

**Microwave Temperature Compensation Attenuator DC~18GHz 50Ω 200mW**
**Part No. Descriptions**

|               |                  |                            |                                     |                                   |                                     |                        |
|---------------|------------------|----------------------------|-------------------------------------|-----------------------------------|-------------------------------------|------------------------|
| ****          | **               | **                         | **                                  | **                                | **                                  | *                      |
| <b>Series</b> | <b>Frequency</b> | <b>Attenuation</b>         | <b>Temperature Coefficient Code</b> | <b>Metallization Options</b>      | <b>Termination</b>                  | <b>Plating Options</b> |
| MTCA          | 18               | (01 to 10)<br>1dB to 10 dB | (N3 to N9)                          | Planar(no code), W1, W3, WB1 or G | (no code)=lead free or (S)=Lead(Pb) |                        |

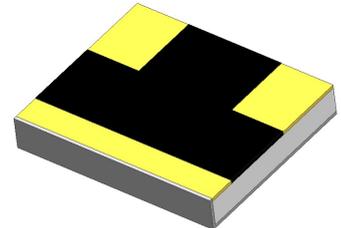
**Metallization Options**

- Planar(no code): planar terminal.
- Single wrap(W1): metallization wrap ground terminal.
- Triple wrap(W3): metallization wrap input, output and ground terminal.
- Wire bond(WB1): metallization wrap ground terminal, input and output terminal have gold metallization for wire bonding.
- Planar gold(G): planar terminal with gold metallization for wire bonding.

| Part No.      | Frequency Range (GHz) | Attenuation (dB) | Temperature Coefficient Code | Temperature Coefficient of Attenuation (dB/dB/°C) | Max. VSWR (:1) @1GHz@25°C | Max. Input Power (mW) | Attenuation Accuracy (dB) |
|---------------|-----------------------|------------------|------------------------------|---|---------------------------|-----------------------|---------------------------|
| MTCA1801N*WB1 | DC-18                 | 1                | N3~N7                        | -0.003~-0.007                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1802N*WB1 | DC-18                 | 2                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1803N*WB1 | DC-18                 | 3                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1804N*WB1 | DC-18                 | 4                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1805N*WB1 | DC-18                 | 5                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1806N*WB1 | DC-18                 | 6                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1807N*WB1 | DC-18                 | 7                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1808N*WB1 | DC-18                 | 8                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1809N*WB1 | DC-18                 | 9                | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |
| MTCA1810N*WB1 | DC-18                 | 10               | N3~N9                        | -0.003~-0.009                                     | 1.20                      | 200                   | ±0.5                      |

**General Specifications**

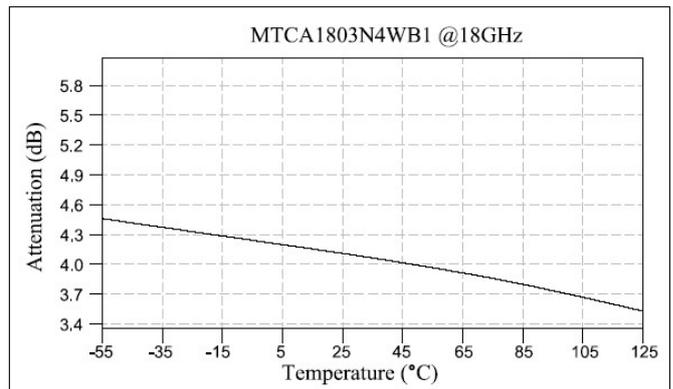
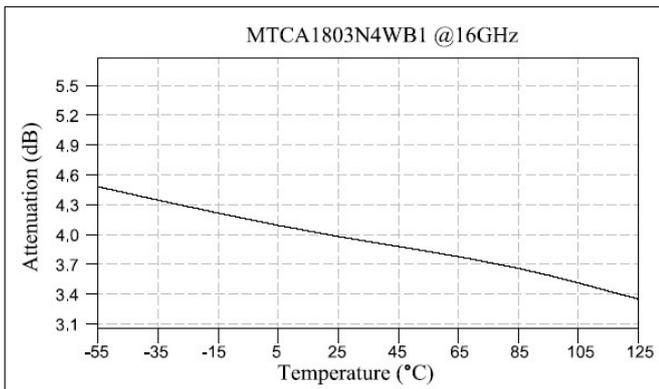
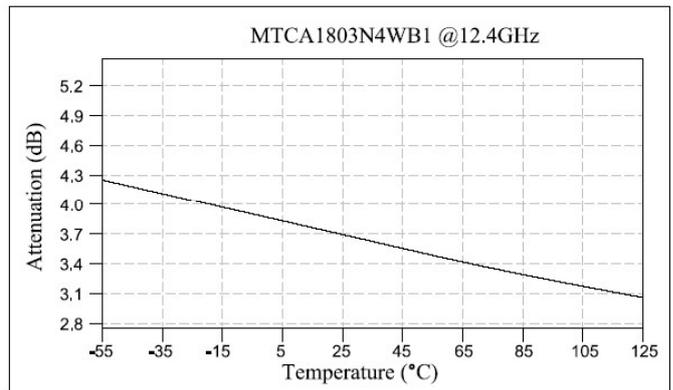
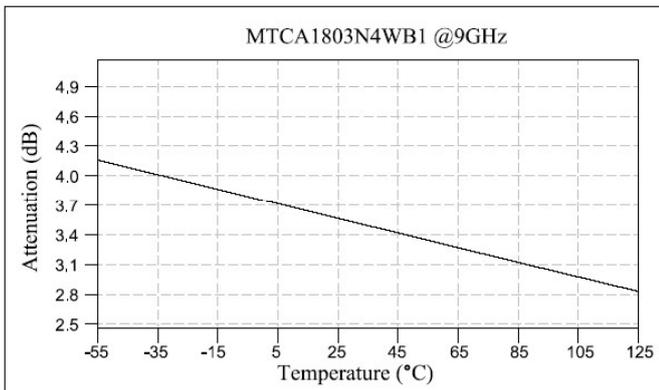
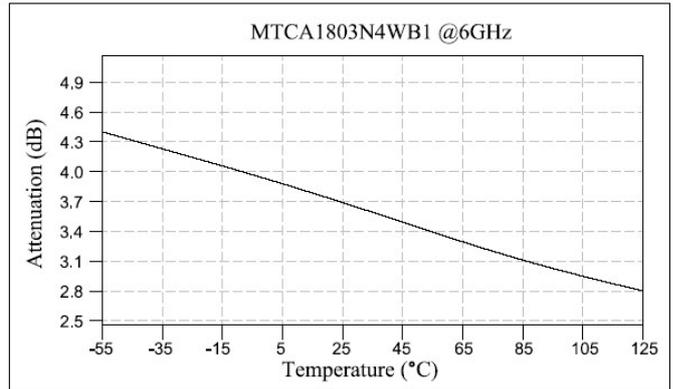
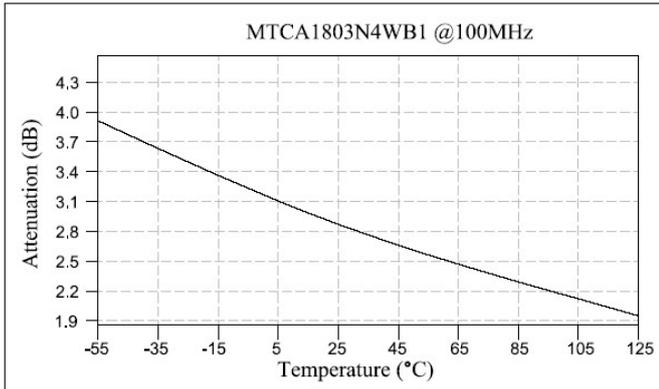
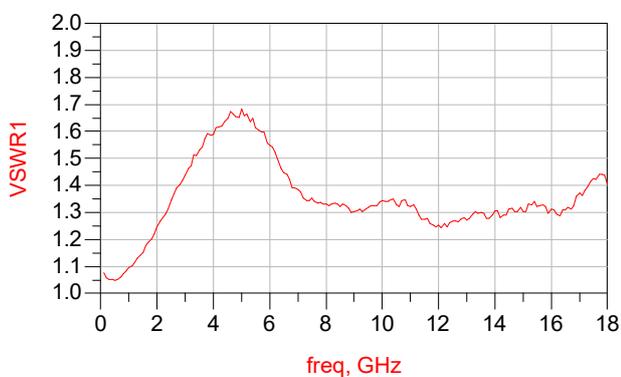
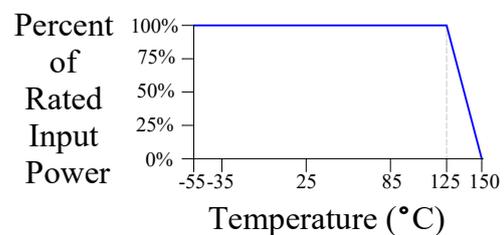
- Frequency Range  
WB1 series DC-18GHz(N3~N5); DC-12.4GHz(N6~N9)
- Attenuation  
3dB
- Attenuation Accuracy  
at 25°C ±0.5dB@1GHz
- VSWR  
at 25°C 1.7:1 Max. over DC-8GHz  
1.4:1 Max. over 8-16GHz  
1.5:1 Max. over 16-18GHz
- Nominal Impedance  
50 Ohms
- Power Rating  
200 mW CW
- Power Derating  
100% @ 125°C  
Derates to 0% @ 150°C
- Operating Temperature  
-55°C to +150°C
- Temperature Coefficient over Operating Temperature Range: See Table Above.  
Temperature Coefficient Tolerance: ±0.001dB/dB/°C.
- Substrate: Alumina (Al<sub>2</sub>O<sub>3</sub>)
- Resistive material: Thick film
- Terminal material: Thick film, Input, Output and front Ground all made by gold, Back Ground made by Pd/Ag.
- Protective Coating: Thick film (ethyl acetate)
- Package Outline: See Sheet 4.
- Workmanship: per MIL-PRF-55342.
- RoHS Compliant.
- Electrostatic Discharge Control: per MIL-STD-1686.



**Unit Marking** dB Value (XX), Direction of Shift (N) and TCA Shift (X).  
Legibility and Permanency: per MIL-STD-130.

**Quality Assurance**

- Sample inspect per ANSI/ASQC Z1.4 general inspection, LEVEL II, AQL = 1.0.
  - 1.1 Visual and mechanical examination for conformance to outline package requirements.
- Select five (5) Units from lot measure attenuation from DC to 18GHz every 20°C over the temperature range -55°C to +125°C.
  - 2.1 Calculate, using linear regression, the slope of the curve.
  - 2.2 Calculate TCA using the following formula: TCA = Slope / Attenuation @ 25°C.
- Test data required for customer.

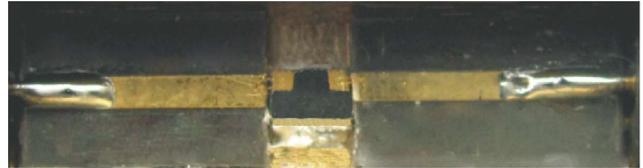
**MTCA Response**

**Typical VSWR @25°C**

**Power Rating & Derating Curve**


**Notes on RF Testing and Circuit Layout**

**DC-18GHz WB1 series(for Gold Terminal type) Test Fixture**



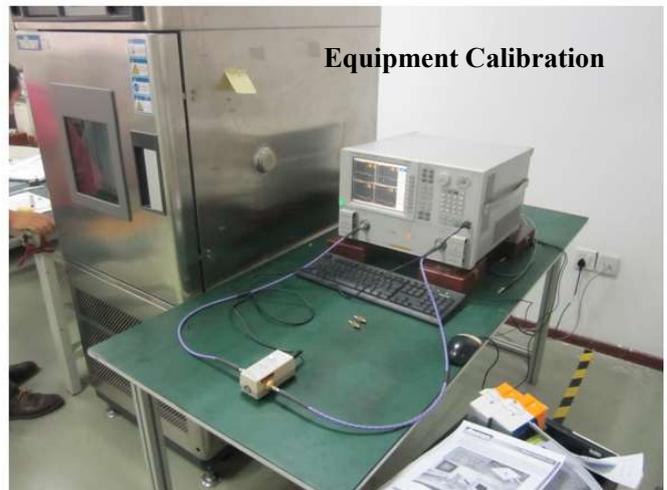
**WB1 PCB Test Board**



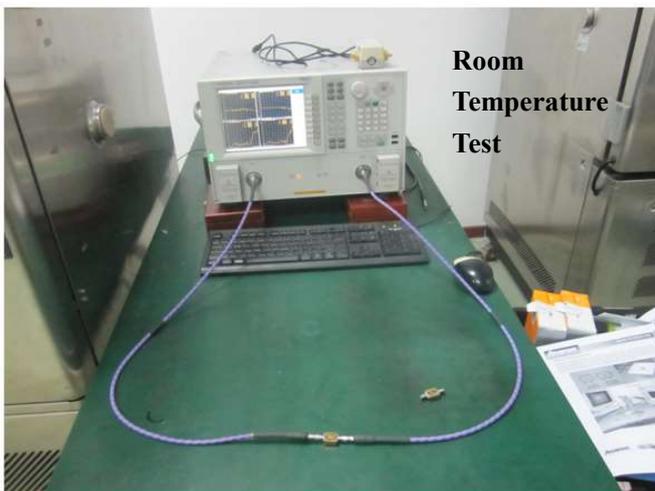
**Connect test part to Test Fixture**



**Equipment Calibration**



**Room  
Temperature  
Test**



**High-Low  
Temperature  
Test**



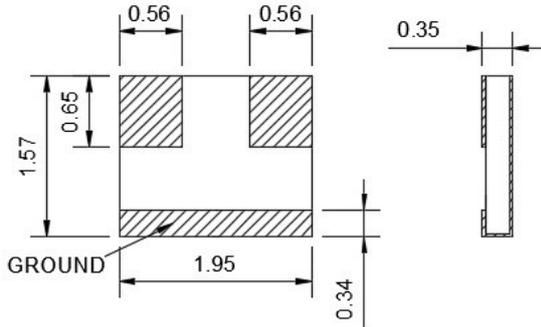
- 1、 Download S2P documents in [http://www.yantel-corp.com/en/products/products1\\_200.html](http://www.yantel-corp.com/en/products/products1_200.html)
- 2、 DC-18GHz or 16-36GHz test fixture is rentable (only for Chinese customers) , otherwise please purchase them.

For any questions or needs, please feel free to contact [inform@yantel-corp.com](mailto:inform@yantel-corp.com).

### Package Outlines

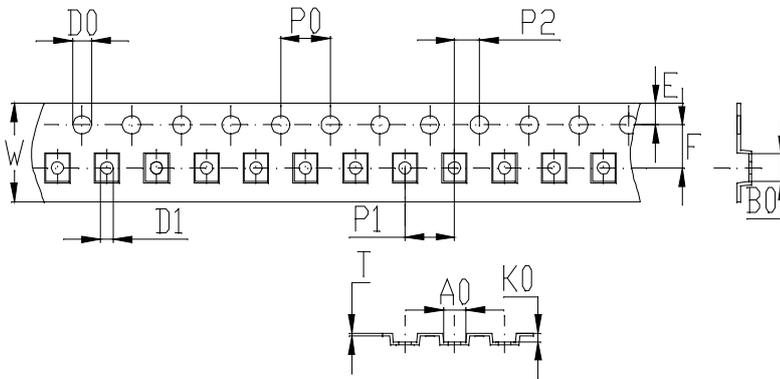
All dimensions shown in mm unless stated otherwise

Dimension tolerance:  $\pm 0.1\text{mm}$



### Tape & Reel Drawing

All dimensions shown in mm unless stated otherwise



Notice:

- A.10 Sprocket hole pitch cumulative tolerance is 0.2mm.
- B. Carrier camber shall be not more than 1mm per 100mm through a length of 250mm.
- C. All dimensions meet EIA-418-B requirements.
- D. A0 & B0 measured as indicated.
- E. K0 measured from a place on the inside bottom of the pocket to top surface of carrier.
- F. Material: PS
- G. Thickness:  $0.25 \pm 0.05\text{mm}$
- H. 5000 units (maximum) / T&R

|        |                |                 |                |               |                          |                          |
|--------|----------------|-----------------|----------------|---------------|--------------------------|--------------------------|
| symbol | A0             | B0              | K0             | P0            | P1                       | P2                       |
| spec   | $1.85 \pm 0.1$ | $2.25 \pm 0.1$  | $0.7 \pm 0.1$  | $4.0 \pm 0.1$ | $4.0 \pm 0.1$            | $2.0 \pm 0.1$            |
| symbol | W              | T               | E              | F             | D0                       | D1                       |
| spec   | $8.0 \pm 0.3$  | $0.25 \pm 0.05$ | $1.75 \pm 0.1$ | $3.5 \pm 0.1$ | $\Phi 1.5^{+0.1}_{-0.0}$ | $\Phi 1.0^{+0.1}_{-0.0}$ |

