

Transformer, 1:2 Transmission Line Balun 5 - 1200 MHz

Rev. V6

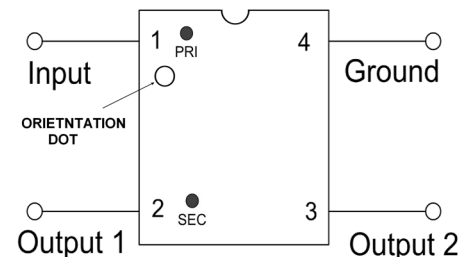
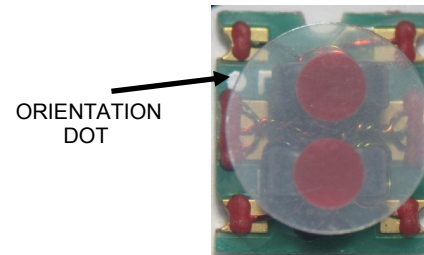
Features

- 1:2 Impedance Ratio
- Transmission Line Transformer
- Surface Mount
- Available on Tape and Reel
- 260°C Reflow Compatible
- RoHS Compliant and Pb Free
- Excellent Temperature Stability
- Can be used on 50 Ω and 75 Ω systems

Description

The MABA-007681-CT2010 is a 1:2 RF transmission line transformer in a low cost surface mount package. Ideally suited for high volume CATV/ Broadband application.

Schematic



Ordering Information^{1,2}

| Part Number | Description |
|--------------------|---------------------------|
| MABA-007681-CT2010 | Tape & Reel |
| MABA-007681-CT20TB | Customer Evaluation Board |

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

Pin Configuration

| Pin No. | Function |
|---------|--------------------|
| 1 | Input (PRI dot) |
| 2 | Output 1 (SEC dot) |
| 3 | Output 2 (SEC) |
| 4 | Ground (PRI) |

Electrical Specifications: Freq. = 5 - 1200 MHz, $T_A = 25^\circ\text{C}$, $P_{IN} = 0 \text{ dBm}$, $Z_0 = 75 \Omega$

| Parameter | Conditions | Units | Min. | Typ. | Max. |
|--------------------------------------|-----------------|-------|------|------------|------------|
| Impedance Ratio | — | Ratio | — | 1:2 | — |
| Insertion Loss 1 (pin 1 to pin 2) | 5 - 50 MHz | dB | — | 0.35 | 0.50 |
| | 50 - 1000 MHz | | | 0.60 | 1.10 |
| | 1000 - 1200 MHz | | | 0.60 | 1.40 |
| Insertion Loss 2 (pin 1 to pin 3) | 5 - 50 MHz | dB | — | 0.5 | 0.70 |
| | 50 - 1000 MHz | | | 0.9 | 1.50 |
| | 1000 - 1200 MHz | | | 1.8 | 2.20 |
| Amplitude Balance | 5 - 50 MHz | dB | — | ± 0.10 | ± 0.40 |
| | 50 - 1000 MHz | | | ± 0.30 | ± 1.50 |
| | 1000 - 1200 MHz | | | ± 0.60 | ± 1.80 |
| Phase Balance | 5 - 50 MHz | ° | — | ± 0.2 | ± 1.50 |
| | 50 - 1200 MHz | | | ± 3.0 | ± 7.00 |
| Input Return Loss (pin 1) | 5 - 50 MHz | dB | 22 | 25 | — |
| | 50 - 1000 MHz | | 14 | 22 | |
| | 1000 - 1200 MHz | | 8 | 17 | |

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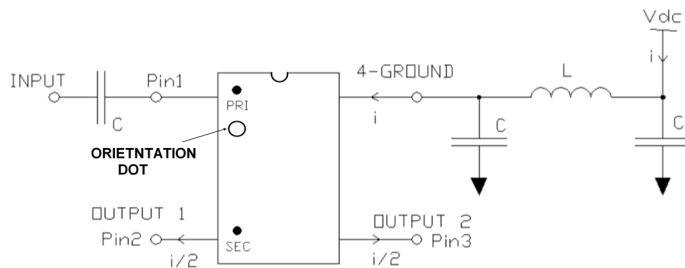
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Absolute Maximum Ratings^{3,4}

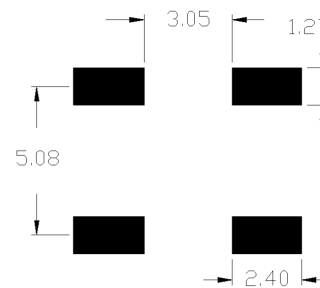
| Parameter | Units |
|-----------------------|-----------------|
| Input Power | 250 mW |
| DC Current | 600 mA |
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -55°C to +125°C |

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.

Recommended DC Bias Circuit



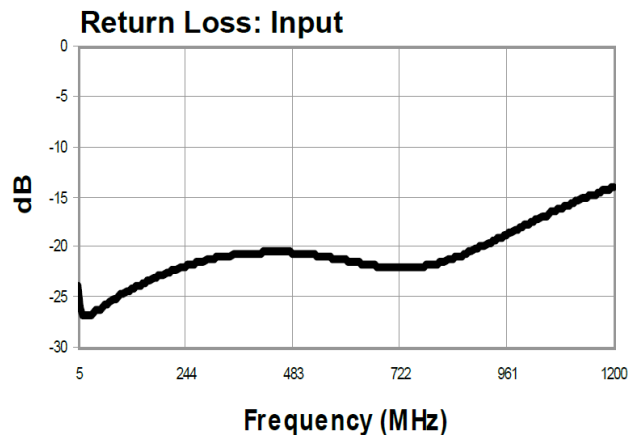
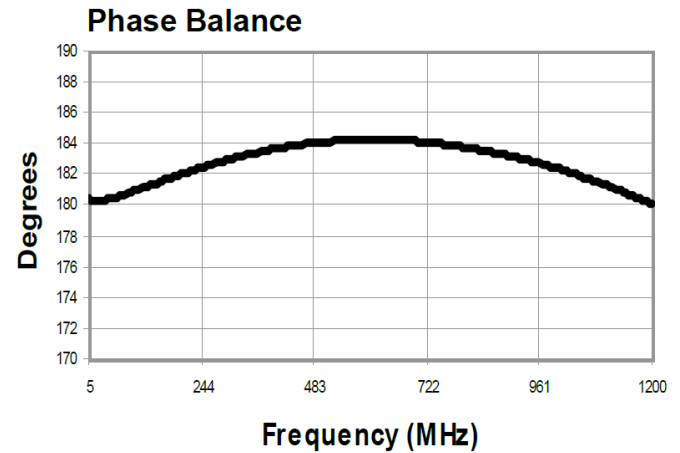
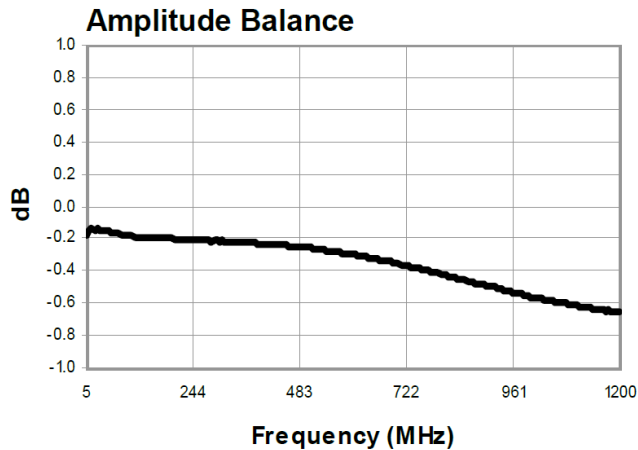
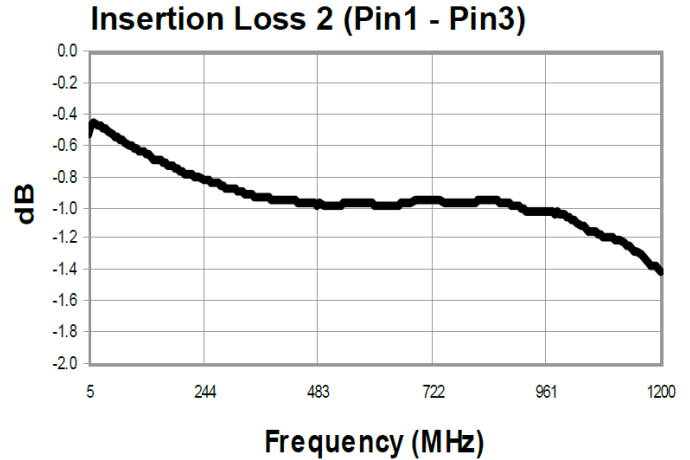
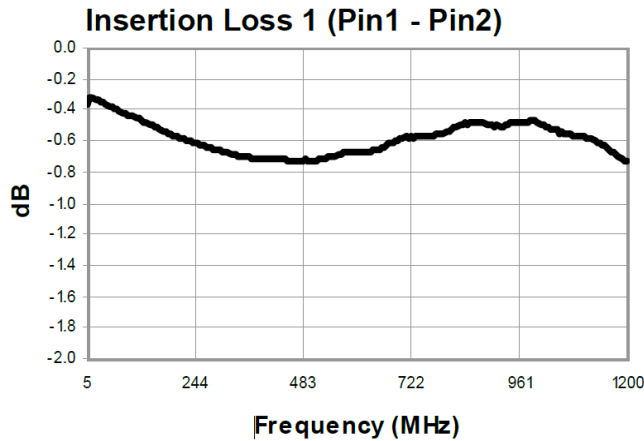
Recommended Footprint



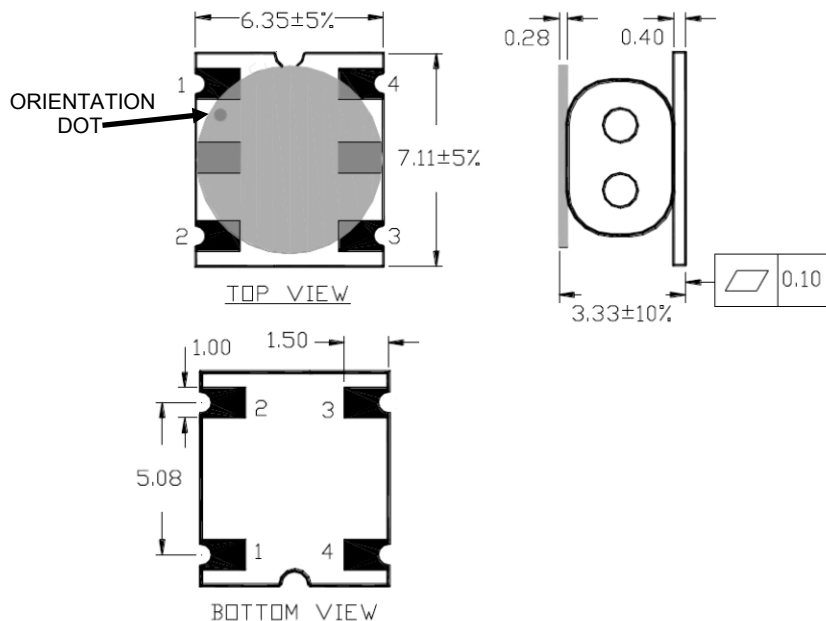
Parts List

| Designator | 5 - 50 MHz | 50 - 1200 MHz |
|---------------|------------|---------------|
| C = capacitor | 100 nF | 10 nF |
| L = inductor | 10 μ H | 1 μ H |

Typical Performance Curves: $T_A = 25^\circ\text{C}$, $P_{IN} = 0\text{ dBm}$, $Z_0 = 75\ \Omega$



Outline Drawing ^{5, 6, 7, 8}



5. Dimensions in mm.
6. Tolerance: ± 0.2 mm unless otherwise noted.
7. Model number and lot code are printed on the reel.
8. Plating finish: ENIG on both sides, 0.05 to $0.1 \mu\text{m}$ gold over 3 to $6 \mu\text{m}$ nickel.

Tape & Reel Information

| Parameter | Units | Value |
|----------------------------------------------------|-------|-------|
| Qty per reel | - | 900 |
| Reel Size | mm | 330 |
| Tape Width | mm | 16.00 |
| Pitch | mm | 12.00 |
| Ao | mm | 6.70 |
| Bo | mm | 7.50 |
| Ko | mm | 3.60 |
| Orientation | - | F33 |
| Reference Application Note ANI-019 for orientation | | |