



PJMG320N40TL

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 40V, I_D = 320A$
- $R_{DS(on)} < 1.2m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 1.7m\Omega @ V_{GS} = 4.5V$

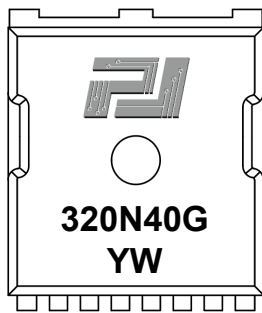
Features

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

Application

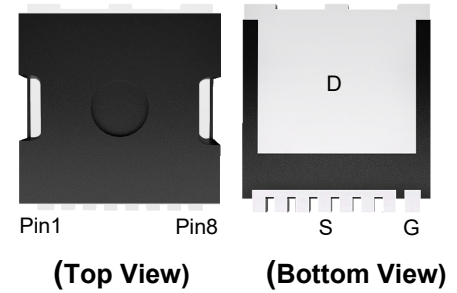
- BMS
- Electric Tools

Marking Code

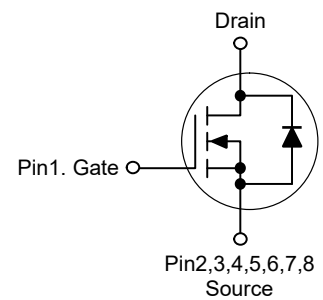


(Top View)

TOLL



Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	320	A
Drain Current-Pulsed ^{Note1}	I_{DM}	1200	A
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	529	mJ
Maximum Power Dissipation	P_D	250	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.6	°C/W
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Electrical Characteristics

(T_J=25°C 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	40	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, 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	1	1.8	3	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V, I _D =50A	--	1.05	1.2	mΩ
		V _{GS} =4.5V, I _D =50A	--	1.45	1.7	mΩ
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V, I _D =2A	--	15	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	6296	--	pF
Output Capacitance	C _{oss}		--	1506	--	pF
Reverse Transfer Capacitance	C _{rss}		--	628	--	pF
Gate Resistance	R _G	V _{DS} =0V, V _{GS} =0V, f=1MHz	--	3.1	--	Ω
Total Gate Charge	Q _g	V _{DD} =32V, I _D =20A, V _{GS} =10V	--	99.8	--	nC
Gate-Source Charge	Q _{gs}		--	52.1	--	nC
Gate-Drain Charge	Q _{gd}		--	11.2	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =20V, I _D =25A, V _{GS} =10V, R _{GEN} =2Ω	--	19.2	--	nS
Turn-on Rise Time	t _r		--	106.8	--	nS
Turn-off Delay Time	t _{d(off)}		--	214.3	--	nS
Turn-off Fall Time	t _f		--	74.3	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =40A	--	--	1.2	V
Diode Forward Current	I _S		--	--	320	A

Note:

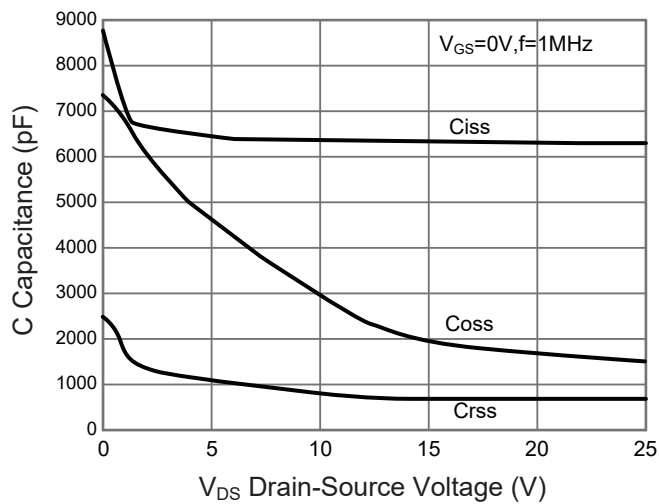
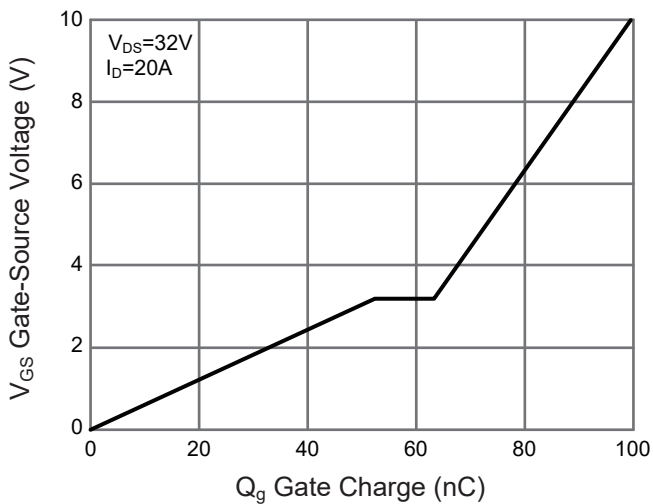
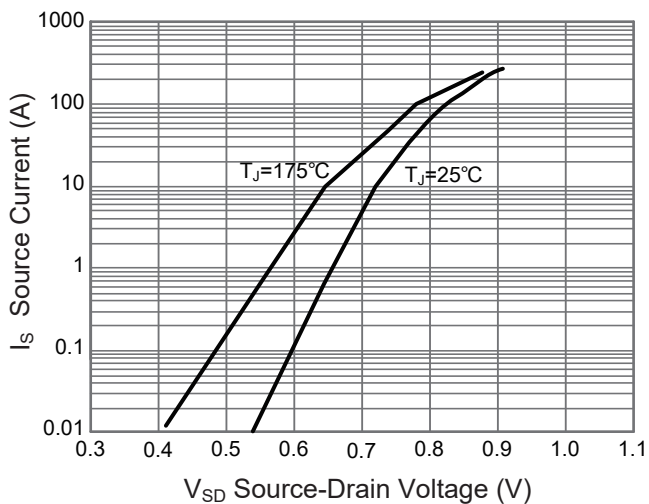
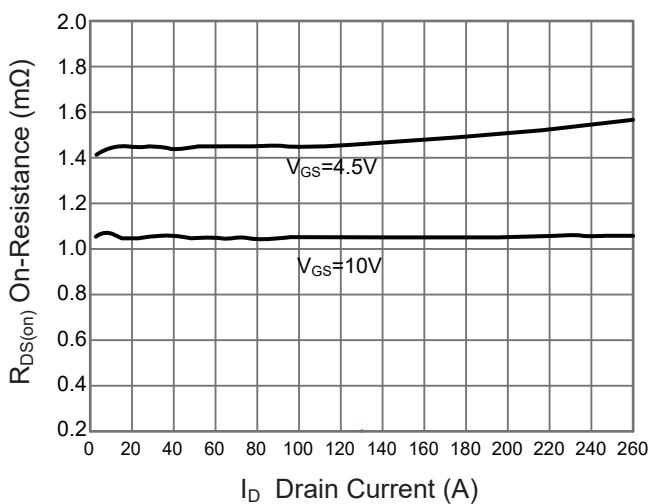
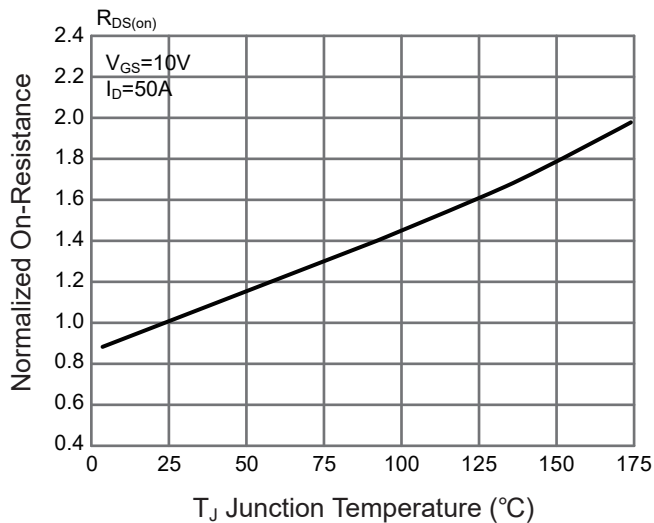
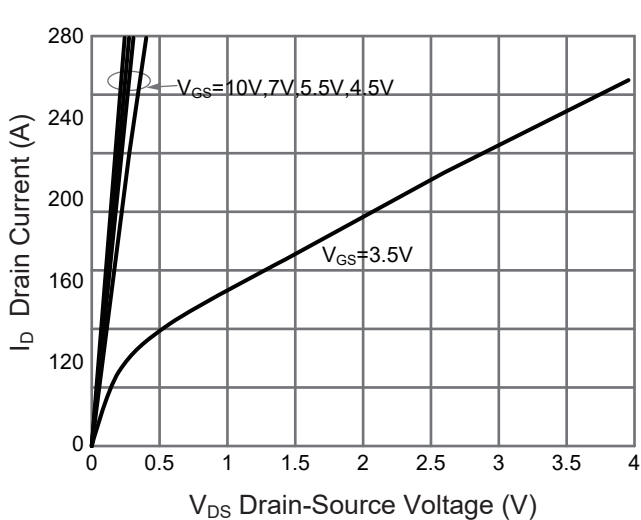
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition: T_J=25°C, V_{DD}=25V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=46A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%



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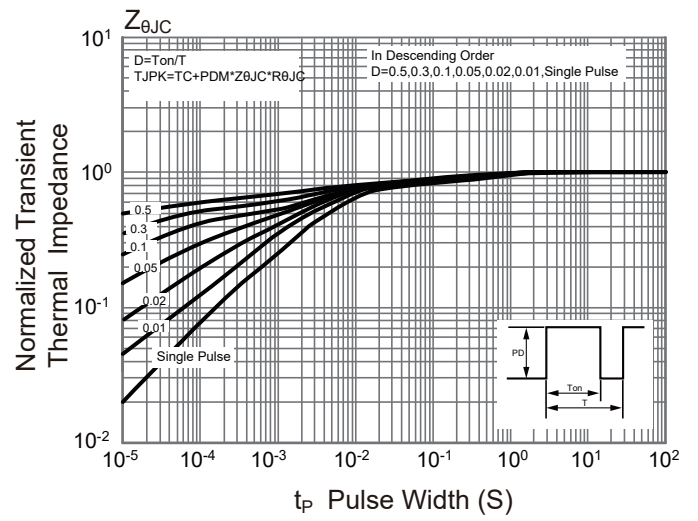
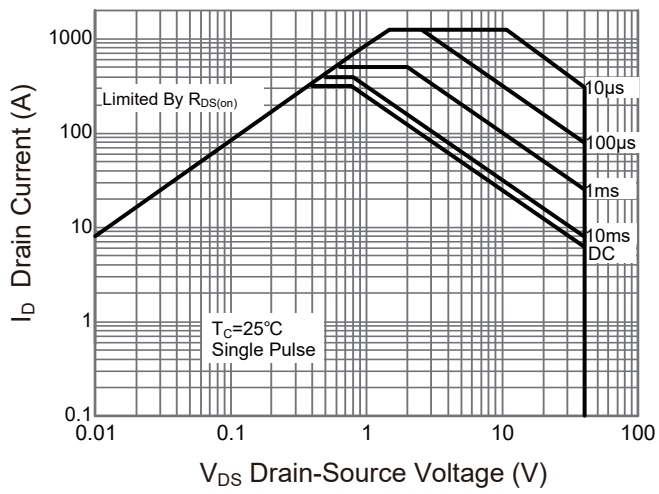
Typical Characteristic Curves





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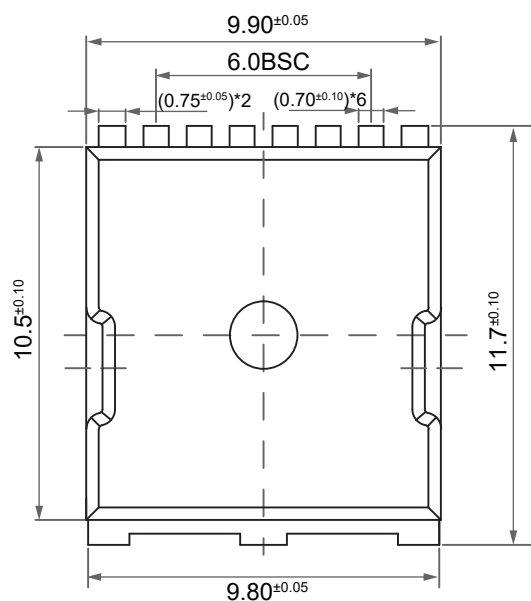
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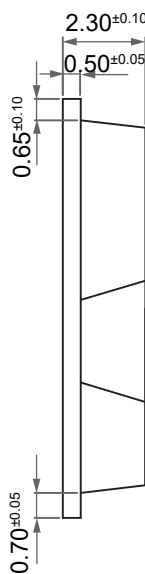
Package Outline

TOLL

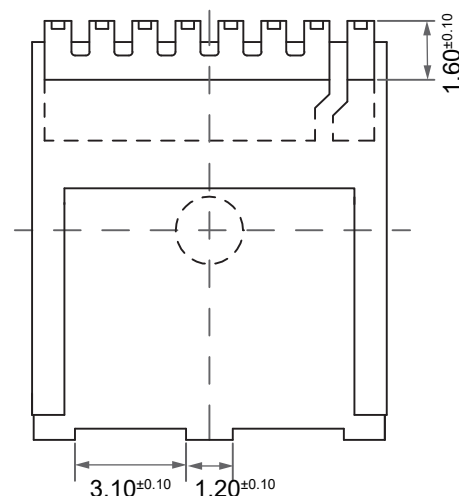
Dimensions in mm



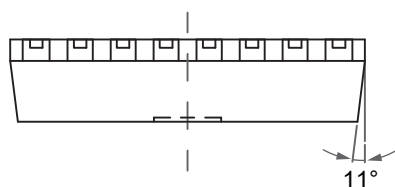
TOP VIEW



SIDE VIEW



BOTTOM VIEW



FRONT VIEW

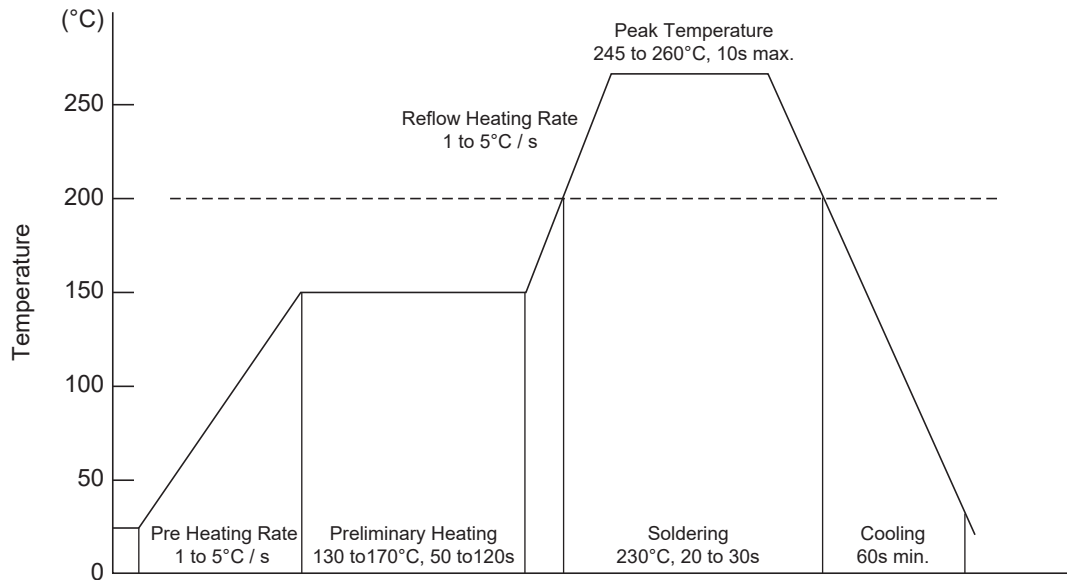
Ordering Information

Device	Package	Shipping
PJMG320N40TL	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

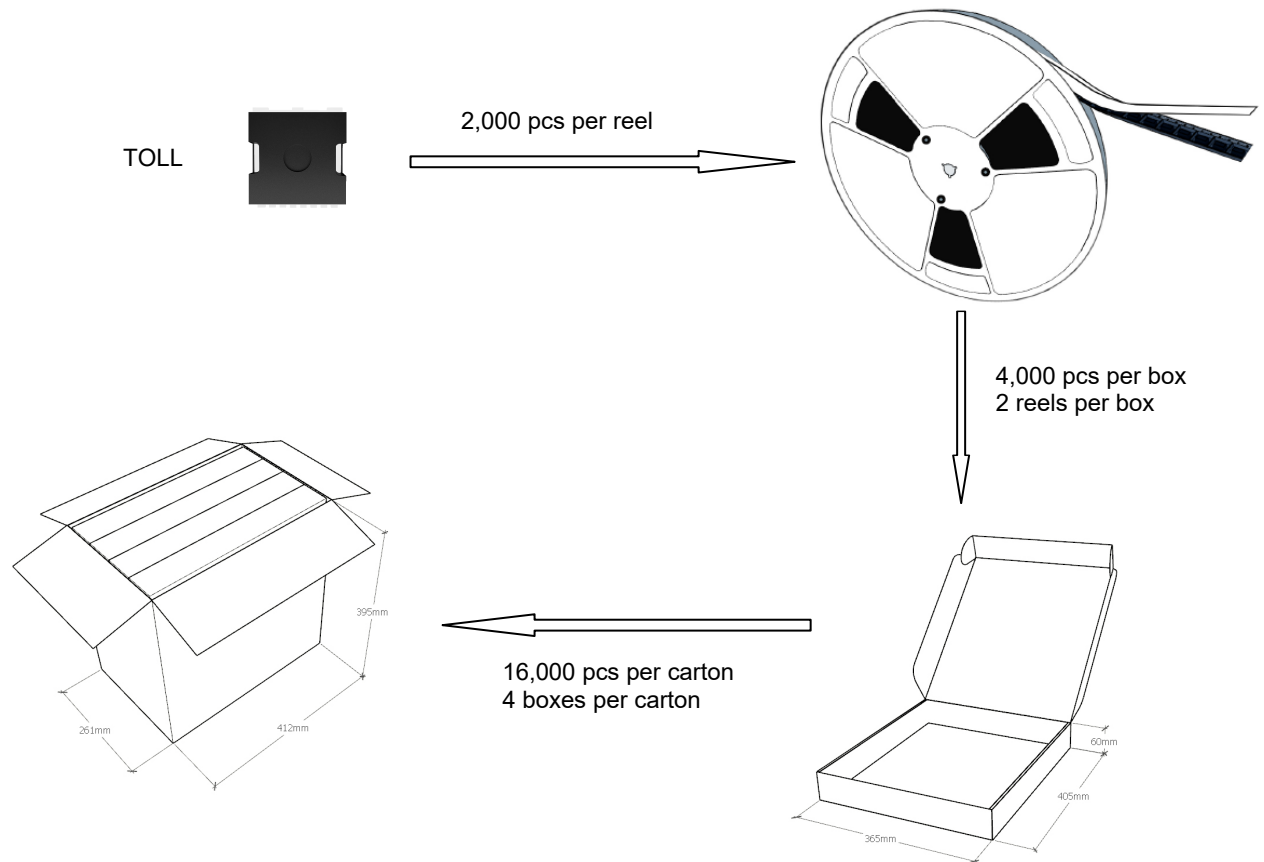


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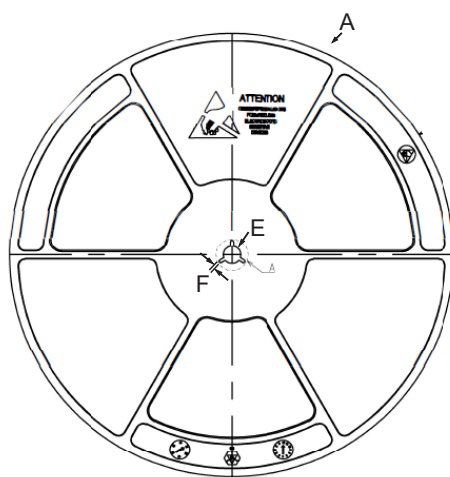
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Package Specifications

- The method of packaging



◆ reel data



Reel (13")



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



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◆ Embossed tape data

