

TN70H04NTE

N-Channel Enhancement Mode Power MOSFET

TO-252

Product Summary

- $V_{DS} = 700V, I_D = 4A$
- $R_{DS(on)} < 2.8\Omega @ V_{GS} = 10V$

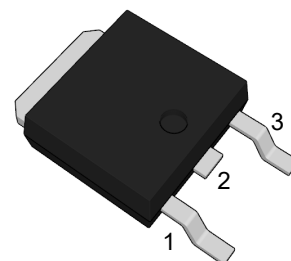
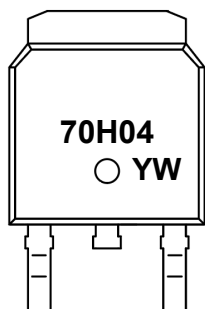
Features

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

Application

- High Efficiency Switch Mode Power Supplies
- Electronic Lamp Ballasts Based on Half Bridge
- LED Power Supplies

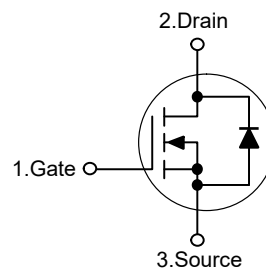
Marking Code



(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}	700	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}	61.25	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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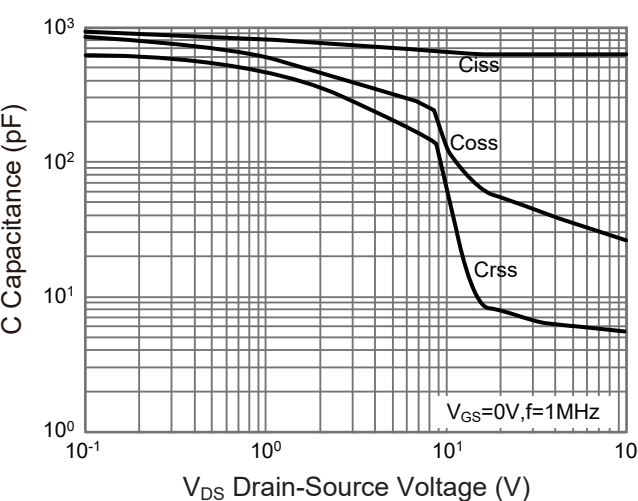
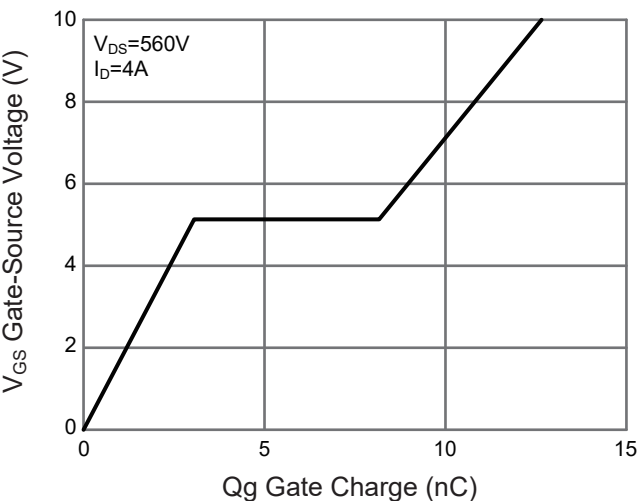
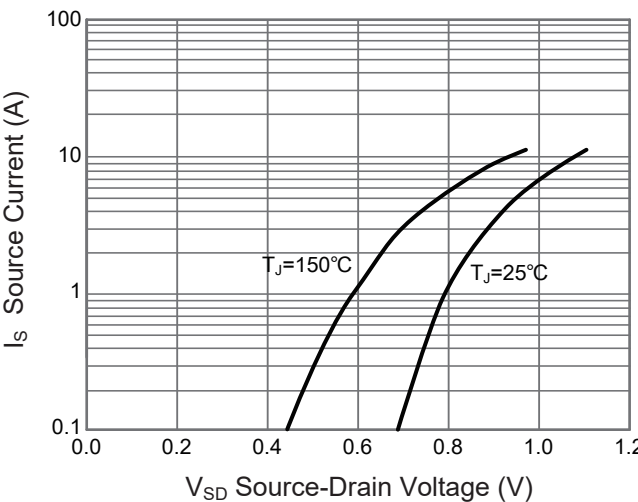
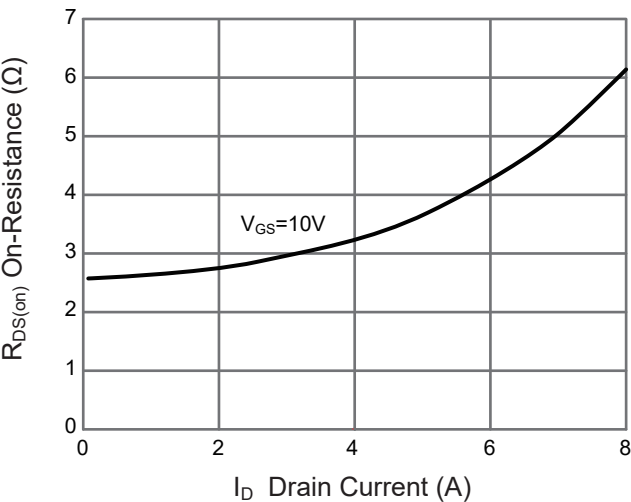
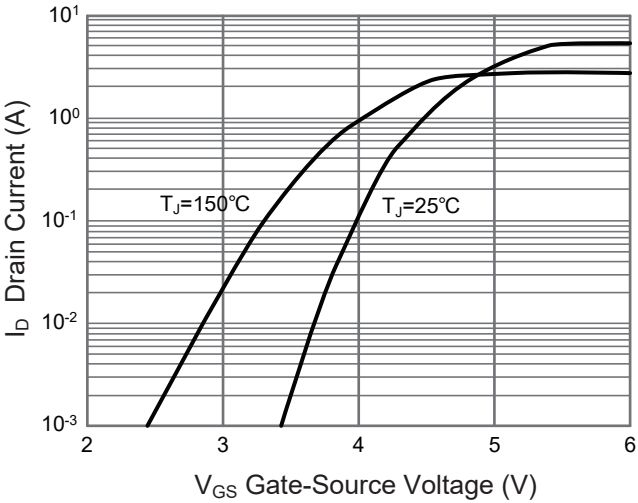
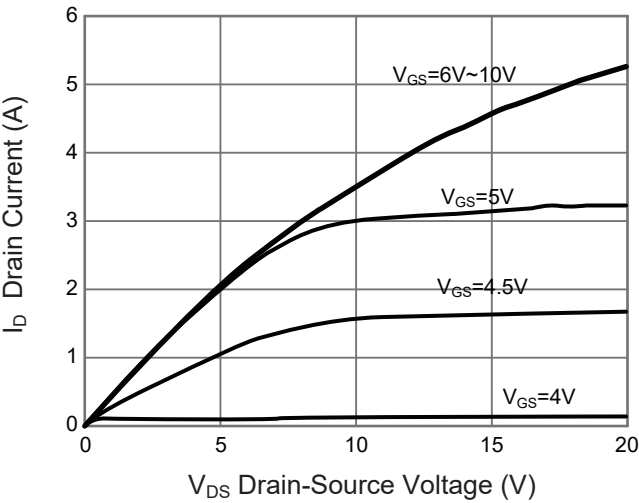
Electrical Characteristics

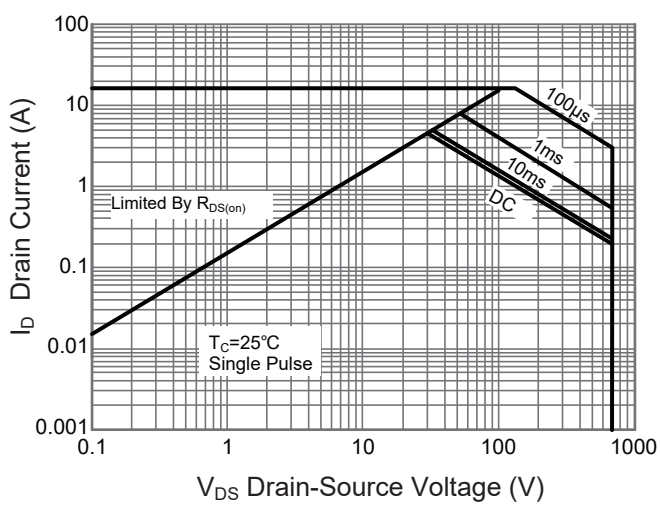
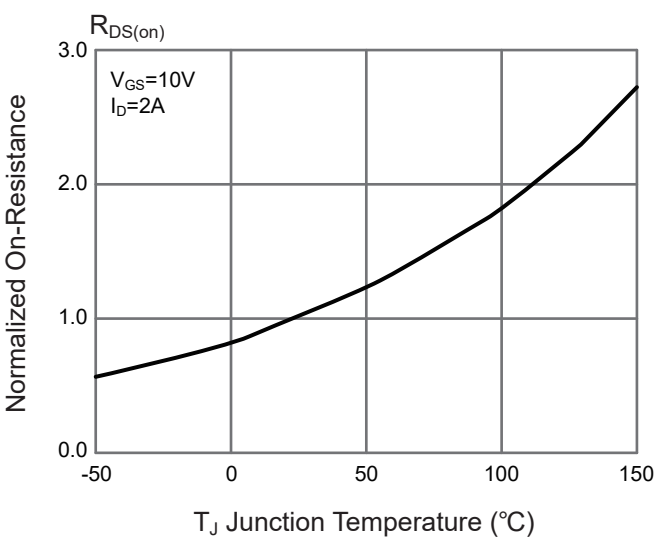
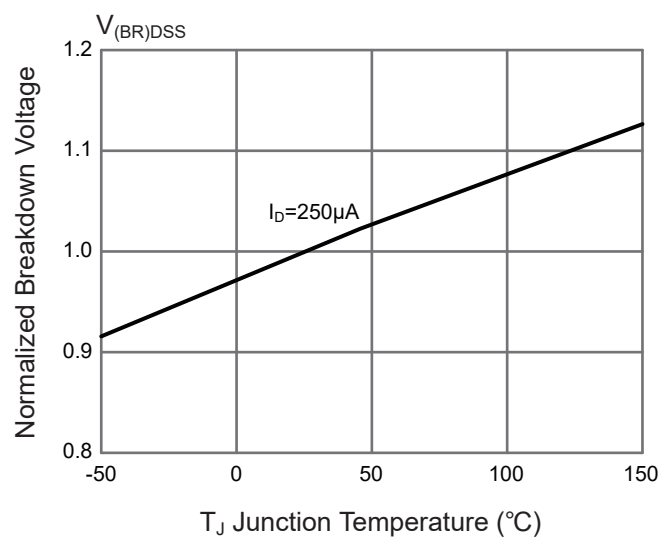
(T_J=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	700	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =700V, 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	--	2.55	2.8	Ω
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V, I _D =2A	--	0.16	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	618	--	pF
Output Capacitance	C _{oss}		--	49	--	pF
Reverse Transfer Capacitance	C _{rss}		--	7	--	pF
Gate Resistance	R _G	V _{DS} =0V, V _{GS} =0V, f=1MHz	--	3	--	Ω
Total Gate Charge	Q _g	V _{DS} =560V, I _D =4A, V _{GS} =10V	--	12.7	--	nC
Gate-Source Charge	Q _{gs}		--	3	--	nC
Gate-Drain Charge	Q _{gd}		--	5.1	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =350V, I _D =4A, V _{GS} =10V, R _{GEN} =10Ω	--	14	--	nS
Turn-on Rise Time	t _r		--	15	--	nS
Turn-off Delay Time	t _{d(off)}		--	30	--	nS
Turn-off Fall Time	t _f		--	9	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	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}=3.5A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristic Curves

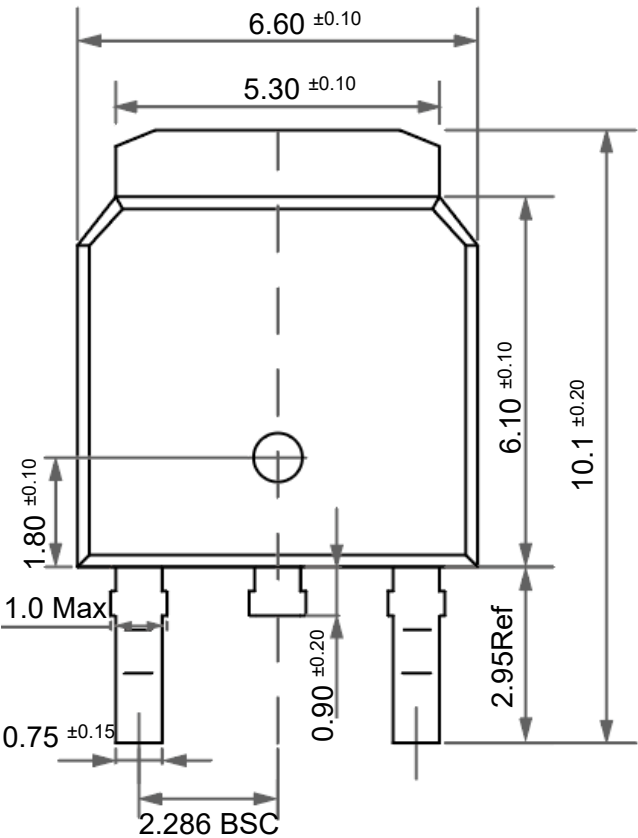




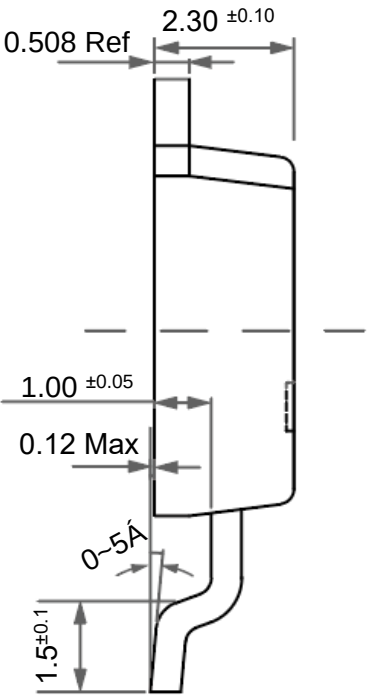
Package Outline

TO-252

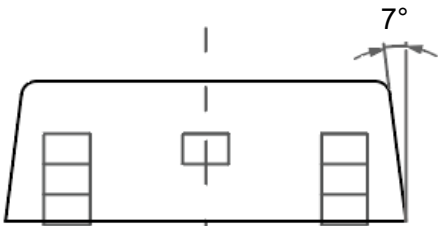
Dimensions in mm



Front View



Side View



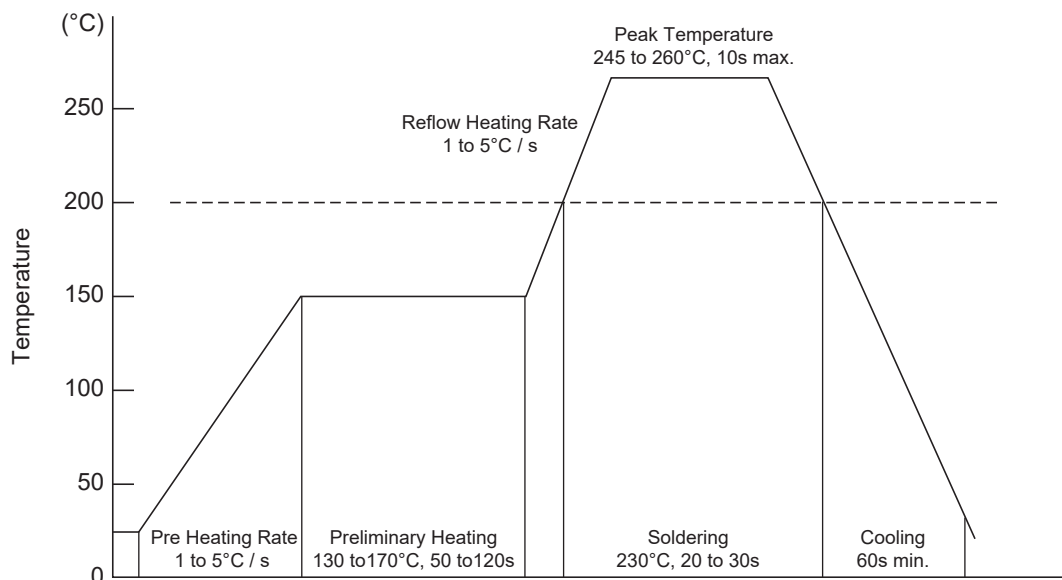
Bottom View

Ordering Information

Device	Package	Shipping
TN70H04NTE	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

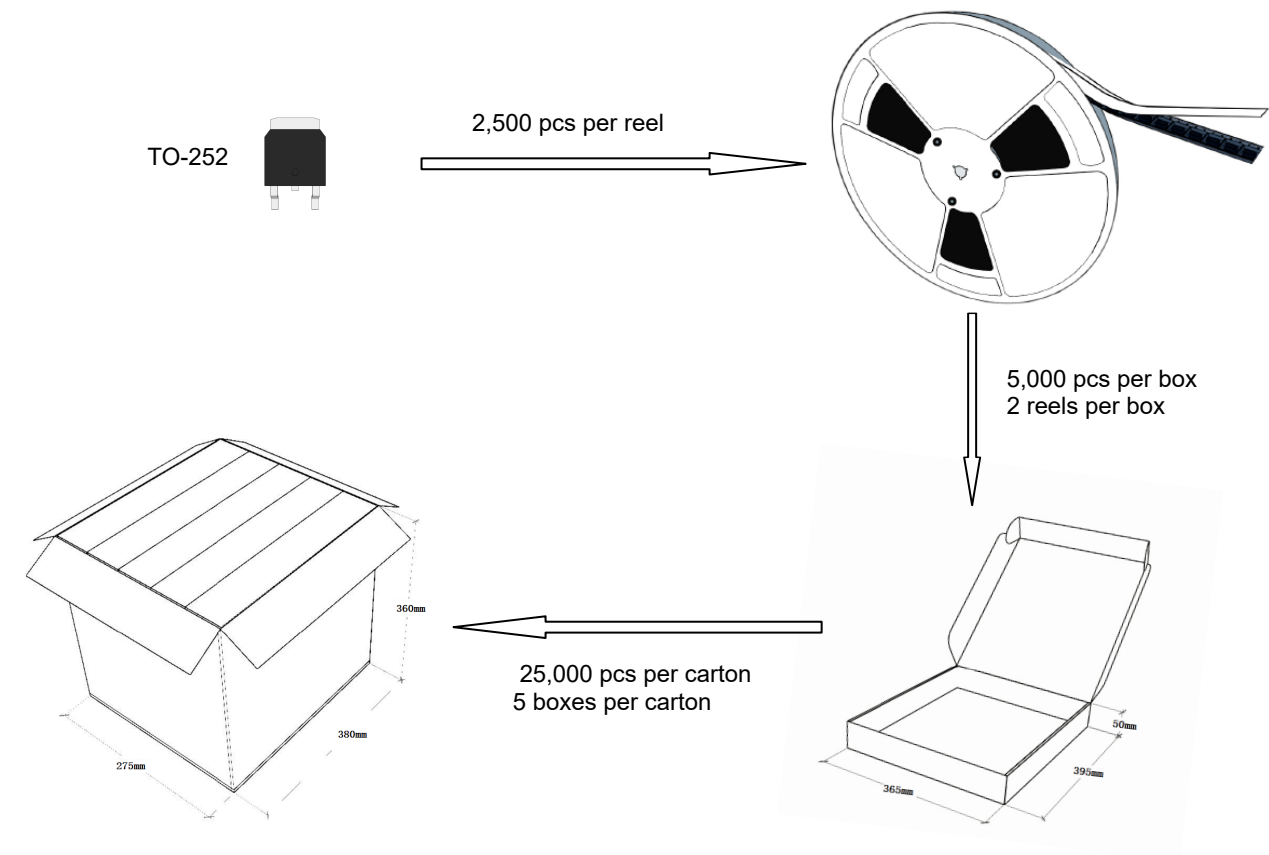
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

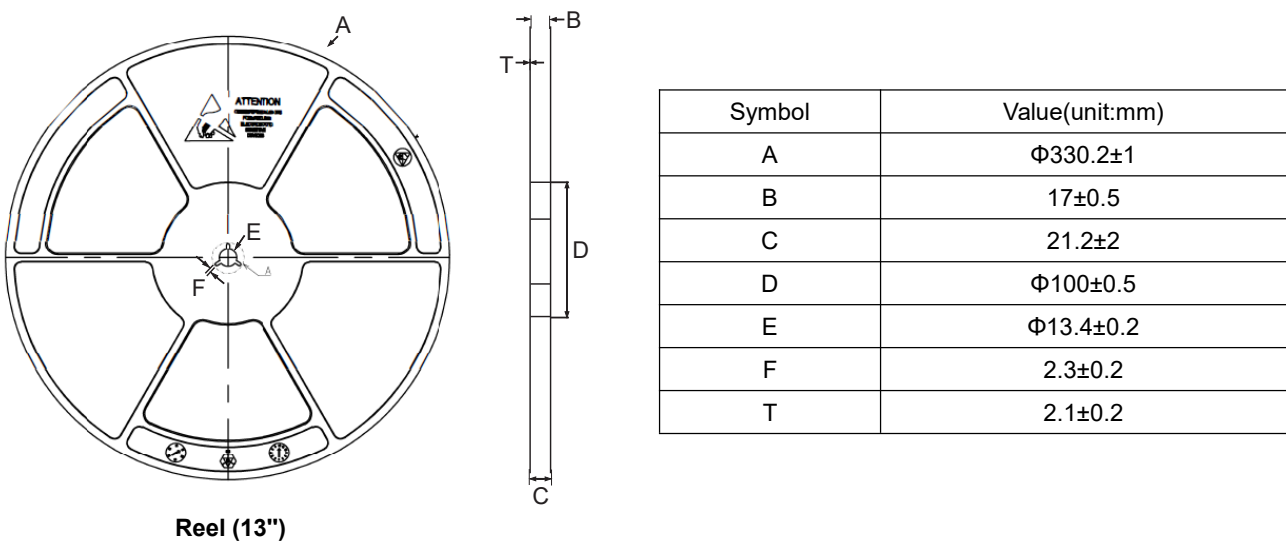
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications

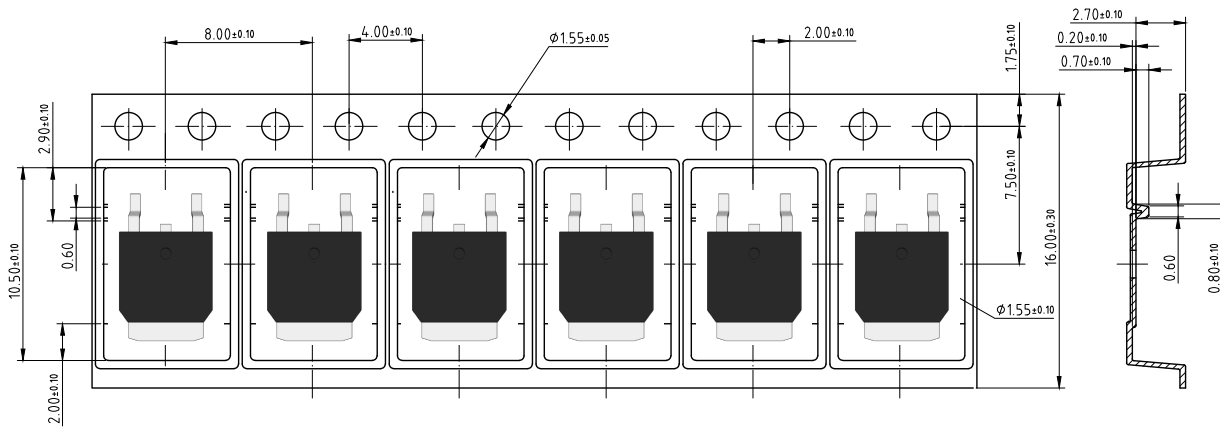
- The method of packaging



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

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