N-Channel Enhancement Mode Power MOSFET

RoHS COMPLIANT

Features

V_{DS} = 60V,

I_D = 150A

$R_{DS(ON)}$ @V_{GS}= 10V, TYP 2.6mΩ

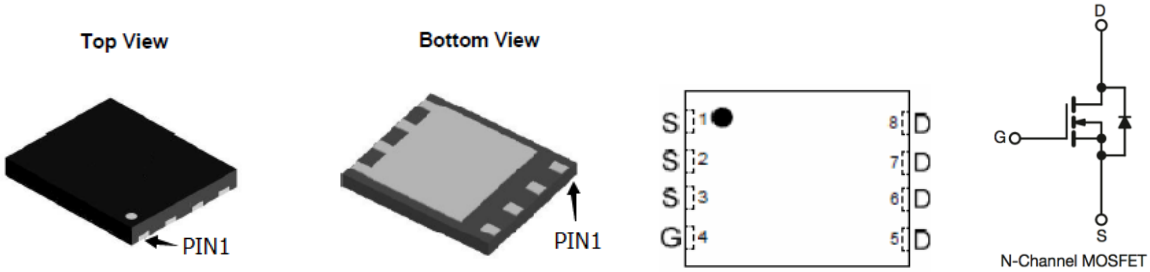
$R_{DS(ON)}$ @V_{GS}= 4.5V, TYP 3.8mΩ

General Description

• Notebook AC-in load switch

• Battery protection charge/discharge

Pin Configurations



TDFN5*6-8L

Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_C=25°C	I_D	150	A
	T_C=70°C		120	
Drain Current (Pulse) *B		I_{DM}	200	A
Power Dissipation	T_C=25°C	P_D	83	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

Thermal Resistance Ratings

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	t ≤ 10 s	R_{thJA}	18	23	°C/W
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	1	1.5	

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- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= 250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= 250μA	1	1.7	2.5	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	--	2.6	3.3	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 20A	--	3.8	4.8	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= 1A , V_{GS}=0V	--	0.77	1.2	V
Diode Forward Current *AC	I_S	T_C =25°C	--	--	120	A
Switching						
Total Gate Charge	Q_g	V_{DS} = 30 V, V_{GS} = 10 V, I_D = 10 A	--	45	--	nC
Gate-Source Charge	Q_{gs}		--	9	--	nC
Gate-Drain Charge	Q_{gd}		--	5	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 30 V, R_L = 3Ω, I_D =10 A, V_{GEN} = 10 V, R_g = 1Ω	--	15	--	ns
Turn-on Rise Time	t_r		--	9	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	32	--	ns
Turn-Off Fall Time	t_f		--	8	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V, f=1.0MHz	--	4220	--	pF
Output Capacitance	C_{oss}		--	1406	--	pF
Reverse Transfer Capacitance	C_{rss}		--	113	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating, Package limited 120A.

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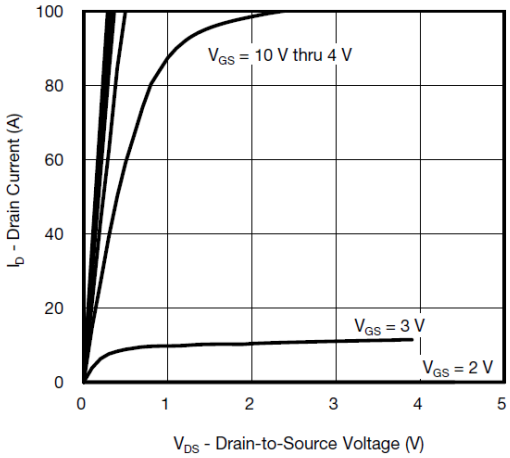
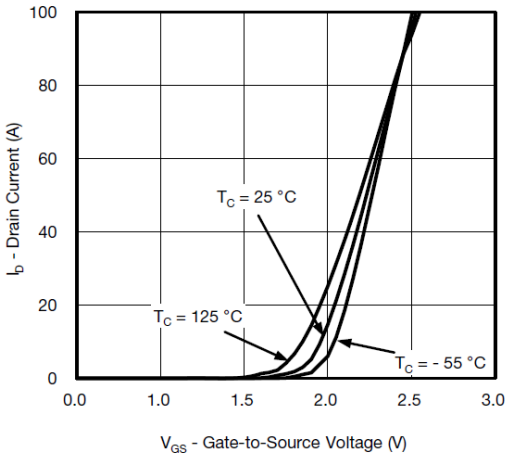
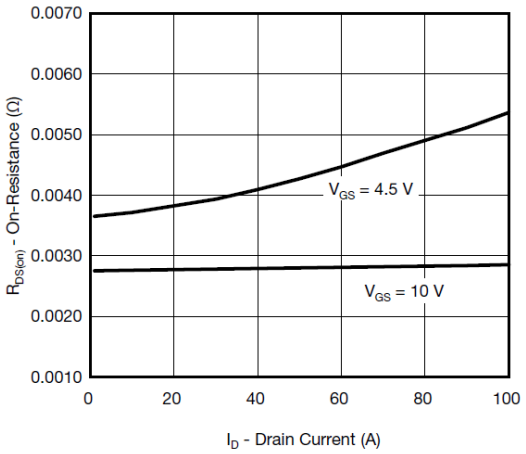
- **Typical Performance Characteristics（(TJ = 25 °C, unless otherwise noted)）**



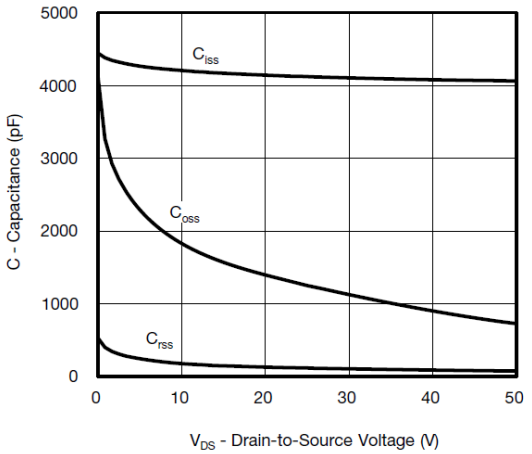
Output Characteristics



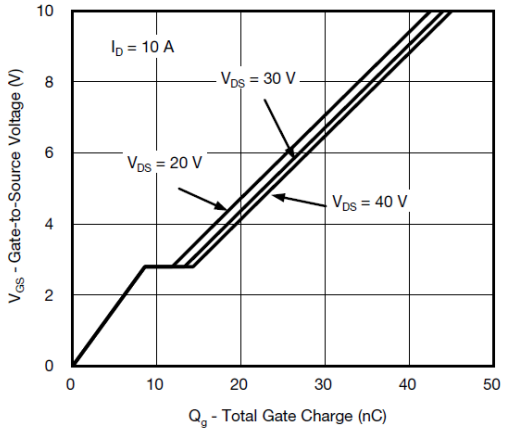
Transfer Characteristics



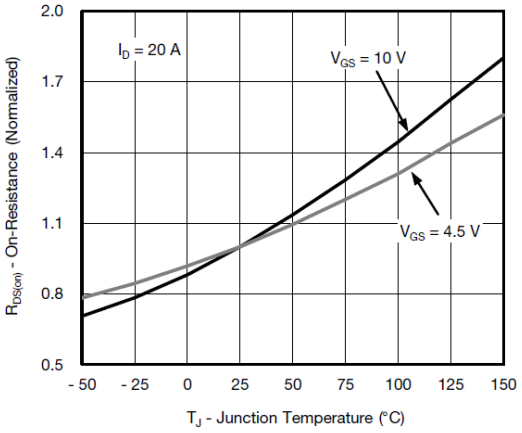
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

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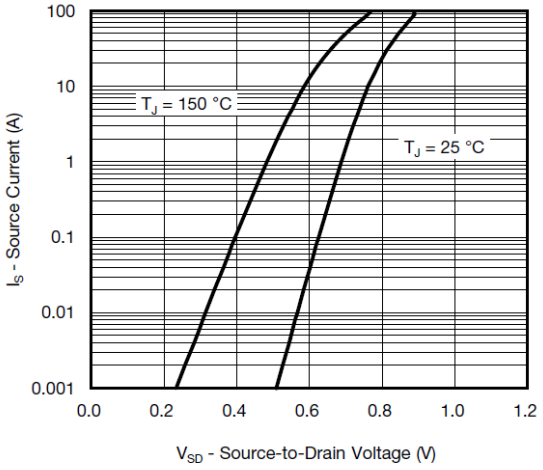
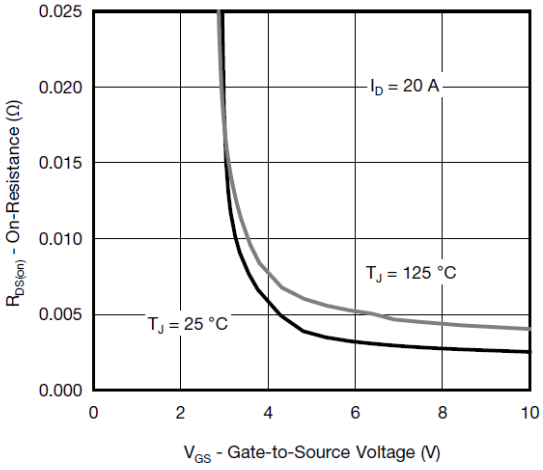
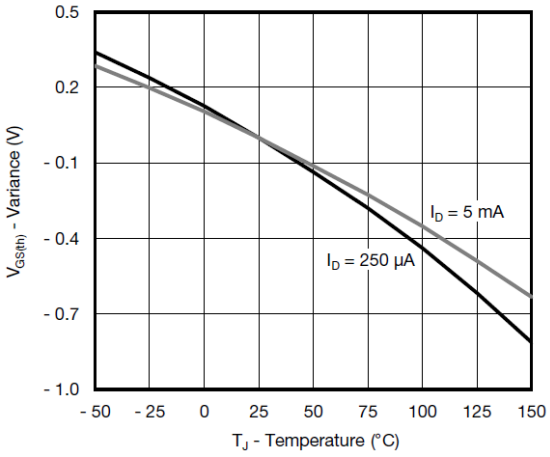


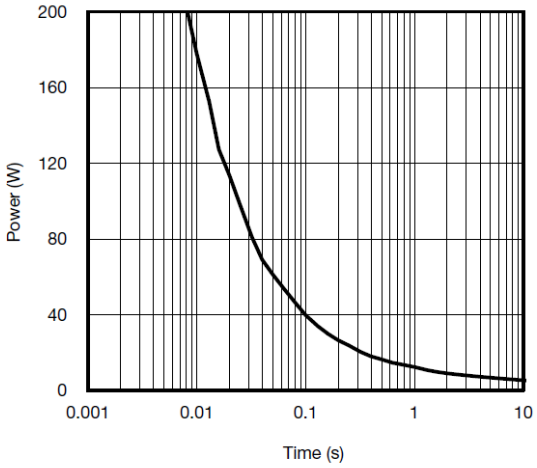
Source-Drain Diode Forward Voltage



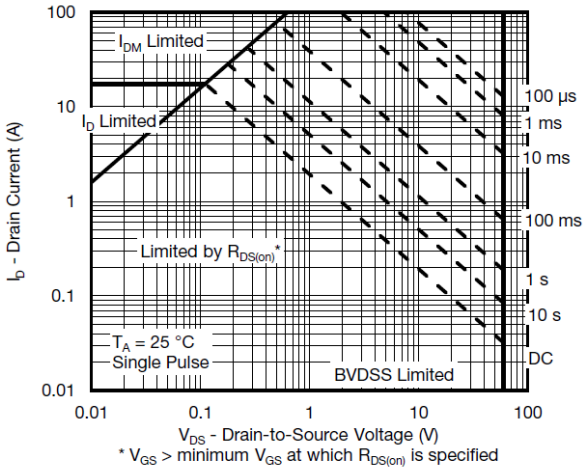
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

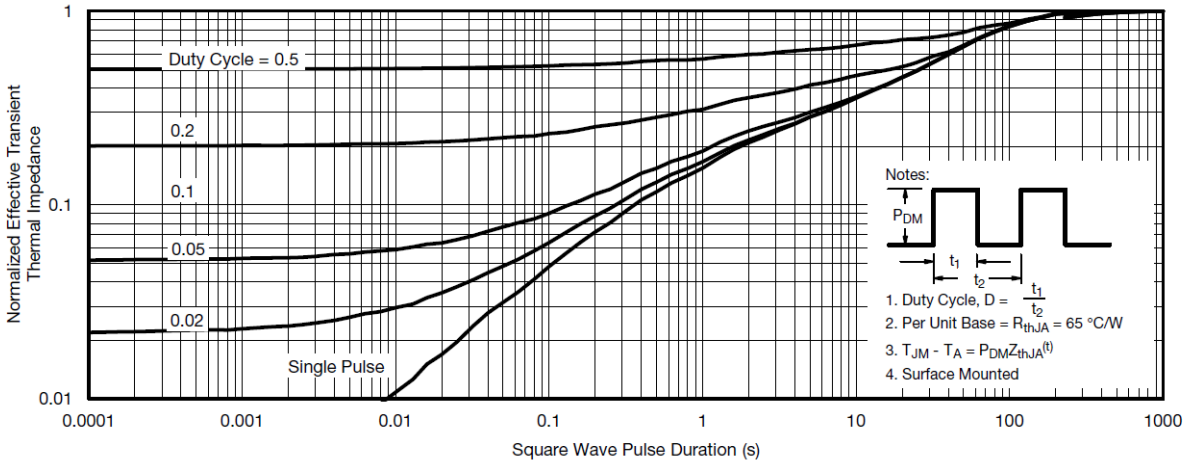


Single Pulse Power, Junction-to-Ambient

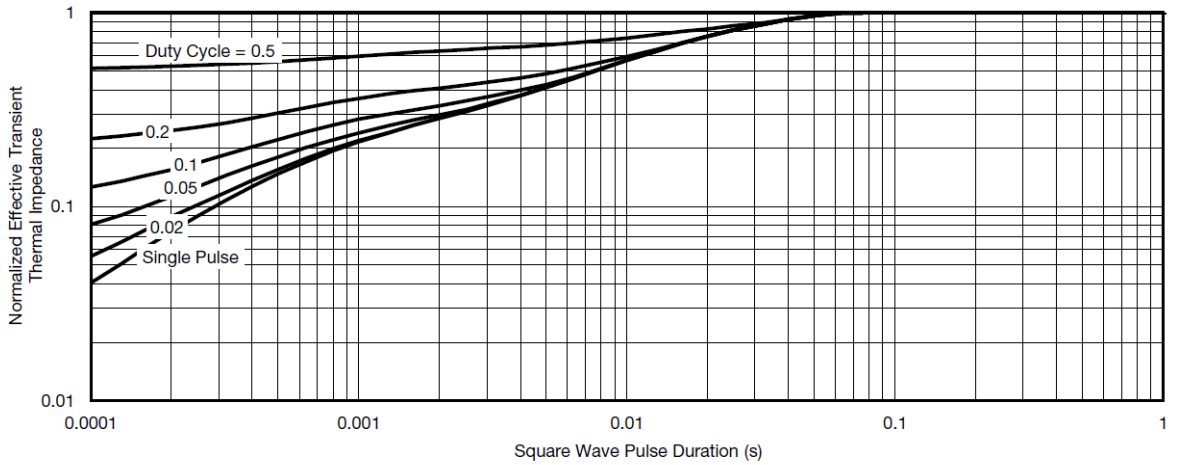


Safe Operating Area, Junction-to-Ambient

N-Channel Enhancement Mode Power MOSFET



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

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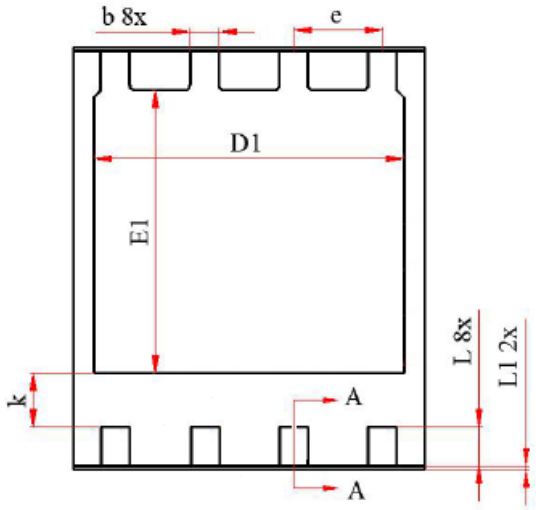
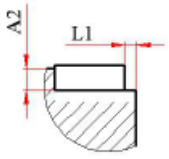
RoHS COMPLIANT

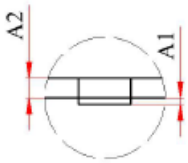
- **Package Information**



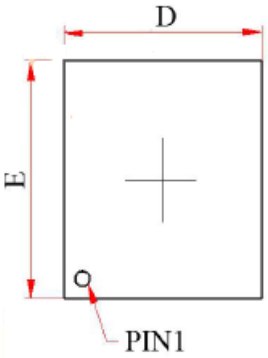
BOTTOM VIEW



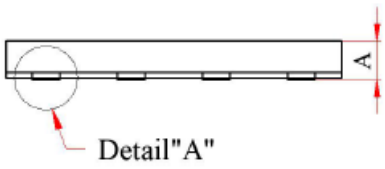
Section A-A



Detail "A"



TOP VIEW



SIDE VIEW

Symbol	Dimension In Millimeters			Dimension In Inches		
	Normal	Min	Max	Normal	Min	Max
A	--	0.500	0.600	--	0.020	0.024
A1	--	--	0.005	--	--	0.000
A2	--	0.100	0.250	--	0.004	0.010
D	5.000	4.900	5.100	0.197	0.193	0.201
E	6.000	5.900	6.100	0.236	0.232	0.240
D1	4.420	4.320	4.520	0.174	0.170	0.178
E1	4.020	3.920	4.120	0.158	0.154	0.162
b	0.410	0.360	0.460	0.016	0.014	0.018
L	0.560	0.510	0.610	0.022	0.020	0.024
L1	0.050	0.010	0.090	0.002	0.000	0.004
k	0.760 REF			0.030 REF		
e	1.270 BSC			0.050 BSC		