

E-Series RF 1:1 Transformer 0.4 - 500 MHz

Rev. V4

Features

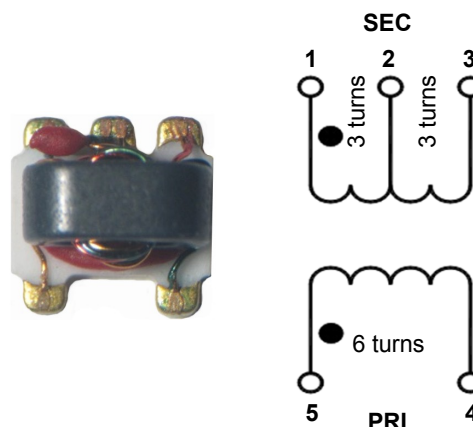
- Surface Mount
- 1:1 Impedance Ratio
- CT on Secondary
- RoHS* Compliant 1:1 Transformer
- Tape and Reel packaging available

Description

MABA-009180-500MHz is a RoHS compliant 1:1 RF flux coupled transformer in a low cost, surface mount package. Ideally suited for high volume cellular and wireless applications. Typical applications include single to balanced mode conversion and impedance matching.

The MABA-009180-500MHz transformer is offered in an SM-22 surface mount package and is designed to be utilized in both standard reflow and high temperature soldering reflow profiles.

Functional Schematic



Pin Configuration

Pin No.	Function
1	Secondary Dot
2	Secondary CT
3	Secondary
4	Primary
5	Primary Dot

Electrical Specifications: $T_A = +25^\circ\text{C}$, $Z_0 = 50 \Omega$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	1 - 100 MHz	dB	—	—	1
	0.5 - 300 MHz				2
	0.4 - 500 MHz				3
Amplitude Unbalance	1 - 100 MHz	dB	—	0.1	—
	0.5 - 300 MHz			0.6	
Phase Unbalance	1 - 100 MHz	Degrees	—	2	—
	0.5 - 300 MHz			5	

Ordering Information

Part Number	Package
MABA-009180-500MHz	2000 piece reels

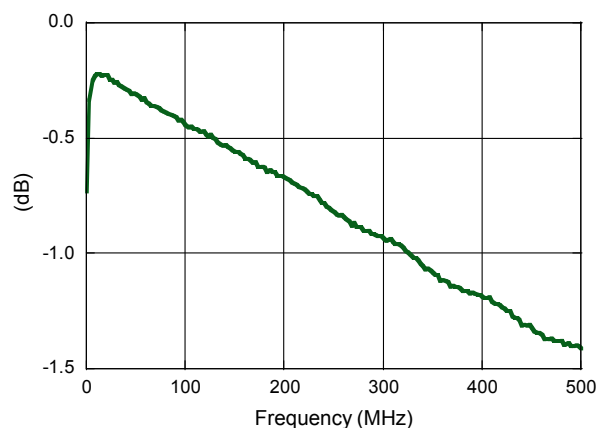
Absolute Maximum Ratings¹

Parameter	Absolute Maximum
RF Power	250 mW
DC Current	240 mA ²
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +125°C

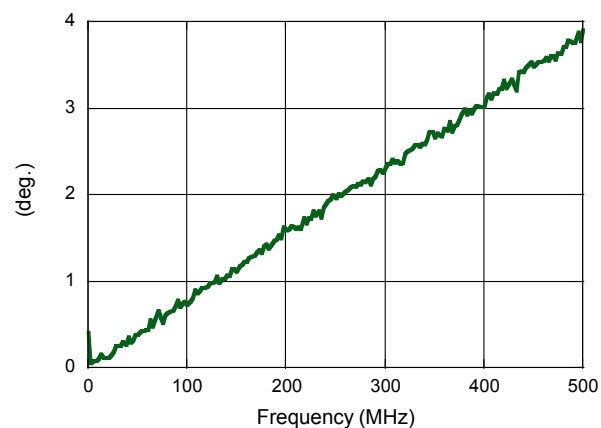
1. Operation of this device above any one of these parameters may cause permanent damage.
2. The maximum DC current applies to the secondary center tap in applications where the secondary is balanced.

Typical Performance Curves

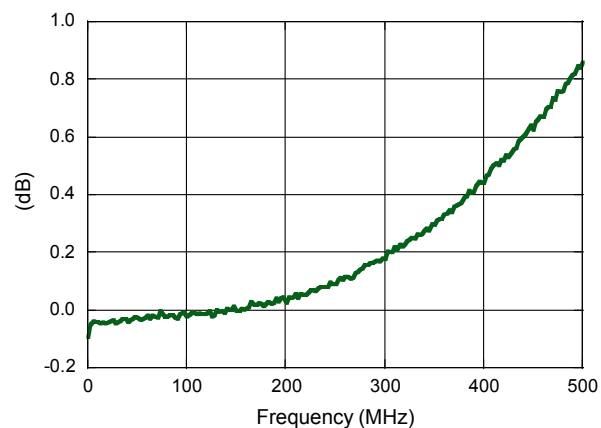
Insertion Loss



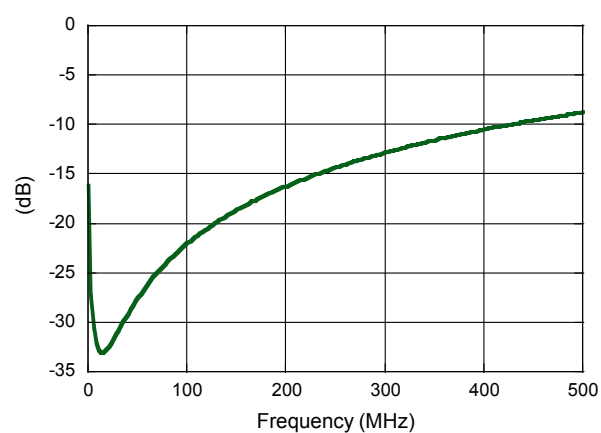
Phase Unbalance



Amplitude Unbalance



Input Return Loss



Electrical Specifications: $T_A = +25^\circ\text{C}$

Frequency (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg.)
0.40	0.73	16.13	0.09	0.41
2	0.33	27.28	0.05	0.06
5	0.25	30.53	0.04	0.08
10	0.22	32.76	0.04	0.11
50	0.31	27.46	0.03	0.38
100	0.44	21.95	0.02	0.73
200	0.67	16.18	0.03	1.59
300	0.93	12.79	0.18	2.31
400	1.19	10.46	0.44	3.02
500	1.41	8.72	0.86	3.91

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Technical drawing of the SM-22 component, showing top, side, and footprint views with dimensions in inches and millimeters.

Top View:

- Overall width: $\frac{0.150}{3.81} \text{ \textbackslash X}$
- Pin 1 location: $\frac{0.150}{3.81} \text{ \textbackslash P \textbackslash X}$
- Pin 1 to Pin 3 distance: $\frac{0.030}{0.76} \text{ \textbackslash X}$
- Pin 1 to Pin 5 distance: $\frac{0.020}{0.51} \text{ \textbackslash X}$
- Pin 1 to Pin 4 distance: $\frac{0.110}{2.79} \text{ \textbackslash X}$
- Pin 1 to Pin 2 distance: $\frac{0.025}{0.64} \text{ \textbackslash X}$
- Pin 1 to Pin 3 distance: $\frac{0.075}{1.91} \text{ \textbackslash X}$
- Pin 1 to Pin 4 distance: $\frac{0.125}{3.18} \text{ \textbackslash X}$

Side View:

- Overall height: $\frac{0.150}{3.81} \text{ \textbackslash X}$
- Pin 1 height: $\frac{0.025}{0.64} \text{ \textbackslash X}$
- Pin 1 to Pin 3 distance: $\frac{0.030}{0.76} \text{ \textbackslash X}$
- Pin 1 to Pin 5 distance: $\frac{0.020}{0.51} \text{ \textbackslash X}$
- Pin 1 to Pin 4 distance: $\frac{0.110}{2.79} \text{ \textbackslash X}$
- Pin 1 to Pin 2 distance: $\frac{0.025}{0.64} \text{ \textbackslash X}$
- Pin 1 to Pin 3 distance: $\frac{0.075}{1.91} \text{ \textbackslash X}$
- Pin 1 to Pin 4 distance: $\frac{0.125}{3.18} \text{ \textbackslash X}$

Footprint View:

- Overall width: $\frac{0.130}{3.30} \text{ \textbackslash X}$
- Pin 1 location: $\frac{0.050}{1.27} \text{ \textbackslash X}$
- Pin 1 to Pin 3 distance: $\frac{0.190}{4.83} \text{ \textbackslash X}$
- Pin 1 to Pin 5 distance: $\frac{0.020}{0.51} \text{ \textbackslash X}$
- Pin 1 to Pin 4 distance: $\frac{0.110}{2.79} \text{ \textbackslash X}$
- Pin 1 to Pin 2 distance: $\frac{0.025}{0.64} \text{ \textbackslash X}$
- Pin 1 to Pin 3 distance: $\frac{0.075}{1.91} \text{ \textbackslash X}$
- Pin 1 to Pin 4 distance: $\frac{0.125}{3.18} \text{ \textbackslash X}$

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