



# TN10H15NTE

## N-Channel Enhancement Mode Power MOSFET

### Product Summary

- $V_{DS} = 100V, I_D = 15A$
- $R_{DS(on)} < 100m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 130m\Omega @ V_{GS} = 4.5V$

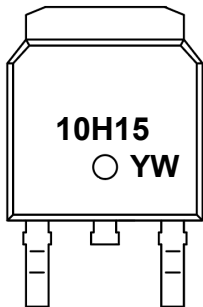
### Features

- 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

### Marking Code



### Absolute Maximum Ratings

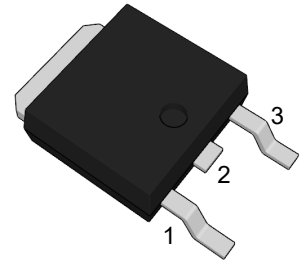
Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	15	A
Drain Current-Pulsed <sup>Note1</sup>	$I_{DM}$	60	A
Maximum Power Dissipation	$P_D$	46	W
Single Pulse Avalanche Energy <sup>Note2</sup>	$E_{AS}$	20	mJ
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

### Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.7	°C/W
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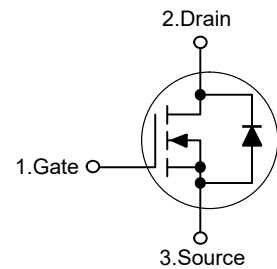
### TO-252



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

### Schematic Diagram





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### Electrical Characteristics

( $T_C=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V	--	--	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±1	μA
Gate Threshold Voltage <sup>Note3</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.9	3	V
Drain-Source On-Resistance <sup>Note3</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =10A	--	81	100	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =8A	--	86	130	mΩ
Forward Transconductance <sup>Note3</sup>	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =2A	--	7.5	--	S
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz	--	1034	--	pF
Output Capacitance	C <sub>oss</sub>		--	36	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	35	--	pF
Gate Resistance	R <sub>g</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	--	2.2	--	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V	--	22	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	3	--	nC
Gate-Drain Charge	Q <sub>gd</sub>		--	6.1	--	nC
Switching Characteristics						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V, R <sub>GEN</sub> =3Ω	--	14	--	nS
Turn-on Rise Time	t <sub>r</sub>		--	5.5	--	nS
Turn-off Delay Time	t <sub>d(off)</sub>		--	28	--	nS
Turn-off Fall Time	t <sub>f</sub>		--	5.2	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =30A	--	--	1.2	V
Diode Forward Current	I <sub>S</sub>		--	--	30	A

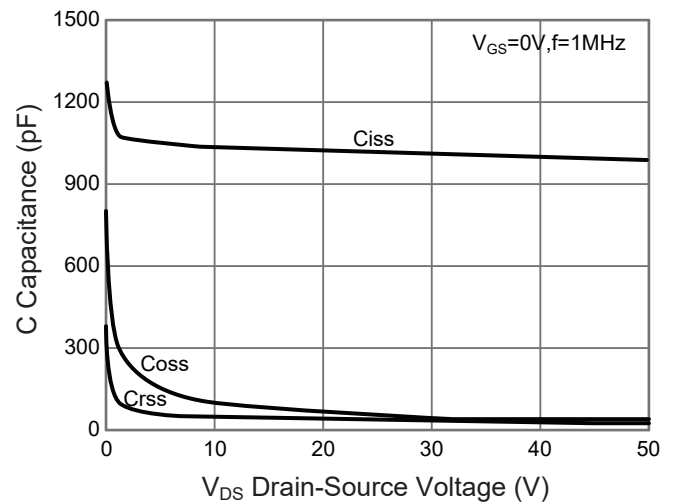
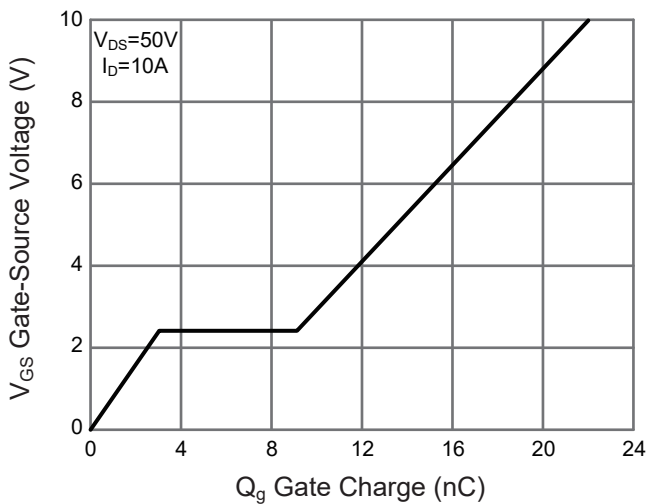
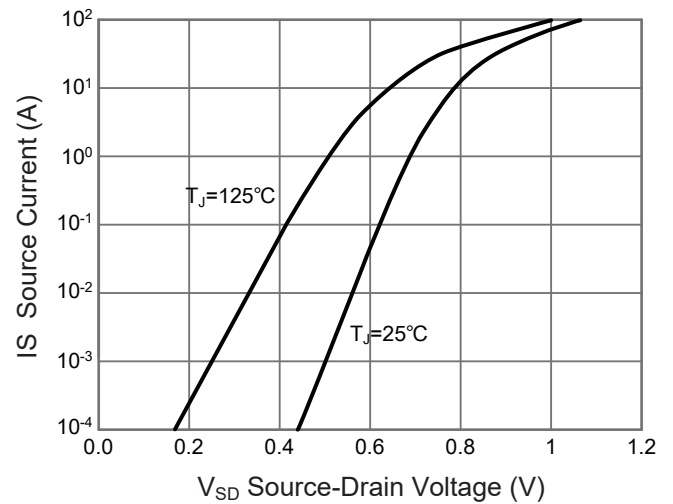
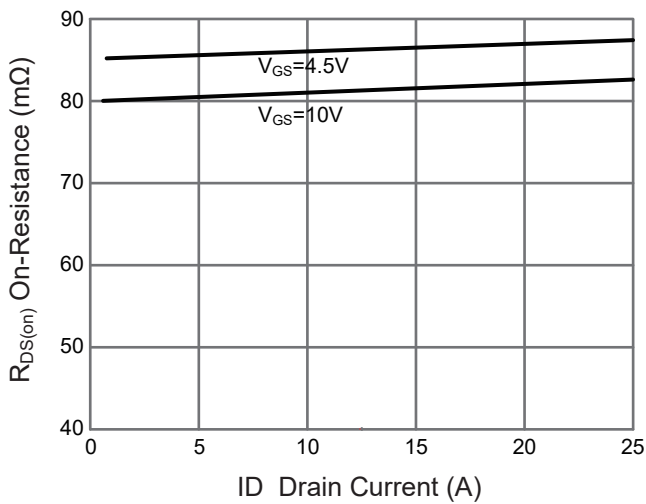
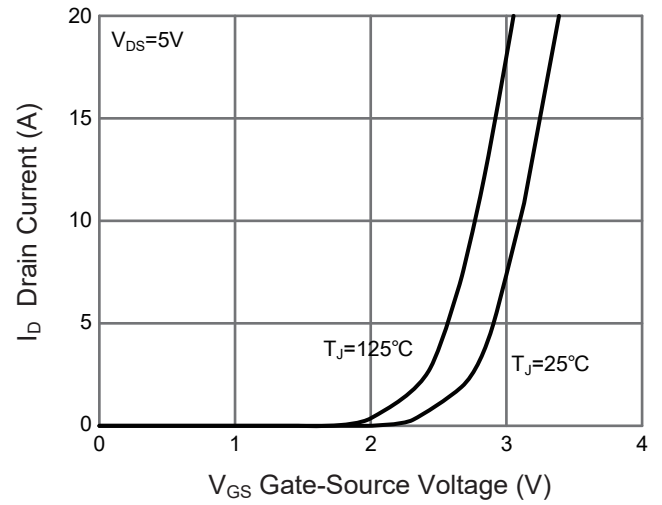
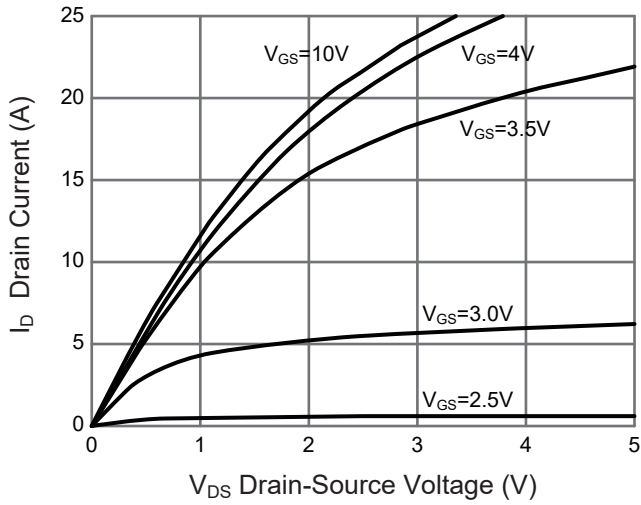
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature  
2. EAS condition:  $T_J=25^{\circ}\text{C}$ ,  $V_{DD}=50V$ ,  $V_G=10V$ ,  $R_G=25\Omega$ ,  $L=0.5\text{mH}$ ,  $I_{AS}=9A$   
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 0.5\%$



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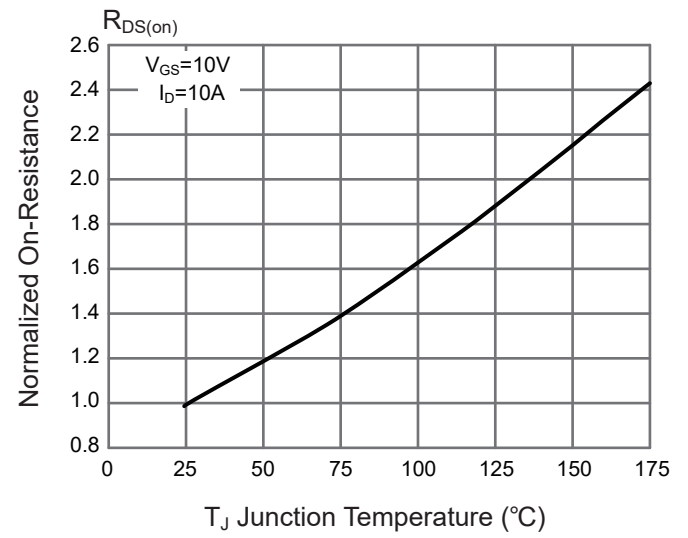
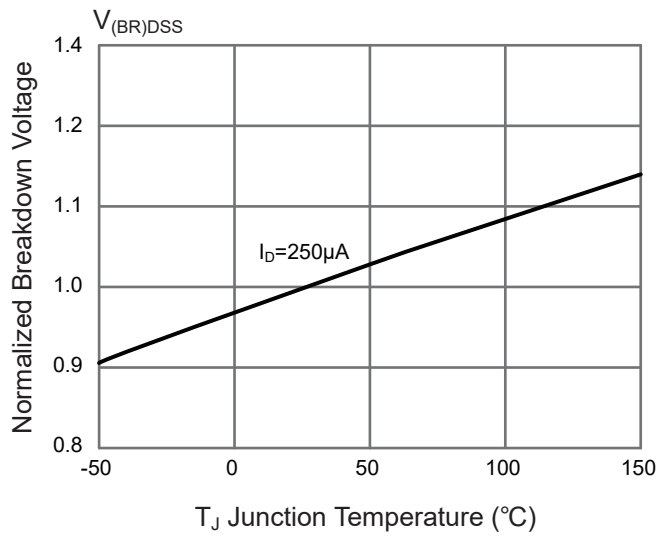
### Typical Characteristic Curves





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## N-Channel Enhancement Mode Power MOSFET





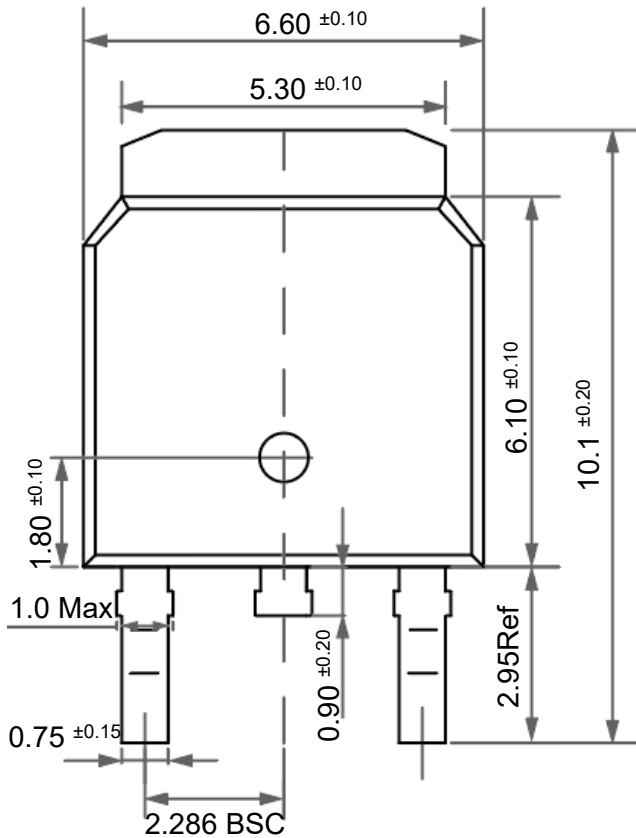
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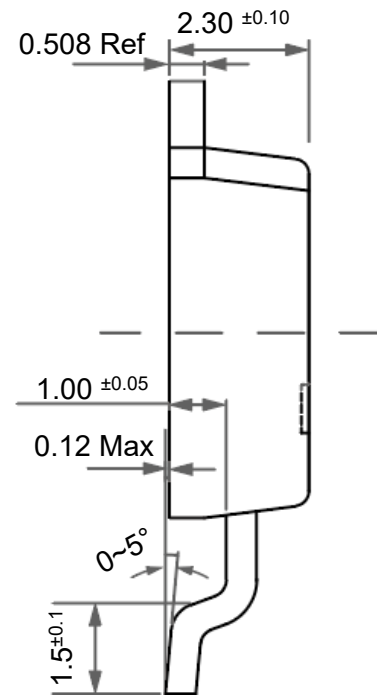
### Package Outline

TO-252

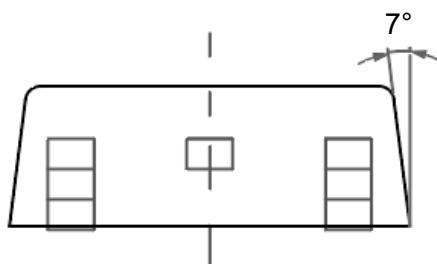
Dimensions in mm



Front View



Side View



Bottom View

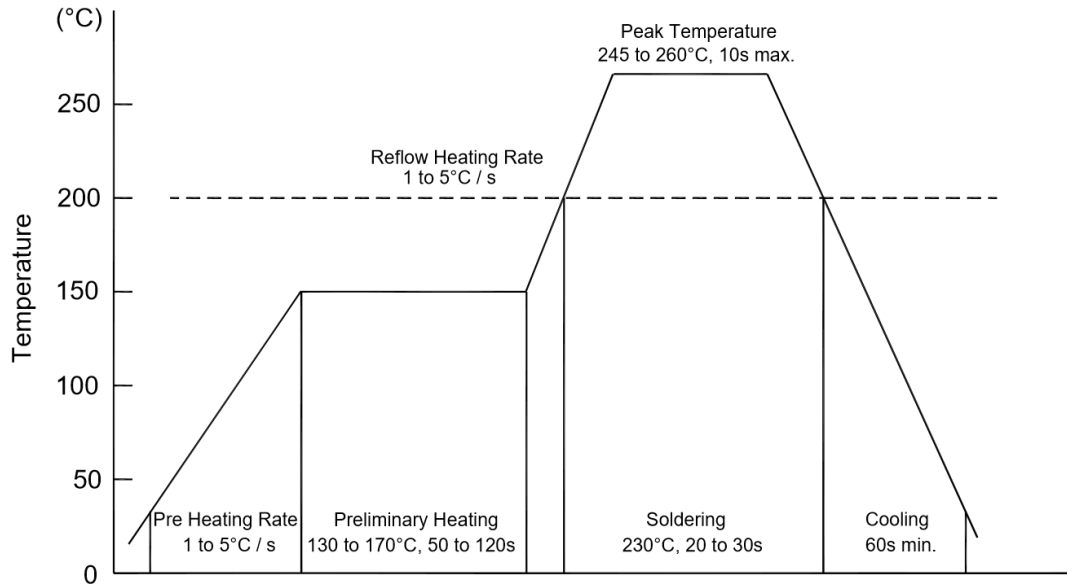
### Ordering Information

Device	Package	Shipping
TN10H15NTE	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

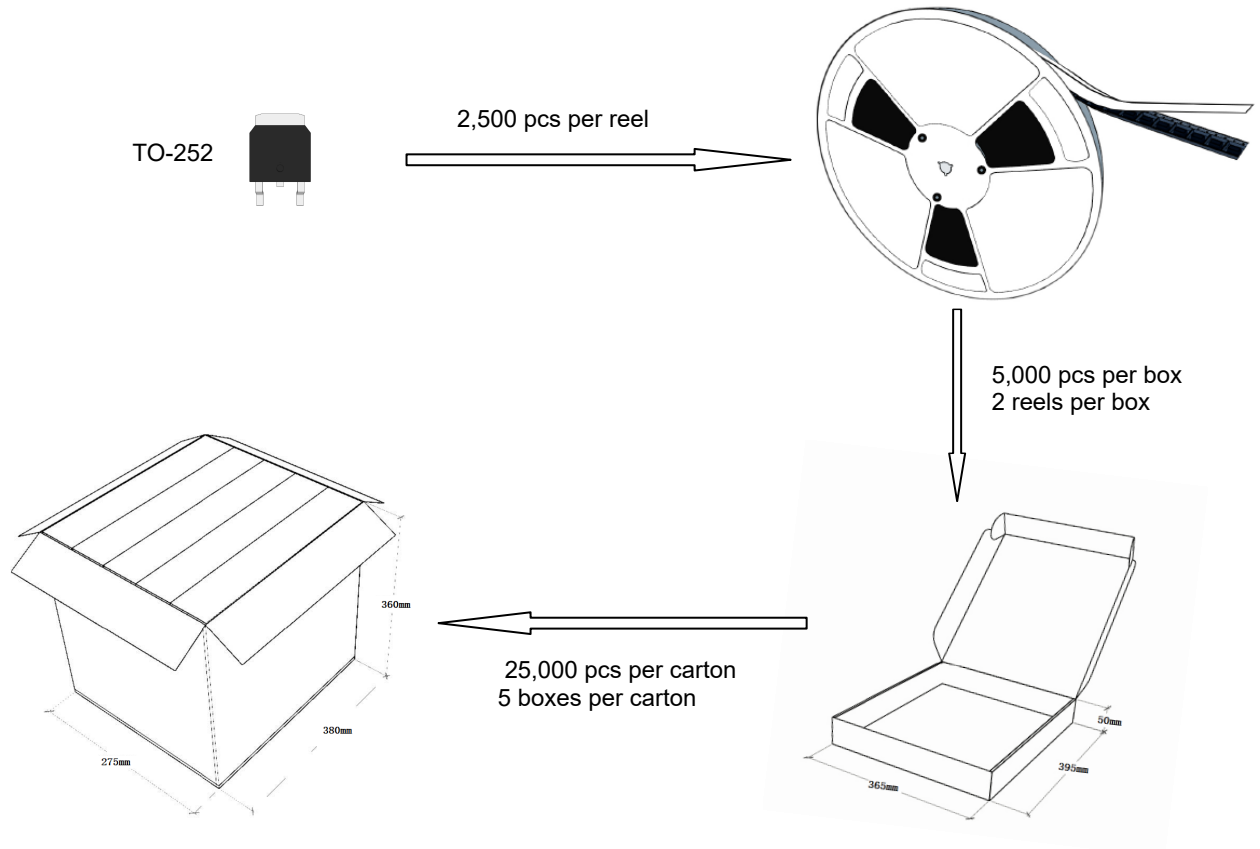


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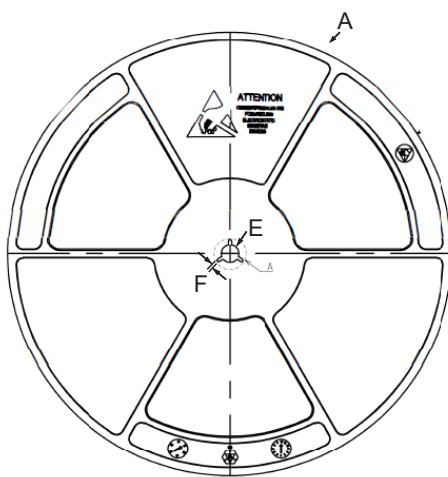
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### Package Specifications

- The method of packaging



### ◆ reel data



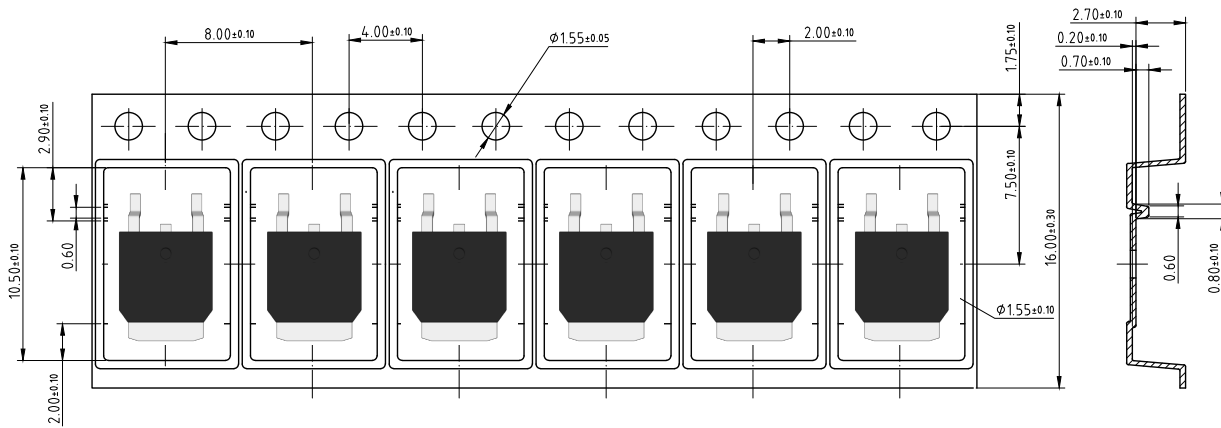
Symbol	Value(unit:mm)
A	$\Phi 330.2 \pm 1$
B	$17 \pm 0.5$
C	$21.2 \pm 2$
D	$\Phi 100 \pm 0.5$
E	$\Phi 13.4 \pm 0.2$
F	$2.3 \pm 0.2$
T	$2.1 \pm 0.2$



# TN10H15NTE

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### ◆ Embossed tape data








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### Contact Information

TANI website: <http://www.tanisemi.com> Email: [tani@tanisemi.com](mailto:tani@tanisemi.com)

For additional information, please contact your local Sales Representative.

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