9:1 Transmission Line Step-up Transformer

## Features

- Surface Mount
- 9:1 Impedance
- Excellent amplitude and phase balance
- Can be used in both $50 \Omega$ and $75 \Omega$ systems
- $260^{\circ} \mathrm{C}$ Reflow Compatible
- RoHS* Compliant
- RoHS version of MABAES0022
- Available on Tape and Reel. Reel quantity 900


## Description

M/ACom's MABA-007488-CT9550 is a 9:1 Transmission Line step up transformer in a low cost, surface mount package. Ideally suited for high volume

## Pin Configuration

| Function | Config 1 Pin No. | Config 2 Pin No. |
| :---: | :---: | :---: |
| Input | 6 | 4 |
| Output 1 | 1 | 3 |
| Output 2 | 3 | 1 |
| Ground | 4 | 6 |
| Not connected | 2,5 | 2,5 |

## Ordering Information

| Part Number | Package |
| :---: | :---: |
| MABA-007488-CT9550TR | 900 piece reel |
| MABA-007488-CT95TB | Customer Test Board |



Case Style: SM-55


Dimensions in inches [mm] Tolerance: .xx $\pm .02, . x x x \pm .010$

Note: Reference Application Note M513 for reel size information.

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.
PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology
Solutions has under development. Performance is based on engineering tests. Specifications are
typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available.
Commitment to produce in volume is not guaranteed.

9:1 Transmission Line Step-up Transformer
MABA-007488-CT9550
$5-220 \mathrm{MHz}$

Electrical Specifications: $\mathrm{T}_{\mathrm{A}}=\mathbf{2 5 ^ { \circ }} \mathrm{C}, \mathrm{Z}_{0}=\mathbf{7 5} \Omega$

| Parameter | Units | Typical | Minimum | Maximum |
| :---: | :---: | :---: | :---: | :---: |
| Frequency Range 5-220 | MHz |  |  |  |
|  | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \end{aligned}$ | $\begin{aligned} & 0.2 \\ & 0.8 \end{aligned}$ | - | $\begin{aligned} & 0.5 \\ & 1.0 \end{aligned}$ |
| Amplitude Imbalance 1 $5-55 \mathrm{MHz}$ <br>  $55-155 \mathrm{MHz}$ <br>  $155-220 \mathrm{MHz}$ | dB <br> dB <br> dB | $\begin{aligned} & 0.03 \\ & 0.04 \\ & 0.14 \end{aligned}$ | — | $\begin{aligned} & 0.2 \\ & 0.3 \\ & 0.5 \end{aligned}$ |
| Phase Imbalance 1 $5-55 \mathrm{MHz}$ <br>  $55-155 \mathrm{MHz}$ <br> $155-220 \mathrm{MHz}$  | $\begin{aligned} & \hline 0 \\ & \circ \\ & 0 \end{aligned}$ | $\begin{aligned} & 0.5 \\ & 1.1 \\ & 1.5 \end{aligned}$ | — | $\begin{aligned} & 1.0 \\ & 2.0 \\ & 2.5 \end{aligned}$ |
| Insertion Loss 2 \{From Pin 6 to 3 \& From Pin 4 to 1\} |  |  |  |  |
| (Cross connections)$5-55 \mathrm{MHz}$ <br>  <br> $55-100 \mathrm{MHz}$ <br> $100-220 \mathrm{MHz}$ | dB <br> dB <br> dB | $\begin{aligned} & 0.8 \\ & 1.0 \\ & 1.4 \end{aligned}$ | - | $\begin{aligned} & 1.0 \\ & 1.2 \\ & 1.8 \end{aligned}$ |
| Amplitude Imbalance 2 $5-55 \mathrm{MHz}$ <br>  $55-155 \mathrm{MHz}$ <br>  $155-220 \mathrm{MHz}$ | dB <br> dB <br> dB | $\begin{aligned} & 0.03 \\ & 0.04 \\ & 0.14 \end{aligned}$ | — | $\begin{aligned} & 0.2 \\ & 0.3 \\ & 0.5 \end{aligned}$ |
| Phase Imbalance 2 $5-55 \mathrm{MHz}$ <br>  $55-100 \mathrm{MHz}$ <br> $100-220 \mathrm{MHz}$  | $\begin{aligned} & \circ \\ & \text { o } \\ & \text { o } \end{aligned}$ | $\begin{aligned} & 1.0 \\ & 1.4 \\ & 2.5 \end{aligned}$ | — | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.0 \end{aligned}$ |
| Input Return Loss $5-220 \mathrm{MHz}$ | dB | 10 | 8 | - |

Absolute Maximum Ratings ${ }^{1,2}$

| Parameter | Absolute Maximum |
| :---: | :---: |
| Max Input Power | 250 mW |
| DC current | 30 mA |
| Operating Temperature | $-20^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ |
| Storage Temperature | $-55^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. M/A-COM does not recommend sustained operation near these survivability limits.

## Recommended PCB Configuration



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## RoHS <br> Compliant

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MABA-007488-CT9550 $5-220 \mathrm{MHz}$

## Schematic for Config 1

## Schematic for Config 2

Note: Terminate unused output

Note: When Pin 4 is the I/P Pin 6 is ground And when Pin 6 is the I/P Pin 4 is ground.


Typical Performance Curves: $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}, \mathrm{Z}_{0}=75 \Omega$

Insertion Loss 1 \& 2 (Reference Value -15.45dB)


Phase Balance


Amplitude Unbalance


## Input Return Loss



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