

## E-Series RF 1:4 Flux Coupled Step-up Transformer 2 - 800 MHz

Rev. V8

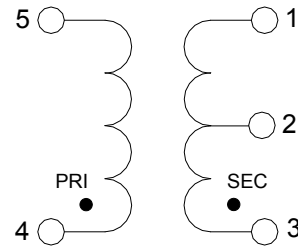
### Features

- 1:4 Impedance Ratio
- CT on Secondary
- Surface Mount
- Tape and Reel Packaging Available
- RoHS Compliant, Pb Free
- Termination Finish - Sn

### Description

The ETC4-1-2 is a 1:4 RF flux coupled step-up transformer in a surface mount package. Ideally suited for high volume cellular and wireless applications. Typical applications include single to balanced mode conversion and impedance matching. Parts are packaged in tape & reel.

### Functional Schematic



### Pin Configuration<sup>2</sup>

Pin #	Function	Pin #	Function
1	Secondary	4	Primary dot
2	Secondary CT	5	Primary
3	Secondary Dot		

2. MACOM recommends connecting unused package pins to ground.

### Electrical Specifications: Freq = 2 - 800 MHz, T<sub>A</sub> = 25°C, Z<sub>0</sub> = 50 Ω, P<sub>IN</sub> = 0 dBm

Parameter	Test Conditions & Frequency (MHz)	Units	Min.	Typ.	Max.
Insertion Loss	F <sub>L</sub> —F <sub>U</sub> 10 - 100	dB	—	— 1.21 —	1.0
	5 - 600				2.0
	2 - 800				3.0
Amplitude Balance	10 - 100	dB	—	—	0.25
	2 - 800				1.0
Phase Balance	10 - 500	Degrees	—	—	2.0
	2 - 800				10.0

### Ordering Information<sup>1</sup>

Part Number	Package
ETC4-1-2TR	2000 piece reel

1. Reference Application Note M513 for reel size information.

### Recommended Maximum Ratings<sup>3,4</sup>

Parameter	Absolute Maximum
DC Power <sup>5</sup>	250 mW
DC Current	30 mA
Operating Temperature	-55°C to +85°C

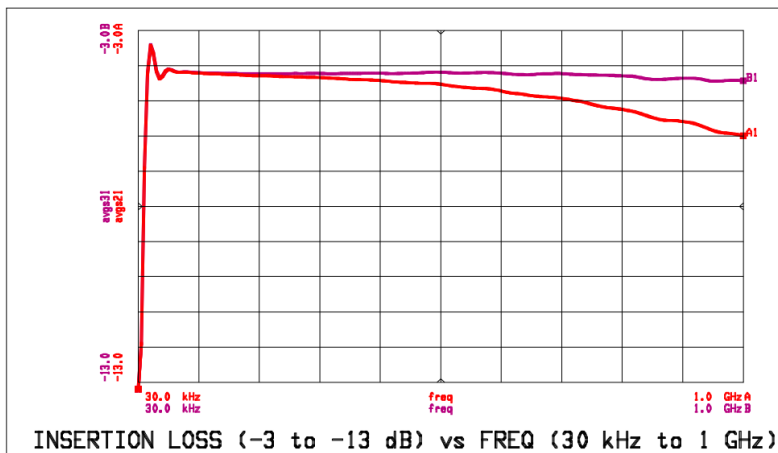
3. Exceeding anyone or combination of these limits may cause permanent damage to this device.  
 4. MACOM does not recommend sustained operation near these survivability limits.  
 5. Specified at +25°C only.

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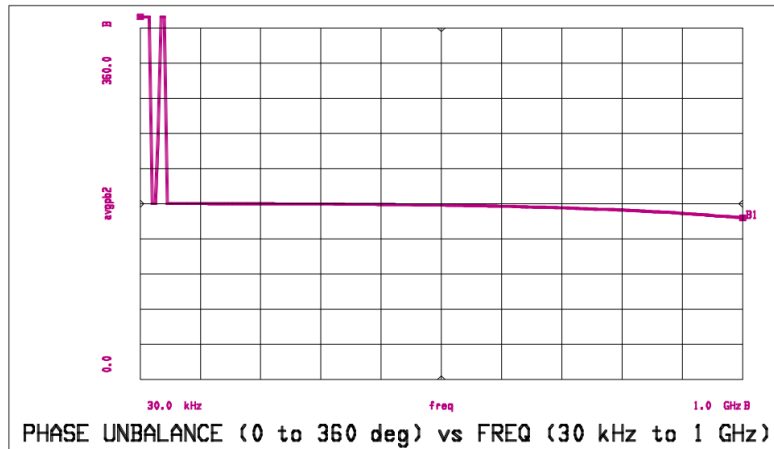
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Typical Performance Curves<sup>6</sup>:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50\ \Omega$ ,  $P_{IN} = 0\ \text{dBm}$

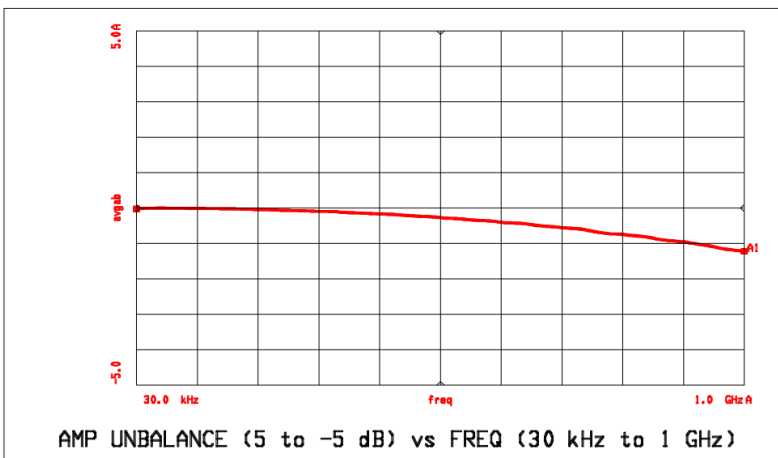
**Insertion Loss**



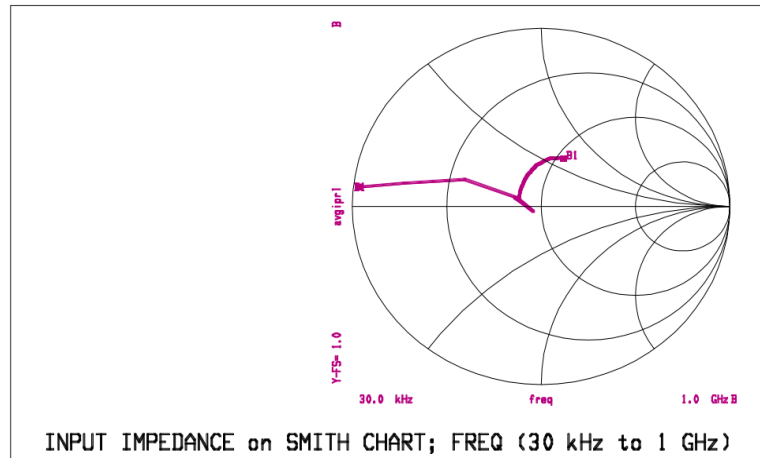
**Phase Balance**



**Amplitude Balance**



**Input Impedance**

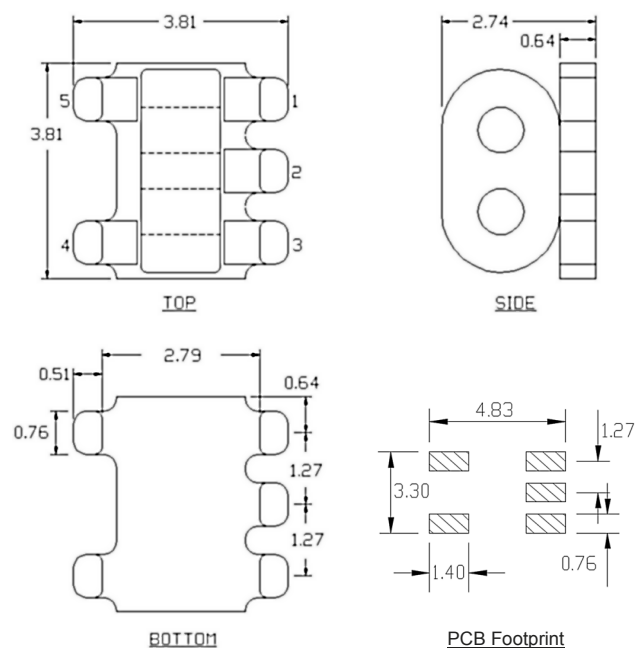


6. Full temperature plots available on request.

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### Outline Drawing<sup>7,8,9,10</sup>



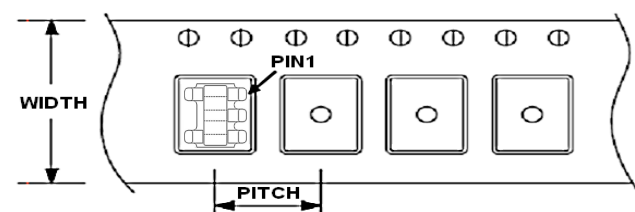
7. Dimensions in mm.  
8. Tolerance:  $\pm 0.2$  mm unless otherwise noted.  
9. Model number and lot code are printed on the reel.  
10. Finish: Tin (Sn).

### PCB Layout<sup>11</sup>



11. Recommended PCB layout shown above uses 0.8 mm FR4, Grounded coplanar wave guide, transmission line width 0.25 mm and gap 0.90 mm.

### Carrier Tape Orientation



### Tape & Reel Information

Parameter	Units	Value
Qty per reel	-	2000
Reel Size	mm	330
Tape Width	mm	12.00
Pitch	mm	8.00
Orientation	-	F5
Reference Application Note ANI-019 for orientation		

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