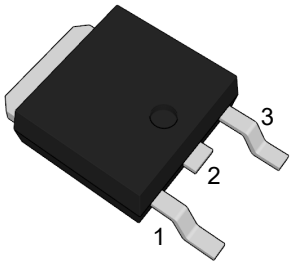
TNG10H25NTE

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 100V,I_D= 25A
- $R_{DS(on)}$< 24mΩ @V_{GS}= 10V
- $R_{DS(on)}$< 30mΩ @V_{GS}= 4.5V

TO-252



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

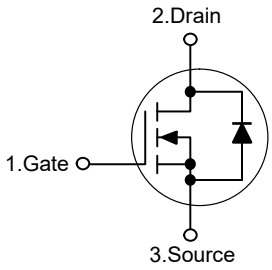
Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

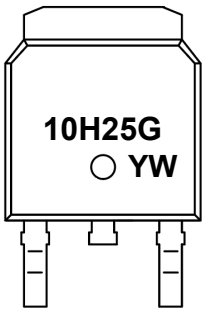
Application

- Power Switching Application
- Hard Switched and High Frequency Circuits
- Uninterruptible Power Supply

Schematic Diagram



Marking Code



Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	25	A
Drain Current-Pulsed Note1	I_{DM}	84	A
Maximum Power Dissipation	P_D	27	W
Single Pulse Avalanche Energy Note2	E_{AS}	8	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.63	°C/W

Electrical Characteristics

(T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=100V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1	---	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=10A	---	20	25	mΩ
		V_{GS}=4.5V,I_D=10A	---	25	30	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	680	---	pF
C_{oss}	Output Capacitance		---	371	---	
C_{rss}	Reverse Transfer Capacitance		---	25	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V ,V_{DS}=50V, R_G=2Ω,I_D=20A	---	16.8	---	ns
t_r	Rise Time		---	3.2	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	25.4	---	ns
t_f	Fall Time		---	2	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=50V, I_D=20A	---	11	---	nC
Q_{gs}	Gate-Source Charge		---	1.8	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	2.4	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=20A	---	---	1.3	V
trr	Body Diode Revrse Recovery Time	I_S=20A,**V_R=50V** dI/dt=100A/μs	---	41.6	---	ns
Qrr	Body Diode Revrse Recovery Charge		---	54.6	---	nc

Notes:

1. Calculated continuous current based on maximum allowable junction temperature.

2. Repetitive rating; pulse width limited by max. junction temperature.

3. Pd is based on max. junction temperature, using junction-case thermal resistance.

4. The value of $R_{\Theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25℃.

5. VDD=30V,VGS=10V, L=0.3mH, starting Tj=25℃.

Typical Characteristic Curves

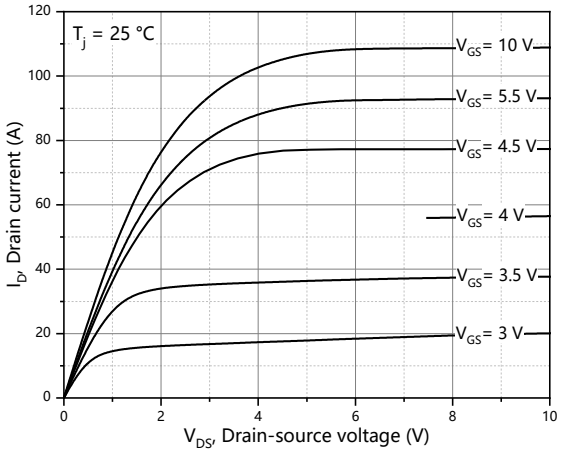


Figure 1. Typ. output characteristics

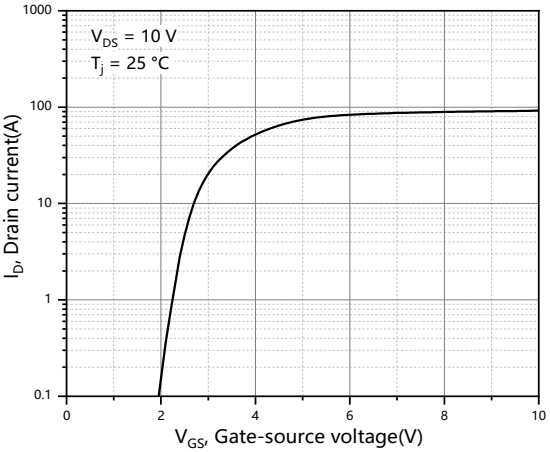


Figure 2. Typ. transfer characteristics

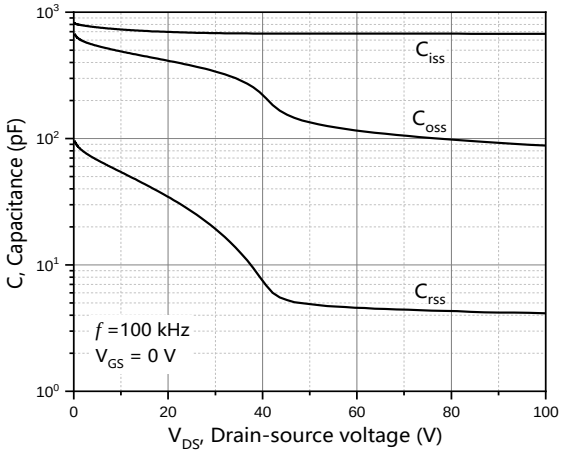


Figure 3. Typ. capacitances

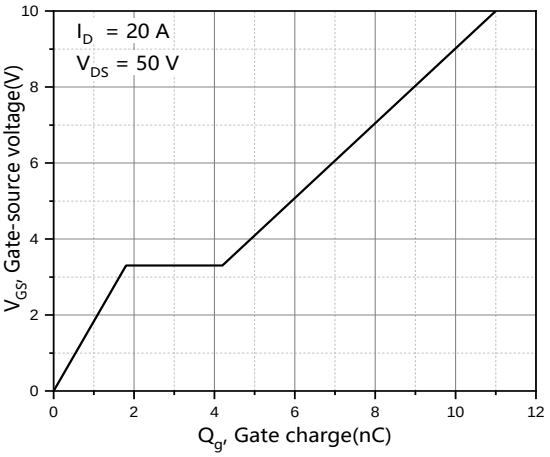


Figure 4. Typ. gate charge

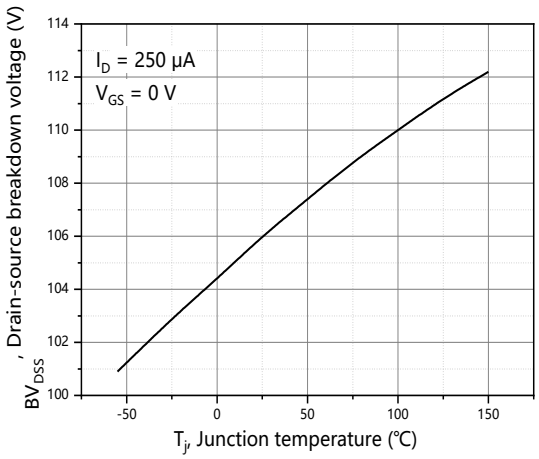


Figure 5. Drain-source breakdown voltage

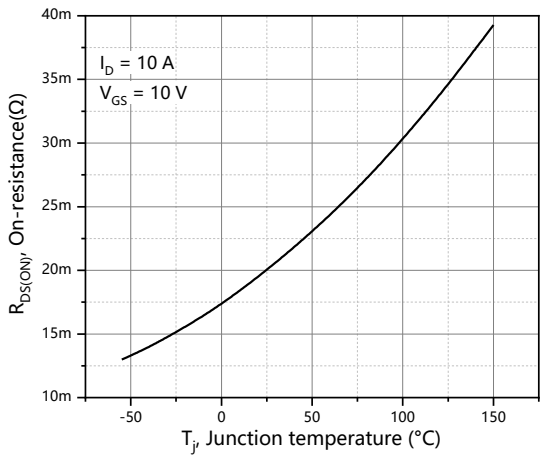


Figure 6. Drain-source on-state resistance

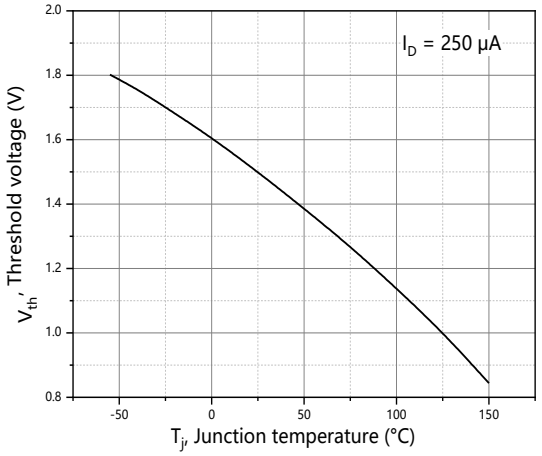


Figure 7. Threshold voltage

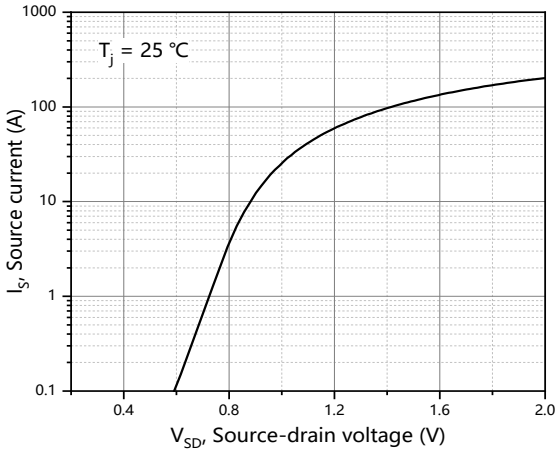


Figure 8. Forward characteristic of body diode

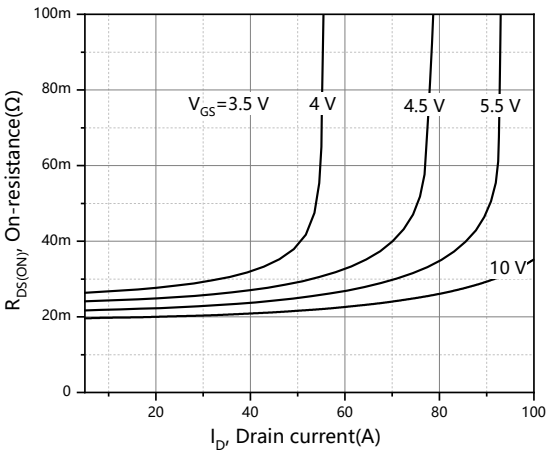


Figure 9. Drain-source on-state resistance

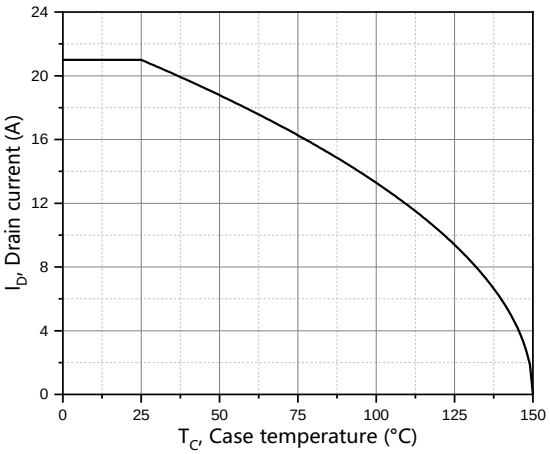


Figure 10. Drain current

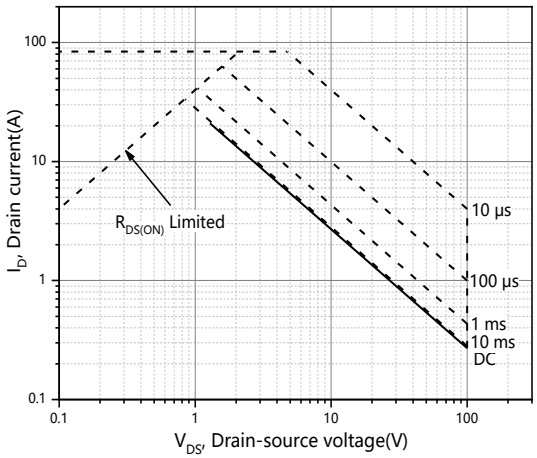


Figure 11. Safe operation area T_C=25℃

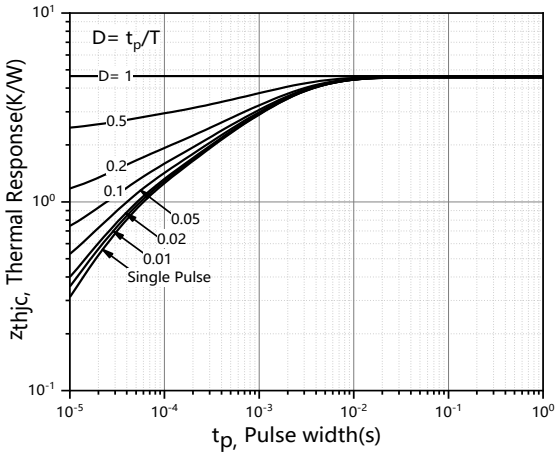
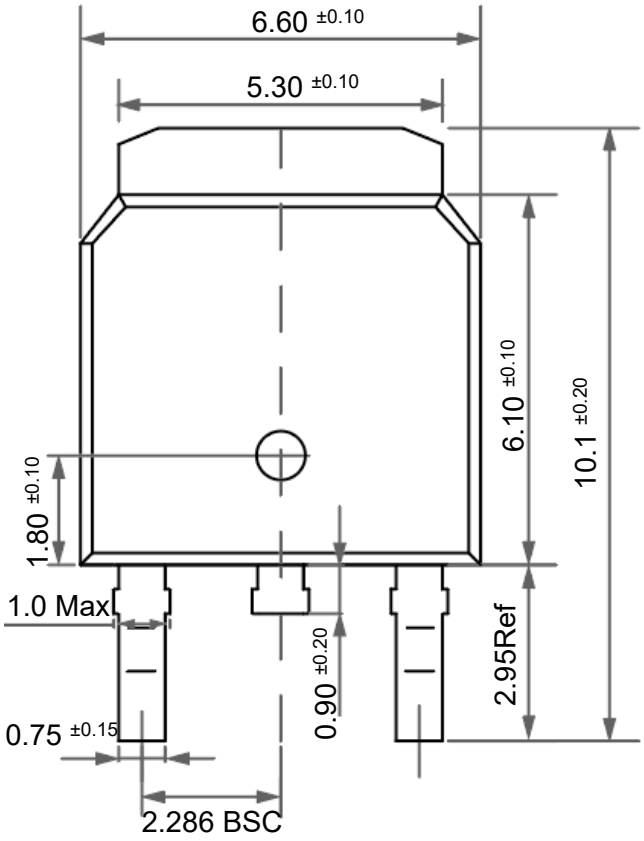


Figure 12. Max. transient thermal impedance

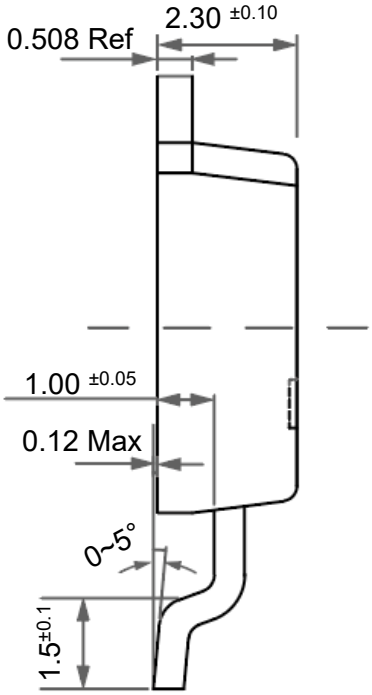
Package Outline

TO-252

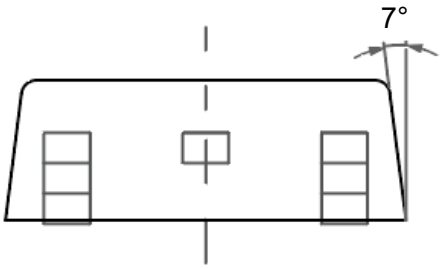
Dimensions in mm



Front View



Side View



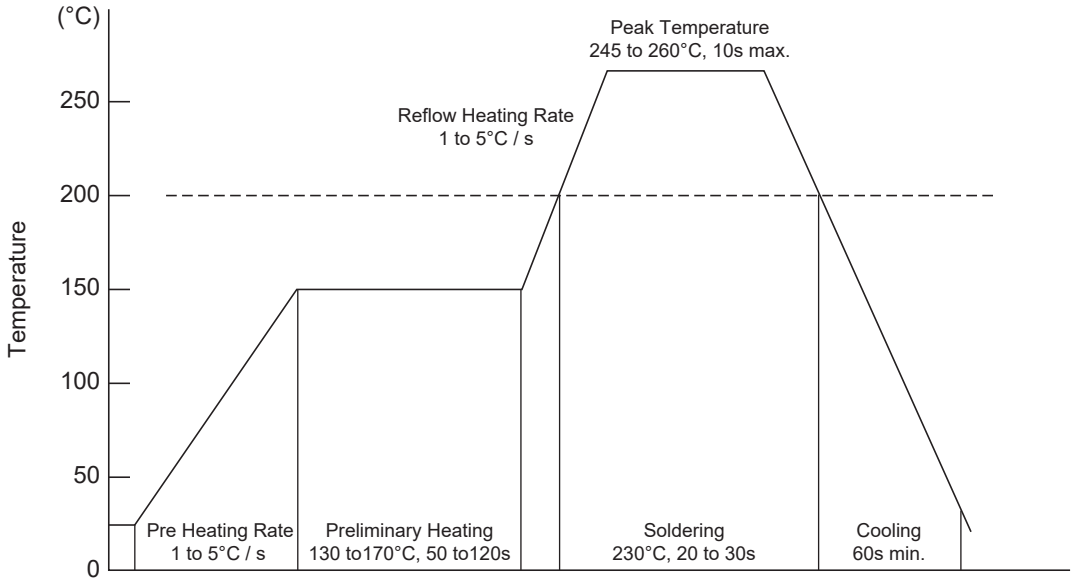
Bottom View

Ordering Information

Device	Package	Shipping
TNG10H25NTE	TO-252	2,500PCS/Reel&13inches

Conditions of Soldering and Storage

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245°C. If peak temperature is below 245°C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

◆ Conditions of hand soldering

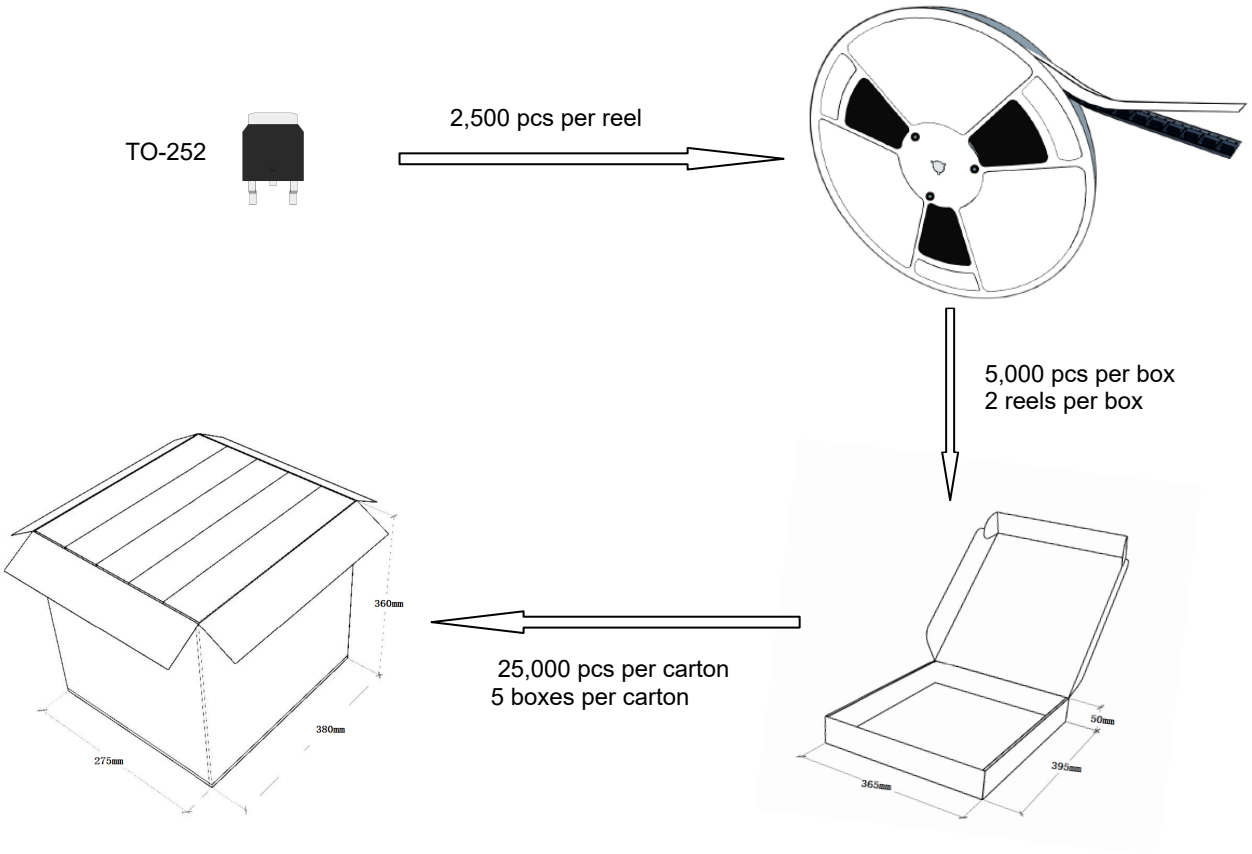
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

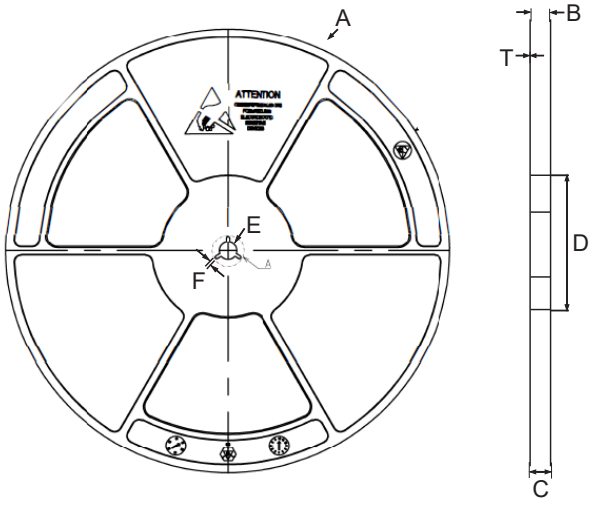
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

Package Specifications

- The method of packaging



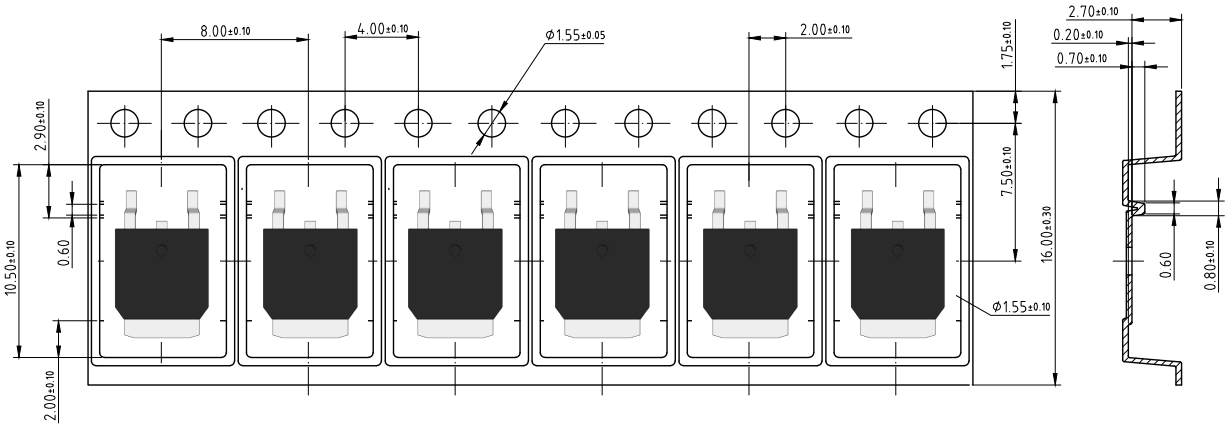
◆ **reel data**



Reel (13")

Symbol	Value(unit:mm)
A	Φ330.2±1
B	17±0.5
C	21.2±2
D	Φ100±0.5
E	Φ13.4±0.2
F	2.3±0.2
T	2.1±0.2

◆ **Embossed tape data**



Contact Information

TANI website: **http://www.tanisemi.com** Email:tani@tanisemi.com

For additional information, please contact your local Sales Representative.

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