

# Engineering Development Model

## RF Transformer

## TC1-ED12743/1

Impedance Ratio : 1

### Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability. At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.



Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : AT224-3

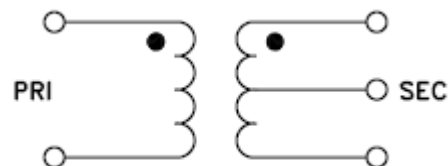
| ELECTRICAL SPECIFICATIONS 50Ω @ +25°C |                |      |        |      |       |
|---------------------------------------|----------------|------|--------|------|-------|
| Parameter                             |                | Min. | Typ.   | Max. | Units |
| Frequency                             |                | .3   |        | 500  | MHz   |
| Insertion Loss *                      | 3 dB Bandwidth |      | .3-500 |      | MHz   |
|                                       | 2 dB Bandwidth |      | .7-200 |      | MHz   |
|                                       | 1 dB Bandwidth |      | 2-160  |      | MHz   |

**Note:** \* Insertion Loss is referenced to mid-band loss, 0.32 dB typ.

| MAXIMUM RATINGS       |                |
|-----------------------|----------------|
| Operating Temperature | -20°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power              | 0.25W          |
| DC Current            | 30 mA          |

| PIN CONNECTIONS |   |
|-----------------|---|
| PRIMARY DOT     | 6 |
| PRIMARY         | 4 |
| SECONDARY DOT   | 1 |
| SECONDARY       | 3 |
| SECONDARY CT    | 2 |

### Configuration : A



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# RF Transformer

# TC1-ED12743/1

## Typical Performance Data

| FREQUENCY<br>(MHz) | INSERTION LOSS<br>(dB) | RETURN LOSS<br>(dB) |
|--------------------|------------------------|---------------------|
| 0.03               | 2.36                   | 4.83                |
| 0.04               | 1.58                   | 6.39                |
| 0.05               | 1.15                   | 7.77                |
| 0.06               | 0.90                   | 9.01                |
| 0.07               | 0.73                   | 10.13               |
| 0.08               | 0.62                   | 11.15               |
| 0.09               | 0.54                   | 12.06               |
| 0.10               | 0.49                   | 12.90               |
| 0.20               | 0.34                   | 18.44               |
| 0.30               | 0.31                   | 21.41               |
| 0.40               | 0.30                   | 23.32               |
| 0.50               | 0.28                   | 24.64               |
| 0.60               | 0.29                   | 25.58               |
| 0.80               | 0.27                   | 26.85               |
| 1.00               | 0.26                   | 27.69               |
| 5.0                | 0.17                   | 32.70               |
| 10.0               | 0.19                   | 32.59               |
| 20.0               | 0.21                   | 29.85               |
| 30.0               | 0.24                   | 27.29               |
| 40.0               | 0.26                   | 25.24               |
| 50.0               | 0.29                   | 23.55               |
| 60.0               | 0.31                   | 22.11               |
| 70.0               | 0.32                   | 20.89               |
| 80.0               | 0.35                   | 19.86               |
| 90.0               | 0.37                   | 18.91               |
| 100.0              | 0.40                   | 18.09               |
| 120.0              | 0.45                   | 16.66               |
| 140.0              | 0.51                   | 15.46               |
| 160.0              | 0.55                   | 14.42               |
| 170.0              | 0.58                   | 13.95               |
| 180.0              | 0.60                   | 13.49               |
| 190.0              | 0.64                   | 13.09               |
| 200.0              | 0.68                   | 12.69               |
| 300.0              | 1.03                   | 9.75                |
| 400.0              | 1.48                   | 7.89                |
| 500.0              | 2.02                   | 6.70                |



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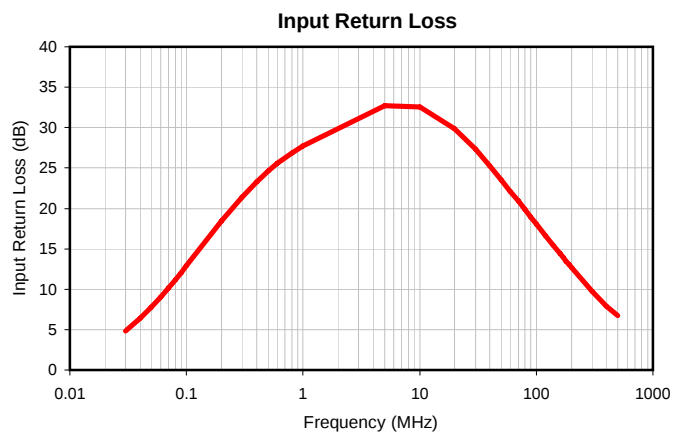
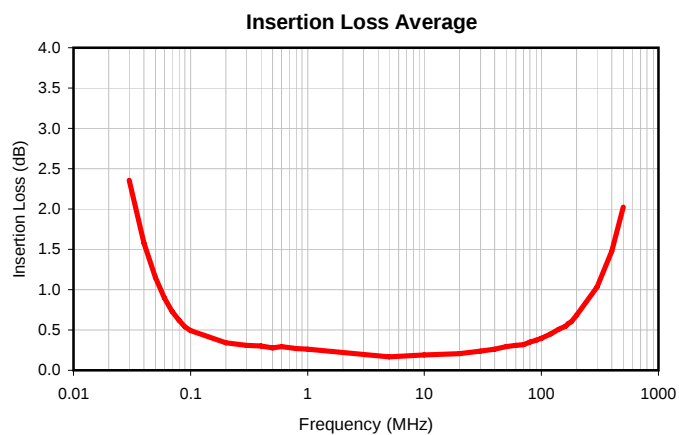
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IF/RF MICROWAVE COMPONENTS



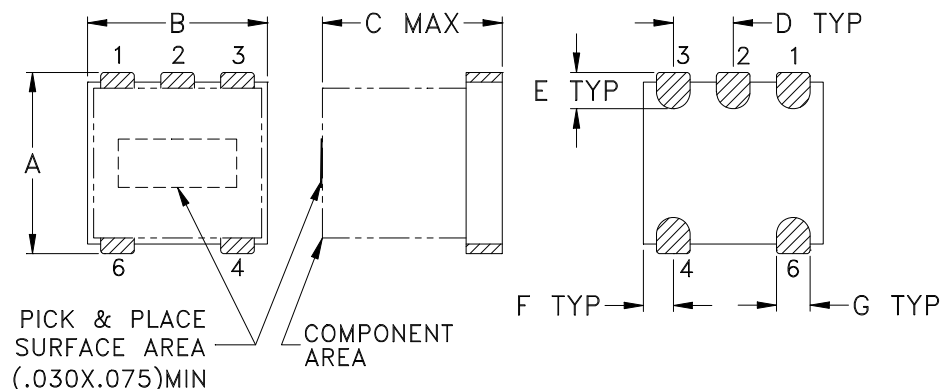
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## Typical Performance Data

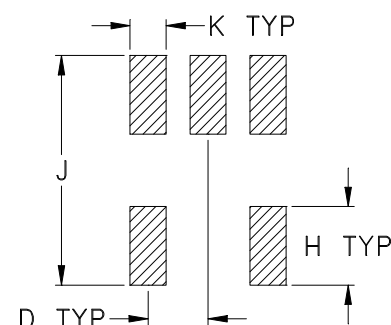


## Outline Dimensions

AT224-3



## PCB Land Pattern



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

| CASE #  | A              | B              | C              | D              | E              | F              | G              | H              | J              | K              | L        | WT. GRAMS |
|---------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------|-----------|
| AT224-3 | .150<br>(3.81) | .150<br>(3.81) | .150<br>(3.81) | .050<br>(1.27) | .030<br>(0.76) | .025<br>(0.64) | .028<br>(0.71) | .065<br>(1.65) | .190<br>(4.83) | .030<br>(0.76) | --<br>-- | .10       |

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

### Notes:

- Open style, ceramic base.
- Termination finish: 3.15-5.12  $\mu$  inch (.08-.130 microns) Gold over 78-236  $\mu$  inch (1.98-6.0 microns) Nickel plate.



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RF/IF MICROWAVE COMPONENTS

# Tape & Reel Packaging TR-F17

## DEVICE ORIENTATION IN T&R



| Tape Width,<br>mm | Device Cavity<br>Pitch, mm | Reel Size,<br>inches | Devices per Reel                             |      |
|-------------------|----------------------------|----------------------|----------------------------------------------|------|
| 12                | 8                          | 7                    | Small<br>quantity<br>standards<br>(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](http://www.minicircuits.com/pages/pdfs/tape.pdf)



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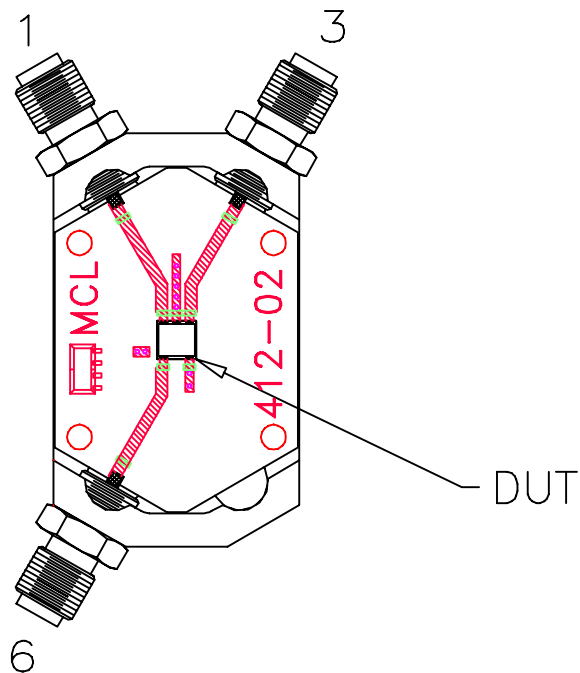
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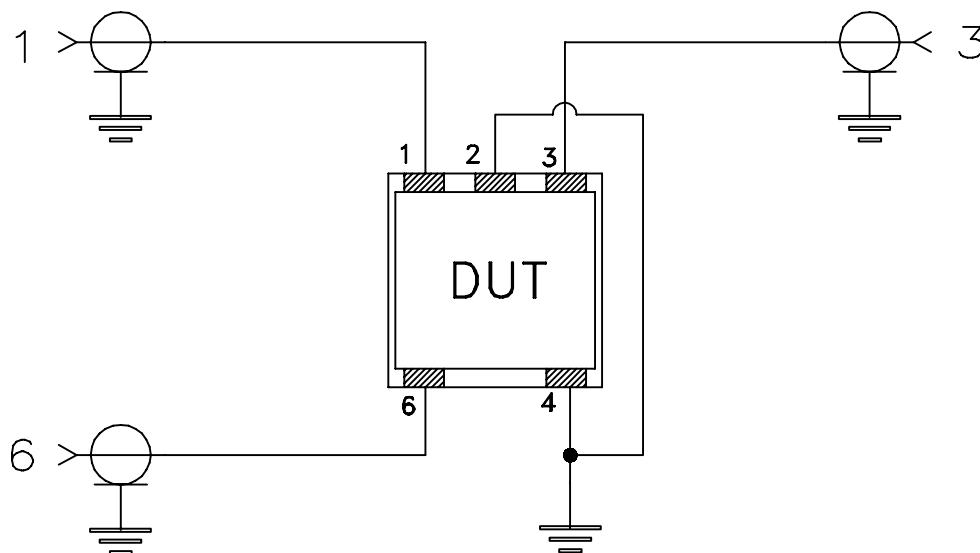


# Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT



TB-145



Schematic Diagram

## Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: Rogers R04350B or its equivalent, Dielectric Constant=3.5, Thickness=.020"

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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          | -20° to 85°C<br>Ambient Environment                                                                                                                             | Individual Model Data Sheet                                                                          |
| Storage Temperature            | -55° to 100° C<br>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<br>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;<br>distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215                                                                              |