

TNG280N80TL

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 80V, I_D = 280A$
- $R_{DS(on)} < 1.9m\Omega @ V_{GS} = 10V$

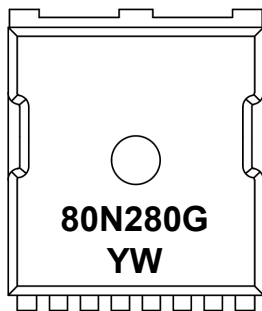
Features

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

Application

- Power Tool Appliances
- High Power Inverter System
- BMS Appliances

Marking Code



(Top View)

Absolute Maximum Ratings

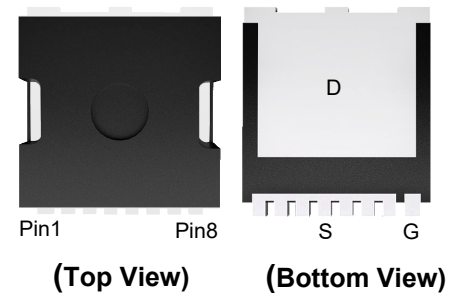
Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	280	A
Drain Current-Pulsed ^{Note1}	I_{DM}	160	A
Maximum Power Dissipation	P_D	208	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	2800	mJ
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

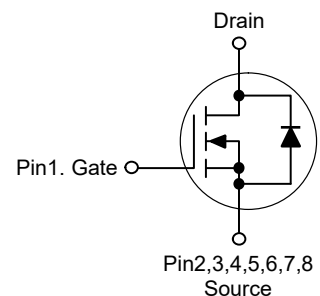
Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.45	°C/W
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TOLL



Schematic Diagram



Electrical Characteristics

(T_J=25°C 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	80	-	-	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} = 64 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} = 30A	-	1.5	2.0	mΩ
Diode Characteristics						
Diode Forward Voltage ^a	V _{SD}	I _{SD} = 30A, V _{GS} = 0 V	-	-	1.2	V
Reverse Recovery Time	t _{rr}	I _{DS} = 30A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	80	-	nS
Reverse Recovery Charge	Q _{rr}		-	196	-	nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 40 V Frequency = 1 MHz	-	8237	-	pF
Output Capacitance	C _{oss}		-	1549	-	
Reverse Transfer Capacitance ^b	C _{rss}		-	152	-	
Turn-on Delay Time	t _d (on)	V _{DS} = 40 V, V _{GEN} = 10 V, R _G = 4.5 Ω, R _L = 1.3 Ω, I _{DS} = 30A	-	32	-	nS
Turn-on Rise	t _r		-	115	-	
Turn-off Delay Time	t _d (off)		-	93	-	
Turn-off Fall Time	t _f		-	140	-	
Gate Charge Characteristics ^b						
Total Gate Charge	Q _g	V _{DS} = 40 V, V _{GS} = 10 V, I _{DS} = 30A	-	138	-	nC
Gate-Source Charge	Q _{gs}		-	39	-	
Gate-Drain Charge	Q _{gd}		-	36	-	

Notes :

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

** Surface Mounted on minimum footprint pad area.

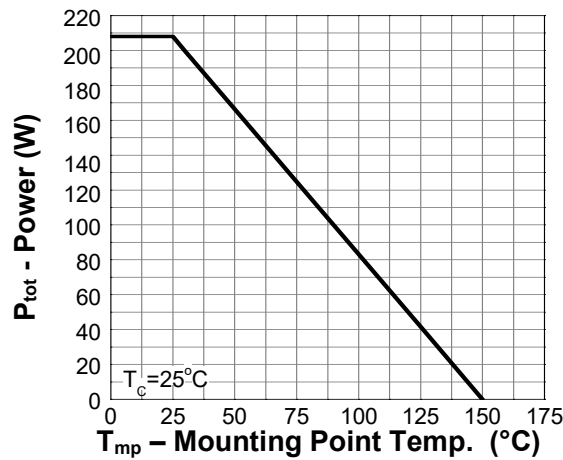
*** Limited by bonding wire

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

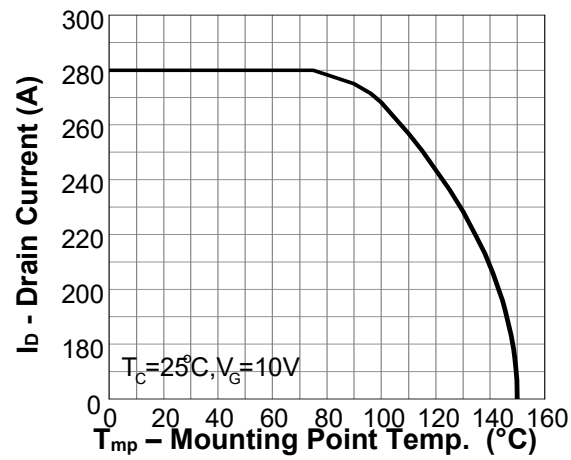
b : Guaranteed by design, not subject to production testing

Typical Characteristic Curves

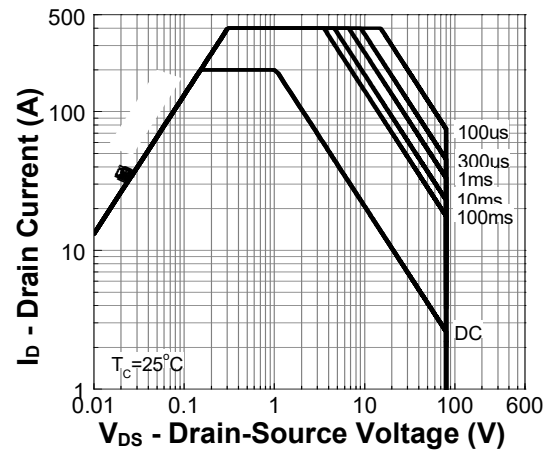
Power Capability



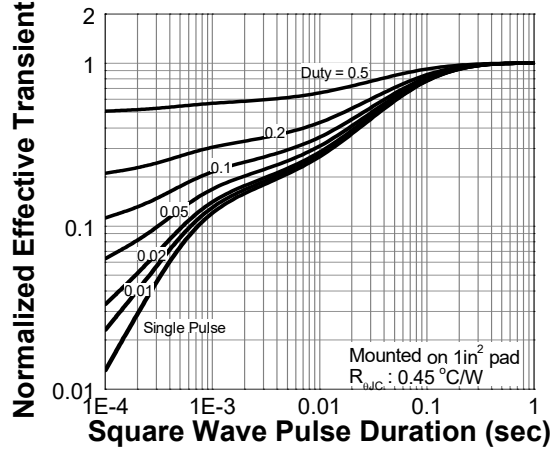
Current Capability



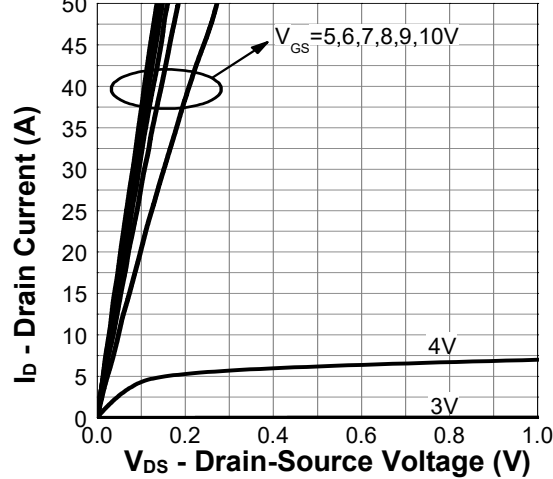
Safe Operating Area



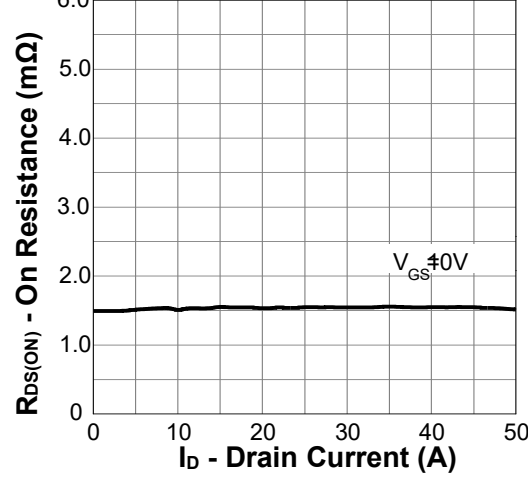
Transient Thermal Impedance

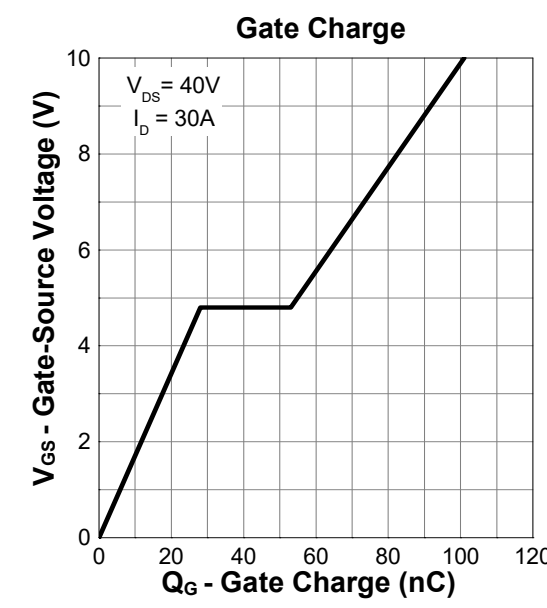
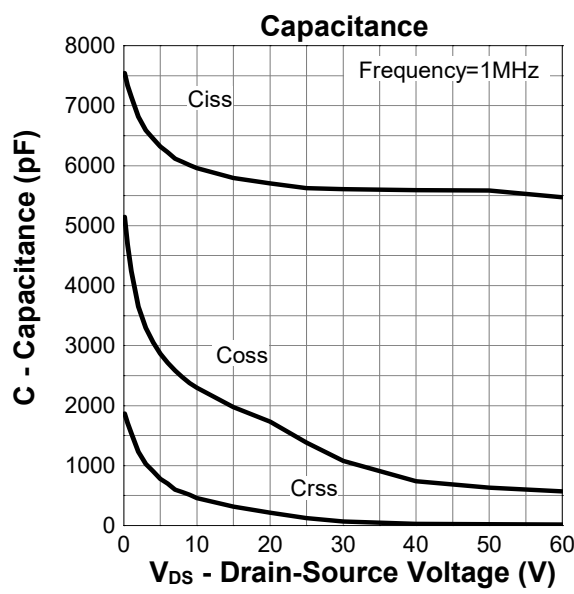
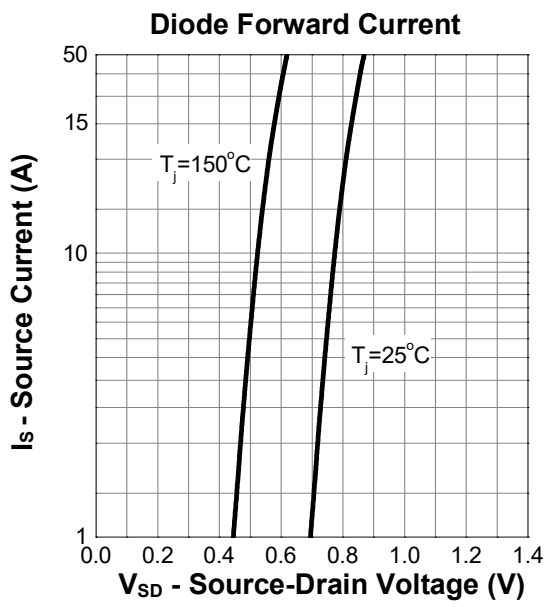
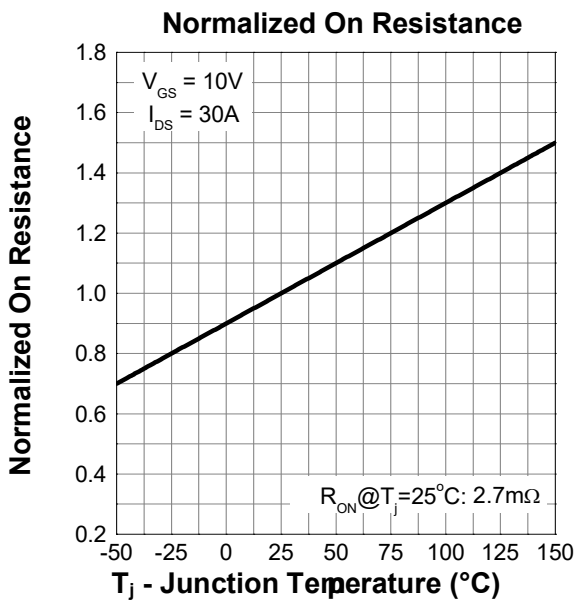
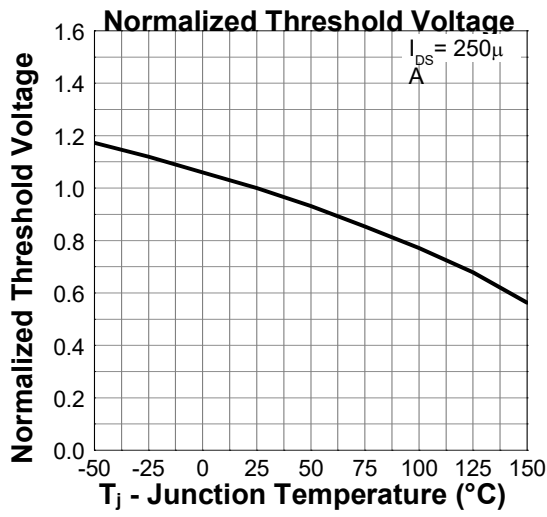
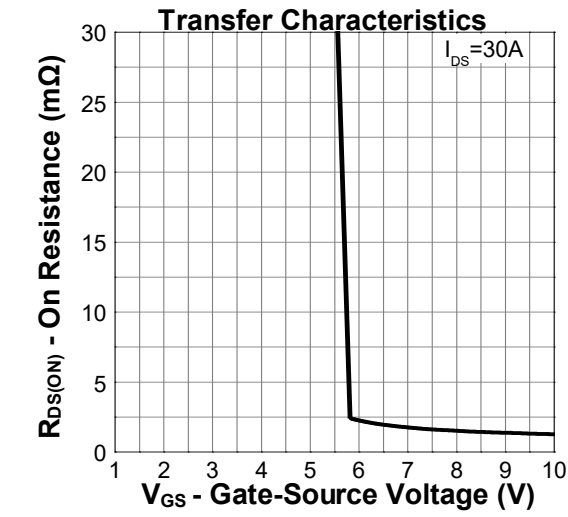


Output Characteristics



On Resistance

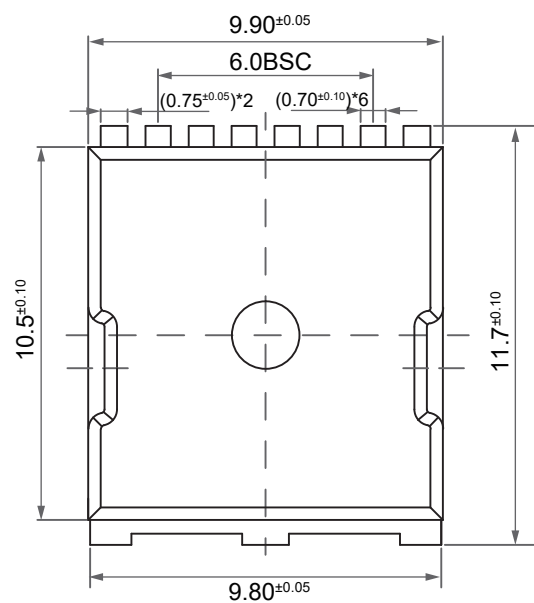




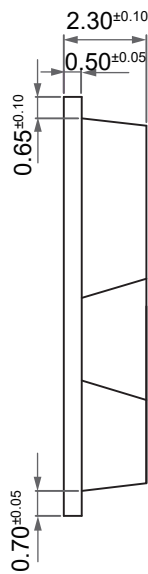
Package Outline

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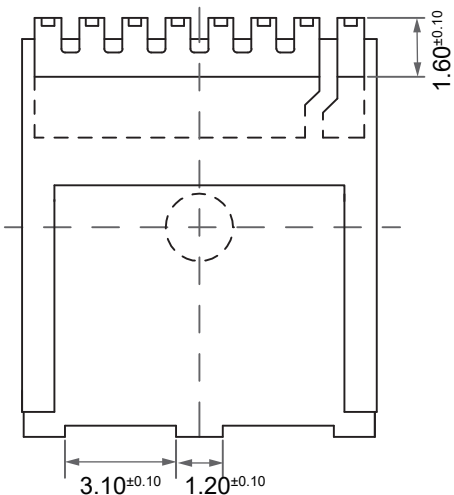
Dimensions in mm



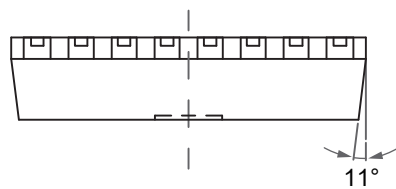
TOP VIEW



SIDE VIEW



BOTTOM VIEW



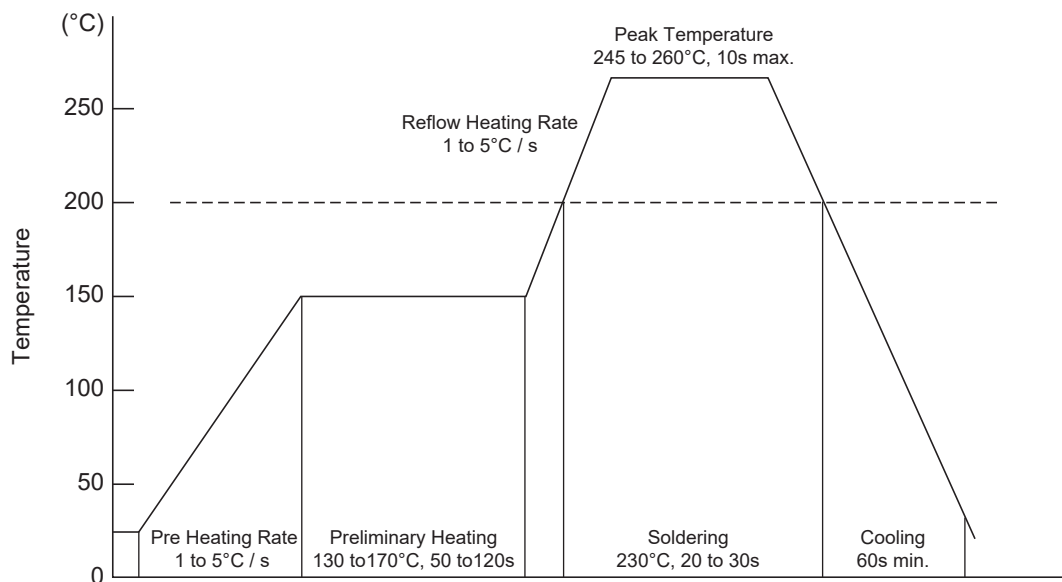
FRONT VIEW

Ordering Information

Device	Package	Shipping
TNG280N80TL	TOLL	2,000PCS/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

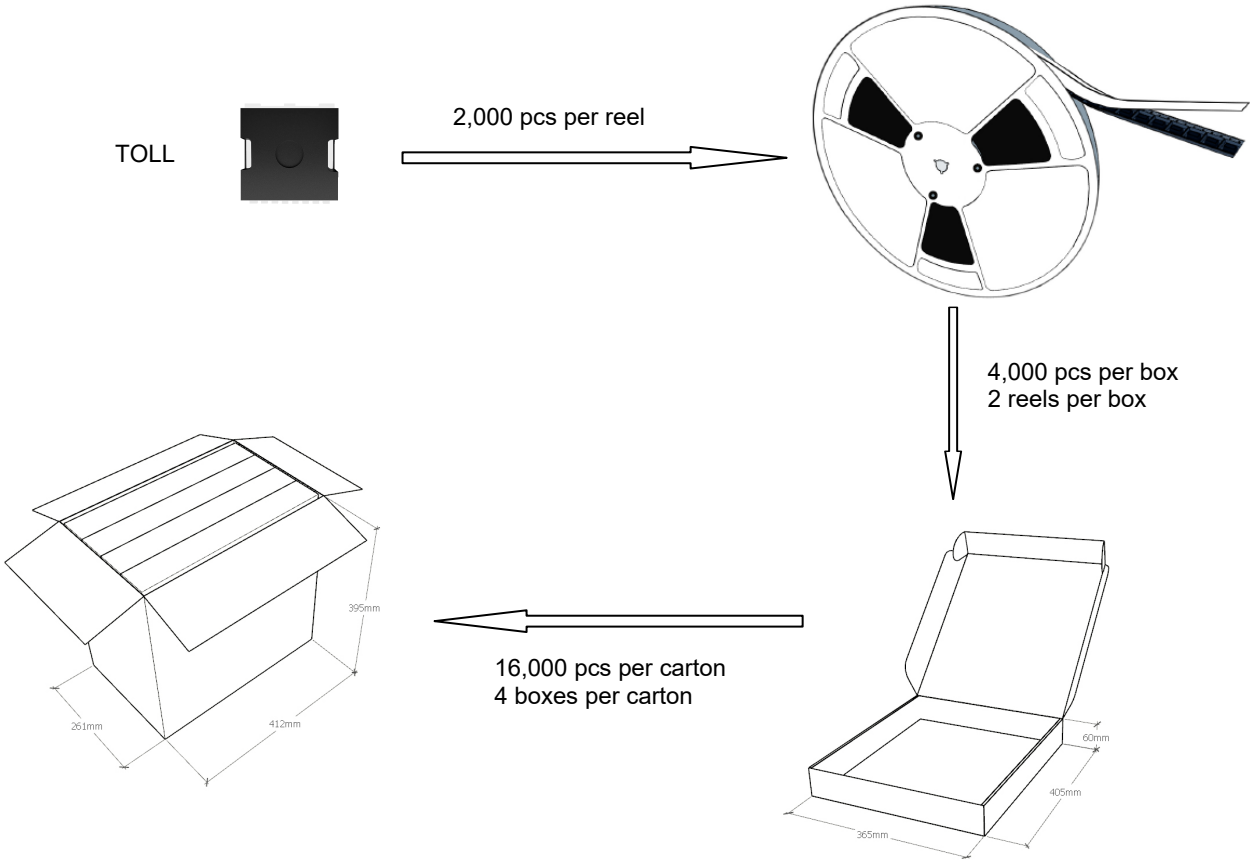
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

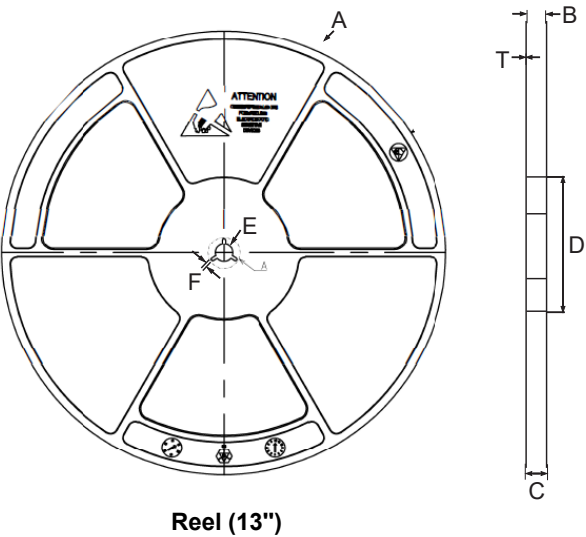
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications

- The method of packaging

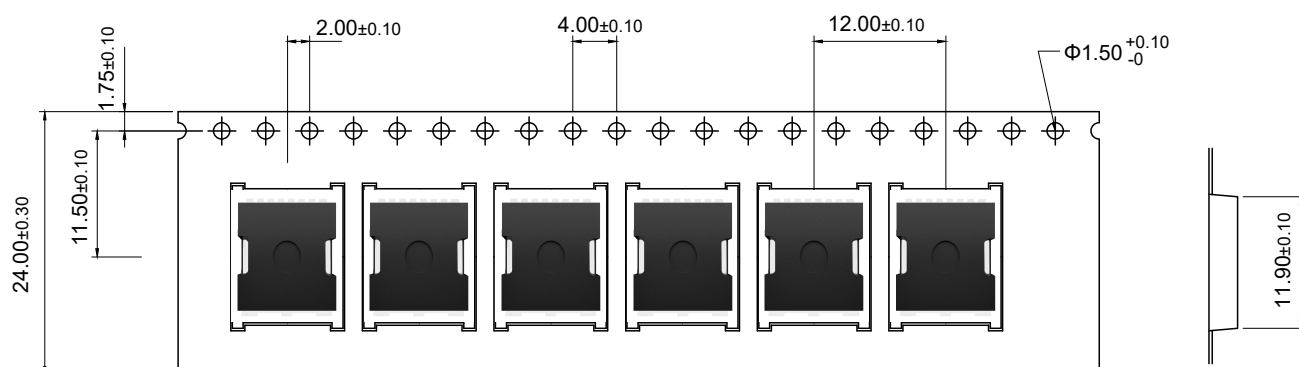


◆ reel data



Symbol	Value(unit:mm)
A	$\Phi 330.2 \pm 1$
B	25 ± 0.5
C	29.2 ± 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

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.

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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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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