

TNG580N80TL

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 80V, I_D = 580A$
- $R_{DS(on)} < 0.9m\Omega @ V_{GS} = 10V$

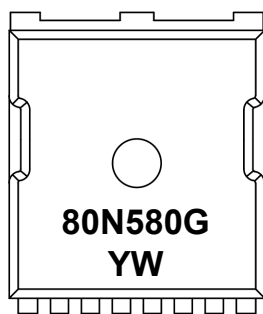
Features

- 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

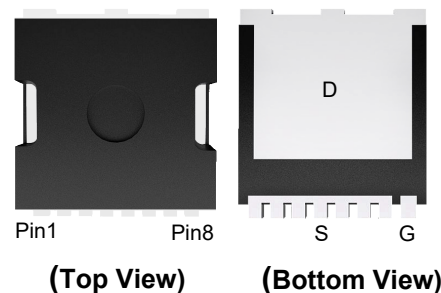
Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	580	A
Drain Current-Pulsed ^{Note1}	I_{DM}	1800	A
Maximum Power Dissipation	P_D	600	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	900	mJ
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

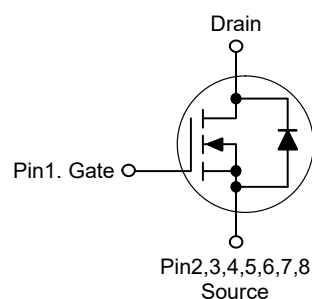
Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.25	°C/W
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TOLL



Schematic Diagram



Electrical Characteristics

(T_J=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		V _{(BR)DSS}	80	-	-	V	V _{GS} =0V, I _D =250μA
Gate-Threshold Voltage		V _{GS(th)}	2	-	4	V	V _{DS} =V _{GS} , I _D =250μA
Forward Transfer Conductance ²		g _{fs}	-	87	-	S	V _{DS} =5V, I _D =20A
Gate-Source Leakage Current		I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
Drain-Source Leakage Current	T _J =25°C	I _{DSS}	-	-	1	uA	V _{DS} =80V, V _{GS} =0V
	T _J =100°C		-	-	100		
Static Drain-Source On-Resistance ³		R _{DS(ON)}	-	0.75	0.9	mΩ	V _{GS} =10V, I _D =20A
Gate Resistance		R _g	-	0.64	-	Ω	f=1MHz
Total Gate Charge		Q _g	-	318	-	nC	I _D =20A V _{DD} =40V V _{GS} =10V
Gate-Source Charge		Q _{gs}	-	60	-		
Gate-Drain Change		Q _{gd}	-	85	-		
Turn-on Delay Time		T _{d(on)}	-	36	-	nS	V _{DD} =40V I _D =20A V _{GS} =10V R _G =10Ω
Rise Time		T _r	-	32	-		
Turn-off Delay Time		T _{d(off)}	-	84	-		
Fall Time		T _f	-	26	-		
Input Capacitance		C _{iss}	-	19090	-	pF	V _{GS} =0V V _{DS} =40V f=1MHz
Output Capacitance		C _{oss}	-	2871	-		
Reverse Transfer Capacitance		C _{rss}	-	54	-		
Source-Drain Diode							
Diode Forward Voltage ³		V _{SD}	-	0.9	-	V	I _F =20A, V _{GS} =0V
Reverse Recovery Time		t _{rr}	-	100	-	nS	I _F =20A, V _R =40V, dI _F /dt=100A/μs
Reverse Recovery Charge		Q _{rr}	-	221	-	nC	

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper.
2. The Pulse width limited by maximum junction temperature, Pulse Width≤10μs, Duty Cycles≤2%.
3. The Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

Typical Characteristic Curves

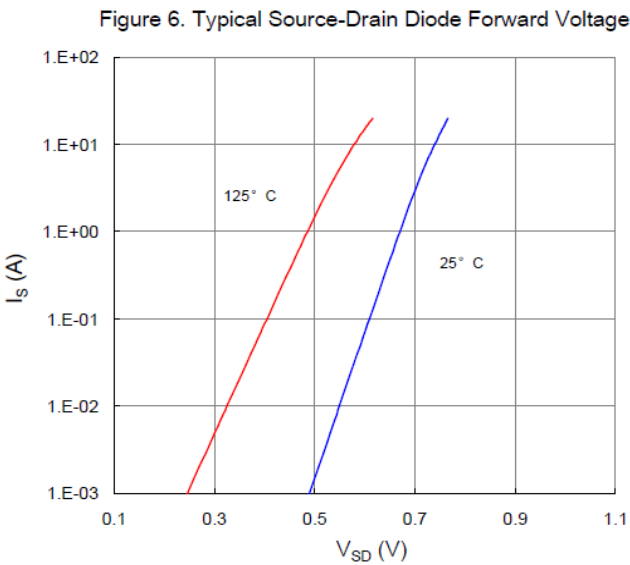
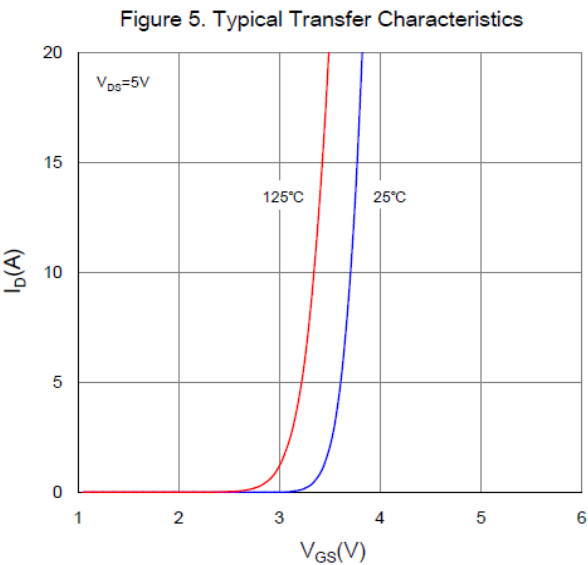
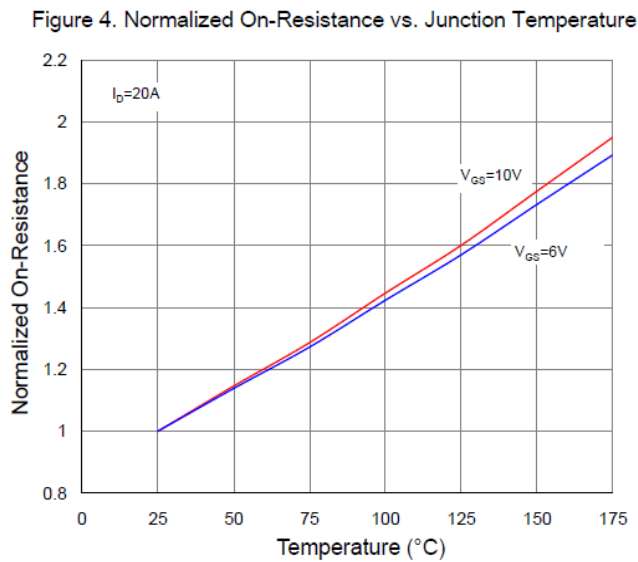
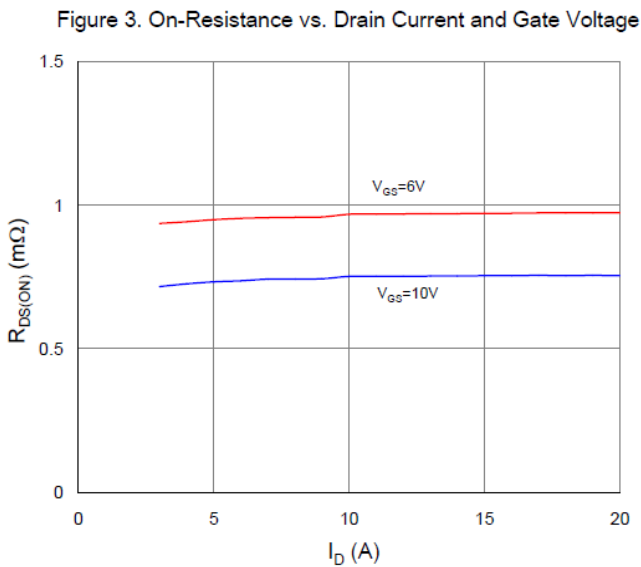
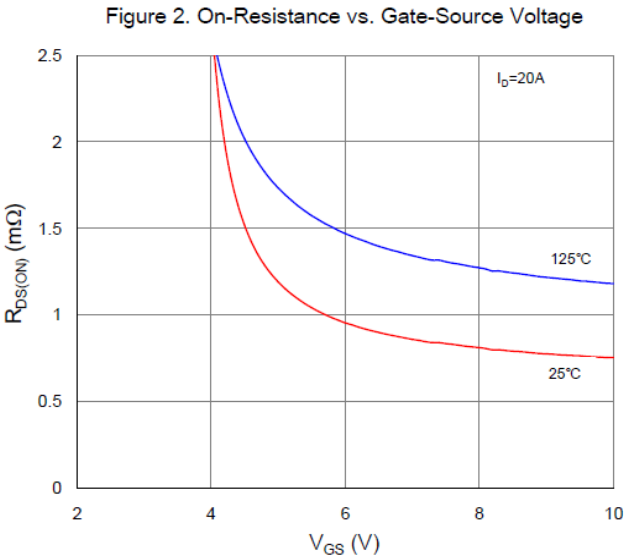
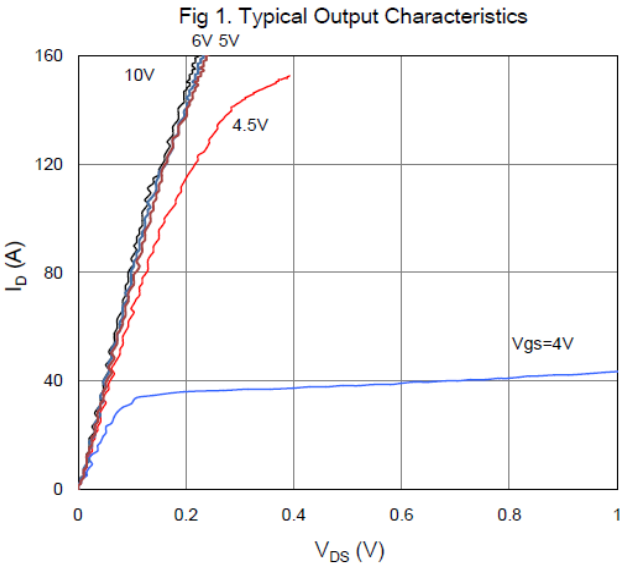


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

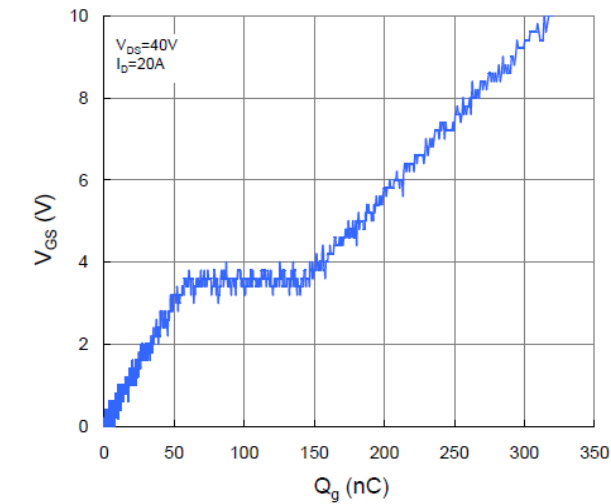


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

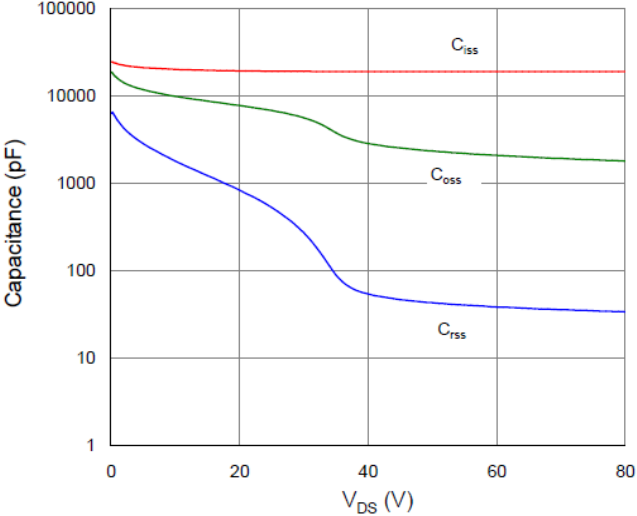


Figure 9. Maximum Safe Operating Area

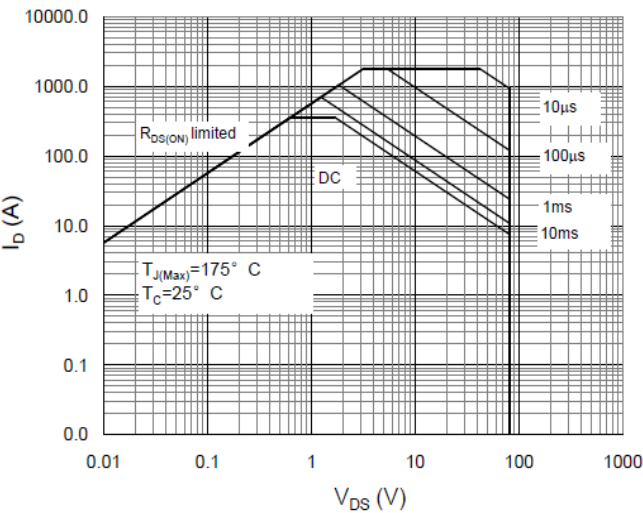


Figure 10. Maximum Drain Current vs. Case Temperature

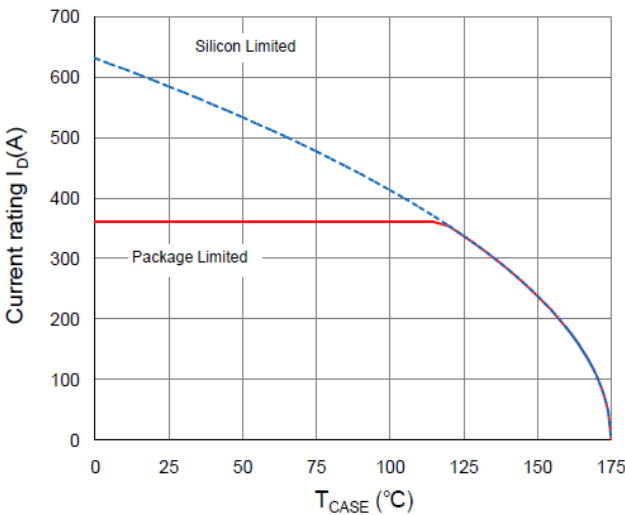
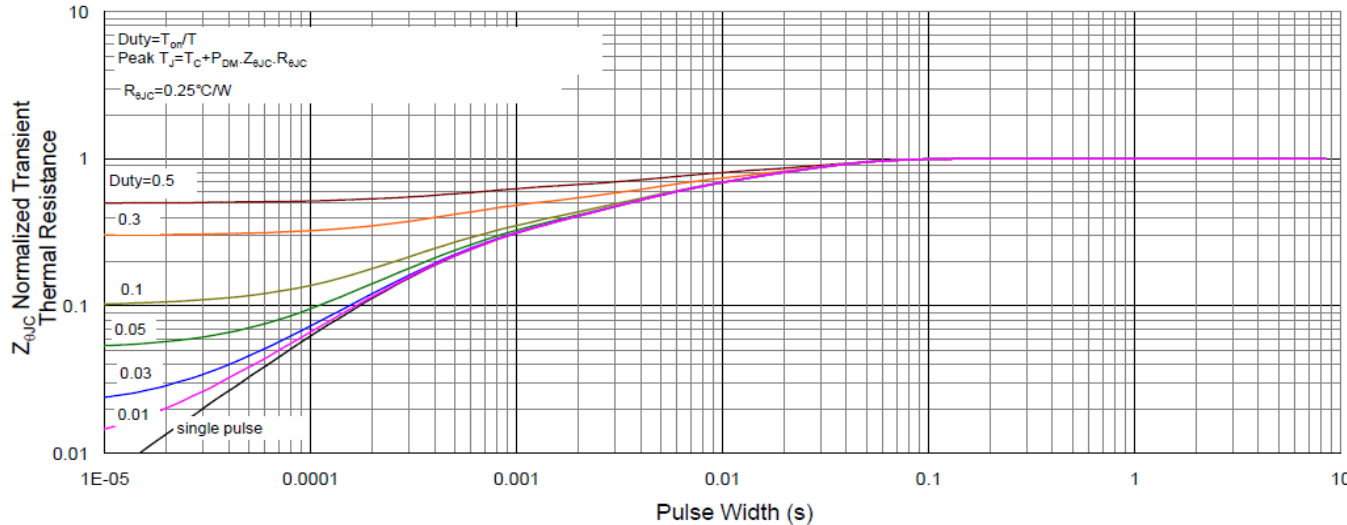


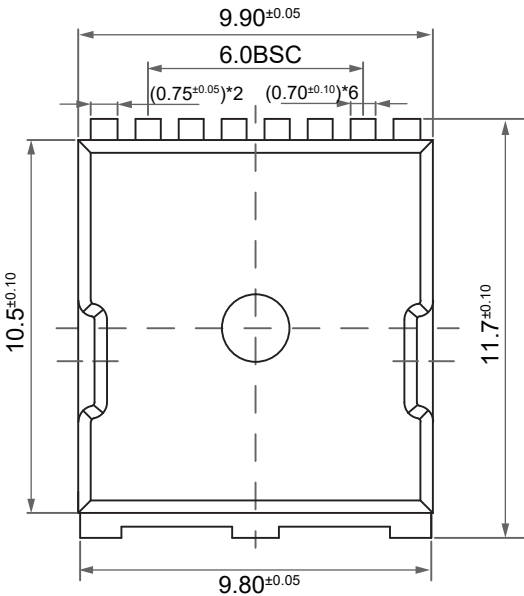
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



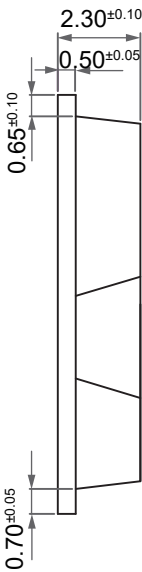
Package Outline

TOLL

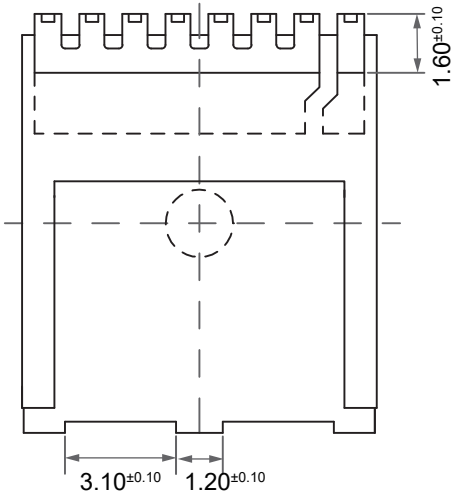
Dimensions in mm



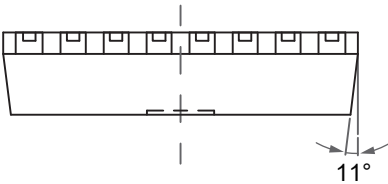
TOP VIEW



SIDE VIEW



BOTTOM VIEW



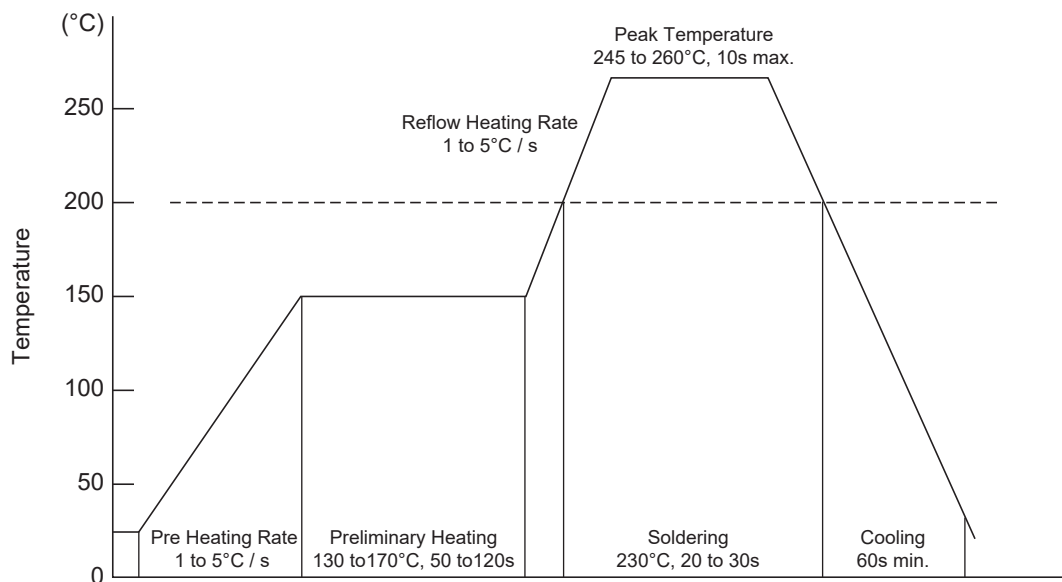
FRONT VIEW

Ordering Information

Device	Package	Shipping
TNG580N80TL	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

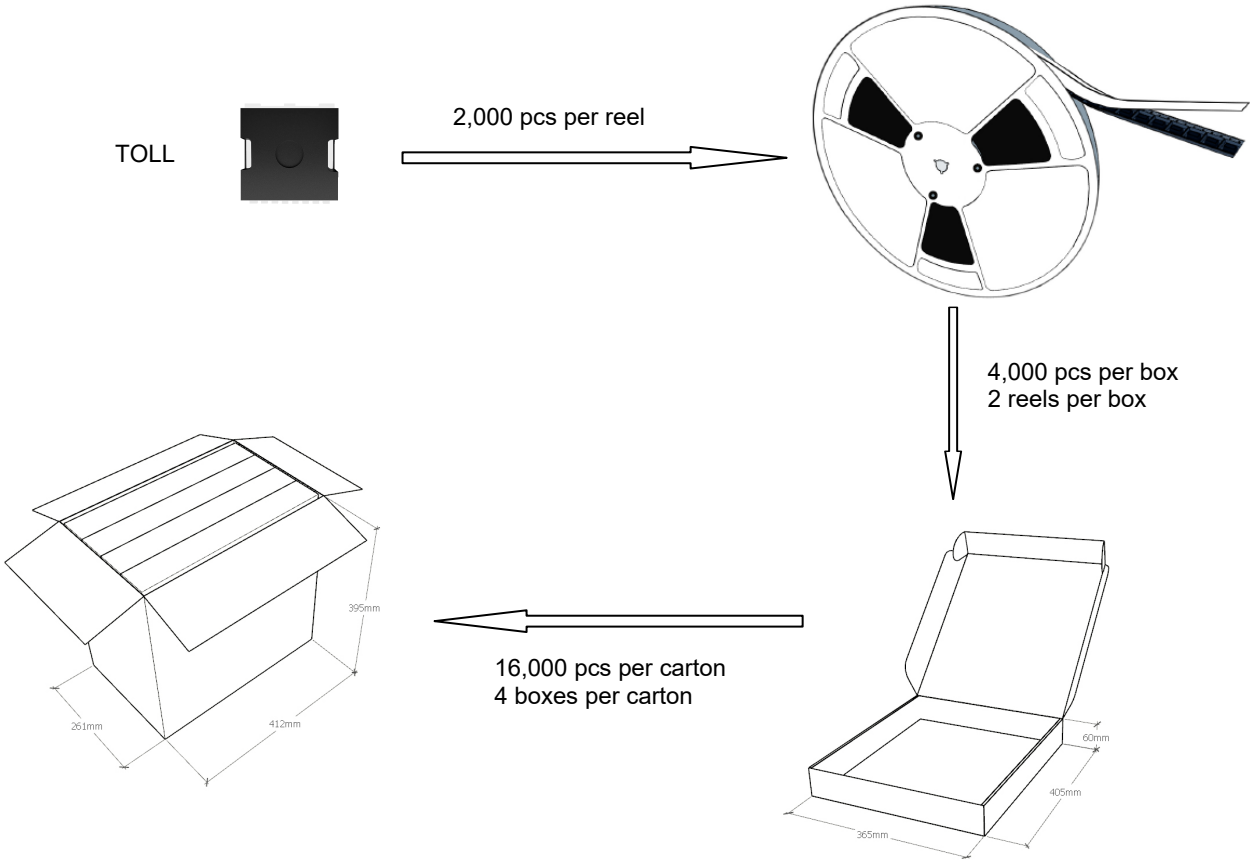
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

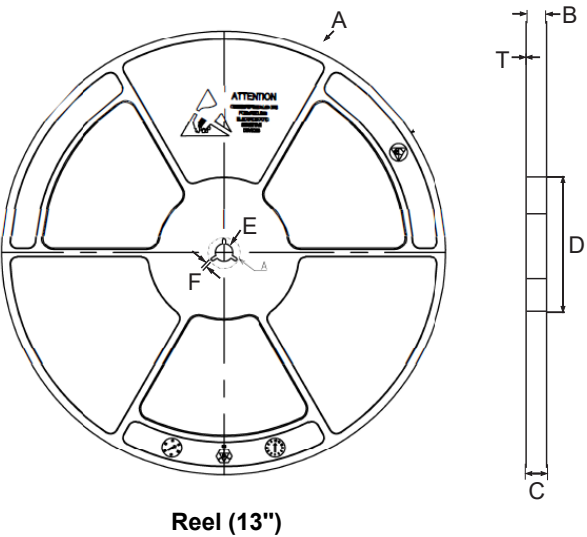
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications

- The method of packaging

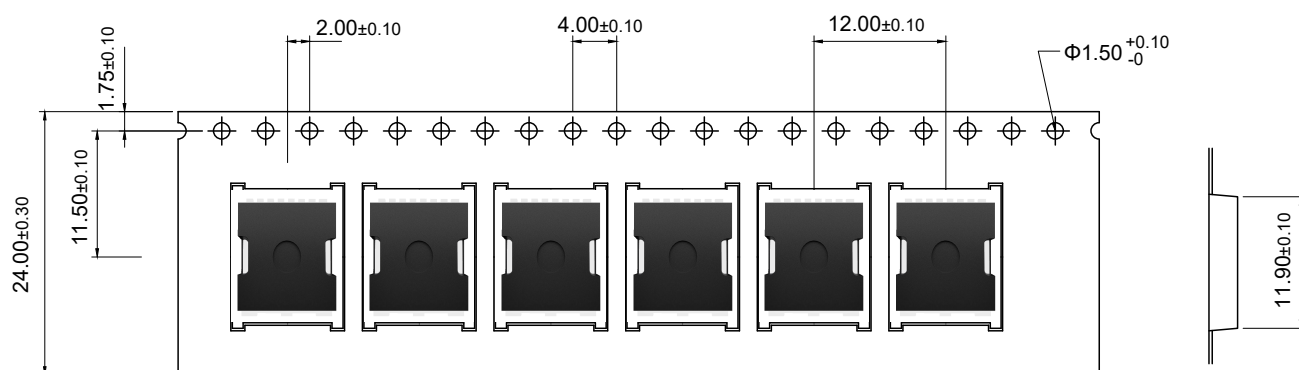


reel data



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.

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