

TN50H02NTE

N-Channel Enhancement Mode Power MOSFET

TO-252

Product Summary

- $V_{DS} = 500V, I_D = 2A$
- $R_{DS(on)} < 6\Omega @ V_{GS} = 10V$

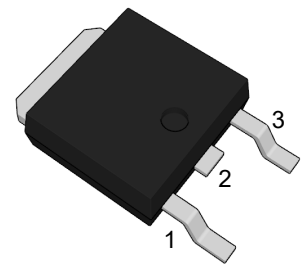
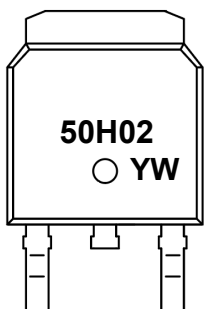
Features

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

Application

- Electronic Ballast
- Electronic Transformer
- Switch Mode Power Supply

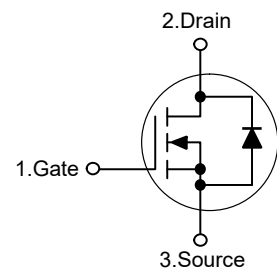
Marking Code



(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}	500	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	2	A
Drain Current-Pulsed ^{Note1}	I_{DM}	8	A
Maximum Power Dissipation	P_D	28	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	20	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.57	°C/W
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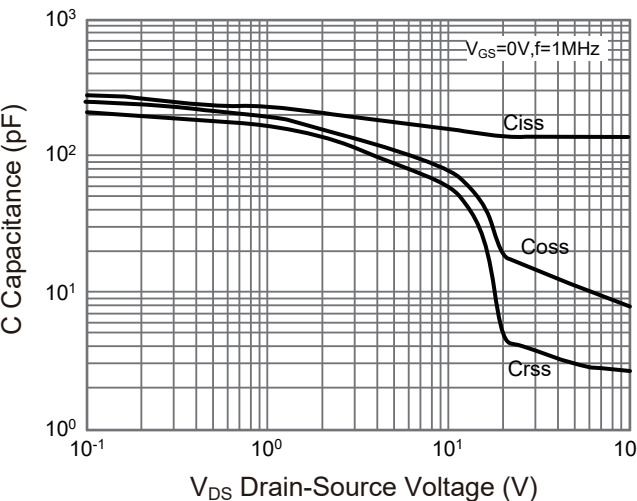
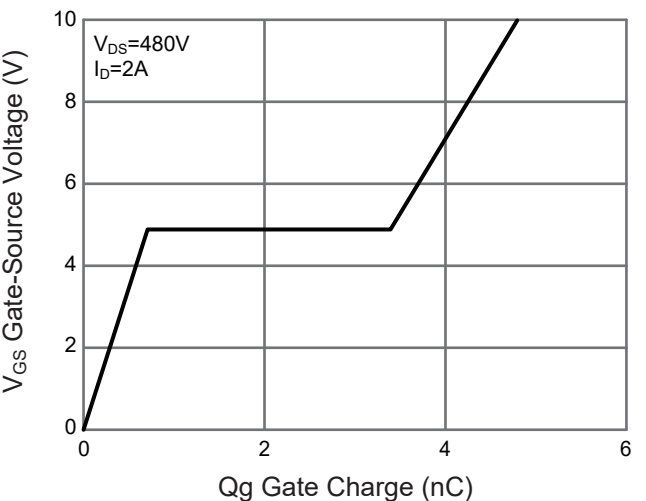
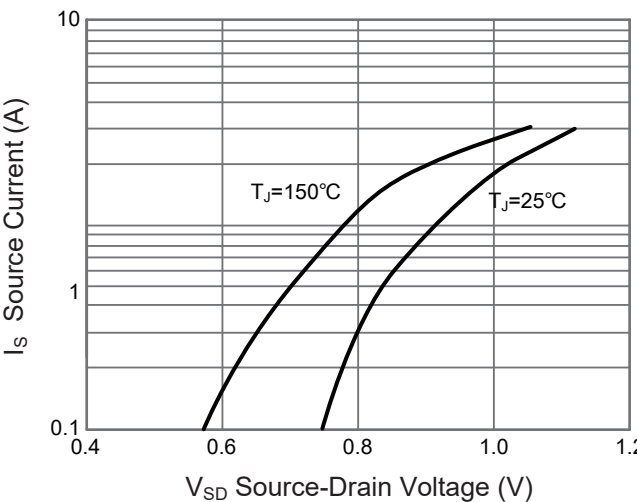
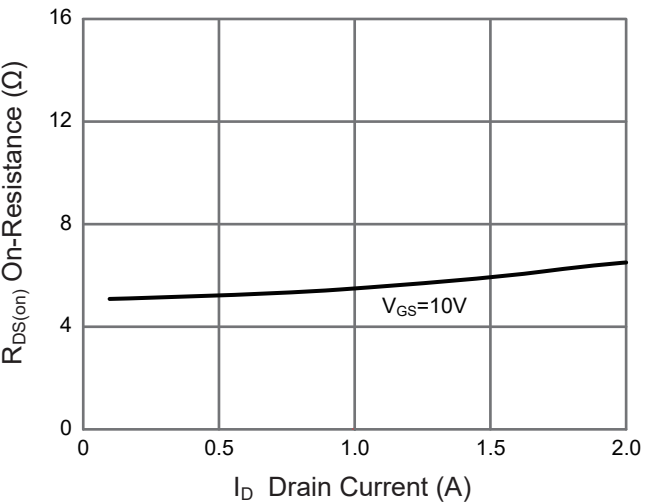
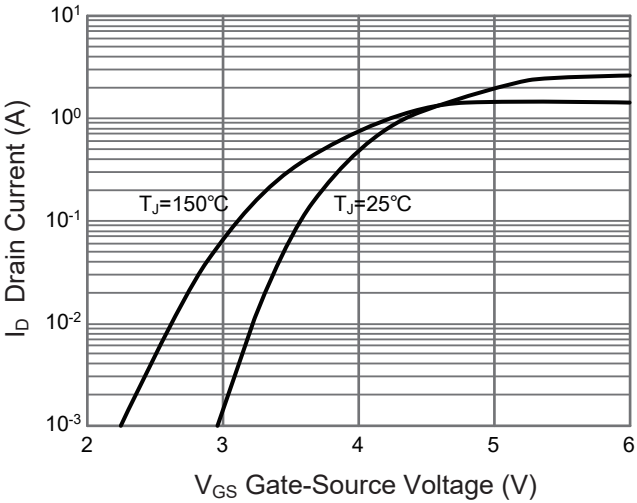
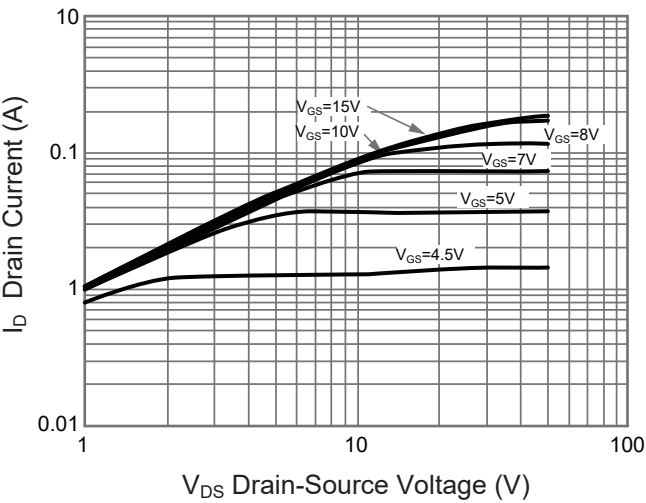
Electrical Characteristics

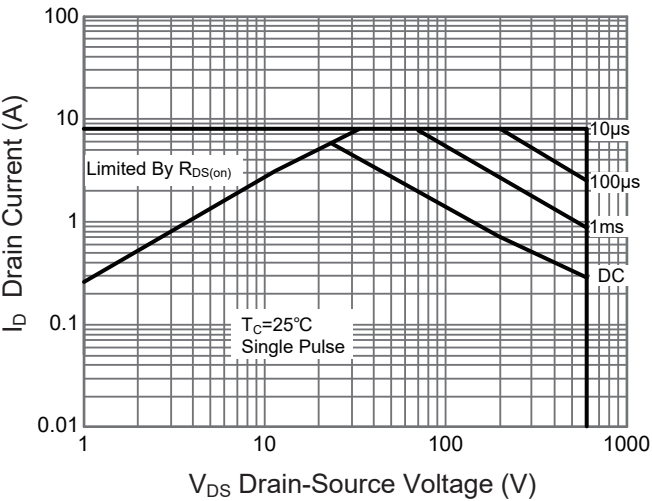
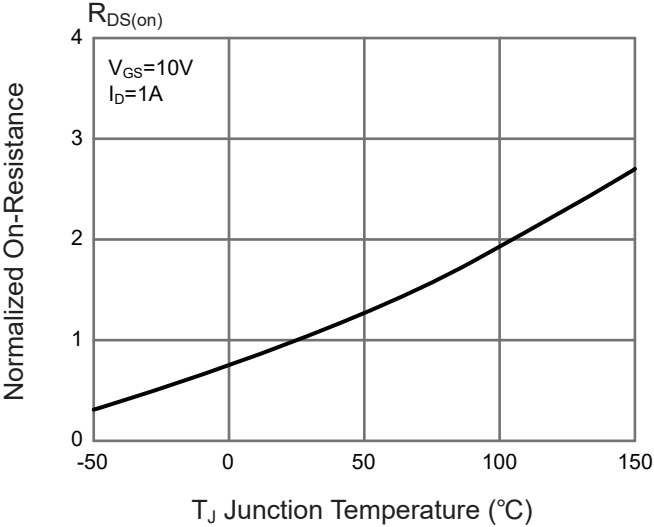
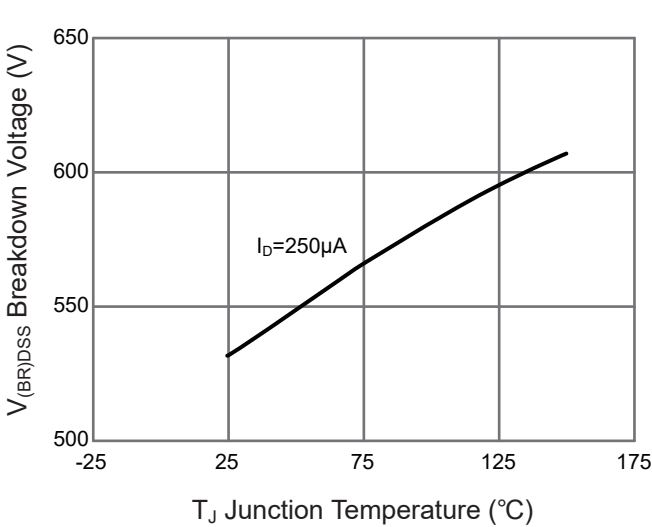
(T_J=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	500	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =500V, 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 =1A	--	5.5	6	Ω
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V, I _D =2A	--	0.05	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	139	--	pF
Output Capacitance	C _{oss}		--	16	--	pF
Reverse Transfer Capacitance	C _{rss}		--	3.8	--	pF
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	--	7	--	Ω
Total Gate Charge	Q _g	V _{DS} =480V, I _D =2A, V _{GS} =10V	--	4.8	--	nC
Gate-Source Charge	Q _{gs}		--	0.7	--	nC
Gate-Drain Charge	Q _{gd}		--	2.7	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =250V, I _D =2A, V _{GS} =10V, R _{GEN} =10Ω	--	2.7	--	nS
Turn-on Rise Time	t _r		--	12.1	--	nS
Turn-off Delay Time	t _{d(off)}		--	16.7	--	nS
Turn-off Fall Time	t _f		--	7.2	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =2A	--	--	1.2	V
Diode Forward Current	I _S		--	--	2	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}=2A.
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

Typical Characteristic Curves

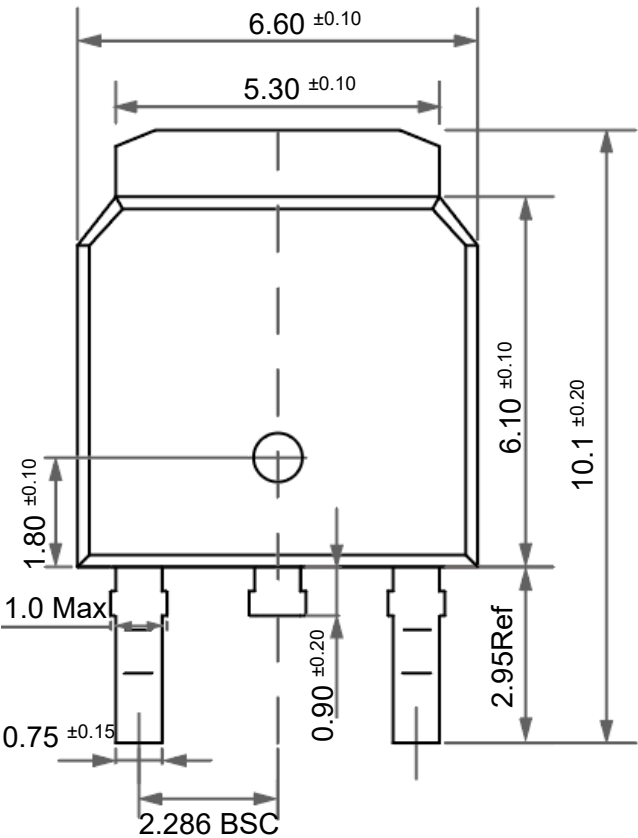




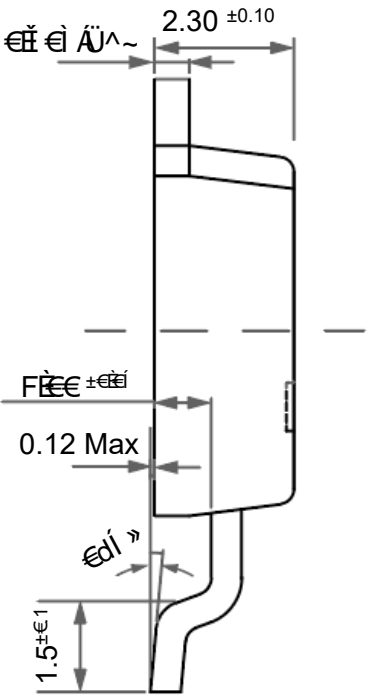
Package Outline

TO-252

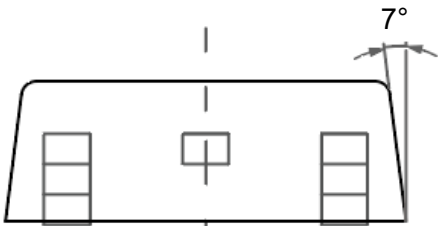
Dimensions in mm



Front View



Side View



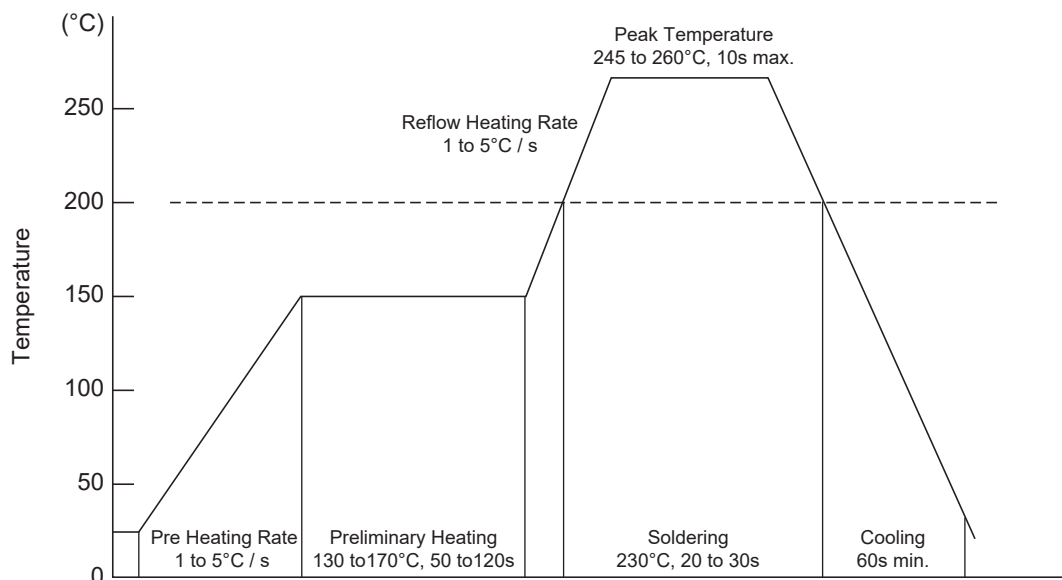
Bottom View

Ordering Information

Device	Package	Shipping
TN50H02NTE	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

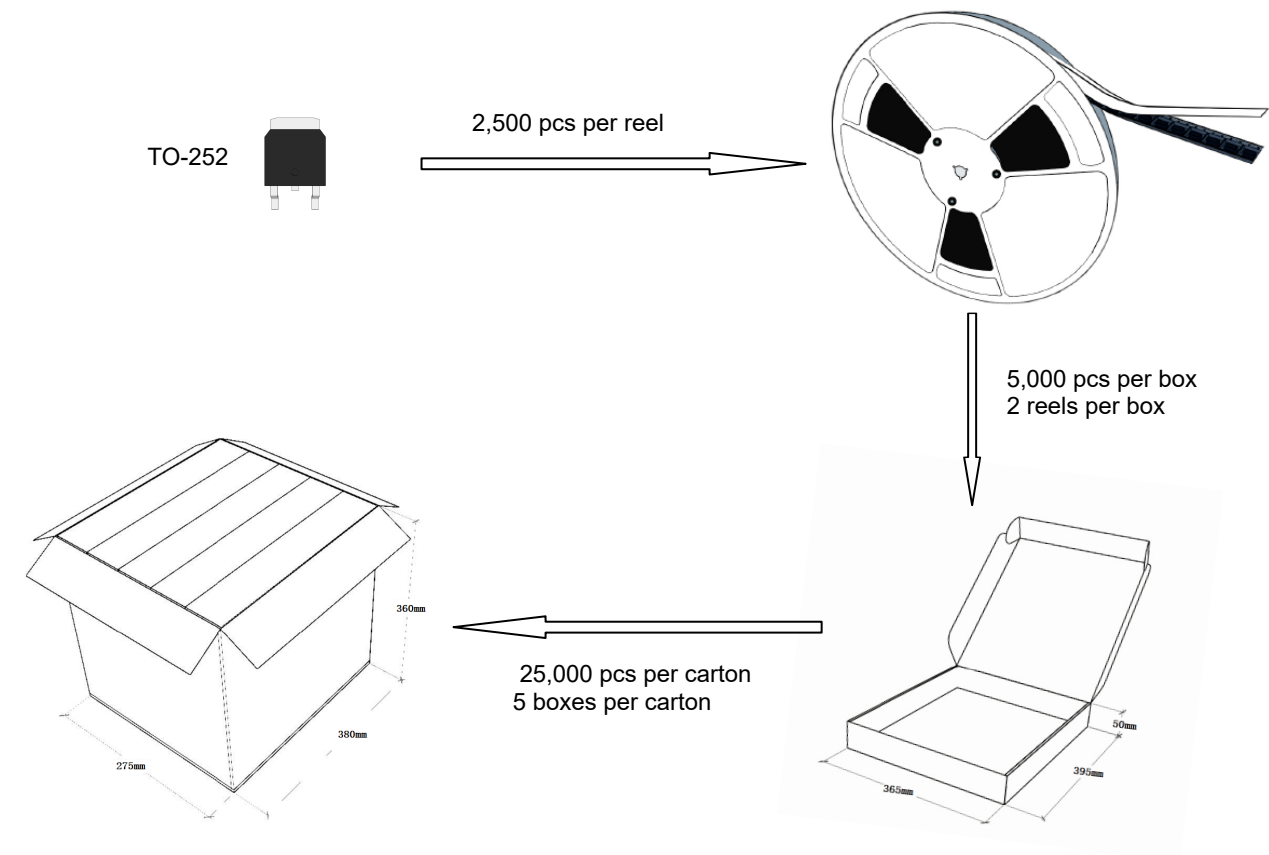
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

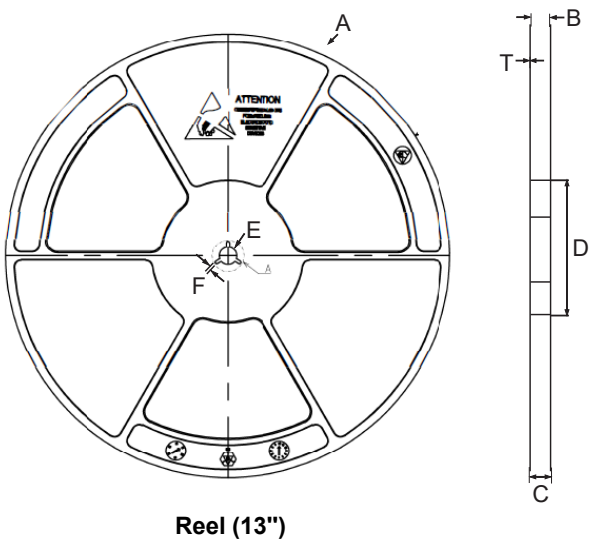
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications

- The method of packaging

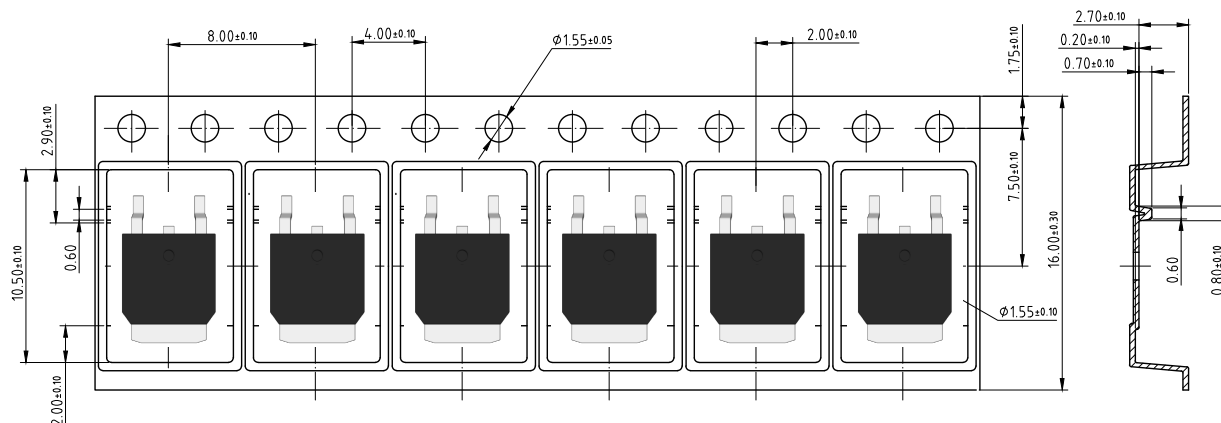


reel data



Symbol	Value(unit:mm)
A	$\Phi 330.2\pm 1$
B	17 ± 0.5
C	21.2 ± 2
D	$\Phi 100\pm 0.5$
E	$\Phi 13.4\pm 0.2$
F	2.3 ± 0.2
T	2.1 ± 0.2


◆ 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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