

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

Rev. V8

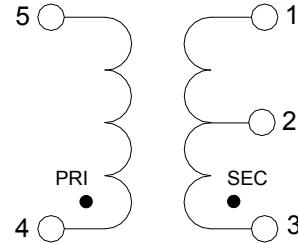
Features

- 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 Configuration²

| 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_A = 25°C, Z₀ = 50 Ω, P_{IN} = 0 dBm

| Parameter | Test Conditions & Frequency (MHz) | Units | Min. | Typ. | Max. | |
|-------------------|-----------------------------------|---------|------|------|------|-----|
| Insertion Loss | F _L —F _U | dB | — | — | 1.0 | |
| | 10 - 100 | | | | | 2.0 |
| | 5 - 600 | | | | | 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 Information¹

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

1. Reference Application Note M513 for reel size information.

Recommended Maximum Ratings^{3,4}

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

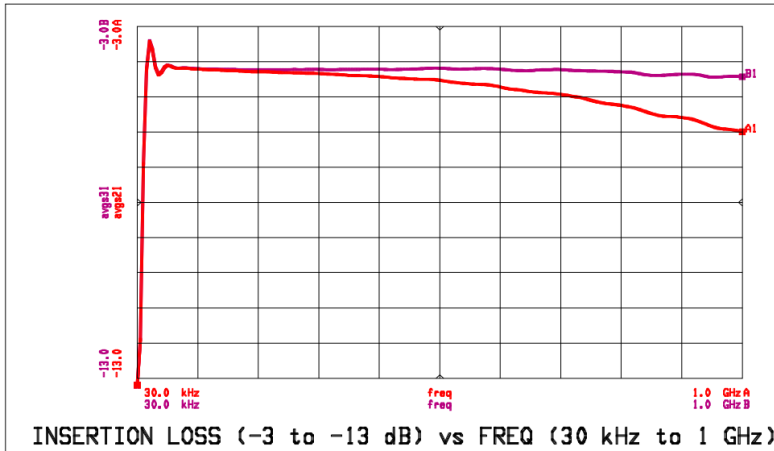
3. Exceeding anyone or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.
5. Specified at +25°C only.

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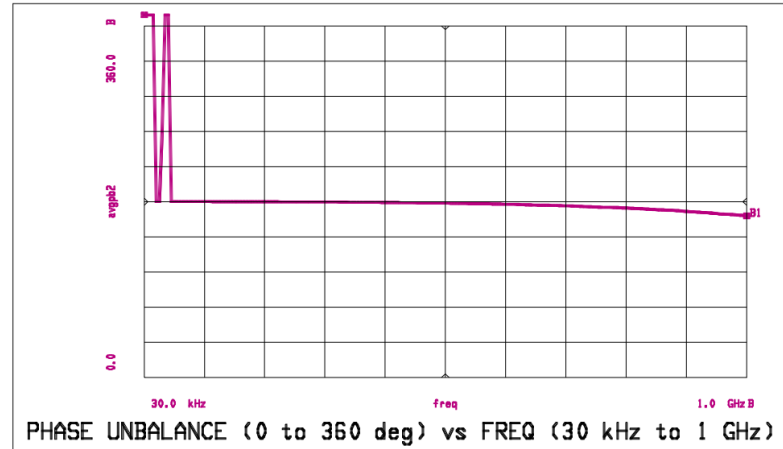
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Typical Performance Curves⁶: $T_A = 25^\circ\text{C}$, $Z_0 = 50 \Omega$, $P_{IN} = 0 \text{ dBm}$

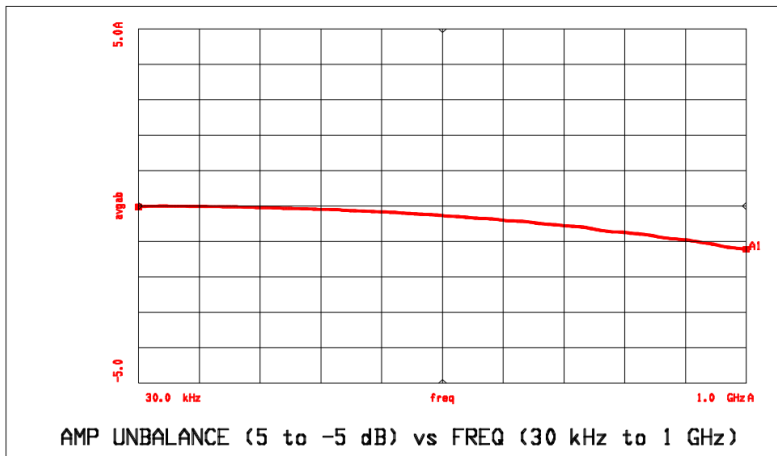
Insertion Loss



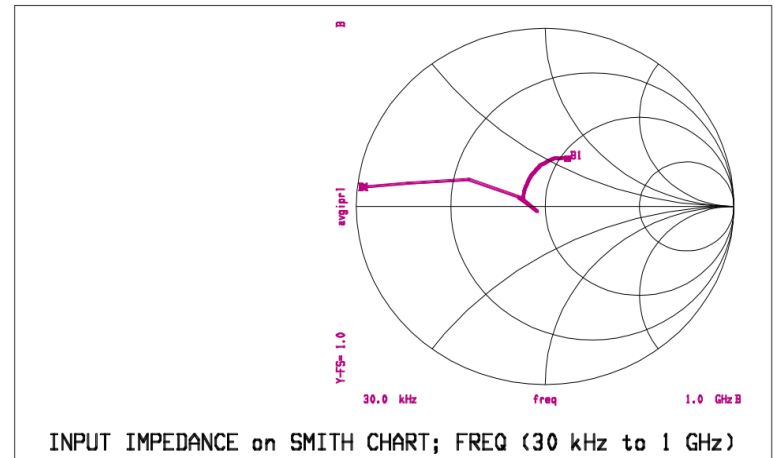
Phase Balance



Amplitude Balance

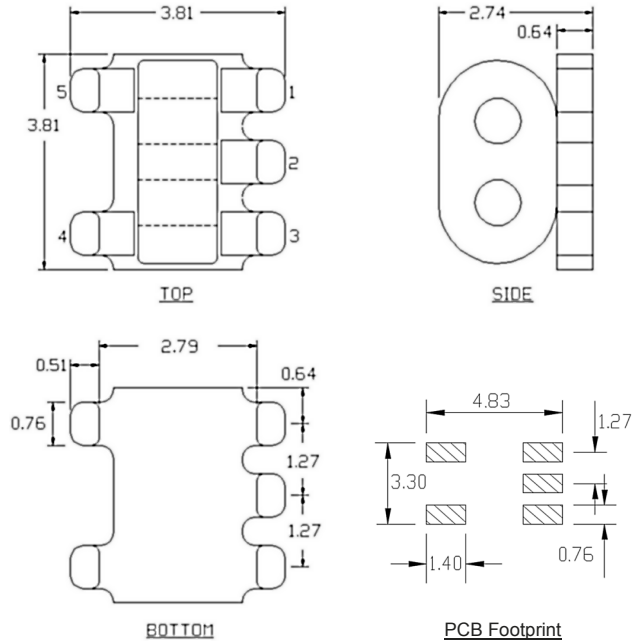


Input Impedance



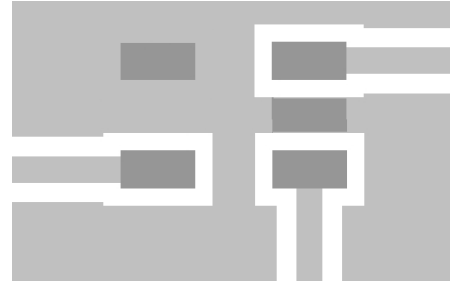
6. Full temperature plots available on request.

Outline Drawing^{7,8,9,10}



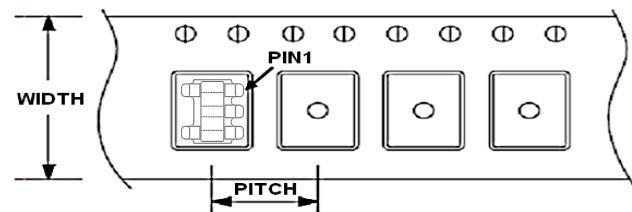
- 7. Dimensions in mm.
- 8. Tolerance: ± 0.2 mm unless otherwise noted.
- 9. Model number and lot code are printed on the reel.
- 10. Finish: Tin (Sn).

PCB Layout¹¹



- 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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