

Surface Mount  **RF Transformer**

**TC1-1-13MX+**

50Ω 4.5 to 3000 MHz



CASE STYLE: AT1521

**Maximum Ratings**

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power              | 0.25W          |
| DC Current            | 30mA           |

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

**Pin Connections**

|               |   |
|---------------|---|
| PRIMARY DOT   | 6 |
| PRIMARY       | 4 |
| SECONDARY DOT | 1 |
| SECONDARY     | 3 |
| NOT USED      | 2 |

**Features**

- wideband, 4.5 to 3000 MHz
- balanced transmission line
- good return loss
- excellent amplitude unbalance, 0.5 dB typ. and phase unbalance, 2 deg typ. in 1 dB bandwidth
- plastic base with leads
- aqueous washable

**Applications**

- balanced to unbalanced transformation
- push-pull amplifiers
- PCS/DCS
- MMDS

**+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**

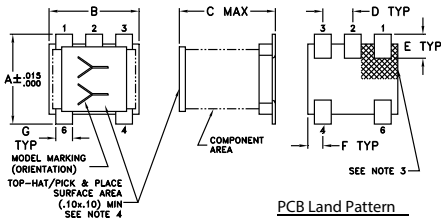
| Reel Size | Devices/Reel          |
|-----------|-----------------------|
| 7"        | 20, 50, 100, 200, 500 |
| 13"       | 1000, 2000            |

**Electrical Specifications (T<sub>AMB</sub> = 25°C)**

| Ω RATIO | FREQUENCY (MHz) | INSERTION LOSS* |           |          | PHASE UNBALANCE (Deg.) Typ. |                | AMPLITUDE UNBALANCE (dB) Typ. |                |
|---------|-----------------|-----------------|-----------|----------|-----------------------------|----------------|-------------------------------|----------------|
|         |                 | 3 dB MHz        | 2 dB MHz  | 1 dB MHz | 1 dB bandwidth              | 2 dB bandwidth | 1 dB bandwidth                | 2 dB bandwidth |
| 1       | 4.5-3000        | 2000-3000       | 1000-2000 | 4.5-1000 | 2                           | 3              | 0.5                           | 0.5            |

\*Insertion Loss is referenced to mid-band loss, 0.5 dB typ.

**Outline Drawing AT1521**



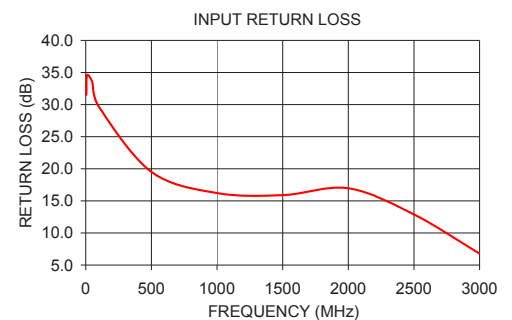
- Note:
1. Case Material Plastic
  2. Termination Finish: Tin plate over Nickel plate.
  3. Lead #1 identifier shall be located in the cross-hatched area shown, on bottom view. Identifier may be either a molded or marked feature.
  4. Top-Hat total thickness: 0.13 inches max.

**Typical Performance Data**

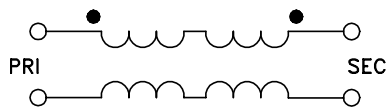
| FREQUENCY (MHz) | INSERTION LOSS (dB) | INPUT R. LOSS (dB) | AMPLITUDE UNBALANCE (dB) | PHASE UNBALANCE (Deg.) |
|-----------------|---------------------|--------------------|--------------------------|------------------------|
| 4.50            | 0.18                | 31.52              | 0.69                     | 3.81                   |
| 10.00           | 0.18                | 34.60              | 0.56                     | 1.78                   |
| 50.00           | 0.19                | 33.50              | 0.56                     | 0.11                   |
| 100.00          | 0.24                | 29.68              | 0.55                     | 0.19                   |
| 500.00          | 0.46                | 19.52              | 0.45                     | 0.81                   |
| 1000.00         | 0.68                | 16.22              | 0.14                     | 1.59                   |
| 1500.00         | 0.90                | 15.89              | 0.29                     | 0.89                   |
| 2000.00         | 1.11                | 16.97              | 0.71                     | 1.28                   |
| 2500.00         | 1.62                | 12.88              | 0.78                     | 5.79                   |
| 3000.00         | 3.02                | 6.79               | 0.49                     | 12.32                  |

**Outline Dimensions (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  |      |



**Config. G**



**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](http://www.minicircuits.com/MCLStore/terms.jsp)

