



PJP4N60 / PJF4N60

600V N-Channel Enhancement Mode MOSFET

TO-220AB / ITO-220AB

FEATURES

- 4A , 600V, $R_{DS(ON)}=2.4\Omega@V_{GS}=10V, I_D=2.0A$
- Low ON Resistance
- Fast Switching
- Low Gate Charge
- Fully Characterized Avalanche Voltage and Current
- Specially Designed for AC Adapter, Battery Charge and SMPS
- In compliance with EU RoHs 2002/95/EC Directives

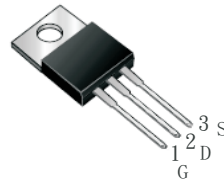
MECHANICAL DATA

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

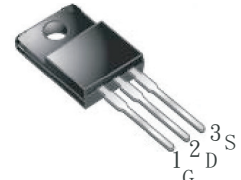
ORDERING INFORMATION

TYPE	MARKING	PACKAGE	PACKING
PJP4N60	P4N60	TO-220AB	50PCS/TUBE
PJF4N60	F4N60	ITO-220AB	50PCS/TUBE

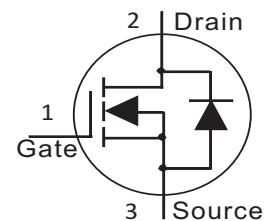
TO-220AB



ITO-220AB



INTERNAL SCHEMATIC DIAGRAM



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

PARAMETER	Symbol	PJP4N60	PJF4N60	Units
Drain-Source Voltage	V_{DS}	600		V
Gate-Source Voltage	V_{GS}	± 30		V
Continuous Drain Current	I_D	4	4	A
Pulsed Drain Current ¹⁾	I_{DM}	16	16	A
Maximum Power Dissipation Derating Factor	P_D	70 0.56	26 0.2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		$^\circ\text{C}$
Avalanche Energy with Single Pulse $I_{AS}=4.4A, V_{DD}=85V, L=30mH$	E_{AS}	330		mJ
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	1.75	4.8	$^\circ\text{C/W}$
Junction-to Ambient Thermal Resistance(PCB mounted) ²	$R_{\theta JA}$	62.5	100	$^\circ\text{C/W}$

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	600	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.0	-	4.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =2.0A	-	2.0	2.4	Ω
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =600V, V _{GS} =0V	-	-	10	uA
Gate Body Leakage	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA
Dynamic						
Total Gate Charge	Q _g	V _{DS} =480V, I _D =4A V _{GS} =10V	-	17.2	-	nC
Gate-Source Charge	Q _{gs}		-	4.6	-	
Gate-Drain Charge	Q _{gd}		-	5.2	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =300V, I _D =4A V _{GS} =10V, R _G =25Ω	-	11.6	16.8	ns
Turn-On Rise Time	t _r		-	10.6	15.2	
Turn-Off Delay Time	t _{d(off)}		-	25.8	36.8	
Turn-Off Fall Time	t _f		-	9.2	14.2	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V f=1.0MHz	-	560	680	pF
Output Capacitance	C _{oss}		-	55	66	
Reverse Transfer Capacitance	C _{rss}		-	5.2	9.6	
Source-Drain Diode						
Max. Diode Forward Current	I _S	-	-	-	4.0	A
Max.Pulsed Source Current	I _{SM}	-	-	-	16	A
Diode Forward Voltage	V _{SD}	I _S =4A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _F =4A di/dt=100A/us	-	300	-	ns
Reverse Recovery Charge	Q _{rr}		-	2.2	-	uC

NOTE : Plus Test : Pluse Width ≤ 300us, Duty Cycle ≤ 2%.



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

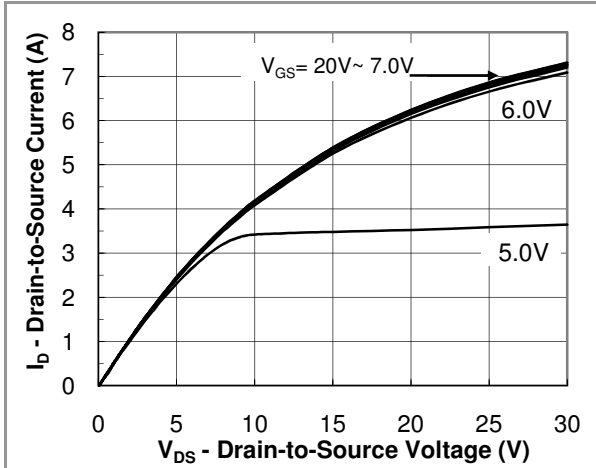


Fig.1 Output Characteristic

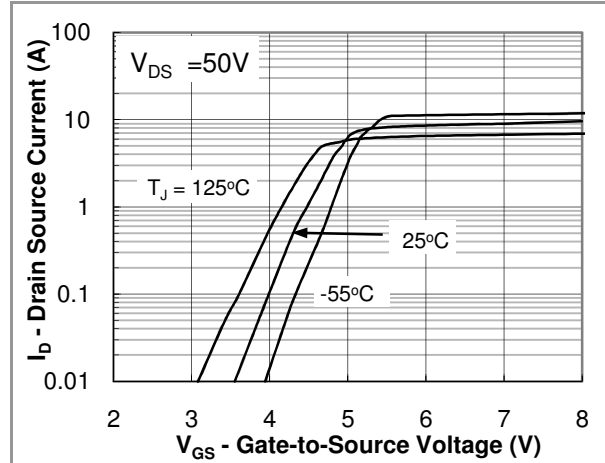


Fig.2 Transfer Characteristic

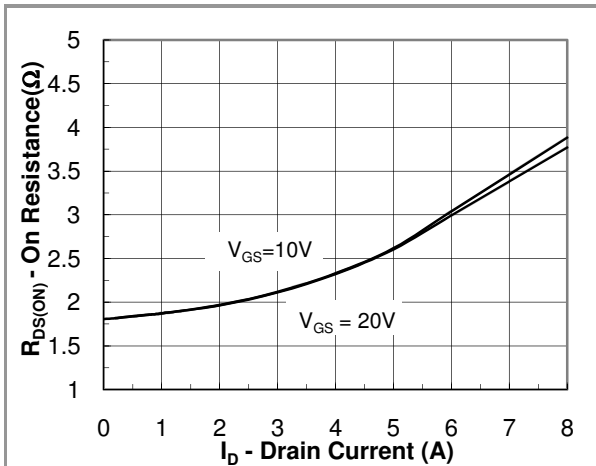


Fig.3 On Resistance vs Drain Current

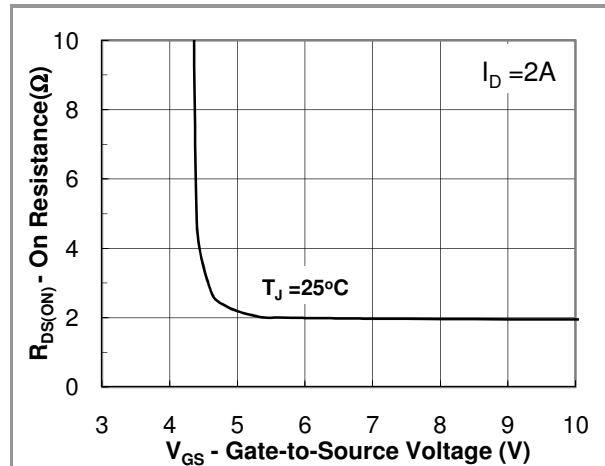


Fig.4 On Resistance vs Gate to Source Voltage

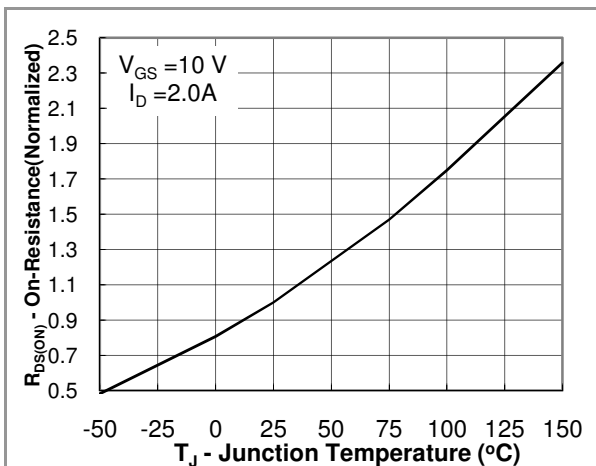


Fig.5 On Resistance vs Junction Temperature

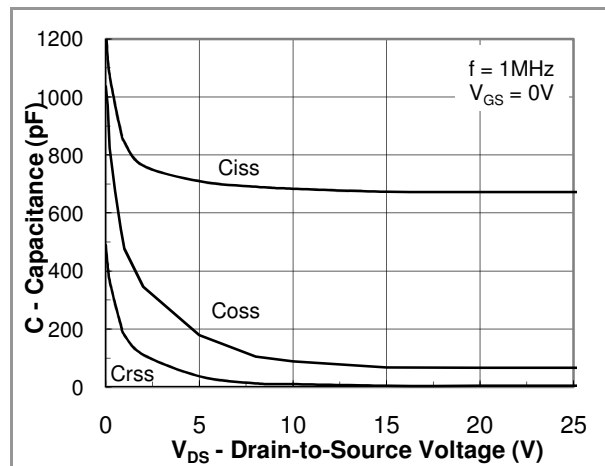


Fig.6 Capacitance



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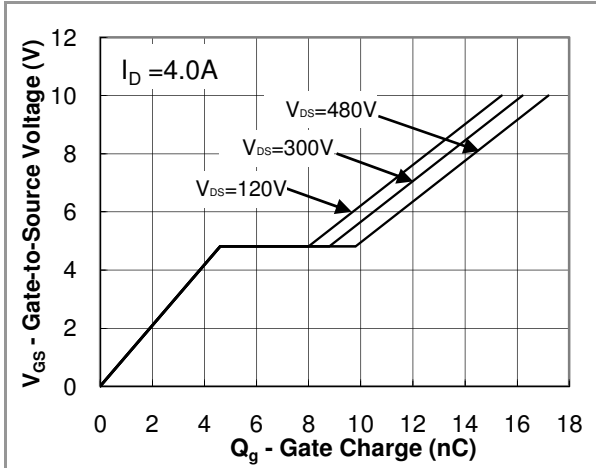


Fig. 7 Gate Charge Waveform

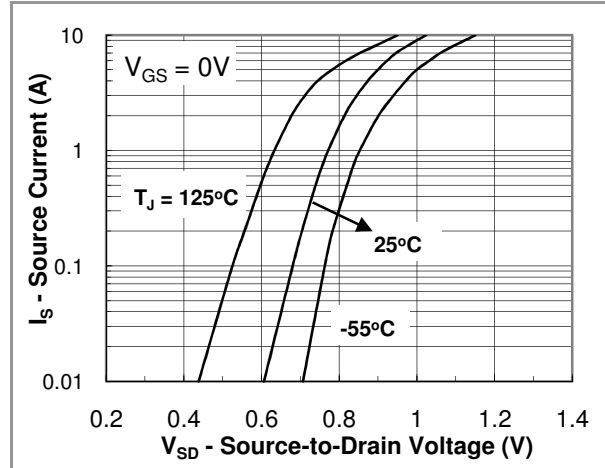


Fig.8 Source-Drain Diode Forward Voltage

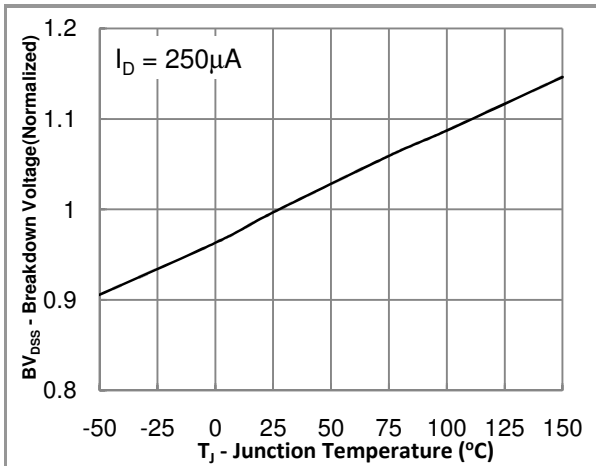


Fig.9 Breakdown Voltage vs Junction Temperature



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