Plug-In

Directional Coupler

PDC-10-1+

50Ω 0.5 to 500 MHz

Generic photo used for illustration purposes only

CASE STYLE: A01

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

INPUT	1
OUTPUT	4
COUPLED	3
GROUND	2,5,7,8
CASE GROUND	2,5,7,8
NOT USED	6

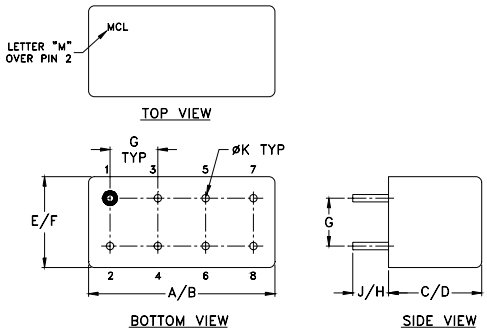
Features

- wideband, 0.5 to 500 MHz
- excellent directivity, 32 dB typ.
- low mainline loss, 0.85 dB typ.
- rugged welded construction, hermetic

Applications

- VHF/UHF
- power levelling monitoring
- instrumentation

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F
.770	.800	.385	.400	.370	.400
19.56	20.32	9.78	10.16	9.40	10.16
G	**H**	**J**	**K**		**wt**
.200	.20	.14	.031		grams
5.08	5.08	3.56	0.79		5.2

Directional Coupler Electrical Specifications

FREQ. (MHz)	COUPLING (dB)		MAINLINE LOSS[1] (dB)						DIRECTIVITY (dB)						VSWR (:1)	POWER INPUT, W	
			L		M		U		L		M		U			L	MU
f_L-f_U	Nom.	Flatness	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Max.	Max.
0.5-500	11.5±0.5	±0.6	0.85	1.3	0.65	1.0	0.85	1.3	32	25	32	25	22	15	1.2	1.5	3.0

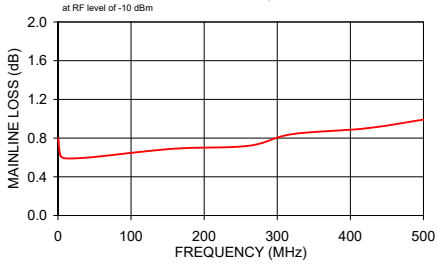
L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U= upper range [f_U/2 to f_U]

1. Mainline loss includes theoretical power loss at coupled port.

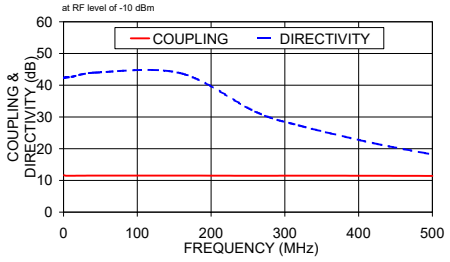
Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Return Loss (dB) Out	Return Loss (dB) Cpl
0.50	0.80	11.64	42.32	24.01	18.42	19.01
0.90	0.76	11.62	42.36	26.26	19.13	19.85
3.40	0.62	11.48	42.46	33.23	20.95	21.81
11.00	0.59	11.46	42.63	38.68	21.51	22.33
43.00	0.60	11.51	43.97	36.45	21.47	22.23
158.00	0.69	11.52	43.84	26.94	20.89	22.26
260.00	0.72	11.48	31.65	23.01	20.10	22.34
320.00	0.84	11.49	27.26	21.41	19.56	22.25
420.00	0.90	11.47	21.73	19.41	18.68	21.52
500.00	0.99	11.43	18.20	18.24	18.05	20.30

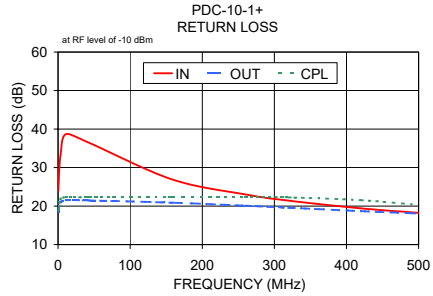
PDC-10-1+
MAINLINE LOSS



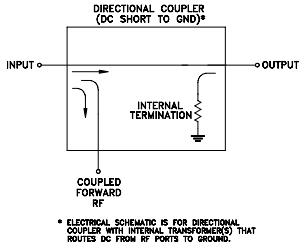
PDC-10-1+
COUPLING & DIRECTIVITY



PDC-10-1+
RETURN LOSS



Electrical Schematic



Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Directional Coupler PDC-10-1+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS (dB)		
				IN	OUT	CPL
0.5	0.80	11.64	42.32	24.01	18.42	19.01
0.6	0.80	11.65	42.40	24.74	18.63	19.27
0.7	0.79	11.64	42.27	25.32	18.81	19.48
0.8	0.78	11.62	42.28	25.82	18.97	19.68
0.9	0.76	11.62	42.36	26.26	19.13	19.85
1.0	0.75	11.60	42.26	26.70	19.28	20.02
1.8	0.67	11.52	42.45	29.55	20.18	21.01
2.6	0.63	11.50	42.33	31.63	20.67	21.53
3.4	0.62	11.48	42.46	33.23	20.95	21.81
4.2	0.61	11.47	42.42	34.48	21.12	21.99
5.0	0.60	11.47	42.55	35.40	21.22	22.09
8.0	0.60	11.47	42.68	37.59	21.43	22.27
11.0	0.59	11.46	42.63	38.68	21.51	22.33
14.0	0.59	11.47	42.94	39.11	21.54	22.35
17.0	0.59	11.47	43.01	39.21	21.54	22.34
20.0	0.59	11.48	43.32	39.16	21.55	22.33
43.0	0.60	11.51	43.97	36.45	21.47	22.23
66.0	0.64	11.51	46.14	33.68	21.39	22.19
89.0	0.65	11.51	48.86	31.48	21.30	22.20
112.0	0.67	11.52	52.11	29.68	21.19	22.23
135.0	0.69	11.55	48.58	28.20	21.06	22.25
158.0	0.69	11.52	43.84	26.94	20.89	22.26
181.0	0.69	11.51	40.13	25.85	20.74	22.29
204.0	0.76	11.53	37.22	24.91	20.55	22.31
227.0	0.77	11.53	34.76	24.08	20.37	22.34
250.0	0.74	11.49	32.46	23.32	20.17	22.34
260.0	0.72	11.48	31.65	23.01	20.10	22.34
270.0	0.73	11.49	30.78	22.72	20.01	22.34
280.0	0.79	11.52	29.98	22.44	19.91	22.32
290.0	0.86	11.55	29.29	22.16	19.82	22.31
300.0	0.88	11.52	28.58	21.90	19.73	22.29
320.0	0.84	11.49	27.26	21.41	19.56	22.25
340.0	0.80	11.48	26.05	20.95	19.38	22.17
360.0	0.82	11.48	24.86	20.54	19.21	22.06
380.0	0.95	11.51	23.74	20.13	19.03	21.91
400.0	0.95	11.46	22.73	19.76	18.85	21.74
420.0	0.90	11.47	21.73	19.41	18.68	21.52
440.0	0.90	11.45	20.80	19.09	18.51	21.26
460.0	1.01	11.48	19.88	18.79	18.36	20.97
480.0	1.04	11.43	19.03	18.51	18.20	20.65
500.0	0.99	11.43	18.20	18.24	18.05	20.30

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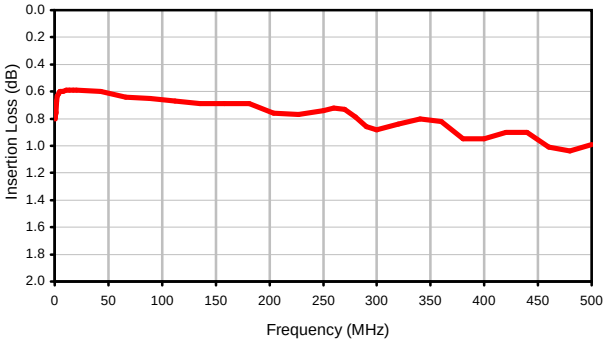
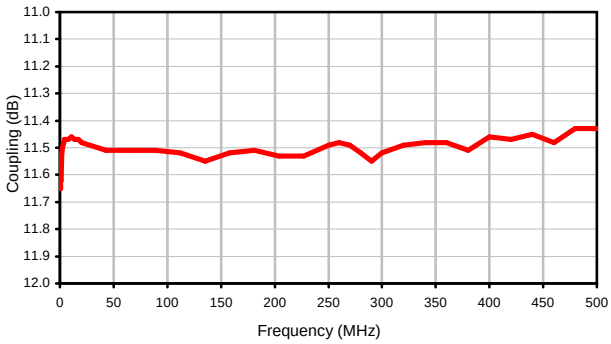
Directional Coupler PDC-10-1+

Typical Performance Curves

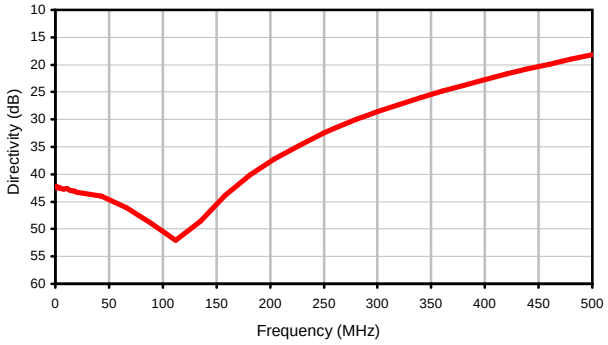
Insertion Loss



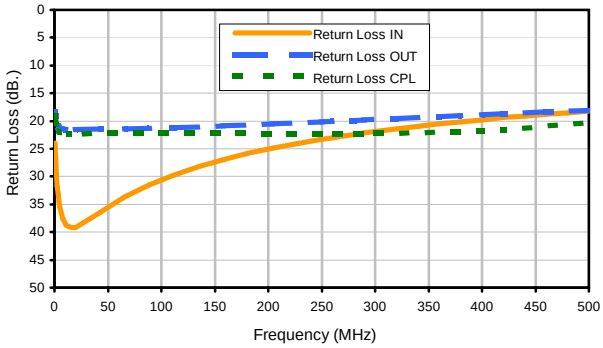
Coupling



Directivity



Return Loss



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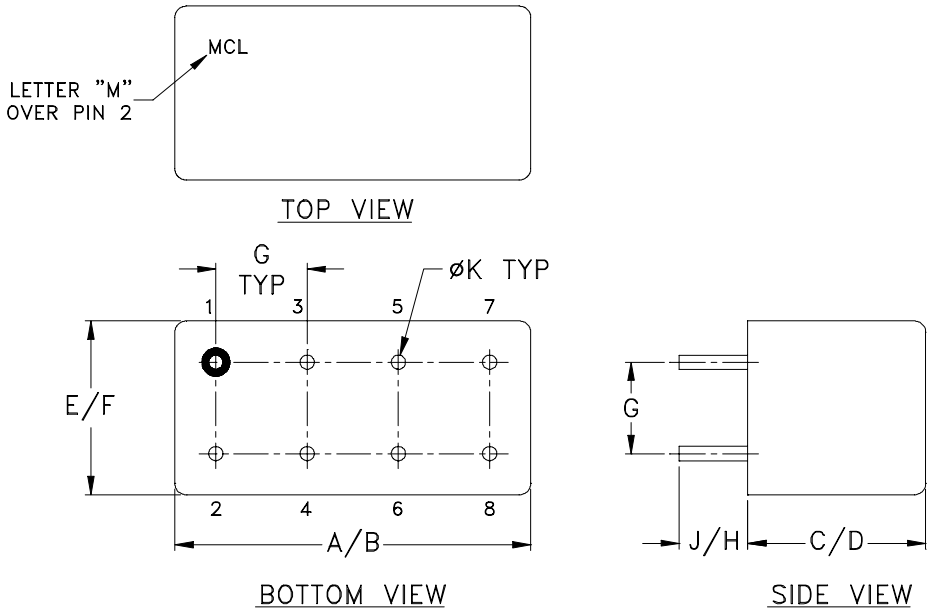
Case Style A

A01
A04
A05
A06

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A01	.770 (19.56)	.800 (20.32)	.385 (9.78)	.400 (10.16)	.370 (9.40)	.400 (10.16)	.200 (5.08)	.20 (5.08)	.14 (3.56)	.031 (.79)	5.2
A04			.200 (5.08)	.210 (5.33)							3.7
A05			.240 (6.10)	.250 (6.35)							3.7
A06			.285 (7.24)	.310 (7.87)							5.2

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Header material: C.R.S.
   Pin material: #52 alloy.
   Cover material: Cupro-Nickel.
2. Pin finish: Electro Tin-Silver.
3. Insulated spacer available. Request P/N B14-045-01.
4. Tolerance on pin diameter +/-.005 inch.
5. Glass meniscus 0.015 inch max.
6. Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.

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Environmental Specifications ENV01

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	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
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
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A

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Specification	Test/Inspection Condition	Reference/Spec
Gross Leak	125°C Bubble Test	MIL-STD-202, Method 112, Condition D
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D

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