

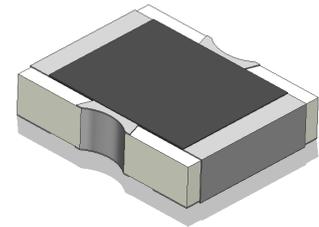
**Part No. Descriptions**

| ***<br>Series | **<br>Frequency | **<br>Attenuation          | **<br>Temperature Coefficient Code | **<br>Metallization Options | *<br>Termination Plating Options    |
|---------------|-----------------|----------------------------|------------------------------------|-----------------------------|-------------------------------------|
| WTCA,         | 20              | (02 to 10)<br>2dB to 10 dB | N3 to N9                           | SMT                         | (no code)=lead free or (S)=Lead(Pb) |

| 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) |
|----------------|-----------------------|------------------|------------------------------|---|---------------------------|-----------------------|---------------------------|
| WTCA2002N*SMT  | DC-20                 | 2                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA2003N*SMT  | DC-20                 | 3                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA2004N*SMT  | DC-20                 | 4                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA2005N*SMT  | DC-20                 | 5                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA2006N*SMT  | DC-20                 | 6                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA2007N*SMT  | DC-20                 | 7                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA2008N*SMT  | DC-20                 | 8                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA2009N*SMT  | DC-20                 | 9                | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |
| WTCA20010N*SMT | DC-20                 | 10               | N3~N9                        | -0.003~ -0.09                                     | 1.2                       | 200                   | ±0.5                      |

**General Specifications**

- |   |  |
|---|--|
| 1. Frequency Range  | DC to 20GHz  |
| 2. Attenuation  | 7dB  |
| 3. Attenuation Accuracy   | at 25°C ±0.5dB@1GHz                                |
| 4. VSWR   | at 25°C 1.55:1 Max. over DC - 20GHz                |
| 5. Nominal Impedance  | 50 Ohms  |
| 6. Power Rating   | 200 mW CW  |
| 7. Power Derating   | 100% @ 125°C<br>Derates to 0% @ 150°C              |
| 8. Operating Temperature  | -55°C to +150°C                                    |
| 9. Temperature Coefficient over Operating Temperature Range: See Table Above.   |  |
|   | Temperature Coefficient Tolerance: ±0.001dB/dB/°C. |
| 10. Substrate: Alumina (Al <sub>2</sub> O <sub>3</sub> )  |  |
| 11. Resistive material: Thick film  |  |
| 12. Terminal material: Thick film, Nickel barrier with pure tin plate (lead free) or with tin (Sn90) plate (10% lead contained) |  |
| 13. Protective Coating: Thick film (ethyl acetate)  |  |
| 14. Package Outline: See Sheet 4.   |  |
| 15. Workmanship: per MIL-PRF-55342.   |  |
| 16. RoHS Compliant.   |  |
| 17. Electrostatic Discharge Control: per MIL-STD-1686.  |  |

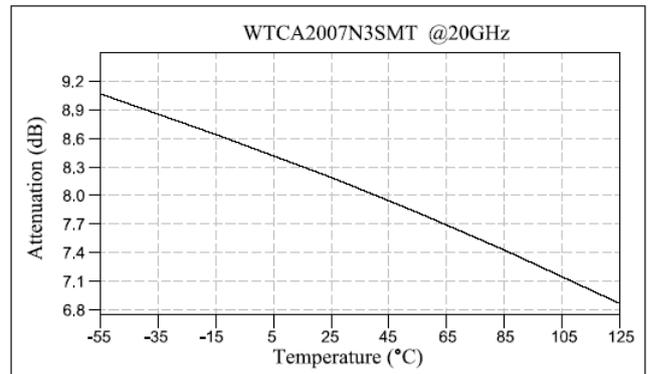
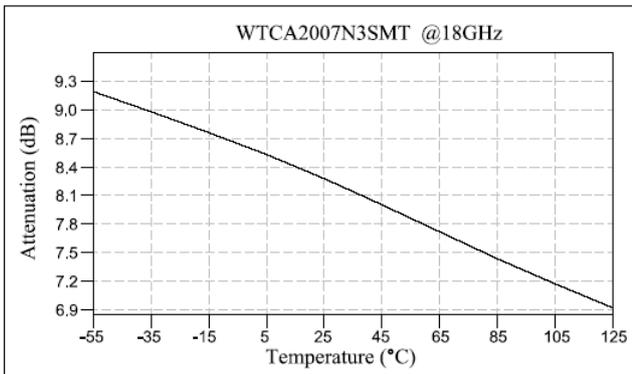
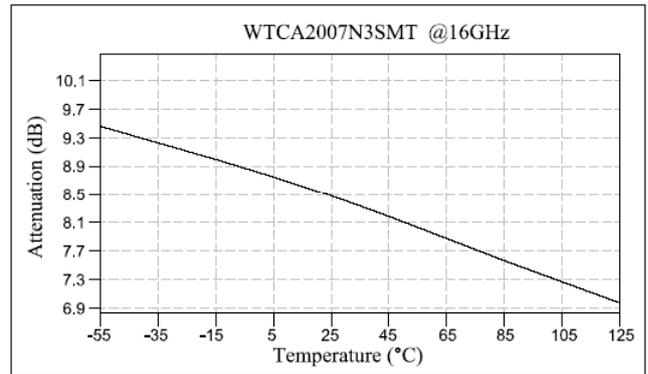
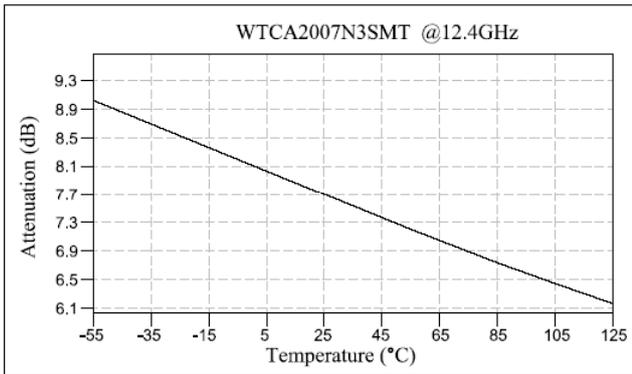
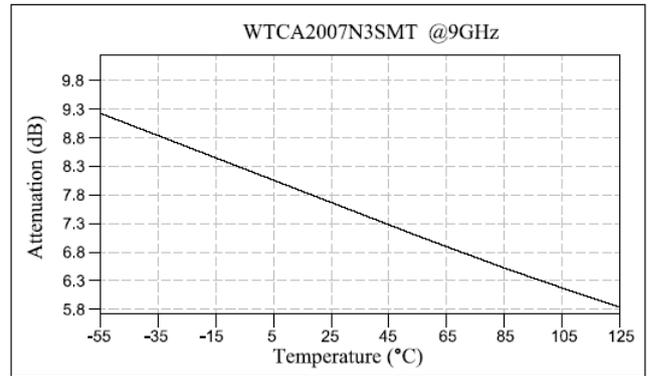
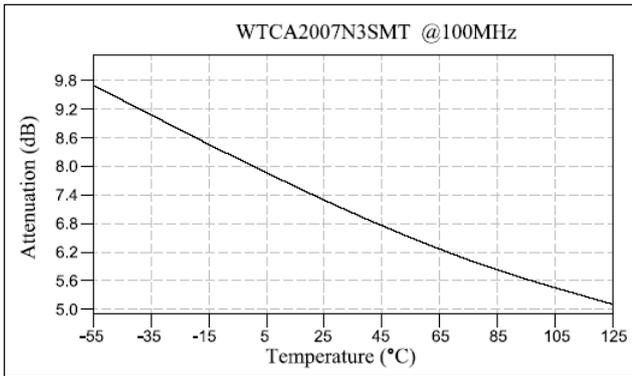


**Unit Marking** dB Value (XX), Direction of Shift (N) and TCA Shift (X).  
Legibility and Permanency: per MIL-STD-130.

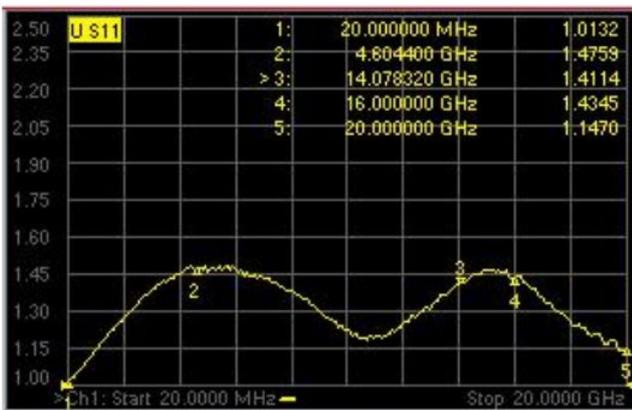
**Quality Assurance**

- 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 20GHz 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.

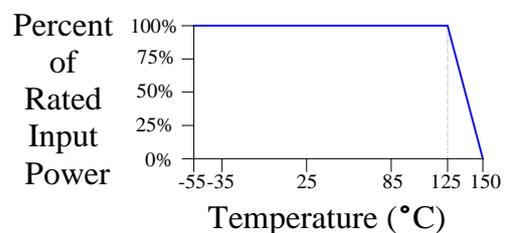
WTCA Response



Typical VSWR @25°C

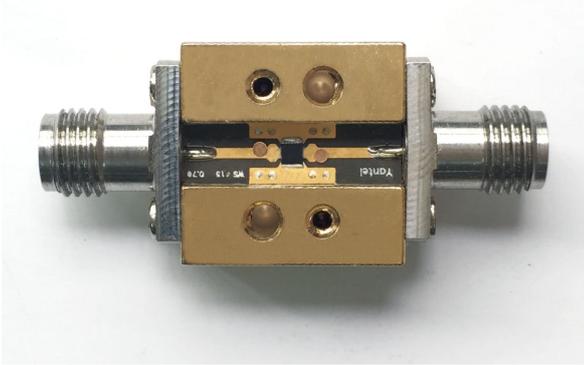


Power Rating & Derating Curve

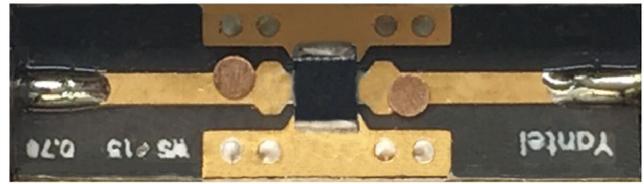


**Notes on RF Testing and Circuit Layout**

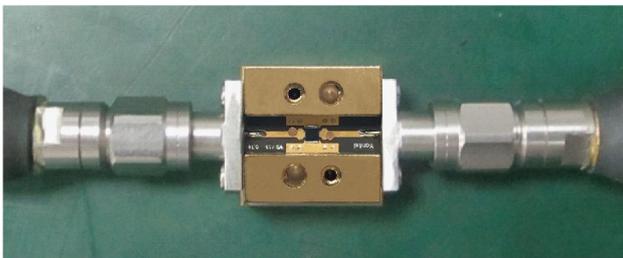
**DC-20GHz SMT series(for SMT type) Test Fixture**



**SMT PCB Test Board**



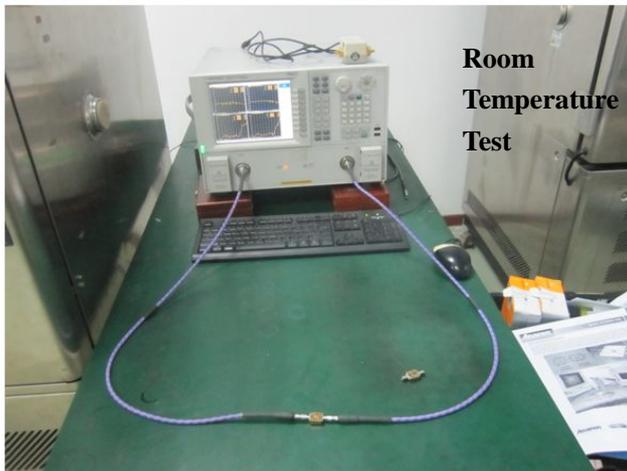
**Connect test part to Test Fixture**



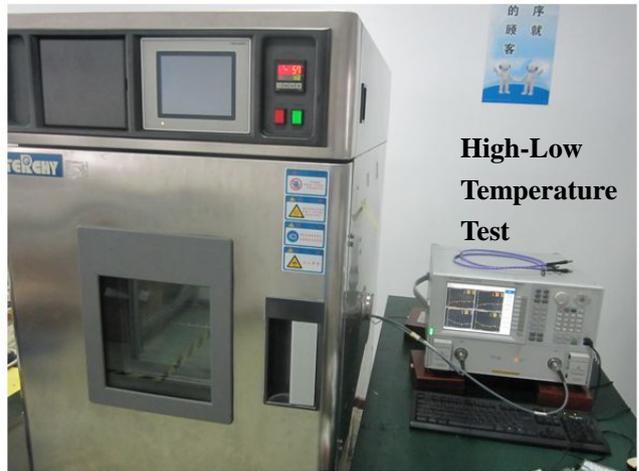
**Equipment Calibration**



**Room Temperature Test**



**High-Low Temperature Test**

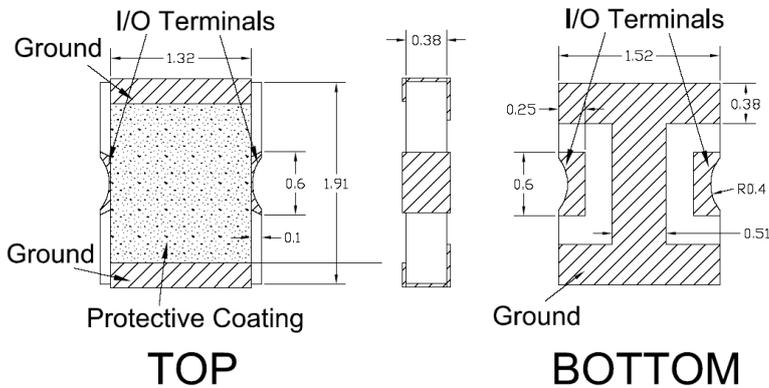


- 1、 S2P documents are available for download
- 2、 DC-20GHz or 16-36GHz test fixture is rentable (only for Chinese customers) , otherwise please purchase them.

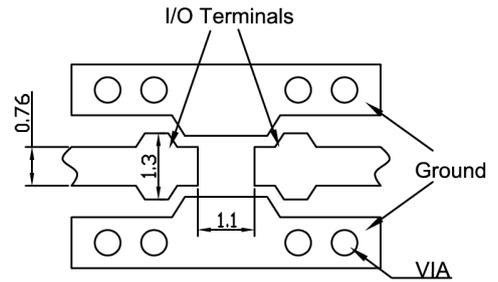
For any questions or needs, please feel free to contact [inform@yantel-corp.com](mailto:inform@yantel-corp.com).

### Package Outlines

All dimensions shown in mm unless stated otherwise  
 Note: Dimension tolerance in  $\pm 0.10$  otherwise mention.



### Recommended PCB Layout

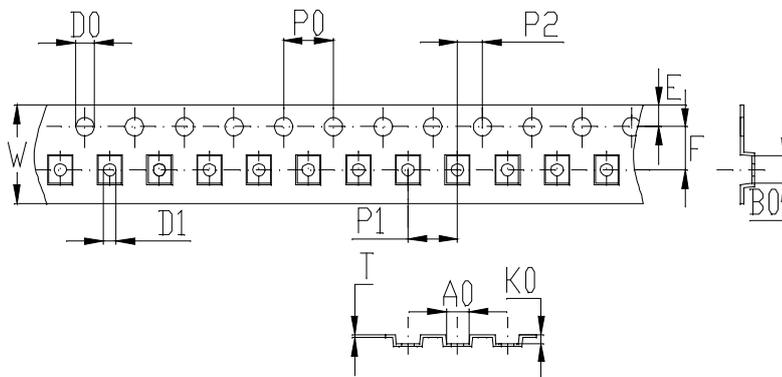


**NOTE:**

1. 50Ω line width is shown above designing from Rogers5880 dielectric thickness 0.254mm; copper H OZ
2. Bottom side of the PCB is continuous ground plane.
3. All dimensions shown in mm.

### Tape & Reel Drawing

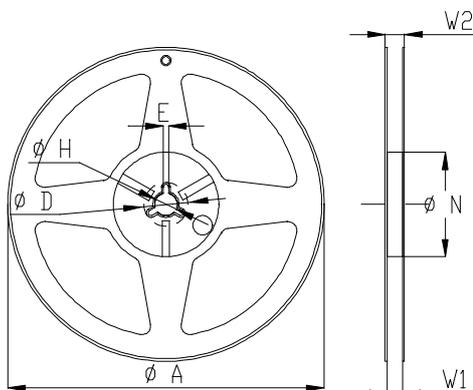
All dimensions shown in mm unless stated otherwise



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±0.05mm
- H. 3000 units (maximum) / T&R

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



| Symbol | Dimensions(mm) |
|--------|----------------|
| A      | 180+0/-3       |
| N      | 60+1/-0        |
| W1     | 9.0±0.3        |
| W2     | 11±1.0         |
| D      | 25±0.8         |
| H      | 13±0.2         |
| E      | 3±0.5          |

