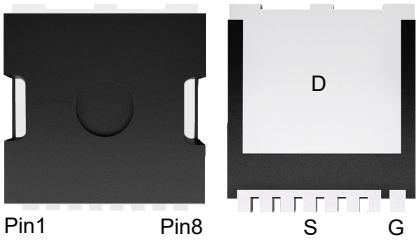
TNG10H40NDL

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 100V,I_D= 40A
- $R_{DS(on)}$< 16mΩ @V_{GS}= 10V

TOLL



(Top View) **(Bottom View)**

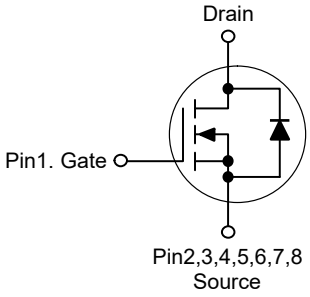
Features

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

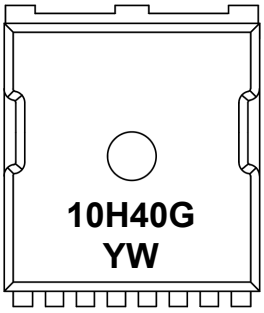
Application

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

Schematic Diagram



Marking Code



(Top View)

Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	100	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25℃) **(Note 1)**	40	A
	Drain Current-Continuous(Tc=100℃)	28	A
IDM (pluse)	Drain Current-Pulsed **(Note 2)**	160	A
PD	Maximum Power Dissipation(Tc=25℃)	68	w
	Maximum Power Dissipation(Tc=100℃)	27	w
EAS	Avalanche energy **(Note 3)**	100	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)[1]	---	55	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	1.85	℃/W

Table 3. Electrical Characteristics (TJ=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	VDS=100V,VGS=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.6	2.2	V
gFS	Forward Transconductance	VDS=5V,ID=15A	--	18	--	S
$R_{DS(on)}$	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	12	17	mΩ
		VGS=4.5V, ID=15A	--	17	21	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	1090	--	pF
C_{oss}	Output Capacitance		--	470	--	pF
C_{rss}	Reverse Transfer Capacitance		--	60	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.3	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=50V,ID= 10A,RGEN=6Ω	--	45	--	nS
tr	Turn-on Rise Time		--	54.5	--	nS
td(off)	Turn-Off Delay Time		--	249	--	nS
tf	Turn-Off Fall Time		--	60	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=8.5A	--	30.5	--	nC
Qgs	Gate-Source Charge		--	6.1	--	nC
Qgd	Gate-Drain Charge		--	8.3	--	nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)		--	--	40	A
V_{SD}	Forward on Voltage	VGS=0V,IS=20A	--	0.7	1.2	V
trr	Reverse Recovery Time	Isd=20A , dI/dt=100A/μs , TJ=25℃	--	43	--	ns
Qrr	Reverse Recovery Charge		--	90	--	nc

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25℃,VDD=50V,Vgs=10V，ID=20A, L=0.5mH,RG=25ohm

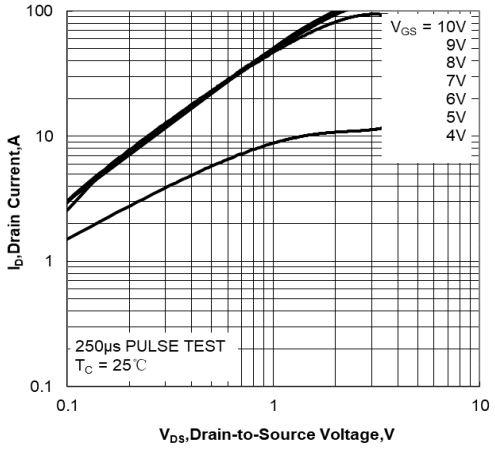


Figure 1. Output Characteristics

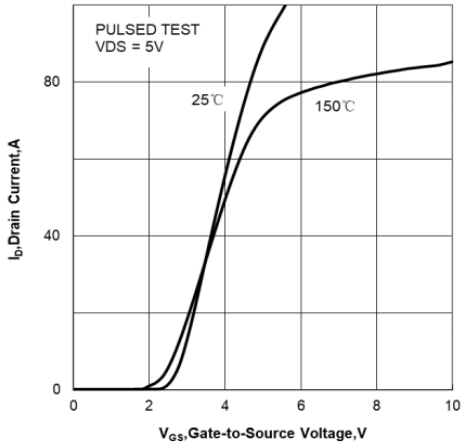


Figure 2. Transfer Characteristics

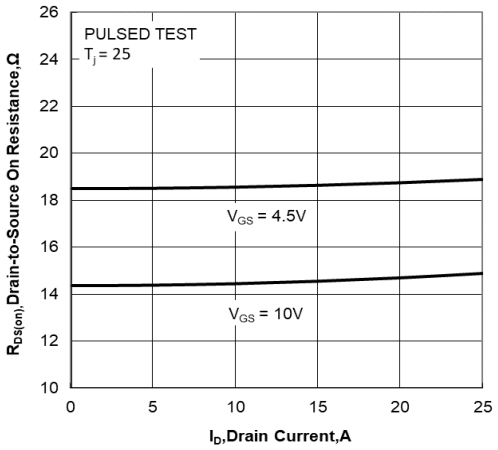


Figure 3. Drain-to-Source On Resistance vs Drain Current

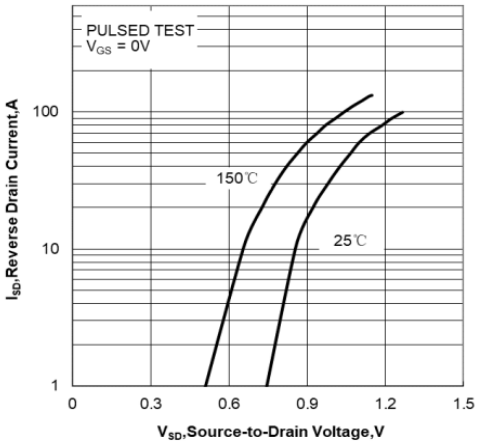


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

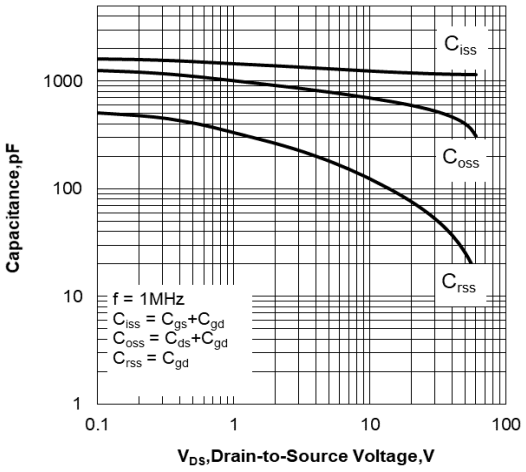


Figure 5. Capacitance Characteristics

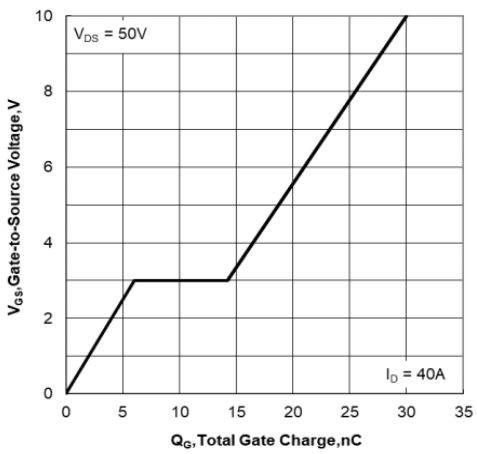


Figure 6. Gate Charge Characteristics

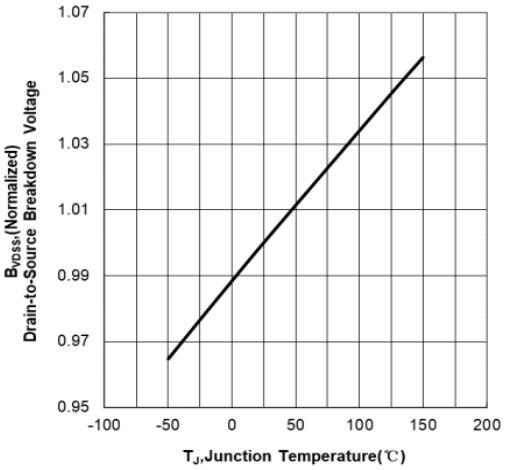


Figure 7. Normalized Breakdown Voltage vs Junction Temperature

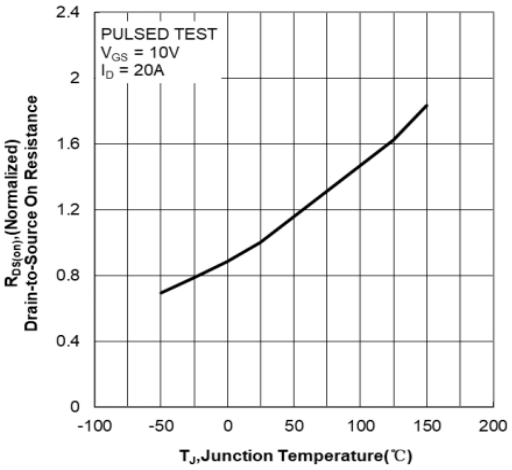


Figure 8. Normalized On Resistance vs Junction Temperature

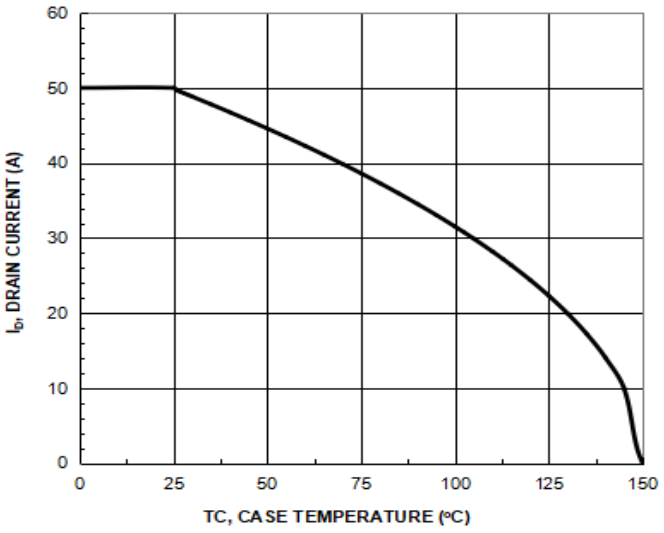


Figure 9. Maximum Continuous Drain Current vs Case Temperature

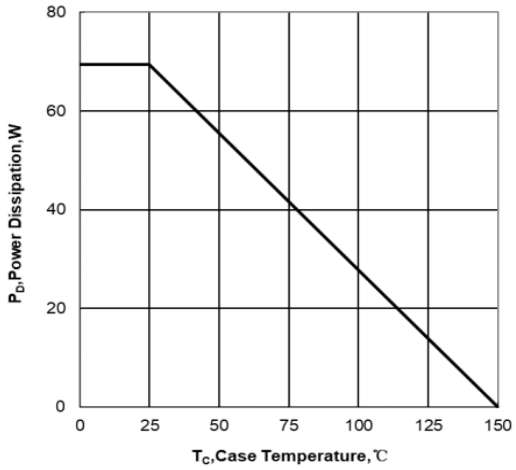


Figure 10. Maximum Power Dissipation vs Case Temperature

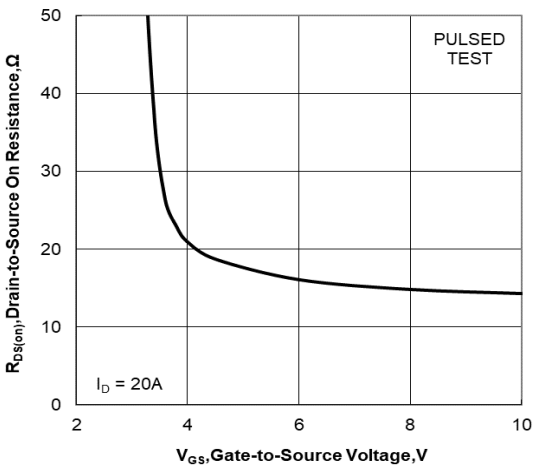


Figure11. Drain-to-Source On Resistance vs Gate

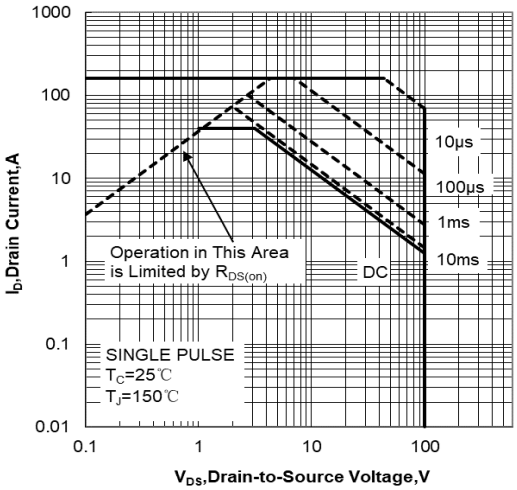
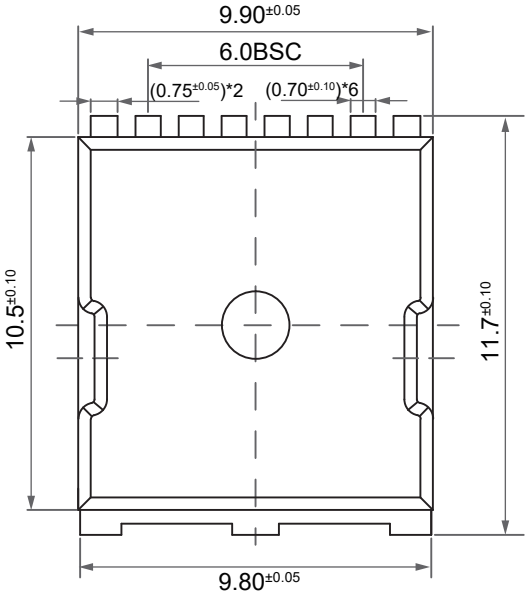


Figure 12. Maximum Safe Operating Area

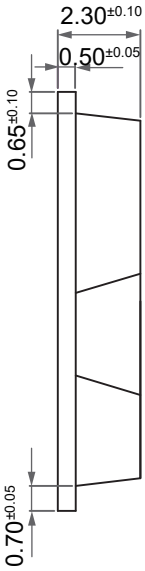
Package Outline

TOLL

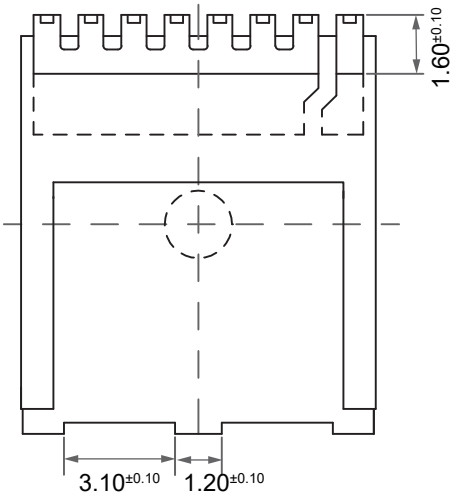
Dimensions in mm



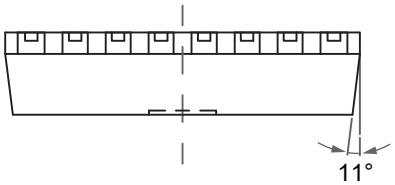
TOP VIEW



SIDE VIEW



BOTTOM VIEW



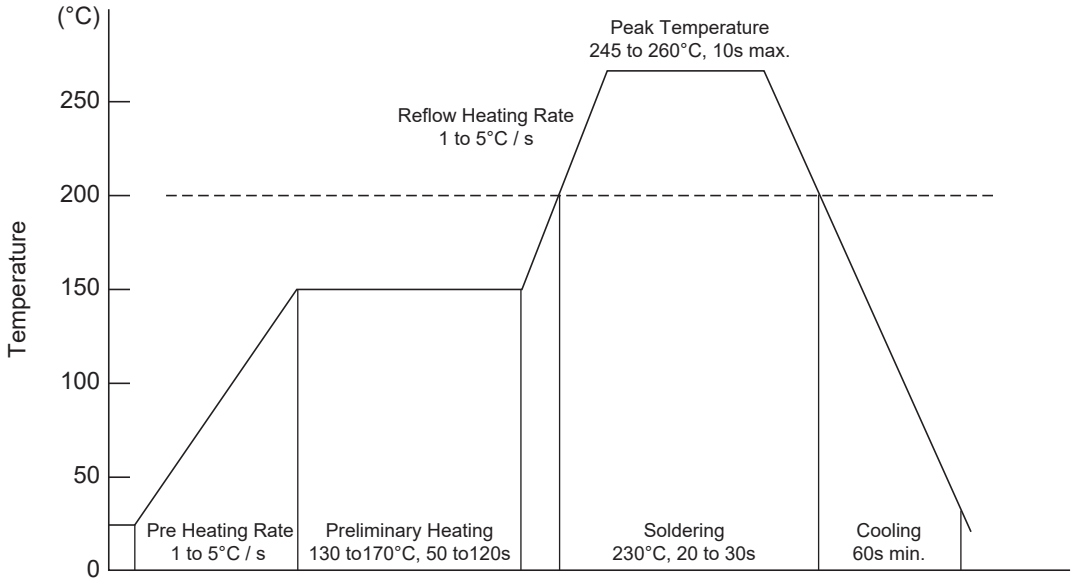
FRONT VIEW

Ordering Information

Device	Package	Shipping
TNG10H40NDL	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

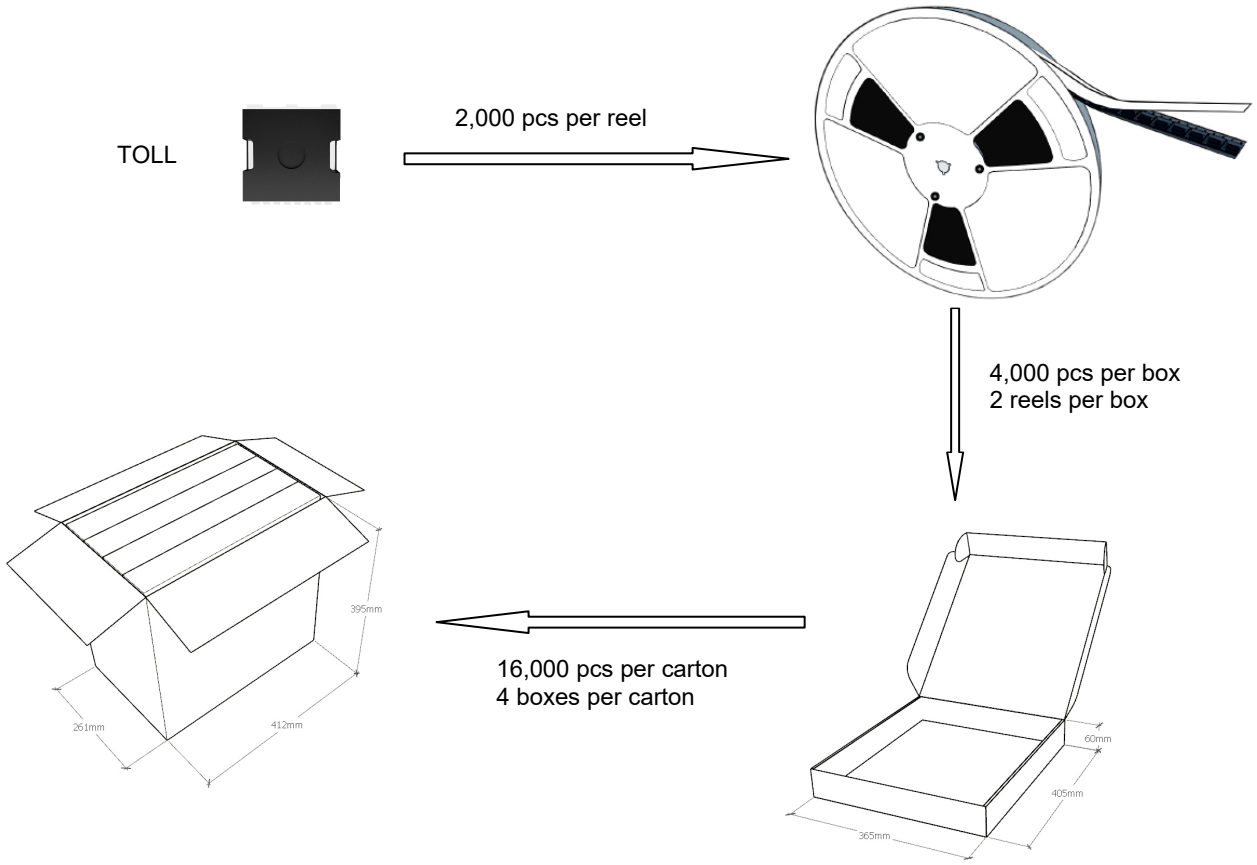
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

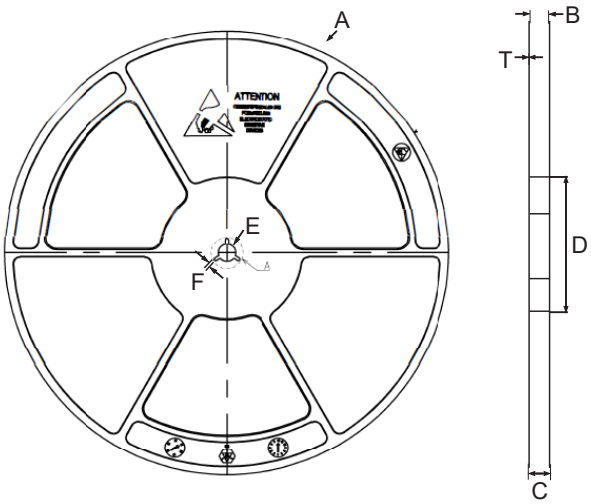
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

Package Specifications

- The method of packaging



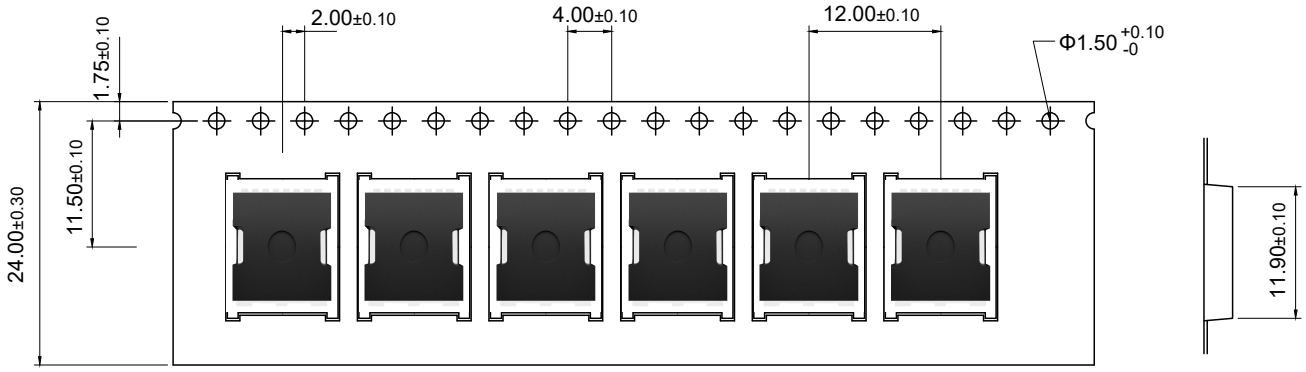
◆ **reel data**



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

◆ 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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