# ETC1-1-13



## E-Series Transformer, RF 1:1 Transmission Line
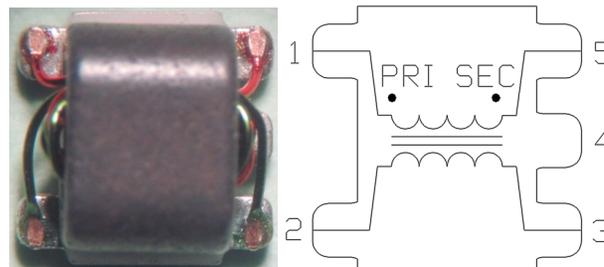## 4.5 - 3000 MHz

**Rev. V12**

## Features

- Surface Mount
- 1:1 impedance ratio
- Available on Tape and Reel
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible
- Available on Tape and Reel

## Description

The ETC1-1-13 is a 1:1 transmission line transformer in a low cost surface mount package.

Ideally suited for high volume cellular and wireless applications.

## Functional Schematic



## Pin Configuration

| Pin No. | Function |
|---------|----------|
| 1 | Primary Dot |
| 2 | Primary |
| 3 | Secondary |
| 4 | Not Connected (ground) |
| 5 | Secondary Dot |

## Electrical Specifications:  Freq. = 4.5 - 3000 MHz, $T_A$ = 25°C, $Z_0$ = 50 Ω, $P_{IN}$ = 0 dBm

| Parameter | Conditions | Units | Min. | Typ. | Max. |
|-----------|------------|-------|------|------|------|
| Insertion Loss (Ref. level -3 dB) | 4.5 - 1000 MHz<br>1000 - 2000 MHz<br>2000 - 3000 MHz | dB | - | 0.32<br>-<br>- | 1.0<br>2.0<br>3.5 |
| Amplitude Balance | - | dB | - | - | ±1.0 |
| Phase Balance (Ref. value 0°) | - | degree | - | - | ±20 |

## Ordering Information

| Part Number | Description |
|-------------|-------------|
| ETC1-1-13TR | 2000 piece reel |

## Recommended Maximum Ratings

| Parameter | Units |
|-----------|-------|
| Input RF Power | 250 mW |
| DC Current | 30 mA |
| Operating Temperature | -55ºC to +85ºC |

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## Typical Performance Curves: $T_A$ = 25°C, $Z_0$ = 50 Ω, $P_{IN}$ = 0 dBm

*Insertion Loss*

INSERTION LOSS (0 to -10 dB) vs FREQ (30 kHz to 3 GHz)

*Input Impedance*

INPUT IMPEDANCE on SMITH CHART; FREQ (30 kHz to 3 GHz)

*Phase Unbalance*

PHASE UNBALANCE (0 to 360 deg) vs FREQ (30 kHz to 3 GHz)

*Amplitude Unbalance*

AMP UNBALANCE (5 to -5 dB) vs FREQ (30 kHz to 3 GHz)
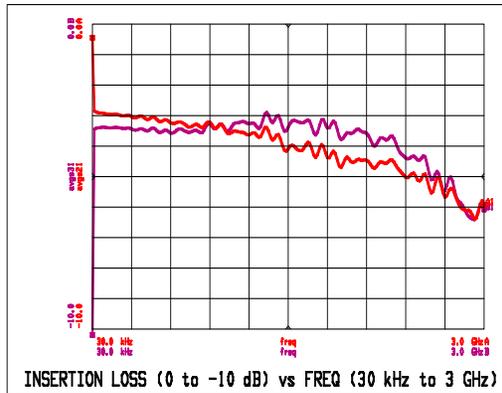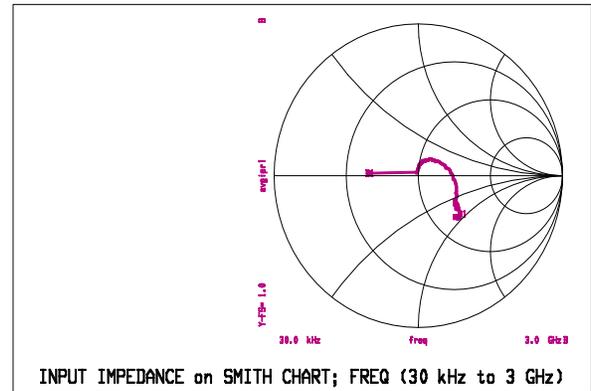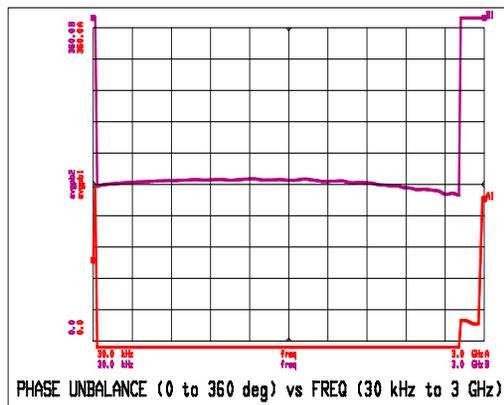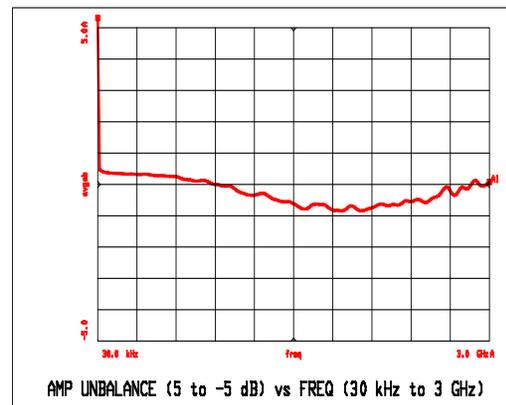
Full temperature plots available on request

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## 4.5 - 3000 MHz

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## Recommended Board Layout / Footprint[2]
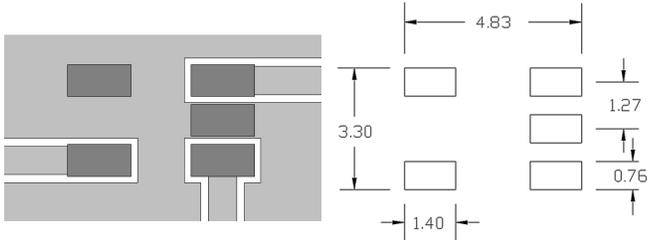
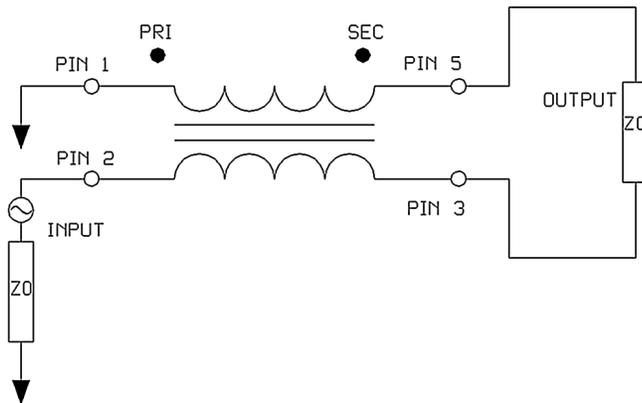

2. Recommended PCB layout shown uses 0.8 mm FR4, grounded coplanar wave guide, transmission line width 0.90 mm and gap 0.25 mm.
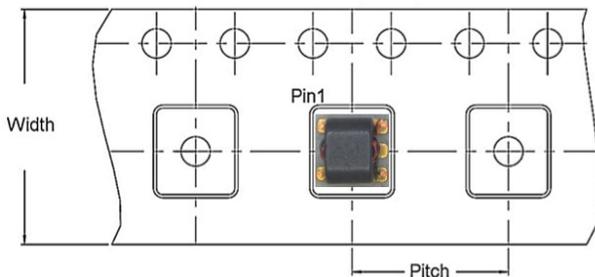
## Application Circuit



## Outline Drawing[3,4,5,6]
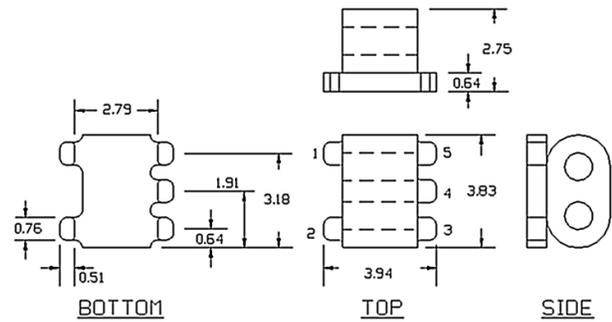


3. Dimensions in mm.
4. Tolerance: ±0.2 mm unless otherwise noted.
5. Model number and lot code are printed on the reel.
6. Lead finish: Sn.

## Carrier Tape Orientation



## Tape & Reel Information

| Parameter | Units | Value |
|---|---|---|
| Qty per reel | - | 2000 |
| Reel Size | mm | 330 |
| Width | mm | 12.0 |
| Pitch | mm | 8.0 |
| Orientation | - | F5 |
| Reference Application Note ANI-019 for orientation | | |

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