TC16-1TX+
$50 \Omega$ 20 to 300 MHz

Features

- good return loss, 15 dB typ. in 1 dB bandwidth
- plastic base with leads

Generic photo used for illustration purposes only

- aqueous washable

Applications

- catv

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


## Electrical Specifications at $25^{\circ} \mathrm{C}$

| Parameter | Frequency (MHz) | Min. | Typ. | Max. | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Impedance Ratio (secondary/primary) |  |  | 16 |  | Ohm |
| Frequency Range |  | 20 |  | 300 | MHz |
| Insertion Loss* | $\begin{aligned} & 20-300 \\ & 30-200 \\ & 50-150 \end{aligned}$ |  | $\begin{aligned} & 3 \\ & 2 \\ & 1 \end{aligned}$ |  | dB |
| Amplitude Unbalance | $\begin{aligned} & 50-150 \\ & 30-200 \end{aligned}$ |  | $\begin{aligned} & 0.3 \\ & 0.5 \end{aligned}$ |  | dB |
| Phase Unbalance | $\begin{aligned} & 50-150 \\ & 30-200 \end{aligned}$ |  | $\begin{aligned} & 4 \\ & 5 \end{aligned}$ |  | Degree |

* Insertion Loss is referenced to mid-band loss, 1 dB typ.

Maximum Ratings

| Parameter | Ratings |
| :--- | :---: |
| Operating Temperature | $-20^{\circ} \mathrm{C}$ to $85^{\circ} \mathrm{C}$ |
| Storage Temperature | $-55^{\circ} \mathrm{C}$ to $100^{\circ} \mathrm{C}$ |
| RF Power | 0.25 W |
| DC Current | 30 mA |

Permanent damage may occur if any of these limits are exceeded

Pin Connections

| Function | Pin Number |
| :--- | :---: |
| PRIMARY DOT | 3 |
| PRIMARY | 1 |
| SECONDARY DOT | 4 |
| SECONDARY | 6 |
| SECONDARY CT | 2 |

Product Marking


## Config. A




| Outline Dimensions | $\binom{$ inch }{mm} |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: |
| A | B | C | D | E | F |
| .150 | .150 | .160 | .050 | .040 | .025 |
| 3.81 | 3.81 | 4.06 | 1.27 | 1.02 | 0.64 |
| G | H | J | K |  | wt |
| .028 | .065 | .190 | .030 |  | grams |
| 0.71 | 1.65 | 4.83 | 0.76 |  | 0.15 |

Typical Performance Data

| FREQUENCY <br> $(\mathbf{M H z )}$ | INSERTION <br> LOSS <br> (dB) | INPUT <br> R. LOSS <br> (dB) |
| :---: | :---: | :---: |
| 20.00 | 1.34 | 13.77 |
| 40.00 | 1.07 | 16.14 |
| 5.00 | 1.01 | 15.90 |
| 70.00 | 0.99 | 14.80 |
| 90.00 | 1.00 | 13.12 |
| 112.50 | 1.07 | 11.35 |
| 165.00 | 1.46 | 8.32 |
| 200.00 | 1.70 | 6.90 |
| 240.60 | 2.04 | 5.63 |
| 300.00 | 2.50 | 4.34 |



## 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

Typical Performance Data

| FREQUENCY <br> $(\mathbf{M H z})$ | INSERTION LOSS <br> $(\mathbf{d B})$ | RETURN LOSS <br> (dB) |
| :---: | :---: | :---: |
| 20.0 | 1.34 | 13.77 |
| 40.0 | 1.07 | 16.14 |
| 55.0 | 1.01 | 15.90 |
| 70.0 | 0.99 | 14.80 |
| 90.0 | 1.00 | 13.12 |
| 112.5 | 1.07 | 11.35 |
| 165.0 | 1.46 | 8.32 |
| 200.0 | 1.70 | 6.90 |
| 240.6 | 2.04 | 5.63 |
| 300.0 | 2.50 | 4.34 |

## Typical Performance Data




## Case Style

Outline Dimensions

PCB Land Pattern


| CASE \# | A | B | C | D | E | F | G | H | J | K | WT. <br> GRAMS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| AT1521 | .150 | .150 | .160 | .050 | .040 | .025 | .028 | .065 | .190 | .030 | .15 |
| $(3.81)$ | $(3.81)$ | $(4.06)$ | $(1.27)$ | $(1.02)$ | $(.64)$ | $(.71)$ | $(1.65)$ | $(4.83)$ | $(.76)$ |  |  |

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

## Notes:

1. Case material: Plastic.
2. Termination finish:

For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
3. Orientation Dot on Top Hat \& Marking on the Substrate both refers to Pin \#1 of the Unit.
4. Top-Hat total thickness: . 013 inches MAX. Fax (718) 3324081 For detald perdor

## Tape \& Reel Packaging TR-F17

DEVICE ORIENTATION IN T\&R


DIRECTION OF FEED.


DIRECTION OF FEED_

| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Device | 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


## WMini-Circuits

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 | $-20^{\circ} \text { to } 85^{\circ} \mathrm{C}$ <br> Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | $-55^{\circ} \text { to } 100^{\circ} \mathrm{C}$ <br> Ambient Environment | Individual Model Data Sheet |
| Humidity | 90 to $95 \%$ RH, 240 hours, $50^{\circ} \mathrm{C}$ | MIL-STD-202, Method 103, Condition A, Except $50^{\circ} \mathrm{C}$ and end-point electrical test done within 12 hours |
| Thermal Shock | $-55^{\circ}$ to $100^{\circ} \mathrm{C}, 100$ cycles | MIL-STD-202, Method 107, Condition A-3, except $+100^{\circ} \mathrm{C}$ |
| Solder Reflow Heat | Sn-Pb Eutetic Process: $225^{\circ} \mathrm{C}$ peak Pb-Free Process $245^{\circ}-250^{\circ} \mathrm{C}$ 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) | 20 g peak, $10-2000 \mathrm{~Hz}$, 12 times in each of three perpendicular directions (total 36) | MIL-STD-202, Method 204, Condition D |
| Mechanical Shock | $50 \mathrm{~g}, 11 \mathrm{~ms}, 1 / 2$-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 $25^{\circ} \mathrm{C}$; terpene defluxer at $25^{\circ} \mathrm{C}$; <br> distilled water + proylene glycol monomethyl ether + monoethanolamine at $63^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$ | MIL-STD-202, Method 215 |
| ENV02 Rev: A 02/25/11 M130240 File: ENV02.pdf |  |  |
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