

DC Pass, High Power

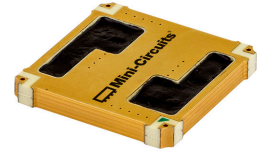
Dual-Directional Coupler

DDCH-35-252+

50 Ω 36 dB Coupling 100W* 225 to 2500 MHz

The Big Deal

- Ultra wide band 225 to 2500 MHz (usable up to 3 GHz)
- High power handling, up to 100W
- Low insertion loss, 0.15 dB Typ.
- Excellent return loss, 26 dB Typ. (In-Out).



CASE STYLE: PQ2074-1

Product Overview

Mini-Circuits DDCH-35-252+ is a high-power (100W), ultra wide band (225-3000MHz) dual-directional coupler which features low insertion loss (0.15 dB), 36 dB coupling and excellent mainline return loss(26 dB). The Dual directional design allows monitoring forward and reverse power and guarantees good directivity, flatness and coupling accuracy.

The DDCH-35-252+ supports a wide variety of applications from military to UHF radio (covering all UHF bands), various cellular base station applications and more.

The coupler is designed into an open printed laminate (1.0 x 1.0 x 0.128") with wrap-around terminations for good solderability and easy visual inspection.

Key Features

Feature	Advantages
High power handling: 100W @ 85°C	Usable in many systems with high-power requirements such as antenna feeds, power amplifiers, and others that require sampling a high power RF signal.
Dual-Directional Coupler	Ideally suited for simultaneous monitoring of both forward and reverse power of a system, and reflectometer measurements. The Directivity is not affected by coupling ports mismatch.
Low insertion loss, 0.15 dB typ	Used primarily in high power transmission applications, the excellent through-path signal loss maximizes the power transmitted to the antenna.
Excellent return loss, 26 dB typ. (input and output)	Provides excellent matching for 50 Ω systems.
DC current passing, up to 2 A	Suitable for use in systems requiring DC voltage on the RF line, such as supplying bias to remote circuit via the antenna cable.



Dual-Directional Coupler

DDCH-35-252+

50Ω 36 dB Coupling 100W* 225 to 2500 MHz

Maximum Ratings

Operating Temperature, case** -55°C to 105°C

Storage Temperature -55°C to 105°C

DC Current 2A

RF power * 100W @ +85°C, case

*Derate to 80W at 95°C and 35W @ 105°C case temperature

**Case temperature is defined as temperature on base plate.

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

Pad Connections***

INPUT 4

OUTPUT 2

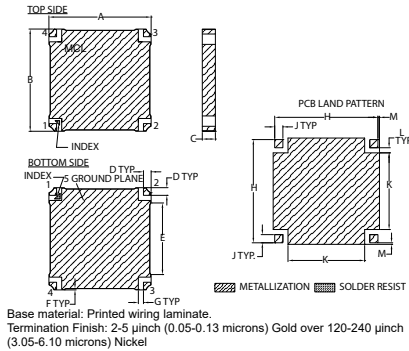
COUPLED FORWARD 1

COUPLED REVERSE 3

GROUND 5

***Model is Dual-directional input and output are interchangeable.

Outline Drawing

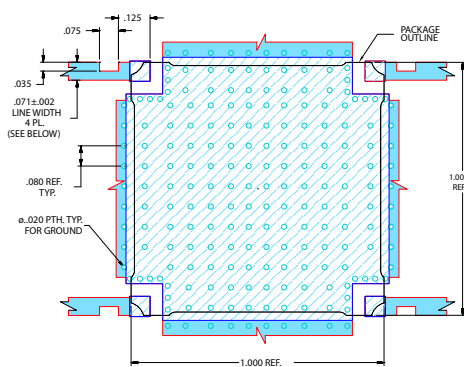


Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
1.000	1.000	.128	.075	.700	.013	.050
25.40	25.40	3.25	1.90	17.78	0.33	1.27

H	J	K	L	M	wt.
1.010	.080	.750	.050	.015	grams
26.65	2.03	19.05	1.27	0.38	10.0

Demo Board MCL P/N: TB-861
Suggested PCB Layout (PL-468)



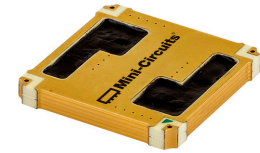
NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4003C WITH DIELECTRIC THICKNESS, 0.032"±.0015". COPPER: 1 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. CUTOUTS IN RF LINES ARE REQUIRED TO ACHIEVE SPECIFIED DIRECTIVITY.
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Features

- ultra wide band 225 to 2500 MHz (usable up to 3 GHz)
- high power, up to 100W
- low insertion loss, 0.15 dB typ.
- very good return loss, 26 dB typ
- DC current pass through input to output

Applications

- UHF high power radio
- transmission signal monitoring
- simultaneous monitoring of forward and reverse power
- antenna reflection monitoring
- wireless transmitters
- distributed antenna systems (DAS)



CASE STYLE: PQ2074-1

+RoHS Compliant

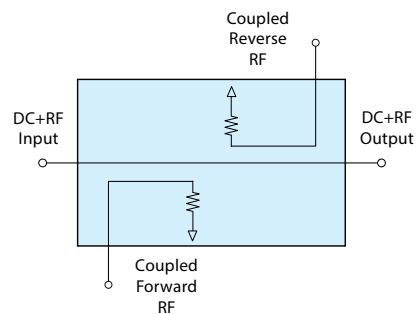
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications @ +25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		225		2500	MHz
Insertion Loss	225 - 2500	—	0.15	0.25	dB
Coupling	225 - 2500	—	36±1	—	dB
Coupling Flatness	225 - 2500	—	±0.6	—	dB
Directivity	225 - 2500	12	19	—	dB
Return Loss (Input)	225 - 2500	19	26	—	dB
Return Loss (Output)	225 - 2500	19	26	—	dB
Return Loss (Coupling)	225 - 2500	—	11	—	dB
Input RF Power	@+85°C, case	225 - 2500	—	—	W
	@+95°C, case	225 - 2500	—	—	
	@+105°C, case	225 - 2500	—	—	

Electrical Schematic

Dual-Directional Coupler (DC THRU)*



*Mainline is DC coupled.

*Coupling ports are DC coupled to internal terminations.

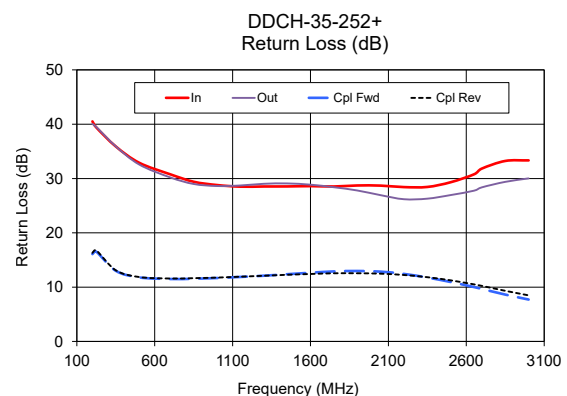
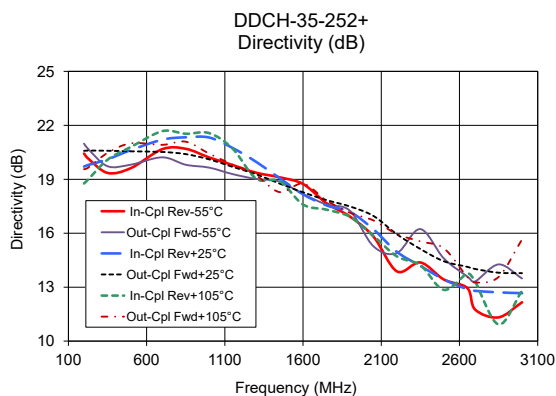
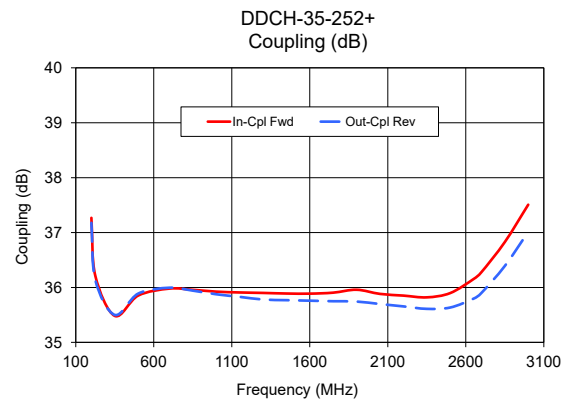
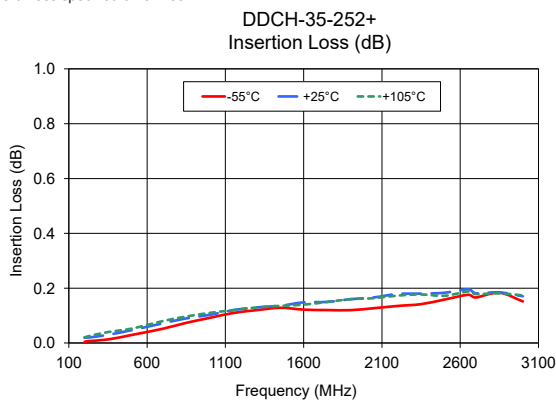


www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

Typical Performance Data *

FREQUENCY (MHz)	Insertion Loss (dB)			Coupling (dB)		Directivity (dB)						Return Loss (dB)			
	In - Out			In -	Out -	In-Cpl Rev			Out-Cpl Fwd			In	Out	Cpl	Cpl
	-55°C	+25°C	+105°C	Cpl Fwd	Cpl Rev	-55°C	+25°C	+105°C	-55°C	+25°C	+105°C			Fwd	Rev
200.0	0.00	0.02	0.02	37.27	37.18	20.43	19.70	18.77	20.99	20.58	19.56	40.52	40.06	16.09	16.30
225.0	0.01	0.02	0.02	36.21	36.14	20.16	19.79	18.98	20.70	20.60	19.64	39.40	39.50	16.53	16.77
350.0	0.01	0.03	0.04	35.48	35.50	19.35	20.11	20.09	19.73	20.59	20.46	35.90	35.93	13.02	13.10
500.0	0.03	0.05	0.05	35.85	35.89	19.62	20.63	20.80	19.81	20.56	21.00	32.91	32.59	11.80	11.86
700.0	0.05	0.07	0.08	35.98	36.00	20.67	21.20	21.68	20.22	20.52	20.92	30.77	30.21	11.51	11.59
850.0	0.07	0.09	0.10	35.96	35.94	20.69	21.33	21.53	19.81	20.40	21.09	29.41	29.00	11.56	11.65
1000.0	0.09	0.10	0.11	35.92	35.88	20.21	21.32	21.57	19.65	20.11	20.43	28.80	28.62	11.69	11.75
1150.0	0.11	0.12	0.12	35.91	35.83	19.79	20.74	20.70	19.29	19.69	19.82	28.50	28.72	11.89	11.92
1300.0	0.12	0.13	0.13	35.90	35.78	19.36	19.97	19.03	19.02	19.28	19.22	28.53	29.03	12.11	12.09
1450.0	0.13	0.14	0.14	35.89	35.77	19.11	19.06	18.89	18.88	18.76	18.29	28.54	29.10	12.39	12.27
1600.0	0.12	0.15	0.14	35.89	35.76	18.74	18.16	17.60	18.18	18.28	18.76	28.60	28.87	12.66	12.42
1750.0	0.12	0.15	0.15	35.91	35.75	17.67	17.55	17.31	17.60	17.84	17.83	28.53	28.40	12.90	12.55
1900.0	0.12	0.16	0.16	35.96	35.74	16.92	17.19	16.92	17.25	17.49	17.14	28.72	27.81	12.98	12.55
2050.0	0.13	0.17	0.16	35.88	35.70	15.81	16.22	15.85	15.28	16.96	16.72	28.69	26.94	12.86	12.48
2200.0	0.14	0.18	0.17	35.85	35.66	13.88	14.96	14.71	14.90	15.94	15.96	28.42	26.20	12.44	12.23
2350.0	0.14	0.18	0.18	35.82	35.61	14.37	14.18	14.22	16.23	15.13	15.55	28.45	26.30	11.77	11.83
2500.0	0.16	0.18	0.17	35.90	35.63	13.43	13.43	12.85	14.60	14.45	15.17	29.32	26.96	10.96	11.25
2650.0	0.18	0.20	0.19	36.15	35.80	12.95	12.89	13.76	13.60	14.14	13.57	30.78	27.77	10.02	10.50
2700.0	0.17	0.18	0.18	36.28	35.90	11.75	12.80	13.31	13.32	14.01	13.27	31.83	28.38	9.68	10.23
2850.0	0.18	0.18	0.18	36.83	36.39	11.32	12.71	10.93	14.27	13.81	13.57	33.24	29.39	8.64	9.32
3000.0	0.15	0.17	0.17	37.51	37.01	12.16	12.67	12.80	13.49	13.78	15.66	33.34	30.03	7.73	8.48

* Data at +25°C unless specified otherwise.



Additional Notes

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



Dual-Directional Coupler

DDCH-35-252+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = +5 dBm @Temperature = -55°C

FREQ. (MHz)	INSERTION LOSS	COUPLING		DIRECTIVITY	RETURN LOSS			
	(dB) In - Out	(dB) In Fwd	(dB) Rev - Out	(dB) In - Rev	(dB) In	(dB) Out	(dB) Rev	(dB) Fwd
100	0.00	46.16	46.15	20.64	41.53	44.03	11.32	11.39
150	0.01	41.30	41.24	20.64	46.11	49.26	13.31	13.35
200	0.00	37.26	37.17	20.43	39.87	39.83	16.55	16.67
225	0.01	36.19	36.12	20.16	38.37	37.91	16.68	16.94
300	0.01	35.36	35.36	19.52	42.99	41.19	13.73	13.94
350	0.01	35.44	35.46	19.35	47.16	46.54	12.73	12.88
400	0.02	35.59	35.62	19.40	40.08	40.62	12.20	12.32
450	0.02	35.70	35.74	19.51	35.32	36.29	11.90	12.01
500	0.03	35.80	35.84	19.62	33.06	33.30	11.74	11.81
550	0.04	35.86	35.89	19.84	31.21	31.13	11.66	11.70
600	0.04	35.89	35.92	20.18	29.98	29.82	11.59	11.62
650	0.05	35.92	35.94	20.38	29.26	29.08	11.51	11.53
700	0.05	35.91	35.94	20.67	29.09	28.81	11.43	11.44
750	0.06	35.93	35.94	20.76	29.09	28.59	11.39	11.39
800	0.07	35.94	35.93	20.70	28.86	28.30	11.37	11.37
850	0.07	35.95	35.92	20.69	28.61	27.90	11.38	11.39
900	0.08	35.93	35.90	20.94	28.60	27.91	11.38	11.42
950	0.09	35.91	35.88	20.63	28.81	28.21	11.40	11.45
1000	0.09	35.91	35.87	20.21	29.38	28.89	11.44	11.48
1100	0.10	35.86	35.80	19.93	29.23	28.98	11.63	11.66
1150	0.11	35.85	35.79	19.79	28.69	28.45	11.74	11.80
1200	0.11	35.86	35.79	19.41	28.11	28.00	11.83	11.94
1250	0.12	35.84	35.76	19.40	27.51	27.40	11.92	12.04
1300	0.12	35.86	35.73	19.36	27.06	26.99	12.03	12.12
1350	0.13	35.87	35.71	19.34	26.61	26.56	12.14	12.19
1400	0.12	35.85	35.72	19.10	26.37	26.29	12.24	12.26
1450	0.13	35.85	35.71	19.11	26.22	26.24	12.31	12.33
1500	0.12	35.85	35.74	19.09	26.35	26.37	12.37	12.39
1550	0.13	35.84	35.75	18.73	26.68	26.70	12.43	12.43
1600	0.12	35.89	35.72	18.74	26.97	27.03	12.52	12.46
1650	0.12	35.85	35.76	18.25	27.42	27.43	12.60	12.46
1700	0.13	35.86	35.76	17.82	27.75	27.64	12.67	12.49
1750	0.12	35.89	35.71	17.67	28.02	27.80	12.72	12.47
1800	0.12	35.89	35.75	17.28	28.12	27.71	12.76	12.47
1900	0.12	35.84	35.71	16.92	28.32	27.63	12.82	12.43
1950	0.12	35.86	35.68	16.40	28.39	27.63	12.84	12.40
2000	0.12	35.96	35.71	15.94	28.08	27.49	12.82	12.38
2050	0.13	36.00	35.72	15.81	27.77	27.13	12.74	12.34
2100	0.13	35.85	35.65	15.99	27.14	26.77	12.64	12.29
2150	0.13	35.79	35.59	15.58	26.62	26.46	12.49	12.18
2200	0.14	35.97	35.70	13.88	26.53	26.38	12.35	12.09
2250	0.14	35.72	35.60	13.66	26.71	26.49	12.17	11.98
2300	0.14	35.49	35.34	14.86	27.11	26.91	11.96	11.85
2400	0.15	35.87	35.49	13.65	27.56	27.27	11.41	11.51
2450	0.16	35.95	35.55	13.49	27.62	27.07	11.11	11.33
2500	0.16	35.87	35.45	13.43	27.35	26.86	10.82	11.13
2550	0.16	35.99	35.53	13.45	27.44	26.71	10.48	10.90
2600	0.17	35.88	35.64	14.35	27.83	26.99	10.19	10.68
2650	0.18	36.14	35.93	12.95	28.25	27.17	9.92	10.44
2700	0.17	36.30	35.90	11.75	28.64	27.16	9.64	10.19
2800	0.16	36.54	36.07	11.38	29.36	26.75	9.04	9.61
2850	0.18	36.85	36.35	11.32	30.55	26.62	8.73	9.32
2900	0.16	37.26	36.82	10.98	31.53	27.02	8.40	9.02
3000	0.15	37.13	36.62	12.16	35.40	27.89	7.87	8.50

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-Circuits' 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/MOLStore/terms.jsp



Dual-Directional Coupler

DDCH-35-252+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = +5 dBm @Temperature = +25°C

FREQ. (MHz)	INSERTION LOSS (dB) In - Out	COUPLING (dB)		DIRECTIVITY (dB) In - Rev	RETURN LOSS (dB)			
		In Fwd	Rev - Out		In	Out	Rev	Fwd
100	0.01	46.12	46.10	19.55	47.06	45.76	11.60	11.64
150	0.01	41.28	41.22	19.64	46.12	44.91	13.30	13.39
200	0.02	37.27	37.18	19.70	40.52	40.06	16.09	16.30
225	0.02	36.21	36.14	19.79	39.40	39.50	16.53	16.77
300	0.03	35.39	35.38	19.96	37.03	36.63	14.18	14.31
350	0.03	35.48	35.50	20.11	35.90	35.93	13.02	13.10
400	0.04	35.63	35.66	20.30	34.50	34.29	12.38	12.43
450	0.04	35.76	35.80	20.49	33.51	33.30	12.01	12.07
500	0.05	35.85	35.89	20.63	32.91	32.59	11.80	11.86
550	0.06	35.91	35.95	20.83	32.08	31.88	11.67	11.73
600	0.06	35.95	35.98	20.97	31.63	31.26	11.59	11.66
650	0.07	35.98	36.00	21.03	31.02	30.54	11.54	11.62
700	0.07	35.98	36.00	21.20	30.77	30.21	11.51	11.59
750	0.08	35.98	35.98	21.30	30.14	29.74	11.52	11.60
800	0.08	35.97	35.97	21.25	29.99	29.35	11.52	11.61
850	0.09	35.96	35.94	21.33	29.41	29.00	11.56	11.65
900	0.09	35.95	35.93	21.44	29.32	28.79	11.58	11.67
950	0.10	35.93	35.90	21.16	28.95	28.64	11.64	11.72
1000	0.10	35.92	35.88	21.32	28.80	28.62	11.69	11.75
1100	0.11	35.90	35.84	20.81	28.53	28.58	11.82	11.86
1150	0.12	35.91	35.83	20.74	28.50	28.72	11.89	11.92
1200	0.12	35.90	35.81	20.39	28.46	28.75	11.96	11.97
1250	0.13	35.89	35.79	20.17	28.42	28.92	12.03	12.03
1300	0.13	35.90	35.78	19.97	28.53	29.03	12.11	12.09
1350	0.13	35.89	35.78	19.57	28.50	29.12	12.20	12.15
1400	0.13	35.88	35.77	19.23	28.65	29.20	12.28	12.21
1450	0.14	35.89	35.77	19.06	28.54	29.10	12.39	12.27
1500	0.14	35.89	35.76	18.72	28.66	29.21	12.46	12.31
1550	0.14	35.89	35.77	18.50	28.52	29.01	12.58	12.37
1600	0.15	35.89	35.76	18.16	28.60	28.87	12.66	12.42
1650	0.15	35.89	35.76	17.94	28.42	28.68	12.76	12.47
1700	0.15	35.88	35.75	17.73	28.58	28.66	12.82	12.49
1750	0.15	35.91	35.75	17.55	28.53	28.40	12.90	12.55
1800	0.15	35.92	35.75	17.43	28.69	28.29	12.93	12.54
1900	0.16	35.96	35.74	17.19	28.72	27.81	12.98	12.55
1950	0.16	35.95	35.75	17.09	28.73	27.57	12.99	12.57
2000	0.16	35.92	35.73	16.71	28.65	27.17	12.94	12.51
2050	0.17	35.88	35.70	16.22	28.69	26.94	12.86	12.48
2100	0.17	35.87	35.68	15.79	28.51	26.62	12.75	12.41
2150	0.17	35.85	35.67	15.37	28.58	26.46	12.60	12.34
2200	0.18	35.85	35.66	14.96	28.42	26.20	12.44	12.23
2250	0.18	35.84	35.64	14.67	28.52	26.25	12.23	12.12
2300	0.18	35.83	35.62	14.39	28.40	26.13	12.02	11.98
2400	0.18	35.83	35.60	13.94	28.63	26.38	11.52	11.65
2450	0.19	35.85	35.62	13.67	28.75	26.57	11.25	11.45
2500	0.18	35.90	35.63	13.43	29.32	26.96	10.96	11.25
2550	0.19	35.96	35.66	13.17	29.64	27.08	10.66	11.01
2600	0.18	36.04	35.70	13.06	30.46	27.60	10.33	10.76
2650	0.20	36.15	35.80	12.89	30.78	27.77	10.02	10.50
2700	0.18	36.28	35.90	12.80	31.83	28.38	9.68	10.23
2800	0.17	36.62	36.19	12.75	33.26	29.37	8.98	9.63
2850	0.18	36.83	36.39	12.71	33.24	29.39	8.64	9.32
2900	0.17	37.05	36.58	12.74	34.25	30.14	8.29	9.02
3000	0.17	37.51	37.01	12.67	33.34	30.03	7.73	8.48

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-Circuits' 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/MOLStore/terms.jsp



Dual-Directional Coupler

DDCH-35-252+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = +5 dBm @Temperature = +105°C

FREQ. (MHz)	INSERTION LOSS (dB) In - Out	COUPLING (dB)		DIRECTIVITY (dB) In - Rev	RETURN LOSS (dB)			
		In Fwd	Rev - Out		In	Out	Rev	Fwd
100	0.01	46.06	46.04	18.66	50.50	43.29	11.89	11.88
150	0.02	41.23	41.18	18.67	54.10	43.50	13.36	13.52
200	0.02	37.26	37.18	18.77	35.31	34.99	15.66	15.94
225	0.02	36.21	36.14	18.98	32.45	32.46	16.25	16.40
300	0.03	35.38	35.38	19.66	29.16	29.09	14.69	14.68
350	0.04	35.47	35.49	20.09	28.81	28.79	13.40	13.51
400	0.04	35.63	35.67	20.38	29.10	28.95	12.60	12.72
450	0.05	35.76	35.80	20.61	29.34	29.05	12.15	12.27
500	0.05	35.86	35.90	20.80	29.57	29.32	11.89	11.98
550	0.06	35.93	35.96	21.03	29.43	29.21	11.75	11.81
600	0.06	35.96	35.99	21.33	29.19	28.96	11.63	11.71
650	0.07	35.99	36.01	21.56	29.07	28.67	11.55	11.66
700	0.08	36.00	36.02	21.68	29.08	28.69	11.47	11.61
750	0.08	35.98	36.00	21.84	29.15	28.77	11.43	11.60
800	0.09	35.97	35.98	21.95	29.36	28.80	11.41	11.58
850	0.10	35.96	35.98	21.53	29.61	29.03	11.43	11.58
900	0.10	36.00	35.97	22.27	29.83	29.22	11.44	11.59
950	0.11	36.00	35.96	21.84	30.21	29.65	11.48	11.61
1000	0.11	35.99	35.95	21.57	30.33	29.98	11.51	11.65
1100	0.12	35.97	35.90	21.18	30.72	30.70	11.64	11.76
1150	0.12	35.95	35.88	20.70	30.97	31.20	11.73	11.81
1200	0.12	35.94	35.87	20.25	30.99	31.49	11.83	11.86
1250	0.13	35.93	35.87	19.66	31.15	32.02	11.91	11.94
1300	0.13	35.87	35.83	19.03	31.24	32.26	12.05	12.01
1350	0.14	35.81	35.78	18.59	31.38	32.54	12.16	12.09
1400	0.13	35.92	35.78	19.39	31.35	32.42	12.30	12.16
1450	0.14	35.88	35.74	18.89	31.03	31.88	12.44	12.26
1500	0.14	35.95	35.77	19.03	30.73	31.53	12.58	12.33
1550	0.14	35.85	35.85	18.00	30.27	30.65	12.72	12.41
1600	0.14	35.85	35.84	17.60	29.76	29.90	12.86	12.50
1650	0.14	35.91	35.78	17.74	29.22	29.10	12.97	12.54
1700	0.15	35.92	35.75	17.62	28.60	28.44	13.06	12.60
1750	0.15	35.93	35.77	17.31	28.24	27.75	13.17	12.65
1800	0.15	35.90	35.74	17.39	27.61	27.15	13.20	12.71
1900	0.16	35.89	35.71	16.92	27.02	26.30	13.23	12.69
1950	0.16	35.99	35.77	16.62	26.92	26.04	13.17	12.67
2000	0.16	35.97	35.76	16.45	26.64	25.64	13.10	12.63
2050	0.16	35.91	35.74	15.85	26.86	25.54	12.96	12.55
2100	0.17	35.91	35.69	16.02	26.73	25.40	12.82	12.50
2150	0.17	35.87	35.68	15.57	27.04	25.33	12.63	12.37
2200	0.17	35.92	35.66	14.71	27.12	25.32	12.43	12.27
2250	0.17	35.78	35.64	14.67	27.45	25.38	12.18	12.13
2300	0.18	35.76	35.48	14.55	27.57	25.54	11.93	11.99
2400	0.18	35.91	35.57	14.11	28.18	26.05	11.35	11.61
2450	0.18	35.97	35.70	13.38	28.59	26.44	11.02	11.39
2500	0.17	35.96	35.63	12.85	29.16	26.94	10.72	11.20
2550	0.19	36.22	35.77	12.53	29.81	27.10	10.42	10.97
2600	0.18	36.10	35.69	15.44	31.07	28.29	10.07	10.72
2650	0.19	36.17	36.01	13.76	32.04	28.95	9.76	10.45
2700	0.18	36.29	36.10	13.31	33.56	29.63	9.43	10.19
2800	0.18	36.67	36.26	12.68	35.97	30.89	8.76	9.61
2850	0.18	37.30	36.64	10.93	34.94	31.13	8.44	9.30
2900	0.18	37.66	36.86	10.38	34.03	30.73	8.11	9.01
3000	0.17	37.41	36.72	12.80	31.60	29.54	7.60	8.46

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-Circuits' 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/MOLStore/terms.jsp

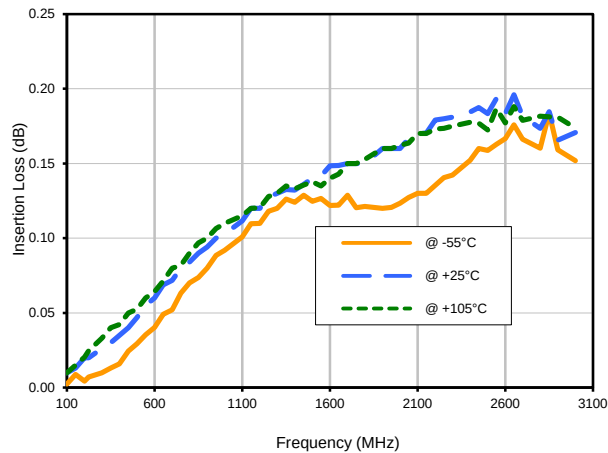


Dual-Directional Coupler

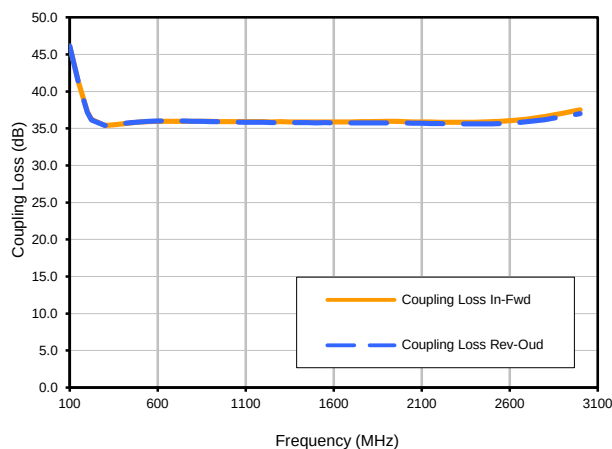
Typical Performance Curves

DDCH-35-252+

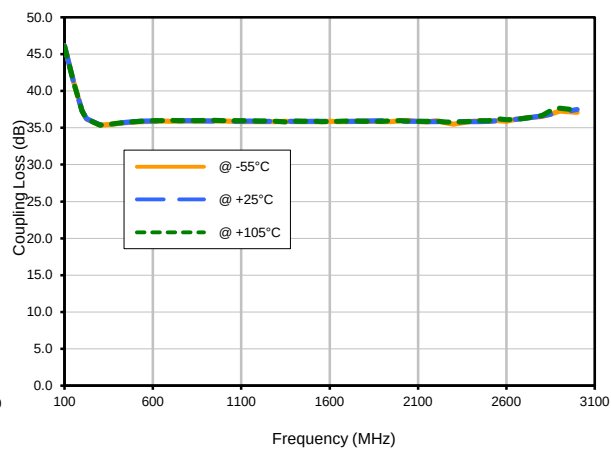
Insertion Loss vs. TEMPERATURE



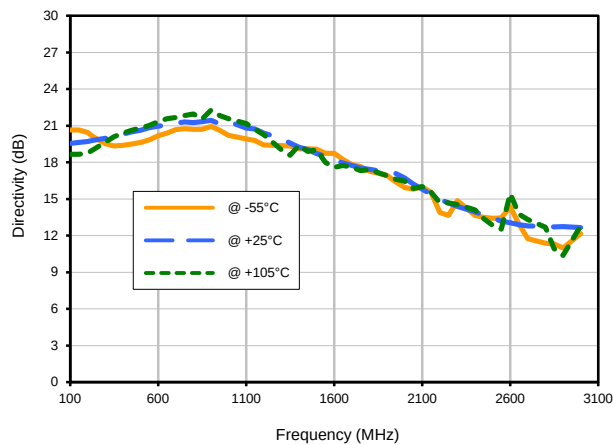
Coupling Loss



Coupling Loss vs. TEMPERATURE



Directivity vs. TEMPERATURE



Notes

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

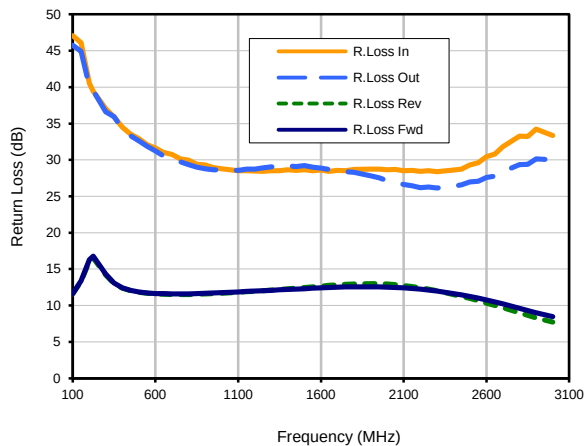


Dual-Directional Coupler

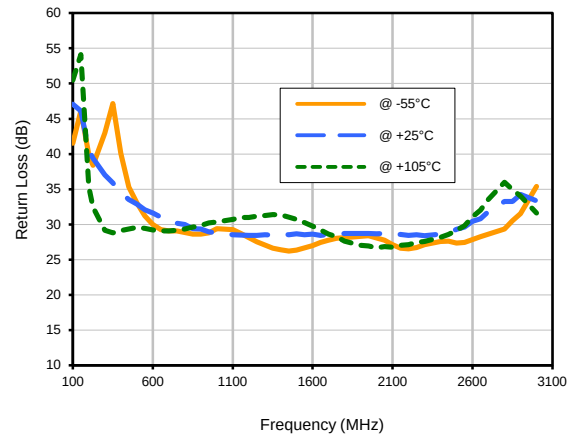
Typical Performance Curves

DDCH-35-252+

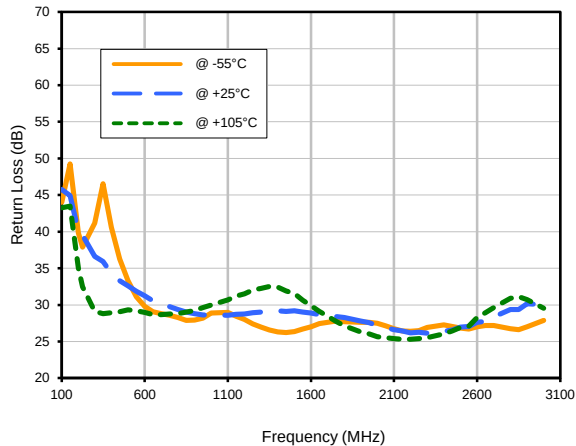
Return Loss



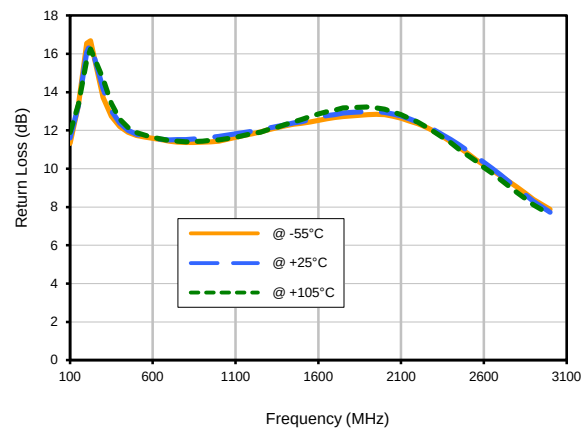
Return Loss In vs. TEMPERATURE



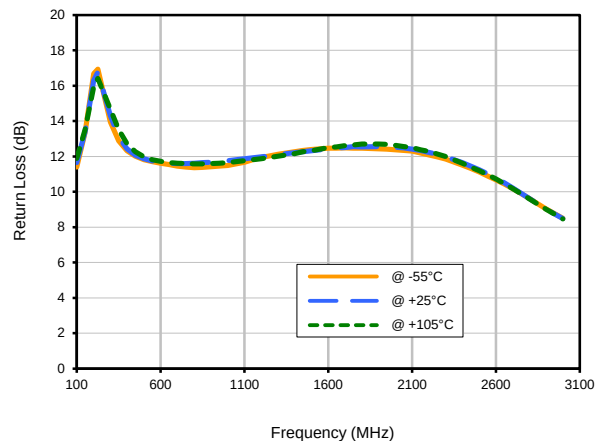
Return Loss Out vs. TEMPERATURE



Return Loss Reverse vs. TEMPERATURE



Return Loss Forward vs. TEMPERATURE



Notes

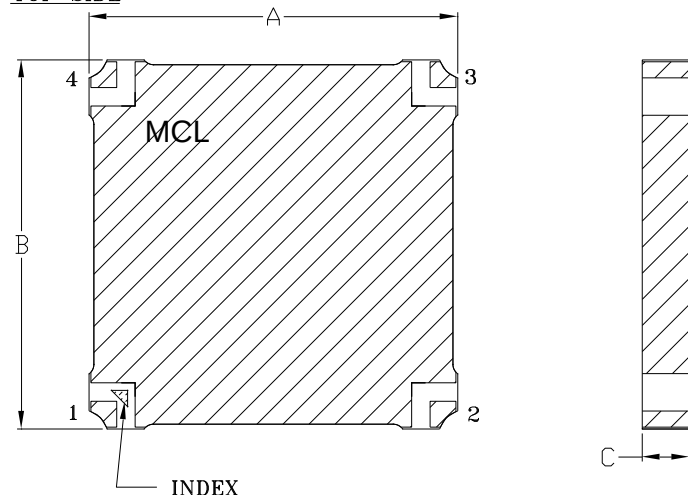
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- 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/MCStore/terms.jsp



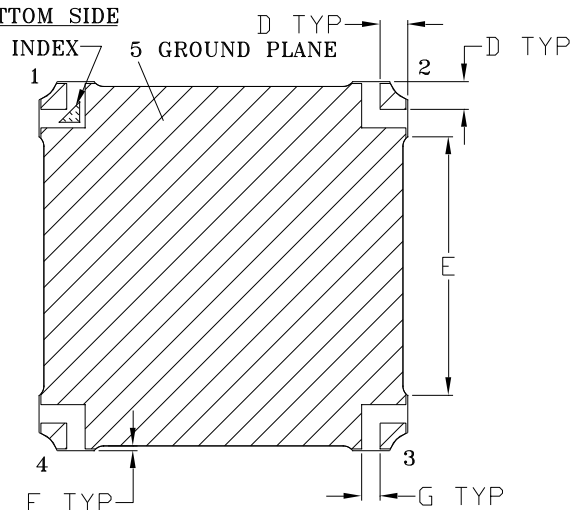
Outline Dimensions

PQ2074-1

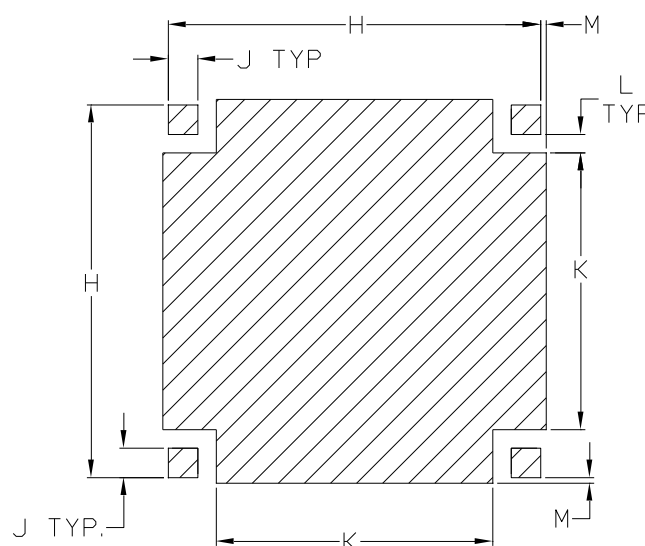
TOP SIDE



BOTTOM SIDE



PCB LAND PATTERN



METALLIZATION SOLDER RESIST

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAMS
PQ2074-1	1.000 (25.40)	1.000 (25.40)	.128 (3.25)	.075 (1.90)	.700 (17.78)	.013 (0.33)	.050 (1.27)	1.010 (26.65)	.080 (2.03)	.750 (19.05)	.050 (1.27)	.015 (0.38)	10.0

Dimensions are in inches (mm). Tolerances: 2PL. +/- .03; 3PL. +/- .010

Notes:

1. Base material: Printed wiring laminate.

2. Termination finish:

For RoHS Cases, all models (+) suffix: 2-5 μ inch (.05-.13 microns) Immersion Gold.

For RoHS-5 Cases, all models no (+) suffix: Tin-Lead plate.



INTERNET <http://www.minicircuits.com>

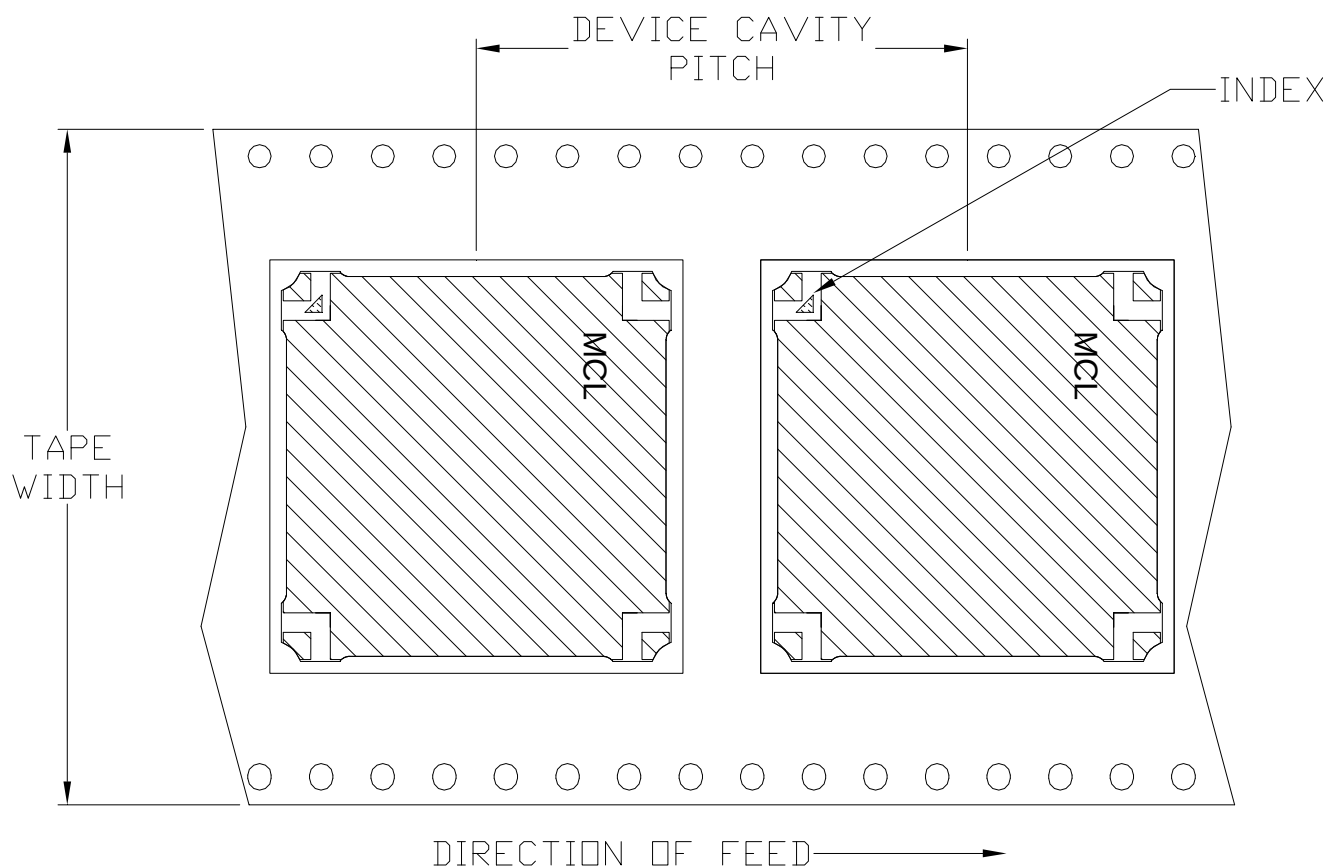
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

Tape & Reel Packaging TR-F117

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
44	32	13	500

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



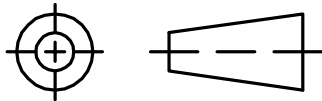
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

THIRD ANGLE PROJECTION

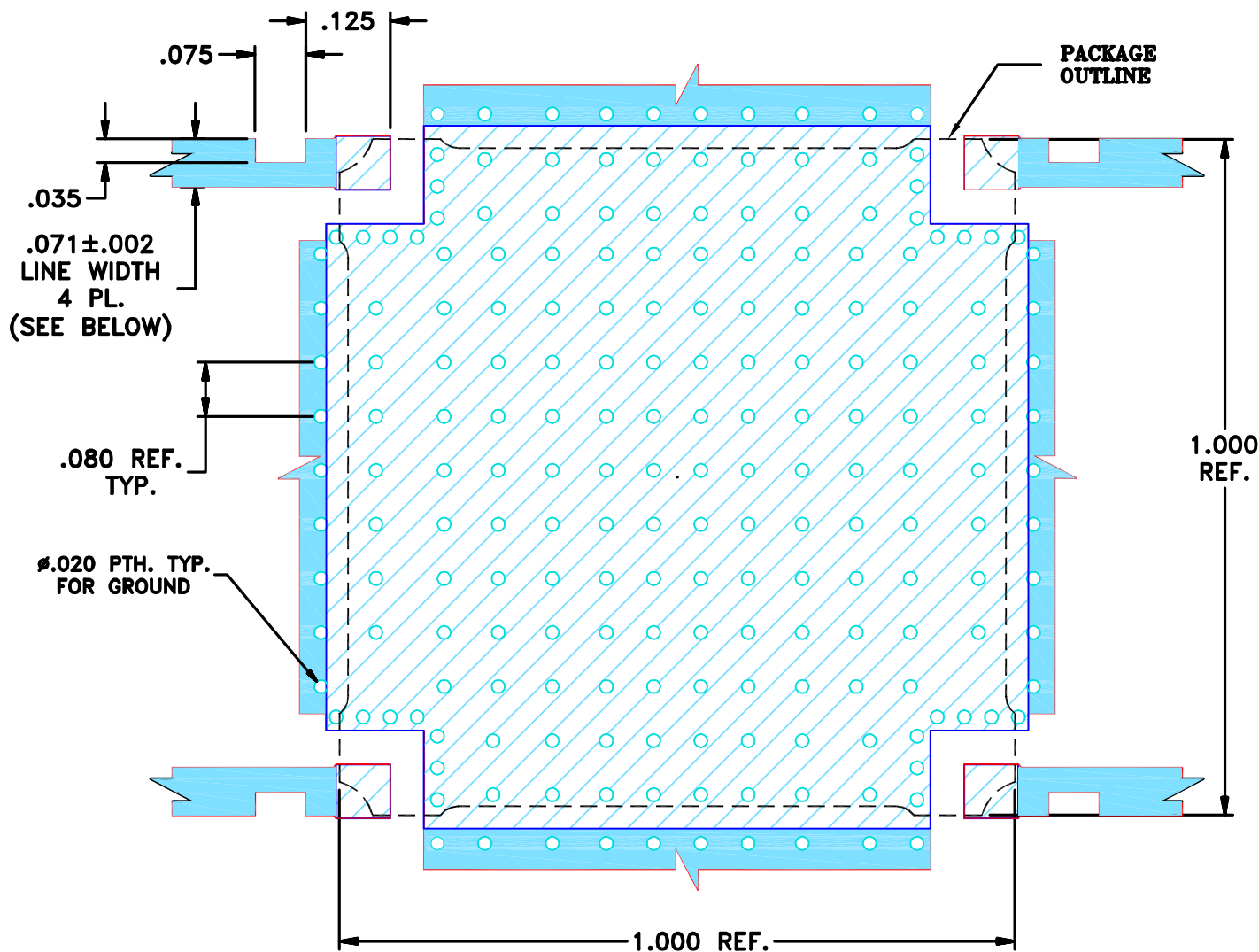


REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
A	M156950	CHANGE PIN CONNECTION CODE	06/16	DK	YB
B	M159071	CHANGE MATERIAL, THICK & COP WEIGHT	12/16	ZV	YB
C	M162783	CHANGE TUNING OF RF LINES	07/17	DK	HH
C	R92206	CHANGE TUNING OF RF LINES	07/17	DK	HH

SUGGESTED MOUNTING CONFIGURATION

FOR PQ2074/2074-1 CASE STYLE 04DC01 PIN CONNECTION, 50 OHM



NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS R04003C WITH DIELECTRIC THICKNESS. 0.032"±.0015". COPPER: 1 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- CUTOUTS IN RF LINES ARE REQUIRED TO ACHIEVE SPECIFIED DIRECTIVITY.

 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

 DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS ±

3 PL DECIMALS ± .005

ANGLES ±

FRACTIONS ±

INITIALS

DATE

DRAWN

ZY (RAYON)

08 DEC 16

CHECKED

HH (RAYON)

08 DEC 16

APPROVED

YB (RAYON)

08 DEC 16



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235PL FOR MBD PQ2074
TB-861 (50 Ω)SIZE
ACODE IDENT
15542

DRAWING NO:

98-PL-468

REV:

C

FILE: 98PL468(C)

SCALE:

4:1

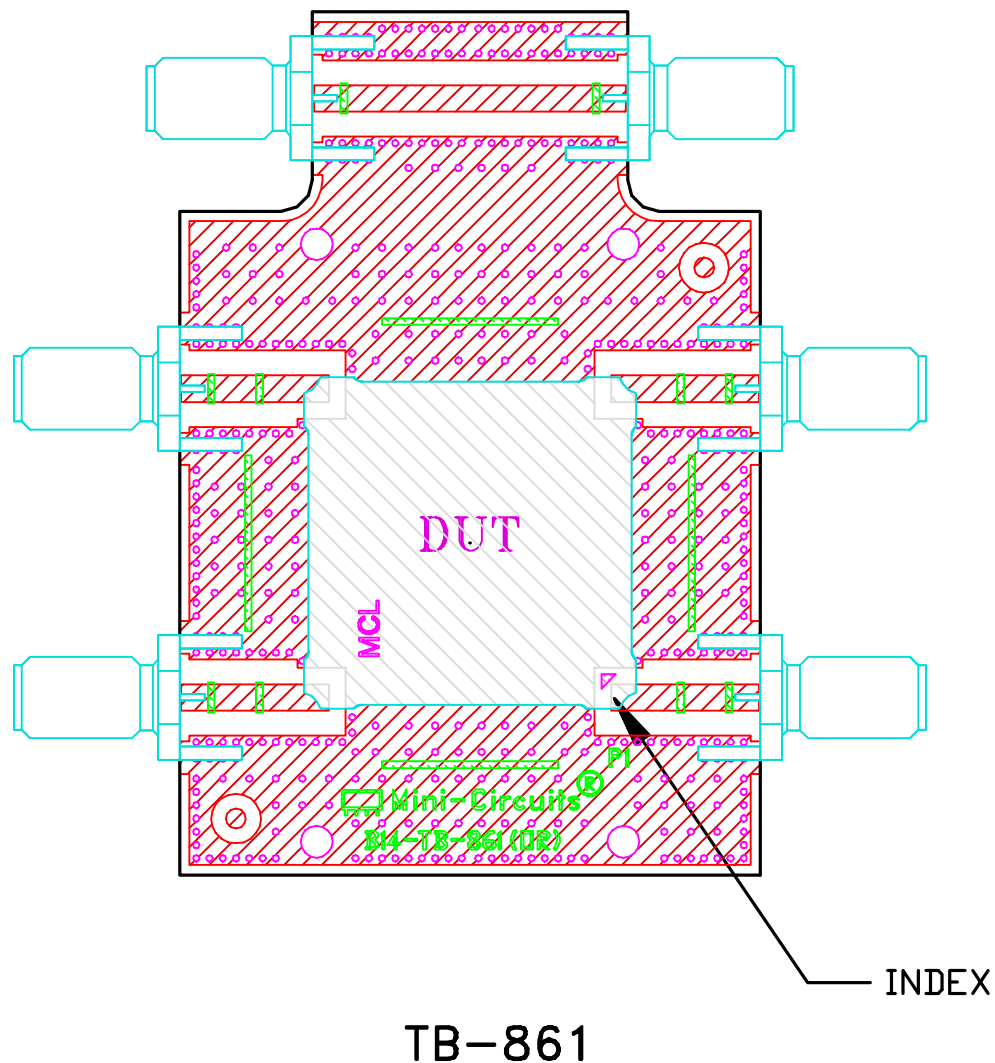
SHEET:

1 OF 1

THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDOR AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

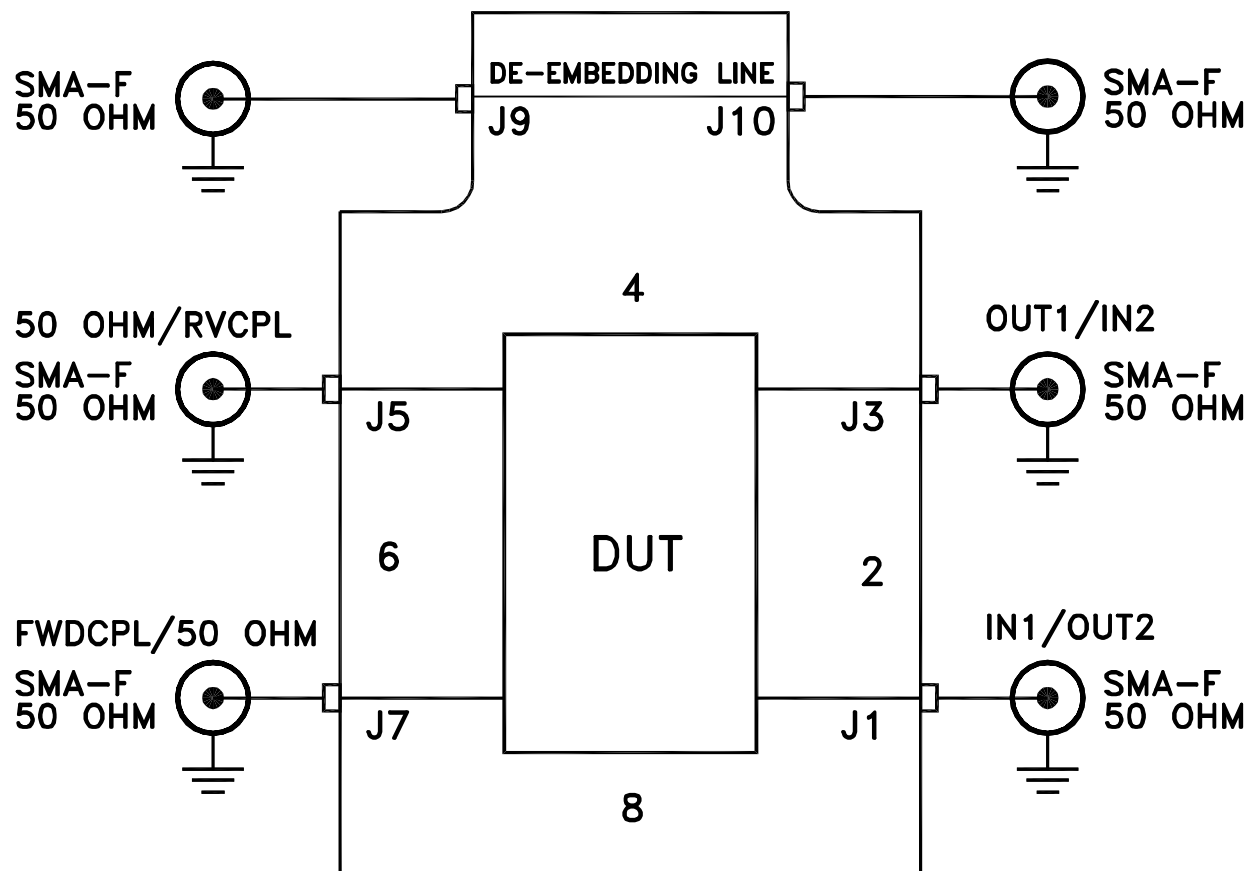
ASHEETA1.DWG REV:A DATE:01/12/95

Evaluation Board and Circuit



NOTES:

1. SMA FEMALE CONNECTORS.
2. PCB MATERIAL: ROGERS R04003C OR EQUIVALENT, DIELECTRIC CONSTANT=3.5, DIELECTRIC THICKNESS=.032 INCH.



TB-861
Schematic Diagram



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 105° C Case Environment	Individual Model Data Sheet
Storage Temperature	-55° to 105°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 Eutectic Process 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020C, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (high Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-883, Method 2007.3, Condition A
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