

PJP6000

60V N-Channel Enhancement Mode MOSFET

FEATURES

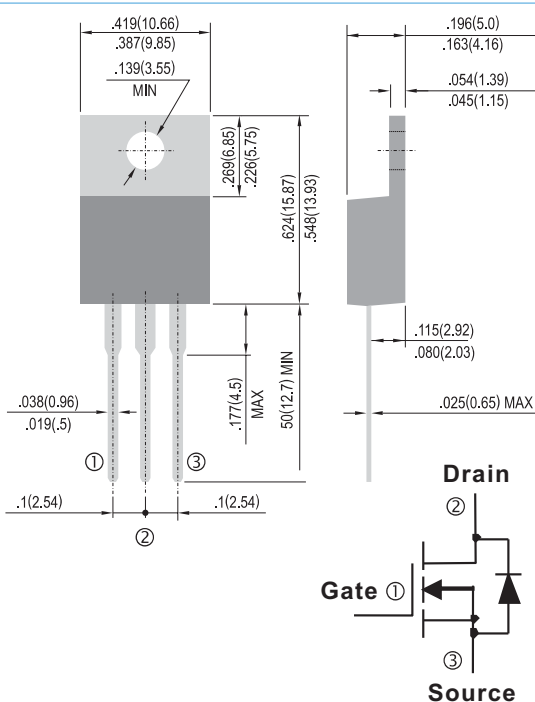
- $R_{DS(ON)}$, $V_{GS}@10V, I_{DS}@30A=14m\Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for Converters and Power Motor Controls
- Fully Characterized Avalanche Voltage and Current
- In compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

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

TO-220AB

Unit: inch (mm)



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}	± 20	V
Continuous Drain Current	I_D	60	A
Pulsed Drain Current ¹⁾	I_{DM}	210	A
Maximum Power Dissipation	P_D	$T_A=25^{\circ}C$ 90 $T_A=75^{\circ}C$ 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) ²	$R_{\theta JA}$	62	$^{\circ}C/W$

Note: 1. Maximum DC current limited by the package

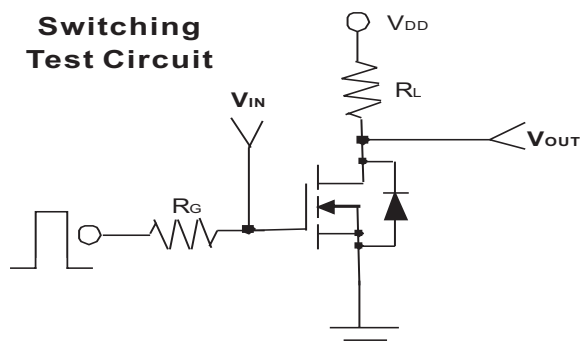
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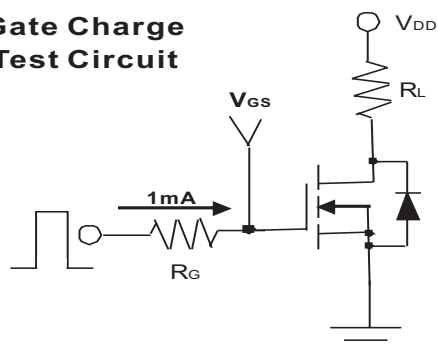
ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

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

Switching Test Circuit



Gate Charge Test Circuit



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

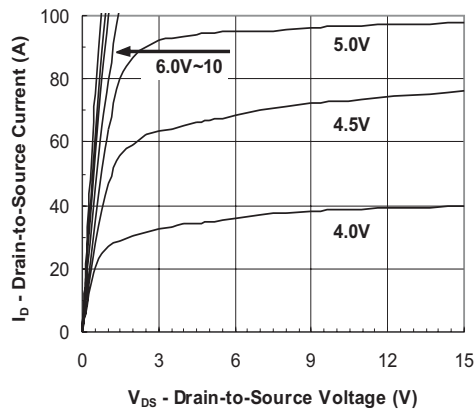


FIG.1- Output Characteristic

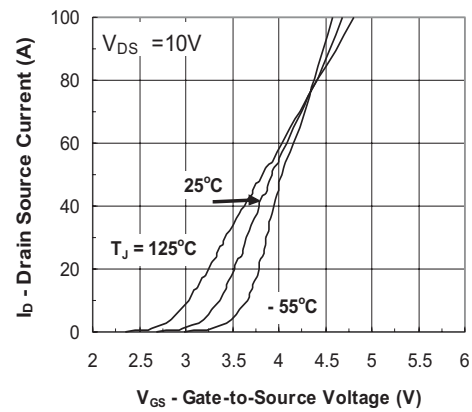


FIG.2- Transfer Characteristic

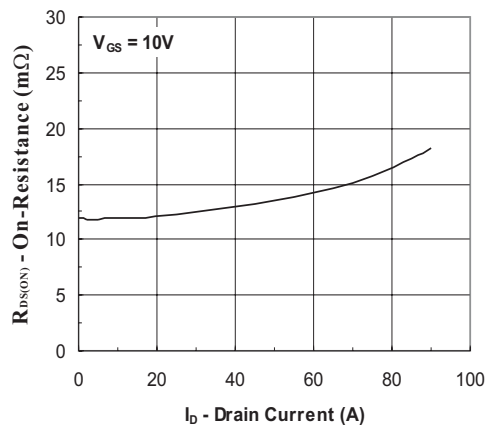


FIG.3- On Resistance vs Drain Current

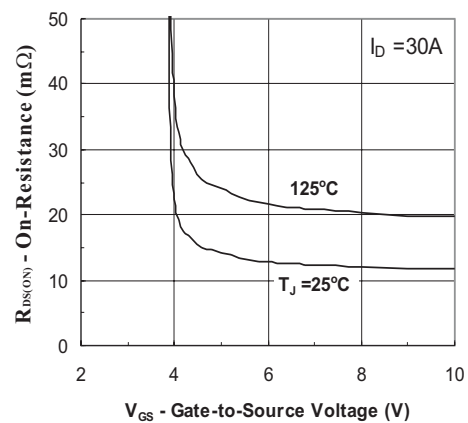


FIG.4- On Resistance vs Gate to Source Voltage

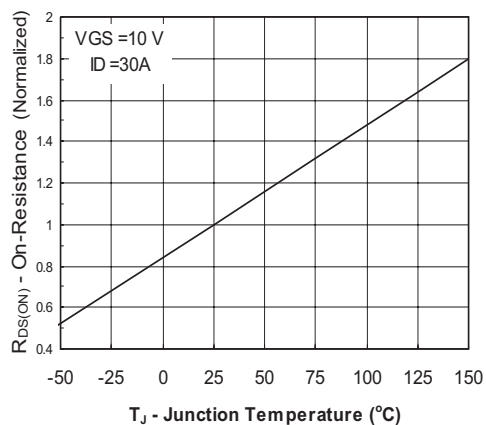


FIG.5- On Resistance vs Junction Temperature

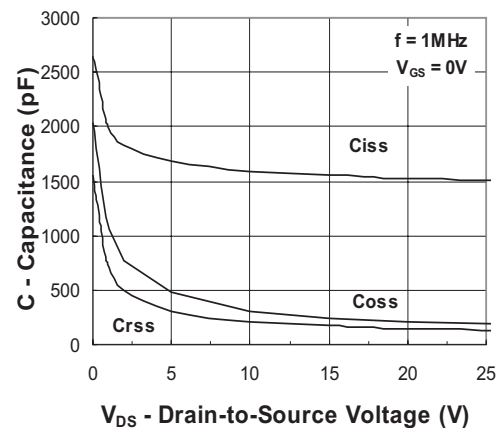


FIG.6 - Capacitance

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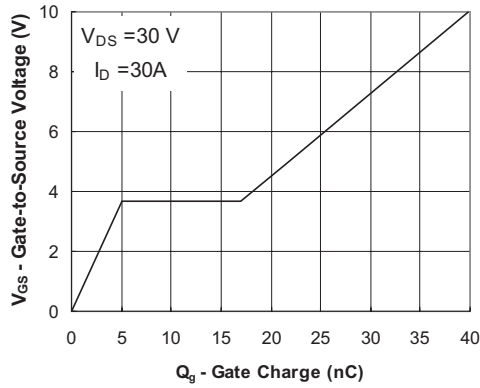


Fig.7 - Gate Charge

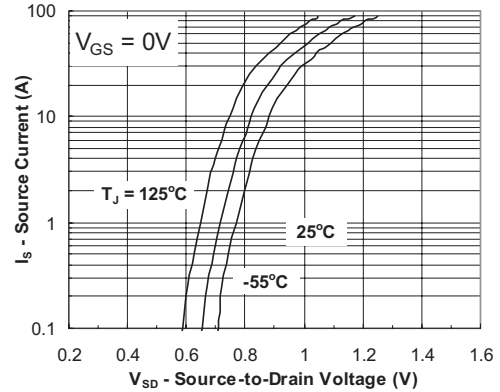


Fig.10 - Source-Drain Diode Forward Voltage

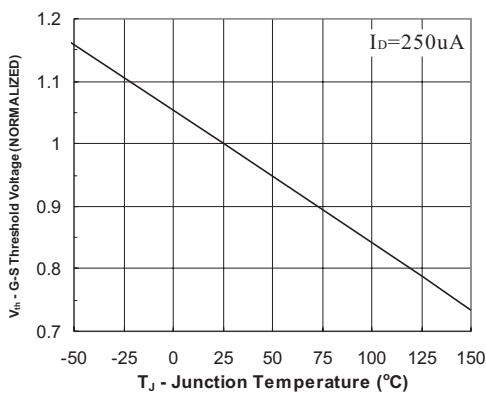


Fig.8 - Threshold Voltage vs Junction Temperature

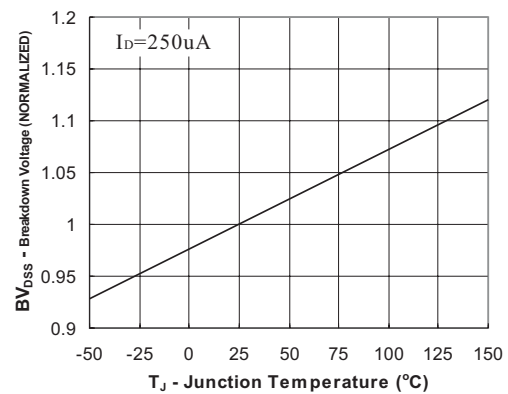


Fig.9 - Breakdown Voltage vs Junction Temperature

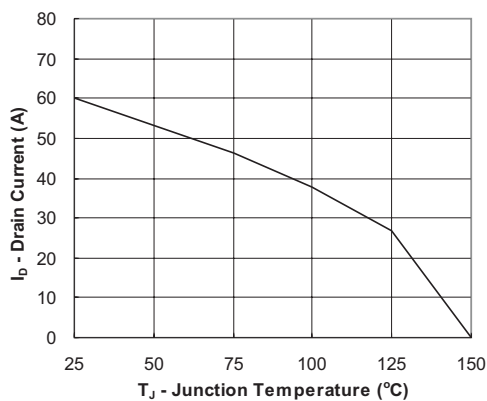


Fig.11 - Maximum Drain Current vs Junction Temperature

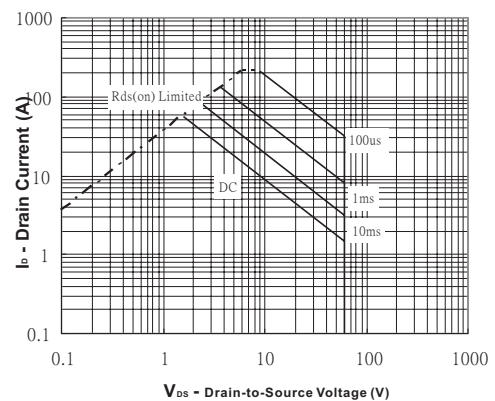


Fig.12 - Safe Operation Area