P-Channel Enhancement Mode Power MOSFET

Features

V_{DS} = -40V,

I_D = -100A

$R_{DS(ON)}$ @V_{GS}= -10V, TYP 4.3mΩ

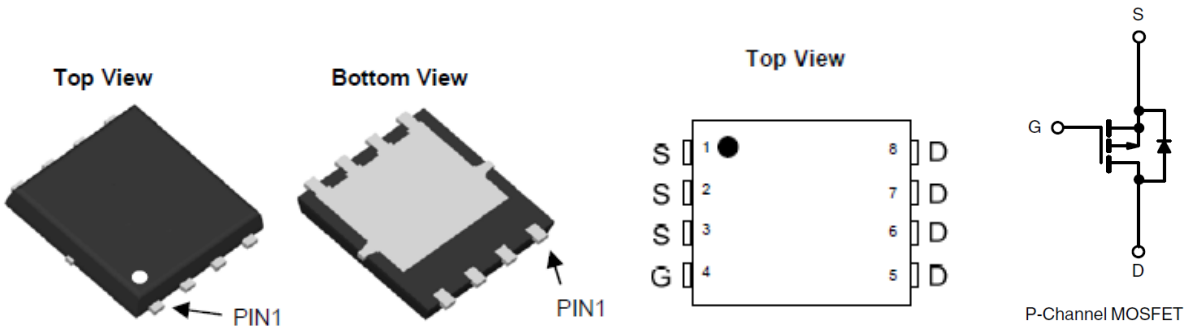
$R_{DS(ON)}$ @V_{GS}= -4.5V, TYP 5.8mΩ

General Description

• Load Switch

• Power Management

Pin Configurations



DFN5*6-8L

Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	-40	V
Gate-Source Voltage		V_{GSS}	±25	V
Drain Current (Continuous) *C	Tc=25°C	I_D	-100	A
	Tc=100°C		-66	
Drain Current (Pulse) *B		I_{DM}	400	A
Power Dissipation	Tc=25°C	P_D	104	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient *A	t≤10s	R_{thJA}	20	°C/W
Maximum Junction-to-Case (Drain) *A	Steady State	R_{thJC}	1.2	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static *D						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -32V, V_{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS} = -250μA	-1	--	-2.5	V
Gate Leakage Current	I_{GSS}	V_{GS} = ±25V, V_{DS} = 0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -30A	--	4.3	5.6	mΩ
	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -20A	--	5.8	7.5	mΩ
Diode Forward Voltage	V_{SD}	I_{SD} = -1A , V_{GS} = 0V	--	--	-1.2	V
Diode Forward Current *AC	I_S	T_C = 25°C	--	--	-87	A
Switching						
Total Gate Charge	Q_g	V_{GS} = -10V, V_{DS} = -20V, I_D = -20A	--	43	--	nC
Gate-Source Charge	Q_{gs}		--	4	--	nC
Gate-Drain Charge	Q_{gd}		--	8	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -20V, R_L = 1Ω, I_D = -20A, V_{GEN} = -10V, R_g = 1Ω	--	18	--	ns
Turn-on Rise Time	t_r		--	20	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	43	--	ns
Turn-Off Fall Time	t_f		--	20	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS} = -20V, V_{GS} = 0 V, f = 1 MHz	--	5303	--	pF
Output Capacitance	C_{oss}		--	420	--	pF
Reverse Transfer Capacitance	C_{rss}		--	316	--	pF

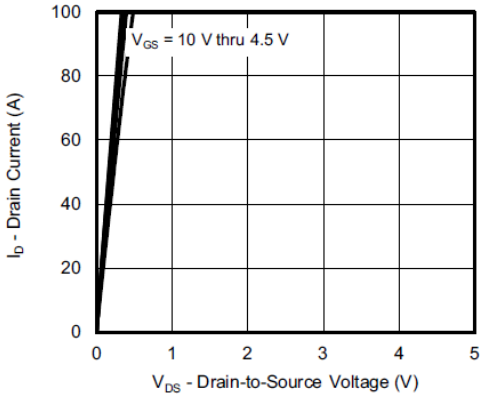
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

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

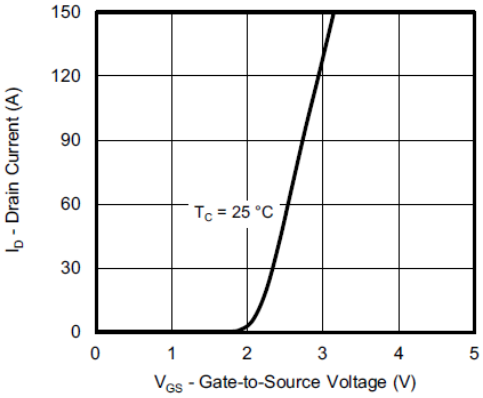
C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating,Package limited 100A.

D: Pulse Test：Pulse Wide≤ 300μs，Duty Cycle≤ 2%.

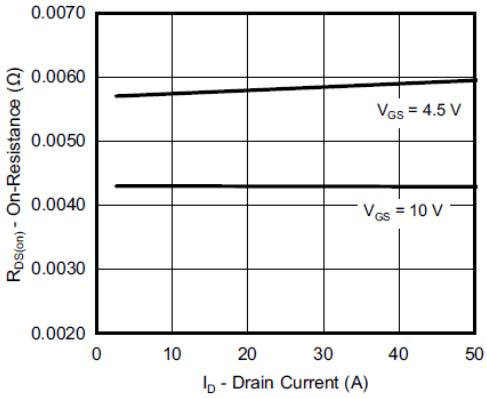
- **Typical Performance Characteristics（(TJ = 25 °C, unless otherwise noted)）**



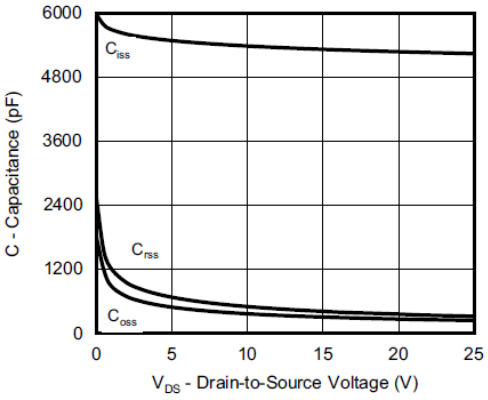
Output Characteristics



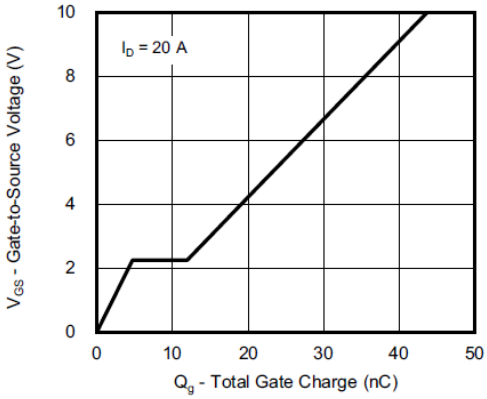
Transfer Characteristics



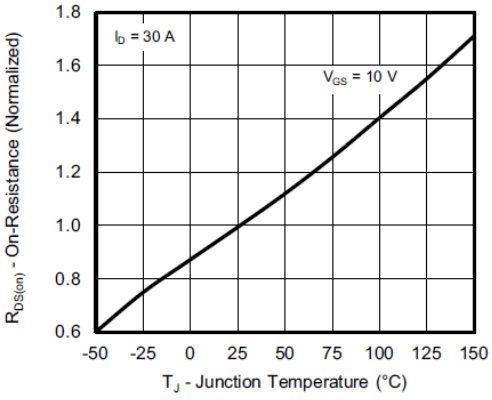
On-Resistance vs. Drain Current and Gate Voltage



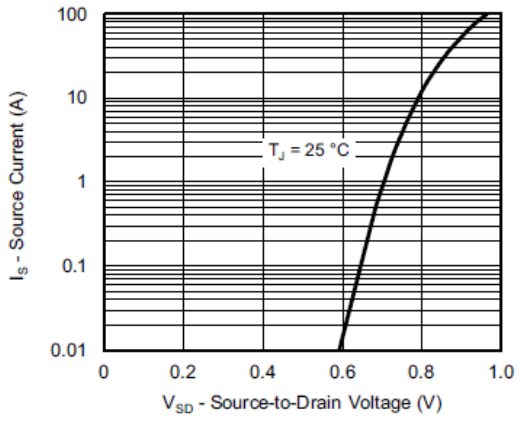
Capacitance



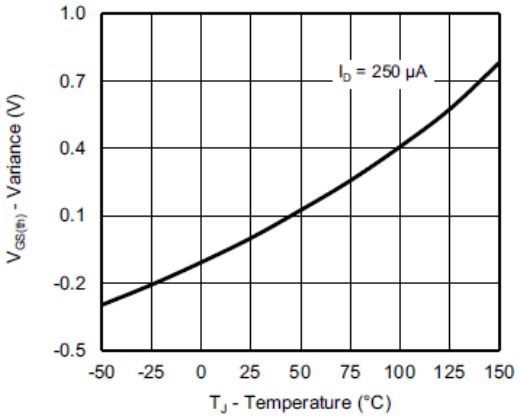
Gate Charge



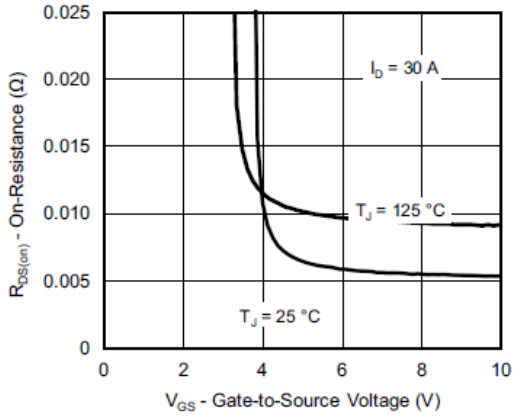
On-Resistance vs. Junction Temperature



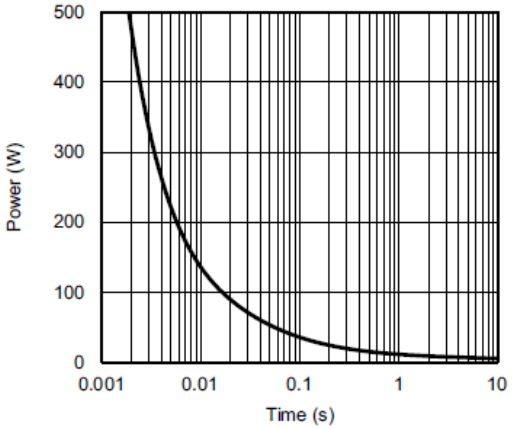
Source-Drain Diode Forward Voltage



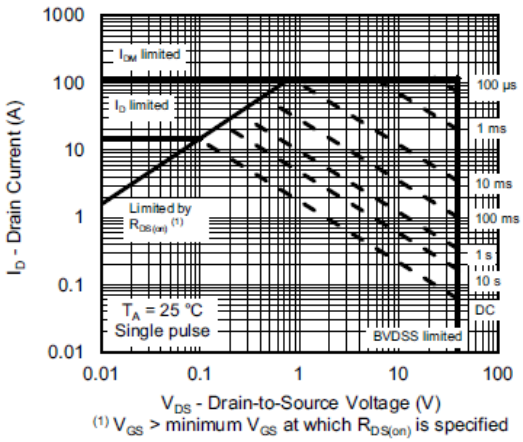
Threshold Voltage



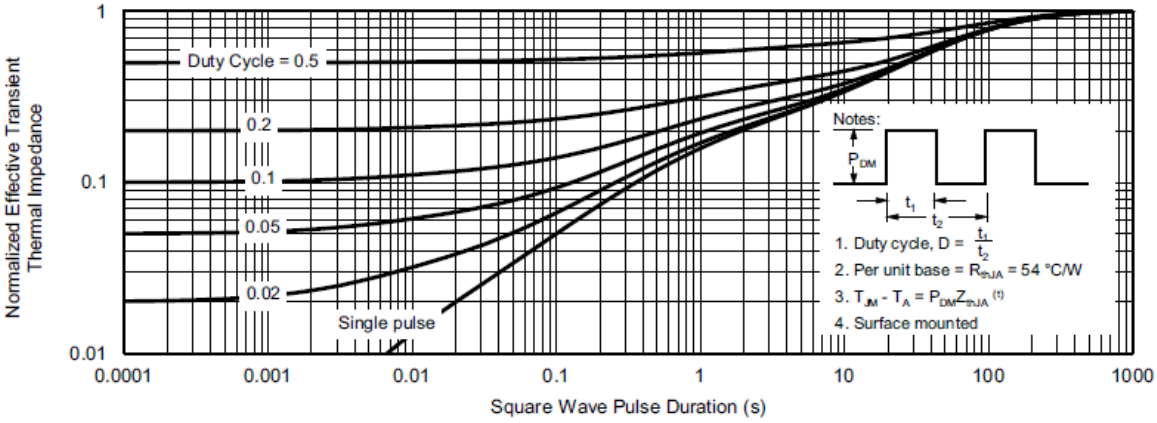
On-Resistance vs. Gate-to-Source Voltage



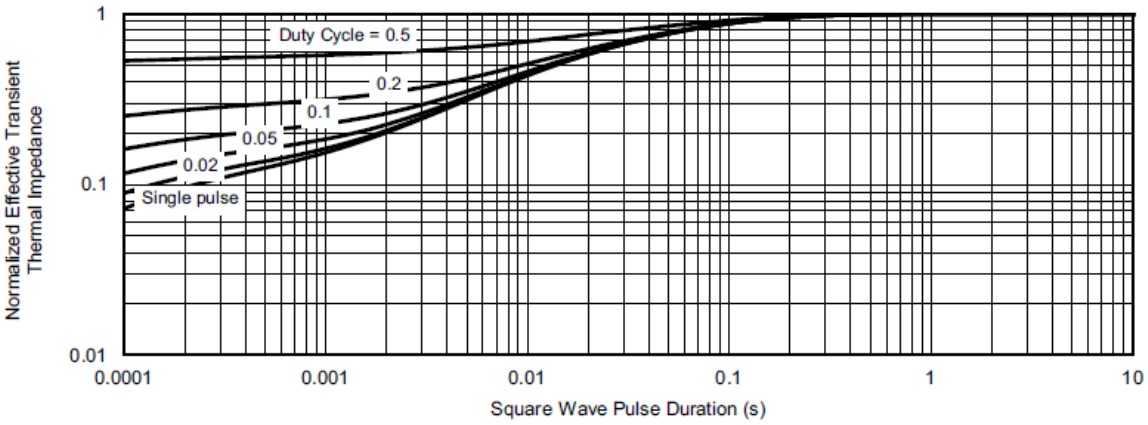
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient

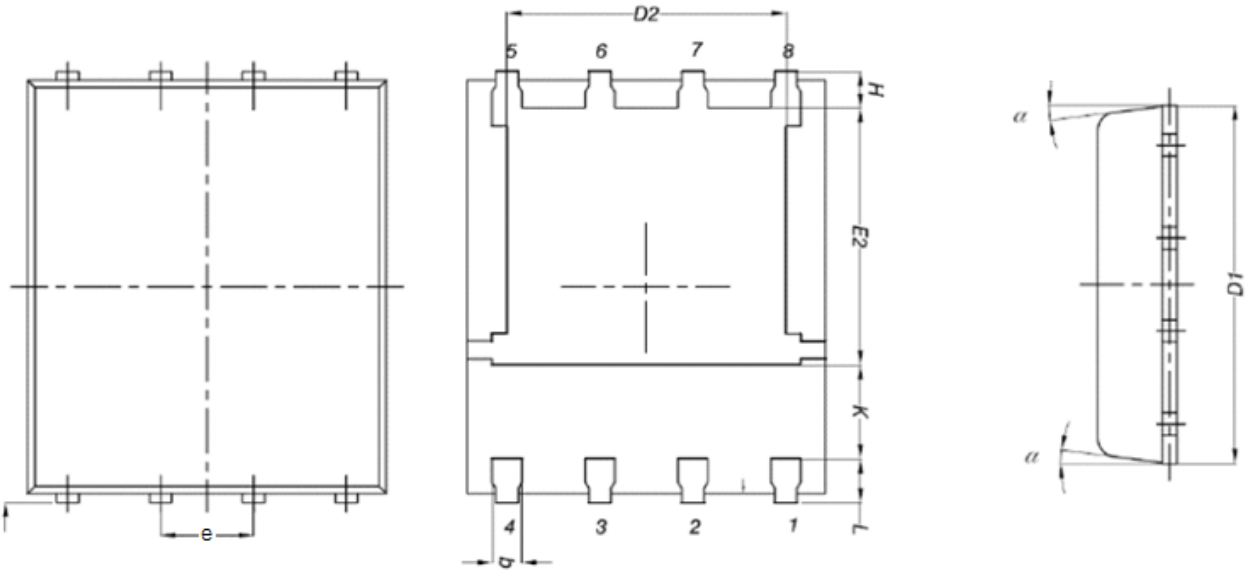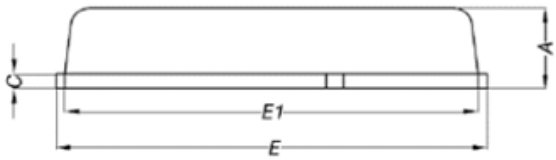


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

- **Package Information**





DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.8	--	1.1
b	0.2	--	0.51
C	0.15	--	0.35
D1	4.8	--	5.3
D2	3.61	--	4.4
E	5.85	--	6.3
E1	5.4	--	6.1
E2	3.3	--	4.3
e	--	1.27	--
H	0.41	--	0.8
K	1.1	--	1.5
L	0.34	--	0.74
a	0°	--	14°

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