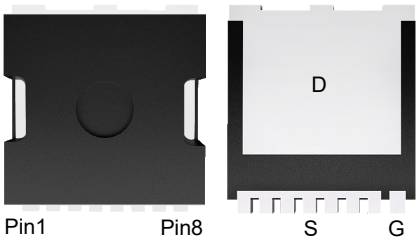
TNG12H200NTL

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 120V,I_D= 200A
- $R_{DS(on)}$< 3.9mΩ @V_{GS}= 10V

TOLL

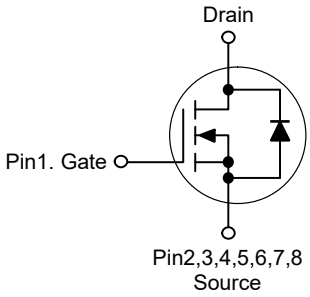


(Top View) (Bottom View)

Features

- Advanced Split Gate Trench Technology
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 1
- 100% Avalanche Tested
- 100% DVDS

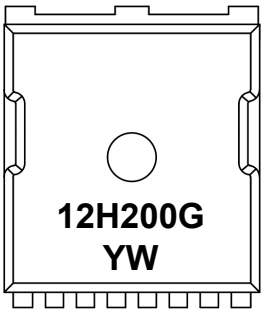
Schematic Diagram



Application

- Switching Application
- Power Management for Inverter Systems
- Battery Management

Marking Code



(Top View)

Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	200	A
Drain Current-Pulsed Note1	I_{DM}	700	A
Maximum Power Dissipation	P_D	375	W
Single Pulse Avalanche Energy Note2	E_{AS}	3819	mJ
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.40	°C/W

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Electrical Characteristics

(T_J=25℃ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_{DS} = 250 μA	120	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_{DS} = 250 μA	2	-	4	V
Drain Leakage Current	I_{DSS}	V_{DS} = 96 V, V_{GS} = 0 V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{GS} = 0 V, V_{GS} = ± 20 V	-	-	±100	nA
On-State Resistance a	$R_{DS(ON)}$	V_{GS} = 10 V, I_{DS} = 50A	-	2.8	3.2	mΩ
		V_{GS} = 6 V, I_{DS} = 30A	-	3.4	3.9	
Diode Characteristics						
Diode Forward Voltage a	V_{SD}	I_{SD} = 50A, V_{GS} = 0 V	-	-	1.3	V
Reverse Recovery Time	t_{rr}	I_{DS} = 50A, V_{GS} = 0 V dI$_{SD}$/dt = 100 A/μs	-	124	-	nS
Reverse Recovery Charge	Q_{rr}		-	368	-	nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V Frequency = 1 MHz	-	8600	-	pF
Output Capacitance	C_{oss}		-	3700	-	
Reverse Transfer Capacitance b	C_{rss}		-	1400	-	
Turn-on Delay Time	t_d (on)	V_{DS} = 60 V, V_{GEN} = 10 V, R_G = 3.9 Ω, R_L = 1.3 Ω, I_{DS} = 50A	-	26	-	nS
Turn-on Rise	t_r		-	87	-	
Turn-off Delay Time	t_d (off)		-	105	-	
Turn-off Fall Time	t_f		-	87	-	
Gate Charge Characteristics b						
Total Gate Charge	Q_g	V_{DS} = 60 V, V_{GS} = 10 V, I_{DS} = 50A	-	157	-	nC
Gate-Source Charge	Q_{gs}		-	47	-	
Gate-Drain Charge	Q_{gd}		-	37	-	

Notes：

* Pulse width ≤ 300 μs, duty cycle ≤ 2 %

** Surface Mounted on minimum footprint pad area.

*** Limited by bonding wire

a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

b : Guaranteed by design, not subject to production testing

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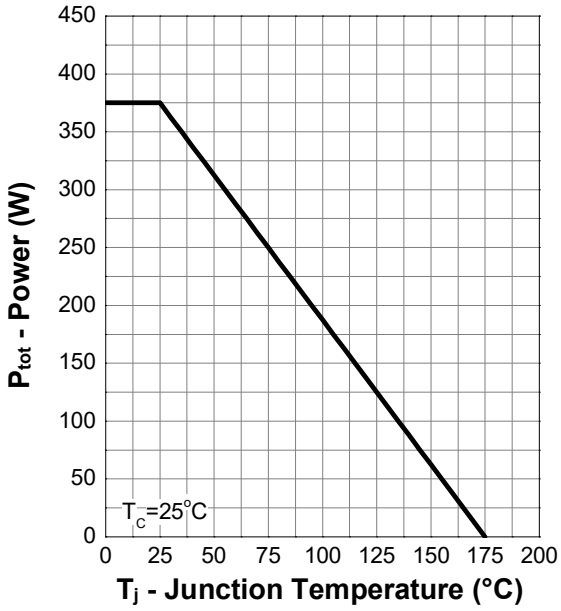
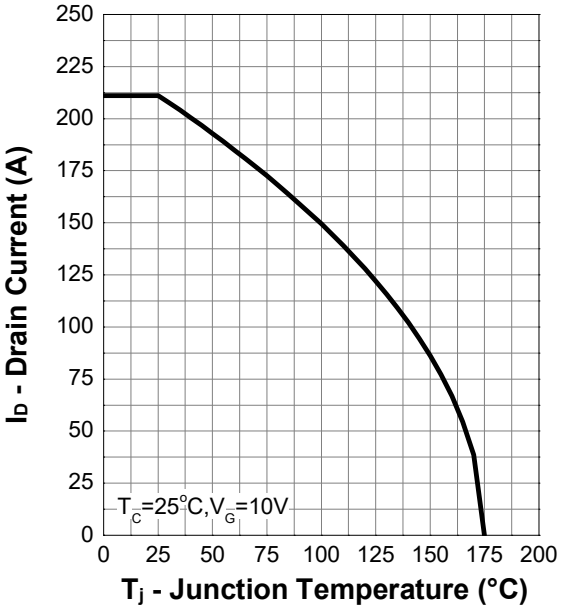
Typical Characteristic Curves

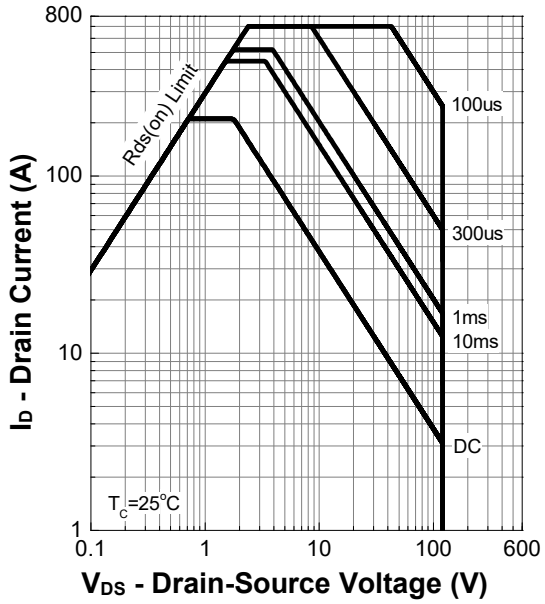
Power Capability



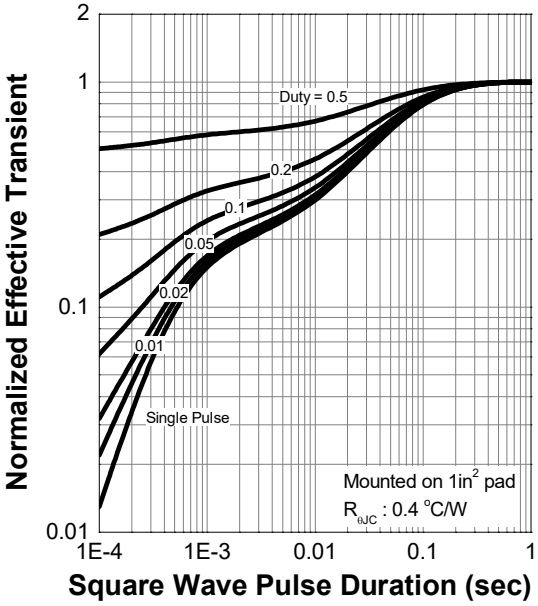
Current Capability



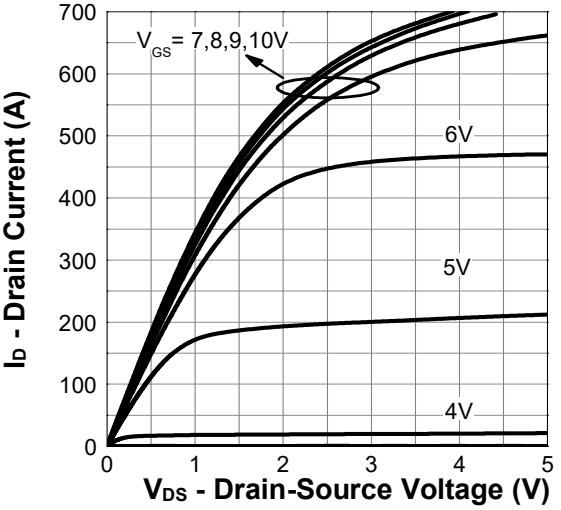
Safe Operating Area



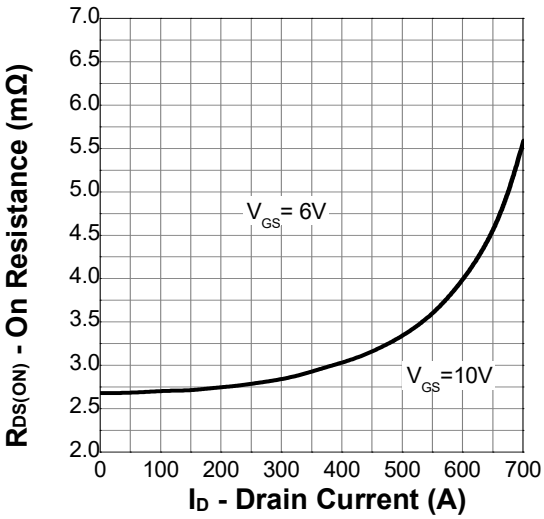
Transient Thermal Impedance



Output Characteristics



On Resistance



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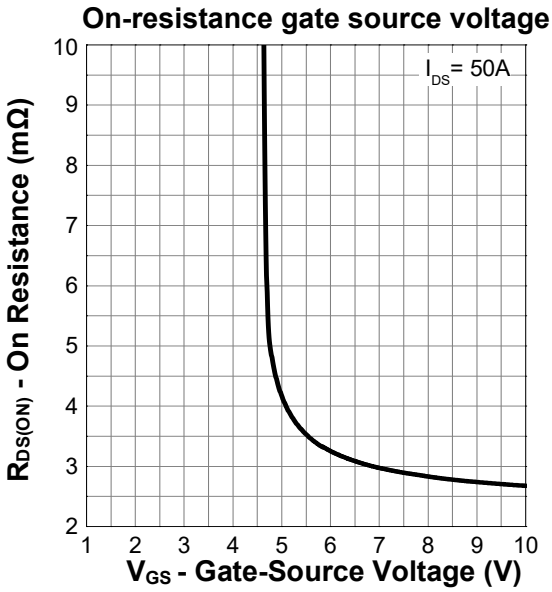

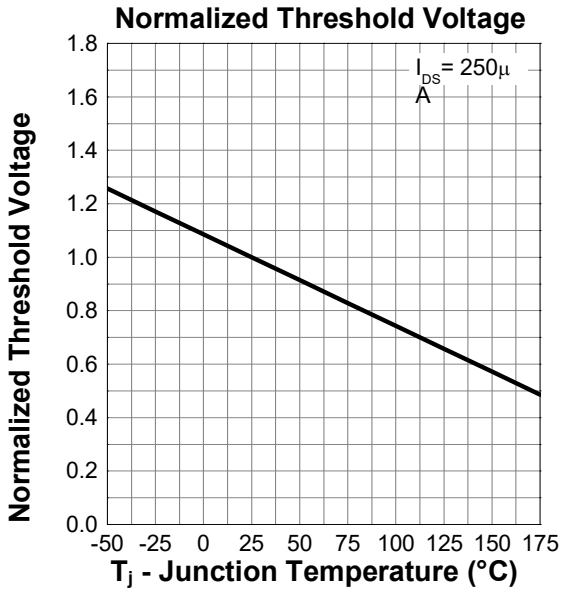

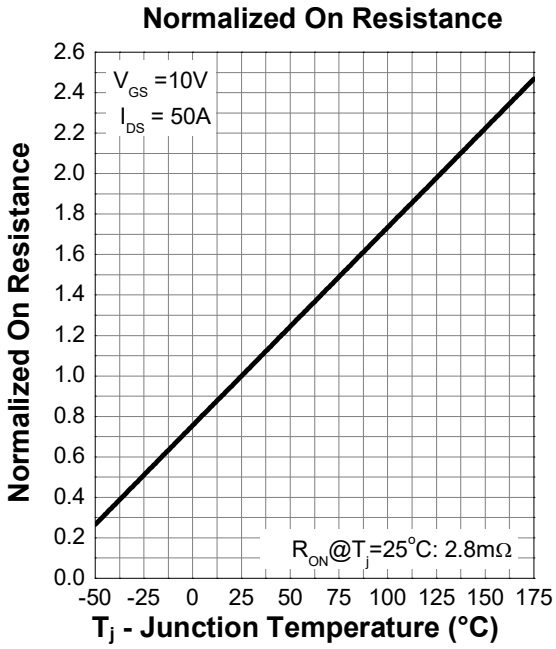

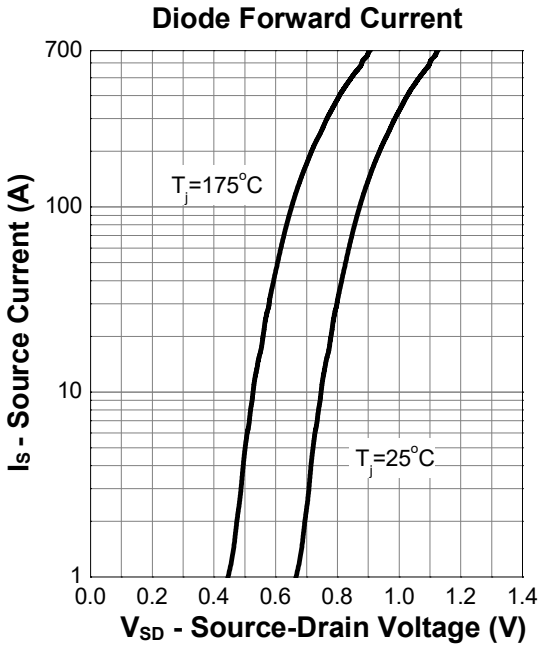

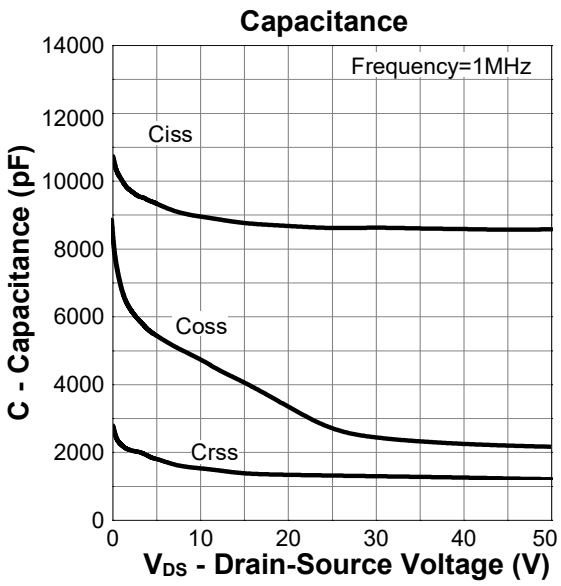

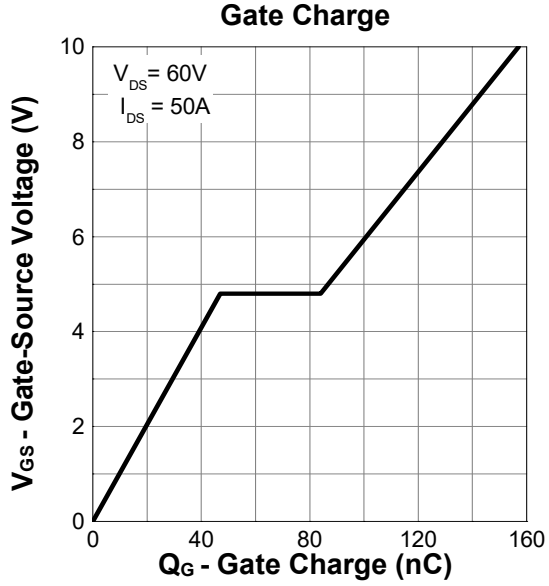

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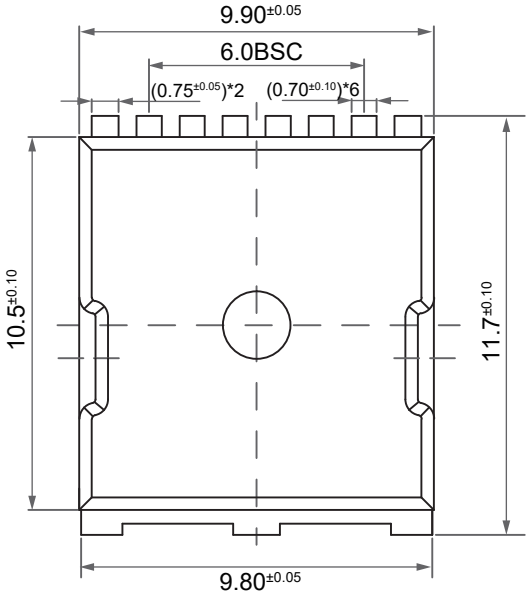
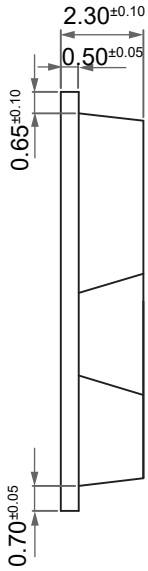
Package Outline

TOLL

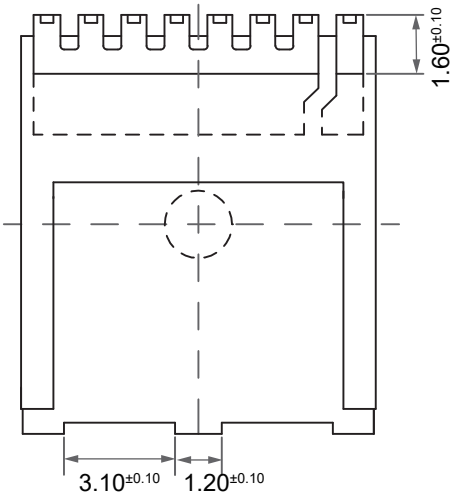
Dimensions in mm



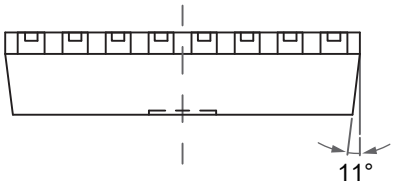
TOP VIEW



SIDE VIEW



BOTTOM VIEW



FRONT VIEW

Ordering Information

Device	Package	Shipping
TNG12H200NTL	TOLL	2,000PCS/Reel&13inches

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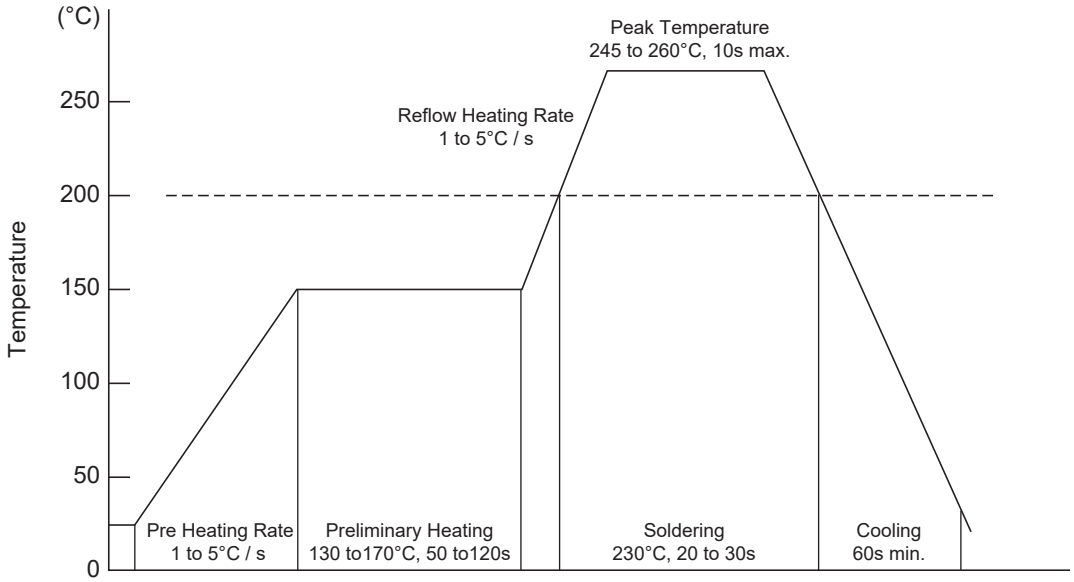
Conditions of Soldering and Storage

◆ 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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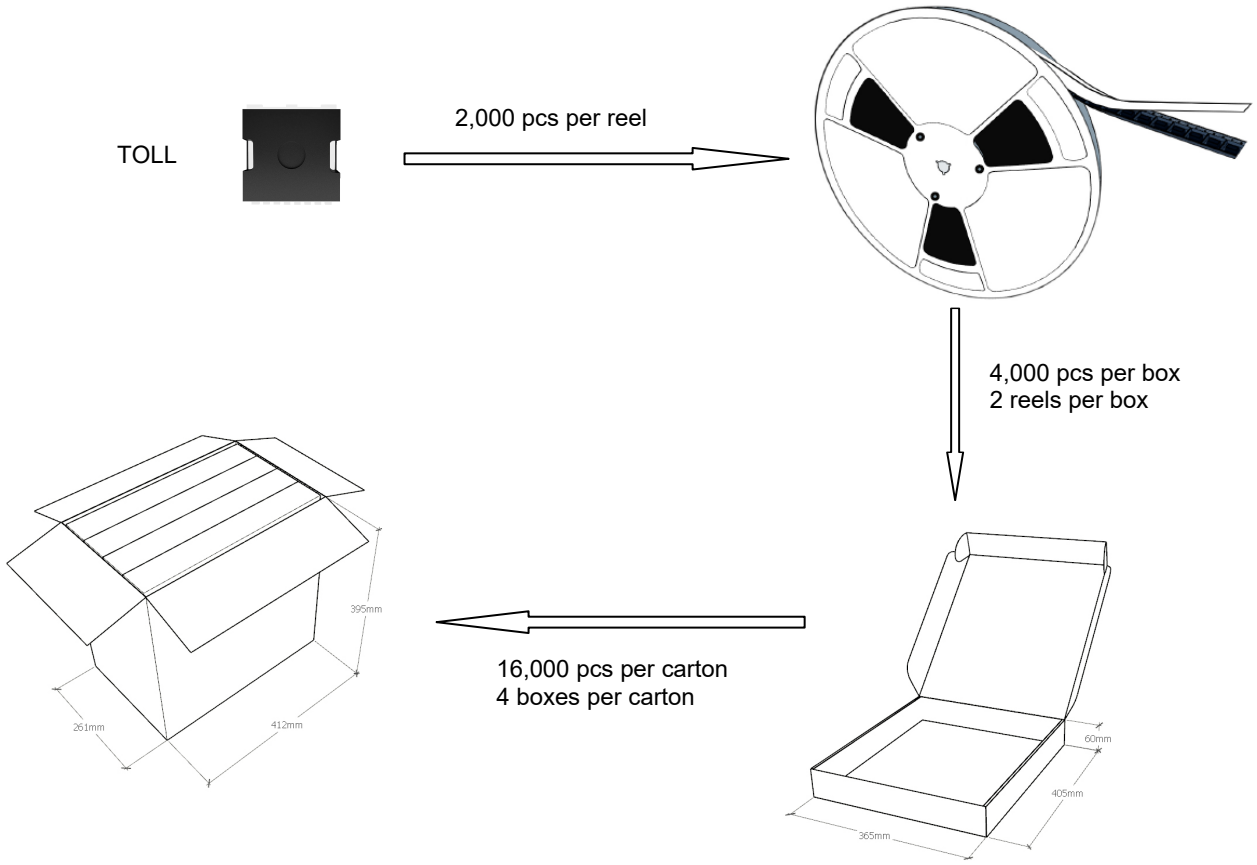
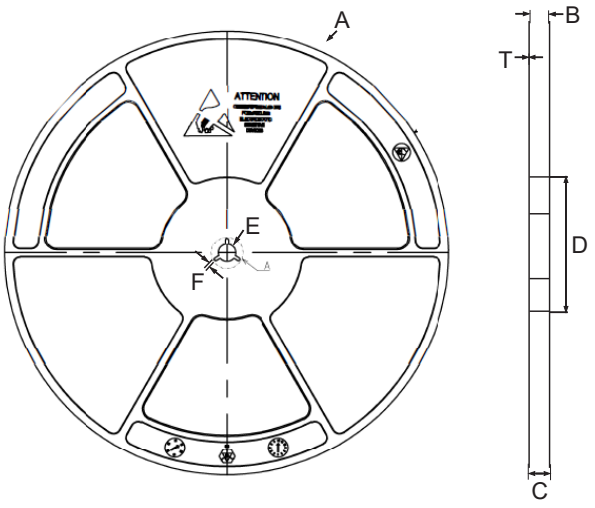
Package Specifications

- The method of packaging



◆ **reel data**



Reel (13")

Symbol	Value(unit:mm)
A	Φ330.2±1
B	25±0.5
C	29.2±2
D	Φ100±0.5
E	Φ13.4±0.2
F	2.3±0.2
T	2.1±0.2

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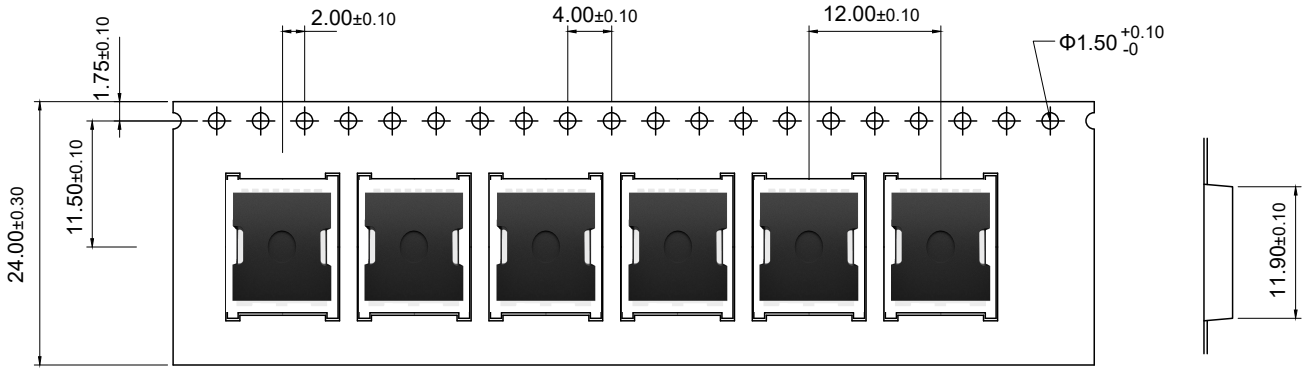
◆ Embossed tape data



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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The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up -to- date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications.

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