

# Surface Mount RF Transformer

50Ω 10 to 8000 MHz

## TCM1-83X+



Generic photo used for illustration purposes only

CASE STYLE: DB1627

**+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            |

### Features

- ultra wide bandwidth 10 to 8000 MHz
- one model covers all telecommunication bands
- flat insertion loss
- good return loss
- aqueous washable
- protected by US Patent 9,071,229B1

### Applications

- differential modulator/demodulator and active mixers
- wideband push-pull amplifiers
- LTE, Cellular, PCS, UMTS, WiFi, WiMAX

### Electrical Specifications at 25°C

| Parameter           | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|---------------------|-----------------|------|------|------|--------|
| Impedance Ratio     |                 |      | 1    |      |        |
| Frequency Range     |                 | 10   |      | 8000 | MHz    |
| Insertion Loss      | 10-6000         | —    | 1.3  | 2.5  | dB     |
|                     | 6000-8000       | —    | 1.3  | 3.0  |        |
| Amplitude Unbalance | 10-6000         | —    | 0.5  | —    | dB     |
|                     | 6000-8000       | —    | 1.1  | —    |        |
| Phase Unbalance     | 10-6000         | —    | 8    | —    | Degree |
|                     | 6000-8000       | —    | 4    | —    |        |

### Maximum Ratings

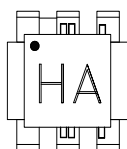
| Parameter             | Ratings        |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power              | 0.2W           |
| DC Current            | 30mA           |

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

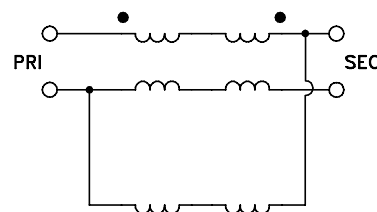
### Pin Connections

| Function      | Pin Number |
|---------------|------------|
| PRIMARY DOT   | 3          |
| PRIMARY       | 2          |
| SECONDARY DOT | 5          |
| SECONDARY     | 4          |
| GND           | 2          |
| NOT USED      | 1, 6       |

### Product Marking

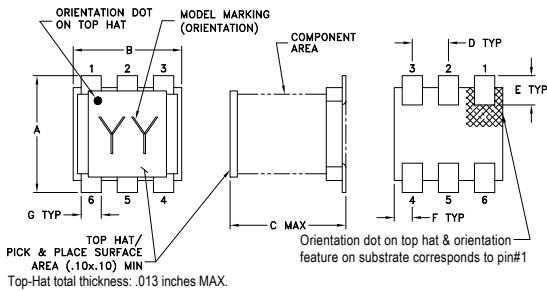


### Config. K



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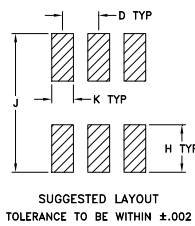
## Outline Drawing



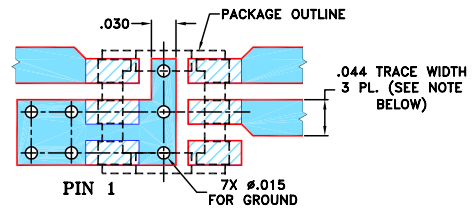
## Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E     | F    |
|------|------|------|------|-------|------|
| .160 | .150 | .160 | .050 | .040  | .025 |
| 4.06 | 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  |      |

## PCB Land Pattern



## Demo Board MCL P/N: TB-717+ Suggested PCB Layout (PL-395)

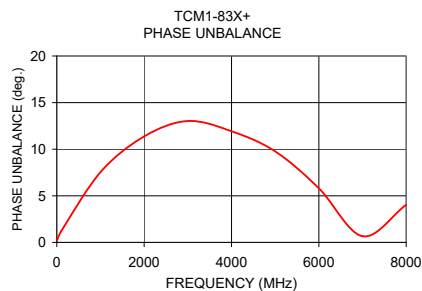
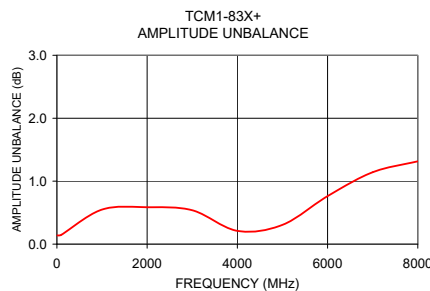
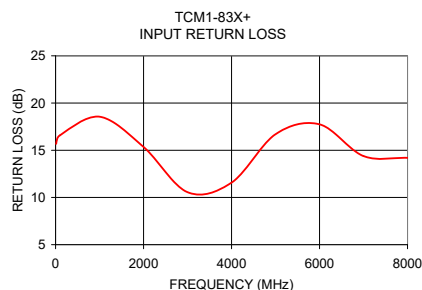
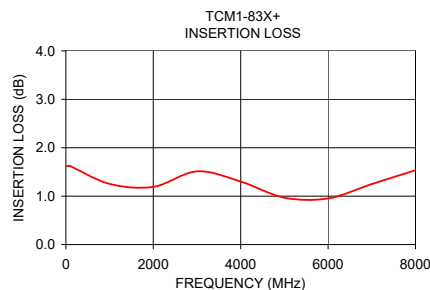


- NOTES:** 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Typical Performance Data

| Frequency (MHz) | Insertion Loss (dB) | Input R. Loss (dB) | Amplitude Unbalance (dB) | Phase Unbalance (Deg.) |
|-----------------|---------------------|--------------------|--------------------------|------------------------|
| 10              | 1.62                | 15.68              | 0.14                     | 0.26                   |
| 100             | 1.62                | 16.58              | 0.15                     | 1.19                   |
| 1000            | 1.25                | 18.55              | 0.55                     | 7.54                   |
| 2000            | 1.19                | 15.35              | 0.59                     | 11.37                  |
| 3000            | 1.51                | 10.56              | 0.54                     | 13.02                  |
| 4000            | 1.30                | 11.57              | 0.21                     | 11.93                  |
| 5000            | 0.97                | 16.70              | 0.31                     | 9.77                   |
| 6000            | 0.95                | 17.74              | 0.76                     | 5.81                   |
| 7000            | 1.25                | 14.39              | 1.14                     | 0.67                   |
| 8000            | 1.54                | 14.19              | 1.32                     | 4.03                   |



### Additional 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-Circuits' applicable established test performance criteria and measurement instructions.  
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