TCD-16-12W-75X+

75Ω 16.5dB 5 to 1218 MHz

Features

- wideband, 5 to 1218 MHz
- low mainline loss, 0.7 dB typ.
- aqueous washable
- leads for excellent solderability
- protected by US Patent 6,140,887

Applications

- DOCSIS® 3.1 Systems
- VHF/UHF
- CATV
- cellular

Generic photo used for illustration purposes only

CASE STYLE: DB1627

+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, 500 | | | | | |
| 13" | 1000, 2000 | | | | | |

Electrical Specifications at 25°C

| Parameter | Condition (MHz) | Min. | Тур. | Max. | Unit |
|--|-----------------|------|----------|------|------|
| Frequency Range | | 5 | | 1218 | MHz |
| | 5 - 50 | _ | 0.65 | 0.9 | |
| Mainline Loss (above theoretical 0.1 dB) | 50 - 870 | _ | 0.5 | 0.8 | dB |
| | 870 - 1218 | _ | 0.70 | 1.0 | |
| Nominal Coupling | 5 - 1218 | _ | 16.0±0.5 | _ | dB |
| Coupling Flatness(±) | 5 - 1218 | _ | 0.8 | 1.2 | dB |
| | 5 - 50 | 25 | 35 | _ | |
| Directivity | 50 - 870 | 11 | 16 | _ | dB |
| | 870 - 1218 | 8 | 12 | _ | |
| | 5 - 50 | 18 | 22 | _ | |
| Return Loss (Input) | 50 - 870 | 14 | 18 | _ | dB |
| | 870 - 1218 | 16 | 19 | _ | |
| | 5 - 50 | 20 | 25 | _ | |
| Return Loss (Output) | 50 - 870 | 17 | 19 | _ | dB |
| | 870 - 1218 | 18 | 22 | _ | |
| | 5 - 50 | 18 | 22 | _ | |
| Return Loss (Coupling) | 50 - 870 | 15 | 17 | _ | dB |
| | 870 - 1218 | 14 | 16 | _ | |
| Input Power | 5 - 1218 | _ | _ | 1.0 | W |

Mainline loss includes theoretical power loss at coupled port.

Maximum Ratings

| Parameter | 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.

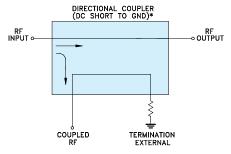
Product Marking



Pin Connections

| Function | Pin Number |
|-------------------|------------|
| INPUT | 3 |
| OUTPUT | 4 |
| COUPLED | 1 |
| GROUND | 2 |
| 75Ω TERM EXTERNAL | 6 |
| NOT USED | 5 |

Electrical Schematic

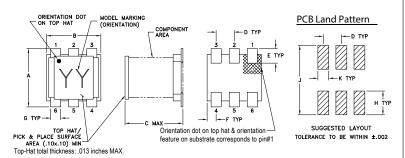


* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.

^{*}Case temperature is defined as temperature on ground leads.

TCD-16-12W-75X+

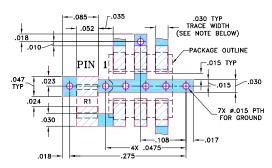
Outline Drawing



Outline Dimensions (inch)

| F | E | D | С | В | Α |
|-------|------|------|------|------|------|
| .025 | .040 | .050 | .160 | .150 | .160 |
| 0.64 | 1.02 | 1.27 | 4.06 | 3.81 | 4.06 |
| wt | | K | J | Н | G |
| grams | | .030 | .190 | .065 | .028 |
| 0.15 | | 0.76 | 4.83 | 1.65 | 0.71 |

Demo Board MCL P/N: TB-72 Suggested PCB Layout (PL-010)



RESISTOR R1: 75 \pm 1% Ohm, 0805 SIZE

- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" \pm 0.002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

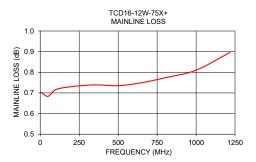
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

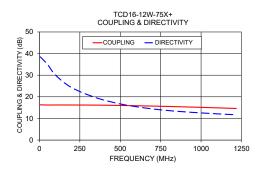
 - DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

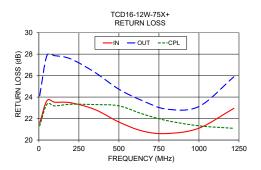
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) | Coupling Directivity (dB) (dB) | | | | |
|--------------------|-----------------------|--------------------------------|-------|-------|-------|-------|
| (| In-Out | In-Cpl | () | In | Out | Cpl |
| 5 | 0.70 | 16.30 | 38.48 | 21.56 | 24.12 | 21.32 |
| 50 | 0.68 | 16.20 | 34.99 | 23.66 | 27.86 | 23.32 |
| 100 | 0.72 | 16.23 | 30.01 | 23.52 | 27.85 | 23.18 |
| 200 | 0.73 | 16.21 | 24.23 | 23.47 | 27.55 | 23.33 |
| 350 | 0.74 | 16.16 | 19.59 | 22.84 | 26.30 | 23.30 |
| 500 | 0.74 | 16.00 | 16.71 | 21.68 | 24.73 | 23.18 |
| 650 | 0.75 | 15.79 | 14.87 | 20.83 | 23.65 | 22.42 |
| 800 | 0.77 | 15.54 | 13.63 | 20.61 | 22.88 | 21.81 |
| 1000 | 0.81 | 15.12 | 12.55 | 21.11 | 23.12 | 21.32 |
| 1218 | 0.90 | 14.62 | 11.68 | 22.95 | 25.89 | 21.09 |







Additional 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