



# PJP6000

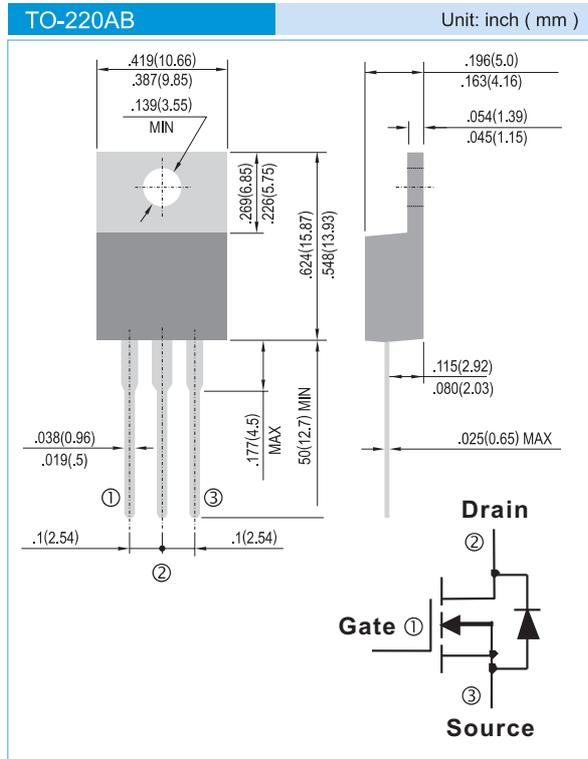
## 60V N-Channel Enhancement Mode MOSFET

### FEATURES

- $R_{DS(ON)}$ ,  $V_{GS}$  @  $10V$ ,  $I_{DS}$  @  $30A=14m\Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for Converters and Power Motor Controls
- Fully Characterized Avalanche Voltage and Current
- In compliance with EU RoHS 2002/95/EC directives

### MECHANICAL DATA

- Case: TO-220AB Molded Plastic
- Terminals : Solderable per MIL-STD-750, Method 2026
- Marking : P6000



### Maximum RATINGS and Thermal Characteristics ( $T_A=25^\circ C$ unless otherwise noted )

PARAMETER	Symbol	Limit	Units
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	60	A
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	210	A
Maximum Power Dissipation	$P_D$	90 53.5	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$
Avalanche Energy with Single Pulse $I_{AS}=37A, V_{DD}=30V, L=0.3mH$	$E_{AS}$	410	mJ
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	1.4	$^\circ C/W$
Junction-to Ambient Thermal Resistance(PCB mounted) <sup>2</sup>	$R_{\theta JA}$	62	$^\circ C/W$

Note: 1. Maximum DC current limited by the package

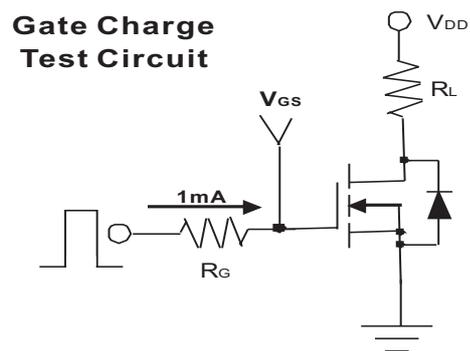
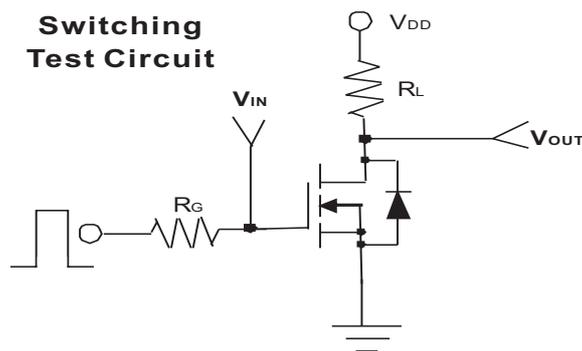
PAN JIT RESERVES THE RIGHT TO IMPROVE PRODUCT DESIGN,FUNCTIONS AND RELIABILITY WITHOUT NOTICE



# PJP6000

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	-	3	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =30A	-	12	14	mΩ
		V <sub>GS</sub> =10V, I <sub>D</sub> =30A, T <sub>C</sub> =125°C	-	-	26	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	-	-	1	μA
		V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>C</sub> =125°C	-	-	10	
Gate Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Forward Transconductance	g <sub>fS</sub>	V <sub>DS</sub> >I <sub>D(ON)</sub> XR <sub>DS(ON)max</sub> , I <sub>D</sub> =15A	25	-	-	S
<b>Dynamic</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =30V, I <sub>D</sub> =30A V <sub>GS</sub> =10V	-	40	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	3.8	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	12	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, R <sub>L</sub> =15Ω I <sub>D</sub> =2A, V <sub>GEN</sub> =10V R <sub>G</sub> =2.5Ω	-	14.6	20	ns
Turn-On Rise Time	t <sub>r</sub>		-	14.2	18	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	40	60	
Turn-Off Fall Time	t <sub>f</sub>		-	7.3	9.5	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V f=1.0MHz	-	1480	-	pF
Output Capacitance	C <sub>oss</sub>		-	190	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	135	-	
<b>Source-Drain Diode</b>						
Max. Diode Forward Current	I <sub>s</sub>	-	-	-	60	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>s</sub> =30A, V <sub>GS</sub> =0V	-	0.94	1.2	V





# PJP6000

Typical Characteristics Curves ( $T_J=25^\circ\text{C}$ , unless otherwise noted)

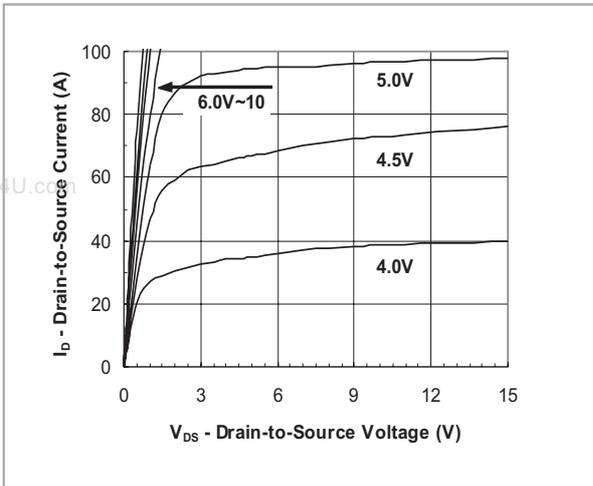


FIG.1- Output Characteristic

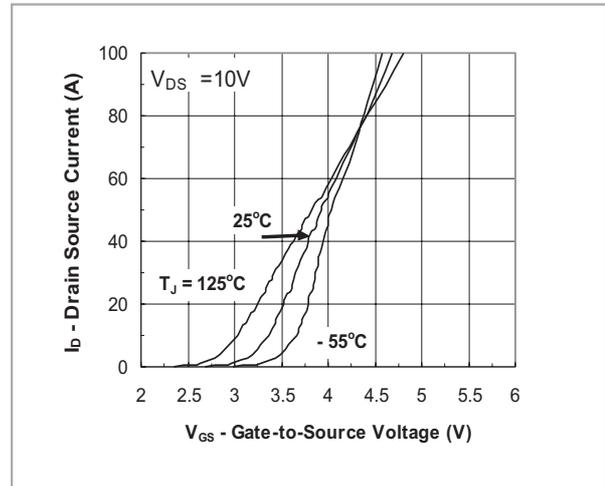


FIG.2- Transfer Characteristic

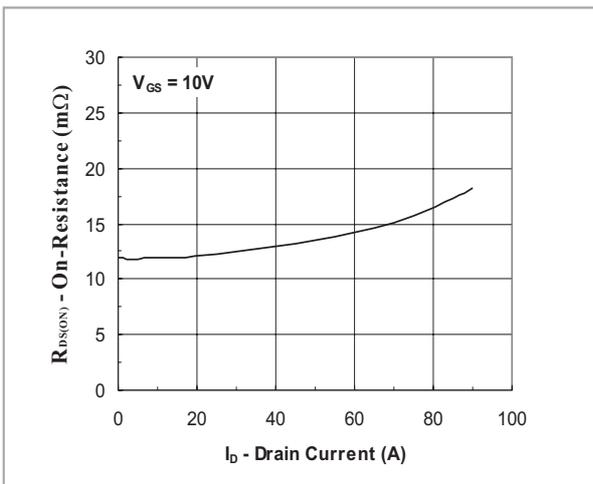


FIG.3- On Resistance vs Drain Current

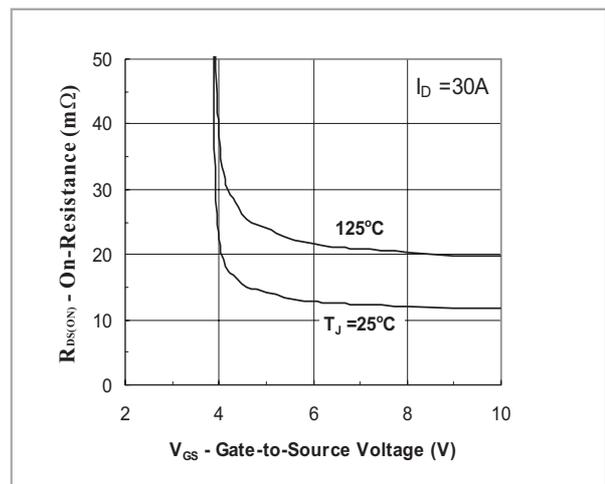


FIG.4- On Resistance vs Gate to Source Voltage

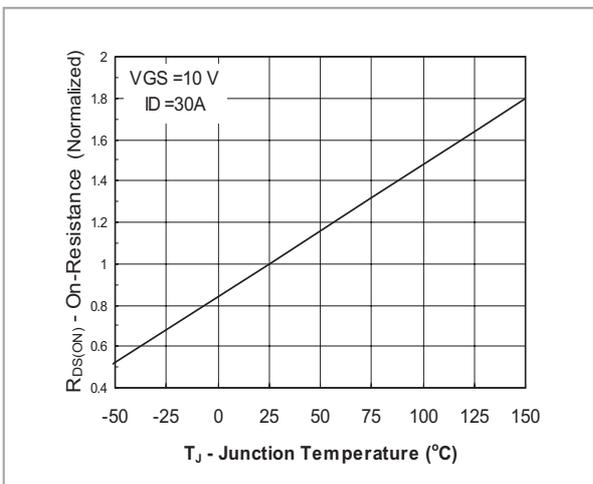


FIG.5- On Resistance vs Junction Temperature

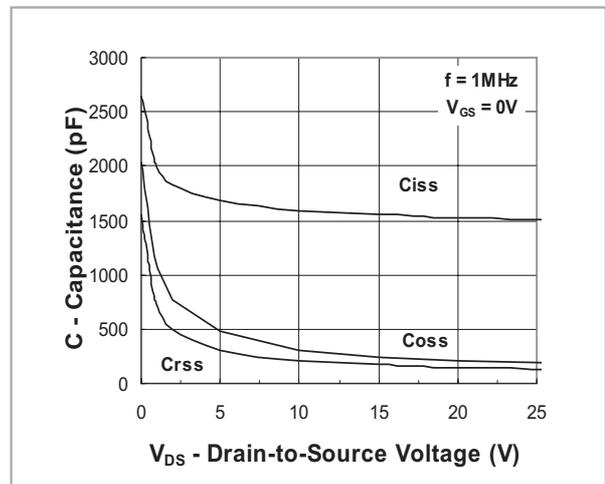


FIG.6- Capacitance



# PJP6000

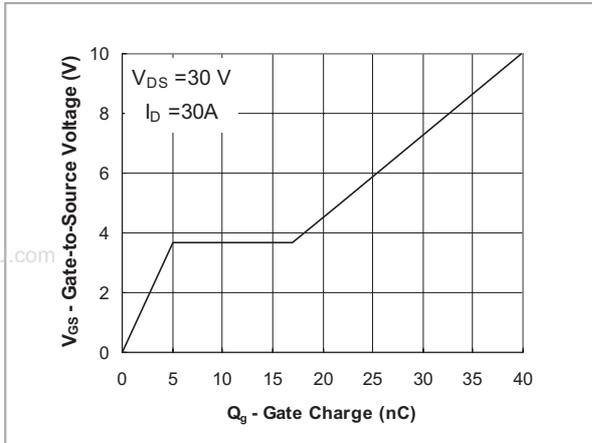


Fig. 7 - Gate Charge

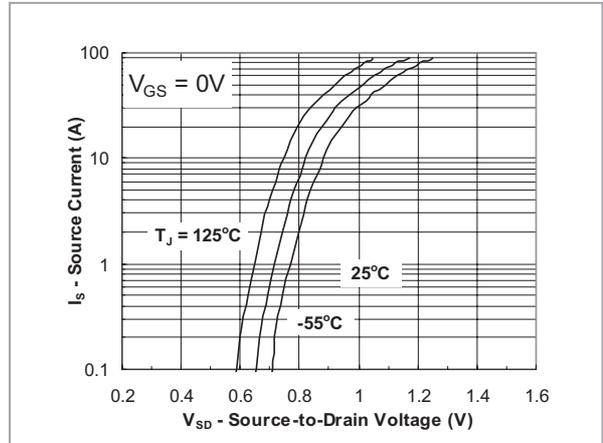


Fig. 10 - Source-Drain Diode Forward Voltage

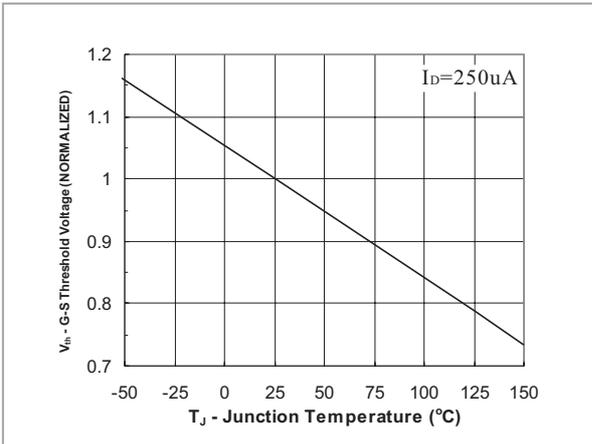


Fig. 8 - Threshold Voltage vs Junction Temperature

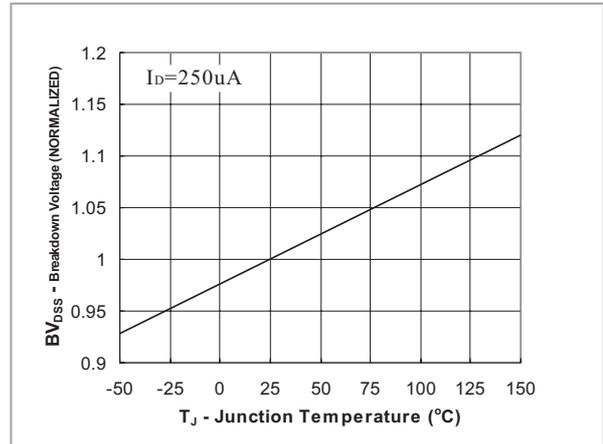


Fig. 9 - Breakdown Voltage vs Junction Temperature

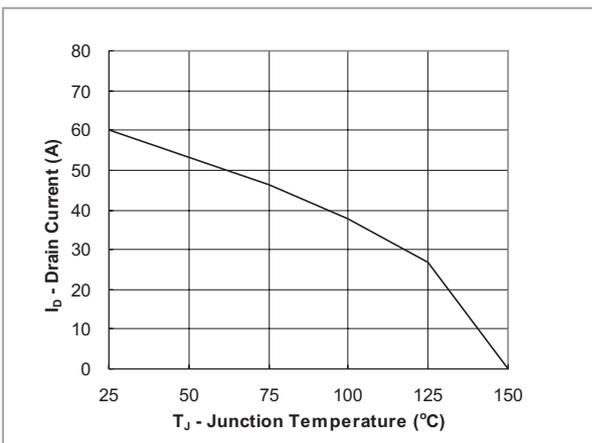


Fig. 11 - Maximum Drain Current vs Junction Temperature

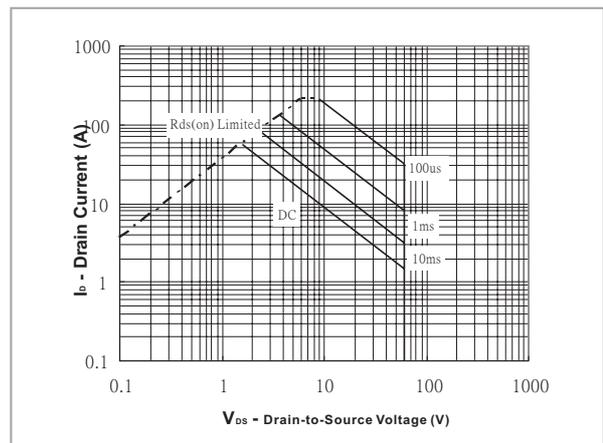


Fig. 12 - Safe Operation Area