



SURFACE MOUNT

RF Transformer

TC4-14G2+

50Ω 200 to 1400 MHz

FEATURES

- Suitable for tin/lead and RoHS solder systems
- Good return loss
- Wideband, 200 to 1400 MHz
- Aqueous washable



Generic photo used for illustration purposes only

CASE STYLE: AT224-3

+RoHS Compliant

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

APPLICATIONS

- Push-pull amplifiers
- Impedance matching

ELECTRICAL SPECIFICATIONS AT 25°C

| Parameter | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|---------------------------------------|-----------------|------|------|------|------|
| Impedance Ratio (secondary / primary) | | | 4 | | |
| Frequency Range | | 200 | — | 1400 | MHz |
| Insertion Loss* | 200-1400 | | 3 | | dB |
| | 300-1300 | | 2 | | |
| | 800-1100 | | 1 | | |

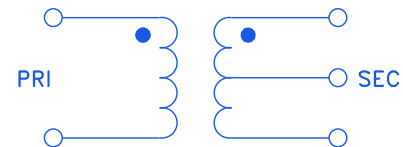
* Insertion Loss is referenced to mid-band loss, 0.7 dB typ.

MAXIMUM RATINGS

| Parameter | Ratings |
|-----------------------|----------------|
| Operating Temperature | -20°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. A



REV. B
ECO-015303
TC4-14G2+
MCL NY
221019



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Mini-Circuits

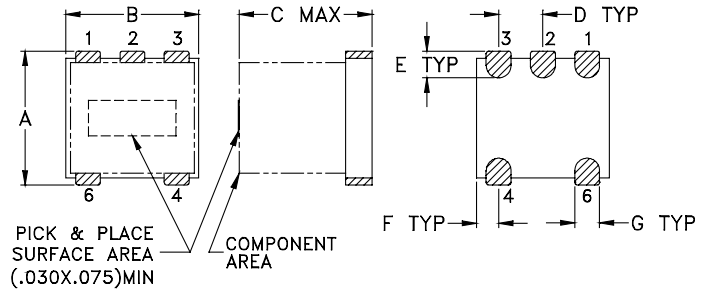
50Ω 200 to 1400 MHz

PIN CONNECTIONS

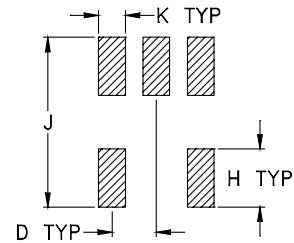
| | |
|---------------|---|
| PRIMARY DOT | 6 |
| PRIMARY | 4 |
| SECONDARY DOT | 3 |
| SECONDARY | 1 |
| SECONDARY CT | 2 |

PRODUCT MARKING: NA

OUTLINE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within ± 0.002

OUTLINE DIMENSIONS (Inch/mm)

| A | B | C | D | E | F |
|------|------|------|------|-------|------|
| .150 | .150 | .150 | .050 | .030 | .025 |
| 3.81 | 3.81 | 3.81 | 1.27 | 0.76 | 0.64 |
| G | H | J | K | wt | |
| .028 | .065 | .190 | .030 | grams | |
| 0.71 | 1.65 | 4.83 | 0.76 | 0.10 | |

TAPE & REEL INFORMATION: F17



SURFACE MOUNT

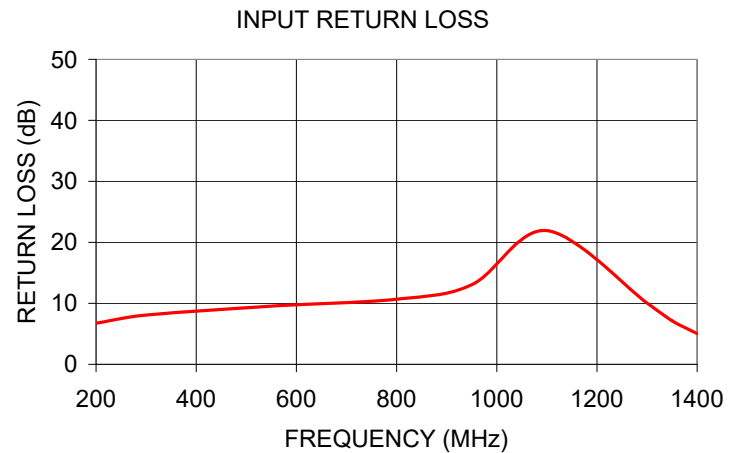
RF Transformer

TC4-14G2+

50Ω 200 to 1400 MHz

TYPICAL PERFORMANCE DATA

| FREQUENCY (MHz) | INSERTION LOSS (dB) | INPUT R. LOSS (dB) |
|-----------------|---------------------|--------------------|
| 200.00 | 1.33 | 6.74 |
| 210.00 | 1.26 | 6.88 |
| 300.00 | 1.22 | 8.07 |
| 550.00 | 0.92 | 9.54 |
| 800.00 | 0.88 | 10.68 |
| 950.00 | 0.82 | 13.05 |
| 1100.00 | 0.70 | 21.93 |
| 1300.00 | 1.53 | 10.04 |
| 1350.00 | 1.77 | 7.15 |
| 1400.00 | 2.77 | 5.05 |



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/terms/viewterm.html

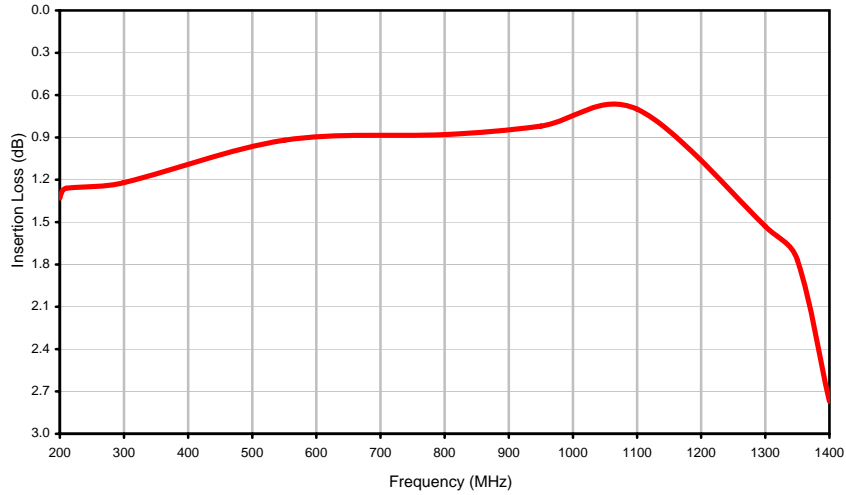


Typical Performance Data

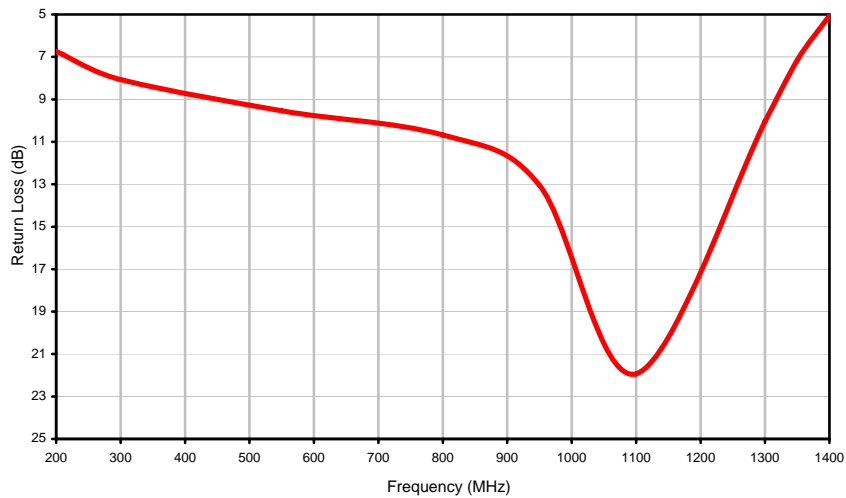
| FREQUENCY (MHz) | INSERTION LOSS (dB) | RETURN LOSS (dB) |
|--------------------|---------------------------|------------------------|
| 200.00 | 1.33 | 6.74 |
| 210.00 | 1.26 | 6.88 |
| 300.00 | 1.22 | 8.07 |
| 550.00 | 0.92 | 9.54 |
| 800.00 | 0.88 | 10.68 |
| 950.00 | 0.82 | 13.05 |
| 1100.00 | 0.70 | 21.93 |
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| 1350.00 | 1.77 | 7.15 |
| 1400.00 | 2.77 | 5.05 |

Typical Performance Curves

Insertion Loss



Return Loss



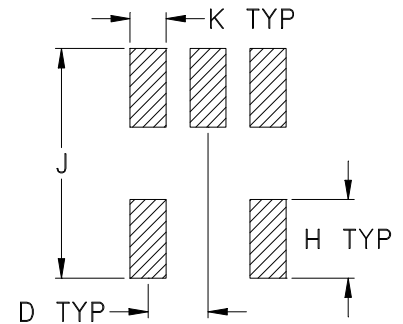
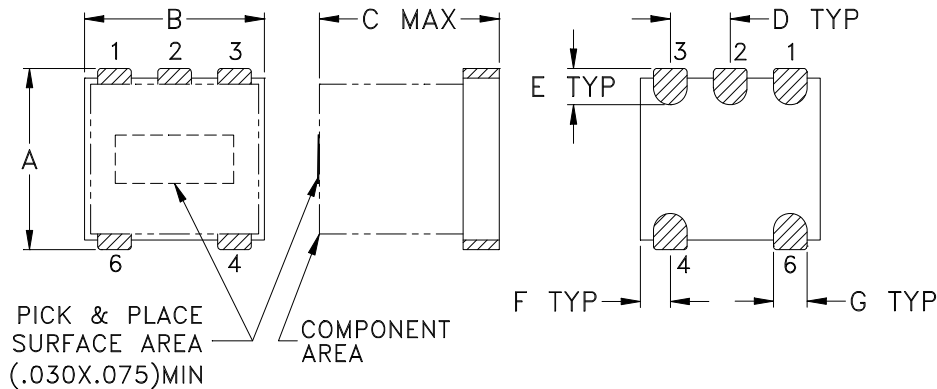
Case Style

AT

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 (3.81) | .150 (3.81) | .150 (3.81) | .050 (1.27) | .030 (0.76) | .025 (0.64) | .028 (0.71) | .065 (1.65) | .190 (4.83) | .030 (0.76) | -- -- | .10 |

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

Notes:

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

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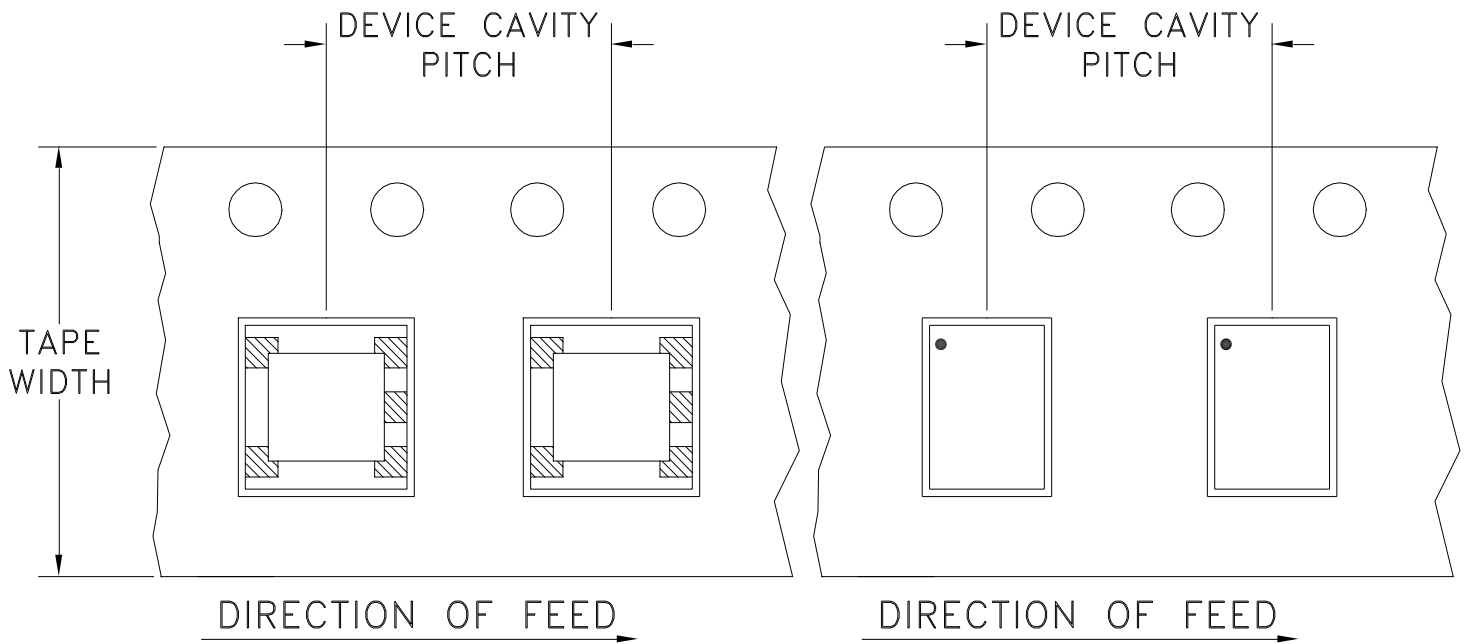


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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F17

DEVICE ORIENTATION IN T&R



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per 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.

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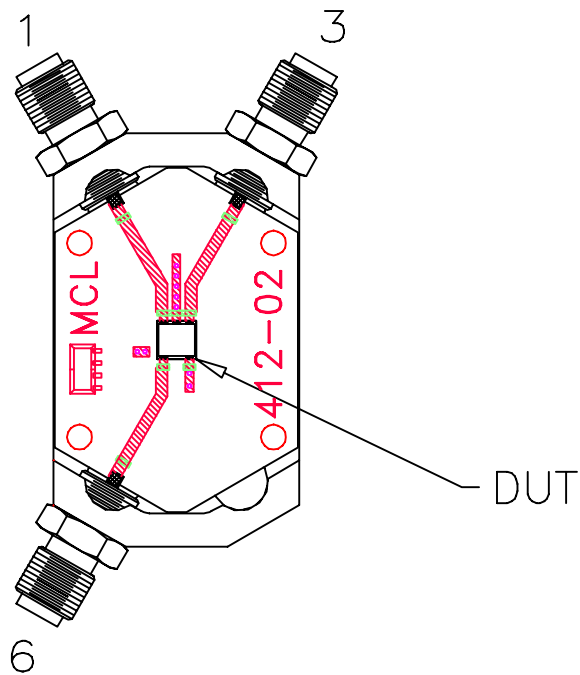


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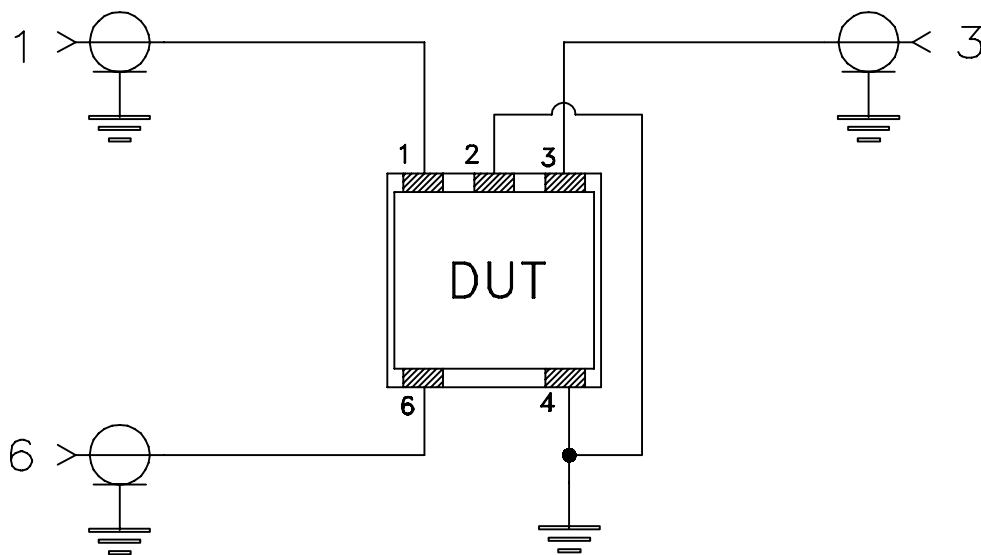
RF/IF MICROWAVE COMPONENTS

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 RO4350B 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 Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C 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 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; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215 |