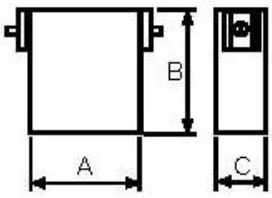

Fig. 3

Model	A	B	C	Fig.
2IDS46-2	35.0	46.0	9.3	1
2IDS53-1	50.0	50.0	20.0	2
2IDS64-1	50.0	50.0	20.0	2
2IDS78-1	50.0	50.0	20.0	2
2IDS83-1	25.4	31.8	8.3	1
2IDS94-5	31.5	46.0	20.0	3
3IDS14-2	25.4	25.4	8.7	1
3IDS15-1	19.0	25.4	8.3	1
3IDS15-4	35.0	46.0	12.7	1
3IDS16-1	19.0	20.0	8.3	1
3IDS16-2	19.0	25.4	9.3	1
3IDS19-1	19.0	25.4	9.3	1
3IDS26-2	19.0	21.0	9.3	1
3IDS30-1	19.0	21.0	9.3	1

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2.2. **Drop-in Circulators**



Model name	Frequency range (GHz)	Insertion loss dB	Isolation dB	VSWR	Oper. temp. °C	Average power W
2CDS50-1	0.400÷0.600[1]	0.5	18	1.3	0 to +65	60
2CDH50-1	0.400÷0.800[2]	0.2	21	1.2	0 to +50	1000
2CDM50-1	0.400÷0.800[2]	0.2	21	1.2	0 to +50	500
2CDS88-1	0.800÷0.960	0.4	20	1.22	0 to +65	150
2CDS83-1	0.824÷0.849	0.4	20	1.25	0 to +65	60
2CDS87-1	0.864÷0.894	0.4	20	1.25	0 to +65	60
2CDS90-1	0.890÷0.915	0.4	20	1.25	0 to +65	60
2CDS94-1	0.925÷0.960	0.4	20	1.2	-10 to +85	50
2CDS94-3	0.925÷0.960	0.2	23	1.15	0 to +65	100
2CDS94-2	0.935÷0.960	0.5	20	1.25	0 to +65	60
3CDS10-1	0.960÷1.215	0.5	19	1.25	-55 to +85	50
3CDS12-1	1.200÷1.400	0.5	20	1.25	-30 to +70	300
3CDS14-1	1.400÷1.455	0.4	20	1.25	0 to +50	30
3CDS15-1	1.420÷1.525	0.5	19	1.25	0 to +50	50
3CDS15-2	1.460÷1.660	0.3	23	1.15	+5 to +55	100
3CDS18-1	1.805÷1.880	0.2	23	1.15	-10 to +70	50
3CDS19-1	1.930÷1.990	0.2	21	1.15	-10 to +70	50
3CDS28-1	2.700÷2.900	0.5	20	1.25	-30 to +70	300
3CDS30-1	3.000÷3.200	0.5	20	1.25	-30 to +70	300

NOTES:
1. Modified versions of all devices are available.
2. Devices operate within full bandwidth. Items marked with a " [1] " operate within bandwidth 10 MHz. Items marked with a " [2] " operate within bandwidth 20 MHz.

Outlines (all dimensions are in millimeters)

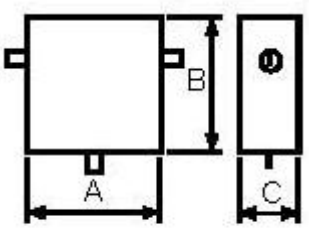

Fig. 2

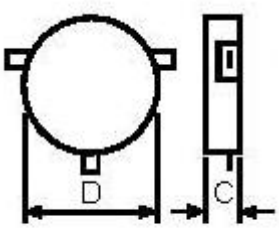

Fig. 3

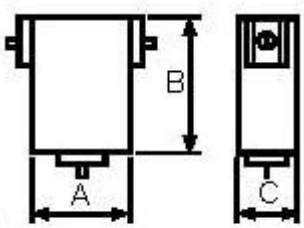

Fig. 4

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Model	A	B	C	D	Fig.
2CDS50-1	35.0	35.0	9.3	-	2
2CDH50-1	66.0	72.0	23.0		2
2CDM50-1	50.0	50.0	23.0		2
2CDS88-1	34.3	34.3	12.7	-	2
2CDS83-1	-	-	7.2	24.1	3
2CDS87-1	-	-	7.2	24.1	3
2CDS90-1	-	-	7.2	24.1	3
2CDS94-1	25.4	25.4	13.0	-	2
2CDS94-3	31.0	33.8	19.0	-	4
2CDS94-2	-	-	9.0	25.0	3
3CDS10-1	31.75	31.75	12.7	-	2
3CDS12-1	31.7	31.7	13.0		2
3CDS14-1	25.4	25.4	8.3	-	2
3CDS15-1	19	20.0	8.3	-	2
3CDS15-2	31.0	33.8	19.0	-	4
3CDS18-1	25.4	25.4	12.6	-	4
3CDS19-1	31.0	33.8	20.1	-	4
3CDS28-1	31.7	31.7	17.0	-	2
3CDS30-1	31.7	31.7	17.0	-	2

3. Isoductors (Hexalators)

3.1. **Isoductors**

Model name	Frequency range (MHz)	Band width %, min	Insertion loss dB, max	Isolation dB, min	Temperature range °C	Power W
1HDS57-1	44÷70	4	0.7 1.0	18 15	+25 -10 to +60	100
1HDS78-1	68÷88	4	0.7 1.0	18 15	+25 -10 to +60	100
1HDS90-1	70÷110	4	0.7 1.0	18 15	+25 -10 to +60	100
2HDS12-2	118÷138	2	0.7	20	0 to +60	40
2HDS16-1	145÷174	4	0.7 1.0	18 15	+25 -25 to +85	100
2HDS16-2	146÷176	3	0.5 1.0	20 15	+25 -40 to +85	250
2HDS20-1	170÷230	4	0.7 1.0	18 15	+25 -25 to +85	100
2HDS32-1	300÷350	4	0.7 1.0	18 15	+25 -25 to 85	100
2HDS45-1	330÷470	4	0.7 1.0	18 15	+25 -25 to +85	100
2HDS60-1	470÷720	4	0.7 1.0	18 15	+25 -25 to +85	100
2HDS60-2	470÷720	4	0.7 1.0	18 15	+25 -25 to +85	50
2HDS84-1	720÷960	4	0.7 1.0	18 15	+25 -25 to +85	100
2HDS84-2	720÷960	4	0.7 1.0	18 15	+25 -25 to +85	50
2HDB20-1	150÷250	full	0.8 1.0	17 15	+25 -10 to +50	150
2HDB33-1	250÷400	full	0.8 1.0	17 15	+25 -10 to +50	150

NOTES:
1. Outlines - all

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dimensions are in millimeters.

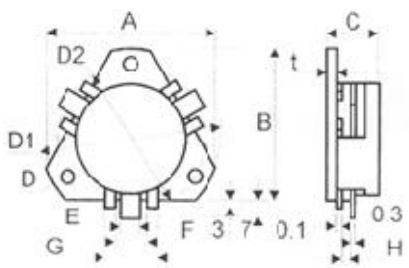

Fig. 1

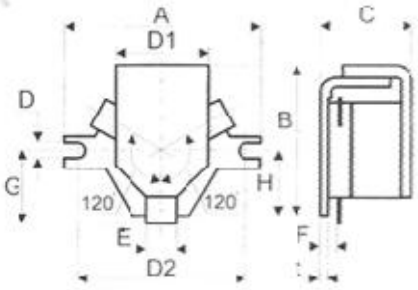

Fig.2

Model	A	B	C	D	D1	D2	E	F	G	H	t	Fig.
1HDS57-1	74.5	66.5	20.6	3.4	75.0	67.0	6.0	10.0	16.0	2.0	2.5	1
1HDS78-1	68.0	61.0	21.6	3.4								1
1HDS90-1	68.0	60.0	20.6	3.4	69.0	60.0	6.0	10.0	16.0	2.0	2.5	1
2HDS12-2	40.0	29.5	18.5	3.1	19.0	34.0	6.2	3.5	15.0	13	1.5	2
2HDS16-1	55.0	48.5	18.4	3.4	56.0	50.0	6.0	10.0	16.0	1.5	2.5	1
2HDS16-2	68.0	60.0	20.6	3.4	69.0	60.0	6.0	10.0	16.0	2.0	2.5	1
2HDS20-1	55.0	48.5	18.4	3.4	56.0	50.0	6.0	10.0	16.0	1.5	2.5	1
2HDS32-1	55.0	48.5	18.4	3.4	56.0	50.0	6.0	10.0	16.0	1.5	2.5	1
2HDS45-1	44.5	38.5	16.0	3.4	46.0	40.0	4.0	6.0	10.0	1.0	2.5	1
2HDS60-1	44.5	38.5	14.6	3.4	46.0	40.0	4.0	6.0	10.0	1.0	2.5	1
2HDS60-2	34.5	30.0	12.7	2.9	36.0	25.0	4.0	6.0	10.0	1.0	2.0	1
2HDS84-1	44.5	38.5	14.6	3.4	46.0	40.0	4.0	6.0	10.0	1.0	2.5	1
2HDS84-2	34.5	30.0	12.7	2.9	36.0	25.0	4.0	6.0	10.0	1.0	2.0	1
2HDB20-1	61.8	54.0	20.0	3.4	66.0	60.0	4.0	10.0	14.0	3.0	2.5	1
2HDB33-1	55.2	48.0	19.5	3.4	60.0	54.0	4.0	10.0	14.0	2.5	2.5	1

3.2. **Isohybrides**

This devices have integrated the functions of isolator and combiner into a single Isohybrid. This provides two Isolators and a 90 degree hybrid a single unit.

Model name	Frequency range (MHz)	Band width %, min	Insertion loss dB, max	Isolation dB, min	Temperature range °C	Power W
2ISG91-1	890÷935	4	3.6	45	-30 to +70	60
3ICG15-1	1200÷1700	4			+10 to +50	60
3ISG18-1	1815÷1868	4	3.4	45	-30 to +70	60

NOTES: 1. Outlines - all dimensions are in millimeters.

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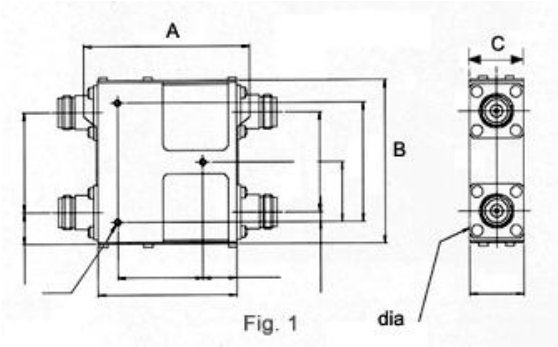


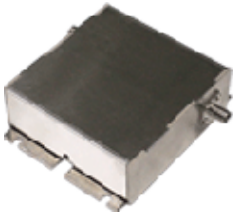
Fig. 1

Model	A	B	C	D	D1	D2	E	F	G	H	t	Fig.
2ISG91-1	66.0	77.0	25.4									1
3ICG15-1	93.0	139.0	21.5									1
3ISG18-1	77.0	66.0	25.4									1

4. Coaxial Circulators & Isolators

4.1. Broad Bandwidth Lumped Element Isolators



Model name	Frequency range (MHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C	Power W
1CCS30-4	29÷31	1.1	15	1.4	+25	40
		1.3	15	1.6	10 to +35	
1CCS41-1	40÷42	1.0	16	1.4	+25	40
		1.3	15	1.6	10 to +35	
1CCS50-1	44÷55	1.2	17	1.4	+25	40
		1.3	15	1.6	0 to +50	
1ICS57-2	48÷66	1.2	17	1.4	+25	30
		1.3	15	1.6	-10 to +60	
1ICS88-1	76÷100	1.0	17	1.4	+25	30
		1.2	15	1.6	-10 to +60	
1ICS98-1	88÷108	1.0	17	1.4	+25	30
		1.2	15	1.6	-10 to +60	

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2ICS12-1	100÷150	1.0 1.2	17 15	1.5 1.6	+25 -40 to +70	30
2CCS14-1	108÷176	1.2 1.5	15 14	1.5 1.65	+25 -10 to +60	30
2ICS15-1	120÷180	1.0 1.2	17 15	1.5 1.6	+25 -40 to +70	30
2ICS19-1	150÷225	1.0 1.2	17 15	1.5 1.6	+25 -40 to +70	30
2ICS23-1	180÷270	1.0 1.2	17 15	1.5 1.6	+25 -40 to +70	30
2ICS28-1	220÷330	0.8 1.0	17 15	1.5 1.6	+25 -40 to +70	30
2ICB31-1	225÷400	1.0 1.5	17 15	1.4 1.5	+25 -10 to +70	30
2ICS35-1	270÷405	0.8 1.0	17 15	1.5 1.6	+25 -40 to +70	30
2ICS41-1	330÷495	0.8 1.0	17 15	1.5 1.6	+25 -40 to +70	30
2ICS50-1	400÷600	0.8 1.0	17 15	1.5 1.6	+25 -40 to +70	30
2ICS62-1	500÷750	0.8 1.0	17 15	1.5 1.6	+25 -40 to +70	30

Outlines (all dimensions are in millimeters)

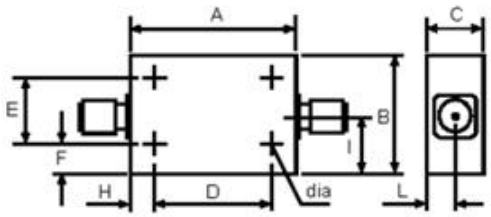


Fig. 1

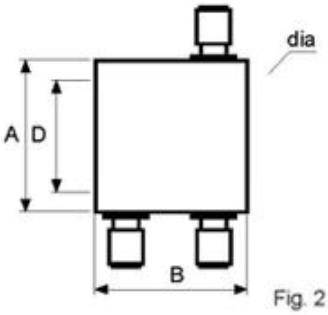
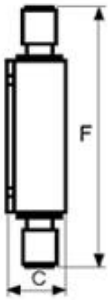
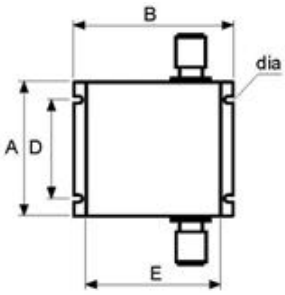


Fig. 2





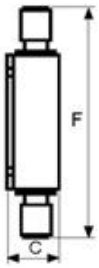


Fig. 3

Model	A	B	C	D	E	F	H	I	L	Drawing	Fig.
1CCS30-4	83.0	93.0	30.0								
1CCS41-1	83.0	93.0	30.0								
1CCS50-1	83.0	93.0	30.0								
1ICS57-2	67.0	65.0	24.3	51.0	54.0	5.5	8.0	9.5	12.0		1
1ICS88-1	67.0	65.0	24.7	51.0	54.0	5.5	8.0	9.5	12.0	PDF	1
1ICS98-1	67.0	65.0	24.3	51.0	54.0	5.5	8.0	9.5	12.0		1
2ICS12-1	67.0	65.0	24.0	51.0	54.0	6.0	7.5	10.0	12.0		1
2CCS14-1	67.0	65.0	24.0	51.0	54.0	12.8	2.8	12.3	12.0		2
2ICS15-1	66.0	66.0	24.7	51.0	54.0	6.5	7.5	10.0	12.0		1
2ICS19-1	66.0	66.0	25.0	51.0	54.0	6.5	7.5	10.0	12.0	PDF	1
2ICS23-1	66.0	66.0	24.7	51.0	54.0	6.5	7.5	10.0	12.0		1
2ICS28-1	59.4	52.0	22.1	34.0	35.0	6.5	12.7	24.5	11.6		1
2ICB31-1	82.0	70.0	26.0	50.0	76.1	2.9	10.0	21.8	14.2	PDF	3
2ICS35-1	59.4	52.0	22.1	34.0	35.0	6.5	12.7	24.5	11.6		1
2ICS41-1	59.4	52.0	22.1	34.0	35.0	6.5	12.7	24.5	11.6		1
2ICS50-1	48.5	53.5	27.2	36.5	38.4	11.3	6.0	14.2	13.6		1
2ICS62-1	54.0	43.0	18.5	38.0	15.0	14.0	8.0	21.5	9.6		1

NOTES: 1. Isolators with SMA and N connection can be supplied on request; dia - M3 (4-40)

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4.2. Broad Bandwidth Y-junction Isolators & Circulators



Model name	Frequency range (GHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C	Power W
2ICS45-1	0.380÷0.520	0.5 0.8	17 15	1.35 1.5	+25 -10 to +60	100
2CCS52-1	0.400÷0.650	0.8 1.2	14 12	1.60 1.70	+25 -60 to +85	100
2ICS58-1	0.464÷0.700	0.7 0.8	16 14	1.40 1.50	+25 -60 to +85	75
2ICS57-1	0.50÷0.65	0.7 0.7	17 17	1.30 1.40	+25 -60 to +85	75
2ICS81-1	0.65÷0.975	0.8 1.0	16 13	1.40 1.50	+25 -60 to +85	75
2CCS83-1	0.65÷1.00	0.7 1.0	14 13	1.55 1.60	+25 -60 to +85	75
2ICS85-1	0.685÷1.03	0.7 0.8	16 14	1.40 1.50	+25 -60 to +85	30
3CCS10-1	0.80÷1.20	0.7 0.8	15 14	1.45 1.55	+25 -10 to +85	75
3ICS12-1	0.94÷1.41	0.8 0.9	17 14	1.40 1.50	+25 -60 to +85	75
3ICS17-2	1.35÷2.05	0.8 1.0	16 13	1.40 1.50	+25 -60 to +85	75
3ICS33-1	2.60÷3.90	0.3 0.4	20 15	1.25 1.40	+25 -60 to +85	50
3ICS40-1	3.20÷4.80	0.3 0.3	20 18	1.25 1.30	+25 -60 to +85	35
3ICS67-1	4.60÷8.80	0.3 0.3	20 18	1.25 1.30	+25 -60 to +85	35
4ICS10-1	8.0÷12.40	0.4 0.5	20 18	1.25 1.30	+25 -60 to +85	25
4ICS15-1	12.0÷18.0	0.4 0.5	18 17	1.30 1.35	+25 -60 to +85	25
4ICS22-1	18.0÷26.5	1.0 1.2	16 14	1.50 1.55	+25 -60 to +85	1

Outlines (all dimensions are in millimeters)

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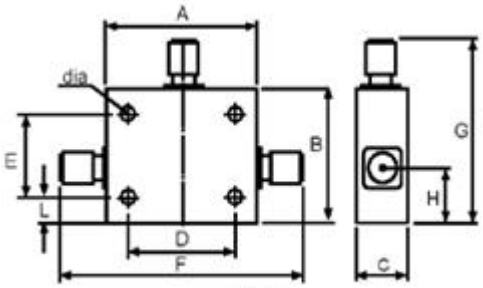

Fig. 2

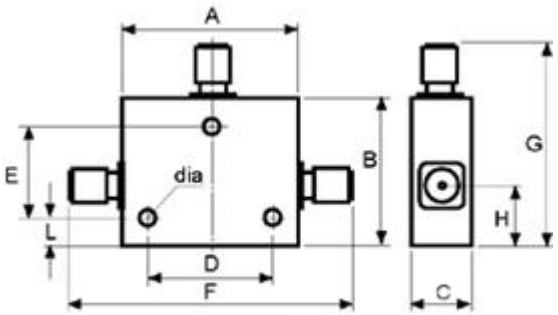

Fig. 3

Model	A	B	C	D	E	dia	H	L	Drawing	Fig.
2ICS45-1	64.8	73.4	25.0	50.0	50.0	M4	19.5	13.0	PDF	2
2CCS52-1	64.8	73.4	25.0	50.0	50.0	M4	19.5	13.0	PDF	2
2ICS58-1	64.8	73.4	26.4	50.0	50.0	M4(4-40)	19.5	13.0	PDF	2
2ICS57-1	48.5	53.5	20.8	36.5	38.4	M4(4-40)	14.2	11.3	PDF	2
2ICS81-1	48.5	53.5	20.8	36.5	38.4	M4(4-40)	14.2	11.3	PDF	2
2CCS83-1	48.5	53.5	20.8	36.5	38.4	M3	14.2	11.3	PDF	2
2ICS85-1	48.5	53.5	20.8	36.5	38.4	M4(4-40)	14.2	11.3	PDF	2
3CCS10-1	48.5	53.5	21.0	36.5	38.4	M3	14.2	11.3	PDF	2
3ICS12-1	48.5	53.5	20.2	36.5	38.4	M3(4-40)	14.2	11.3	PDF	2
3ICS17-2	48.5	53.5	20.2	36.5	38.4	M3(4-40)	14.2	11.3	PDF	2
3ICS33-1	41.8	44.1	19.0	33.0	32.0	M3(4-40)	7.7	7.7	PDF	2
3ICS40-1	41.8	44.1	19.0	33.0	32.0	M3(4-40)	7.7	7.7	PDF	2
3ICS67-1	28.6	33.2	16.5	21.0	20.8	M3(4-40)	7.5	7.4	PDF	3
4ICS10-1	21.3	24.7	15.2	15.0	14.5	M3(4-40)	6.8	6.8	PDF	3
4ICS15-1	17.1	19.7	14.6	12.5	10.2	M3(4-40)	6.8	6.8	PDF	3
4ICS22-1	12.8	15.3	10.0	8.0	8.0	M2(2-56)	5.2	5.3	PDF	3

NOTES: 1. Isolators with SMA connectors.
2. Dimensions without load.

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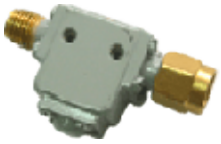
4.3. Octave and Octave Plus Bandwidth Isolators & Circulators



Octave Band

Model name	Frequency range (GHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C	Power W
2CCB75-1	0.5÷1.0	0.5 0.8	17 14	1.35 1.40	+25 0 to +40	10
2CCB84-1	0.56÷1.12	0.6 0.8	17 14	1.35 1.40	+25 0 to +40	10
3CCB15-1	1.0÷2.0	0.4 1.0	20 15	1.25 1.50	+25 +1 to +70	75
3CCB15-6	1.0÷2.0	0.4 1.0	20 15	1.25 1.50	+25 +1 to +70	75
3CCB16-1	1.07÷2.14	0.5 0.7	19 16	1.25 1.40	+25 +1 to +50	75
3CCB20-2	1.35÷2.7	0.5 1.0	18 15	1.35 1.50	+25 -20 to +80	50
3CCB21-1	1.40÷2.7	0.5 0.7	19 18	1.25 1.30	+25 0 to +65	50
3CCB22-1	1.5÷3.0	0.6 0.8	18 15	1.35 1.50	+25 -30 to +55	50
3CCB30-1	2.0÷4.0	0.4 0.6	20 16	1.25 1.40	+25 -25 to +85	50
3CCB30-6	2.0÷4.0	0.4 1.0	20 15	1.25 1.50	+25 -30 to +70	75
3CCB45-1	3.0÷6.0	0.4 0.6	20 16	1.25 1.40	+25 -60 to +85	35
3CCB60-1	4.0÷8.0	0.4 0.6	20 16	1.25 1.40	+25 -60 to +85	25
3CCB75-1	5.0÷10.0	0.4 0.6	20 16	1.25 1.40	+25 -60 to +85	25
3CCB90-1	6.0÷12.0	0.4 0.6	20 16	1.25 1.40	+25 -60 to +85	25
4CCB13-1	9.0÷18.0	0.6 0.8	16 15	1.45 1.50	+25 -60 to +85	25

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Octave Plus Band

Model name	Frequency range (GHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C	Average Power W
3CCB14-1	0.8÷2.0	1.2 1.3	10 10	1.70 1.80	25 +10 to +40	75
3CCB14-6	0.8÷2.0	0.7 0.9	13 12.5	1.60 1.70	25 +10 to +40	75
3ICB14-6	0.8÷2.0	0.7 0.9	13 12.5	1.60 1.70	25 +10 to +40	75
3CCB17-1	1.0÷2.5	0.9 1.2	14 12	1.55 1.67	+25 -20 to +55	50
3CCB20-4	1.00÷3.0	1.1 1.3	14 12	1.50 1.67	+25 +1 to +70	50
3CCB40-1	2.0÷6.0	0.8 1.2	14 13	1.50 1.60	+25 -40 to +85	35
3CCB80-1	4.0÷12.0	1.2 1.3	13 12	1.60 1.70	+25 -60 to +70	50
4CCB12-1	6.0÷18.0	1.2 1.3	12 12	1.67 1.67	+25 -60 to +85	2
4CCB12-2	6.0÷18.0	1.0 1.2	13 13	1.60 1.60	+25 -60 to +85	1
4CCB12-3*	6.0÷18.0	1.2 1.3	10 10	1.70 1.70	+25 -60 to +85	1

NOTES:
1. All devices are available in two modifications: *C - Circulators, I - Isolators*.
2. Average reverse power for isolators: 1W.
3. Items marked with a " * " operates at 1 kW peak power.
4. Yellow color - new devices.
5. Modified versions of all devices are available.

Outlines (all dimensions are in millimeters)

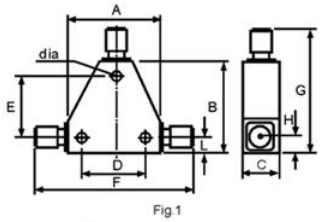


Fig.1

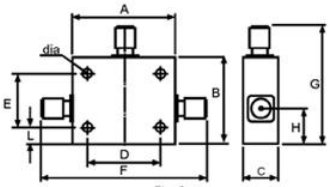


Fig. 2

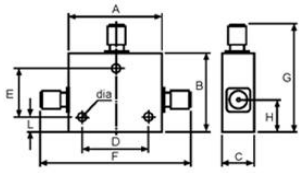


Fig. 3

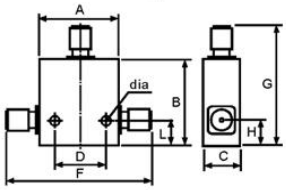


Fig. 4

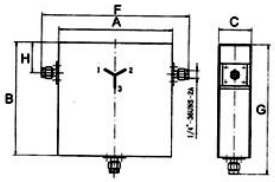
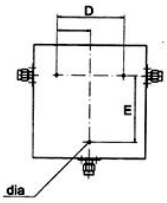


Fig.5



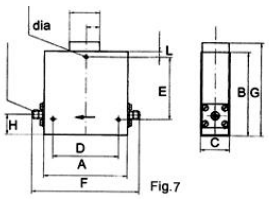


Fig.7

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Model	A	B	C	D	E	F	G	dia	H	L	Drawing	Fig.
Octave Band												
2CCB75-1	92.5	92.8	25.4	55.0	55.0	111.0	105.2	M3	24.7	24.3	PDF	5
2CCB84-1	92.7	93.0	25.4	55.0	55.0	111.0	105.2	M3	24.7	24.3	PDF	5
3CCB15-1	78.4	77.0	21.2	70.0	63.5	97.4	86.5	M4	9.5	9.5	PDF	1
3CCB15-6	62.6	62.6	21.0	50.0	47.5	82.0	70.0	M3	14.6	3.8	PDF	7
3CCB16-1	78.4	77.0	21.2	70.0	63.5	97.4	86.5	M4	9.5	9.5	PDF	1
3CCB20-2	45.8	46.2	20.5	37.0	31.0	64.0	55.3	M3	10.8	10.8	PDF	3
3CCB21-1	45.8	46.2	20.5	37.0	31.0	64.0	55.3	M3	10.8	10.8	PDF	3
3CCB22-1	45.8	46.2	20.5	37.0	31.0	64.0	55.3	M3	10.8	10.8	PDF	3
3CCB30-1	41.8	44.1	19.0	33.0	32.0	60.0	53.2	M3	7.7	7.7	PDF	2
3CCB30-6	32.8	33.6	19.0	27.4	-	51.0	49.2	M3	7.7	16.4	PDF	4
3CCB45-1	41.8	44.1	19.0	33.0	32.0	60.0	53.2	M3	7.7	7.7	PDF	2
3CCB60-1	28.6	33.2	16.5	21.0	20.8	47.0	42.5	M3	7.5	7.4	PDF	3
3CCB75-1	28.6	33.2	16.5	21.0	20.8	47.0	42.5	M3	7.5	7.4	PDF	3
3CCB90-1	21.3	24.7	15.2	15.0	14.5	39.5	33.8	M3	6.8	6.8	PDF	3
4CCB13-1*	17.1	19.7	14.6	12.5	10.2	35.5	28.9	M3	6.7	6.8	PDF	3
Octave Plus Band												
3CCB14-1	96.0	83.5	21.5	67.3	60.5	115.0	93.1	M3	10.3	12.3	PDF	1
3CCB14-6	62.6	62.6	21.0	50.0	47.5	82.0	71.8	M3	14.6	11.3	PDF	3
3ICB14-6	62.6	62.6	21.0	50.0	47.5	82.0	67.6	M3	14.6	11.3	PDF	7
3CCB17-1	78.4	77.0	21.2	70.0	63.5	97.4	86.5	4-40	9.5	9.5	PDF	1
3CCB20-4	96.4	83.6	25.2	68.0	59.0	115.0	93.1	M3	10.3	12.3	PDF	1
3CCB40-1	41.8	44.1	19.0	33.0	32.0	60.0	53.2	M3	7.7	7.7	PDF	3
3CCB80-1	45.8	45.2	24.4	35.0	25.5	81.0	54.3	M4	15.5	14.8	PDF	2
4CCB12-1*	12.8	15.3	10.0	8.0	-	31.8	24.8	M2	5.2	5.5	PDF	4
4CCB12-2*	12.8	15.3	10.0	8.0	-	31.8	24.8	M2	5.2	5.5	PDF	4
4CCB12-3*	12.8	15.3	10.0	8.0	-	31.8	24.8	M2	5.2	5.5	PDF	4

NOTES:
1. Dimensions are given for Circulators. Isolator dimensions are defined by connected load.
2. Isolators with SMA and N connection can be supplied on request. (N connection except for the Items marked with a " * ")

4.4. Multioctave Bandwidth (Peripheral Mode) Isolators



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Model name	Frequency range (GHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C	Test data
3ICP24-1	0.8÷3.0	3.0 4.5	14 12	1.6 1.7	+25 -10 to +60	
3ICP27-1	1.0÷4.3	2.0 2.2*	20 15*	1.5 1.6	+25 -10 to +60	
3ICP40-2	2.0÷6.2	1.3 1.7	20 18	1.5 1.6	+25 -40 to +80	
3ICP51-1	2.0÷8.2	1.5 1.5**	20 17	1.5 1.5**	+25 -10 to +60	
3ICP58-1	3.2÷8.3	0.9 1.0***	20 20	1.5 1.5	+25 -10 to +60	
3ICP70-1	3.5÷10.5	1.5	15	1.5	+25	
3ICP80-1	3.35÷12.8	2.0	18	1.5	+25	
4ICP10-1	2.0÷18.0	3.5 3.5 4.0	14 10.5 10.0	1.77 1.77 1.8	+25 -10 to +60	PDF
4ICP10-1P	2.0÷18.0	3.5 3.5 4.0	14 10.5 10.0	1.77 1.77 1.8	+25 -10 to +60	
4ICP10-5	2.0÷18.0	3.0	15	1.8	+25	
4ICP10-4	5.0÷14.0	2.0 2.0	20 20	1.77 1.8	+25 -10 to +60	
4ICP12-1	6.0÷18.0	1.6 1.7	17 16	1.5 1.5	+25 -10 to +60	
4ICP14-1	6.0÷21.0	2.5	15	1.6	+25	
4ICP14-2	6.0÷21.0	2.5	15	1.6	+25	
4ICP13-1	8.0÷18.0	1.0 1.1	20 20	1.5 1.5	+25 -10 to +60	
4ICP20-1	10.0÷29.0	2.0	16	1.8	-10 to +60	PDF
4ICP25-1	10.0÷35.0	3.0	15	1.8	+25	
4ICP37-1	25.0÷50.0	4.0	14	1.8	+25	

NOTES: 1. Operating Power: 1W.
2. * - Insertion loss - 3.5 dB between 1.0 and 1.3 GHz. Isolation - 13 dB between 4.0 and 4.3 GHz. ** - Insertion loss - 1.8 dB between 8.0 and 8.2 GHz. VSWR - no more than 1.6 between 2.0 and 2.1 GHz. *** - Insertion loss - 1.2 dB between 3.2 and 3.3 GHz.

Outlines (all dimensions are in millimeters)

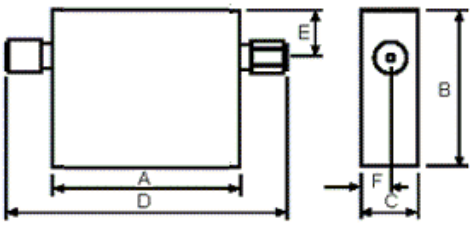

Fig. 1

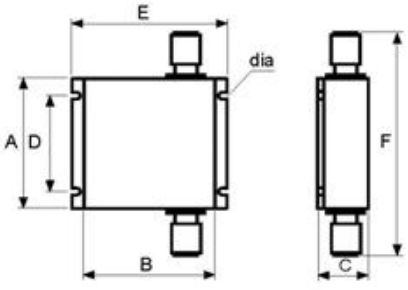

Fig. 2

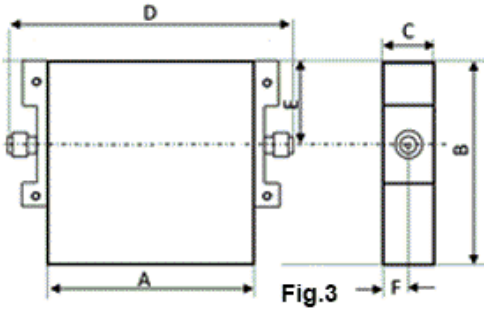

Fig.3

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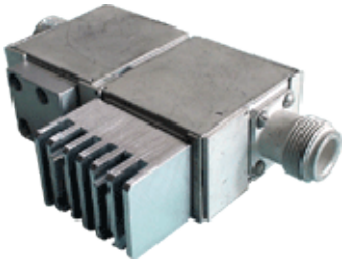
Model	A	B	C	D	E	F	Drawing	Fig.
3ICP24-1	68.5	47.4	16.5	87.5	18.3	7.5	PDF	1
3ICP27-1	68.5	47.5	16.5	87.5	18.3	7.5	PDF	1
3ICP40-2	48.0	35.0	12.0	64.0	21.0	6.0	PDF	1
3ICP51-1	48.0	35.0	12.0	64.0	14.0	6.0	PDF	1
3ICP58-1	48.0	35.0	12.0	64.0	14.0	6.0	PDF	1
3ICP70-1	48.0	44.0	12.0	64.0	23.0	6.0	PDF	1
3ICP80-1	48.0	44.0	12.0	64.0	23.0	6.0	PDF	1
4ICP10-1	48.0	44.0	12.0	64.0	23.0	6.0	PDF	1
4ICP10-1P	45.0	43.6	12.0	30.0	56.0	5.8	PDF	2
4ICP10-5	53.0	44.0	12.0	70.0	21.0	6.0		1
4ICP10-4	45.0	44.0	12.0	64.0	21.0	6.0	PDF	1
4ICP12-1	28.0	30.0	10.0	44.0	14.5	5.0	PDF	1
4ICP14-1	53.0	44.0	12.0	70.0	21.0	6.0		1
4ICP14-2	30.0	26.6	11.0	32.0	12.4	5.15		1
4ICP13-1	23.0	25.0	10.0	39.0	12.0	5.0	PDF	1
4ICP20-1	13.8	26.6	10.3	32.0	12.4	5.15	PDF	1
4ICP25-1	13.8	26.6	10.3	32.0	12.4	5.15		1
4ICP37-1	13.8	26.6	10.3	32.0	12.4	5.15		1

NOTES: 1. Connectors: Standart, SMA (input - male, output - female).
2. Devices can be delivered into the mounting holes.

4.5. 4-port Isolators and Circulators



Model name	Frequency range (MHz)	Insertion loss dB, (Typ*/ Max)	Isolation dB, min	VSWR max	Temperature range °C	Power W
2CCX43-1	405÷455[1]	0.4/0.5	45	1.25	-10 to +55	100
2CCX47-1	450÷500	0.4/0.5	45	1.25	-10 to +55	100
2ICX85-1	850÷870	0.3	60	1.25	-10 to +50	200
2CCX88-1	869÷894	0.4	55	1.15	-10 to +70	100
2CCX91-1	860÷960	0.4	50	1.25	-10 to +55	100
2CCX94-1	917÷960	0.4	55	1.2	-10 to +70	100

NOTES: 1. Power - Average power. * - Typical performance at (25 B± 10) B°C, max and min values within temperature range. [1] - 5% bandwidth.

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Outlines (all dimensions are in millimeters)

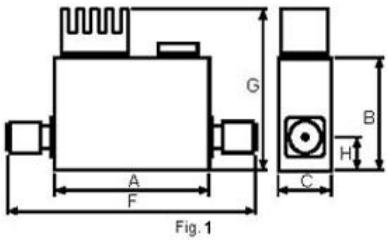

Fig. 1

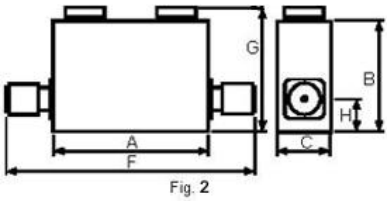

Fig. 2

Model	A	B	C	H	F	G	Fig.
2CCX43-1	96	50	27	14.7	132	67.5	1
2CCX47-1	96	50	27	14.7	132	67.5	1
2ICX85-1	74	41	26	13.7	109	63.5	2
2CCX88-1	74	41	26	13.7	109	58.5	1
2CCX91-1	74	41	26	13.7	109	58.5	1
2CCX94-1	74	41	26	13.7	109	58.5	1

NOTES: 1. All devices are supplied with N connectors.

4.6. Low-Loss Isolators and Circulators

Model name	Frequency range (GHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C
3ICL15-1	1.38÷1.72	0.30 0.35	20 17	1.20 1.30	+25 -30 to +60
3ICL23-1	2.15÷2.50	0.15 0.30	22 20	1.20 1.30	+25 -60 to +85
3ICL39-1	3.65÷4.20	0.12 0.20	30 26	1.10 1.15	+25 -30 to +60
3ICL49-1	4.55÷5.15	0.12 0.20	30 26	1.10 1.15	+25 -30 to +60
3ICL57-1	5.55÷6.05	0.12 0.20	30 26	1.10 1.15	+25 -30 to +60
3ICL75-1	7.20÷7.80	0.12 0.20	30 26	1.10 1.15	25 -30 to +60
3ICL85-1	8.15÷8.75	0.12 0.20	30 26	1.10 1.15	25 -30 to +60

NOTES: 1. Average reflected power: 0.25 W.
2. Modified versions of all devices are available.
3. At the request of customers in two ways performance devices: circulators and isolators.

Outlines (all dimensions are in millimeters)

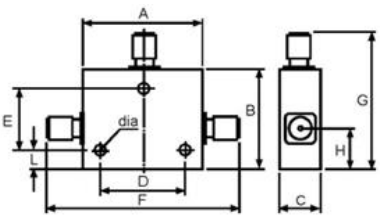

Fig. 3

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Model	A	B	C	D	E	F	G	dia	H	L	Draw.	Fig.
3ICL15-1	25.0	30.0	20.0	19.0	21.0	44.0	39.5	M3				3
3ICL23-1	25.0	30.0	20.0	19.0	21.0	44.0	39.5	M2				3
3ICL39-1	25.0	26.5	17.0	16.0	14.0	44.0	36.0	M1.6				3
3ICL49-1	25.0	26.5	17.0	16.0	14.0	44.0	36.0	M1.6				3
3ICL57-1	20.0	23.5	14.0	15.5	13.5	39.0	33.0	M1.6				3
3ICL75-1	13.5	17.0	15.0	10.3	10.5	32.5	26.5	M1.6				3
3ICL85-1	13.5	17.0	15.0	10.3	10.5	32.5	26.5	M1.6				3

NOTES: 1. Connectors: SMA - female; optional - input/output pin: Ø =0.9 mm, L = 3.0 mm.

4.7. Cryogenic Isolators and Circulators (0.01-77 K)



Model name	Frequency range (GHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range
3CCC10-1	0.8÷1.0	0.7 0.7	15 14	1.45 1.55	0.01-77K +15 to +35C°
3IDC15-1	1.35÷1.75	0.4 0.7	19 16	1.30 1.40	0.01-77K +15 to +35C°
3IDC24-1	2.15÷2.55	0.4 0.7	19 16	1.30 1.40	0.01-77K +15 to +35C°
3IDC39-1	3.55÷4.25	0.2 0.3	22 19	1.18 1.30	0.01-77K +15 to +35C°
3CCC60-1	4.0÷8.0	0.4 0.5	18 16	1.30 1.50	0.01-77K +15 to +35C°
3IDC48-1	4.40÷5.20	0.2 0.3	22 19	1.18 1.30	0.01-77K +15 to +35C°
3CCC50-1	4.6÷5.4	0.3 0.4	19 18	1.25 1.30	0.01-77K +15 to +25C°
3CCC58-1	5.35÷6.35	0.3 0.4	20 18	1.25 1.30	0.01-77K +15 to +35C°
3IDC58-1	5.40÷6.20	0.2 0.3	22 19	1.18 1.30	0.01-77K +15 to +35C°
3IDC75-1	7.20÷7.80	0.2 0.3	23 19	1.18 1.30	0.01-77K +15 to +35C°
3ICXC60-1	4.0÷8.0	0.8	36	1.30	0.01-77K
3ICC82-1	8.0÷8.5	0.25 0.3	23 21	1.15 1.25	0.01-77K +15 to +35C°
3IDC85-1	8.15÷8.75	0.2 0.3	23 19	1.18 1.30	0.01-77K +15 to +35C°
3ICC85-1	8.4÷8.5	0.25 0.3	23 20	1.15 1.25	0.01-77K +15 to +35C°
3ICXC80-1	4.0÷12.0	2.4	24	1.70	0.01-77K
4ICC10-2	8.0÷12.0	0.5 0.7	18 15	1.30 1.50	0.01-77K +15 to +35C°
4ICC15-1	12.4÷18.0	0.4 0.7	18 15	1.30 1.50	0.01-77K +15 to +35C°
4ICPC25-1	16.0÷30.0	1.5 2.0	35 30	1.50 1.80	0.01-77K +15 to +35C°
4ICC26-1	25.0÷27.0	0.9 1.0	20 17	1.35 1.40	0.01-77K +15 to +35C°

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Cryogenic devices with magnetic shield

Model name	Frequency range (GHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range
3CCC16-2-MS	1.35÷1.75	0.4 0.7	18 16	1.3 1.4	0.01-77K +15 to +35C°
3CCC23-2-MS	2.15÷2.60	0.4 0.7	19 16	1.30 1.40	0.01-77K +15 to +35C°
3ICXC60-1-MS	4.0÷8.0	0.8	36	1.30	0.01-77K
3ICXC80-1-MS	4.0÷12.0	2.4	24	1.70	0.01-77K
4CCC10-3-MS	8.0÷12.0	0.6 0.7	17 15	1.35 1.50	0.01-77K +15 to +35C°

NOTES:
1. Modified versions of all devices are available.
2. Operating power: ≤ 0.5 W.
3. Operating power 1.0 W.
4. At the request of customers in two ways performance devices: circulators and isolators.
5. Devices can be realized on the temperature range 0.02°K ÷ 77°K for circulators and temperature range 1K-77K for isolators
6. Devices with magnetic shield can operate in external magnetic field up to 1500 Oe.

Outlines (all dimensions are in millimeters)

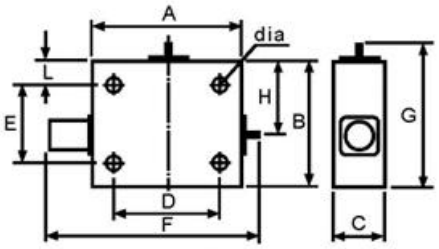


Fig. 1

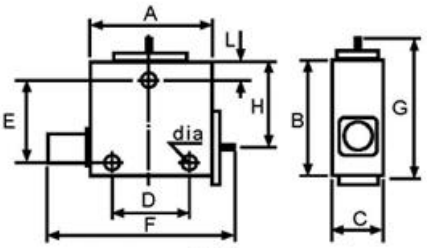


Fig. 2

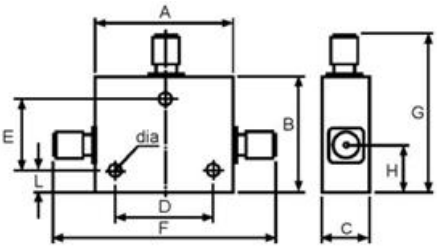
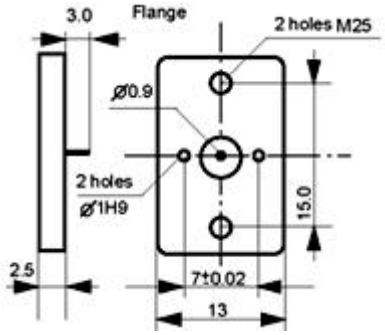


Fig. 3



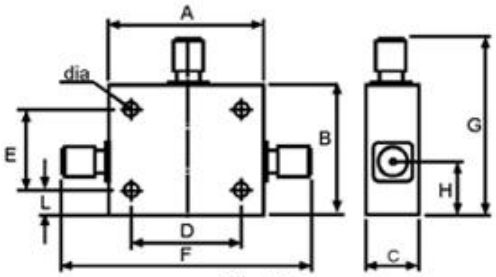


Fig. 4

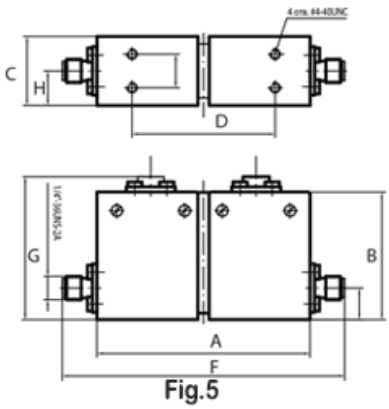


Fig.5

Cryogenic devices with magnetic shield

Model	A	B	C	D	E	F	G	dia	H	L	Draw	Fig.
3CCC16-2-MS	50	55.6	40.6	28	26.5	54	57.3	M3	18.3	17.8	PDF	3
3CCC23-2-MS	40	45.4	36.8	19	22.5	44	45.4	M3	19.0	13.0	PDF	3
3ICXC60-1-MS	72	49.0	30.6	28	20.8	75	-	M3	15.3	15.45	PDF	5
3ICXC80-1-MS	81.8	50.2	38	50	26	84.2	50.2	M3	19			5
4CCC10-3-MS	36	40.0	29.6	15	14.8	40	41.6	M3	14.7	11.0	PDF	3

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Cryogenic devices without magnetic shield

Model	A	B	C	D	E	F	G	dia	H	L	Draw	Fig.
3CCC10-1	48.5	53.5	20.6	36.5	38.4	71.0	63.0	M3	14.2	11.3	PDF	4
3IDC15-1	35.4	40.9	26.6	12.0	27.5	53.5	42.0	M2	24.8	3.0	PDF	1
3IDC24-1	24.8	30.0	23.5	19.0	21.0	46.5	35.5	M1.6	18.5	3.0	PDF	2
3IDC39-1	25.0	29.7	15.0	16.0	14.0	46.5	35.2	M1.6	19.6	8.8	PDF	3
3CCC60-1	28.6	33.2	16.5	21.0	20.8	47.0	42.5	M1.6	7.5	7.4	PDF	3
3IDC48-1	25.0	29.7	15.0	16.0	14.0	46.5	35.2	M1.6	19.6	8.8	PDF	3
3CCC50-1	25.0	26.0	15.4	16.0	14.0	44.0	35.5	M1.6	19.6	8.8	PDF	3
3CCC58-1	28.6	33.2	16.5	21.0	20.8	47.0	42.5	M3	7.5	7.4	PDF	3
3IDC58-1	20.0	23.0	13.6	15.6	13.5	25.0	41.4	M1.6	15.4	6.5	PDF	3
3IDC75-1	13.5	20.2	14.8	10.3	10.5	34.5	25.7	M1.6	10.2	3.5	PDF	3
3ICXC60-1	56,6	34,2	18,6	38	9	75	38,5	4-40UNC	8.5	9,3		5
3ICC82-1	13.5	17.0	14.8	10.3	10.5	32.5	33.0	M1.6	10.2	3.5	PDF	3
3IDC85-1	13.5	20.2	14.8	10.3	10.5	34.5	36.2	M1.6	10.2	3.5	PDF	3
3ICC85-1	13.5	17.0	14.8	10.3	10.5	32.5	33.0	M1.6	10.2	3.5	PDF	3
3ICXC80-1	65.9	35.4	24	49	11.4	84.2	39.4	4-40UNC	12			5
4ICC10-2	21.3	24.7	15.2	15.0	14.5	39.5	40.3	M3.0	6.8			3
4ICC15-1	18.0	20.0	15.5									3
4ICPC25-1	13.8	29.8	10.3	8.0		32.0		M2.0				3
4ICC26-1	12.8	22.0	10.5	8.0	12.0	35.3		M2.0	12.0	3.5	PDF	3

NOTES: 1. Connectors: SMA - female; optional - input/output pin: Ø =0.9 mm, L = 3.0 mm.

4.8. Medium Power Coaxial Circulators (150÷800 W)



Model name	Frequency range (MHz)	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C	Power aver/peak W
1CCM27-2	26.5÷27.5	1.0	15	1.45	15 PrPs +25	50/800
1CCM98-1	88÷108	0.5	18	1.30	0 to +50	500/500
2CCM12-1	108÷136	0.5 0.5	18 17	1.30 1.35	+25 -10 to +50	300/300
2CCM12-2	103÷153	0.8 1.0	17 15	1.40 1.50	+25 -10 to +50	50/800
2CCM12-3	100÷150	0.8 1.0	17 15	1.40 1.50	+25 -10 to +70	100/400
2CCM15-1	136÷174	0.5 0.5	18 17	1.30 1.35	+25 -10 to +50	300/300
2CCM17-1	150÷200	0.5 0.5	18 17	1.30 1.35	+25 -10 to +50	300/300
2CCM20-1	170÷230	0.5 0.8	18 16	1.30 1.40	+25 -50 to +50	200/1000
2CCM26-1	220÷297	0.6 0.6	17 16	1.35 1.40	+25 -10 to +50	300/300

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2CCH31-1	225÷400	1.0 1.5	17 15	1.40 1.50	+25 -10 to +50	400/400
2CCH31-2	220÷400	0.9 1.4	17 15	1.40 1.50	+25 -10 to +70	250/400
2CCM35-1	297÷400	0.5 0.5	18 17	1.30 1.35	+25 -10 to +50	300/300
2CCM51-2	470÷560	0.2 0.3	23 20	1.15 1.25	+25 -10 to +50	600/1000
2CCM60-2	550÷660	0.2 0.3	23 20	1.15 1.25	+25 -10 to +50	600/1000
2CCM70-2	650÷760	0.2 0.3	23 20	1.15 1.25	+25 -10 to +50	600/1000
2CCM81-2	750÷860	0.2 0.3	23 20	1.15 1.25	+25 -10 to +50	600/1000
2CCM91-1	910÷920	0.2 0.3	25 20	1.15 1.25	+25 -10 to +60	800/800
3CCM10-1	1000÷1100	0.5 0.5	20 18	1.20 1.25	+25 -50 to +55	70/10000
3CCM11-3	960÷1215	0.5 0.5	20 18	1.25 1.30	0 to +50	200/200
3CCM11-1	1000÷1100	0.2	20	1.25	0 to +50	200/200
3CCM12-2	940÷1410	0.8 1.0	17 16	1.40 1.50	+25 -30 to +70	200/200
3CCM14-1	1300÷1500	0.3 0.4	20 18	1.25 1.30	+25 -50 to +60	200/5000
3CCM15-1	1000÷2000	0.5 0.8	17 14	1.35 1.60	+25 -60 to +55	250/250
3CCM20-4	1000÷3000	1.1 1.3	14 12	1.50 1.67	+25 +1 to +70	250/250
3CCM30-1	2000÷4000	0.4 0.6	18 15	1.30 1.45	+25 -60 to +70	250/250
3CCM45-1	3000÷6000	0.4 0.6	18 15	1.30 1.45	+25 -60 to +70	150/150
3CCM60-1	4000÷8000	0.4 0.6	18 15	1.30 1.45	+25 -60 to +70	150/150
3CCM80-1	4000÷12000	1.2 1.3	13 12	1.60 1.70	+25 -60 to +70	150/150
3CCM90-1	6000÷12000	0.5 0.8	17 15	1.35 1.45	+25 -60 to +70	150/150
4CCM13-1	8000÷18000	0.8 0.9	14 13	1.55 1.60	+25 -60 to +70	150/150
4CCM14-1	9000÷18000	0.6 0.8	15 14	1.45 1.60	+25 -60 to +70	150/150

NOTES:
1. Modified versions of all devices are available.
2. Can supply Isolators.
3. Product dimensions are determined by the power load.
4. Items marked with a " * " need a liquid cooling.

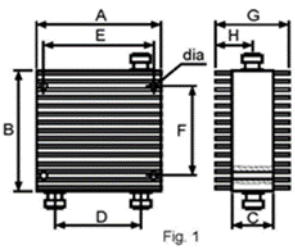

Fig. 1

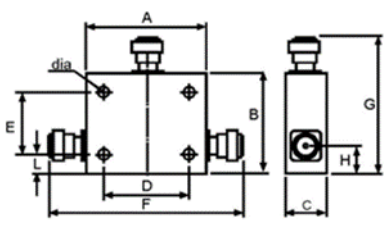

Fig. 2

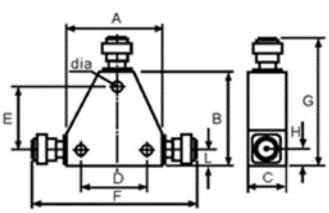

Fig. 3

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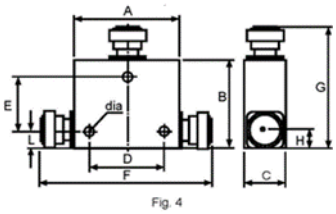

Fig. 4

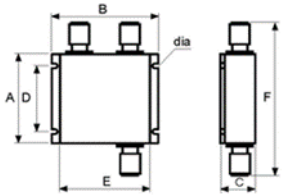

Fig. 5

Outlines (all dimensions are in millimeters)

Model	A	B	C	D	E	F	H	L	dia	Draw	Fig.
1CCM27-2	106.0	113.0	41.0								2
1CCM98-1	175.0	175.0	41.5	135.0	115.0	208.0	47.0	30.0	M5	PDF	2
2CCM12-1	121.0	121.0	29.0	70.0	98.6	156.0	32.7	11.2	M4	PDF	2
2CCM12-2	83.0	80.0	30.0	60.0	68.0	119.0	10.0	6.0	M3	PDF	2
2CCM12-3	165.6	170.1	43.5	150.0	150.0	201.0	46.8	6.0	4.5	PDF	2
2CCM15-1	111.0	111.0	28.0	66.0	92.0	146.0	29.0	30.0	M4	PDF	2
2CCM17-1	111.0	111.0	28.0	66.0	92.0	146.0	29.0	30.0	M4	PDF	2
2CCM20-1	95.0	95.0	25.5	60.0	80.0	128.0	25.5	7.5	M4	PDF	2
2CCM26-1	74.0	78.0	24.4	61.0	40.0	108.0	23.0	19.0	M4	PDF	2
2CCH31-1	120.0	120.0	38.5	87.0	107.0	119.0	35.7	-	4.5	PDF	5
2CCH31-2	83.0	93.0	39.0								5
2CCM35-1	72.6	76.6	24.4	61.0	40.0	108.0	22.3	18.3	M4	PDF	2
2CCM51-2	72.6	74.8	27.5	42.0	62.0	110.0	21.9	7.5	4.5	PDF	2
2CCM60-2	72.6	74.8	27.5	42.0	62.0	110.0	21.9	7.5	4.5	PDF	2
2CCM70-2	72.6	74.8	27.5	42.0	62.0	110.0	21.9	7.5	4.5	PDF	2
2CCM81-2	72.6	74.8	27.5	42.0	62.0	110.0	21.9	7.5	4.5	PDF	2
2CCM91-1	72.6	74.8	27.5	42.0	62.0	122.0	14.0	14.0	M3	PDF	2
3CCM10-1	73.0	78.0	27.0	42.0	62.0		22.5	10.5	M3		2
3CCM11-3	35.4	40.9	26.6	28.0	26.5	54.0	11.0	10.5	M3	PDF	4
3CCM11-1	35.4	40.9	26.6	28.0	26.5	54.0	11.0	10.5	M3	PDF	4
3CCM12-2	45.6	47.5	20.5	34.0	25.0	67.5	8.5	8.9	M3	PDF	4
3CCM14-1	74.0	77.0	28.6	61.0	40.0	106.0	22.0	18.0	M4	PDF	2
3CCM15-1	96.4	83.6	25.2	68.0	59.0	132.0	10.3	12.3	M3	PDF	3
3CCM20-4	96.4	83.6	25.2	68.0	59.0		10.3	12.3	M3		3
3CCM30-1	55.8	51.9	22.2	40.0	32.0	91.0	11.5	11.5	M3	PDF	4
3CCM45-1	45.8	45.2	24.8	35.0	25.5	81.0	15.5	14.8	M3	PDF	4
3CCM60-1	45.8	45.2	24.4	35.0	25.5	81.0	15.5	14.8	M3	PDF	4
3CCM80-1	45.8	45.2	24.4	35.0	25.5	81.0	15.5	14.8	M4	PDF	4
3CCM90-1	34.8	37.1	22.3	25.0	20.0	70.0	13.8	12.3	M3	PDF	4
4CCM13-1	34.8	37.1	22.3	25.0	20.0	70.0	13.8	12.3	M3	PDF	4
4CCM14-1	34.8	37.1	22.3	25.0	20.0	70.0	13.8	12.3	M3	PDF	4

NOTES:
1. Connector Type N (7/3.04) or 7/16, depending on the level of power and the wishes of the customer.

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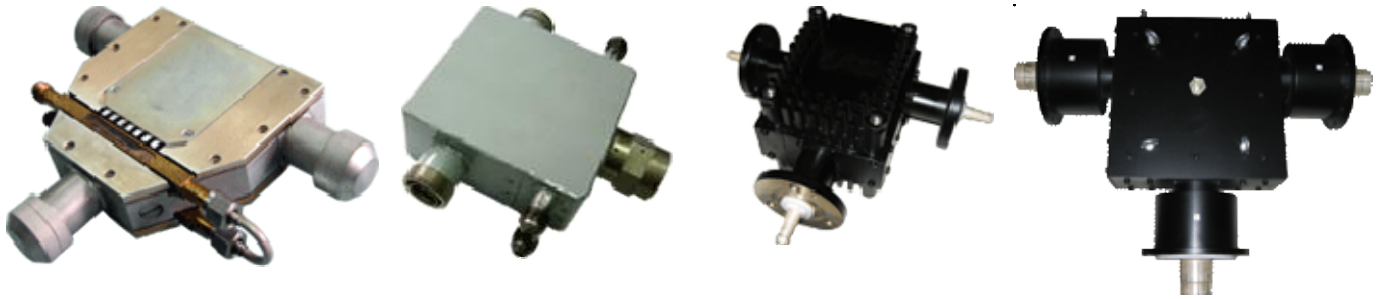
4.9. Hight Power Circulators & Isolators



Model name	Frequency range (MHz)	Band width MHz	Insertion loss dB, max	Isolation dB, min	VSWR max	Temperature range °C	Power Peak kW	Power Average W	Cooling
1CCH81-1	80.25÷82.25	8	0.4	20	1.25	+20 to +40	6	5000	Water
1CCH85-1	60÷100	8	0.5	18	1.30	+5 to +45	6	4000	Water
1CCH99-1	88÷108	6	0.35	25	1.15	+5 to +45	2	1500	Air
1CCH99-2	88÷108	6	0.35	25	1.15	+5 to +45	3	3000	Air Forced
2CCH10-1	86÷100	full	0.4	20	1.25	+5 to +35	1	1000	Air
2CCH16-1	150÷170	full	0.5	20	1.25	0 to +50	12	600	Air
2CCH17-3	170÷180	full	0.3	23	1.15	+5 to +45	6	5500	Water
2CCH18-1	180÷220	full	0.4	20	1.25	+5 to +35	2	1500	Air Forced
2CCH18-2	180÷186	full	0.3	20	1.25	+5 to +45	16	10000	Water
2CCH20-6	180÷220	full	0.5	20	1.25	0 to +50	30	300	Air
2CCH25-1	225÷300	full	0.6	17	1.35	+5 to +45	1	1000	Air Forced
2CCH25-2	200÷300	full	0.8	16	1.40	+5 to +45	1	1000	Air Forced
2CCH32-1	300÷350	10	0.25	23	1.15	+10 to +40	75	1000	Air Forced
2CCH32-2	300÷350	10	0.2	23	1.15	+10 to +40	500	10000	Water
2CCH32-3	321.5÷322.5	10	0.3	23	1.15	0 to +40	2	2200	Water
2CCH35-1	290÷400	full	0.4	20	1.25	+5 to +45	1	1000	Air Forced
2CCH43-1	420÷440	15	0.5	20	1.25	0 to +50	500	8000	Air
2CCH45-1	400÷500	full	0.4	20	1.25	+5 to +45	1	1000	Air
2CCH60-1	470÷790	30	0.3	20	1.20	+5 to +45	2	1000	Air
2CCH60-2	470÷790	40	0.3	23	1.15	+5 to +45	10	5000	Air Forced
2CCH60-3	470÷790	50	0.3	20	1.20	+5 to +45	30	15000	Air Forced
3CCH13-2	1250÷1350	full	0.5	20	1.25	0 to +50	200	2000	Air Forced
3CCH13-1	1250÷1350	full	0.5	20	1.25	0 to +50	60	600	Air Forced
3CCH13-3	1200÷1400	full	0.3	20	1.25	0 to +50	10	300	Air
3CCH15-1	1000÷2000	full	0.6 1.0	17 15	1.35 1.45	25 -60 to +55	1	1000	Water
3CCH15-3	1000÷2000	full	0.6 1.0	16 15	1.40 1.45	25 -10 to +55	2.5	2500	Water
3CCH30-1	2000÷4000	full	0.5 0.8	18 15	1.30 1.45	25 -10 to +55	1	1000	Water
3CCH30-3	2000÷4000	full	0.6 0.8	17 15	1.35 1.45	25 -10 to +55	2.5	2500	Water

Outlines (all dimensions are in millimeters)

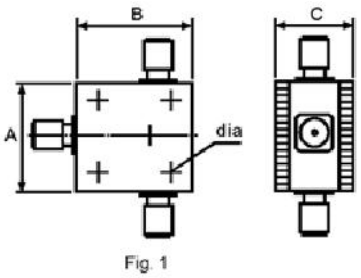


Fig. 1

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Model	A	B	C	Fig.	Connector
1CCH81-2	270	270	86	1	1-5/8
1CCH85-1	330	370	105	1	1-5/8
1CCH99-1	197	197	64	1	1-5/8
1CCH99-2	197	197	69	1	1-5/8
2CCH10-1	197	197	64	1	7-16
2CCH16-1	158	157	56.4	1	7-16
2CCH17-3	205	205	120	1	7/8
2CCH18-1	154	146	58	1	1-5/8
2CCH18-2	376	376	242	1	3-1/8
2CCH20-6	175	175	55	1	7-16
2CCH25-1	160	152.4	53	1	7-16
2CCH25-2	162	150	58	1	7-16
2CCH32-1	175	175	76	1	1-5/8
2CCH32-2	340	340	130	1	6-1/8
2CCH32-3	160	160	89	1	7/16
2CCH35-1	162	150	58	1	7-16
2CCH43-1	340	340	119	1	3-1/8
2CCH45-1	162	150	58	1	7-16
2CCH60-1	95	95	28	1	7-16
2CCH60-2	152	158	88	1	1-5/8
2CCH60-3	390	370	180	1	3-1/8
3CCH13-2	157	137	130	1	1-5/8
3CCH13-1	100	115	82	1	7/8
3CCH13-3	91	99	67	1	7-16
3CCH15-1	109.5	109.5	49	1	7-16
3CCH15-3	143.5	130.5	57	1	7/8
3CCH30-1	93.5	102.5	46.7	1	7/16
3CCH30-3	104.5	111.5	57	1	7/8

5. Waveguide Circulators & Isolators

5.1. Isolators and Circulators for General Use



Broad Bandwidth Isolators and Circulators (Y & T - junction)

Model name	Frequency range (GHz)	Bandwidth %	Insertion loss dB, (Typ* / Max)	Isolation dB, (Typ* / Min)	VSWR (Typ* / Max)
3CWY49-1	3.95÷5.85	Full	0.3/0.5	20/18	1.22/1.3
3CWY70-1	5.85÷8.2	Full	0.3/0.5	20/18	1.22/1.3
3CWY85-1	7.05÷10.0	Full	0.3/0.5	20/18	1.22/1.3
4CWY10-1	8.2÷12.4	Full	0.3/0.5	20/18	1.22/1.3
4CWY12-3	10.0÷15.0	Full	0.3/0.5	20/18	1.22/1.3
4CWY15-1	12.4÷18.0	Full	0.3/0.5	20/18	1.22/1.3
4CWY22-1	18.0÷26.5	Full	0.3/0.5	20/18	1.22/1.3
4CWY33-1	26.5÷40.0	Full	0.5	16	1.40

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NOTES:
1. Modified versions of all devices are available.
2. " * " - Typical performance at (+ 25 B± 10) °C.
3. Max and Min values within temperature ranges (-30 to +70) °C.
4. For Isolators, replace "C" with "I" in the model number.

Low Loss Isolators and Circulators (T - junction)

Model name	Frequency range (GHz)	Bandwidth %	Insertion loss dB	Isolation dB	VSWR
3CWN40-2	3.7÷4.2	Full	0.15	25	1.13
3CWN62-2	5.92÷6.42	Full	0.15	25	1.13
3CWN68-2	6.42÷7.13	Full	0.15	25	1.13
3CWN70-2	7.12÷7.73	Full	0.15	25	1.13
3CWN80-2	7.72÷8.4	Full	0.15	25	1.13
4CWN11-2	10.7÷11.7	Full	0.15	25	1.13
4IWN12-9	10.7÷11.7	Full	0.15	34	1.12
4IWN12-8	10.7÷12.7	Full	0.22	34	1.12
4CWN12-4	10.75÷12.8	Full	0.25	21	1.22
4CWN12-10	11.7÷12.7	Full	0.15	34	1.12
4CWN14-2	14.0÷14.5	Full	0.20	25	1.13
4CWN18-2	17.7÷19.7	Full	0.20	25	1.13
4CWN23-2	21.2÷24.5	Full	0.20	23	1.16
4CWN25-2	24.5÷26.5	Full	0.20	23	1.16
4CWN28-2	26.0÷30.0	Full	0.30	20	1.20
4CWN38-2	37.0÷40.0	Full	0.30	20	1.20
4CWN35-1	26.5÷40.0	20	0.30	20	1.25
4CWN35-2	26.5÷40.0	15	0.20	20	1.20
4CWN35-4	36.0÷39.0	Full	0.30	20	1.22

NOTES:
1. Modified versions of all devices are available.
2. Operating temperature range (0 to +50) °C.
3. For Isolators replace "C" with "I" in the model number.

Outlines (all dimensions are in millimeters)

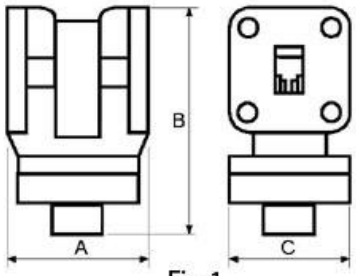

Fig.1

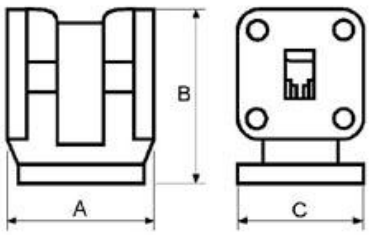

Fig.2

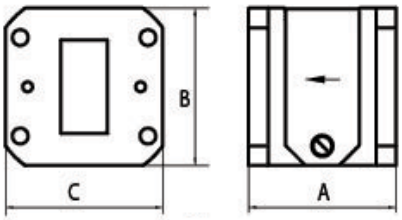

Fig.3

Broad Bandwidth Isolators and Circulators (Y & T - junction)

Model	A	B C(I)	C	Waveguide
3CWY49-1	100	110 ()	60	WR-187
3CWY70-1	70	79 (166)	54	WR-137
3CWY85-1	68	65 (127)	47	WR-112
4CWY10-1	50	55 (130)	42	WR-90
4CWY12-3	45	50 (76.2)	38.1	WR-75
4CWY15-1	34	46 (51)	34	WR-62
4CWY22-1	32	39 (46)	22.4	WR-42
4CWY33-1	19.05 (12.7)	25.4 (32)	19.05	WR-28

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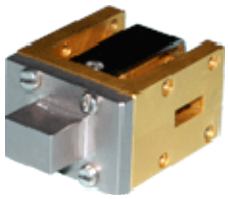
Low Loss Isolators and Circulators (T - junction)

Model	A	B C(I)	C	Waveguide
3CWN40-2	120	128 ()	63	WR-229
3CWN62-2	90	85 ()	53	WR-137
3CWN68-2	90	85 ()	53	WR-137
3CWN70-2	68	65 (127)	47	WR-112
3CWN80-2	68	65 (127)	47	WR-112
4CWN11-2	50	55 (130)	42	WR-90
4IWN12-9	30	32	32	WR-75
4IWN12-8	30	32	32	WR-75
4CWN12-2	45	50 (76.2)	38.1	WR-75
4CWN12-4	45	50 (76.2)	38.1	WR-75
4CWN14-2	34	46 (51)	34	WR-62
4CWN18-2	32	39 (46)	22.4	WR-42
4CWN23-2	32	39 (46)	22.4	WR-42
4CWN25-2	32	39 (46)	22.4	WR-42
4CWN28-2	25.4 (12.7)	25.4 (31.75)	19.05	WR-28
4CWN38-2	25.4 (12.7)	25.4 (31.75)	19.05	WR-28
4CWN35-1	19.05 (15.0)	25.4 (31.75)	19.05	WR-28
4CWN35-2	19.05 (15.0)	25.4 (31.75)	19.05	WR-28
4CWN35-4	28	32	24	WR-28

5.2. Cryogenic (4 to 77 K) Isolators and Circulators



Model name	Frequency range (GHz)	Bandwidth %	Insertion loss dB	Isolation dB	VSWR
4CWC10-1	8.2÷12.4	15	0.2	20	1.22
4CWC15-1	12.4÷18.0	15	0.2	20	1.22
4CWC15-2	12.4÷18.0	Full	0.3	20	1.22
4CWC22-1	18.0÷26.5	15	0.2	20	1.22
4IWC30-1	28.0÷33.0	Full	0.3	20	1.20
4CWC33-1	26.5÷40.0	12	0.3	20	1.30
4IWC41-1	33.0÷50.0	Full	0.7	13	1.60

NOTES:
1. Modified versions of all devices are available.
2. For Isolators replace “C” with “I” in the model number.

Outlines (all dimensions are in millimeters)

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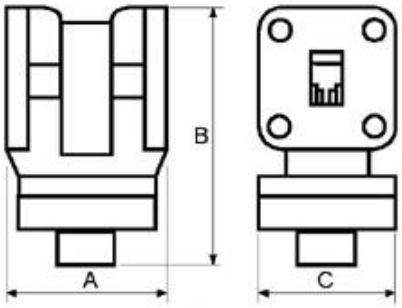

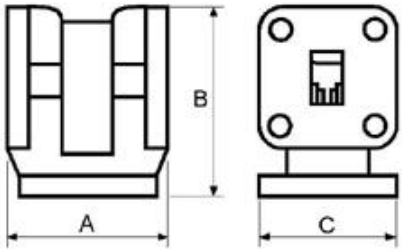

Model	A	B	C	Waveguide
		C(I)		
4CWC10-1	55.0	51 ()	43.00	WR-90
4CWC15-1	40.5	32 ()	33.50	WR-62
4CWC15-2	40.5	32 ()	33.50	WR-62
4CWC22-1	32.0	39 ()	23.00	WR-42
4IWC30-1	19.05	() 38	22.86	WR-34
4CWC33-1	15 (19.5)	25.4 (32)	22.00	WR-28
4IWC41-1	15	37.5	28.6	WR-22

5.3. Miniature Isolators

Model name	Frequency range (GHz)	Bandwidth %	Insertion loss dB	Isolation dB	VSWR
3IWNS87-1	8.7÷9.7	Full	0.3	20	1.2
4IWNS11-1	10.7÷11.2	Full	0.3	20	1.2
4IWNS11-5	10.7÷11.7	Full	0.3	20	1.2
4IWNS11-2	11.2÷11.7	Full	0.3	20	1.2
4IWNS12-5	11.7÷12.7	Full	0.3	20	1.2
4IWNS13-1	12.7÷13.3	Full	0.3	20	1.2
4IWNS13-2A	12.7÷13.25	Full	0.3	20	1.2
4IWNS14-5	14.0÷14.5	Full	0.3	20	1.2
4IWNS14-6	14.0÷14.5	Full	0.3	20	1.3
4IWNS15-3A	14.4÷15.35	Full	0.3	20	1.2
4IWNS16-5	16.0÷17.0	Full	0.2	20	1.2
4IWNS18-4	17.7÷19.7	Full	0.3	20	1.2
4IWNS18-5	17.7÷19.7	Full	0.3	18	1.3

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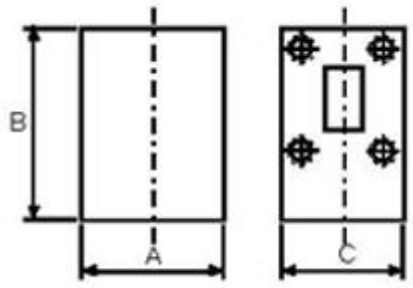
Model name	Frequency range (GHz)	Bandwidth %	Insertion loss dB	Isolation dB	VSWR
4IWNS18-6	17.7÷19.7	Full	0.3	17	1.3
4IWNS21-1H	20.6÷21.4	Full	0.2	20	1.22
4IWNS22-3	21.2÷24.5	Full	0.3	20	1.2
4IWNS22-5	21.2÷23.6	Full	0.3	20	1.2
4IWNS22-6	21.2÷23.6	Full	0.3	18	1.3
4IWNS22-7	21.2÷23.6	Full	0.3	18	1.3
4IWNS23-5	21.2÷23.8	Full	0.25	24	1.14
4IWNS23-6	21.2÷26.5	Full	0.3	16	1.35
4IWNS25-2	24.0÷26.5	Full	0.3	20	1.2
4IWNS25-3	24.5÷26.5	Full	0.3	18	1.3
4IWNS43-1	41.0÷46.0	Full	0.3	20	1.22
4IWNS73-1	71.0÷76.0	Full	0.5	18	1.3
4IWNS83-1	81.0÷86.0	Full	0.5	18	1.3

NOTES:
1. Modified versions of all devices are available.
2. Operating temperature range (0 to +50)°C.

Outlines (all dimensions are in millimeters)



Model	A	B	C	Waveguide	Flange
3IWNS87-1	25.4	70.0	45.0	WR-90	Standard
4IWNS11-1	12.7	50.0	38.5	WR-75	UBR-120
4IWNS11-5	25.4	44.0	38.5	WR-75	Standard
4IWNS11-2	12.7	50.0	38.5	WR-75	UBR-120
4IWNS12-5	25.4	44.0	38.5	WR-75	Standard
4IWNS13-1	12.7	44.5	38.5	WR-75	Standard
4IWNS13-2A	12.7	40.0	22.4	WR-62	Special size
4IWNS14-5	25.4	44.0	38.5	WR-75	Standard
4IWNS14-6	9.0	50.0	38.5	WR-75	Standard
4IWNS15-3A	12.7	40.0	22.4	WR-62	Special size
4IWNS16-5	12.7	44.5	33.4	WR-62	Standard
4IWNS18-4	12.7	38.1	22.4	WR-42	UG-595/U
4IWNS18-5	9.52	31.75	22.4	WR-42	UG-595/U
4IWNS18-6	6.35	22.4	22.4	WR-42	UG-595/U
4IWNS21-1H	12.0	37.8	33.2	WR-51	Standard
4IWNS22-3	22.2	38.1	22.4	WR-42	UG-595/U
4IWNS22-5	12.7	38.1	22.4	WR-42	UG-595/U
4IWNS22-6	9.52	31.75	22.4	WR-42	UG-595/U
4IWNS22-7	6.35	22.4	22.4	WR-42	UG-595/U
4IWNS23-5	32.0	38.1	22.4	WR-42	UG-595/U
4IWNS23-6	6.35	22.4	22.4	WR-42	UG-595/U
4IWNS25-2	12.7	38.1	22.4	WR-42	UG-595/U
4IWNS25-3	6.35	22.4	22.4	WR-42	UG-595/U
4IWNS43-1	15.0	38.0	28.6	WR-22	UG-383/U
4IWNS73-1	13.0	25.0	22.0	WR-12	UG-387/U
4IWNS83-1	13.0	25.0	22.0	WR-12	UG-387/U

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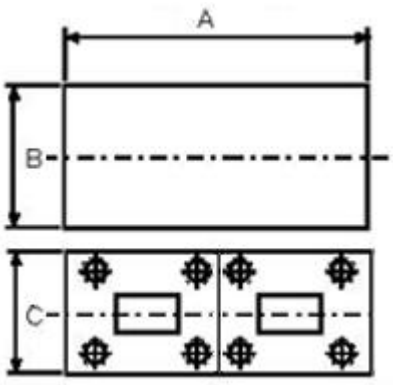
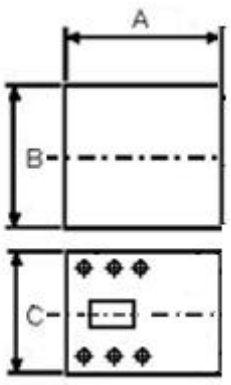
5.4. 4-port Isolators and Circulators

Model name	Frequency range (GHz)	Insertion loss dB	Isolation dB	VSWR
4IWX15-1	15.5÷17.5	0.4	20	1.20
4IWX19-1	18.4÷19.6	0.5	40	1.20
4IWX26-1	21.8÷30.2	0.7	40	1.20
4IWX26-3	23.6÷31.6	0.7	40	1.25
4IWX37-1	36.0÷38.0	0.7	40	1.20
4IWX53-1	50.2÷56.4	0.7	40	1.25
4IWX55-2	50.8÷59.2	0.7	40	1.25
4IWX89-2	88.0÷90.0	0.7	40	1.25

NOTES:
1. Modified versions of all devices are available.

Outlines (all dimensions are in millimeters)





Model	A	B	C	Waveguide	Flange
4IWX15-1	80	56	33.3	WR-62	UG-419/U
4IWX19-1	30	33.02	22.23	WR-42	UG-595/U
4IWX26-1	40	38.1	22.86	WR-34	UG-595/U(AKA UG -1530)
4IWX26-3	40	38.1	22.86	WR-34	UG-595/U (AKA UG -1530)
4IWX37-1	25.4	31.75	19.05	WR-28	UG-599/U
4IWX53-1	25.4	33.0	28.6	WR-19	UG-383/U
4IWX55-2	38.1	25.4	20.95	WR-15	UG-385/U
4IWX89-2	25.4	25.4	19.81	WR-10	UG-387/U

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5.5. Hight Power Isolators and Circulators



Model name	Frequency range (GHz)	Bandwidth %, min	Insertion loss dB, max	Isolation dB, min	VSWR max	Power peak kW	Average power kW	Terminal power, W(max)
3CWH24-1	2.40÷2.50	Full	0.3	20	1.15	10	1.5	-
3CWH25-1	2.40÷2.60	Full	0.3	20	1.25	10	1.5	-
3CWH29-1	2.85÷3.05	Full	0.3	20	1.25	10	1.5	-
3CWH30-2	2.40÷2.50	Full	0.15	23	1.15	1	1	-
3CWM78-1	7.30÷7.70	Full	0.2	23	1.15	0.5	0.5	-
4IWH34-4	25.86÷37.5	2	0.4	20	1.20	6	0.6	60
4IWH34-8	25.86÷37.5	5	0.2	20	1.20	0.6	0.05	20

NOTES:

1. Max and Min values within temperature ranges (-30 to +70)℃.
2. Devices are in need of cooling.
3. For Isolators, replace “C” with “I” in the model number.

Outlines (all dimensions are in millimeters)

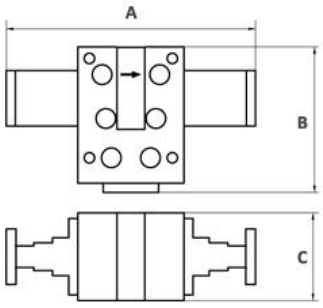

Fig.1

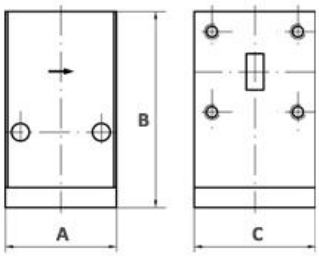

Fig.2

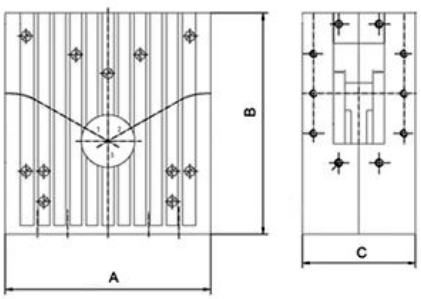

Fig.3

Model	A	B	C	Flange	Drawing	Fig.
3CWH24-1	173	189.8	95.2	WR-340		3
3CWH25-1	173	189.8	95.2	WR-340		3
3CWH29-1	173	189.8	95.2	WR-340		3
3CWH30-2	173	189.8	95.2	WR-340	PDF	3
3CWM78-1	68	65.2	47.9	WR-112	PDF	3
4IWH34-4	108	64	37	WR-28		1
4IWH34-8	22	38	24	WR-28		2

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6. Elements of microwave tracts

6.1. Loads

Loads provide superior electrical performance and effective cooling capability over a broad power range.
We produce available Loads of different power levels. Custom design are available upon request.

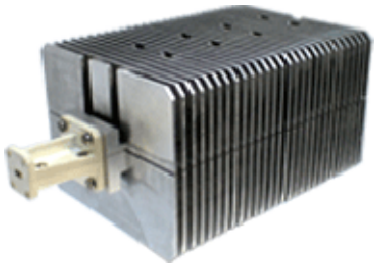
- Coaxial Loads

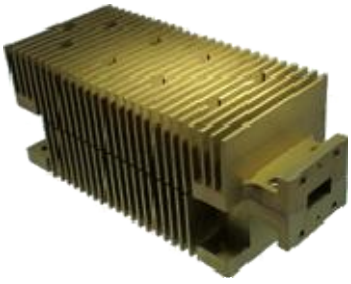
Model name	Frequency range (GHz)	Average Power kW	Power Peak kW	VSWR
3TCM24-1	2.420÷2.520	1.5	5.0	1.15
3TCH25-1	1.0÷4.0	1.0	5.0	1.25

Outlines (all dimensions are in millimeters)

Model	A	B	C
3TCM24-1	98	192	43
3TCH25-1	50	240	45

- Waveguide Hight Power Loads





Model name	Frequency range (GHz)	Bandwidth %, min	Continuous Power W	VSWR
3TWH39-1	3.30÷4.50	Full	2000	1.15
4TWH11-2	10.00÷11.30	Full	2000	1.15
4TWH12-1	10.75÷12.80	Full	400	1.10
4TWH12-2	10.00÷15.00	Full	2000	1.10

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NOTES:
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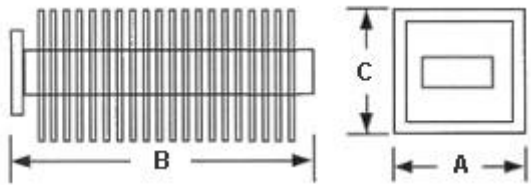
Outlines (all dimensions are in millimeters)



Model	A	B	C	Waveguide
3TWH39-1	112	556	82	WR-229
4TWH11-2	60	461	50	WR-75
4TWH12-1	75	180	78	WR-75
4TWH12-2	60	461	50	WR-75

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7. Types isolators and circulators

0 □ M X X 00 L - 0 P or N
(1) (2) (3) (4) (5) (6) (7) (8) (9)

(1) – frequency range: **1** -10 – 99 (MHz)
2 – 100 - 999 (MHz),
3 – 1- 9 (GHz),
4 – 10 - 99 (GHz).
(2) – **I** – **I**solator,
– **C** – **C**irculator.
(3) – **M** – General code for **M**icrostrip isolator/circulator.
(4) – **B –** for metal **b**acked substrate type (isolator/circulator),
(5) – **S** – carrier type (isolator/circulator),
M – substrate type (isolator/circulator).
(6) – central frequency for frequency range:
2 - (100 – 999 (MHz)) – GHz x10²,
3 - (1– 9 (GHz)) – GHz x10,
4 - (10 – 99 (GHz)) – GHz.
(7) –direction of rotation – **L** – counterclockwise,
– clockwise (by silence).
(8) – developments number (1, 2 and 3 - for example).
(9) – **P** – high-power isolator/circulator or
(9) – **N** – should be installed on the nonmagnetic base (for substrate type isolators and circulators).
(9) – **G** – general (for wideband type isolators and circulators).

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