

# Surface Mount RF Transformer

50Ω 0.2 to 350 MHz

T4-1+  
T4-1



Generic photo used for illustration purposes only  
CASE STYLE: W38

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

## Maximum 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.

## Pin Connections

|               |   |
|---------------|---|
| PRIMARY DOT   | 4 |
| PRIMARY       | 6 |
| SECONDARY DOT | 3 |
| SECONDARY     | 1 |
| SECONDARY CT  | 2 |
| NOT USED      | 5 |

## Features

- wideband, 0.2 to 350 MHz
- good return loss
- also available with surface mount gull wing (KK81) plug-in (X65) leads

## Applications

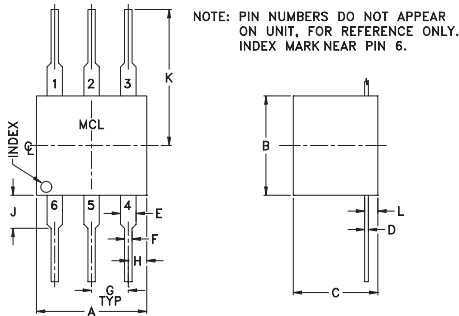
- impedance matching
- receivers/transmitters
- balance antennas

## Transformer Electrical Specifications

| Ω<br>RATIO<br>(Secondary/Primary) | FREQUENCY<br>(MHz) | INSERTION LOSS* |             |             |
|-----------------------------------|--------------------|-----------------|-------------|-------------|
|                                   |                    | 3 dB<br>MHz     | 2 dB<br>MHz | 1 dB<br>MHz |
| 4                                 | 0.2-350            | 0.2-350         | 0.35-300    | 2-100       |

\*Insertion Loss is referenced to mid-band loss, 0.6 dB typ.

## Outline Drawing



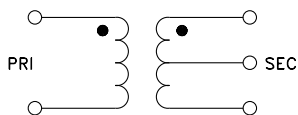
## Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E    | F     |
|------|------|------|------|------|-------|
| .30  | .27  | .23  | .010 | .042 | .020  |
| 7.62 | 6.86 | 5.84 | 0.25 | 1.07 | 0.51  |
| G    | H    | J    | K    | L    | wt    |
| .100 | .05  | .09  | .31  | .036 | grams |
| 2.54 | 1.27 | 2.29 | 7.87 | 0.91 | 0.50  |

## Typical Performance Data

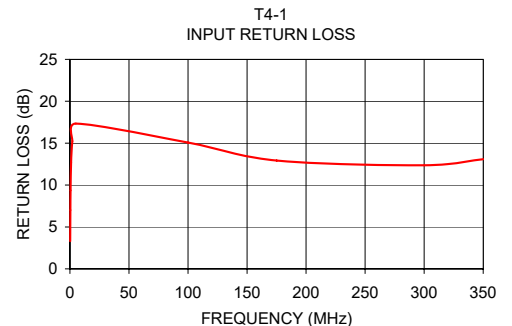
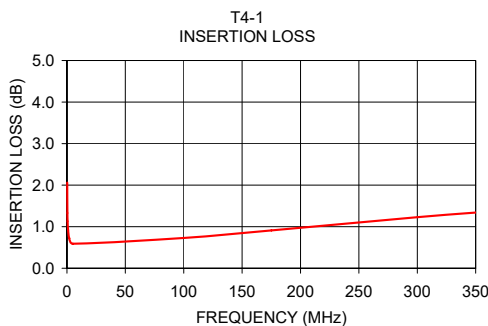
| FREQUENCY<br>(MHz) | INSERTION<br>LOSS<br>(dB) | INPUT<br>R. LOSS<br>(dB) |
|--------------------|---------------------------|--------------------------|
| 0.20               | 2.06                      | 3.31                     |
| 0.35               | 1.33                      | 7.01                     |
| 0.50               | 1.13                      | 9.36                     |
| 1.00               | 0.92                      | 12.67                    |
| 2.00               | 0.72                      | 15.24                    |
| 5.00               | 0.59                      | 17.34                    |
| 100.00             | 0.73                      | 15.07                    |
| 175.10             | 0.91                      | 12.93                    |
| 300.00             | 1.23                      | 12.36                    |
| 350.00             | 1.34                      | 13.08                    |

## Config. A



## 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)

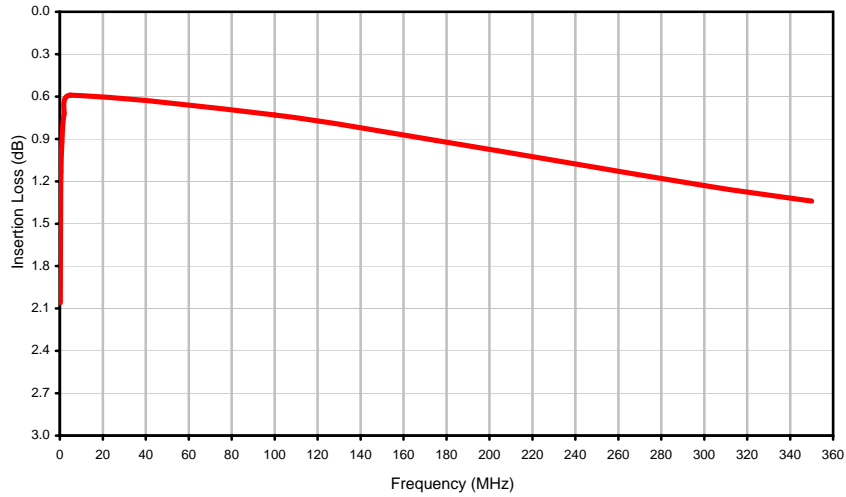


## Typical Performance Data

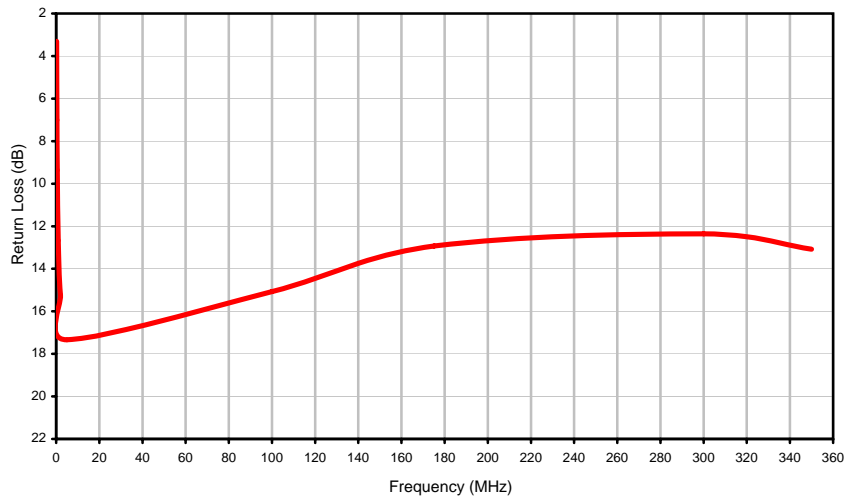
| FREQUENCY<br>(MHz) | INSERTION<br>LOSS<br>(dB) | RETURN<br>LOSS<br>(dB) |
|--------------------|---------------------------|------------------------|
| 0.20               | 2.06                      | 3.31                   |
| 0.35               | 1.33                      | 7.01                   |
| 0.50               | 1.13                      | 9.36                   |
| 1.00               | 0.92                      | 12.67                  |
| 2.00               | 0.72                      | 15.24                  |
| 5.00               | 0.59                      | 17.34                  |
| 100.00             | 0.73                      | 15.07                  |
| 175.10             | 0.91                      | 12.93                  |
| 300.00             | 1.23                      | 12.36                  |
| 350.00             | 1.34                      | 13.08                  |

## Typical Performance Curves

### Insertion Loss

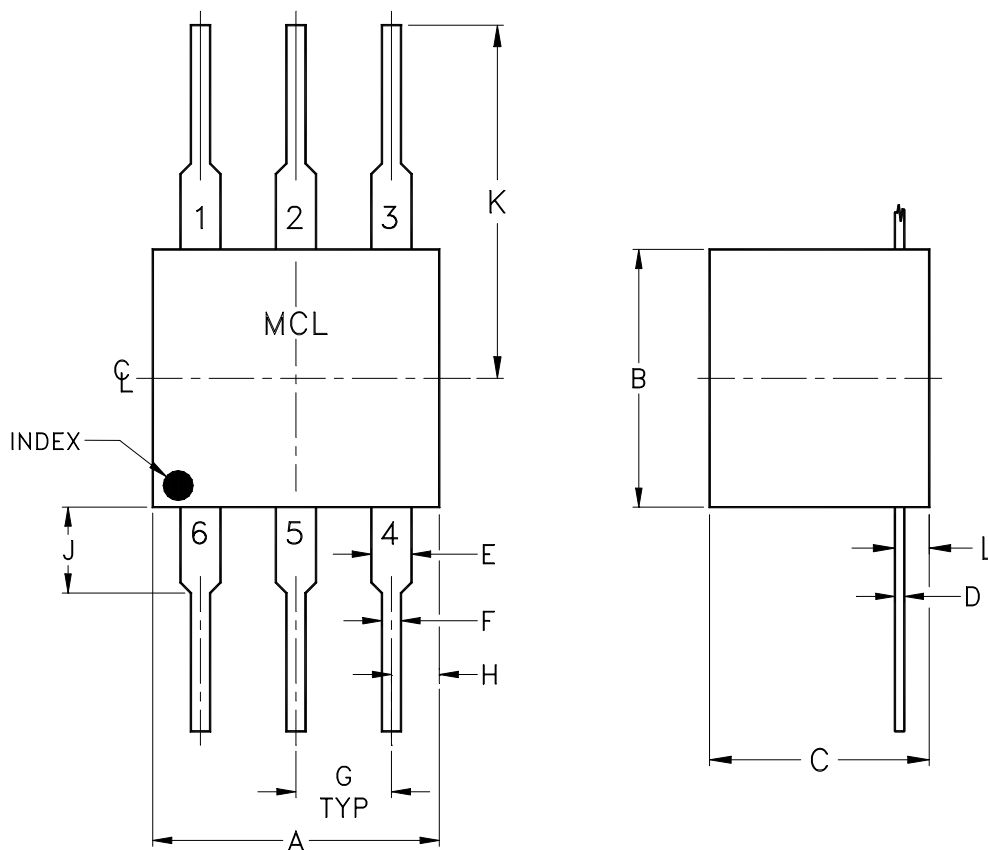


### Return Loss



## Outline Dimensions

W38



| CASE # | A             | B             | C             | D              | E              | F              | G              | H             | J             | K             | L              | WT. GRAM |
|--------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|----------------|----------|
| W38    | .30<br>(7.62) | .27<br>(6.86) | .23<br>(5.84) | .010<br>(0.25) | .042<br>(1.07) | .020<br>(0.51) | .100<br>(2.54) | .05<br>(1.27) | .09<br>(2.29) | .31<br>(7.87) | .036<br>(0.91) | .50      |

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3 Pl.  $\pm .015$ .

### Notes:

- Case material: Plastic.  
Termination finish: For RoHS Case Styles: Tin Plate over Nickel Plate.  
For RoHS-5 Case Styles: Tin-Lead Plate.

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| 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                           |
| 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, Para 4.2.5, Test S, 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                  |
| Lead Integrity                 | 2 Pound Pull, perpendicular to edge of unit   | MIL-STD-202, Method 211, 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                               |