RADITEK INC.

Isolators or Circulators: Microstrip Substrate only, 2-57.8 GHz. Part Bands

RADI/C-FLOW-FHIGH-MSS-XW-L/R-NM/M

L counter clockwise, R clockwise (default) //

(-NM (Non Magnetic) mount on Non Magnetic material ie Aluminum (6 to 23GHz only)

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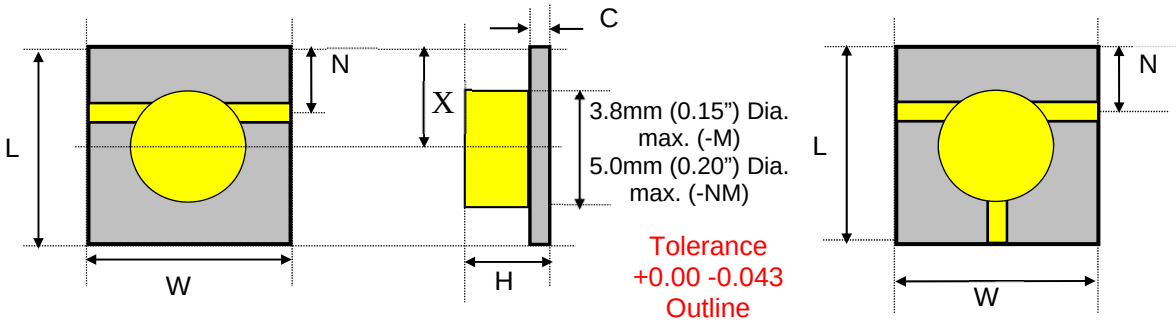

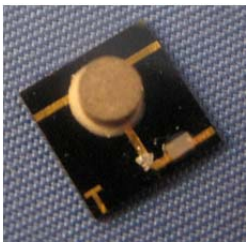

All thin film isolator circuits are gold on copper, suitable for soldering.
(Very easy with regular solder, (silver solder preferred), or gold thermo-compression bonding.
Specifications over full operating temperature (-30 to +70 °C), storage temperature (-40 to +85°C)
PM: Phase Matching
Units: mm (inch). Not to scale.

Extended Temperature range
At -40C and 80 °C, add 0.1 dB to Insertion Loss, and subtract 1.0 dB from Isolation

I	C	RADI/C:-(GHz)-MSS	W mm	L mm	H mm max	N mm	X mm	C mm	In. loss dB	Isol dB	VSWR	Pwr W fwd	Pwr W Rev	NM/M		Notes
✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01								✓
✓	✓	**2.1-2.4**	20	12	5	2.54		1	0.5	20	1.30:1	2	0.2	M only		
✓	✓	**2.1-2.4**	20	17.5	17	5	2.54		0.5	20	1.30:1	2	0.2	M only		
	✓	**2.1-2.4**	20	20	5	tba	tba	tba	0.5 0.7	20 18	1.30:1 1.35:1	1	1	M	b	room 0 to +60
✓	✓	**2.2-2.3**	20	12	5	2.54		1	0.5	20	1.30:1	2	0.2	M only		
✓	✓	**2.3-2.7**	17.5	17	5	2.54		1	0.5 0.6	20 18	1.25:1 1.30:1	2	0.2	M only	b	room -30 to +60
✓		**2.3-2.7**	20	20	5	tba	tba	tba	0.5 0.6	20 18	1.30:1 1.35:1	1	1	M only	b	room -10 to +50
✓	✓	**2.4-2.6**	17.5	17	5	5.5		1	0.6	17	1.35:1	2	0.2	M only		
✓		**3.05-3.5**	15	17	5	1.0	3.5	2	0.6	18	1.35:1	2	0.2	M only		0.5 / 20 / 13 @ RT b SO 8252 (mssc)
✓		**3.1-3.4**	15	16	5	3.0		1	0.6 0.8	19 17	1.25:1 1.35:1	2.5	0.6	M only	b	room -10 to +50 °C
✓	✓	**3.3-3.6**	15	16	5	3.5		1	0.6	18	1.50:1	2.5	0.6	M only		
✓	✓	**3.4-3.7**	15	17	5	2.5		1	0.4	22	1.00:1	5	5	M only	b	

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I	C	RADI/C:-(GHz)-MSS	W mm	L mm	H mm max	N mm	X mm	C mm	In. loss dB	Isol dB	VSWR	Pwr W	Pwr W	NM/M		Notes
✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01				**fwd**	**Rev**			✓
✓	✓	**3.4-4.2**	15	17	5	2.5		1	0.6	18	1.30:1	2	1	M only	e	
✓	✓	**3.4-4.2**	15	20	4	4		1	0.4	20	1.25:1	2	1	M only	b	
	✓	**3.9-4.4**	12	12	5				0.5	20	1.25:1		1	M only	b	
✓	✓	**4.3-5.1**	12	12	5	2.54		1	0.5	20	1.30:1	2	0.2	M only		
✓	✓	**4.4-4.8**	10.6	9	5	2.54		1	0.4	22	1.00:1	5	0.2	M only	b	
✓	✓	**4.4-5.0**	10.6	9	5	2.54		1	0.5	20	1.22:1	5	0.2	M only	b	
✓		**4.8-6.0**	10	9	4.5	tba	tba	tba	0.6	19	1.25:1	1	1	M only	b	-10 to +50
✓	✓	**5.0-5.9**	10.6	9	5	2.54		1	0.5 0.6	20 18	1.25:1 1.30:1	2	0.2	M only	b	room -30 to +70
✓		**5.0-5.9**	12	12	4	tba	tba	tba	0.5 0.6	20 18	1.25:1 1.30:1	2	0.2	NM	b	room 0 to +60
	✓	**5.2-5.5**	10	8	4	tba	tba	tba	0.4 0.5	20 18	1.25:1 1.30:1	1	1	M only	b	Room -10 to +60 10W Pk, 10% duty cycle
		5.2-5.95	10.6	9	5				0.5	20	1.30:1	2	0.2	M only		
	✓	**5.225-5.475**	10	9	5	tba	tba	tba	0.3	20	1.22:1	1	1	M	b	10W Pk
	✓	**5.225-5.475 (Rug)**	10	8	4	tba	tba	tba	0.5 0.6	20 18	1.25:1 1.30:1	1	1	M	b	room -20 to +60 Rugged, no outgassing
		5.3-5.9	10.6	9	5				0.5	20	1.30:1	2	0.2	M only		
	✓	**5.3-5.9**	10	10	4.5	tba	tba	tba	0.5 0.7	20 17	1.25:1 1.35:1	20		M only	b	room -55 to +85
	✓	**5.3-5.9 (5585)**	10	10	4.5	tba	tba	tba	0.5 0.7	20 17	1.25:1 1.35:1	5	5	M only	b	room -55 to +85
	✓	**5.3-5.9 (5585)**	12	12	tba	tba	tba	tba	0.5 0.7	22 17	1.17:1 1.35:1	5	5	M only	b	room -55 to +85
	✓	**5.6-6.4**	9.97	9	4.02			0.635	0.5	20	1.22:1	2	0.2	M only		
✓	✓	**5.6-7.4**	10	9	5	1.5		0.635	0.6	18	1.30:1	2	0.2	M or NM	b	Weight 0.6gram
✓		**5.6-7.4**	12	11	5	2.00		0.635	0.6	18	1.30:1	2	0.2	M only	e b	-10 to +70°C (-NM model)

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I	C	RADI/C:-(GHz)-MSS	W mm	L mm	H mm max	N mm	X mm	C mm	In. loss dB	Isol dB	VSWR	Pwr W fwd	Pwr W Rev	NM/M		Notes
✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01								✓
✓	✓	**5.65-6.85**	12.7	8	4.5	1.58		0.63	0.5	20	1.22:1	2	0.2	M only		-30 to +65°C
✓		**5.7-7.4**	10	9	5	2.54		0.635	0.5	20	1.30:1	2	0.2	M only	p	
		5.8-6.5	16	15	5	4.0	7.5	1	0.5	20	1.20:1	2	0.2			
		5.8-6.7	12.0	11	5	2.5		0.635	0.7	18	1.35:1	1	0.25	nm	e	-40 to +70
✓		**5.8-7.1**	12	11	4.5	2.5		0.635	0.5	20	1.25:1	2	1	M	p	J special
✓		**5.8-7.1**	12	11	4.5	2.5		0.635	0.5 0.7	20 18	1.30:1 1.40:1	2	1	NM	b	room -10 to +60
	✓	**5.8-7.2**	10	9	5	2.54			0.5	20	1.25:1	2	0.2	NM	b	
	✓	**5.8-7.2**	10	9	5.5	2.54			0.5	20	1.25:1	2	0.2	M	b	
✓	✓	**5.85-6.45**	10	9	5	2.54		0.635	0.4	22	1.00:1	5	5		b	
✓		**5.9-6.5**	10	9	5	2.54		0.635	0.4	20	1.20:1	2	0.2		b	-10to+70
✓		**5.9-7.2**	10	9	5	2.54			0.65	18	1.30:1	2	0.2	NM	p	
	✓	**6.0-7.0**	12	11	6	2		0.635	0.5	19	1.25:1	20	20	NM	e	-30 to +70
		6.0-8.0	10	9	5	2.0		0.635	0.6	18	1.30:1	1	1	M	b	-40 to +70
	✓	**6-8**	10	9	4.5	tba	tba	tba	0.6	18	1.30:1	1	1	M	b	-10 to +50
✓		**6.33-8.0**	10	9	5	2.0		0.635	0.5	20	1.25:1	5	0.25	NM	e	-30 to +70C
✓		**6.4-7.1**	10	9	5	2.54		0.635	0.4	20	1.20:1	2	0.2	NM	b	-10to+70
✓	✓	**6.7-7.1**	10	9	5	2.54		0.635	0.4	22	1.00:1	5	5	NM	b	
✓ ✓	✓	**6.9-8.9** **7.1-7.7**	10 9.9	9 9	5 5	2.54 2.49		0.635 0.635	0.5 0.4	20 20	1.30:1 1.20:1	2 2	0.2 0.2	NM NM	b	-002 -10to+70
✓		**7.7-8.5**	9.9	9	5	2.49		0.635	0.4	20	1.20:1	2	0.2	NM	b	-10to+70
	✓	**7.1-8.5**	9.9	9	5	2.49		0.635	0.5	20	1.29:1	3	3	NM		Circ only
✓	✓	**7.1-8.5**	10	9	4.5	2.54		0.635	0.5	18	1.30:1	2	0.2	NM		
✓		**7.1-8.5**	10	9	4.5	1.5		0.635	0.5 0.6	20 18	1.25:1 1.30:1	2/3	1	NM	b	room -30 to +70
✓		**7.1-8.5 (4070)**	10	9	4.5	1.5		0.635	0.7	17	1.35	2	1	NM	b	-40 to +70
✓		**7.1-8.5 (4070)**	10	9	4.5	1.5		0.635	0.7	17	1.35	3	1	NM	b	-40 to +70
✓	✓	**7.1-8.5**	10	9	4.7	2.50		0.635	0.5	20	1.25:1	3/5	1	NM		RFQ 12004
✓	✓	**7.7-9.0**	10	9	5	2.54		0.635	0.6	17	1.35:1	2	0.2	NM		
✓	✓	**8.0-8.6**	10	9 max	4	1.55	5.0	0.65	0.5	19	1.25:1	2	0.2	NM	b	0 to +50 weight 0.64g
	✓	**8-12**	10	10	4.5	tba	tba	tba	0.7	17	1.35:1	3	3	M only	b	0 to +50 10W Pk, 25% duty cycle
✓		**8.4-10.7**	7	10	5.5	1.5		0.635	0.5	18	1.30:1	5	0.25	NM	e	-30 to +65C
	✓	**8.5-10.5**	6	6	2.5	1.0	tbd	0.50	0.6	20	1.22:1	5	5	M	e	-40 to +70
✓		**8.5-10.5**	10	9	5	1.5	tba	0.635	0.5	18	1.30:1	1	1	M	b	room

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✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01								✓
									0.7	16	1.40:1					-40 to +70ºC
	✓	**8.5-11.0**	10	9	5				0.5 0.6	18 17	1.35:1 1.40:1	10		NM	b	room -30 to +60C
✓		**8.9-10.5**	6.35	6.35	4.5	tba	tba	tba	0.5	18	1.30:1	1	1	M	b	-10 to +50
✓	✓	**9-10**	6.35	6.35	4	1.5	3	0.635	0.5	19	1.25:1	2	0.2	NM	p	
	✓	**9-10**	7	7	2.8				0.6	18	1.30:1	10	10	NM	b	-30 to +60
	✓	**9-10**	6	6	3	tba	tba	tba	0.4	20	1.22:1	15 CW		NM	b	
	✓	**9-10**	5	5	3	tba	tba	tba	0.7	20	1.22:1	15 CW		NM	b	
✓	✓	**9.0-10.5**	6.35	6.35	4	1.5	3	0.635	0.5	19	1.30:1	2	1	NM	b	
✓	✓	**9.0-11.0**	7	7	4.5	2.5		0.635	0.6	18	1.30:1	1	1		p	
✓	✓	**9.1-9.6**	7	7	5	1.5		0.635	0.5	20	1.22:1	1	0.2	M	p	
✓	✓	**9.2-9.6**	7	7	5	1.5			0.4	20	1.22:1	10	10	NM	p	
✓		**9.5-9.7**	7	7	5	1.5		0.635	0.5	20	1.22:1	1	0.2	M	p	
✓	✓	**9.5-11.5**	7	7	4.5	2.5		0.635	0.6	18	1.30:1	1	1		p	
✓	✓	**9.5-12.0**	7	7	4.5	2.5		0.635	0.6	18	1.30:1	1	1	M	b	-40 to +70
✓	✓	**9.6-10.2**	6.35	6.35	4	1.5	3	0.635	0.5	20	1.25:1	2	0.2		b	
✓		**9.8-10.2**	6.35	6.35	4	1.5	3	0.635	0.5	20	1.25:1	1	0.5		p	
✓	✓	**9.9-10.1**	7	7	3.5	1.5		1	0.5	20	1.22:1	1	0.5			
✓	✓	**10.0-10.7**	7	7	3.5	1.5		1	0.5	20	1.25:1	1	0.5			-30 to +85C
✓	✓	**10.0-10.7**	6.35	6.35	3.5	1.5		1	0.5	20	1.25:1	1	0.5			Special
✓	✓	**10-12**	7	7	4	1.5	3	0.5	0.6	17	1.35:1	2	0.2	NM		-002
✓		**10-12**	7	7	4	1.5	3	0.5	0.7 0.8	18 17	1.30:1 1.40:1	2	1	NM	b	room -30 to +70
✓		**10.5-10.6**	7	7	3.7	tba	tba	tba	0.4	20	1.25:1		0.25	NM	b	-10 to +50
✓		**10.7-12.7**	10.16	10.16	5	2.50		0.635	0.6	19	1.30:1	1	1	M	E	-30 to +65C
✓	✓	**10.7-12.7**	7	7	3	1.5		0.635	0.4 0.5	20 18	1.25:1 1.30:1	3	1	M	b	room -20 to +70˚C
		10.9-11.5	6.35	6.35	4	1.5	3	0.635	0.5	20	1.22:1	2	0.2			
✓	✓	**10.9-12.0**	6.35	6.35	4	1.5	3	0.5	0.4	22	1.00:1	5	5		b	
✓	✓	**11.4-11.75**	7	7	4	1.5	3	0.5	0.4	22	1.00:1	5	5		b	
✓		**11.5-12.5**	7	7	4				0.5	20	1.25:1	0.5	0.5	NM	b	Solder or Epoxy
	✓	**11.5-12.5**	7	7	4.5	tba	tba	tba	0.5	18	1.30:1	1	1	NM	b	-10 to +50
	✓	**12.0-13.5**	7	7	4.5	1.5		0.5	0.6	18	1.30:1	4 CW 10 Pk		M	e	-30 to +65
✓	✓	**12.4-13.1**	7	7	4	1.4	3.5	0.7	0.5	18	1.30:1	2	0.2	NM	b	0 to +50 wt. 0.32 g
✓		**12.5-13.0**	7	7	4	1.5	3	0.5	0.5	20	1.25:1	2	0.2		p	
✓	✓	**12-13.5**	7	7	4	1.5	3	0.5	0.6	17	1.35:1	2	0.2			-006
✓		**12.75-14.5**	7	7	4	tba	tba	tba	0.5	20	1.25:1		0.5	NM	b	room

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										18	1.30:1					-30 to +70
		12.75-14.5	7	7	4	0.50	1.5		0.6	19	1.30:1	1	1		e	Rfq 14359
		13-15	7	7	5	1.5		0.5	0.7	18	1.35:1	1	0.25	NM	E	-40 to +70
	✓	**13.5-14.7**	7	7	4				1.0	20	1.22:1	3			b	-40 to +70
	✓	**13.5-14.7**	6	6	3.5				0.6	19	1.25:1	3			e	-40 to +70
✓		**13.7-15.4**	7	7	4			0.4	0.6	15	1.35:1	1	1		b	-55 to +95 -65 to +85 storage temp.
✓		**13.7-15.4 (3070)**	7	7	3.7				0.6 0.7	19 17	1.25:1 1.35:1	1	1	NM	b	+25°C -30 to +70°C
✓		**13.75-14.50**	7	7	4	1.5	3	0.5	0.5	20	1.25:1	2	0.5	NM		
✓		**13.75-14.75**	7	7	4	1.5	3	0.5	0.5	20	1.25:1	2	0.2			
✓	✓	**13.9-14.55**	7	7	4	1.5	3	0.5	0.4	22	1.00:1	5	5		b	
	✓	**14-18**	6	6	3.5	1.5		0.9	0.8	17	1.35:1	5		NM	e	-40 to +70
✓	✓	**14-14.5**	7	7	4	1.5	3	0.5	0.6	17	1.35:1	2	0.2			-004
✓	✓	**14-15.6**	7	7	3	1.5	3.5±0.7	0.5	0.5 0.6	20 18	1.25:1 1.30:1	2	0.25	M	b	+25C -30 to +60C
✓	✓	**14.4-15.5**	7	7	4	1.5	3	0.5	0.6	17	1.35:1	2	0.2			-004
	✓	**14.5-15.35**	6.35	6.35					0.7	15	1.50:1	2				-40 to +85
✓	✓	**14.5-15.6**	7	7	4	1.5	3	0.5	0.6	17	1.35:1	2	0.2			-004
	✓	**14.85-17.05**	7	8	4.5				0.5	18	1.30:1	8	8		b	
✓		**15-16**	7	7	3	tba	tba	tba	0.6	20	1.30:1	1	1	M	b	-10 to +60ºC
✓		**15-17**	7	7	3	tba	tba	tba	0.8	20	1.30:1	1	1	M	b	-10 to +60ºC
✓		**15-17**	7	7	4.5				0.6	18	1.35:1	1	1	NM	p	
	✓	**15-18**	7	7	4.5				0.7	18	1.35:1	1	1	M	b	
✓	✓	**15.1-15.35**	6.35	6.35	3.9	1.5	3	0.5	0.5	20	1.25:1	1	0.2		B	60-90C
✓		**15.15-15.35**	6.35	6.35	3.81	1.5	3	0.5	0.5	20	1.13:1	1	0.2		B	60-90C
✓		**15.5-16.5**	7	7	4	tbc	tbc	tbc	0.6	18	1.30:1		0.25	NM	b	-40 to +70
✓		**15.5-17.5**	7	7	4.5	1.5		0.5	0.6	20	1.30:1	2	0.25		e	-10 to +50C
	✓	**15.5-17.5 (1070)**	6	6	3	tba	tba	tba	0.7	17	1.35:1	8 Ave		NM	b	-10 to +70
	✓	**15.5-17.5**	7	7	4.5				0.7	18	1.35:1	8	8		b	-54 to +85 20w Pk
	✓	**15.5-17.5**	6	6	3	1.5		0.5	0.7	17	1.35:1	8	8		e	-54 to +85 20w Pk
✓	✓	**15.7-16.2**	7	7	4	1.5	3	0.5	0.6	18	1.30:1	1	0.2	NM	e	Pad 0.35mm wide
✓	✓	**16.5-17.1**	7	7	4	1.5	3	0.5	0.5	18	1.25:1	1	0.2	NM	p	
	✓	**16.5-17.1**	7	6	2.80	1.5		0.38	0.6	19	1.25:1	2	2	NM	e	-30 to +65
✓		**16.5-17.5**	7	7	3	tba	tba	tba	0.7	20	1.30:1	1	1	M	b	-10 to +60ºC

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✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01				**fwd**	**Rev**			✓
✓	✓	**16.5-17.5**	7	7	4	1.5	3	0.5	0.5	18	1.23:1	2	0.25	NM	b	-45 to +70
	✓	**16.6-17.6**	5	5	4.1	1.5		1.5	0.6	18	1.30:1	10		NM	e	-40 to +70
	✓	**16.6-17.6**	7	7	3				0.6 0.7	19 17	1.25:1 1.35:1	1	1	NM	b	-30 to +70
✓		**15.7-16.2**	7	7	3				0.6 0.7	20 18	1.25:1 1.30:1		0.2	NM	b	room -30 to +70
	✓	**16.8-17.4**	6	6	3.5	1.5		0.5	0.6	20	1.25:1	5		NM	E	-40 to +70
✓		**16.9-17.3-4085**	7	7	3.5	tba	tba	tba	0.5 0.7	20 18	1.25:1 1.35;1	1	2	M	b	room -40 to +85
✓	✓	**17.0-19.7**	7	6	4	1.0		0.38	0.8	20	1.30:1	2	1	NM	b e	
	✓	**17.1-17.3**	6	6	3.5	1.5		0.5	0.5	20	1.25:1	1	1	NM	b	
	✓	**17.1-17.7**	6.20	6.20	4.0	1.50		0.5	0.6 0.7	20 18	1.30:1	2	2	M	e	room -30 to +65
✓	✓	**17.7-19.7**	6	6	4	1.0	2	0.38	0.8	20	1.25:1	2	0.2*	NM		-005
✓		**17.7-19.7**	6	6	4	1.0	2	0.38	0.8	20	1.25:1	2	0.25	M		
✓	✓	**18.0-19.0**	6	6	4	1.0	2	0.38	0.8	20	1.25:1	2	0.2*	M		
✓		**18.0-19.0**	6	6	3.2	1.44	tba	tba	0.7	20	1.30:1	1	1	M	b	-10 to +60
✓		**18.8-22.0**	6	6	4	1.0	2	0.38	1 1.1 1.3	18 17 15	1.35:1 1.40:1 1.50:1	2	0.25	NM	b	room -10 to +60 -40 to +70 (TBC)
	✓	**18.86-19.26**	6	6	4				0.8	20	1.30:1	2	2	NM		p
✓	✓	**19.5-19.8**	6	6	4.38	1.0		0.38	0.8	20	1.35:1	1	0.25*	NM		
✓		**19.5-21.0**	6	6	2.9	1.0	tba	0.38	0.9 1.0	20 18	1.30:1 1.35:1	1	1	M	b	room -40 to +70ºC
✓		**19.5-21.3**	6	6	2.8				1.0	20	1.30:1	1	1	M	b	-30 to +60C
✓	✓	**20-22.5**	5	6	4	1.0		0.38	0.8	17	1.25:1	2	0.2*	NM		
✓		**19.5-20.5**	5	7	4	1.35		0.38	0.8/9	20	1.30:1	2	1	NM		
		20.0-22.0	6	6	4	1.0		0.26	0.9	20	1.35:1	2	1	-M		
✓	✓	**20.0-22.5**	6	6	2.8	tbc	tbc	tbc	0.8 0.9	20 18	1.25:1 1.30:1	0.25	0.25	M	b	-30 to +70°C -40 to -30°C
✓		**20.0-22.5**	6	6	2.5	tba	tba	tba	0.9	20	1.35:1	1	1	M	b	-10 to +60
✓		**20.0-22.5**	6	6	2.6	tba	tba	0.38	1.0	20	1.35:1		2	NM	b	-10 to +60 **Device to be mounted on heat sink.**
✓		**20.0-22.5**	6	5	2.7	tba	tba	tba	0.9	18	1.30:1	2	0.2	NM	b	0 to +50C
✓		**20.2-21.2**	6	6	4.4			0.38	0.8	18	1.30:1	1	0.2*	M	e	-40 to +70 p
✓	✓	**20.75-21.05**	6	6	4.4	1.0		0.38	0.5	20	1.35:1	1	0.25*	NM		
✓	✓	**21.2-23.6**	6	6	4	1.0		0.38	0.9[1]	17	1.25:1	2	0.2*	NM		-007
✓	✓	**21.2-23.6**	6	6	4	1.0		0.38	0.7	17	1.25:1	2	0.2*	NM		-b special

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✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01				**fwd**	**Rev**			✓
																for hyu
✓	✓	**21.2-23.6**	6	6	4	1.0		0.38	0.8	16	1.25:1	2	0.2*	NM		-40 to 70C
	✓	**21.2-23.6 (1050)**	6	6	3	tba	tba	tba	1.0	20	1.30:1	1	1	NM	b	-10 to +50
✓		**21.2-23.6**	6	6	2.5				1.0	20	1.35:1	1	0.25	M	b	-10 to +70C
✓		**21.5-27.5**	6	6	2.5	1.0		.38	1.2	20	1.35:1	0.2	0.2	NM	b	
✓	✓	**22-24**	5	6	4	1.0		0.38	0.8	17	1.25:1	1	0.2*	NM		
	✓	**22-24**	5	5	2.7	tba	tba	tba	0.9	18	1.30:1	2 Ave		NM	b	0 to +50C
✓	✓	**22-25**	6	6	2.5	1.0		0.38	1.0	17.5	1.30:1	0.2	0.2	NM	b	-30 to 70C
	✓	**22-25**	6	6	2.5	tba	tba	tba	0.9	20	1.30:1	1	1	M	b	-10 to +60
✓		**20-27.5**	6	6	2.5	1.0		.38	tba	tba	tba	0.2	0.2	NM	p	
✓	✓	**22-28** 3GHz max bw	6	6	2.5	1.0		.38	1.1	20	1.35:1	0.2	0.2	NM	b	
✓	✓	**22-25**	6	6	2.5	1.0		0.38	1.0	17.5	1.30:1	0.2	0.2	NM	b	-30 to +70C
		22.5-25.0	6	6	2.4	1.0		TBD	0.8	TBD	TBD	1	0.2*	NM		
✓		**23-24**	6	6	2.7	1.0	tba	0.38	0.9 1.1	20 18	1.25:1 1.30:1		0.25	M	b	room -30 to +70
	✓	**23.5-24.5**	6	6	2.4	1.0		0.38	0.7	20	1.25:1	1	0.25	M	b	
	✓	**23.8-24.8**	6	6	3.0	tba		tba	1.0	20	1.30:1		0.01	M	b	
✓	✓	**23.9-24.1**	6	5	4	10		0.25	0.8	20	1.30:1	1	0.2			
	✓	**23.93-24.08**	6	5	4	10		0.25	0.8	20	1.30:1	1	1		p	
	✓	**23-25**	6	5	2.32	1.0		0.25	1.1	18	1.35:1	1 or 6		M		
	✓	**23-25 (3060)**	6	6	2.5	1.5	Tba	0.38	0.9	18	1.30:1	6 Ave		M	b	-30 to +60
✓		**23-25**	6	5	4	1.0		0.25	1.1	18	1.35:1	1	0.2			-30 to +70
✓	✓	**23-24.6**	6	5	4	1.0		0.25	1.1	17	1.35:1	1	0.2	M	b	
✓	✓	**23-25**	6	5	4	1.0		0.25	1.1	17	1.35:1	1	0.2	NM	b	
✓	✓	**23-25**	6	5	4	1.0		0.25	1.1	18	1.35:1	1	0.2	NM	e	
✓	✓	**23-28** 1GHz max bw	6	5	4	1.0		0.25	1.1	18	1.35:1	1	0.2	NM		
✓		**23.5-24.5**	6	6	2.7	tba	tba	tba	0.7	20	1.30:1	1	1	M	b	
	✓	**24.0-24.125**	6	6	2.7	tba		tba	0.7	20	1.25:1	0.25		M	b	-10 to +50
	✓	**24-24.25**	6	5	4	1.0		0.25	1.0	18	1.30:1	1	0.2	M	p	
	✓	**24.0-24.25**	6	6	2.7	tba		tba	0.7	20	1.25:1	0.25		M	b	-10 to +50
✓		**24.0-24.25**	6	5	2.9	0.80		0.25	0.8	20	1.30:1	0.25 Average		M	b	-30 to +60
	✓	**24.0-25.5**	6	5	4	1		0.25	0.9	19	1.25:1	2		M	b	
✓	✓	**24-26.5** 2 GHz max bw	5	6	4.5	1.0		0.25	0.8	17	1.25:1	1	0.2*	M		
	✓	**24-27**	6	5	3	1.0	2.5	0.25	0.9	19	1.25:1	0.5	0.5	M	B	-10 to +50 Mag dia 2.0 mm
✓		**24.0-28.5**	6	5	2.8	1.0	1.5± 0.5	0.25	1.1	20	1.30:1	1	0.25	M	b	

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✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01				**fwd**	**Rev**			✓
✓	✓	**24-30**[2] 2 GHz max bw	5	6	4.5	1.0		0.25	0.8	17	1.25:1	1	0.2*	M		
✓	✓	**24-30**	5	5	3.5	1.35		0.25	1.1	17	1.35:1	1	0.2*	M	e	-40 to 70 C
✓	✓	**24.25-27.25**	5	5	3.5	1.35		0.25	0.9	19	1.25:1	1	0.2*	M	**e**	**-40 to 70 C**
✓	✓	**25-27**	6	5	3.5	1.1		0.25	0.9	20	1.30:1	1	1	M	b	-40 to 70 C
✓		**25-27**	6	6	2.3				1.0	20	1.35:1	1	1	M	b	-10 to +70C
✓		**25.0-28.0**	6	5	2.3	TBD		TBD	0.9	18	1.30:1	1	0.2*	M		
✓	✓	**25-30**	5	5	3.5	1.35		0.25	1.5	17	1.40:1	1	0.2*	M	b 1 2	-30 to 70 C RFQ 13975 preliminary
✓		**25-30**	5	7	3.5	1.0	Tbd	0.25	1.4	17	1.35:1	1	0.2*	M		full 5G Bw max
✓	✓	**25-32 full**	6	5	4.5	1.0		0.25	1.5	17	1.40:1	1	0.2*	M	b	New design -30 to +70C preliminary specs
✓	✓	**25-32** 2 GHz max bw	5	5	4.5	1.0		0.25	0.8	17	1.25:1	1	0.2*	M		
✓		**27-29**	5	5	2.5	1.0		0.25	1.0	20	1.35:1	2	0.25*	M	b	-40 to +70C
		27-31	5	6	3.5	1.0		0.25	1.0	18	1.35:1	2	1	NM	b	11-29-07
		27-31	5	5	4	1.0		0.25	1.0	18	1.35:1	2	2	NM	e	11-29-07
	✓	**27.425-28.425**	4.5	4.5	2.4	tba	tba	0.25	1.0	18	1.35:1	2	2	NM	b	-30 to +70C
✓		**27.5-29.5**	5	5	4	1.0		0.25	0.9	20	1.30:1	1	0.2*	M	e	12-13-07
✓	✓	**27.5-31.0** 3.5 GHz max bw	5	6	3.5	1.0	Tbd	0.25	0.8	17	1.25:1	1	0.2*	M		
		28-30	5	5	3	Tbd		tbd	1.0	20	1.30:1	2	2	M	b	
		28.0-31.0 1 GHz max bw	6	5	2.3	1.0		0.25	0.9	20	1.35:1	1	0.2*	M		
✓	✓	**28-32** 1 GHz max bw	5	5	2.5	1.0		0.25	0.9 1.0	20 20	1.30 1.35:1	2	0.2*	M	b	-10 to +50ºC -40 to 70C
✓	✓	**28.5-28.8**	5	6	4.0	1.0		0.25	0.9	20	1.35:1	1	0.2*	M		
		29-30.0	5	6	4.0	1.0		0.25	0.9	20	1.30:1	2	1	NM		
✓		**29.0-31.0**	5	5	2.3	1.1		0.25	1.0	20	1.35:1	2	0.25	M	b	hi qty optimized
✓		**29.0-31.0**	5	5	2.3	1.1		0.25	0.9	20	1.35:1	2	0.25	M	e	
✓		**29.0-31.5**	5	5	2.3	1.1		0.25	0.8	20	1.30:1	2	0.5	M	p	
✓		**29.94-31.94**	5	5	2.3	tba	tba	tba	0.8	20	1.30:1	1	1	M	b	-10 to +60
✓		**29.5-31.0**	5	5	4.0	1.1		0.25	0.9	20	1.35:1	1	0.2*	M	b	Note b 5x5
✓		**29.6-30.6 LMCO**	5	5	2.3	1.1		0.25	0.9	20	1.35:1	2	1	M	b	ud 6-17-09
✓		**29.6-30.6**	5	5	4.0	1.0		0.25	0.9	20	1.35:1	2	1	M	e	-30 to +70C

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✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01				**fwd**	**Rev**			✓
✓	✓	**29.75-30.05**	5	6	4.0	1.0		0.25	0.9	20	1.35:1	1	0.2*	M		
✓		**30.0-31.0**	6	5	2.5			0.25	0.8 0.9 1.0	23 20 20	1.25:1 1.30:1 1.30:1	5	2	M	b	**Room** **-40 ~ +60°C** **-40 ~ +85°C**
✓		**30-32**	5	5	2.3											
✓		**30-37** 2.5GHz max bw	4.5	9	3.5	1.0		0.20	0.8	17	1.25:1	1	0.2*	M		
✓		**31.0-34.0**	5	5	2.3			0.20	0.9	20	1.30:1	2	0.2*	M	b	
✓		**31.0-34.0**	5	5	2.3			0.20	0.9	20	1.30:1	2	1	M	b	preliminary
✓		**31-34** **(3060)**	5	5	3.6	tba	tba	tba	1.0	20	1.35:1	1	1	M	b	-30 to +60
	✓	**31-34.5**	5	5	2.3				1.0	18	1.35:1	2	0.2*	M		
	✓	**31-34.5**	5	5	2.3				1.0	18	1.35:1	2	1	M		preliminary
	✓	**31.0-35.5**	4.5	4.5	2.3				1.2	18	1.35:1	3.5		M	b	-10 to +60
	✓	**31.0-35.5**	4.5	4.5	2.3				1.2	18	1.35:1	4		M	b	-10 to +60
✓		**31.0-35.5** 2.5GHz max bw	5	5	2.3				1.2	18	1.35:1		3.5	M	b	-10 to +60 to be mounted on steel carrier with heatsink
✓		**31.0-35.5** 2.5GHz max bw	5	5	2.3				1.2	18	1.35:1		4	M	b	-10 to +60 to be mounted on steel carrier with heatsink
✓		**31.5-32.5**	5	5	2.5	1.1		0.20	1.2	17	1.33:1	1	0.2*	M		
✓		**31.5-32.5**	5	5	2.3				0.9 1.0	23 20	1.25:1 1.30:1	1	1	M	b	room -30 to +60
		31.5-33.5	5	5	2.5	1.1		0.20	1.2	17	1.33:1	1	0.2*	M		
✓		**31.5-34.1**	5	5	2.3				1.0 1.1	20 19	1.30:1 1.35:1	1	1	M	b	room -30 to +60
✓		**31.8-33.4**	5	5	2.5	1.1		0.20	1.2	17	1.33:1	1	0.2*	M		
✓		**32-34**	5	5	2.3				1.0	23	1.35:1	1	1	NM	b	-10 to +60C
✓		**32-25**	5	5	3.3				0.9	20	1.30:1	1	1	M	b	-10 to +60C
	✓	**32.7-36.5**	4.5	4.5	2.3	Tbd		0.20	1.2	18	1.35:1	1		M		-30 to +70C
	✓	**33.0-33.5**	5	5	2.5	1.1		0.2	1.0	20	1.35:1	5	0.5	M	b	
	✓	**33-35**	4.5	4.5	2.3	1		0.20	1.2	18	1.35:1	1	0.5*	M	b	-30 to +70C
✓		**33-35**	4.5	4.5	2.3	1		0.20	1.2	18	135:1	1	0.25 or 1	M	P	App. Wt. 0.48g
		33-35.5	5	5	2.5	1.1		0.25	1.0	20	1.35:1	5	0.25	M	p	-40 to +70C
✓		**33-36**	5	5	2.5	1.1		0.25	1.0	20	1.35:1	1	0.25	M	b	4/3/08 -40 to +70C
	✓	**33-36**	4.5	4.5	2.5	1.5		0.2	1.2	18	1.35:1	2 or 6	2 or 6	M	b	-40 to +70C

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Isolators or Circulators: Microstrip Substrate only, 2-57.8 GHz. Part Bands

RADI/C-FLOW-FHIGH-MSS-XW-L/R-NM/M

L counter clockwise, R clockwise (default) //

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I	C	RADI/C:-(GHz)-MSS	W mm	L mm	H mm max	N mm	X mm	C mm	In. loss dB	Isol dB	VSWR	Pwr W	Pwr W	NM/M		Notes
✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01				**fwd**	**Rev**			✓
	✓	**33-36 (3060)**	4.5	4.5	2.3	1.5	tba	0.2	1.2	18	1.30:1	6 Ave		M	b	-30 to +60C
✓		**33-36**	3.3	6.5	3.5	1.0		0.2	1.0	19	1.35:1	1	0.25	M	e	-30 to +70C
✓		**33-37**							1.2	18	1.40:1	2	0.5	M	P	
✓		**33.4-34.1**	5	5	2.3				0.9 1.0	23 20	1.25:1 1.30:1	1	1	M	b	room -30 to +60
	✓	**33.5-34.5**	4.5	4.5	2.5	1.5		0.20	1.2	18	1.40:1	6	0.5*	M	b	-40 to +70C
	✓	**33.5-34.5**	5	5	2.3	1.37		0.25	1.2	18	1.40:1	6	0.5*	M	b	-40 to +70C
	✓	**33.5-34.5**	4.5	4.5	2.3				0.8	20	1.30:1	1	1	M	b	-10 to +50C
	✓	**33.5-35.6**	5	5	2.3			0.25	1.2	18	1.40:1	6	6	M	P	tbc 6-18-09
	✓	**33.5-35.6**	4.5	4.5	2.4			0.20	1.1	19	1.25:1	6	6	M	b	-10 to +70
✓		**33.8-36.2**	5	5					0.9	20	1.30:1		0.25	M	b	-40 to +70C
✓		**34-36**	5	5	2.3	tba	tba	tba	0.9	20	1.30:1	1	1	M	b	-10 to +60
✓		**34-36**	5	5					0.9	20	1.30:1		0.25	M	b	-40 to +70C
		34-36	5	5	2.3			0.20	1.0	20	1.30:1	1	0.2	M		
	✓	**34-36**	4.5	4.5	3.3	1.0		0.20	1.0	20	1.30:1	5	5	M	p	
	✓	**34-36**	4.5	4.5	2.3	tba	tba	tba	1.0 1.2	20 18	1.30:1 1.35:1	2	2	M	b	room -40 to +75
		34.0-37.0	5	5	2.3			0.20	tbd	tbd	tbd	1	0.2*	M		Isolator
	✓	**34.0-37.0**	4.5	4.5	2.3	1.0			tbd	tbd	tbd	1	0.2*	M		
✓		**34.5-35.5**	3.3	6.5	3.5	1.0		0.20	0.9	20	1.30:1	2	1	M	e	-30 to +70C
	✓	**34.5-35.5**	4.5	4.5	2.7	tba	tba	tba	0.9	19	1.25;1	1	1	M	b	-30 to +70
		34.5-36.0	5	6	2.3	1.3		0.20	1.0	20	1.30:1	1	0.2	M	e	-30 to +60C
		34.5-36.0	5	5	2.3	1.1		0.20	1.0	20	1.30:1	1	0.2	M	b	7/28/08 pam
✓	✓	**34.5-35.5**	5	6	4.0	1.0		0.25	0.8*	20	1.30:1	1	0.5	M	e	***0.9dB worst case over temp –30 to +70**
✓	✓	**34.5-35.5 LMCO**	5	5	2.3	1.1		0.20	0.8	20	1.30:1	2	1	M	b	ud 6-17-09
✓		**34.5-35.5**	5	5	2.3	1.1		0.20	1.0	20	1.35:1		2	M	b	-30 to +60C
✓		**34.5-35.5**	5	5	2.3	tba	tba	tba	1.2	18	1.35:1		6	M	b	-10 to+60 to be mounted on steel carrier Carrier to be mounted on the heatsink
	✓	**34.5-35.5**	4.5	4.5	2.3	tba	tba	tba	1.2	18	1.35:1		6	M	b	-10 to+60 to be mounted on steel carrier
✓		**34.7-38.3**	5	5	2.3	1.1		0.20	1.2	20	1.30:1	1	1	M	b	-40 to +70
✓		**35-40**	4.5	9	3.5	1.0		0.38	0.8	17	1.25:1	1	0.2*	M		

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RADITEK INC.

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RADI/C-FLOW-FHIGH-MSS-XW-L/R-NM/M

L counter clockwise, R clockwise (default) //

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See also MSSM Family data sheet for same size part with metal backing shim that can be used from 2-55GHz and mount on Aluminum

I	C	RADI/C:-(GHz)-MSS	W mm	L mm	H mm max	N mm	X mm	C mm	In. loss dB	Isol dB	VSWR	Pwr W	Pwr W	NM/M		Notes
✓	✓	**Tolerance**	±.03	±.03	±.03	±.03	±.03	±.01				**fwd**	**Rev**			✓
		<2.5G BW														
✓		**35-40** <3GHzBW	5	5	2.3	1.0		0.38	1.1	20	1.35:1	1	0.2	M	b	-30 to +70°C
✓		**35-40** <3GHzBW	5	5	3.5	1.1		0.20	1.2	17	1.40:1	1	0.2*	M	e	-30 to +70°C
✓		**35.2-37.8**	4.5	9	3.5	1.0		0.38	0.8	17	1.25:1	1	0.2*	M		
	✓	**35.4-35.6**	5	5	3.5	1.0		0.20	0.9	18	1.30:1	1	0.2	M	e	-40 to +70C
		35.48-35.52	5	5	2.3	1.1		0.20	1.0	20	1.30:1	1	0.2	M		
✓	✓	**35.5-36.1**	4.5	9	3.5	1.0		0.38	0.8	20	1.30:1	1	0.2	M		
✓		**36.5-37.3**	6	5	3.8	1.5		0.20	1.0	18	1.30:1	2	0.5	M		-40 to +85
✓		**36.6-38.4**	5	5	2.3	Tba	Tba	0.20	1.0	20	1.35:1	1	1	M	b	-30 to +70
✓		**37.0-38.6**	5	5	3	1.1		0.20	1.0	20	1.35:1	1	0.5	M	e	pad 0.140 w
✓		**37.0-38.6**	5	5	2.3	1.1		0.20	0.9	20	1.35:1	1	0.5	M	p	Pad width 0.138 mm tabs use <0.12mm
	✓	**37.0-39.5**	4.5	4.5	3.5				1.1	20	1.30:1	1	1	M	b	0 to +50
	✓	**37.0-40.0**	4.5	4.5	2.3				1.0	20	1.25:1	2	2	M	b	-10 to +50
✓		**37.0-40.0**	5	5	2.3	1.1	2.2	0.20	1.0 1.1	20 19	1.35:1 1.35:1	1	0.25*	-30 to +70 -40 to -30 M	b e	Pad width 0.138 mm tabs use <0.12mm Magnet dia 1.2 max
	✓	**38.5-40.0**	5	5	3.2	1.1	1.7	0.20	1.0	20	1.35:1	1	0.2*	M	b e	Pad width 0.2mm tabs use <0.15mm
✓		**39.8-40.2**	3.3	6.5	2.3				1.0	20	1.30:1	1	1		b	-30 to +60C, b
	✓	**40.0-43.5**	5	5	3.5				1.3	20	1.30:1	1	1	M	b	0 to +50
✓	✓	**46.5-47.5**	5	5	2.5	1.1		0.20	1.2	18	1.30:1	1	0.5*	M	b	

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MSS miniature Size Option (Part # suffix-"min")

✓		**32-34**	3.33	6.5	2.2	1.0		0.20	0.9	20	1.30:1	1	0.5*	M	e	8/10/05 –30 to 65C
✓		**32.85-33.45**	3.33	6.5	2.2	1.0		0.20	0.9	20	1.30:1	1	0.5*	M	e	–30 to 65C
✓		**32.5-34.5**	3.33	6.5	2.2	1.0		0.20	0.9	20	1.30:1	1	0.5*	M	e	8/10/05 –30 to 65C
	✓	**36.5-37.3**	3.33	5	3.8	1.5		0.20	1.0	18	1.30:1	2	0.5	M		-40 to +85
✓		**37.0-39.5**	3.33	5	4.0	1.0		0.20	0.8	20	1.35:1	2	0.1	M	e	-30 to +65 pad 0.140 w
✓		**37.0-40.0**	3.33	6.5	4	1.0		0.20	0.9	20	1.35:1	2	1	M	e	
✓		**43-45**	3.33	6.5	4.0	1.0		0.15	1..0 1.1 1.3	20 19 16	1.35:1 1.35:1 1.40:1	1	0.5	M	e	15-35C -10-50C -55-80C

1. : 1.0 dB from -30 to 0°C **2. :** Over any 2.5 GHz bandwidth. **3.:** 2dB degredation in Isolation –10 to 30C & 50 to 70C
Samarium Cobalt magnet, 2 μm thin film Gold on 4μm Copper,
{***1W dissipation possible if good thermal conductivity to heat sink}**

Maximum Temperature during Welding 350C @ 25 microseconds

Curing: can withstand non operating 120 °C for up to 10 min // 5 Seconds @ 130°C
Note 94GHz too but only over a narrow temp range 0-50C

Customer Special Request:

✓	✓	**9.0-10.0**	8.38	8.38	3.05	2.54		1.07	0.5	15	1.22:1	1	0.2			-25 to +85C

✓		**32-35**	4.5	9	3.5	1.0		0.20	0.9	17	1.25:1	1	0.2*	M		full 3.0G Bw max
✓		**32-37**	5	5	2.5	1.1		0.20	1.2	20	1.30:1	1	2	M	b	
✓		**32-37**	5	5	2.5	1.1		0.20	1.3	19	1.30:1	1	2	M	b	-40 to 70C

Extended Temperature range

At -40C or 80 °C, add 0.1 dB to Insertion Loss, and subtract 1.0 dB from Isolation
At 85 °C, add 0.2 dB to Insertion Loss, and subtract 2.5 dB from Isolation
At 90C °C, add 0.3 dB to Insertion Loss, and subtract 4.0 dB from Isolation
At 100C °C, add 0.4 dB to Insertion Loss, and subtract 5.0 dB from Isolation
Higher temperature parts with better specs are available

1. The MSS Substrate only series is a little more difficult to use than the carrier versions
   a. The magnetic circuit has to be considered,

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   i. if the mounting surface is either steel or kovar the magnetic mount version should be selected, lower frequency units must be –M, if steel or kovar mounting is not possible check out the MSSM series which is the same units with a metal back
b. If a non magnetic mounting surface ie aluminum is used then the non magnetic mount version should be selected.

2. Adhesive is preferably non conductive epoxy, with a very thin smear used, adequately cured, if conductive epoxy is used take great care that none comes out the sides as it can degrade performance significantly.

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Installation instruction for MSS and MSSM Isolators and Circulators.

*These models contain low melting point, Indium fine tuning elements and unit should be mounted using an Indium based solder **or** clear epoxy, as a secondary operation, in strict compliance with the following:*

1. **All Microstrip Isolators and Circulators have pure indium tuning elements** that can be damaged by sustained temperatures over 130°C, (Indium melting point is 156°C). So under no circumstances should unit ever exceed 130°C for a few seconds

2. **Preferred attachment for the MSS and MSSM models** is by using a thin smear of clear non conductive epoxy, with temperature of polymerization close to 80°C, it is important to leave area around microstrip junctions clear to facilitate grounding. We do not recommend conductive epoxies as it is too easy to contaminate the isolator surface and detune/damage the unit.

3. **Alternate attachment for MSS and MSSM model** is by soldering, (Soldering is a more complicated process, but Insertion loss at frequencies over 12 GHz can be a little better than with epoxy)
Note the substrates come soldered to a metal back plate. Mounting can only be with low melting point indium solder
Fitting is by using a Indium paste solder (we suggest Lead free: 50% Indium / 50% Tin Alloy) with 125°C liquidus.
Use a controlled solder reflow cycle of up to 125°C for 5 seconds maximum, with slow up and down ramps. (do not use a hot plate due to the inability to control-it will likely melt the Indium and even desolder the ferrite substrates)

4. **Recommended Interconnection is by non ultrasonic wedge bonding**,
Heat the unit to a maximum of 100°C for <3 minutes
Maximum wedge temperature during the bonding process 350°C for 25ms

Cavity Effect: Minimum distance between the housing/module cover: 1.0 - 1.5mm above the magnet without any change in performances. and about 0.7mm with minimum changes.

We have exhaustively tested the Microstrip Drop in's. for shock and vibration .

The units have low mass and are very robust.
-Vibration in frequency range 1-5000Hz with acceleration 400m/sec2 (40g)
- repeated shocks with acceleration 1500m/sec2 (150g) and duration 1-5msec
- single shock with acceleration 15000m/sec2 (1500g) and duration 0.1-2msec
- linear centrifugal acceleration 5000m/sec2
- acoustic noise 50-10000Hz at sound pressure level up to 170dB

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