

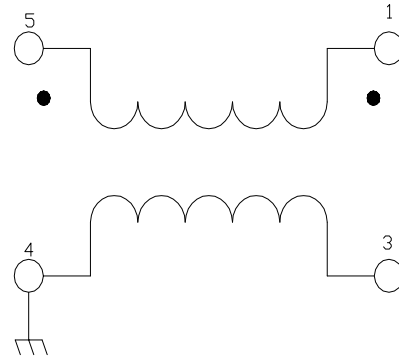
## Features

- 1:1 Impedance ratio
- Surface mount
- Tape and reel packaging available

## Description

M/A-COM's ETC1-1-13 is a 1:1 RF transmission line transformer in a low cost, surface mount package. Ideally suited for high volume cellular and wireless application. Parts are packaged in tape & reel

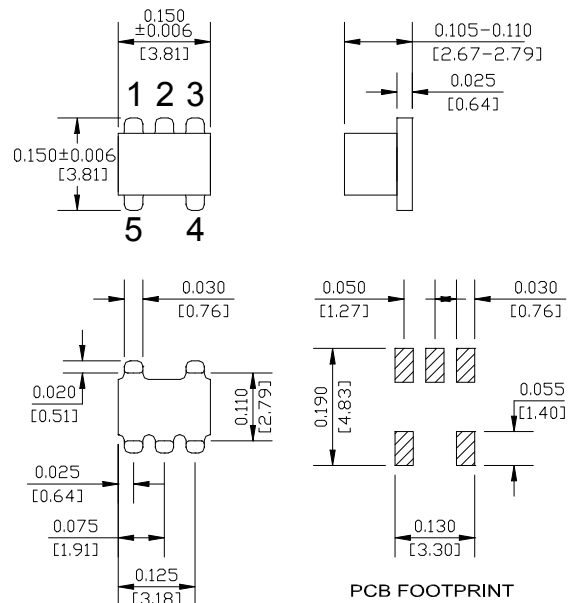
## Schematic



## Product Image



## SM-22 package



## Pin Configuration

Pin No.	Function
1	Secondary Dot
2	Not Connected
3	Secondary
4	Primary
5	Primary Dot

\* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

\* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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

Rev. V7

**Electrical Specifications:**  $T_A = 25^\circ\text{C}$ ,  $V_{\text{HIGH}} = 3.0\text{ V}$ ,  $V_{\text{LOW}} = 0\text{ V}$ ,  $Z_0 = 50\ \Omega$ <sup>1</sup>

Parameter	Test Conditions	Test Conditions	Units	Min	Typ	Max
RF Frequency	-	4.5 - 3000	MHz	-	-	-
Insertion Loss	-	4.5 - 1000	dB	-	0.32	1.0
		1000 - 2000	dB	-	-	2.0
		2000 - 3000	dB	-	-	3.5
Amplitude Unbalance	-	4.5 - 1000	dB	-	-	1.0
Phase Unbalance	-	4.5 - 1000	Degrees	-	-	20

1. External DC blocking capacitors are required on all RF ports (39 pF capacitors are recommended).

### Absolute Maximum Ratings<sup>2,3</sup>

Parameter	Absolute Maximum
DC Power	250mW
DC Current	30mA
Operating Temperature	-55°C to +85°C
Storage Temperature	-55°C to +125°C

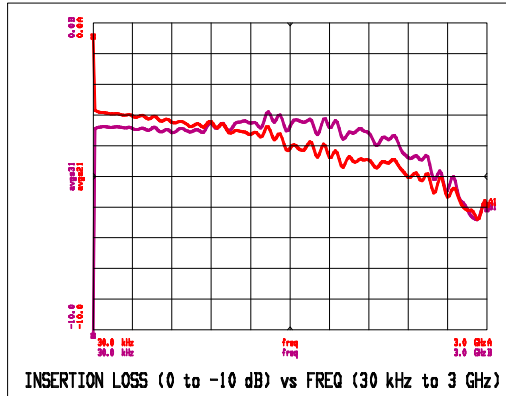
2. Exceeding any one or combination of these limits may cause permanent damage to this device.

3. M/A-COM does not recommend sustained operation near these survivability limits.

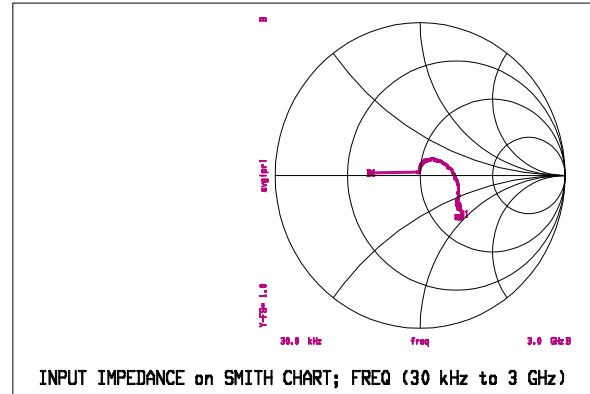
† Reference Application Note M538 for lead-free solder reflow recommendations.  
Meets JEDEC moisture sensitivity level 1 requirements.

## Typical Performance Curves

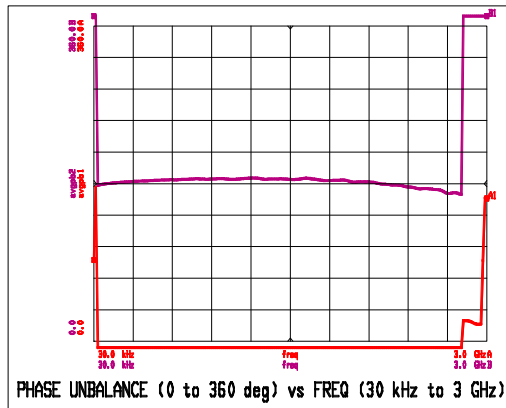
### Insertion Loss



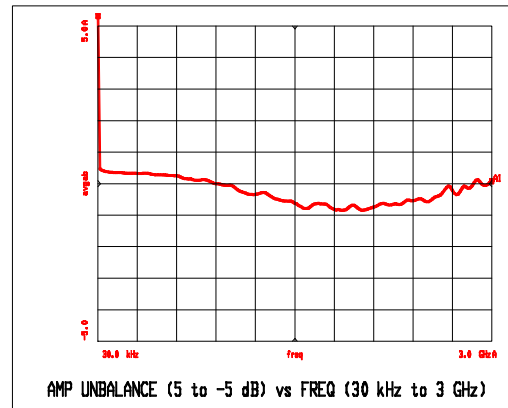
### Input Impedance



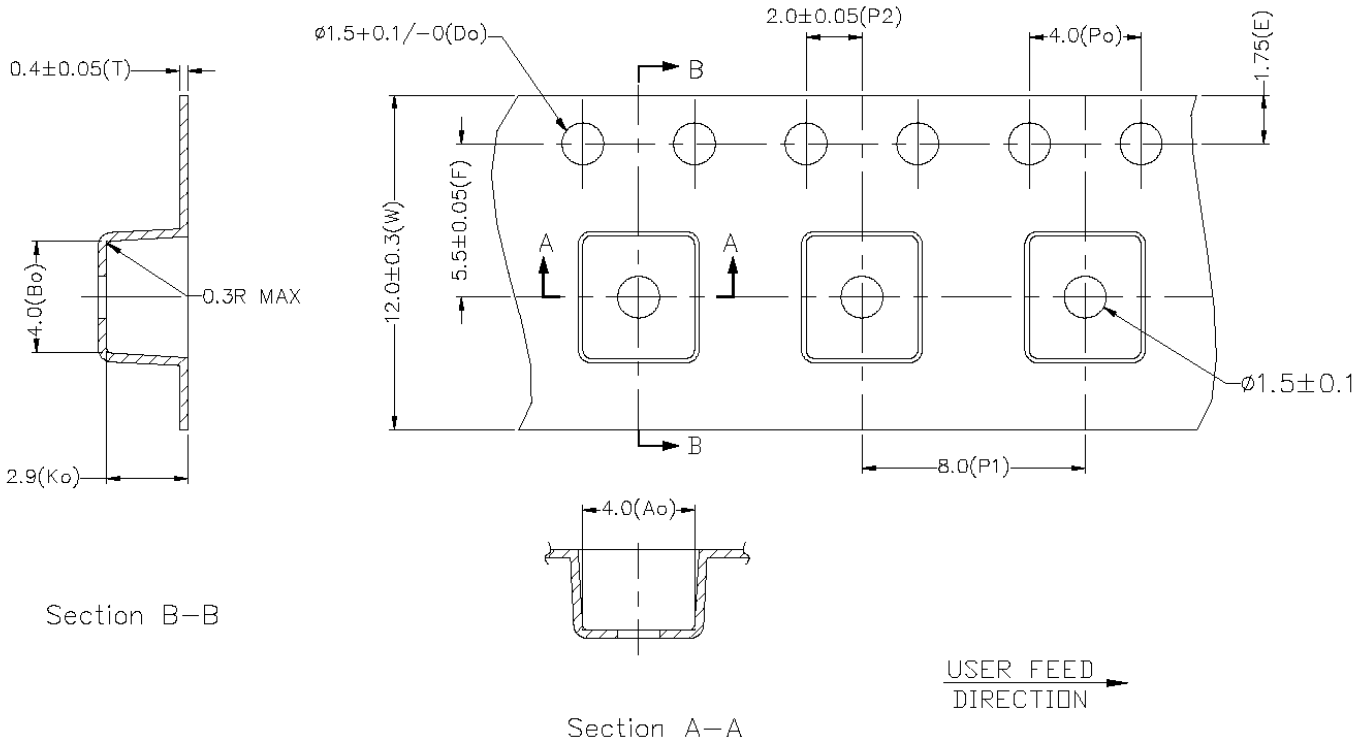
### Phase Unbalance



### Amplitude Unbalance



**Tape & Reel Information**



Item	Dimension
Ao	4.00mm +/-0.1mm
Bo	4.00mm +/-0.1mm
Ko	2.9mm +/-0.1mm
W	12.00mm +/-0.3mm
P1	8.00mm +/-0.1mm

**Ordering Information**

Part Number	Package
ETC1-1-13TR	2000 piece reel

- 4. Reference Application Note M513 for reel size information.
- 5. All sample boards include 5 loose parts.