

800V, 7A N-Channel MOSFET

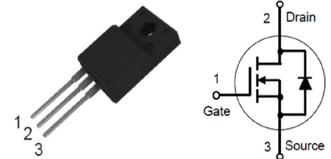
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Features

- Low on-state resistance
- Fast switching
- Low gate charge and low CRSS
- Fully characterized avalanche voltage and current
- Specially designed for AC adapter, battery charger and SMPS

**RoHS
Compliant**



Specifications

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

Maximum Ratings and Electrical Characteristics

Rating at 25°C unless otherwise specified.
Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristics	Symbol	Values	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current @ $T_c = 25^\circ\text{C}$	I_D	7	A
Pulsed Drain Current (Note 1)	I_{DM}	28	A
Maximum Power Dissipation @ $T_c = 25^\circ\text{C}$	P_D	50	W
Derating Factor		0.4	
Avalanche Energy with Single Pulse $I_{AS}=7\text{A}$, $V_{DD}=123\text{V}$, $L=18.5\text{mH}$	E_{AS}	450	mJ
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

Note 1. Maximum DC current limited by the package.

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	$B_{V_{DS}}$	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	800	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	2	-	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$, $I_D=3.5\text{A}$	-	1.39	1.65	Ω
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=800\text{V}$, $V_{GS}=0\text{V}$	-	-	1	μA
Gate Body Leakage Current	I_{GSS}	$V_{GS}=+30\text{V}$, $V_{DS}=0\text{V}$	-	-	± 100	nA

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Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Dynamic						
Total Gate Charge	Qg	V _{DS} =640V, I _D =7A V _{GS} =10V	-	26.8	-	nC
Gate-Source Charge	Qgs		-	7.6	-	
Gate-Drain Charge	Qgd		-	8.3	-	
Turn-On Delay Time	td(on)	V _{DD} =400V, I _D =7A V _{GS} =10V, R _G =25Ω	-	28.2	36.8	ns
Turn-On Rise Time	tr		-	72.8	88	
Turn-Off Delay Time	td(off)		-	68.4	82.6	
Turn-Off Fall Time	tf		-	32	38.4	
Input Capacitance	Ciss	V _{DS} =25V, V _{GS} =0V f=1 MHz	-	1150	-	pF
Output Capacitance	Coss		-	120	-	
Reverse Transfer Capacitance	Crss		-	6.5	-	
Source-Drain Diode						
Max. Diode Forward Voltage	V _S	-	-	-	7	A
Max. Pulsed Source Current	I _{SM}	-	-	-	28	A
Diode Forward Voltage	V _{SD}	I _S =7A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	trr	V _{GS} =0V, I _S =7A	-	195	-	ns
Reverse Recovery Charge	Q _{rr}	di/dt=100A/μs	-	0.62	-	uC

Note: Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%

Rating and Characteristic Curves

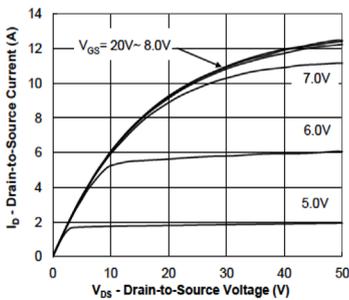


Fig.1 Output Characteristic

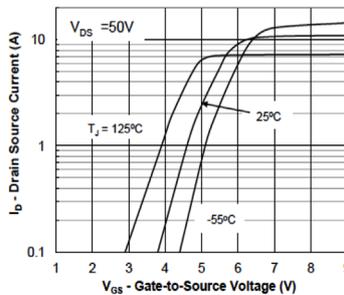


Fig.2 Transfer Characteristic

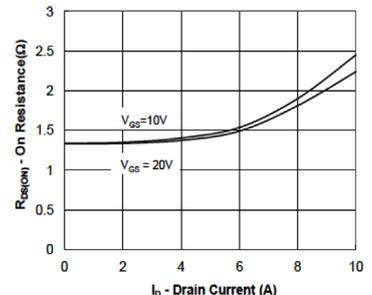


Fig.3 On-Resistance vs Drain Current

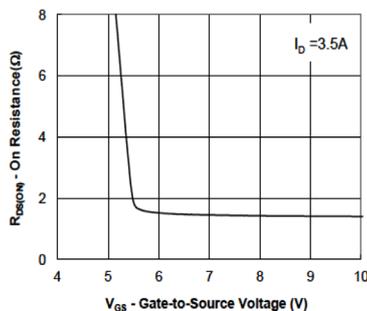


Fig.4 On-Resistance vs Gate to Source Voltage

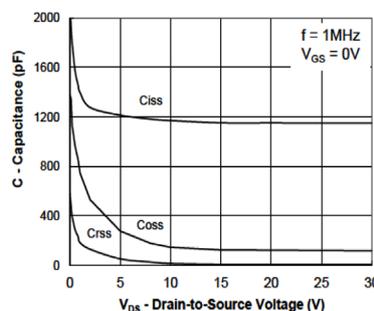


Fig.5 Capacitance Characteristic

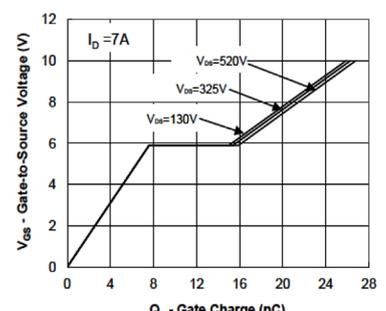


Fig.6 Gate Charge Characteristic

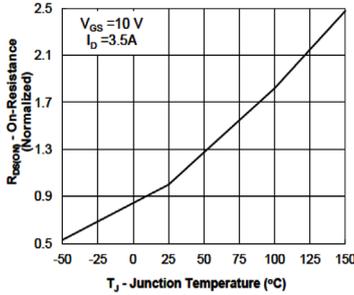


Fig.7 On-Resistance vs Junction Temperature

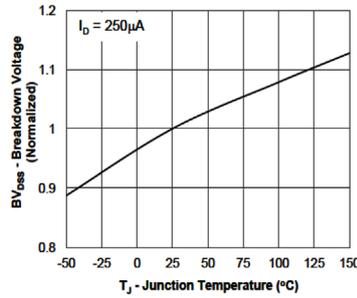


Fig.8 Breakdown Voltage vs Junction Temperature

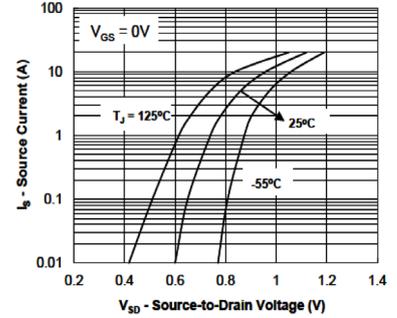


Fig.9 Body Diode Forward Voltage Characteristic

Part Number Table

Description	Part Number
800V, 7A, N-Channel MOSFET, ITO-220AB	MP000031

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