

## RF 1:1 Flux Coupled Transformer 0.3 - 200 MHz

Rev. V9

### Features

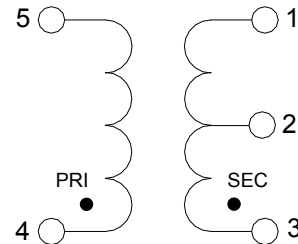
- Surface Mount
- 1:1 impedance
- Available on Tape and Reel
- RoHS Compliant and Lead free
- 260°C Reflow Compatible

### Description

MABAES0060 is a RoHS compliant device that is equivalent to the ETC1-1T transformer. This device is a 1:1 RF flux coupled transformer in a SM-22 surface mount package and is designed to be utilized in both standard reflow and high temperature soldering

Ideally suited for high volume cellular and wireless applications. Typical applications include single to balanced mode conversion and impedance matching.

### 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. = 0.3 - 200 MHz, T<sub>A</sub> = 25°C, P<sub>in</sub> = 0 dBm

Parameter	Test Conditions & Frequency (MHz)	Units	Min.	Typ.	Max.
<b>Z<sub>0</sub> = 50 Ω</b>					
Insertion Loss	0.3 - 200	dB	—	—	1.5
Amplitude Balance	0.3 - 50 0.3 - 200	dB	—	—	0.1 0.5
Phase Balance	0.3 - 50 0.3 - 200	Degree	—	—	1.0 5.0
Input Return Loss	0.3 - 200 5 - 120	dB	—	—	10.0 15.0
<b>Z<sub>0</sub> = 75 Ω</b>					
Insertion Loss	0.3 - 5 5 - 200	dB	—	—	1.7 0.9
Amplitude Balance	0.3 - 50 0.3 - 200	dB	—	—	0.1 0.5
Phase Balance	0.3 - 50 0.3 - 200	Degree	—	—	2.0 5.0
Input Return Loss	0.3 - 5 5 - 120 120 - 200	dB	7 19 15	—	—

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

Part Number	Package
MABAES0060	2000 piece reel

1. Reference Application Note M513 for reel size information.

**RF 1:1 Flux Coupled Transformer**  
**0.3 - 200 MHz**

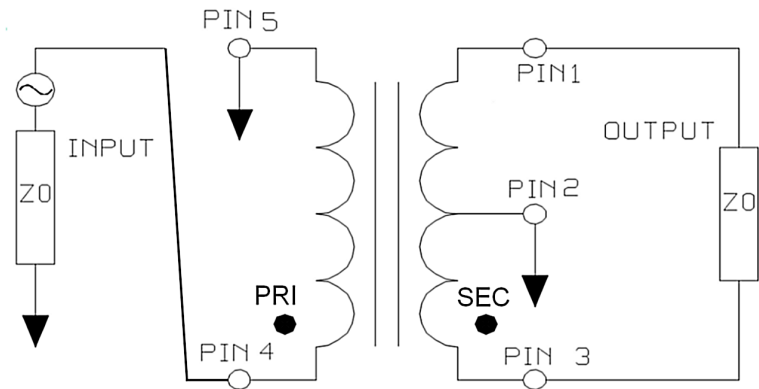
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## Absolute Maximum Ratings<sup>1,2</sup>

Parameter	Units
DC Power	500 mW
DC Current	500 mA
Operating Temperature	-40°C to +85°C

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. The maximum DC current applies to the secondary center tap in applications where the secondary is balanced.

## Application Schematic

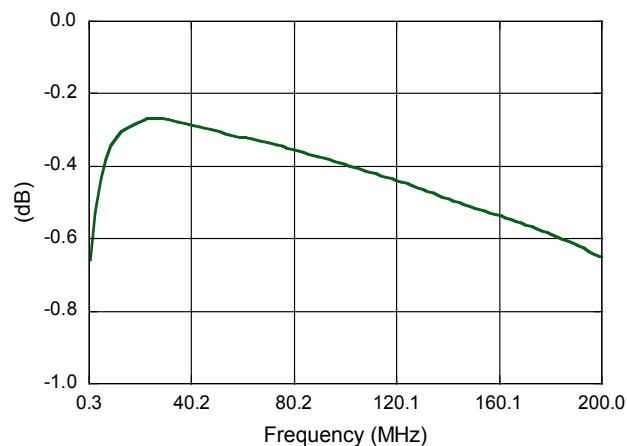


## RF 1:1 Flux Coupled Transformer 0.3 - 200 MHz

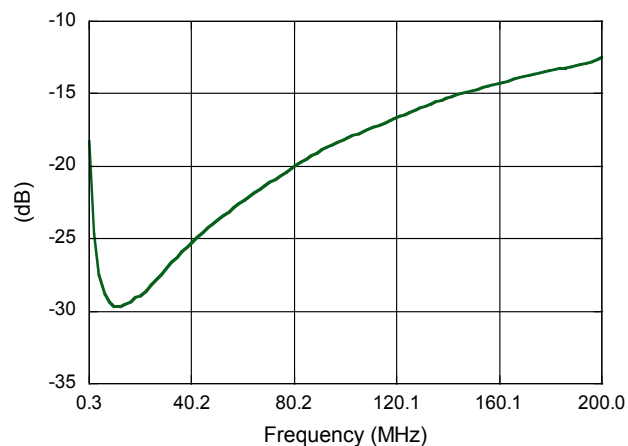
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Typical Performance Curves: Freq. = 0.3 - 200 MHz,  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50\ \Omega$ ,  $P_{IN} = 0\ \text{dBm}$

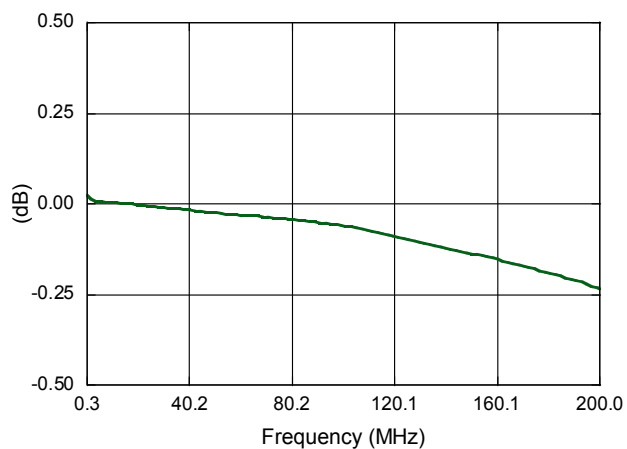
**Insertion Loss**



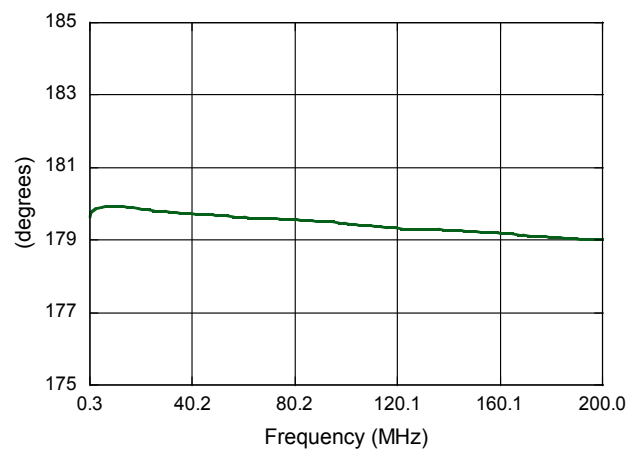
**Input Return Loss**



**Amplitude Balance**



**Phase Balance**

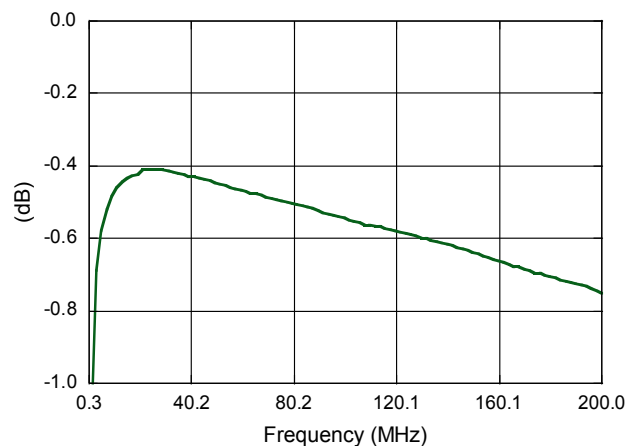


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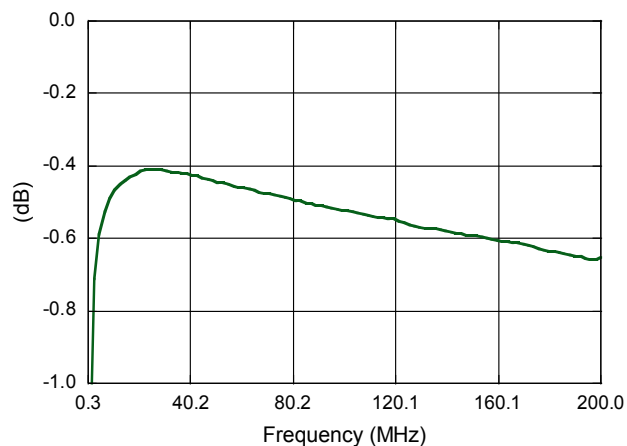
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Typical Performance Curves: Freq. = 0.3 - 200 MHz,  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 75\ \Omega$ ,  $P_{IN} = 0\ \text{dBm}$

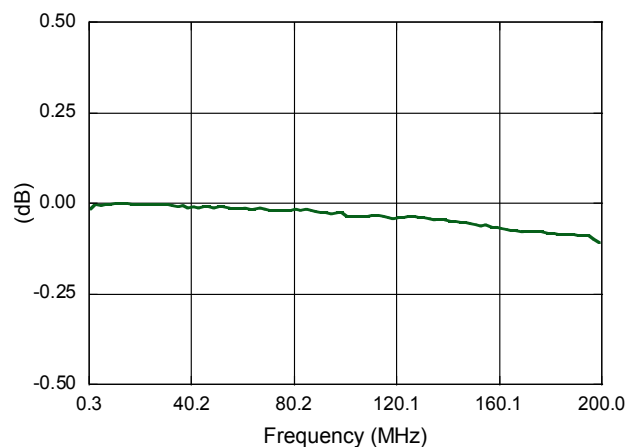
Insertion Loss (pin 4\_3)



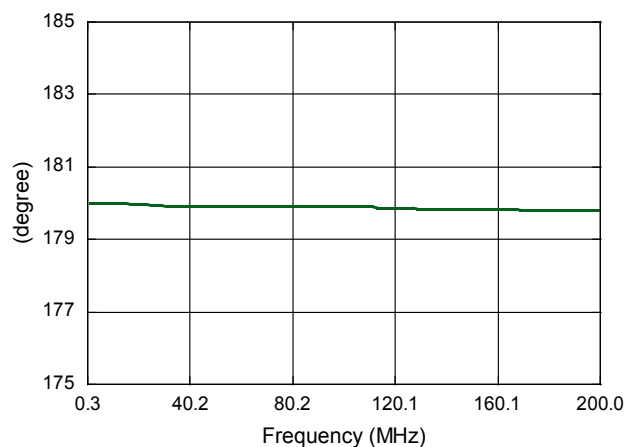
Insertion Loss (pin 4\_1)



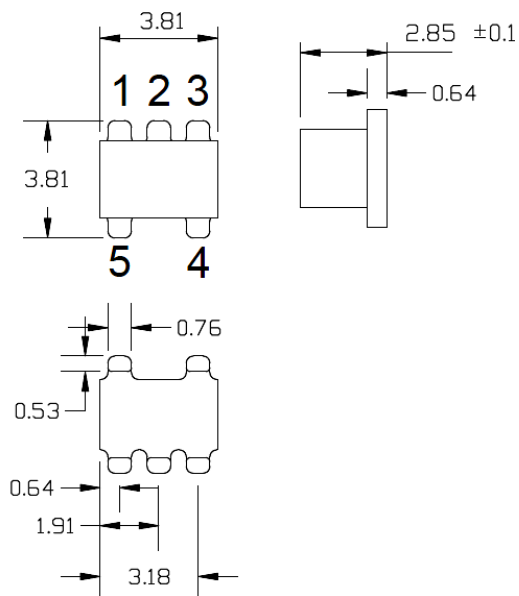
Amplitude Balance



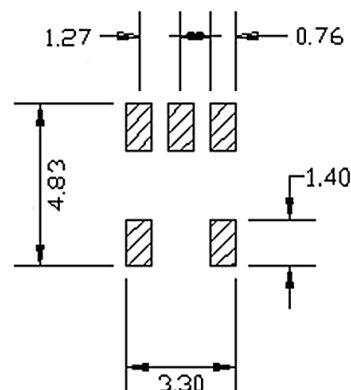
Phase Balance



## Outline Drawing



## PCB Layout



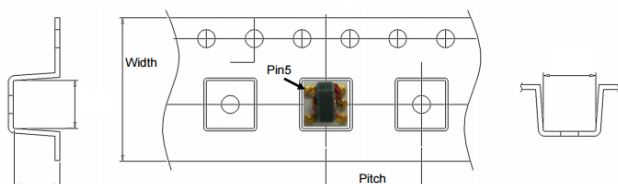
Dimensions in mm.

Tolerance: ±0.38 mm unless otherwise noted.

Model number and lot code are printed on the reel.

Lead plating: ENIG on both sides, 0.05 to 0.1 µm gold over 3 to 6 µm nickel.

## Carrier Tape Orientation



## Tape & Reel Information

Parameter	Units	Value
Qty per reel	-	2000
Reel Size	mm	330
Tape Width	mm	12
Pitch	mm	8
Orientation	-	F5
Reference Application Note ANI-019 for orientation		

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