

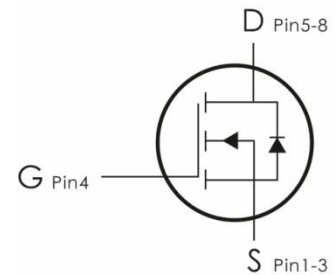
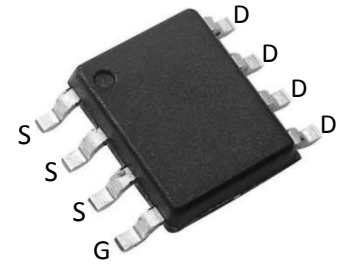
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=30V, I_D=11A, R_{DS(ON)} < 10m\ \Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous ($T_A=25^\circ\text{C}$) ¹	11	A
	Drain Current - Continuous ($T_A=100^\circ\text{C}$) ¹	7	
I_{DM}	Drain Current - Pulsed ²	36	
E_{AS}	Single Pulse Avalanche Energy ³	24.2	mj
I_{AS}	Avalanche Current	22	A
P_D	Power Dissipation ($T_A=25^\circ\text{C}$) ⁴	1.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	25	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ¹	85	

Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	30	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=150V, V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
On Characteristics³						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.2	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source On Resistance ²	$V_{GS}=10V, I_D=8A$	---	9	10	m Ω
		$V_{GS}=4.5V, I_D=6A$	---	12	18	
G_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=8A$	---	24	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	940	1316	pF
C_{oss}	Output Capacitance		---	131	183	
C_{rss}	Reverse Transfer Capacitance		---	109	153	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, R_{GEN}=1.5\ \Omega, V_{GS}=10V, I_D=8A$	---	4.2	8.4	ns
t_r	Rise Time		---	8.2	15	ns
$t_{d(off)}$	Turn-Off Delay Time		---	31	62	ns
t_f	Fall Time		---	4	8	ns
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=15V, I_D=8A$	---	9.63	13.5	nC
Q_{gs}	Gate-Source Charge		---	3.88	5.4	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	3.44	4.8	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	1	V

I_s	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	9	A
I_{SM}	Pulsed Source Current ^{2,5}		---	---	36	
T_{rr}	Body Diode Reverse Recovery Time	I _F =8A , dI/dt=100A/μs , T _J =25°C	---	8	---	Ns
Q_{rr}	Body Diode Reverse Recovery Charge		---	2.9	---	Nc

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=22A
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics:

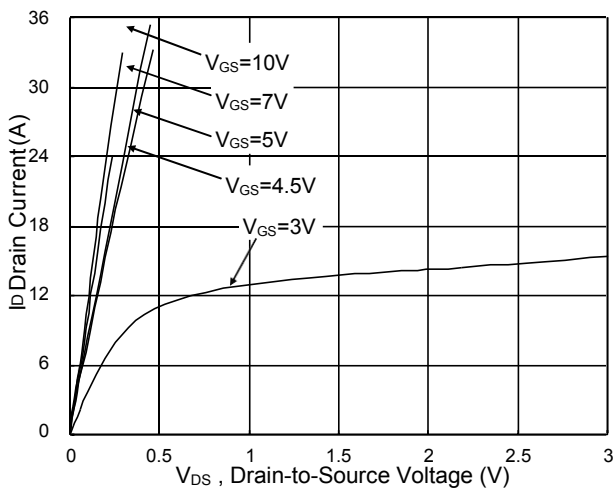


Fig.1 Typical Output Characteristics

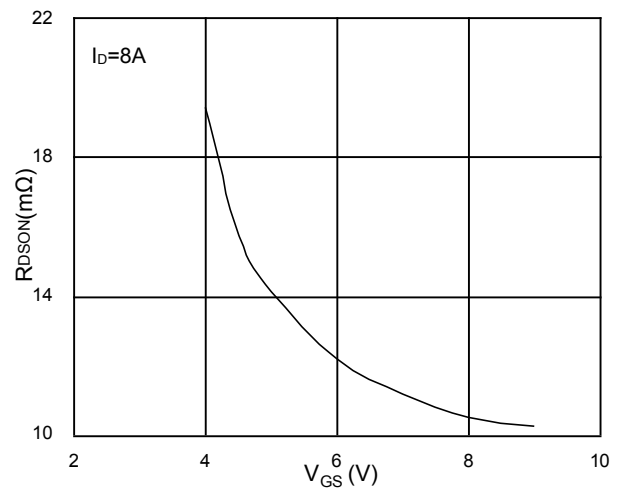


Fig.2 On-Resistance vs. G-S Voltage

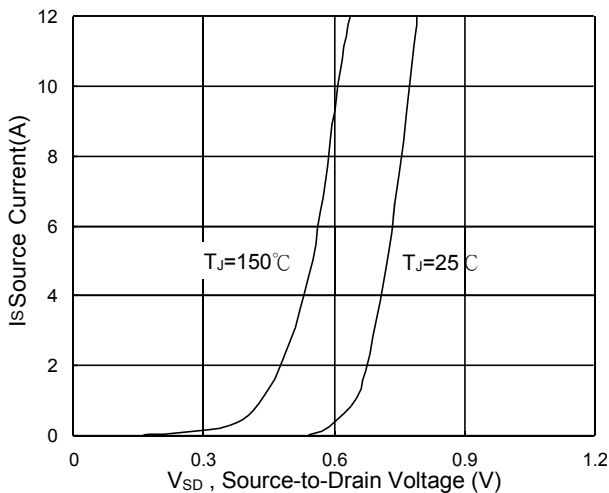


Fig.3 Forward Characteristics of Reverse

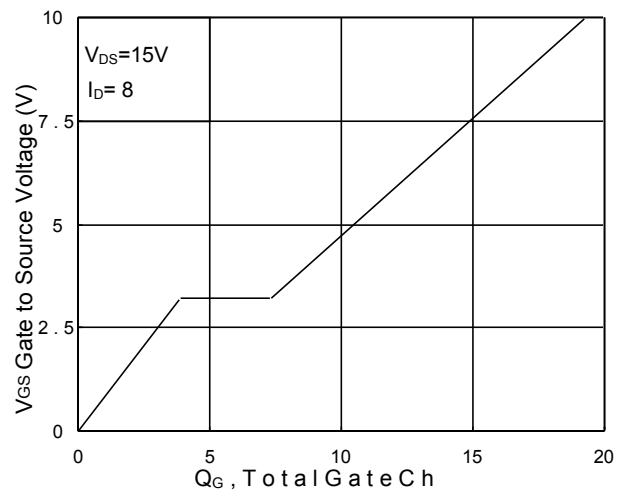


Fig.4 Gate-Charge Characteristics

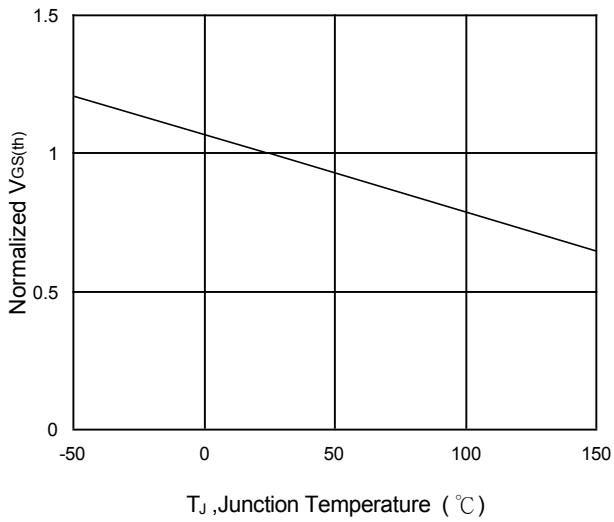


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

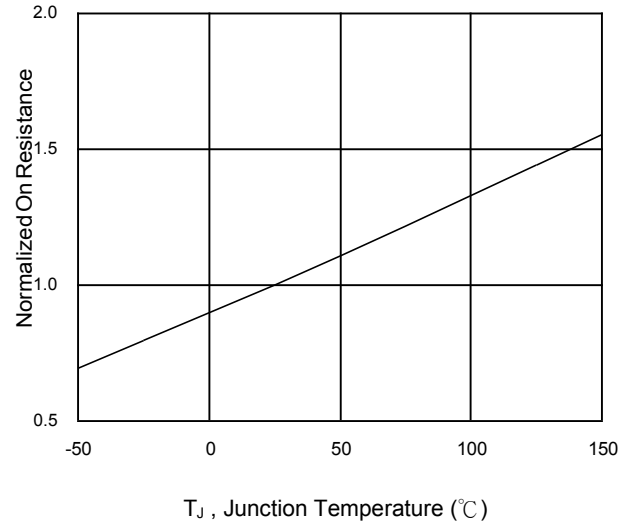


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

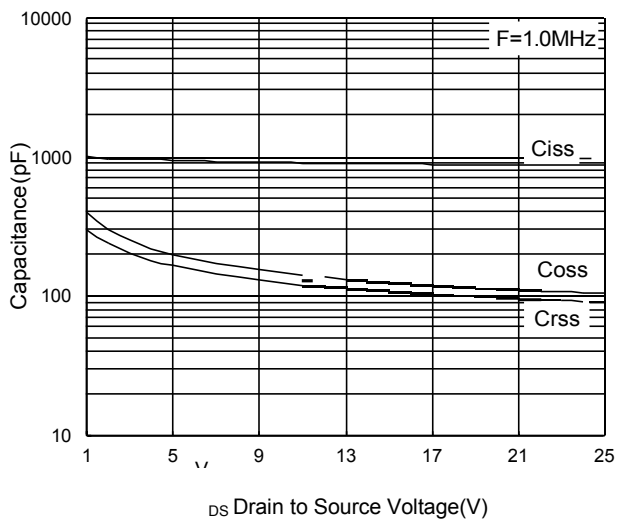


Fig.7 Capacitance

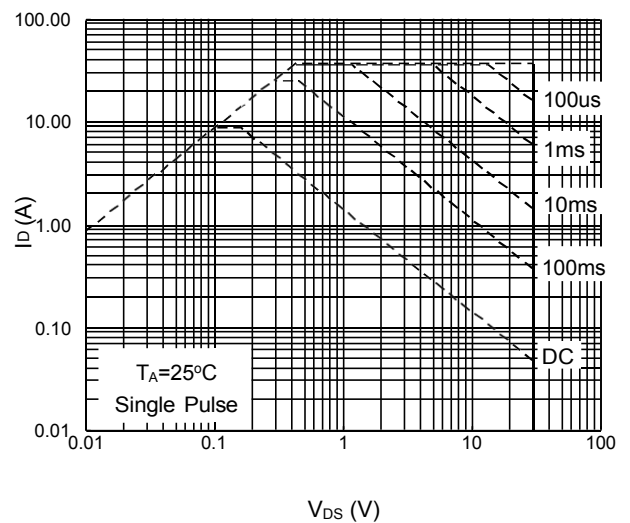


Fig.8 Safe Operating Area

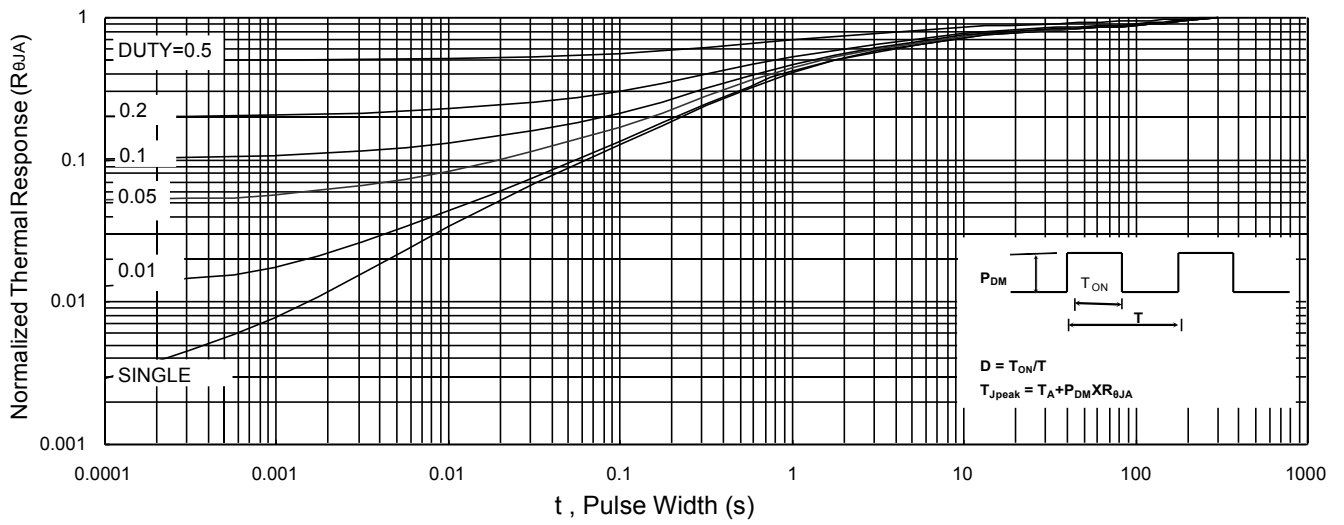


Fig.9 Normalized Maximum Transient Thermal Impedance



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