

Engineering Development Model

Directional Coupler

RC-ED12494/1

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability. At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.



Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : AT224

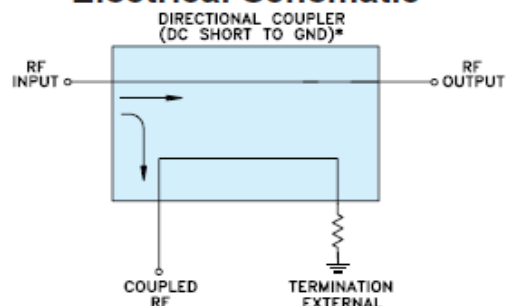
ELECTRICAL SPECIFICATIONS 75Ω @ +25°C				
Parameter		Min.	Typ.	Max. Units
Frequency		5		1000 MHz
Coupling	Nominal		12.7 ± 0.5	dB
	Flatness		± 0.53	dB
Mainline Loss **	5-50 MHz		0.76	dB
	50-500 MHz		0.65	dB
	500-1000 MHz		0.71	dB
Directivity	5-50 MHz		21	dB
	50-500 MHz		17	dB
	500-1000 MHz		12	dB
VSWR	5-1000 MHz		1.15	(:1)
RF Power Input	5-1000 MHz			100 mW

Note: ** Mainline loss includes theoretical coupled power loss of 0.2397dB at 12.7dB coupling.

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

PIN CONNECTIONS	
INPUT	3
OUTPUT	4
COUPLED FORWARD	1
NOT USED	5
TERMINATION 75Ω	6
GROUND	2

Electrical Schematic



* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.



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IF/RF MICROWAVE COMPONENTS



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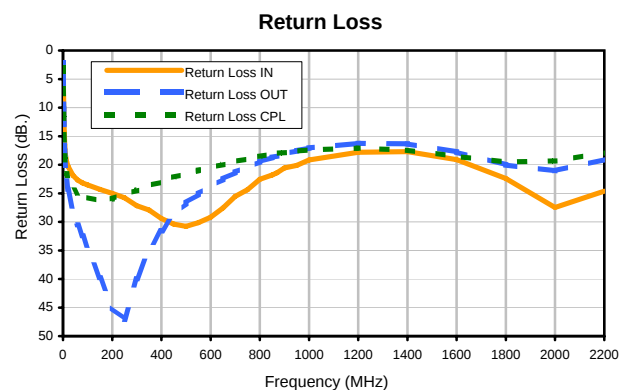
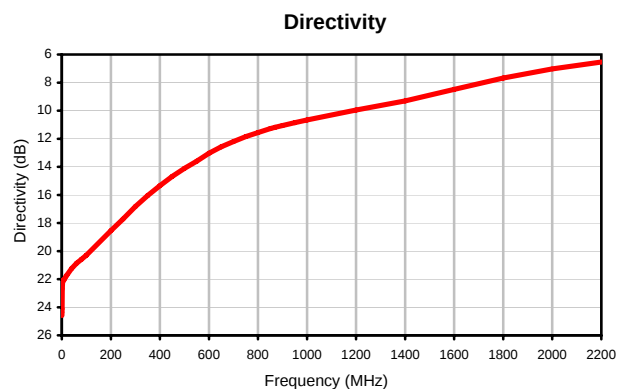
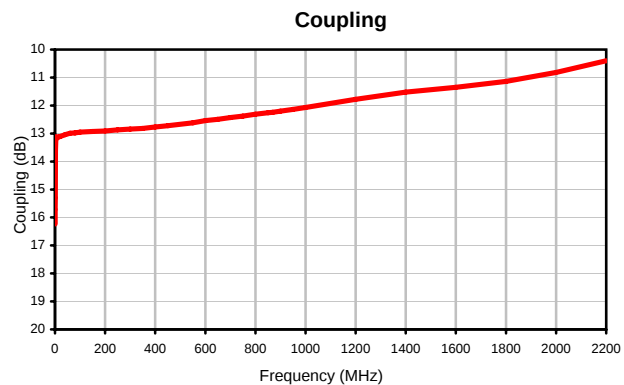
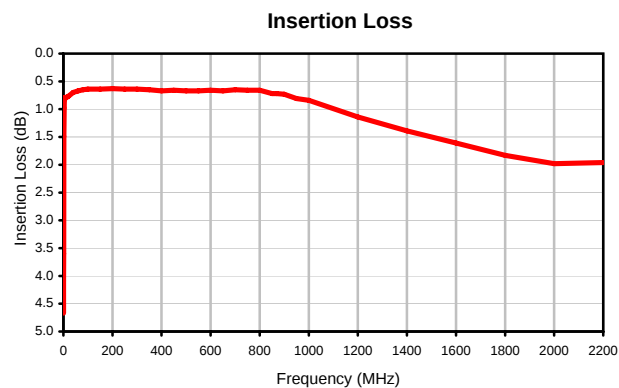
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	OUT	CPL
0.8	4.67	16.23	24.59	2.21	2.20	3.08
0.9	4.09	15.72	24.36	2.64	2.61	3.60
1.0	3.60	15.30	24.12	3.06	3.03	4.13
2.0	1.49	13.61	22.68	6.99	6.99	8.57
3.0	0.98	13.24	22.25	10.10	10.19	11.87
4.0	0.84	13.13	22.11	12.48	12.75	14.34
5.0	0.79	13.13	22.07	14.25	14.77	16.14
7.0	0.79	13.13	22.10	16.52	17.67	18.43
8.0	0.79	13.14	22.07	17.24	18.72	19.16
10.0	0.80	13.14	22.03	18.23	20.33	20.19
15.0	0.78	13.12	21.86	19.53	22.79	21.56
20.0	0.77	13.11	21.73	20.26	24.30	22.33
40.0	0.70	13.04	21.25	21.85	28.03	24.06
60.0	0.67	12.99	20.87	22.68	30.52	24.94
80.0	0.65	12.98	20.59	23.18	32.45	25.43
100.0	0.64	12.95	20.30	23.52	34.42	25.74
150.0	0.64	12.93	19.43	24.31	39.77	26.31
200.0	0.63	12.91	18.55	25.00	45.03	25.98
250.0	0.64	12.87	17.72	25.76	47.10	25.11
300.0	0.64	12.84	16.83	27.16	39.97	24.48
350.0	0.65	12.82	16.05	27.94	34.87	23.65
400.0	0.67	12.77	15.35	29.42	31.58	23.03
450.0	0.66	12.72	14.68	30.39	28.69	22.18
500.0	0.67	12.67	14.11	30.79	26.69	21.66
550.0	0.67	12.62	13.60	30.13	25.10	20.98
600.0	0.66	12.54	13.03	29.20	23.74	20.49
650.0	0.67	12.49	12.57	27.57	22.53	19.95
700.0	0.65	12.43	12.20	25.56	21.31	19.43
750.0	0.66	12.38	11.85	24.38	20.40	18.95
800.0	0.66	12.31	11.56	22.55	19.46	18.55
850.0	0.72	12.26	11.28	21.79	18.71	18.14
870.0	0.72	12.24	11.19	21.41	18.45	17.99
900.0	0.73	12.20	11.06	20.55	18.06	17.87
950.0	0.81	12.14	10.85	20.11	17.55	17.59
1000.0	0.84	12.07	10.66	19.15	17.07	17.41
1200.0	1.14	11.78	9.96	17.82	16.24	17.08
1400.0	1.39	11.52	9.30	17.70	16.33	17.46
1600.0	1.61	11.35	8.48	19.10	17.75	18.51
1800.0	1.83	11.14	7.68	22.40	20.03	19.51
2000.0	1.98	10.82	7.02	27.47	21.07	19.33
2200.0	1.96	10.40	6.54	24.61	19.08	17.90

Directional Coupler

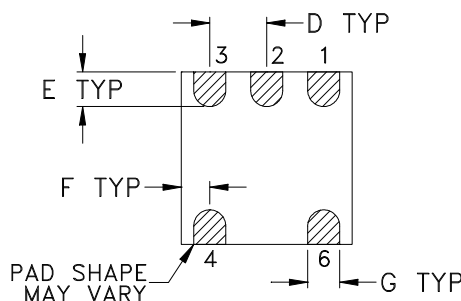
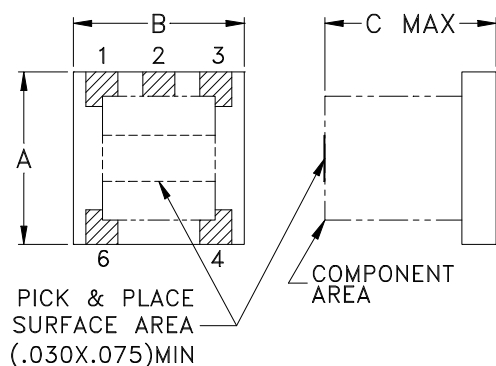
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Typical Performance Curves

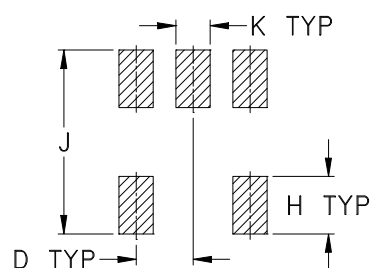


Outline Dimensions

AT224



PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm.002$

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAMS
AT224	.150 (3.81)	.150 (3.81)	.150 (3.81)	.050 (1.27)	.030 (0.76)	.025 (0.64)	.028 (0.71)	.065 (1.65)	.190 (4.83)	.030 (0.76)	-- --	.10

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .01$; 3 Pl. $\pm .005$

Notes:

- Open style, ceramic base.
- Termination finish:
For RoHS Case Styles: 2-10 μ inch (.05-.25 microns) Gold over 100-300 μ inch (2.54-7.62 microns) Nickel plate.
All models, (+) suffix.
For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.



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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F17

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
12	8	7	Small quantity standards (see note)	20
				50
				100
				200
				500
		13	Standard	1000
				2000

Note: Please Consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



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RF/IF MICROWAVE COMPONENTS



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215