



SURFACE MOUNT

# RF Transformer

**TC1-1-43X+**

50Ω 650 to 4000 MHz

## FEATURES

- Wideband, 650 to 4000 MHz
- Balanced transmission line
- Good return loss
- Excellent amplitude unbalance, 0.5 dB typ. and phase unbalance, 3 deg typ. in 1 dB bandwidth
- Plastic base with leads
- Aqueous washable



*Generic photo used for illustration purposes only*

CASE STYLE: AT1521

**+RoHS Compliant**

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

- Balanced to unbalanced transformation
- Push-pull amplifiers
- PCS/DCS
- MMDS

## ELECTRICAL SPECIFICATIONS AT +25°C

| Parameter           | Condition | Min. | Typ. | Max. | Unit   |
|---------------------|-----------|------|------|------|--------|
| Impedance Ratio     |           |      | 1    |      | Ohm    |
| Frequency Range     |           | 650  |      | 4000 | MHz    |
| Insertion Loss*     | 650-4000  |      | 2.0  |      | dB     |
|                     | 800-3000  |      | 1.0  |      |        |
| Amplitude Unbalance | 800-3000  |      | 0.5  |      | dB     |
|                     | 650-4000  |      | 0.5  |      |        |
| Phase Unbalance     | 800-3000  |      | 3    |      | Degree |
|                     | 650-4000  |      | 4    |      |        |

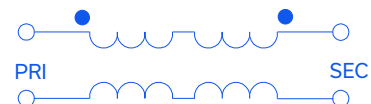
\*Insertion Loss is referenced to mid-band loss, 0.5 dB typ.

## MAXIMUM RATINGS

| Parameter             | 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.

## CONFIG. G



REV. B  
ECO-021678  
TC1-1-43X+  
MCL NY  
240503

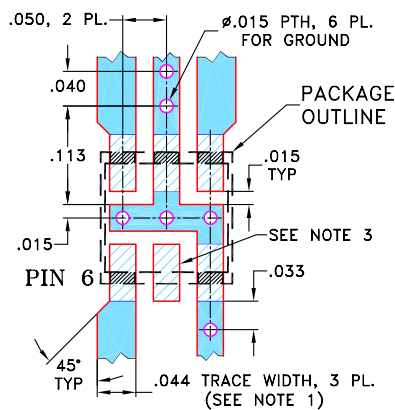


## PIN CONNECTIONS

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

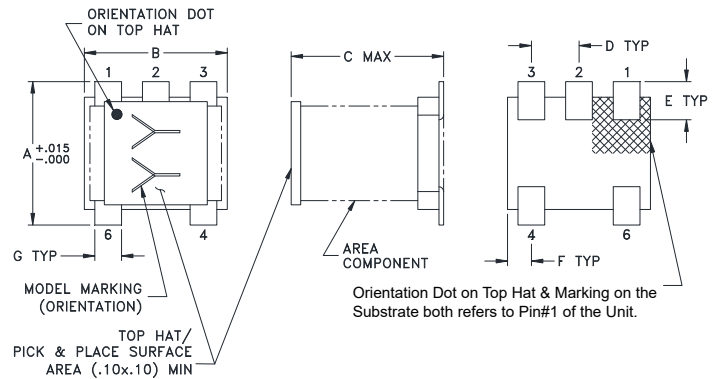
**PRODUCT MARKING:** AV

**DEMO BOARD MCL P/N: TB-145**  
**SUGGESTED PCB LAYOUT: PL-244**



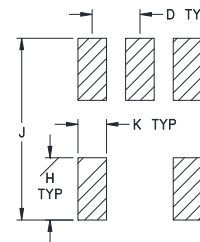
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. ON EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. THIS PAD IS NOT REQUIRED FOR AT224 CASE STYLE.
-  DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
-  DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## OUTLINE DRAWING



Top-hat total thickness: .013 inches MAX.

## PCB Land Pattern



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

## OUTLINE DIMENSIONS (Inch/mm)

| A    | B    | C    | D    | E    | F    | G    | H    | J    | K    |
|------|------|------|------|------|------|------|------|------|------|
| .150 | .150 | .160 | .050 | .040 | .025 | .028 | .065 | .190 | .030 |
| 3.81 | 3.81 | 4.06 | 1.27 | 1.02 | 0.64 | 0.71 | 1.65 | 4.83 | 0.76 |

Weight: 0.15 grams

**TAPE & REEL INFORMATION: F17**



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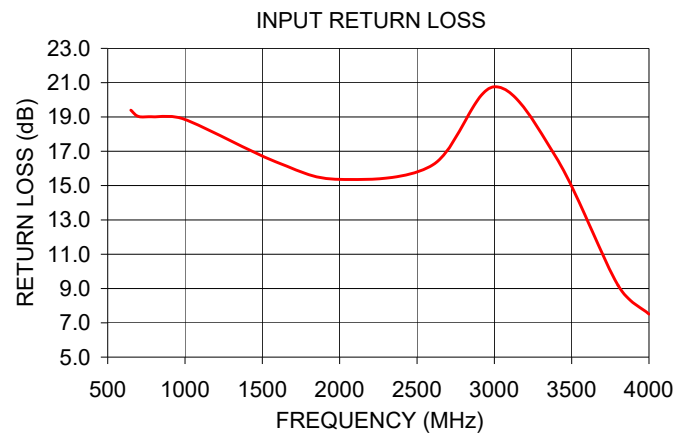
TC1-1-43X+

Mini-Circuits

50Ω 650 to 4000 MHz

## TYPICAL PERFORMANCE DATA

| FREQUENCY (MHz) | INSERTION LOSS (dB) | INPUT R. LOSS (dB) | AMPLITUDE UNBALANCE (dB) | PHASE UNBALANCE (Deg.) |
|-----------------|---------------------|--------------------|--------------------------|------------------------|
| 650.00          | 0.30                | 19.40              | 0.72                     | 7.04                   |
| 700.00          | 0.30                | 19.03              | 0.70                     | 6.11                   |
| 800.00          | 0.32                | 19.01              | 0.65                     | 4.73                   |
| 1000.00         | 0.35                | 18.85              | 0.50                     | 3.45                   |
| 1600.00         | 0.45                | 16.34              | 0.15                     | 0.32                   |
| 2000.00         | 0.53                | 15.36              | 0.05                     | 0.42                   |
| 2600.00         | 0.62                | 16.20              | 0.40                     | 0.66                   |
| 3000.00         | 0.57                | 20.76              | 0.56                     | 1.07                   |
| 3800.00         | 1.34                | 9.18               | 0.41                     | 4.79                   |
| 4000.00         | 1.71                | 7.51               | 0.09                     | 5.95                   |



### 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.
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