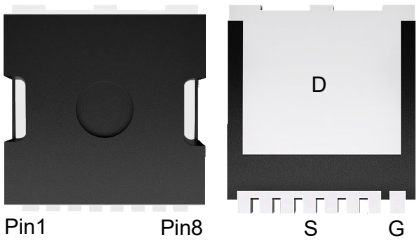
PJMG330N60TL

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 60V,I_D= 330A
- $R_{DS(on)}$< 1.7mΩ(Typ.) @V_{GS}= 10V

TOLL

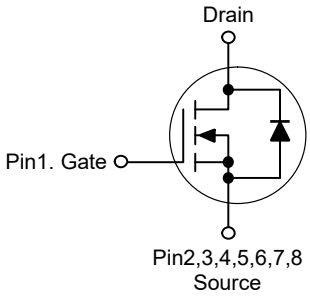


(Top View) **(Bottom View)**

Features

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

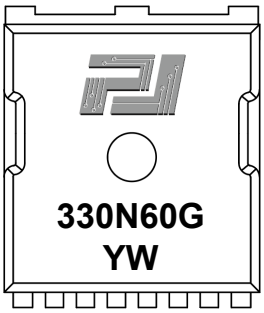
Schematic Diagram



Application

- BMS
- Electric Tools

Marking Code



(Top View)

Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	330	A
Drain Current-Pulsed Note1	I_{DM}	1440	A
Maximum Power Dissipation	P_D	167	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	$R_{\theta JC}$	0.9	°C/W

Electrical Characteristics

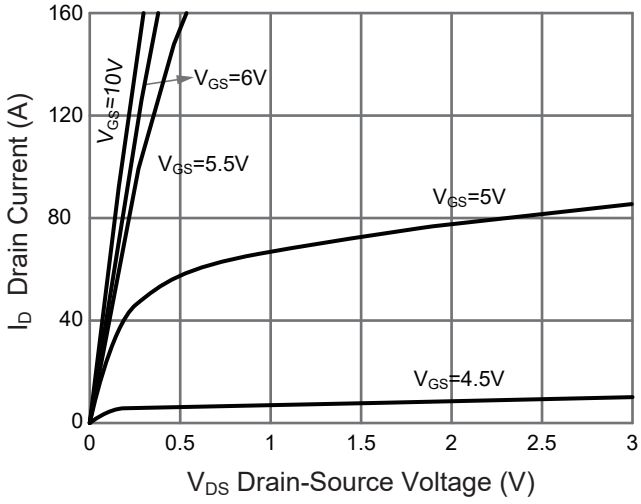
(T_J=25℃ unless otherwise specified)

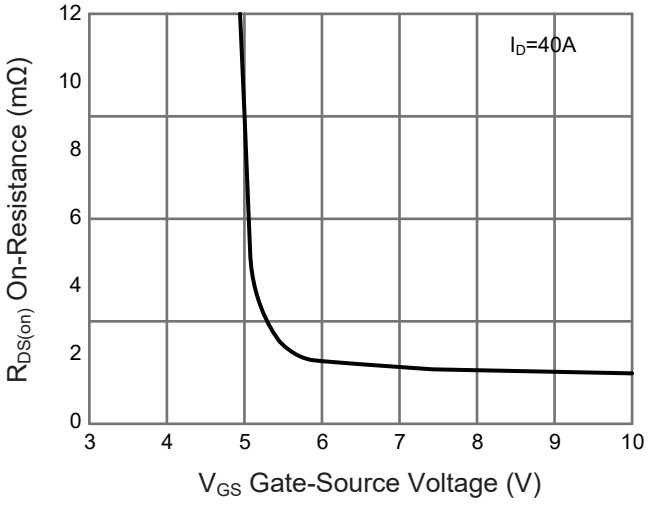
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
Gate Threshold Voltage Note3	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2	3	4	V
Drain-Source On-Resistance Note3	$R_{DS(on)}$	V_{GS}=10V, I_D=30A	--	1.3	1.7	mΩ
Forward Transconductance Note3	g_{FS}	V_{DS}=5V,I_D=2A	--	12.5	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz	--	7285	--	pF
Output Capacitance	C_{oss}		--	3990	--	pF
Reverse Transfer Capacitance	C_{rss}		--	329	--	pF
Gate Resistance	R_G	V_{DS}=0V,V_{GS}=0V,f=1MHz	--	0.7	--	Ω
Total Gate Charge	Q_g	V_{DS}=30V, I_D=30A, V_{GS}=10V	--	120	--	nC
Gate-Source Charge	Q_{gs}		--	37	--	nC
Gate-Drain Charge	Q_{gd}		--	33	--	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V,I_D=30A, V_{GS}=10V,R_{GEN}=3Ω	--	26	--	nS
Turn-on Rise Time	t_r		--	33	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	50	--	nS
Turn-off Fall Time	t_f		--	25	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=30A	--	--	1.2	V
Diode Forward Current	I_S		--	--	330	A

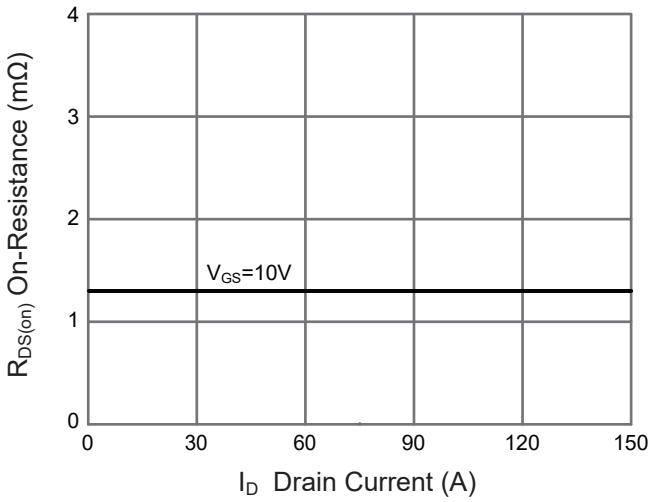
Note:

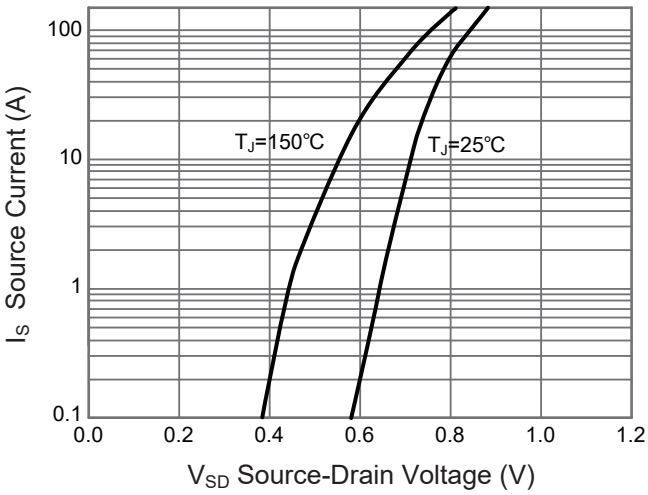
1. Repetitive Rating:Pulse width limited by maximum junction temperature
2. EAS condition: T_J=25℃,V_{DD}=48V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=60A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

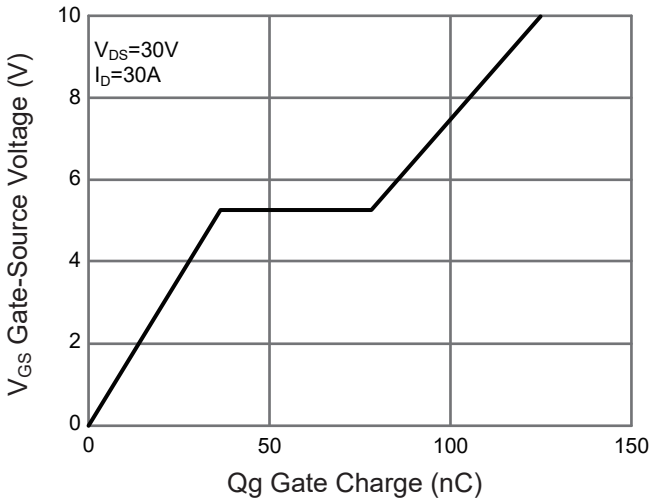
Typical Characteristic Curves

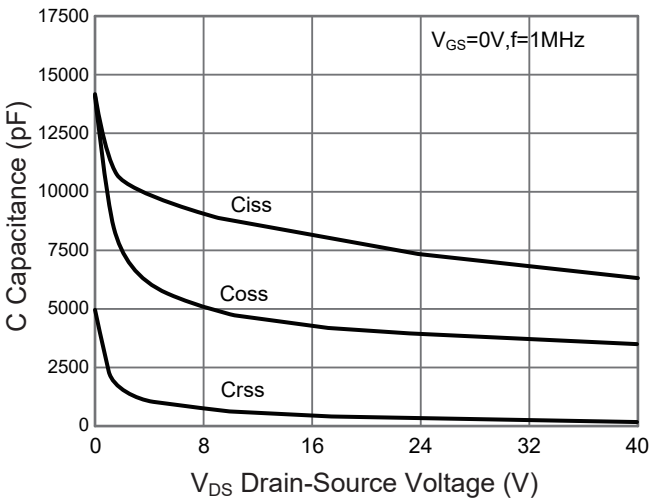


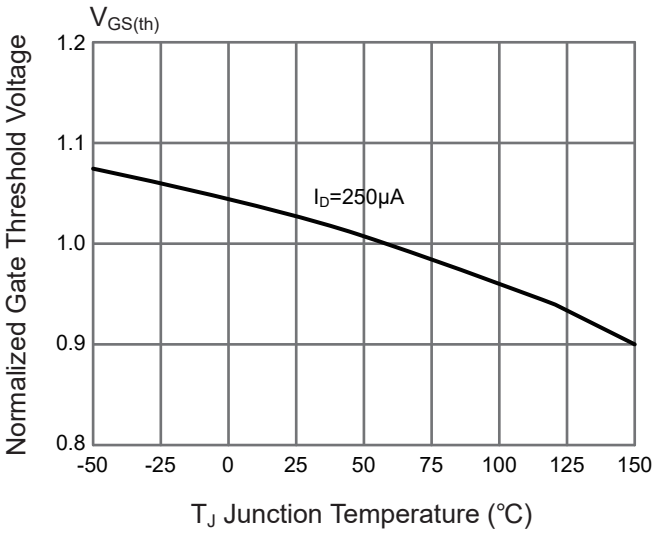


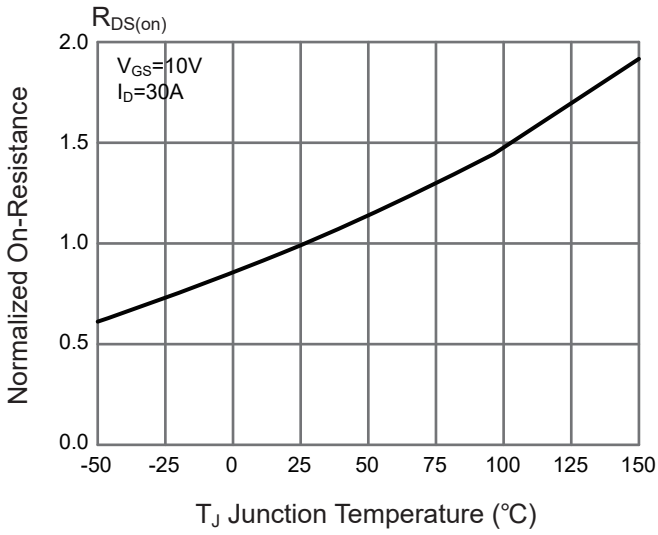








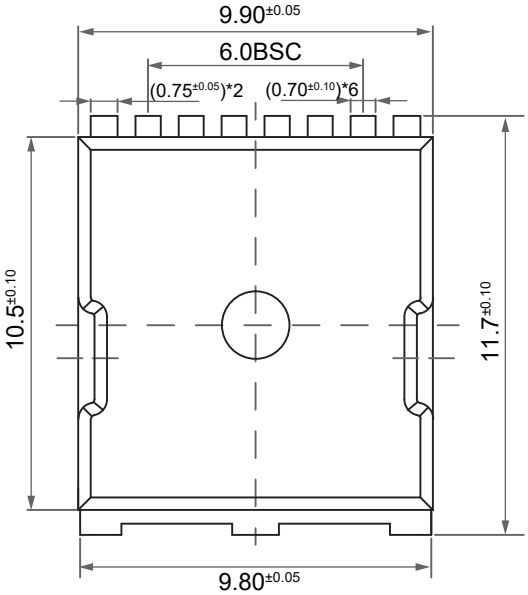

$V_{GS(th)}$
Normalized Gate Threshold Voltage
1.2
1.1
1.0
0.9
0.8
I_D=250μA
-50
-25
0
25
50
75
100
125
150
T_J Junction Temperature (℃)


$R_{DS(on)}$
Normalized On-Resistance
2.0
1.5
1.0
0.5
0.0
V_{GS}=10V
I_D=30A
-50
-25
0
25
50
75
100
125
150
T_J Junction Temperature (℃)

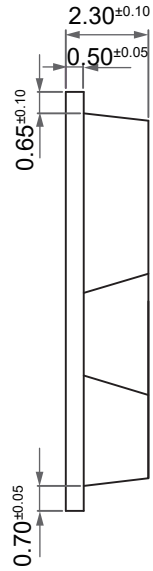
Package Outline

TOLL

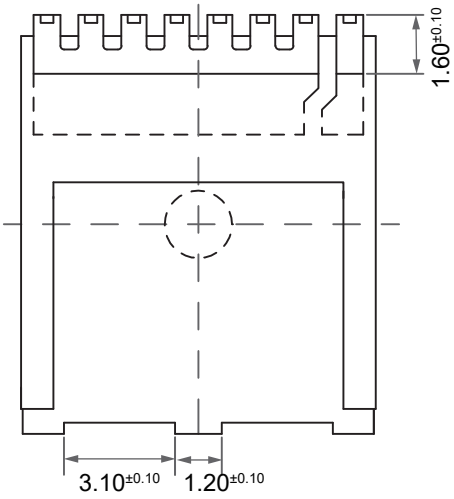
Dimensions in mm



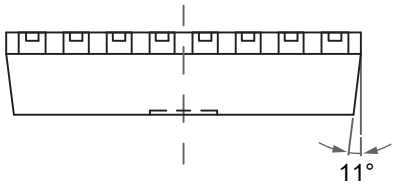
TOP VIEW



SIDE VIEW



BOTTOM VIEW



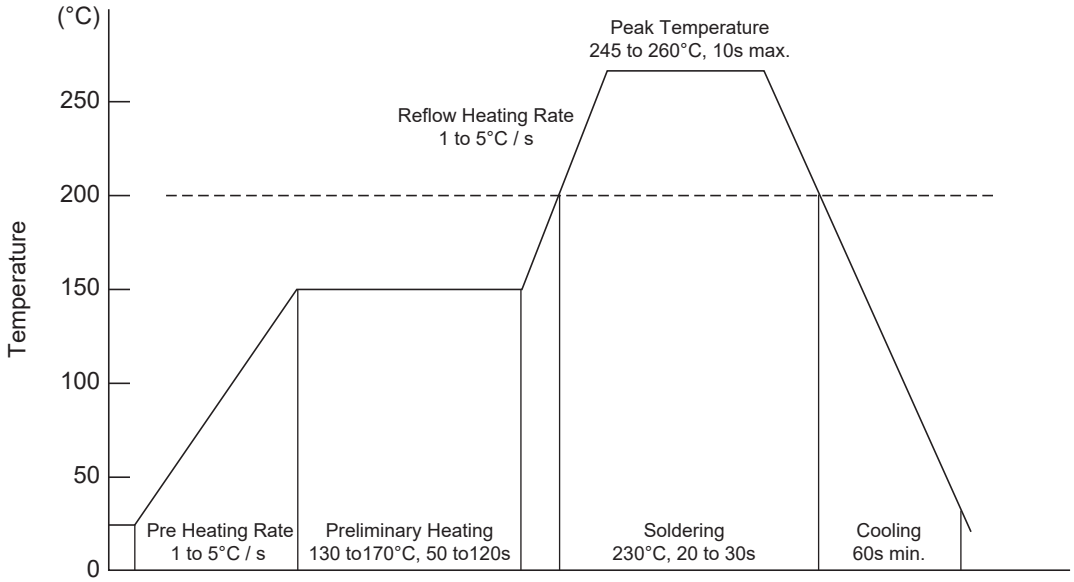
FRONT VIEW

Ordering Information

Device	Package	Shipping
PJMG330N60TL	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

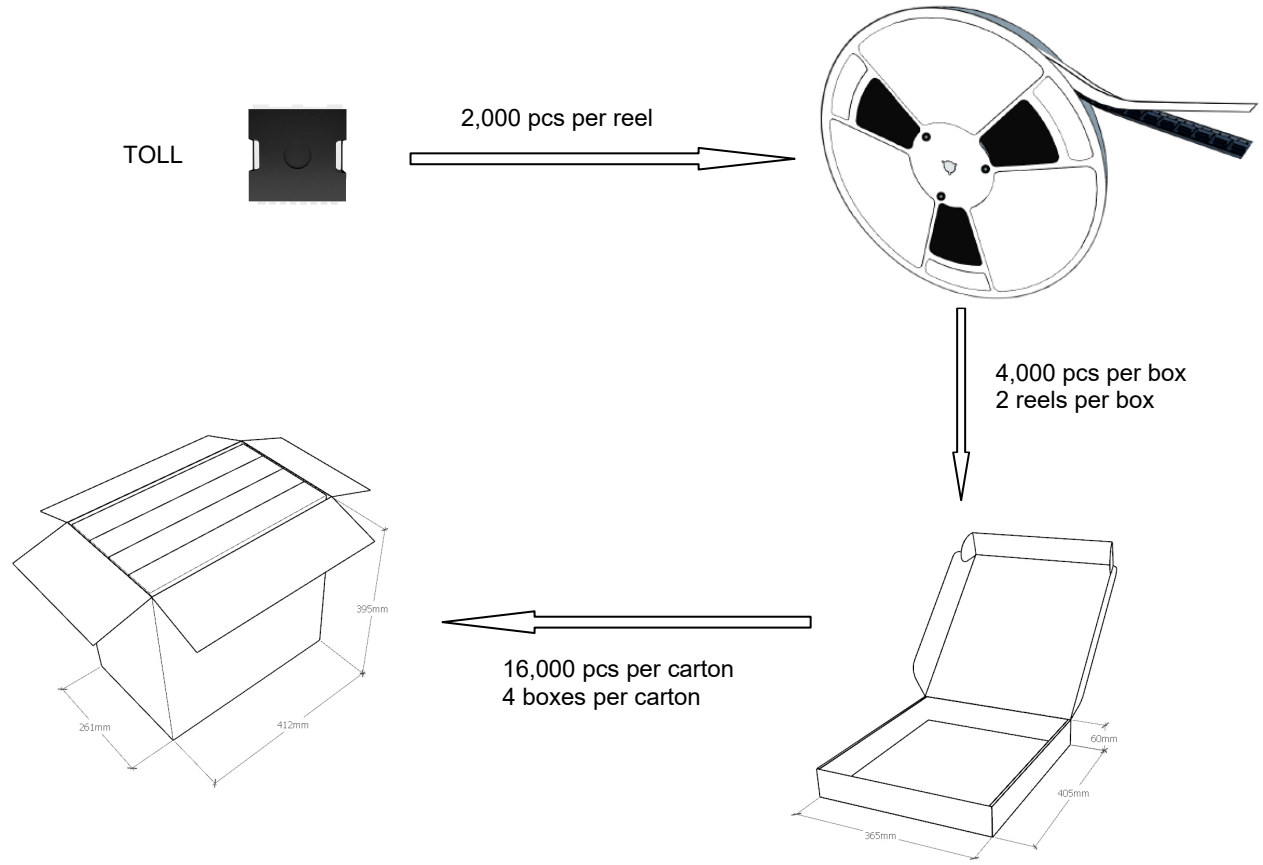
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

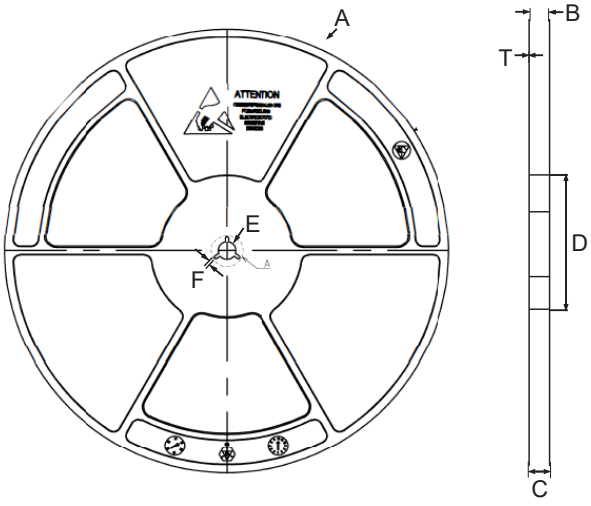
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

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**