**Yantel®**

**High Frequency Temperature Compensation Attenuator    DC~20GHz    50Ω    200mW**

## Part No. Descriptions

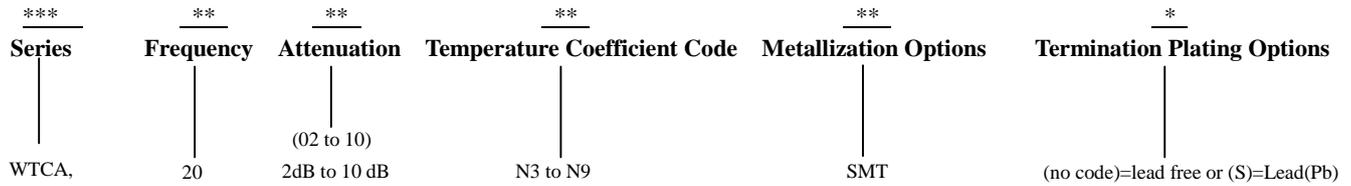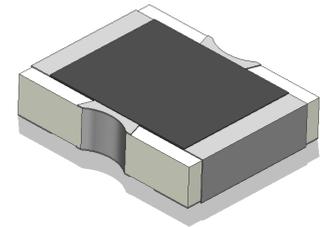| \*\*\* | \*\* | \*\* | \*\* | \*\* | \* |
|---|---|---|---|---|---|
| **Series** | **Frequency** | **Attenuation** | **Temperature Coefficient Code** | **Metallization Options** | **Termination Plating Options** |
| WTCA, | 20 | (02 to 10) 2dB to 10 dB | N3 to N9 | SMT | (no code)=lead free or (S)=Lead(Pb)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

| Part No. | Frequency Range (GHz) | Attenuation (dB) | Temperature Coefficient Code | Temperature Coefficient of Attenuation (dB/dB/℃) | Max. VSWR (:1) @1GHz@25℃ | 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 — 8dB
3. Attenuation Accuracy — at 25℃ ±0.5dB@1GHz
4. VSWR — at 25℃ 1.50:1 Max. over DC - 20GHz

5. Nominal Impedance — 50 Ohms
6. Power Rating — 200 mW CW
7. Power Derating — 100% @ 125℃
   Derates to 0% @ 150℃
8. Operating Temperature — -55℃ to +150℃
9. Temperature Coefficient over Operating Temperature Range: See Table Above.
   Temperature Coefficient Tolerance: ±0.001dB/dB/℃.
10. Substrate: Alumina (Al2O3)
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.
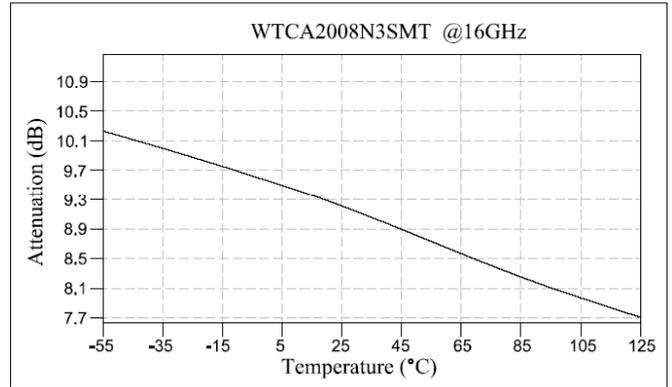15. Workmanship: per MIL-PRF-55342.
16. RoHS Compliant.
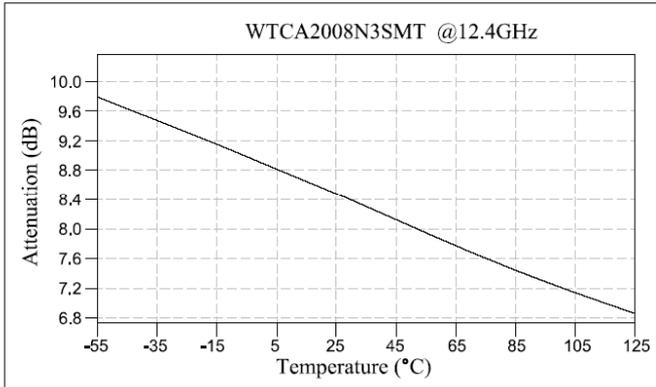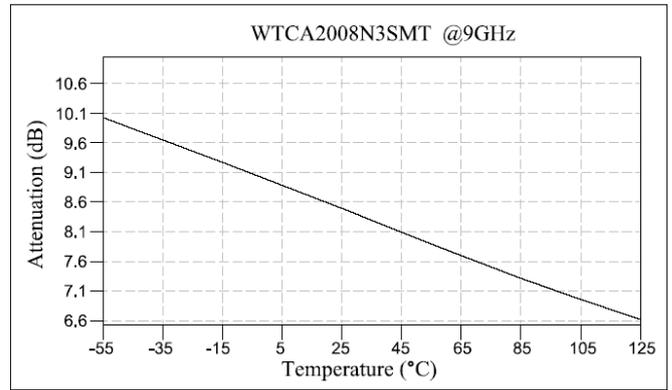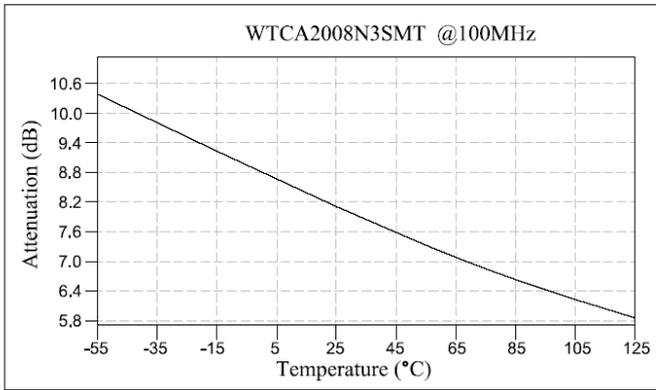17. Electrostatic Discharge Control: per MIL-STD-1686.

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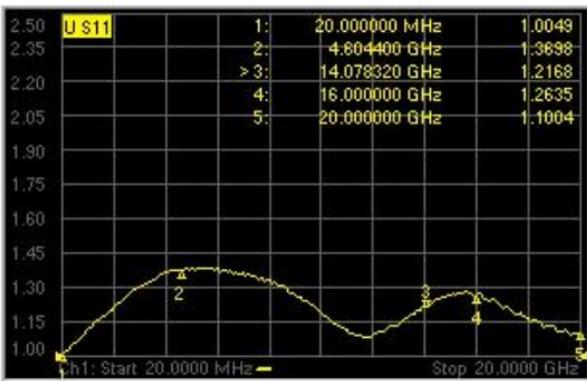Legibility and Permanency: per MIL-STD-130.

## Quality Assurance

1. 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.
2. 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.
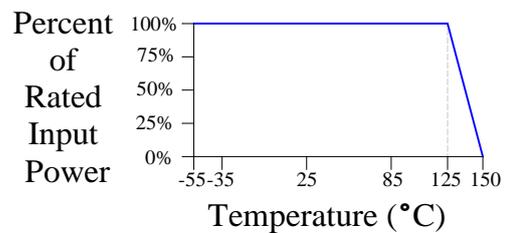3. Test data required for customer.

**Yantel Corporation**

## WTCA Response

WTCA2008N3SMT @100MHz

WTCA2008N3SMT @9GHz

WTCA2008N3SMT @12.4GHz

WTCA2008N3SMT @16GHz

WTCA2008N3SMT @18GHz

WTCA2008N3SMT @20GHz

## Typical VSWR @25℃

| | | |
|---|---|---|
| 1: | 20.000000 MHz | 1.0049 |
| 2: | 4.604400 GHz | 1.3698 |
| > 3: | 14.078320 GHz | 1.2168 |
| 4: | 16.000000 GHz | 1.2635 |
| 5: | 20.000000 GHz | 1.1004 |

Ch1: Start 20.0000 MHz    Stop 20.0000 GHz
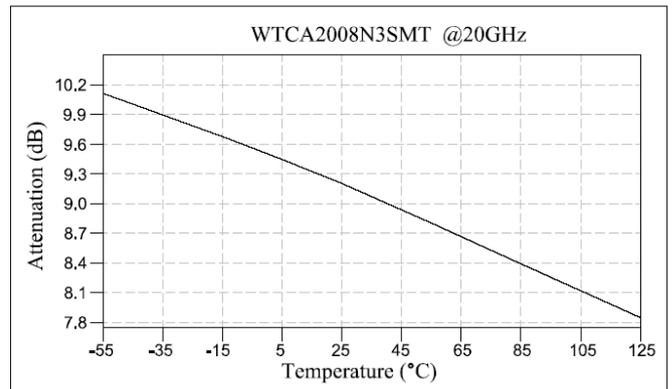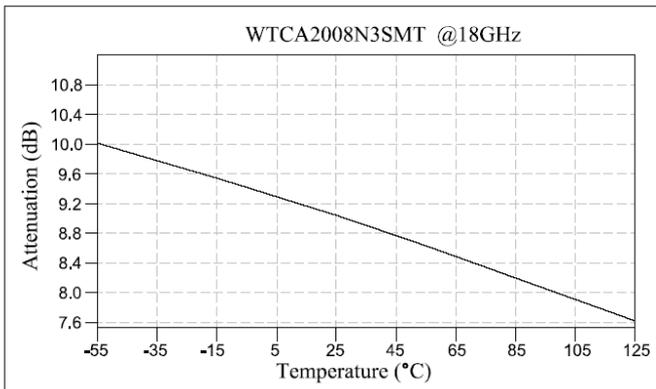
## Power Rating & Derating Curve

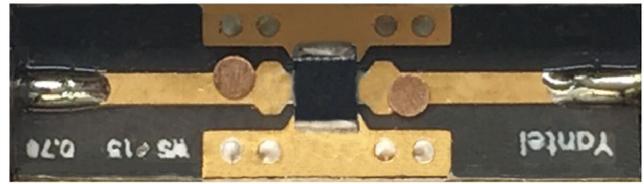Percent of Rated Input Power

Temperature (°C)

**Notes on RF Testing and Circuit Layout**

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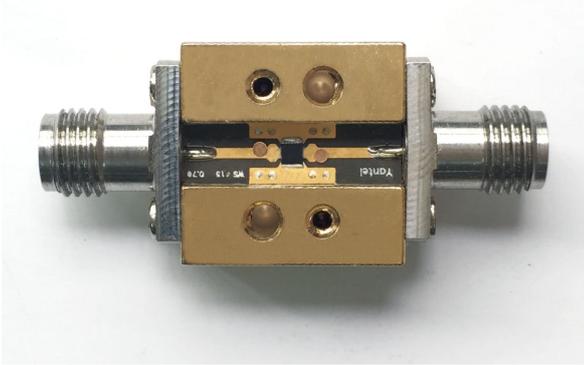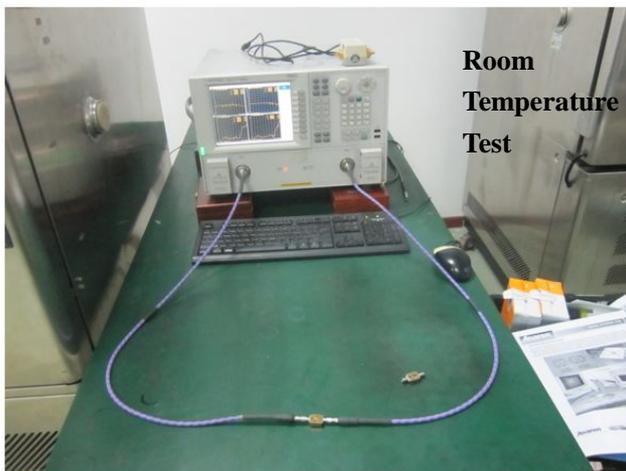


**SMT PCB Test Board**



**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.**
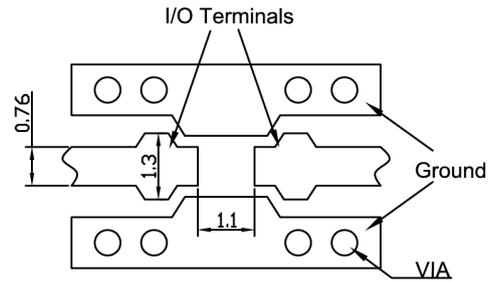
**For any questions or needs, please feel free to contact inform@yantel-corp.com.**

## Package Outlines

All dimensions shown in mm unless stated otherwise
Note: Dimension tolerance in ±0.10 otherwise mention.
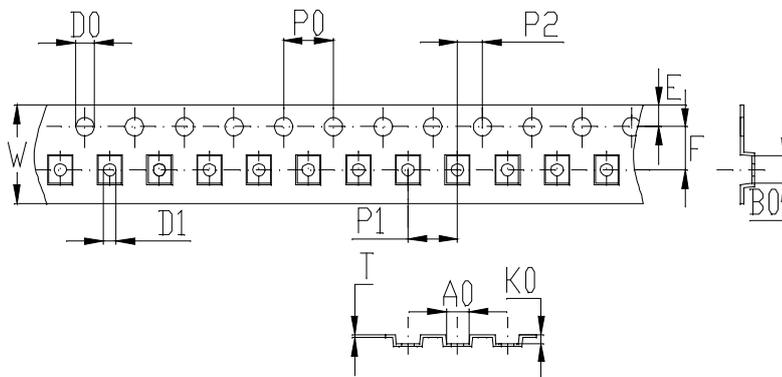


TOP
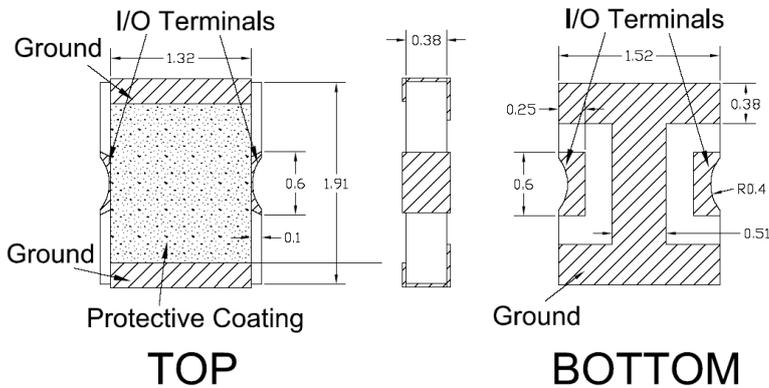
BOTTOM

## 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.**
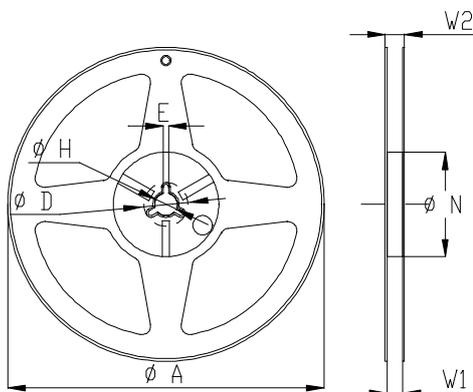**3. All dimensions shown in mm.**

## 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 | $\Phi1.5^{+0.1}_{-0.0}$ | $\Phi1.0^{+0.1}_{-0.0}$ |



| 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 |