

Surface Mount Directional Coupler

ADC-10-4+

50Ω 5 to 1000 MHz

Maximum Ratings

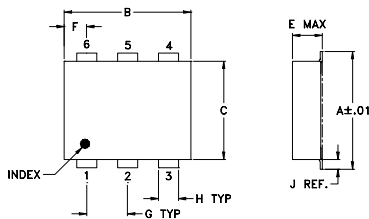
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |

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

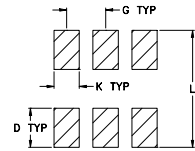
Pin Connections

| | |
|----------------------|---|
| INPUT | 1 |
| OUTPUT | 6 |
| COUPLED | 3 |
| GROUND | 2 |
| 50Ω TERM EXTERNAL | 4 |
| ISOLATE (DO NOT USE) | 5 |

Outline Drawing



PCB Land Pattern

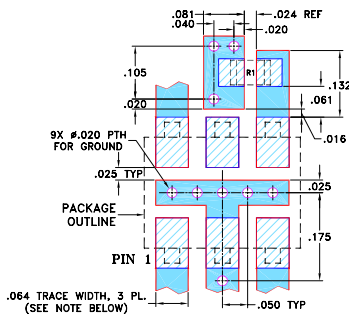


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch/mm)

| | | | | | | |
|------|------|------|------|------|------|-------|
| A | B | C | D | E | F | G |
| .272 | .310 | .220 | .100 | .112 | .055 | .100 |
| 6.91 | 7.87 | 5.59 | 2.54 | 2.84 | 1.40 | 2.54 |
| H | J | K | L | | | wt |
| .030 | .026 | .065 | .300 | | | grams |
| 0.76 | 0.66 | 1.65 | 7.62 | | | 0.20 |

Demo Board MCL P/N: TB-05 Suggested PCB Layout (PL-095)



- Notes:
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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

Features

- wideband, 5-1000 MHz
- low mainline loss, 0.8 dB typ.
- high directivity, 40 dB typ.
- aqueous washable
- protected by U.S. Patents 6,133,525 & 6,140,887

Applications

- communications
- cable tv



Generic photo used for illustration purposes only
CASE STYLE: CD542

+RoHS Compliant

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

| | |
|--|------------------|
| Available Tape and Reel at no extra cost | |
| Reel Size | Devices/Reel |
| 7" | 20, 50, 100, 200 |
| 13" | 500, 1000 |

Directional Coupler Electrical Specifications

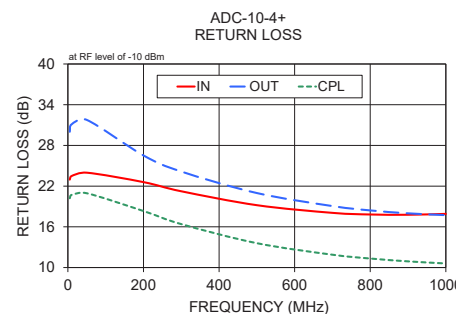
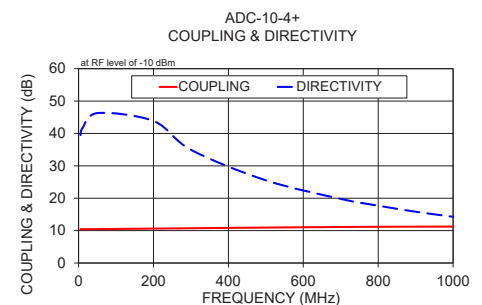
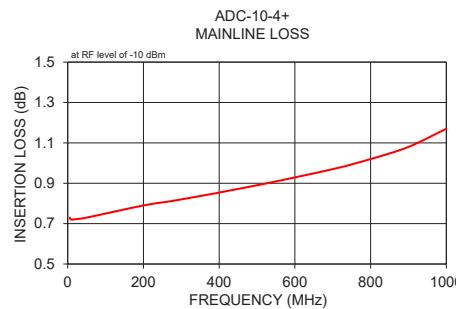
| FREQ. (MHz) | COUPLING (dB) | | MAINLINE LOSS ¹ (dB) | | | DIRECTIVITY (dB) | | | VSWR (:1) | POWER INPUT, W | | |
|--------------------------------|---------------|----------|---------------------------------|------|------|------------------|------|------|-----------|----------------|------|------|
| | Nom. | Flatness | L | M | U | L | M | U | | Typ. | L | MU |
| f _c -f _u | | | Typ. | Max. | Typ. | Max. | Typ. | Min. | Typ. | Min. | Typ. | Max. |
| 5-1000 | 10.5±0.5 | ±1.0 | 0.8 | 1.3 | 0.8 | 1.2 | 1.0 | 1.5 | 40 | 23 | 40 | 20 |
| | | | | | | | | | | | 25 | 13 |
| | | | | | | | | | | | 1.2 | |
| | | | | | | | | | | | 1 | 1 |

L= 5-50 MHz M= 50-500 MHz U= 500-1000 MHz

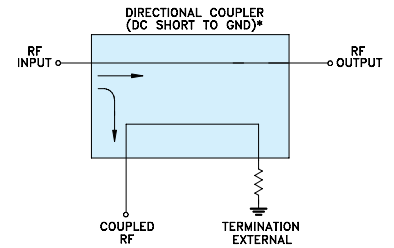
1. Mainline loss includes theoretical power loss at coupled port.

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) | | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | Cpl |
|-----------------|--------------------|--|----------------------|------------------|------------------|-------|-------|
| | In-Out | | | | In | Out | |
| 5.00 | 0.73 | | 10.45 | 39.49 | 22.96 | 30.01 | 20.21 |
| 10.00 | 0.72 | | 10.44 | 41.58 | 23.49 | 31.11 | 20.71 |
| 50.00 | 0.73 | | 10.47 | 46.29 | 23.98 | 31.76 | 20.95 |
| 200.00 | 0.79 | | 10.62 | 43.84 | 22.59 | 26.52 | 18.33 |
| 300.00 | 0.82 | | 10.73 | 34.95 | 21.24 | 24.15 | 16.40 |
| 500.00 | 0.89 | | 10.94 | 25.53 | 19.19 | 20.98 | 13.59 |
| 700.00 | 0.97 | | 11.12 | 19.79 | 18.06 | 19.06 | 11.89 |
| 800.00 | 1.02 | | 11.18 | 17.70 | 17.82 | 18.42 | 11.33 |
| 900.00 | 1.08 | | 11.22 | 15.83 | 17.78 | 17.99 | 10.91 |
| 1000.00 | 1.17 | | 11.24 | 14.27 | 17.91 | 17.72 | 10.60 |



Electrical Schematic



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



Directional Coupler

ADC-10-4+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +25°C

| FREQUENCY (MHz) | INSERTION LOSS (dB) | COUPLING LOSS (dB) | DIRECTIVITY (dB) | RETURN LOSS (dB) | | |
|--------------------|---------------------------|--------------------------|---------------------|---------------------|-------|-------|
| | | | | IN | OUT | CPL |
| 5 | 0.73 | 10.45 | 39.49 | 22.96 | 30.01 | 20.21 |
| 10 | 0.72 | 10.44 | 41.58 | 23.49 | 31.11 | 20.71 |
| 15 | 0.71 | 10.43 | 43.27 | 23.91 | 31.98 | 21.09 |
| 20 | 0.71 | 10.44 | 43.73 | 23.98 | 32.18 | 21.12 |
| 25 | 0.71 | 10.44 | 44.19 | 24.00 | 32.28 | 21.12 |
| 50 | 0.73 | 10.47 | 46.29 | 23.98 | 31.76 | 20.95 |
| 75 | 0.74 | 10.50 | 47.98 | 23.90 | 30.85 | 20.66 |
| 100 | 0.75 | 10.52 | 51.02 | 23.74 | 29.87 | 20.29 |
| 150 | 0.78 | 10.57 | 52.31 | 23.23 | 28.04 | 19.35 |
| 200 | 0.79 | 10.62 | 43.84 | 22.59 | 26.52 | 18.33 |
| 250 | 0.81 | 10.68 | 38.92 | 21.90 | 25.26 | 17.33 |
| 300 | 0.82 | 10.73 | 34.95 | 21.24 | 24.15 | 16.40 |
| 350 | 0.83 | 10.78 | 31.90 | 20.63 | 23.22 | 15.57 |
| 400 | 0.85 | 10.83 | 29.43 | 20.08 | 22.40 | 14.84 |
| 450 | 0.87 | 10.89 | 27.33 | 19.60 | 21.64 | 14.18 |
| 475 | 0.87 | 10.92 | 26.34 | 19.38 | 21.30 | 13.88 |
| 500 | 0.89 | 10.94 | 25.53 | 19.19 | 20.98 | 13.59 |
| 550 | 0.91 | 11.00 | 23.72 | 18.86 | 20.43 | 13.10 |
| 575 | 0.91 | 11.01 | 23.12 | 18.66 | 20.18 | 12.85 |
| 600 | 0.92 | 11.03 | 22.39 | 18.53 | 19.92 | 12.63 |
| 650 | 0.94 | 11.09 | 20.98 | 18.27 | 19.43 | 12.24 |
| 700 | 0.97 | 11.12 | 19.79 | 18.06 | 19.06 | 11.89 |
| 750 | 1.00 | 11.16 | 18.67 | 17.93 | 18.71 | 11.60 |
| 800 | 1.02 | 11.18 | 17.70 | 17.82 | 18.42 | 11.33 |
| 850 | 1.05 | 11.21 | 16.72 | 17.79 | 18.19 | 11.11 |
| 900 | 1.08 | 11.22 | 15.83 | 17.78 | 17.99 | 10.91 |
| 925 | 1.10 | 11.23 | 15.42 | 17.80 | 17.92 | 10.83 |
| 950 | 1.13 | 11.23 | 15.05 | 17.84 | 17.84 | 10.75 |
| 1000 | 1.17 | 11.24 | 14.27 | 17.91 | 17.72 | 10.60 |
| 1025 | 1.20 | 11.24 | 13.89 | 18.00 | 17.72 | 10.55 |
| 1050 | 1.22 | 11.23 | 13.59 | 18.05 | 17.68 | 10.49 |
| 1100 | 1.27 | 11.24 | 12.85 | 18.24 | 17.65 | 10.39 |
| 1150 | 1.33 | 11.22 | 12.27 | 18.37 | 17.69 | 10.32 |
| 1200 | 1.41 | 11.21 | 11.67 | 18.56 | 17.82 | 10.25 |
| 1250 | 1.49 | 11.20 | 11.14 | 18.68 | 18.02 | 10.20 |
| 1300 | 1.59 | 11.21 | 10.57 | 18.75 | 18.33 | 10.15 |
| 1350 | 1.72 | 11.20 | 10.15 | 18.64 | 18.74 | 10.09 |
| 1400 | 1.85 | 11.22 | 9.71 | 18.32 | 19.26 | 10.04 |
| 1450 | 2.01 | 11.25 | 9.28 | 17.76 | 19.88 | 9.99 |
| 1500 | 2.21 | 11.31 | 8.90 | 17.00 | 20.63 | 9.91 |
| 1600 | 2.71 | 11.55 | 8.21 | 14.99 | 22.09 | 9.69 |
| 1700 | 3.34 | 11.96 | 7.70 | 12.85 | 21.92 | 9.36 |
| 1800 | 4.07 | 12.62 | 7.32 | 10.97 | 19.58 | 8.96 |
| 1900 | 4.80 | 13.49 | 7.22 | 9.43 | 16.78 | 8.55 |
| 2000 | 5.41 | 14.55 | 7.42 | 8.34 | 14.55 | 8.24 |
| 2100 | 5.81 | 15.69 | 8.01 | 7.54 | 12.92 | 8.06 |
| 2200 | 6.01 | 16.81 | 9.05 | 7.01 | 11.73 | 8.04 |
| 2300 | 6.12 | 17.83 | 10.57 | 6.65 | 10.88 | 8.17 |
| 2400 | 6.17 | 18.80 | 12.54 | 6.40 | 10.23 | 8.38 |
| 2500 | 6.22 | 19.62 | 14.74 | 6.22 | 9.78 | 8.72 |
| 2750 | 6.38 | 20.95 | 15.97 | 5.97 | 9.12 | 9.83 |
| 3000 | 6.66 | 20.59 | 13.23 | 5.80 | 8.97 | 10.57 |
| 3250 | 7.08 | 19.03 | 8.83 | 5.58 | 9.27 | 10.37 |
| 3500 | 7.64 | 17.67 | 4.58 | 5.33 | 10.33 | 9.57 |

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Directional Coupler

ADC-10-4+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = -40°C

| FREQUENCY (MHz) | INSERTION LOSS (dB) | COUPLING LOSS (dB) | DIRECTIVITY (dB) | RETURN LOSS (dB) | | |
|--------------------|---------------------------|--------------------------|---------------------|---------------------|-------|-------|
| | | | | IN | OUT | CPL |
| 5 | 0.90 | 10.63 | 35.17 | 19.79 | 24.55 | 17.32 |
| 10 | 0.80 | 10.53 | 37.45 | 21.47 | 27.15 | 18.85 |
| 15 | 0.73 | 10.45 | 39.27 | 22.85 | 29.29 | 20.10 |
| 20 | 0.71 | 10.44 | 39.74 | 23.35 | 30.04 | 20.51 |
| 25 | 0.70 | 10.43 | 39.93 | 23.69 | 30.48 | 20.80 |
| 50 | 0.69 | 10.43 | 39.48 | 24.24 | 29.97 | 21.13 |
| 75 | 0.68 | 10.45 | 39.83 | 24.21 | 28.58 | 21.06 |
| 100 | 0.68 | 10.47 | 41.97 | 23.89 | 27.51 | 20.78 |
| 150 | 0.70 | 10.51 | 48.43 | 23.52 | 26.69 | 19.75 |
| 200 | 0.71 | 10.54 | 52.85 | 22.86 | 25.53 | 18.49 |
| 250 | 0.72 | 10.58 | 45.84 | 21.82 | 24.17 | 17.34 |
| 300 | 0.73 | 10.62 | 38.14 | 21.26 | 23.44 | 16.36 |
| 350 | 0.74 | 10.66 | 34.39 | 20.48 | 22.49 | 15.49 |
| 400 | 0.76 | 10.71 | 30.83 | 19.79 | 21.64 | 14.72 |
| 450 | 0.77 | 10.76 | 28.39 | 19.40 | 21.07 | 14.01 |
| 475 | 0.78 | 10.79 | 27.43 | 19.16 | 20.75 | 13.69 |
| 500 | 0.79 | 10.81 | 26.57 | 18.89 | 20.39 | 13.39 |
| 550 | 0.81 | 10.86 | 24.61 | 18.51 | 19.83 | 12.87 |
| 575 | 0.81 | 10.87 | 23.88 | 18.32 | 19.61 | 12.63 |
| 600 | 0.82 | 10.89 | 23.13 | 18.19 | 19.36 | 12.40 |
| 650 | 0.84 | 10.93 | 21.69 | 17.90 | 18.88 | 12.00 |
| 700 | 0.86 | 10.97 | 20.40 | 17.67 | 18.51 | 11.64 |
| 750 | 0.88 | 11.01 | 19.24 | 17.51 | 18.14 | 11.33 |
| 800 | 0.90 | 11.02 | 18.25 | 17.39 | 17.85 | 11.05 |
| 850 | 0.93 | 11.04 | 17.31 | 17.27 | 17.57 | 10.81 |
| 900 | 0.96 | 11.05 | 16.34 | 17.07 | 17.22 | 10.61 |
| 925 | 0.97 | 11.06 | 15.85 | 17.04 | 17.12 | 10.52 |
| 950 | 0.99 | 11.06 | 15.43 | 17.10 | 17.06 | 10.43 |
| 1000 | 1.03 | 11.06 | 14.60 | 17.24 | 16.98 | 10.26 |
| 1025 | 1.05 | 11.06 | 14.23 | 17.34 | 16.96 | 10.20 |
| 1050 | 1.07 | 11.04 | 13.89 | 17.36 | 16.91 | 10.14 |
| 1100 | 1.11 | 11.04 | 13.13 | 17.59 | 16.91 | 10.04 |
| 1150 | 1.16 | 11.02 | 12.56 | 17.75 | 16.96 | 9.96 |
| 1200 | 1.23 | 11.00 | 11.93 | 17.81 | 16.97 | 9.89 |
| 1250 | 1.30 | 10.98 | 11.31 | 17.88 | 17.07 | 9.86 |
| 1300 | 1.38 | 10.95 | 10.73 | 18.20 | 17.51 | 9.82 |
| 1350 | 1.50 | 10.94 | 10.26 | 18.53 | 18.13 | 9.77 |
| 1400 | 1.61 | 10.93 | 9.86 | 18.29 | 18.58 | 9.72 |
| 1450 | 1.77 | 10.94 | 9.38 | 17.80 | 19.11 | 9.69 |
| 1500 | 1.94 | 10.97 | 8.98 | 17.21 | 19.96 | 9.62 |
| 1600 | 2.43 | 11.15 | 8.12 | 15.03 | 21.60 | 9.42 |
| 1700 | 3.06 | 11.50 | 7.47 | 12.92 | 22.37 | 9.07 |
| 1800 | 3.83 | 12.11 | 6.97 | 10.97 | 19.65 | 8.60 |
| 1900 | 4.63 | 12.97 | 6.74 | 9.25 | 16.41 | 8.12 |
| 2000 | 5.30 | 14.06 | 6.70 | 8.09 | 13.98 | 7.70 |
| 2100 | 5.72 | 15.27 | 7.04 | 7.24 | 12.12 | 7.42 |
| 2200 | 5.90 | 16.49 | 7.73 | 6.65 | 10.97 | 7.31 |
| 2300 | 5.94 | 17.54 | 8.71 | 6.34 | 10.12 | 7.38 |
| 2400 | 5.97 | 18.52 | 10.02 | 5.99 | 9.38 | 7.52 |
| 2500 | 5.94 | 19.25 | 11.26 | 5.92 | 9.01 | 7.80 |
| 2750 | 6.05 | 20.27 | 12.68 | 5.63 | 8.39 | 8.86 |
| 3000 | 6.29 | 19.59 | 11.95 | 5.40 | 8.14 | 9.82 |
| 3250 | 6.66 | 18.05 | 8.15 | 5.25 | 8.45 | 9.92 |
| 3500 | 7.25 | 16.78 | 4.18 | 4.98 | 9.41 | 9.39 |

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Directional Coupler

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TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +85°C

| FREQUENCY (MHz) | INSERTION LOSS (dB) | COUPLING LOSS (dB) | DIRECTIVITY (dB) | RETURN LOSS (dB) | | |
|--------------------|---------------------------|--------------------------|---------------------|---------------------|-------|-------|
| | | | | IN | OUT | CPL |
| 5 | 0.79 | 10.53 | 41.18 | 22.58 | 34.08 | 19.92 |
| 10 | 0.79 | 10.52 | 43.91 | 22.81 | 34.69 | 20.14 |
| 15 | 0.79 | 10.52 | 46.13 | 22.99 | 35.14 | 20.30 |
| 20 | 0.79 | 10.53 | 46.86 | 23.02 | 35.11 | 20.31 |
| 25 | 0.79 | 10.54 | 47.87 | 23.03 | 34.99 | 20.30 |
| 50 | 0.81 | 10.56 | 58.43 | 22.95 | 33.95 | 20.11 |
| 75 | 0.83 | 10.60 | 56.78 | 22.93 | 33.39 | 19.82 |
| 100 | 0.83 | 10.62 | 49.58 | 22.91 | 32.51 | 19.48 |
| 150 | 0.86 | 10.69 | 46.38 | 22.55 | 29.35 | 18.71 |
| 200 | 0.87 | 10.74 | 39.77 | 21.98 | 27.33 | 17.95 |
| 250 | 0.88 | 10.81 | 35.91 | 21.58 | 26.22 | 17.14 |
| 300 | 0.90 | 10.87 | 33.01 | 21.00 | 24.86 | 16.34 |
| 350 | 0.91 | 10.94 | 30.27 | 20.46 | 23.83 | 15.58 |
| 400 | 0.93 | 11.00 | 28.08 | 20.06 | 23.06 | 14.91 |
| 450 | 0.95 | 11.08 | 26.29 | 19.61 | 22.23 | 14.29 |
| 475 | 0.96 | 11.11 | 25.42 | 19.41 | 21.87 | 14.02 |
| 500 | 0.96 | 11.14 | 24.61 | 19.23 | 21.52 | 13.76 |
| 550 | 0.98 | 11.20 | 23.05 | 18.94 | 20.96 | 13.30 |
| 575 | 0.99 | 11.23 | 22.37 | 18.78 | 20.69 | 13.08 |
| 600 | 1.01 | 11.26 | 21.69 | 18.64 | 20.40 | 12.87 |
| 650 | 1.03 | 11.32 | 20.37 | 18.42 | 19.91 | 12.52 |
| 700 | 1.06 | 11.37 | 19.24 | 18.27 | 19.56 | 12.19 |
| 750 | 1.09 | 11.42 | 18.15 | 18.17 | 19.24 | 11.92 |
| 800 | 1.12 | 11.44 | 17.23 | 18.11 | 18.95 | 11.66 |
| 850 | 1.16 | 11.47 | 16.35 | 18.14 | 18.80 | 11.44 |
| 900 | 1.19 | 11.49 | 15.52 | 18.14 | 18.61 | 11.26 |
| 925 | 1.21 | 11.50 | 15.14 | 18.14 | 18.53 | 11.17 |
| 950 | 1.23 | 11.51 | 14.79 | 18.17 | 18.42 | 11.10 |
| 1000 | 1.29 | 11.53 | 14.03 | 18.17 | 18.23 | 10.95 |
| 1025 | 1.31 | 11.52 | 13.72 | 18.28 | 18.22 | 10.90 |
| 1050 | 1.34 | 11.52 | 13.39 | 18.31 | 18.17 | 10.84 |
| 1100 | 1.40 | 11.53 | 12.73 | 18.42 | 18.08 | 10.74 |
| 1150 | 1.48 | 11.53 | 12.18 | 18.45 | 18.05 | 10.65 |
| 1200 | 1.56 | 11.53 | 11.61 | 18.57 | 18.13 | 10.58 |
| 1250 | 1.65 | 11.54 | 11.12 | 18.63 | 18.29 | 10.52 |
| 1300 | 1.75 | 11.55 | 10.64 | 18.57 | 18.50 | 10.46 |
| 1350 | 1.88 | 11.57 | 10.20 | 18.40 | 18.79 | 10.40 |
| 1400 | 2.02 | 11.61 | 9.78 | 18.03 | 19.17 | 10.35 |
| 1450 | 2.19 | 11.65 | 9.38 | 17.54 | 19.67 | 10.31 |
| 1500 | 2.38 | 11.73 | 9.06 | 16.87 | 20.19 | 10.25 |
| 1600 | 2.83 | 11.99 | 8.46 | 15.09 | 21.14 | 10.08 |
| 1700 | 3.40 | 12.38 | 8.03 | 13.26 | 21.22 | 9.86 |
| 1800 | 4.04 | 12.97 | 7.75 | 11.52 | 19.89 | 9.60 |
| 1900 | 4.69 | 13.71 | 7.73 | 10.08 | 17.82 | 9.34 |
| 2000 | 5.27 | 14.59 | 8.03 | 9.06 | 15.88 | 9.16 |
| 2100 | 5.71 | 15.57 | 8.64 | 8.22 | 14.40 | 9.08 |
| 2200 | 6.02 | 16.55 | 9.74 | 7.66 | 13.15 | 9.14 |
| 2300 | 6.24 | 17.53 | 11.24 | 7.20 | 12.26 | 9.32 |
| 2400 | 6.38 | 18.44 | 13.74 | 6.92 | 11.60 | 9.62 |
| 2500 | 6.52 | 19.29 | 17.50 | 6.67 | 11.04 | 10.03 |
| 2750 | 6.79 | 21.14 | 29.50 | 6.35 | 10.33 | 11.11 |
| 3000 | 7.09 | 21.55 | 16.20 | 6.22 | 10.15 | 11.48 |
| 3250 | 7.50 | 20.39 | 10.20 | 6.00 | 10.43 | 10.84 |
| 3500 | 7.99 | 18.79 | 5.76 | 5.84 | 11.28 | 9.78 |

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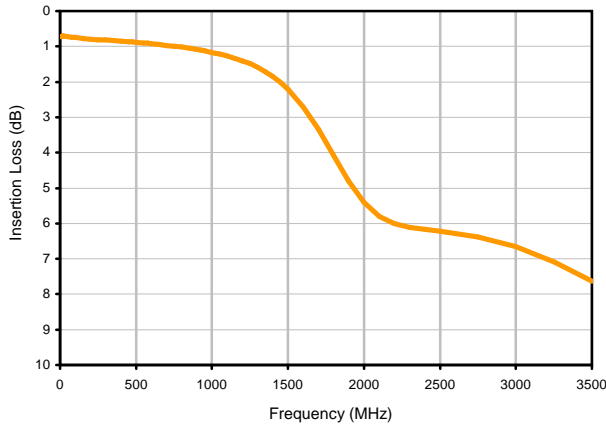


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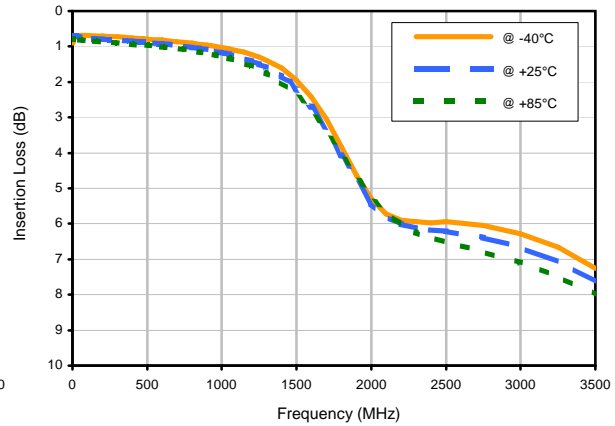


Typical Performance Curves

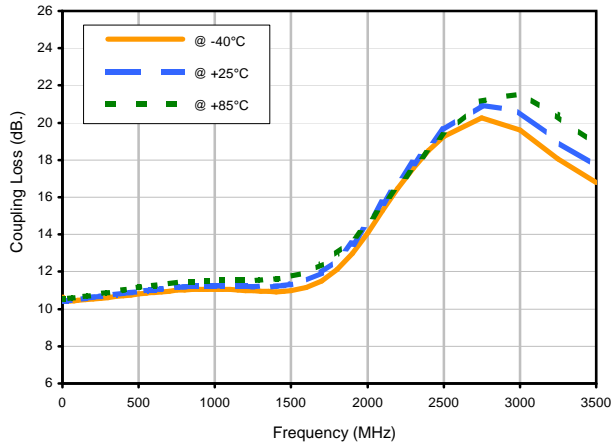
Insertion Loss



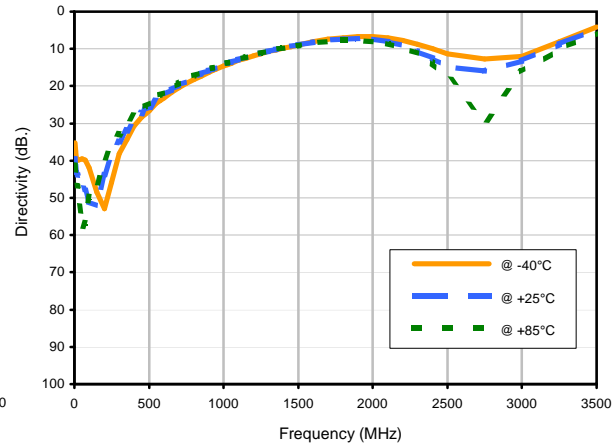
Insertion Loss vs. TEMPERATURE



Coupling Loss vs. TEMPERATURE



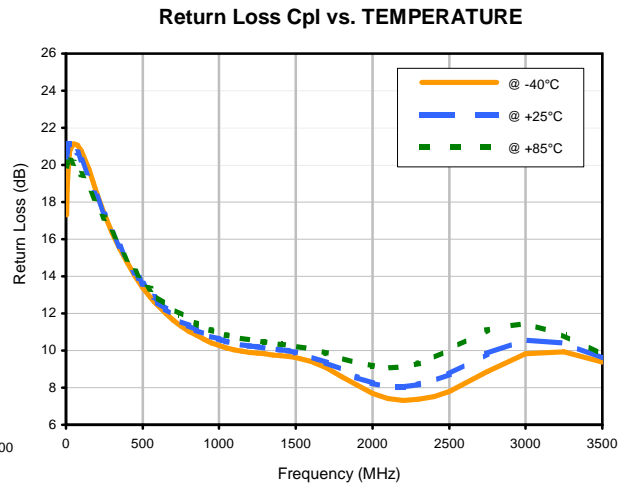
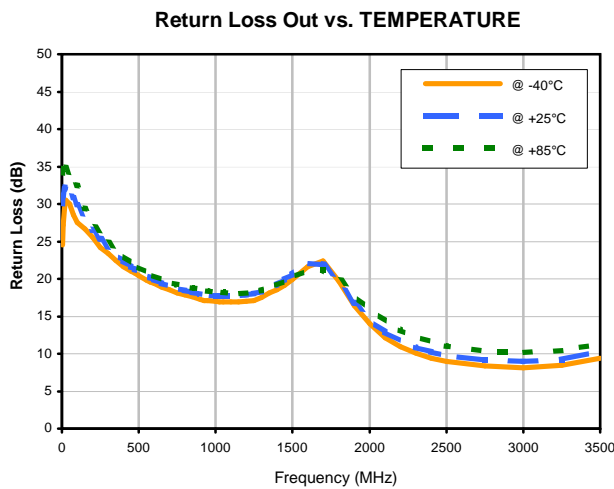
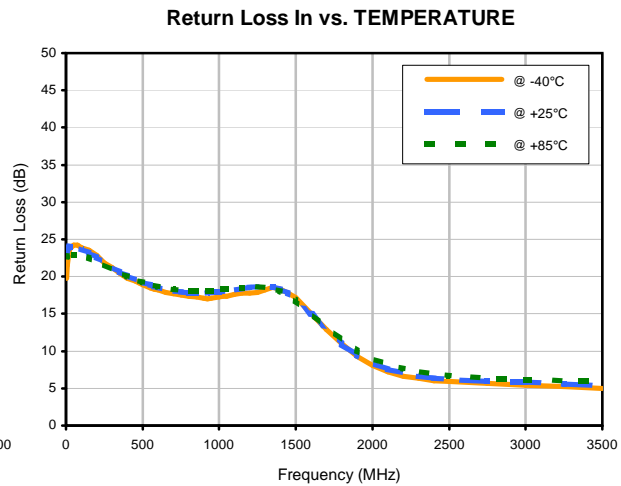
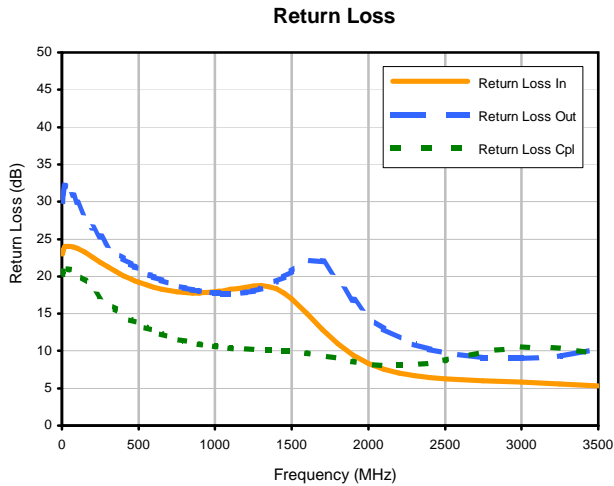
Directivity vs. TEMPERATURE



Directional Coupler

ADC-10-4+

Typical Performance Curves



REV. X1
ADC-10-4+
081007
Page 2 of 2



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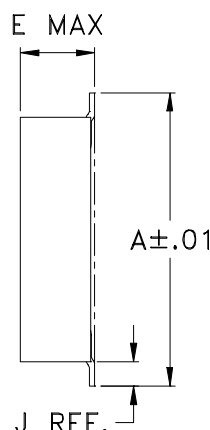
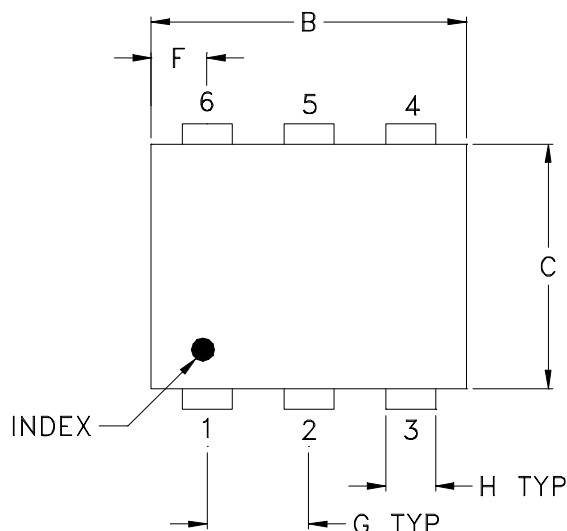


Case Style

CD

CD541
CD542
CD636
CD637

Outline Dimensions



PCB Land Pattern



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

| CASE# | A | B | C | D | E | F | G | H | J | K | L | WT, GRAM |
|-------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------|
| CD541 | | | | | .082 (2.08) | | | | | | | .15 |
| CD542 | .272 (6.91) | .310 (7.87) | .220 (5.58) | .100 (2.54) | .112 (2.84) | .055 (1.40) | .100 (2.54) | .030 (0.76) | .026 (0.66) | .065 (1.65) | .300 (7.62) | .20 |
| CD636 | | | | | .162 (4.11) | | | | | | | .25 |
| CD637 | | | | | .206 (5.23) | | | | | | | .40 |

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

Notes:

- Case material: Plastic.
- Termination finish:
 - For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
 - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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Tape & Reel Packaging TR-F34



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel see note | |
|----------------|-------------------------|-------------------|------------------------------------|-----|
| 16 | 12 | 7 | Small quantity standard (see note) | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | 13 | Standard | 500 |
| 1000 | | | | |

Note: Availability of small reel quantity varies by model.
Refer to pricing and availability on individual model dashboard.

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



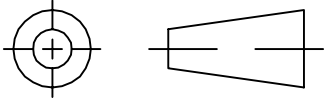
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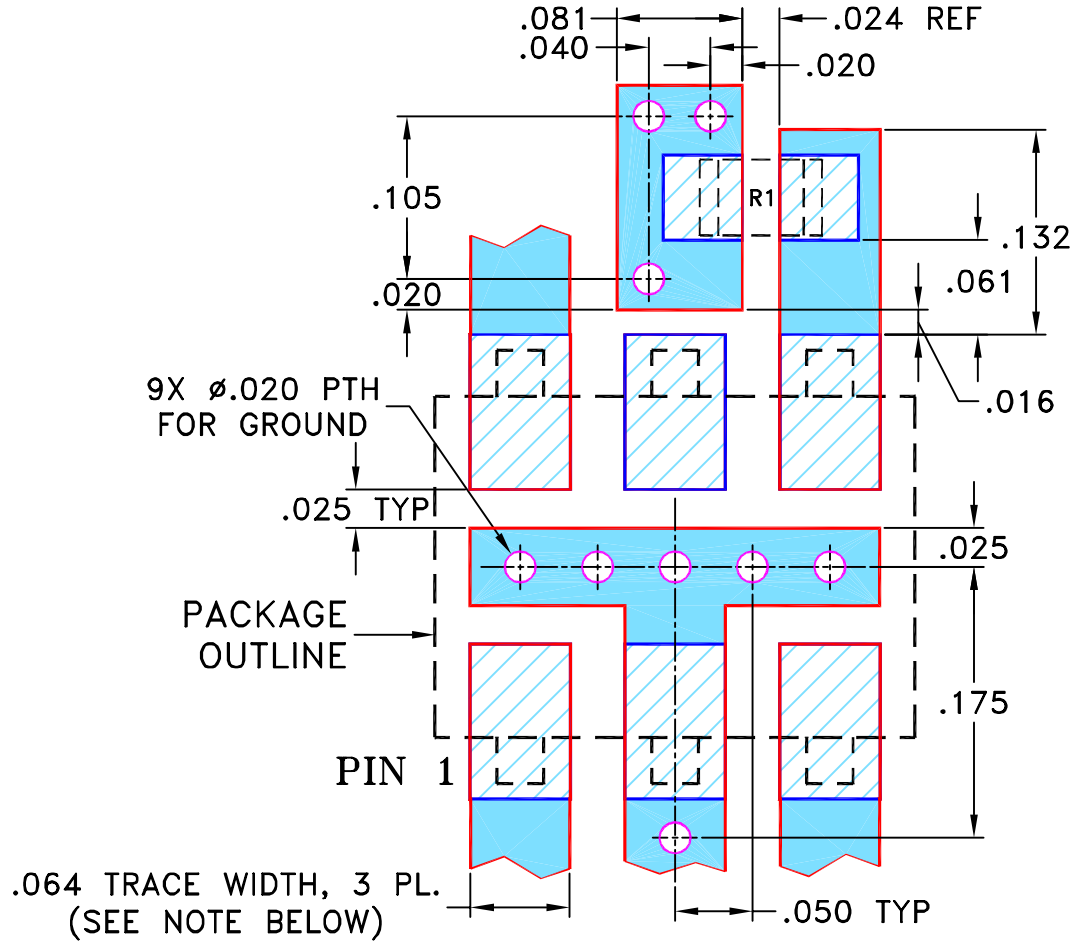
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|---------|--------------------------------|----------|-----|------|
| OR | M82272 | NEW RELEASE | 08/05/02 | MMG | DJ |
| A | M102713 | ADDED NOTE 2 & "...WITH SMOBC" | 01/17/06 | MMG | IL |
| | | | | | |
| | | | | | |

SUGGESTED MOUNTING CONFIGURATION
FOR CD542 CASE STYLE "kd" PIN CONNECTION

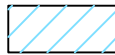


RESISTOR R1: 49.9 Ohm, 0805 SIZE.

- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.



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



DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

| UNLESS OTHERWISE SPECIFIED | INITIALS | DATE |
|----------------------------|-------------|----------|
| DIMENSIONS ARE IN INCHES | DRAWN MMG | 07/23/02 |
| TOLERANCES ON: | CHECKED IC | 08/01/02 |
| 2 PL DECIMALS ± | APPROVED DJ | 08/05/02 |
| 3 PL DECIMALS ± .005 | | |
| ANGLES ± | | |
| FRACTIONS ± | | |



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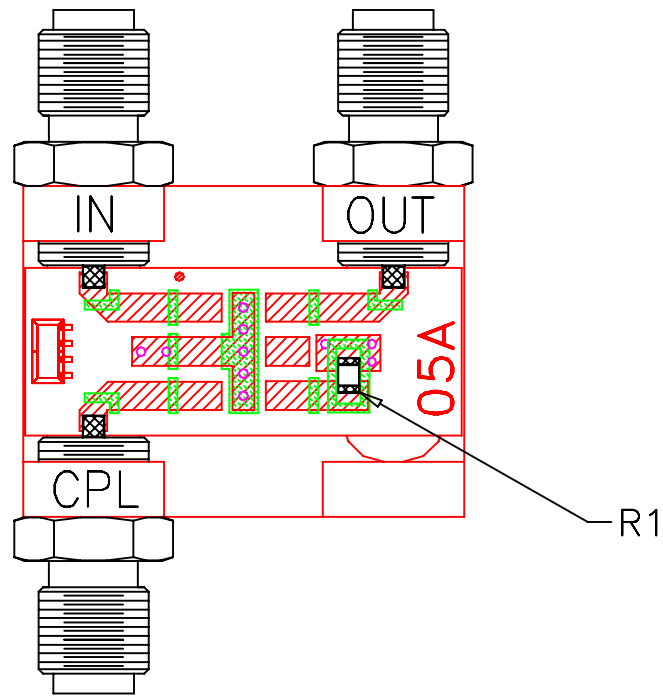
13 Neptune Avenue
Brooklyn NY 11235

PL, kd, CD542, ADC, TB-05

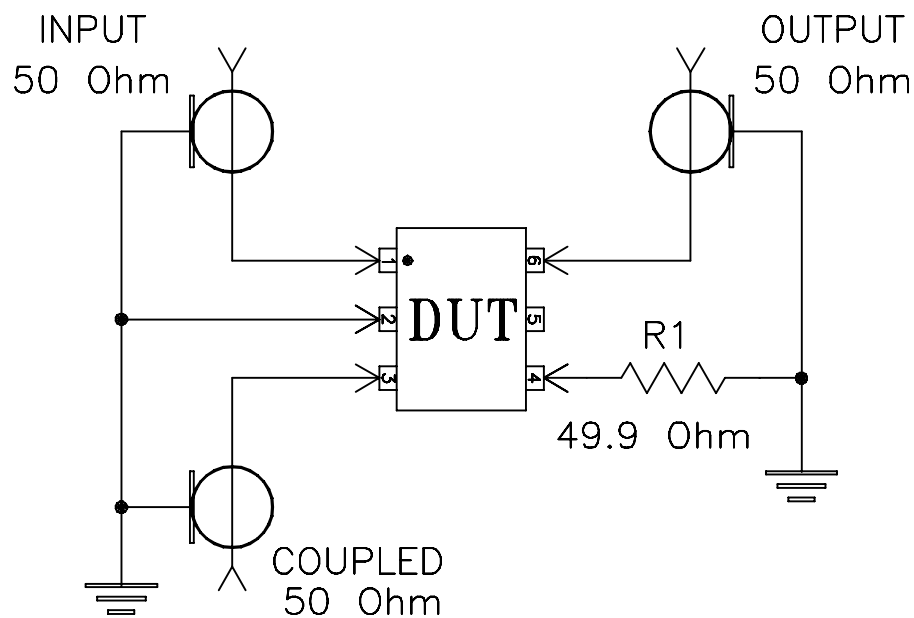
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| SIZE | CODE IDENT | DRAWING NO: | REV: |
|--------|------------|-------------|------|
| A | 15542 | 98-PL-095 | A |
| FILE: | 98PL095 | SCALE: | 8:1 |
| SHEET: | 1 | OF | 1 |

Evaluation Board and Circuit




TB-05



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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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 |