



PJM6050NTK

Single N-Channel Power MOSFET

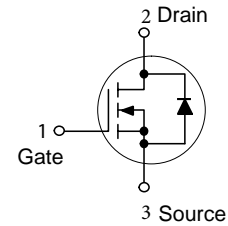
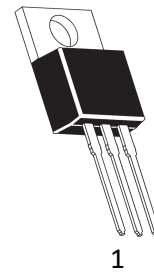
Features

- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation
- $V_{DSS}=60V$
- $I_D=50A$
- $P_D=104W$
- $R_{DS(on)} < 22m\Omega @ V_{GS}=10V$ (Typ18m Ω)

Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

TO-220AB



Ordering information

Device	Package	Shipping
PJM6050NTK	TO-220AB	1000PCS

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise stated)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	60	V
I_D	Continuous Drain Current	50	A
I_{DM}	Pulsed Drain Current	200	A
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}^{a1}	Single Pulse Avalanche Energy	500	mJ
P_D	Power Dissipation	104	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150 , -55 to 150	$^\circ C$

a1 : EAS condition : $T_J=25^\circ C, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25\Omega$



Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}^{a2}$	Thermal Resistance, Junction-to-Case	1.2	$^{\circ}C/W$

Electrical Characteristics ($T_C=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
Off Characteristics						
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=60V, V_{GS}=0V, T_a=25^{\circ}C$	--	--	1	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+30V$	--	--	0.1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-30V$	--	--	-0.1	μA
On Characteristics^{a3}						
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=25A$	--	18	22	m Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
g_{fs}	Forward Trans conductance	$V_{DS}=30V, I_D=25A$	30	--	--	S
Pulse width<380 μs ;duty cycle<2%.						
Dynamic Characteristics^{a4}						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$	--	920	--	pF
C_{oss}	Output Capacitance		--	420	--	
C_{rss}	Reverse Transfer Capacitance		--	80	--	
Resistive Switching Characteristics^{a4}						
$t_{d(ON)}$	Turn-on Delay Time	$I_D=50A, V_{DD}=30V$ $V_{GS}=10V, R_g=3\Omega$ $R_L=50\Omega$	--	40	--	ns
t_r	Rise Time		--	100	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	90	--	
t_f	Fall Time		--	75	--	
Q_g	Total Gate Charge	$I_D=50A, V_{DD}=30V, V_{GS}=10V$	--	35	--	nC
Q_{gs}	Gate to Source Charge		--	7.0	--	
Q_{gd}	Gate to Drain (" Miller ")Charge		--	16	--	
Source-Drain Diode Characteristics						
I_{SD}^{a2}	Continuous Source Current (Body Diode)		--	--	50	A
V_{SD}	Diode Forward Voltage	$I_S=50A, V_{GS}=0V$	--	--	1.5	V
Pulse width<380 μs ;duty cycle<2%.						

a1:Repetitive Rating: Pulse width limited by maximum junction temperature.

a2:Surface Mounted on FR4 Board, $t_s \leq 10sec$.

a3:Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycles $\leq 2\%$.

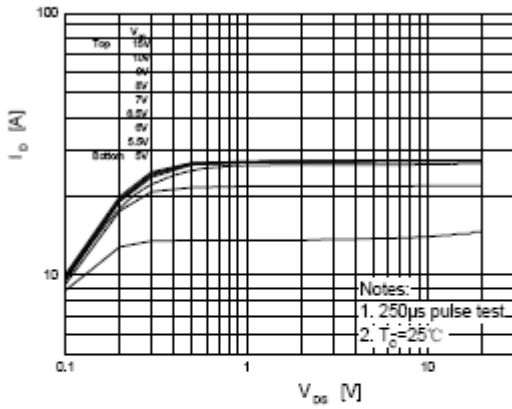
a4:Guaranteed by design, not subject to production

a5:EAS condition : $T_j=25^{\circ}C, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25\Omega$

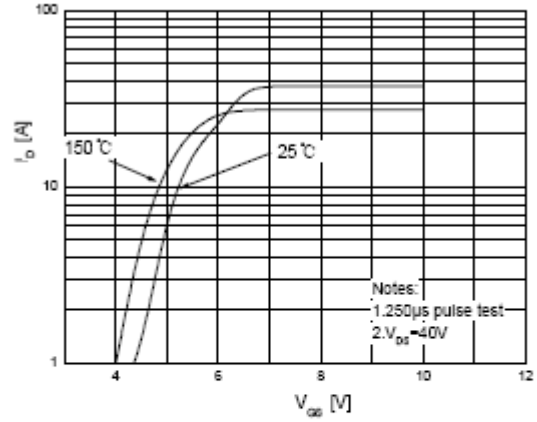


Typical Characteristic Curves

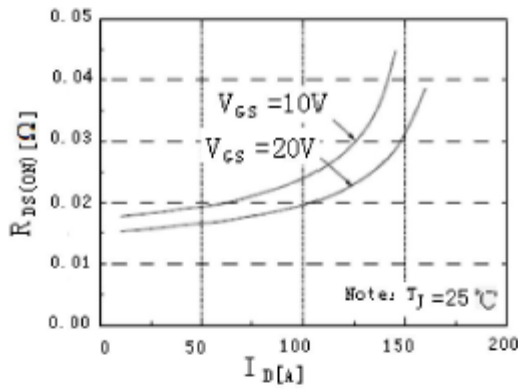
On-Region Characteristics



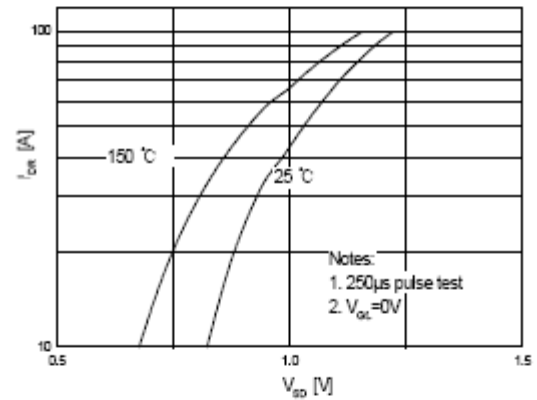
Transfer Characteristics



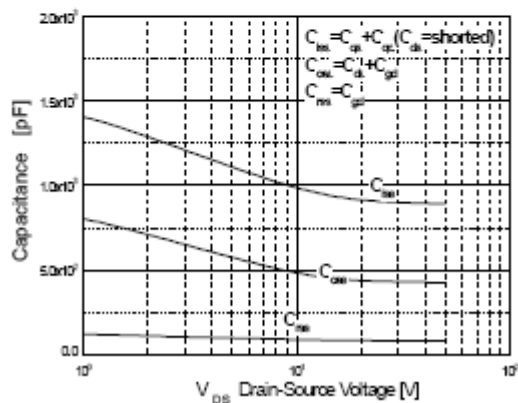
On-Resistance Variation vs. Drain Current and Gate Voltage



Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics



Gate Charge Characteristics

