N-Channel Enhancement Mode Power MOSFET

● Features

V_{DS} = 30V,

I_D = 68A

$R_{DS(ON)}$ @V_{GS}= 10V, TYP 2.9mΩ

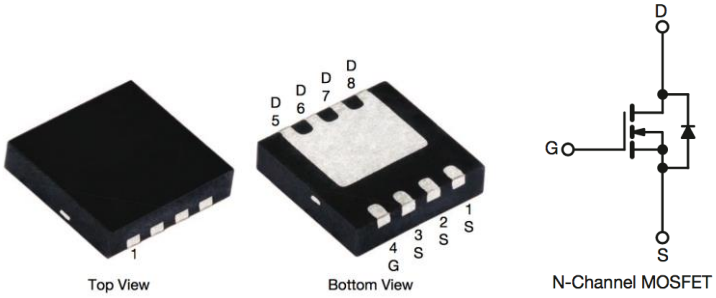
$R_{DS(ON)}$ @V_{GS}= 4.5V, TYP 4.8mΩ

● General Description

• load switch

• battery protection applications

● Pin Configurations



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● Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_C=25°C	I_D	68	A
	T_C=70°C		54.5	
Drain Current (Pulse) *B		I_{DM}	150	A
Power Dissipation	T_C=25°C	P_D	26	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

● Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	t ≤ 10s	R_{thJA}	34	°C/W
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	4.8	

- **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	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= 250μA	1	1.6	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	--	2.9	4	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 10A	--	4.8	6	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= 1A , V_{GS}=0V	--	0.75	1.2	V
Diode Forward Current *AC	I_S	T_C =25°C	--	--	34.7	A
Switching						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS} = 24V, I_D = 27A	--	86	--	nC
Gate-Source Charge	Q_{gs}		--	9.2	--	nC
Gate-Drain Charge	Q_{gd}		--	18.6	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, R_L = 1.11Ω, R_g = 4.7Ω, ID = 13.5A	--	5.7	--	ns
Turn-on Rise Time	t_r		--	14	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	63.7	--	ns
Turn-Off Fall Time	t_f		--	28.4	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V, f=1.0MHz	--	3690	--	pF
Output Capacitance	C_{oss}		--	530	--	pF
Reverse Transfer Capacitance	C_{rss}		--	459	--	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 40A

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

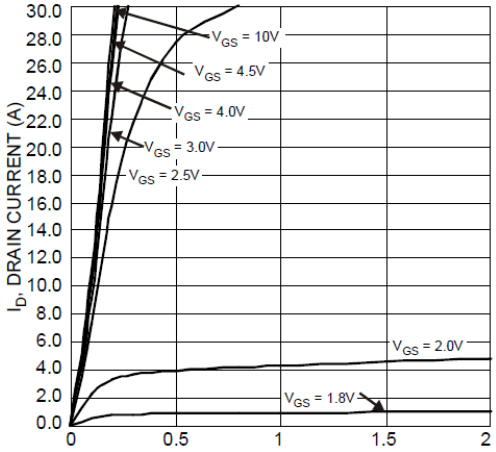

Figure 1 Typical Output Characteristic

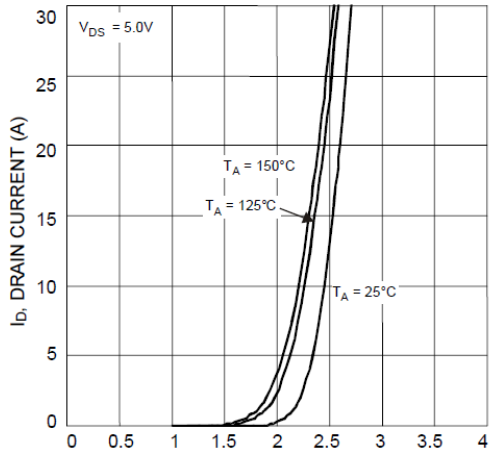

Figure 2 Typical Transfer Characteristics

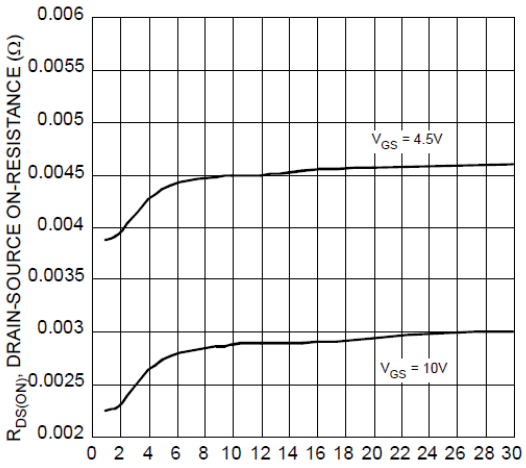

Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

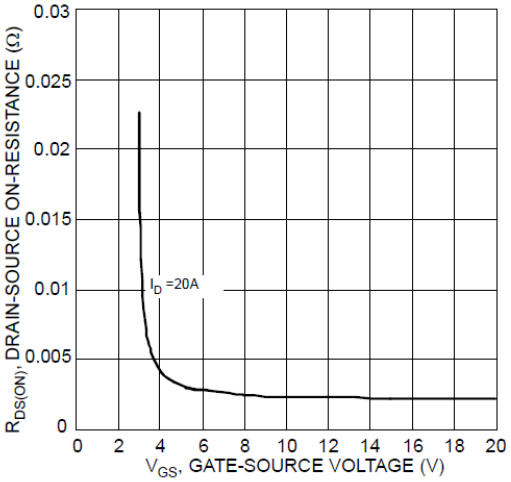

Figure 4 Typical Transfer Characteristic

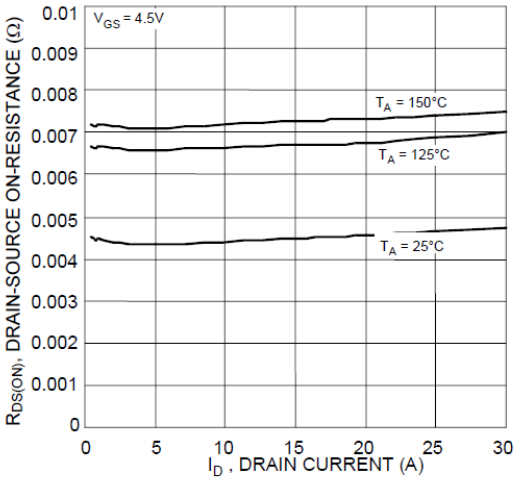

Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

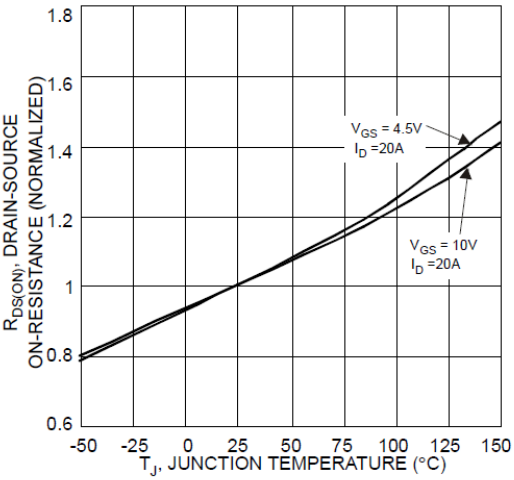

Figure 6 On-Resistance Variation with Temperature

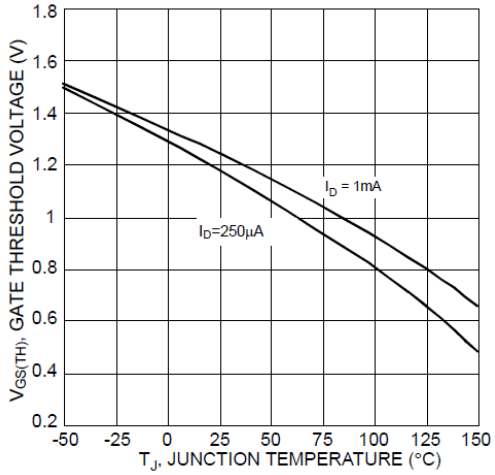

Figure 7 Gate Threshold Variation vs. Junction Temperature

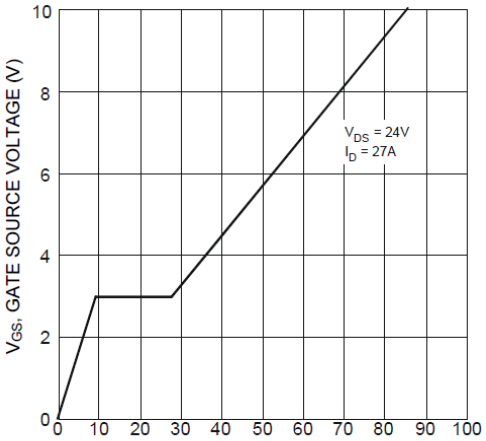

Figure 8 Gate Charge

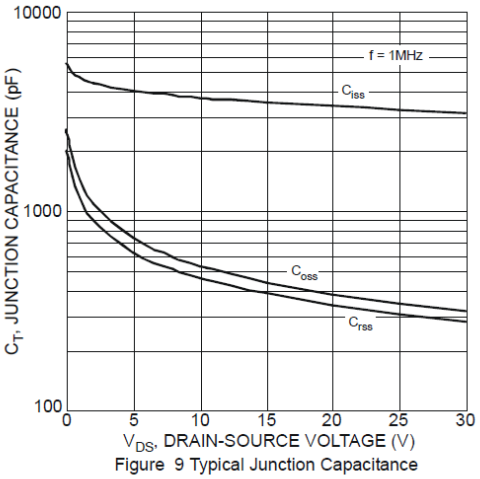

Figure 9 Typical Junction Capacitance

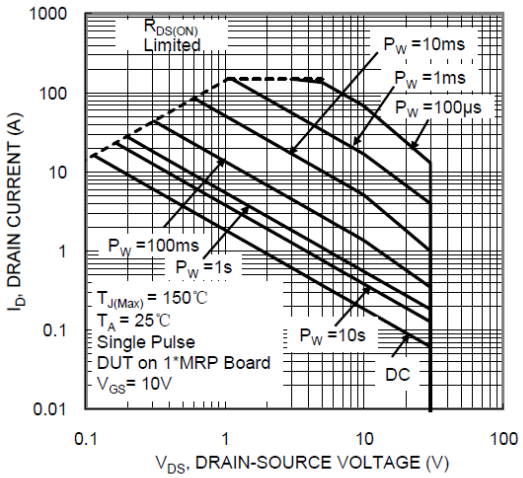

Figure 10. SOA, Safe Operation Area

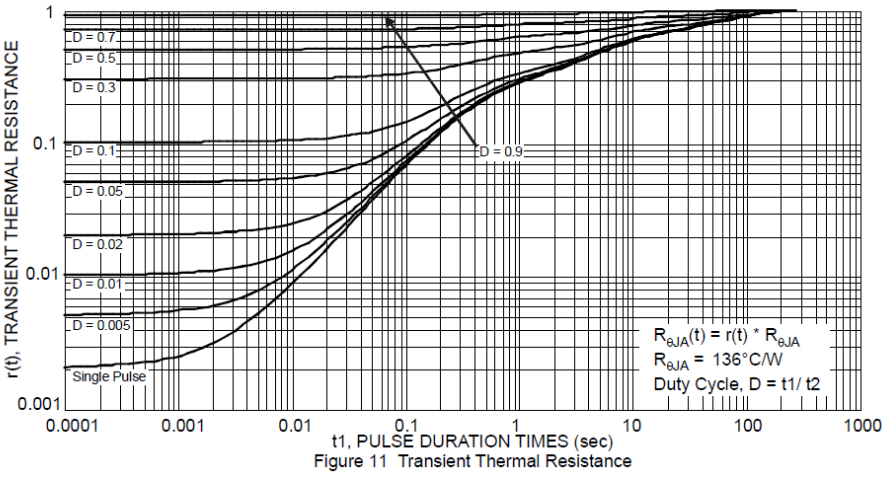

Figure 11 Transient Thermal Resistance

- **Package Information**

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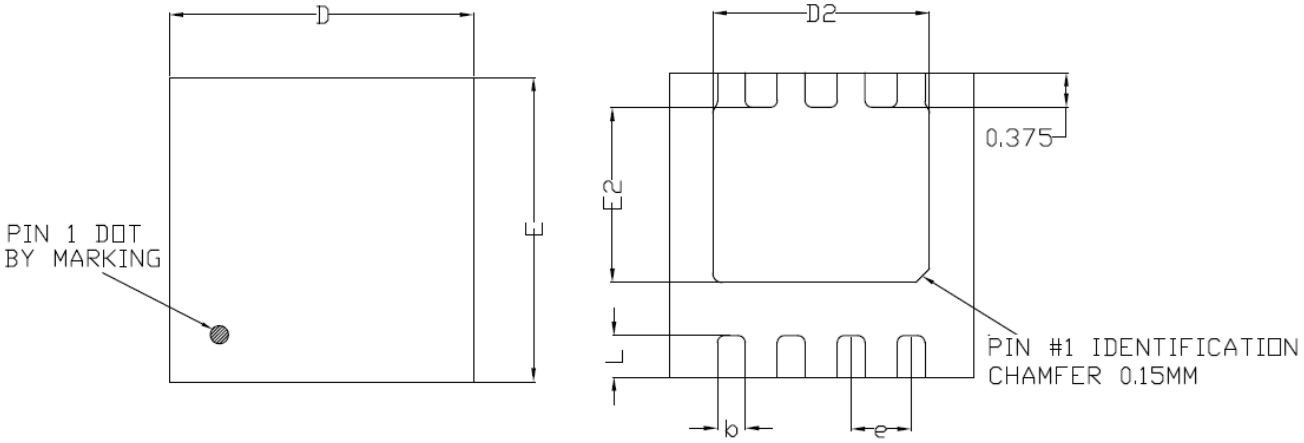
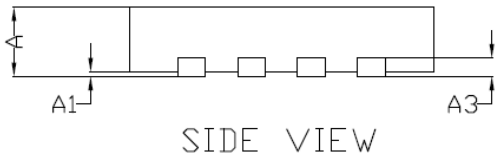


TOP VIEW

BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS(MM)			
PKG.	UT:ULTRA THIN		
REF.	MIN.	NOM.	MAX
A	0.70	0.75	0.80
A1	0.00	–	0.05
A3	0.20 REF.		
D	3.25	3.30	3.35
E	3.25	3.30	3.35
D2	2.30	2.35	2.40
E2	1.85	1.90	1.95
b	0.25	0.30	0.35
L	0.35	0.45	0.55
e	0.65 BSC		