

TN65H04NTE

N-Channel Enhancement Mode Power MOSFET

TO-252

Product Summary

- $V_{DS} = 650V, I_D = 4A$
- $R_{DS(on)} < 2.5\Omega @ V_{GS} = 10V$

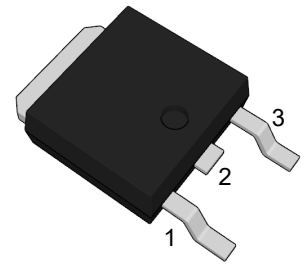
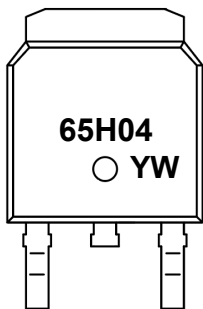
Features

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

Application

- Uninterruptible Power Supply
- LED

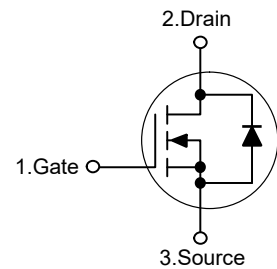
Marking Code



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	4	A
Drain Current-Pulsed ^{Note1}	I_{DM}	16	A
Maximum Power Dissipation	P_D	75	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	120	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.67	°C/W
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Electrical Characteristics

(T_J=25°C unless otherwise specified)

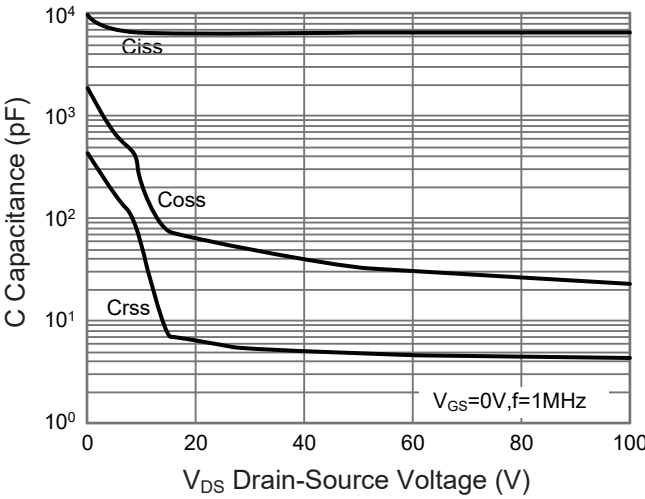
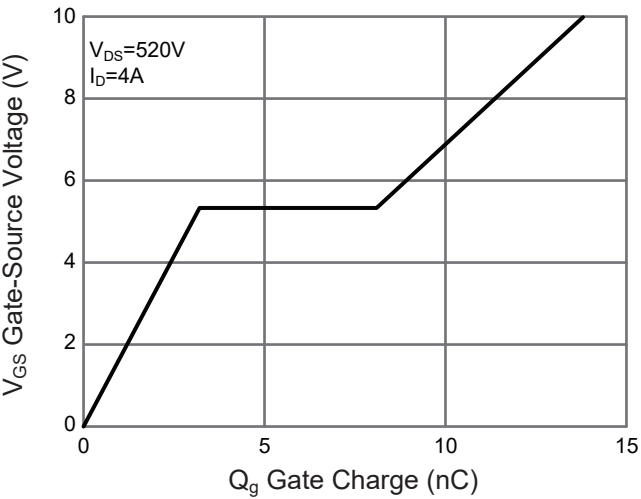
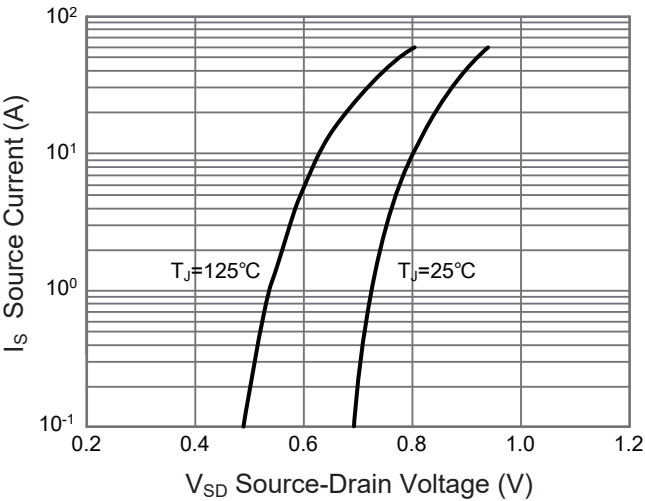
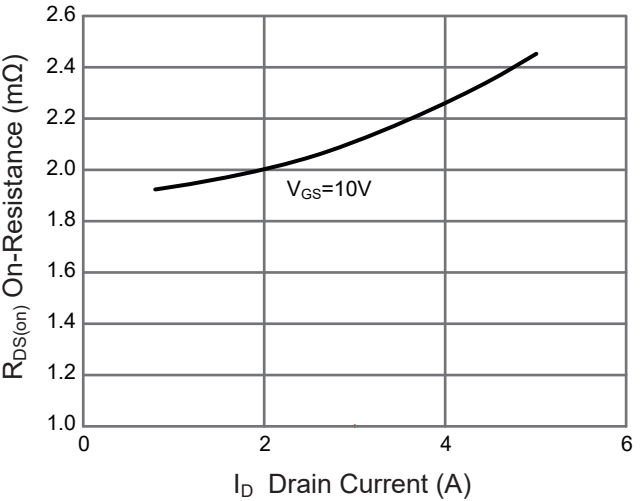
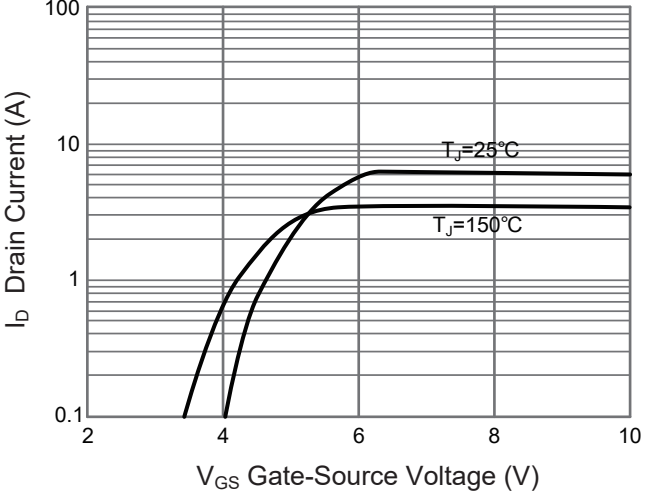
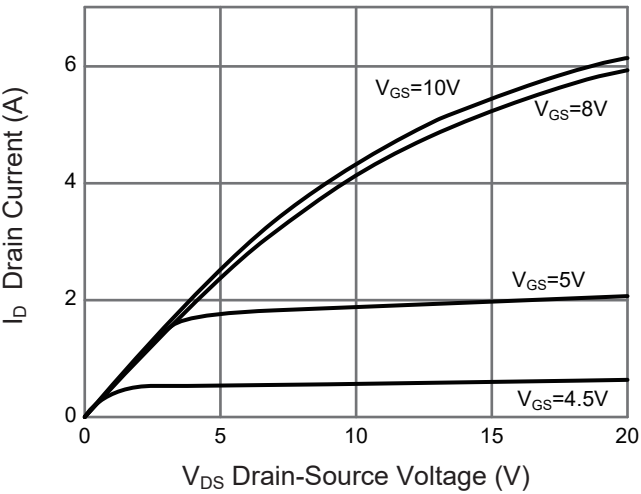
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	650	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V, I _D =2A	--	2	2.5	Ω
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V, I _D =2A	--	2	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	630	--	pF
Output Capacitance	C _{oss}		--	52	--	pF
Reverse Transfer Capacitance	C _{rss}		--	7.8	--	pF
Gate Resistance	R _G	V _{DS} =0V, V _{GS} =0V, f=1MHz	--	2.9	--	Ω
Total Gate Charge	Q _g	V _{DS} =520V, I _D =4A, V _{GS} =10V	--	13.8	--	nC
Gate-Source Charge	Q _{gs}		--	3.2	--	nC
Gate-Drain Charge	Q _{gd}		--	4.9	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =325V, I _D =4A, V _{GS} =10V, R _{GEN} =25Ω	--	18	--	nS
Turn-on Rise Time	t _r		--	16	--	nS
Turn-off Delay Time	t _{d(off)}		--	35	--	nS
Turn-off Fall Time	t _f		--	38	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	V _{SD}	V _{GS} =0V, I _S =4A	--	--	1.2	V
Diode Forward Current	I _S		--	--	4	A

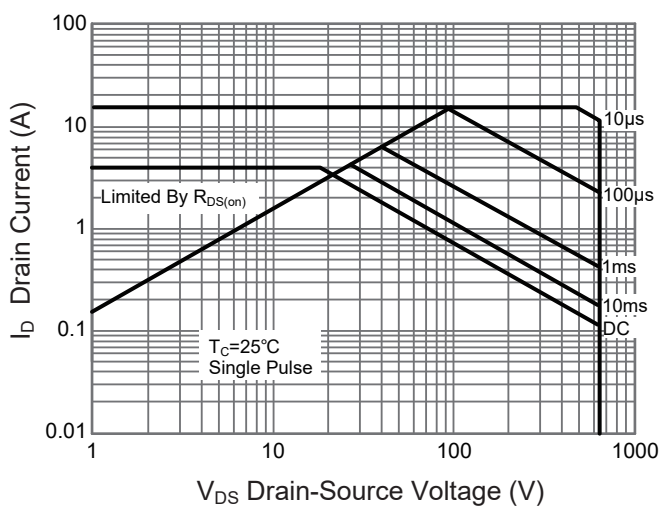
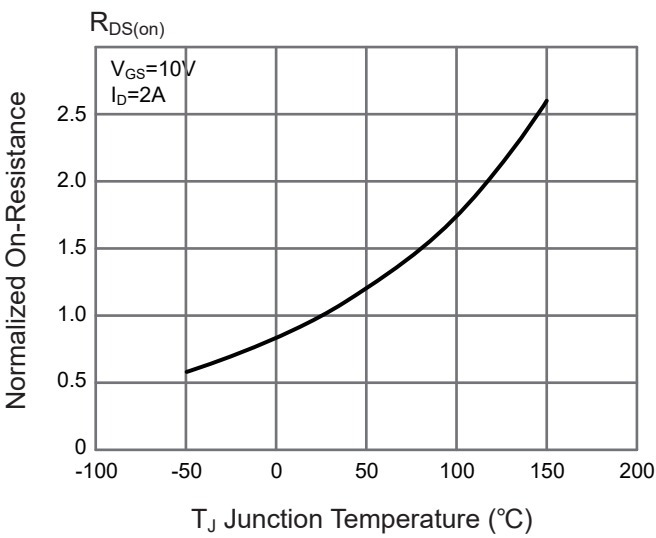
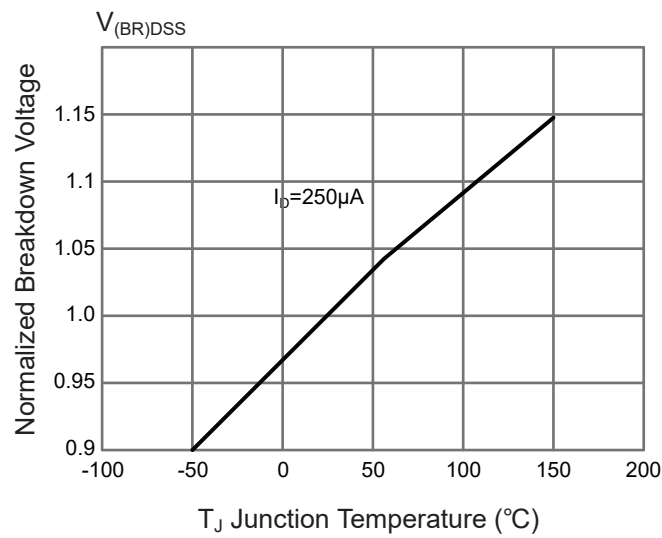
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. EAS Condition: T_J=25°C, V_{DD}=100V, V_G=10V, R_G=25Ω, L=10mH, I_{AS}=4.9A.

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

Typical Characteristic Curves

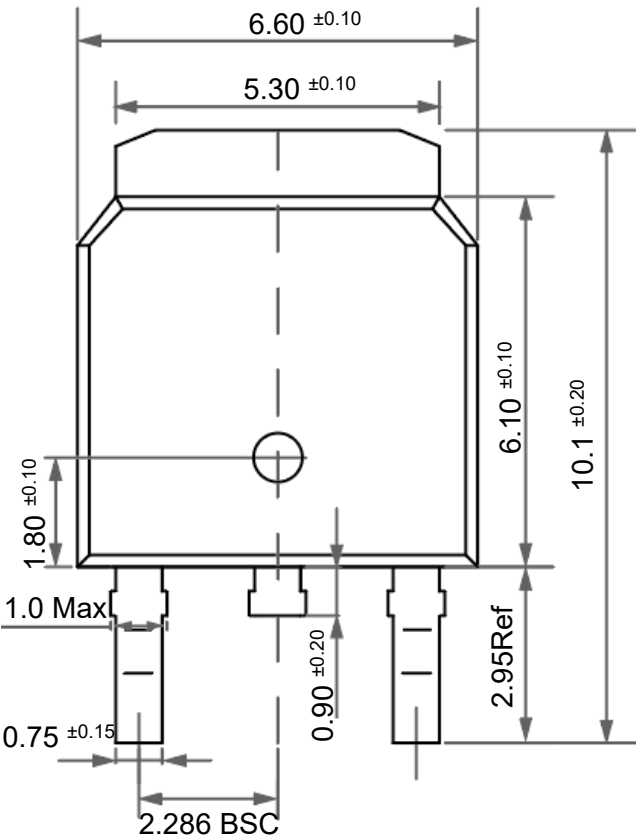




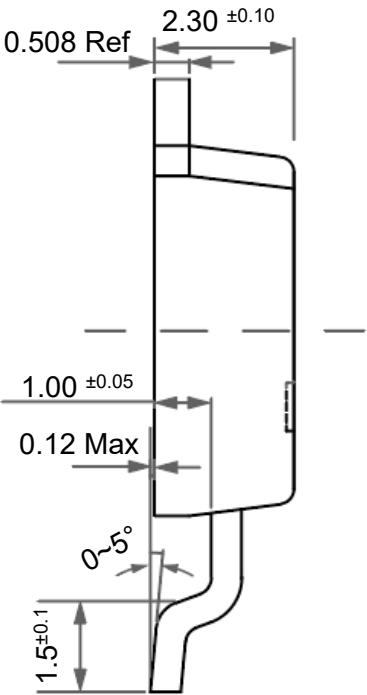
Package Outline

TO-252

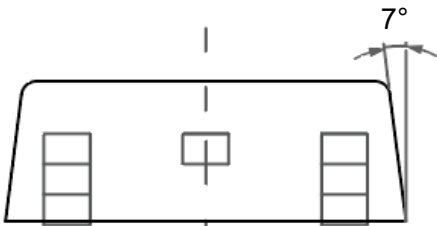
Dimensions in mm



Front View



Side View



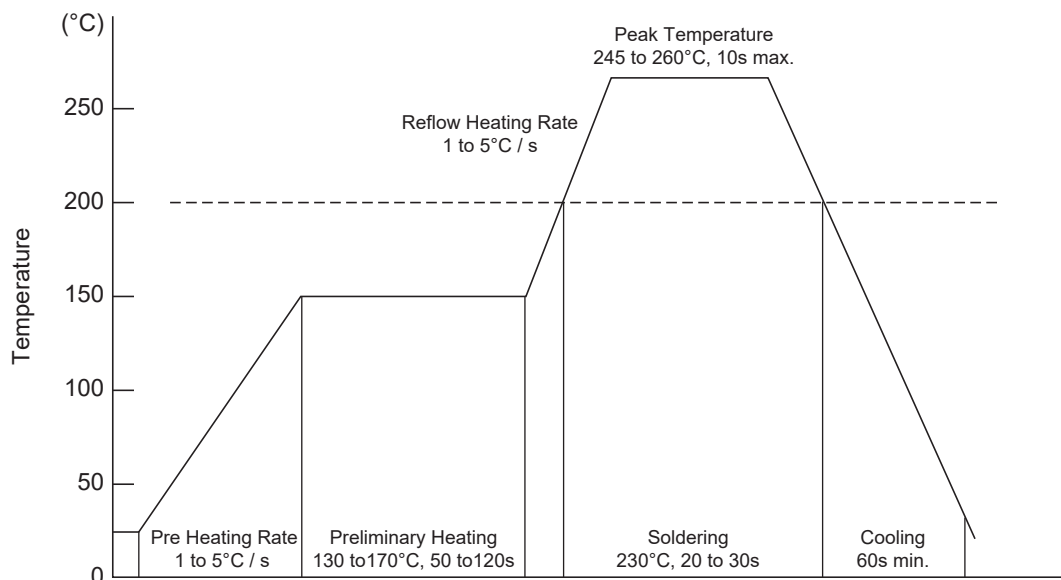
Bottom View

Ordering Information

Device	Package	Shipping
TN65H04NTE	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

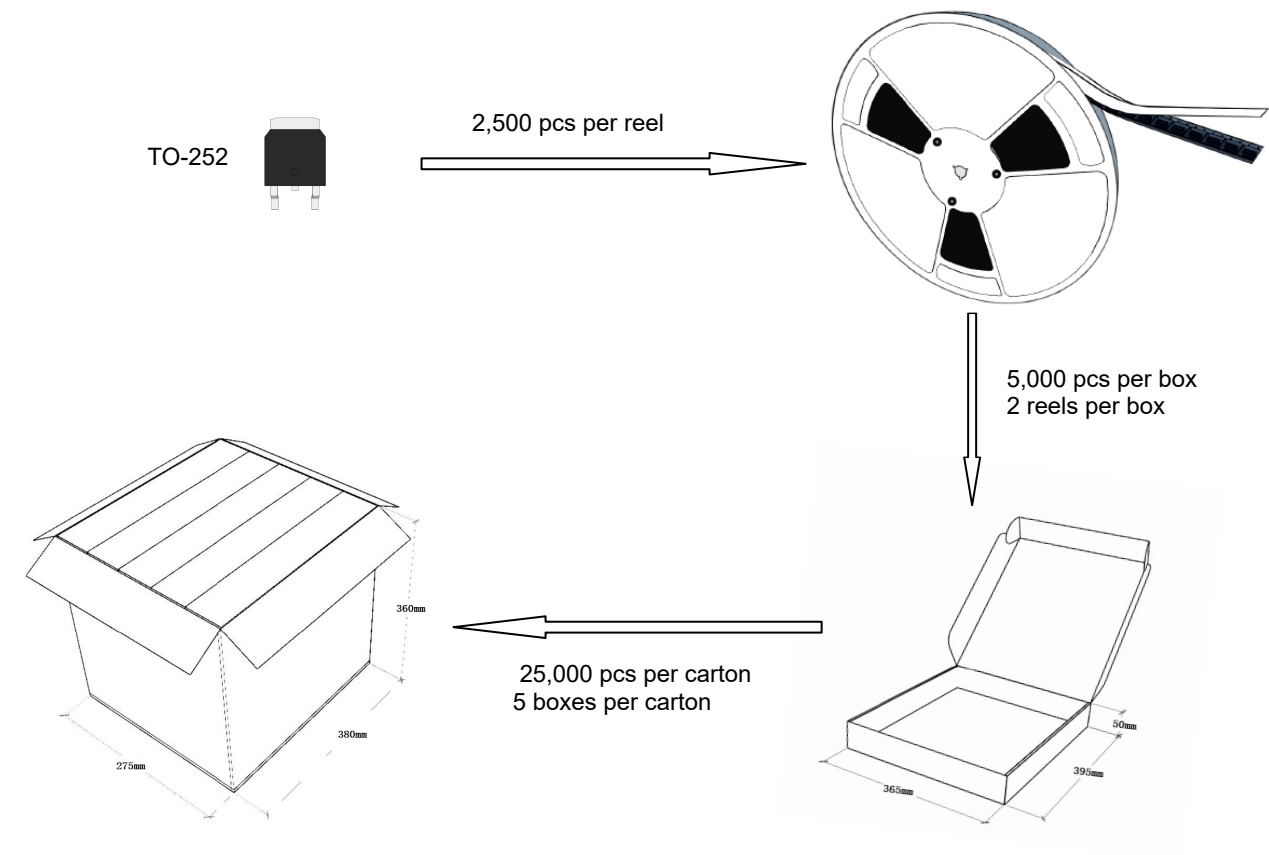
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

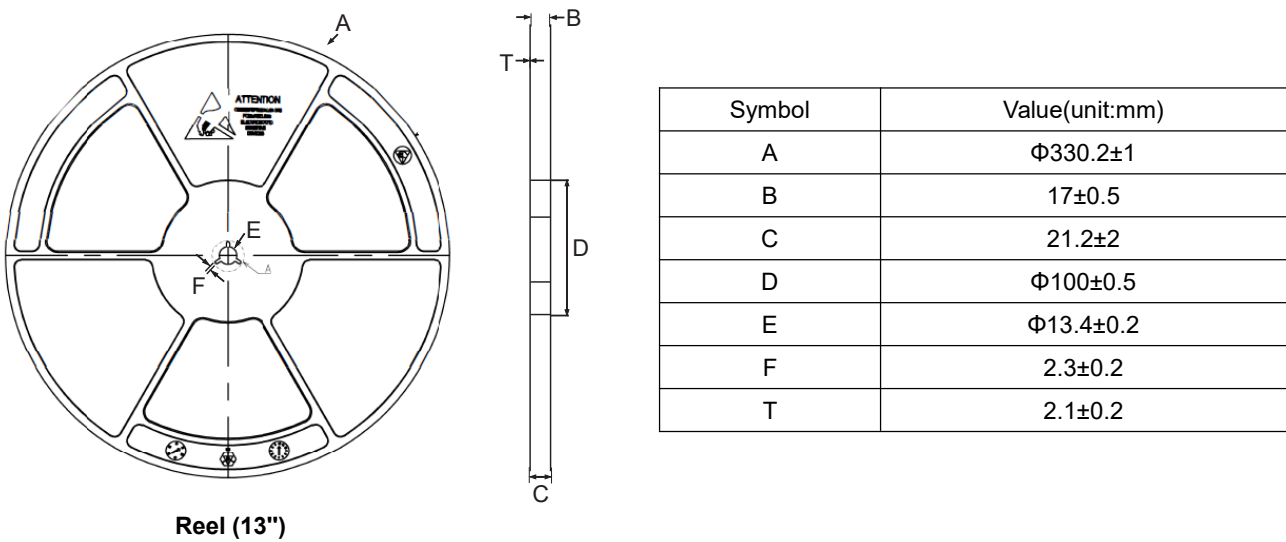
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications

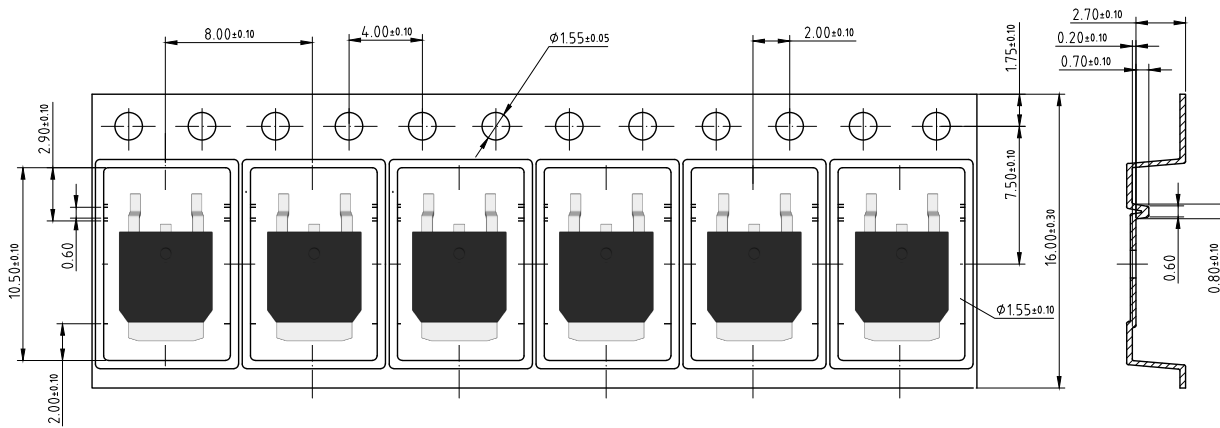
- The method of packaging



reel data



◆ Embossed tape data



Contact Information

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For additional information, please contact your local Sales Representative.

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Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

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Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. TANI shall assume no responsibility for any consequences resulting from such usage.

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