

Surface Mount  **RF Transformer**

**TCM3-452X+**

50Ω

20 to 4500 MHz



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**

- wide bandwidth 20 to 4500 MHz
- balanced transmission line
- good return loss
- aqueous washable

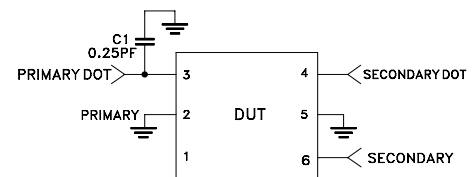
**Applications**

- PCS
- wideband push-pull amplifiers
- cellular

**Electrical Specifications at 25°C**

| Parameter                                  | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|--|-----------------|------|------|------|--------|
| <b>Impedance Ratio</b> (secondary/primary) |                 |      | 3    |      |        |
| <b>Frequency Range</b>                     |                 | 20   | —    | 4500 | MHz    |
| <b>Insertion Loss</b>                      | 20 - 4500       | —    | 1.5  | 3.0  | dB     |
| <b>Amplitude Unbalance</b>                 | 20 - 4500       | —    | 0.5  | —    | dB     |
| <b>Phase Unbalance</b>                     | 20 - 4500       | —    | 4    | —    | Degree |

**Electrical Schematic**



**Maximum Ratings**

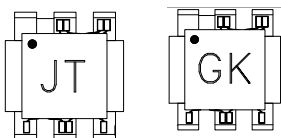
| Parameter             | Ratings        |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power              | 0.4W           |
| DC Current            | 30mA           |

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

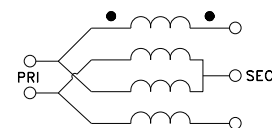
**Pin Connections**

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

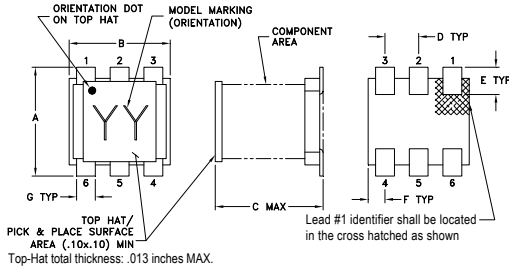
**Internal Optional Product Marking**



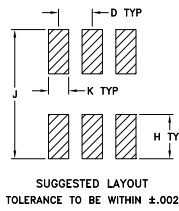
**Config. H**



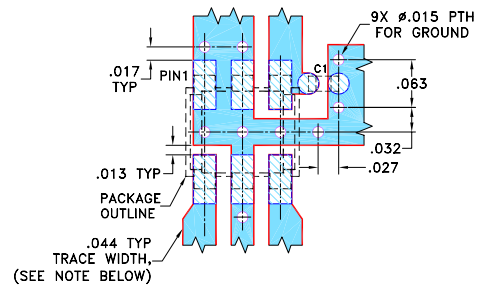
## Outline Drawing



## PCB Land Pattern



## Demo Board MCL P/N: TB-697+ Suggested PCB Layout (PL-381)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; 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.  
 3. 0402 SIZE CHIP COMPONENT FOOTPRINT IS SHOWN FOR REFERENCE. FOR COMPONENT VALUE REFER TO TB-697+.

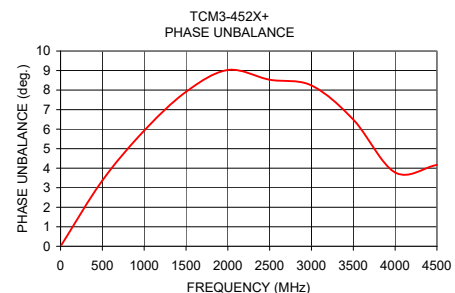
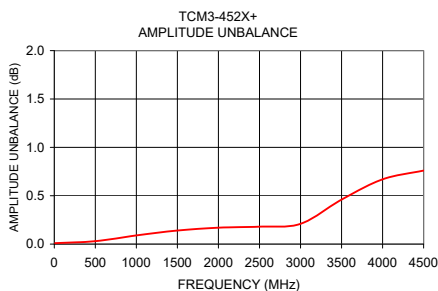
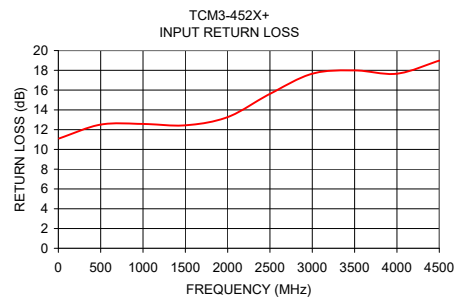
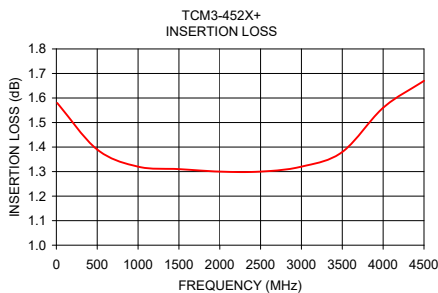
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## 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  |      |

## Typical Performance Data

| Frequency (MHz) | Insertion Loss (dB) | Input R. Loss (dB) | Amplitude Unbalance (dB) | Phase Unbalance (Deg.) |
|-----------------|---------------------|--------------------|--------------------------|------------------------|
| 10              | 1.58                | 11.11              | 0.01                     | 0.07                   |
| 500             | 1.39                | 12.51              | 0.03                     | 3.37                   |
| 1000            | 1.32                | 12.58              | 0.09                     | 5.92                   |
| 1500            | 1.31                | 12.44              | 0.14                     | 7.91                   |
| 2000            | 1.30                | 13.27              | 0.17                     | 9.03                   |
| 2500            | 1.30                | 15.62              | 0.18                     | 8.53                   |
| 3000            | 1.32                | 17.66              | 0.21                     | 8.24                   |
| 3500            | 1.38                | 17.99              | 0.46                     | 6.49                   |
| 4000            | 1.56                | 17.66              | 0.67                     | 3.78                   |
| 4500            | 1.67                | 18.98              | 0.76                     | 4.17                   |



## 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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