

PJP5N60 / PJF5N60

600V N-Channel Enhancement Mode MOSFET

FEATURES

- 5A , 600V, $R_{DS(ON)}=2.1\Omega@V_{GS}=10V, I_D=2.5A$
- 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

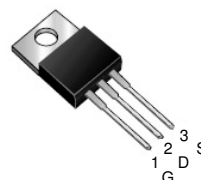
- Case: TO-220AB / ITO-220AB Molded Plastic
- Terminals : Solderable per MIL-STD-750,Method 2026

ORDERING INFORMATION

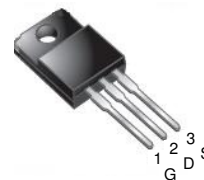
TYPE	MARKING	PACKAGE	PACKING
PJP5N60	P5N60	TO-220AB	50PCS/TUBE
PJF5N60	F5N60	ITO-220AB	50PCS/TUBE

TO-220AB / ITO-220AB

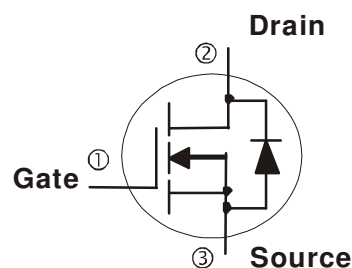
TO-220AB



ITO-220AB



INTERNAL SCHEMATIC DIAGRAM



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

PARAMETER	Symbol	PJP5N60	PJF5N60	Units
Drain-Source Voltage	V_{DS}	600		V
Gate-Source Voltage	V_{GS}	± 30		V
Continuous Drain Current	I_D	5	5	A
Pulsed Drain Current ¹⁾	I_{DM}	20	20	A
Maximum Power Dissipation Derating Factor	P_D	89 0.71	44.6 0.36	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		$^\circ\text{C}$
Avalanche Energy with Single Pulse $I_{AS}=5A, V_{DD}=50V, L=28mH$	E_{AS}	350		mJ
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	1.40	2.80	$^\circ\text{C/W}$
Junction-to Ambient Thermal Resistance	$R_{\theta JA}$	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}	$V_{GS}=0V, I_D=250\mu A$	600	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=2.5A$	-	1.6	2.1	Ω
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$	-	-	10	μA
Gate Body Leakage	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=480V, I_D=5.0A$ $V_{GS}=10V$	-	22.5	-	nC
Gate-Source Charge	Q_{gs}		-	4.3	-	
Gate-Drain Charge	Q_{gd}		-	7.8	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=300V, I_D=5.0A$ $V_{GS}=10V, R_G=25\Omega$	-	11.8	15.8	ns
Turn-On Rise Time	t_r		-	9.8	15.2	
Turn-Off Delay Time	$t_{d(off)}$		-	30.6	46	
Turn-Off Fall Time	t_f		-	12	18.2	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1.0MHz$	-	712	860	pF
Output Capacitance	C_{oss}		-	67.6	78	
Reverse Transfer Capacitance	C_{rss}		-	6.8	9.8	
Source-Drain Diode						
Max. Diode Forward Current	I_S	-	-	-	5.0	A
Max.Pulsed Source Current	I_{SM}	-	-	-	20	A
Diode Forward Voltage	V_{SD}	$I_S=5.0A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_F=5.0A$ $di/dt=100A/us$	-	270	-	ns
Reverse Recovery Charge	Q_{rr}		-	2.0	-	μC

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)

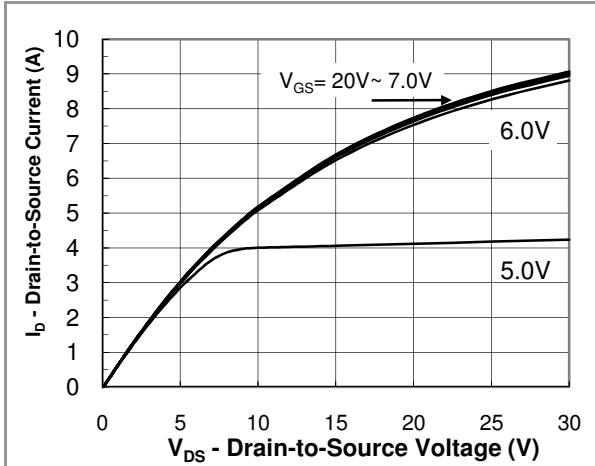


Fig.1 Output Characteristic

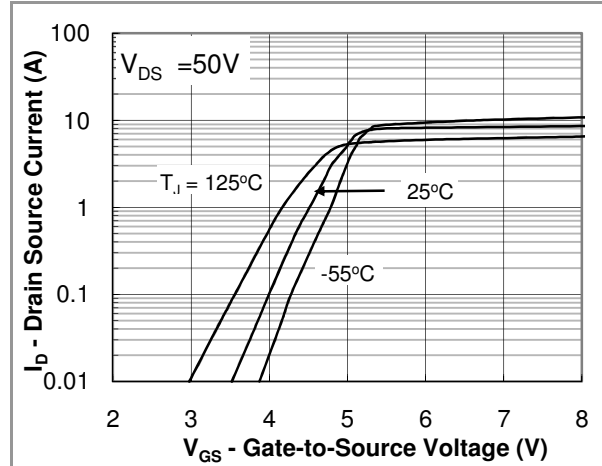


Fig.2 Transfer Characteristic

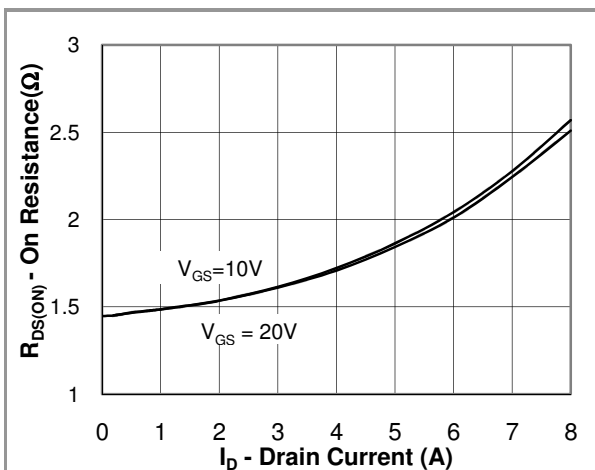


Fig.3 On Resistance vs Drain Current

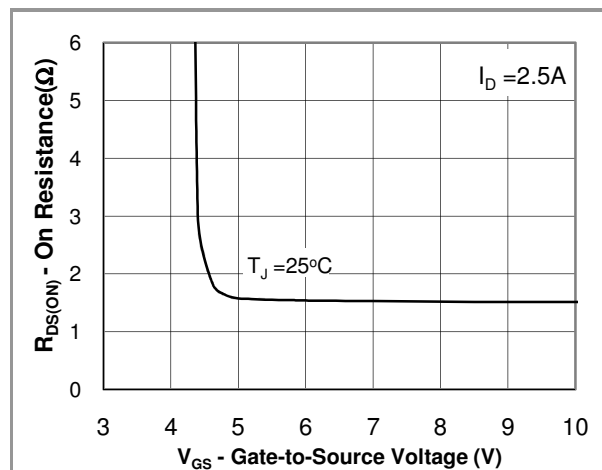


Fig.4 On Resistance vs Gate to Source Voltage

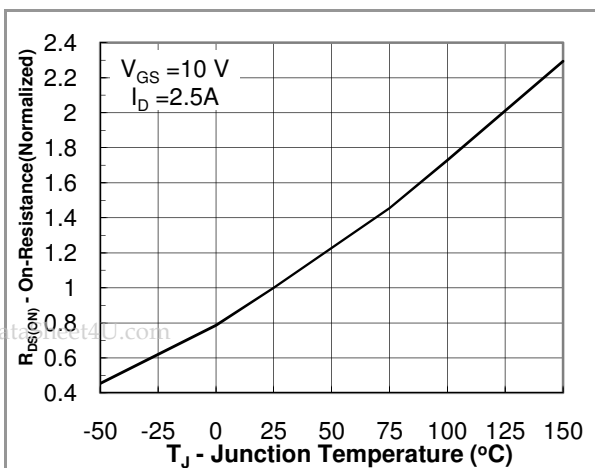


Fig.5 On Resistance vs Junction Temperature

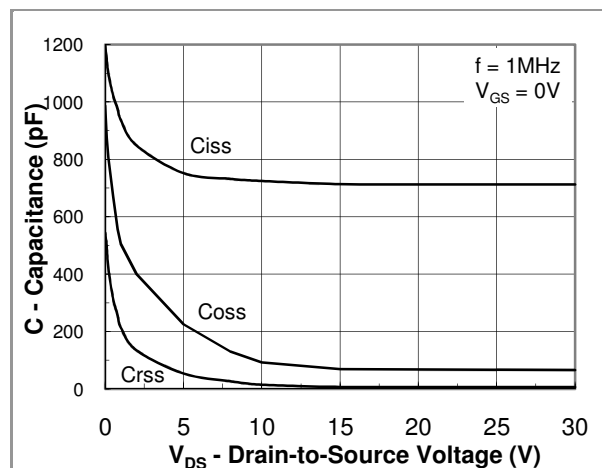


Fig.6 Capacitance

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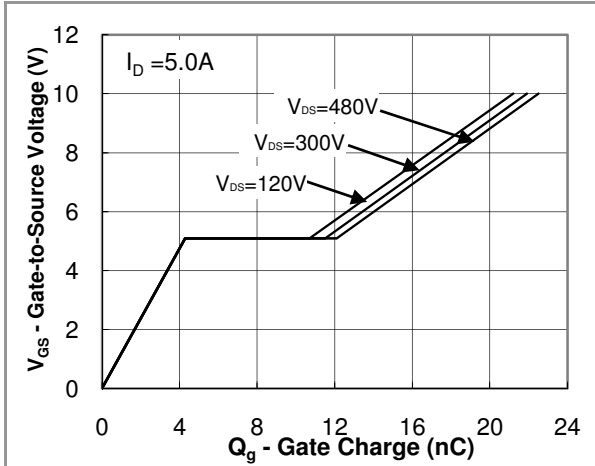


Fig. 7 Gate Charge Waveform

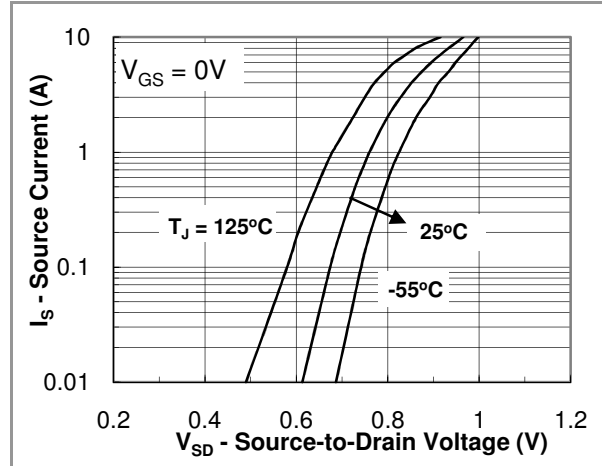


Fig. 8 Source-Drain Diode Forward Voltage

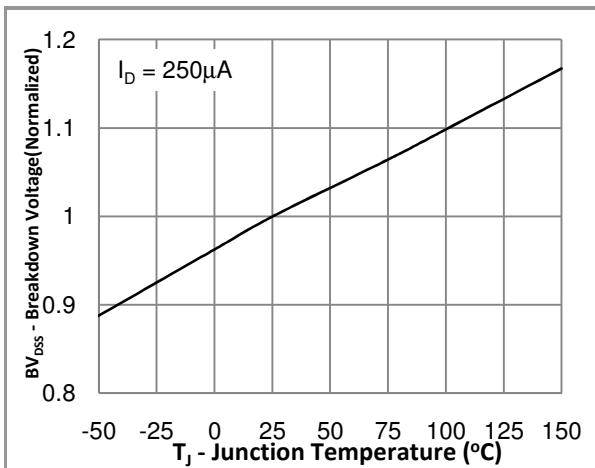


Fig. 9 Breakdown Voltage vs Junction Temperature



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