PJM60N20TE

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 20V,I_D= 60A
- $R_{DS(on)}$< 6mΩ @V_{GS}= 4.5V
- $R_{DS(on)}$< 8.5mΩ @V_{GS}= 2.5V

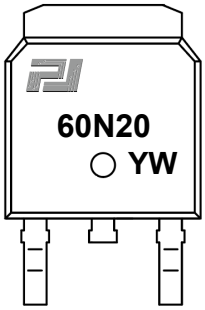
Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

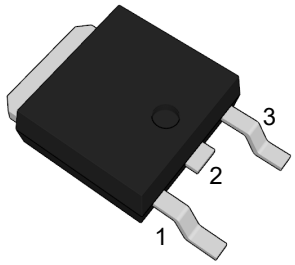
Application

- Load Switch
- PWM Application
- Power Management

Marking Code



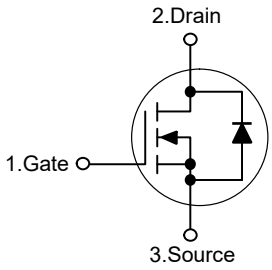
TO-252



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	60	A
Drain Current-Pulsed Note1	I_{DM}	240	A
Maximum Power Dissipation	P_D	37	W
Single Pulse Avalanche Energy Note2	E_{AS}	60	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.4	°C/W

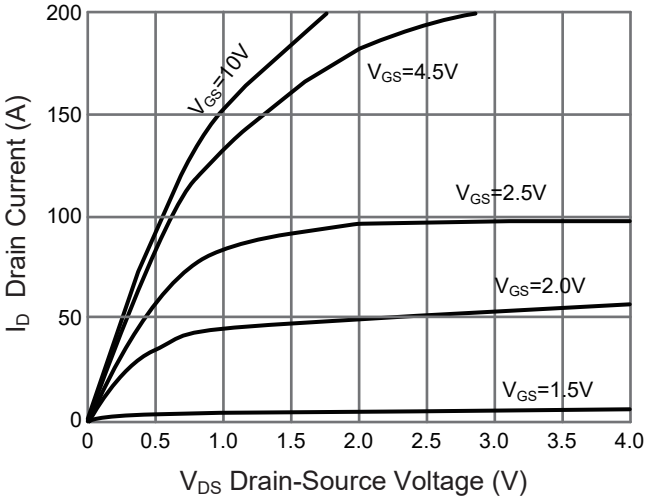
Electrical Characteristics

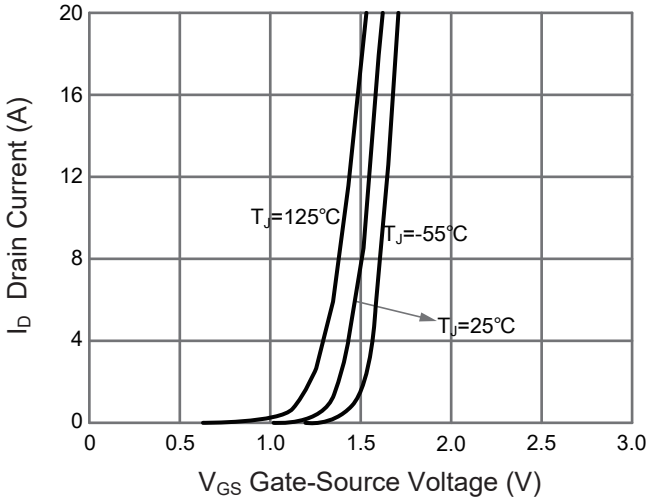
(T_J=25℃ unless otherwise specified)

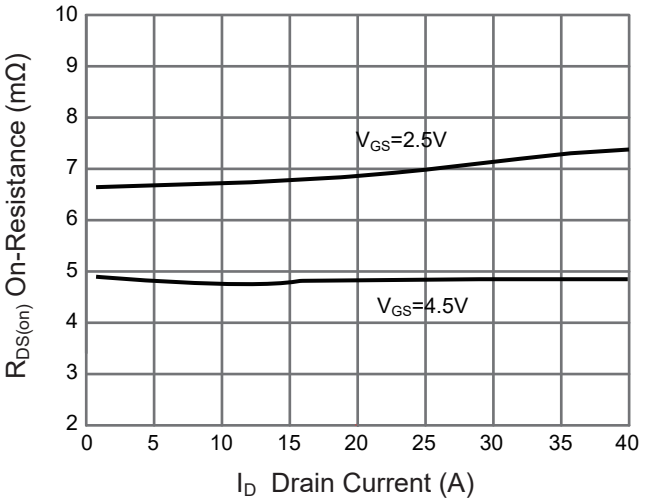
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	--	--	±100	nA
Gate Threshold Voltage Note3	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.4	0.65	1	V
Drain-Source On-Resistance Note3	$R_{DS(on)}$	V_{GS}=4.5V,I_D=25A	--	4.9	6	mΩ
		V_{GS}=2.5V,I_D=15A	--	6.8	8.5	mΩ
Forward Transconductance Note3	g_{FS}	V_{DS}=5V,I_D=2A	--	11	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,f=1MHz	--	1563	--	pF
Output Capacitance	C_{oss}		--	234	--	pF
Reverse Transfer Capacitance	C_{rss}		--	213	--	pF
Gate Resistance	R_g	V_{DS}=0V,V_{GS}=0V,f=1MHz	--	1.5	--	Ω
Total Gate Charge	Q_g	V_{DS}=10V, I_D=20A, V_{GS}=4.5V	--	23	--	nC
Gate-Source Charge	Q_{gs}		--	4	--	nC
Gate-Drain Charge	Q_{gd}		--	7	--	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V, I_D=20A, V_{GS}=4.5V, R_{GEN}=3Ω	--	12	--	nS
Turn-on Rise Time	t_r		--	33	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	48	--	nS
Turn-off Fall Time	t_f		--	95	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage Note3	V_{SD}	V_{GS}=0V,I_S=30A	--	--	1.2	V
Diode Forward Current	I_S		--	--	60	A

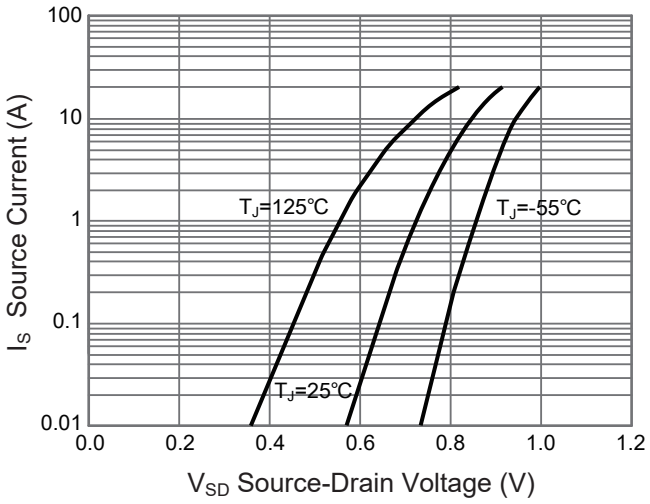
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition: T_J=25℃,V_{DD}=15V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=15.5A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

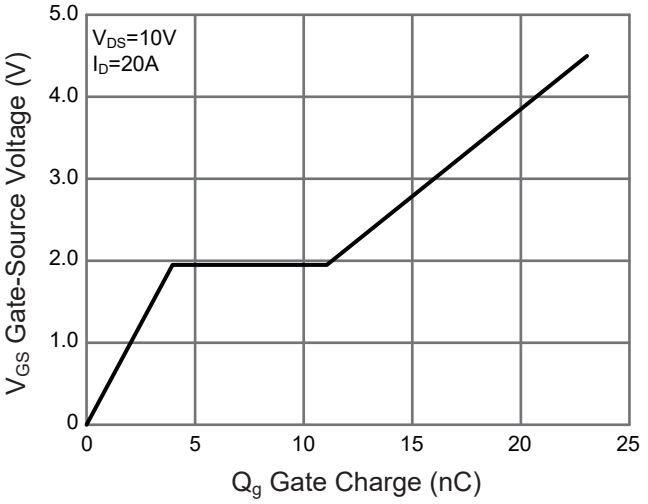
Typical Characteristic Curves

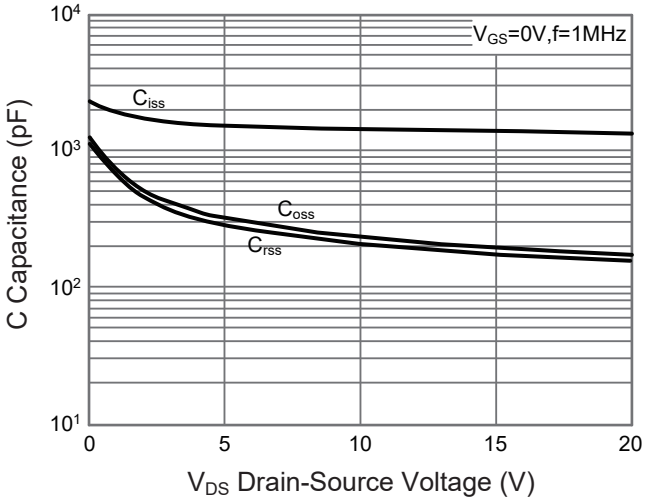


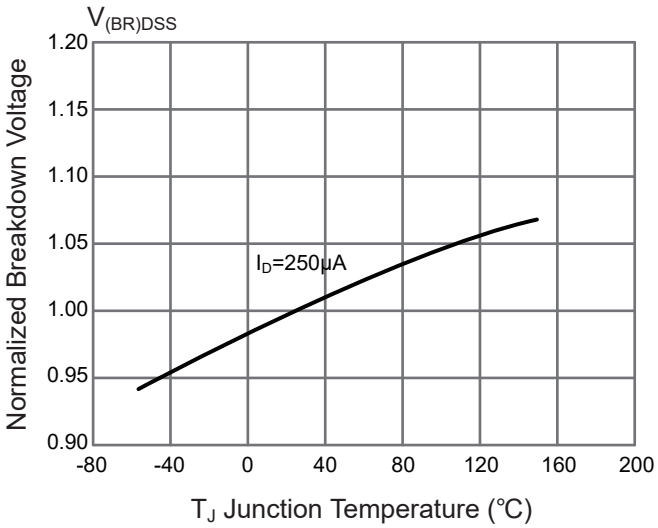


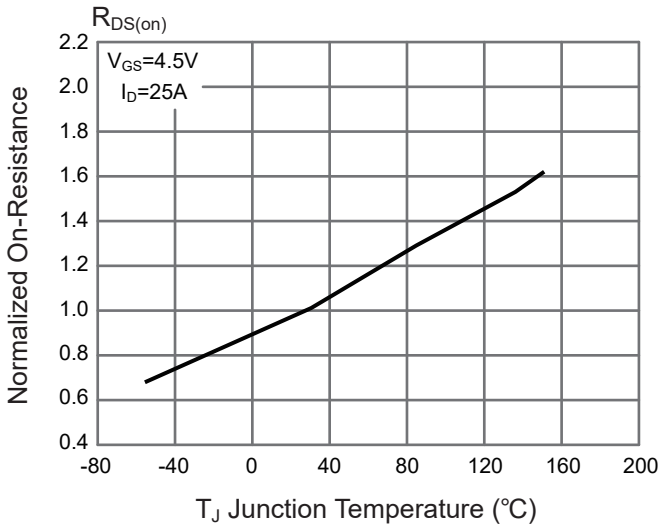








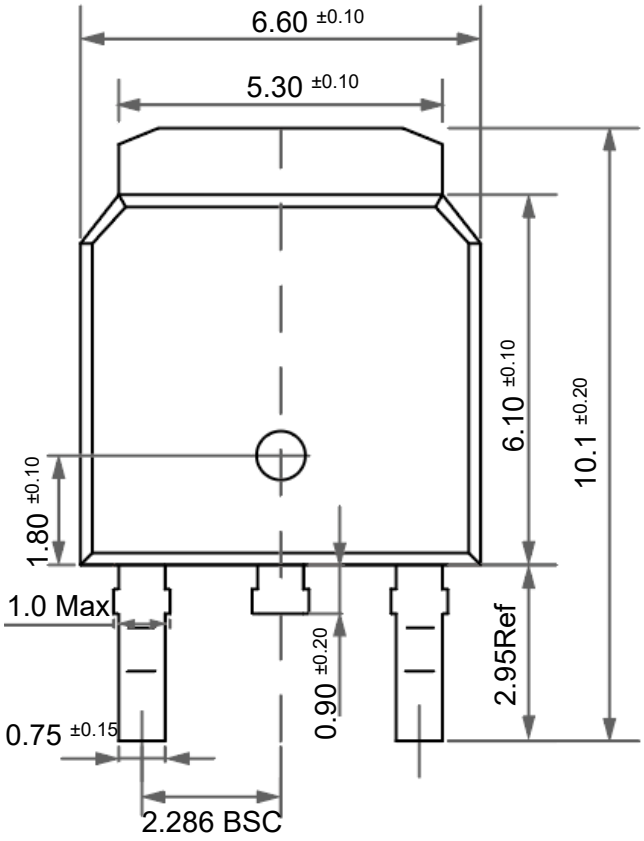

V(BR)DSS
Normalized Breakdown Voltage
1.20
1.15
1.10
1.05
1.00
0.95
0.90
ID=250μA
-80
-40
0
40
80
120
160
200
TJ Junction Temperature (℃)


RDS(on)
Normalized On-Resistance
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
VGS=4.5V
ID=25A
-80
-40
0
40
80
120
160
200
TJ Junction Temperature (℃)

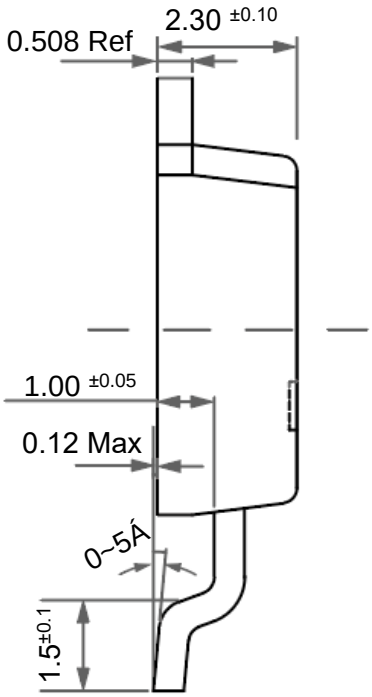
Package Outline

TO-252

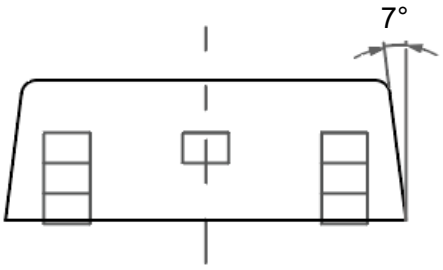
Dimensions in mm



Front View



Side View



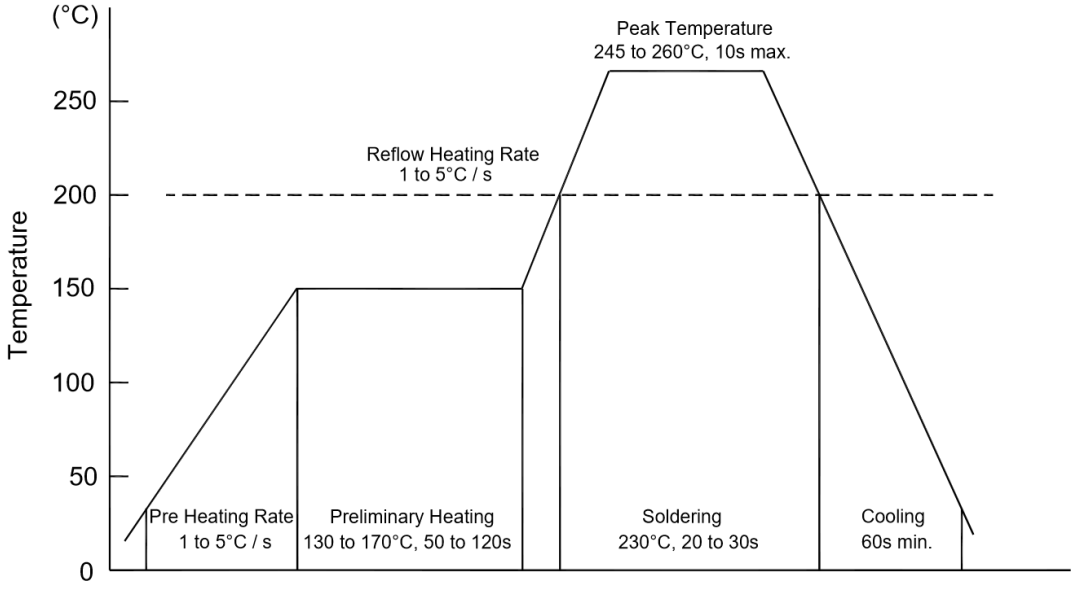
Bottom View

Ordering Information

Device	Package	Shipping
PJM60N20TE	TO-252	2,500PCS/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

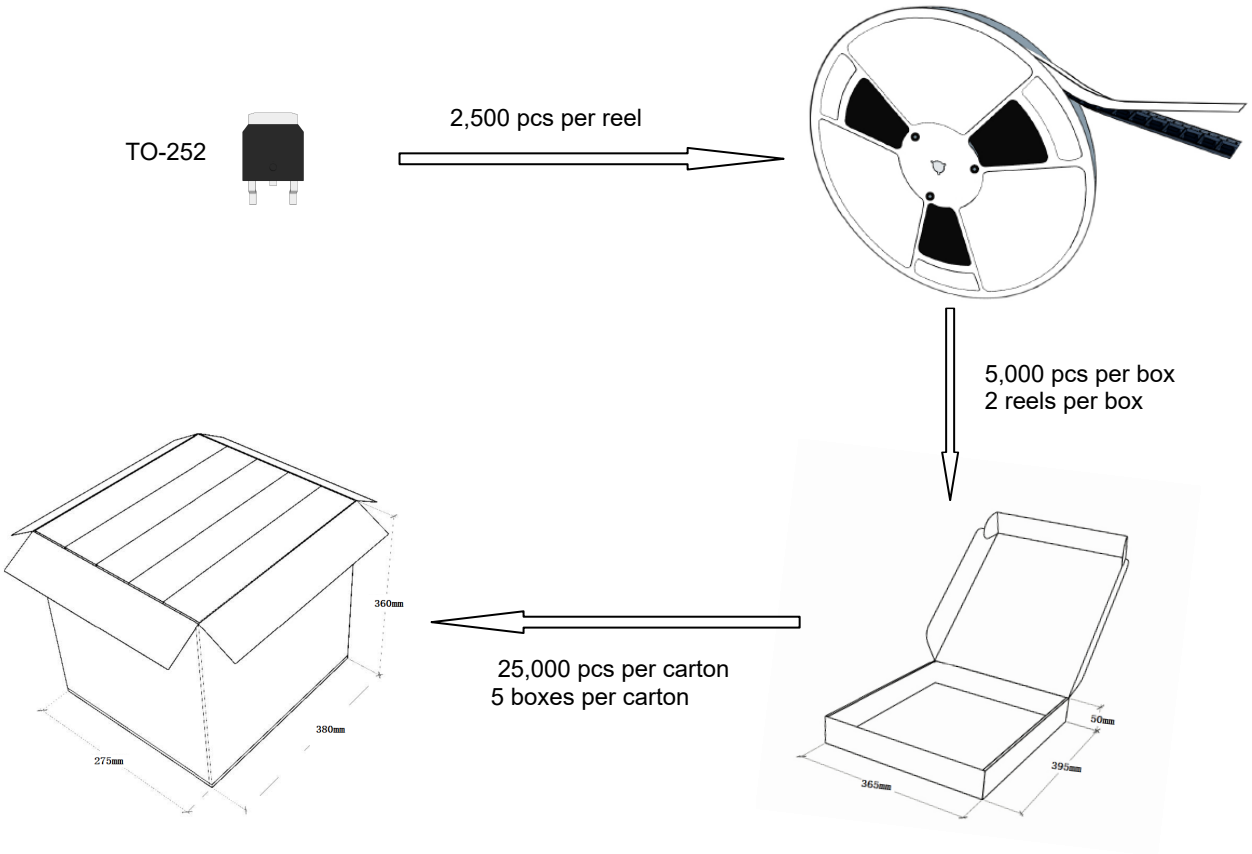
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

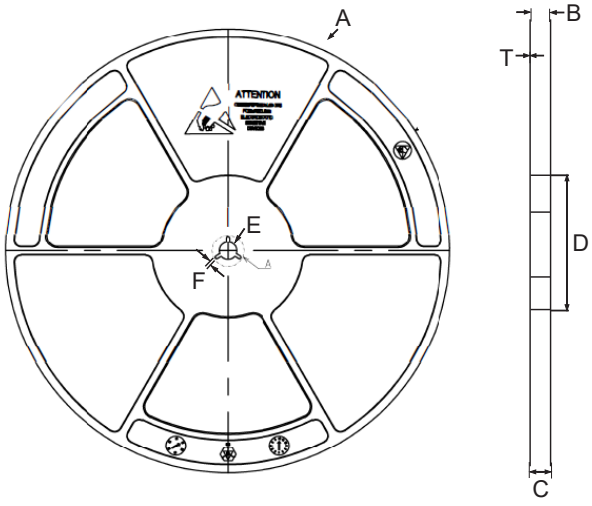
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

Package Specifications

- The method of packaging



◆ **reel data**



Reel (13")

Symbol	Value(unit:mm)
A	Φ330.2±1
B	17±0.5
C	21.2±2
D	Φ100±0.5
E	Φ13.4±0.2
F	2.3±0.2
T	2.1±0.2

◆ **Embossed tape data**