

PJP24N10 / PJF24N10

100V N-Channel Enhancement Mode MOSFET

FEATURES

- $R_{DS(ON)}$, $V_{GS}@10V, I_{DS}@30A=24m\Omega$
- Low On Resistance
- Excellent Gate Charge x $R_{DS(ON)}$ Product (FOM)
- Fully Characterized Avalanche Voltage and Current
- Specially Designed for AC Adapter, High-Frequency Switch and Synchronous Rectification
- Component are in compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

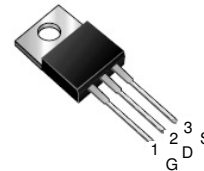
- Case: TO-220AB / ITO-220AB Molded Plastic
- Terminals : Solderable per MIL-STD-750, Method 2026

ORDERING INFORMATION

TYPE	MARKING	PACKAGE	PACKING
PJP24N10	P24N10	TO-220AB	50PCS/TUBE
PJF24N10	F24N10	ITO-220AB	50PCS/TUBE

TO-220AB / ITO-220AB

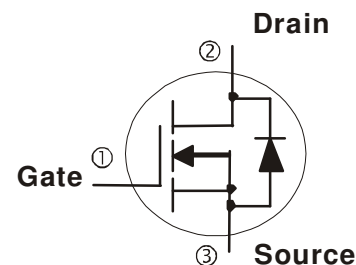
TO-220AB



ITO-220AB



INTERNAL SCHEMATIC DIAGRAM



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

PARAMETER	Symbol	PJP24N10	PJF24N10	Units
Drain-Source Voltage	V_{DS}	100		V
Gate-Source Voltage	V_{GS}	± 20		V
Continuous Drain Current	I_D	42	42	A
Pulsed Drain Current ¹⁾	I_{DM}	160	160	A
Maximum Power Dissipation Derating Factor	P_D	89 0.71	32 0.42	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		$^\circ\text{C}$
Avalanche Energy with Single Pulse $I_{AS}=17A, V_{DD}=80V, L=4.7mH$	E_{AS}	680		mJ
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	1.4	3.8	$^\circ\text{C/W}$
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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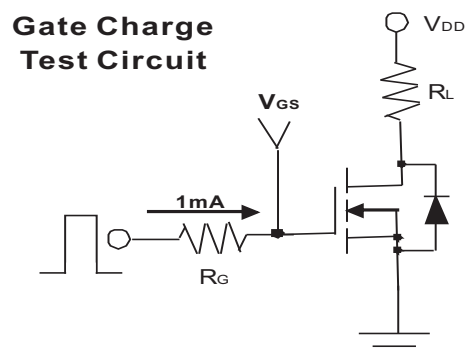
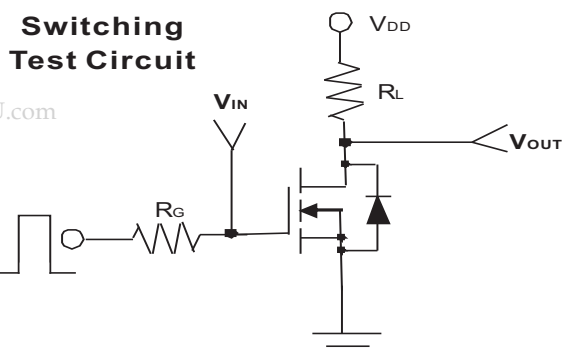
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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	100	-	-	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 = 30A	-	18.6	24	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V	-	-	1	uA
Gate Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Dynamic						
Total Gate Charge	Q _g	V _{DS} =50V, I _D =30A, V _{GS} =10V	-	60.6	78	nC
Gate-Source Charge	Q _{gs}		-	8.2	-	
Gate-Drain Charge	Q _{gd}		-	21.4	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =50V, I _D =1A V _{GS} =10V, R _G =1.6Ω	-	18.4	26	ns
Turn-On Rise Time	t _r		-	9.2	12	
Turn-Off Delay Time	t _{d(off)}		-	56	68	
Turn-Off Fall Time	t _f		-	18.8	26	
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V f=1.0MH _z	-	1450	3200	pF
Output Capacitance	C _{oss}		-	155	200	
Reverse Transfer Capacitance	C _{rss}		-	110	165	
Source-Drain Diode						
Max. Diode Forward Current	I _S	-	-	-	42	A
Diode Forward Voltage	V _{SD}	I _S =30A , V _{GS} =0V	-	-	1.3	V

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)

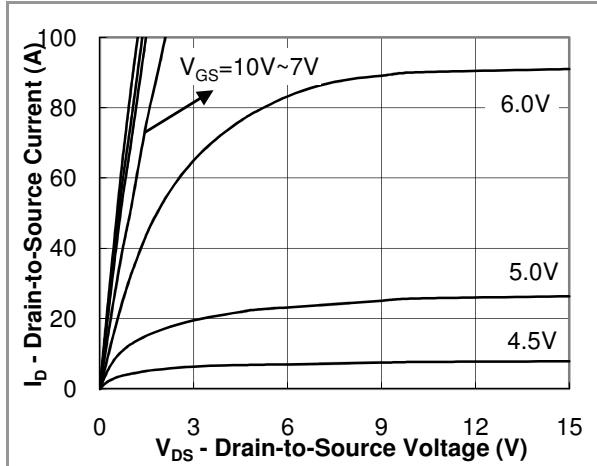


Fig.1 Output Characteristic

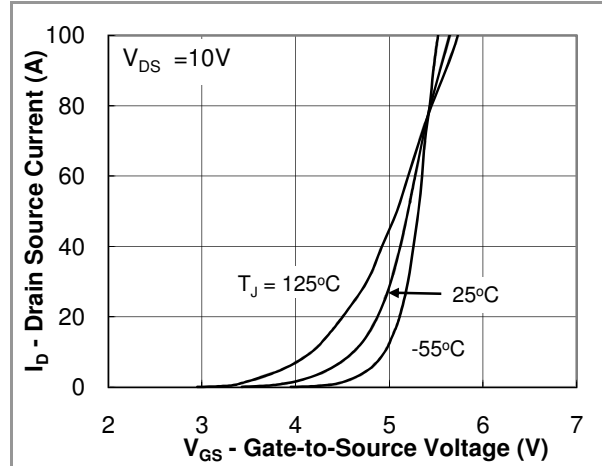


Fig.2 Transfer Characteristic

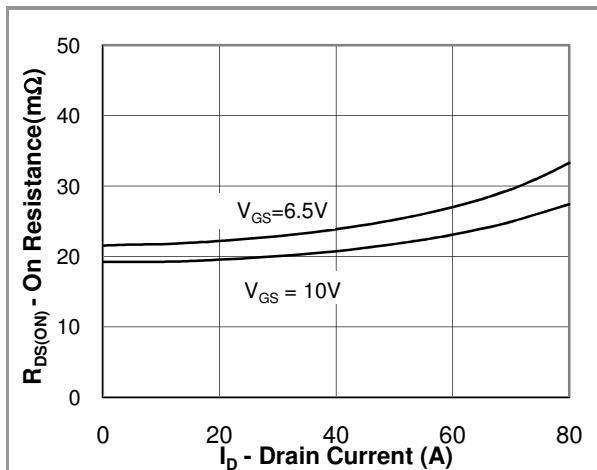


Fig.3 On Resistance vs Drain Current

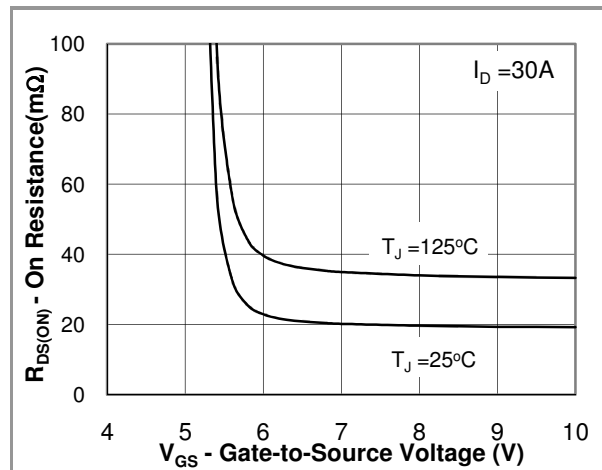


Fig.4 On Resistance vs Gate to Source Voltage

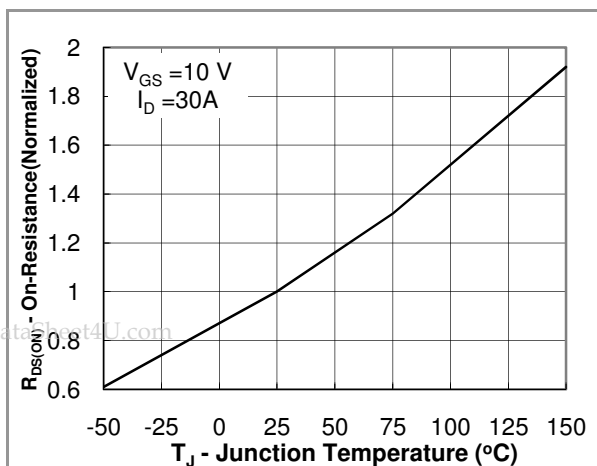


Fig.5 On Resistance vs Junction Temperature

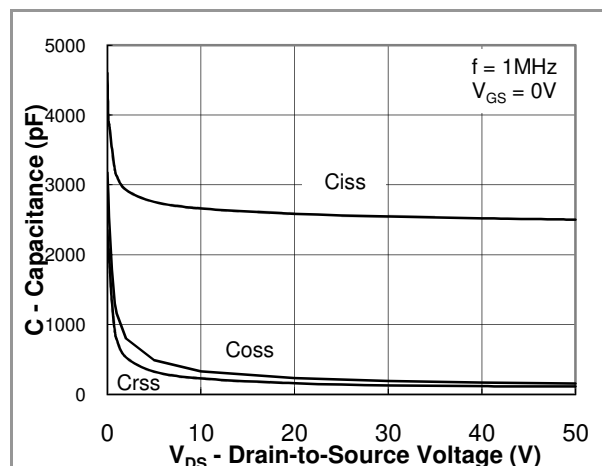


Fig.6 Capacitance

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

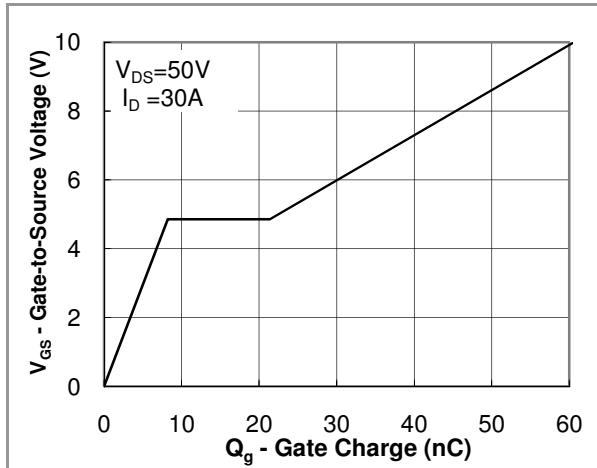


Fig. 7 Gate Charge Waveform

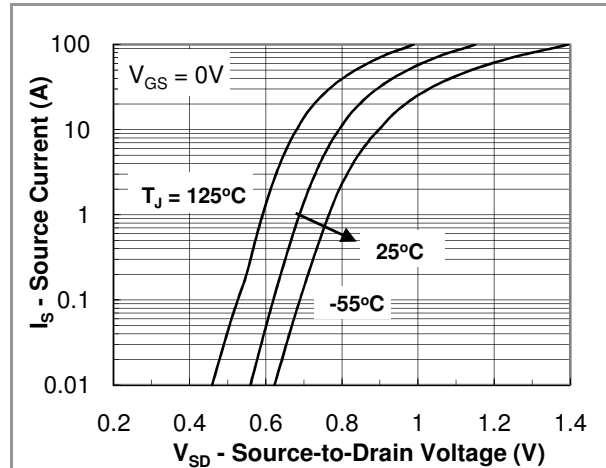


Fig. 8 Source-Drain Diode Forward Voltage

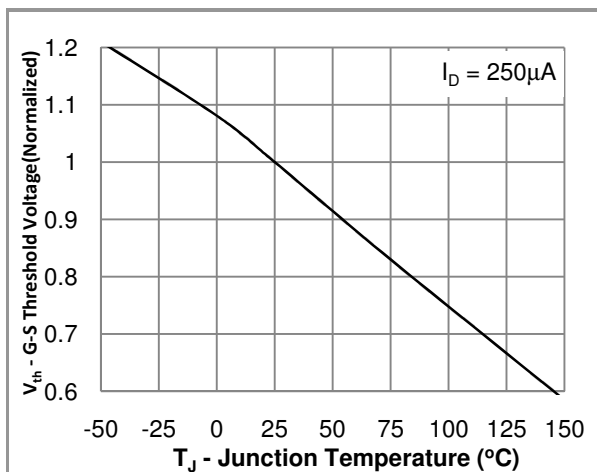


Fig. 9 Breakdown Voltage vs Junction Temperature



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