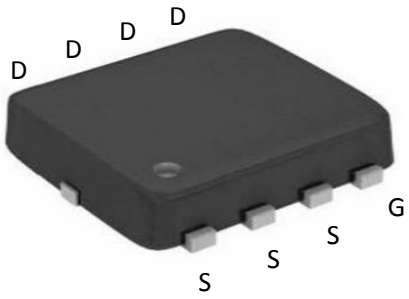
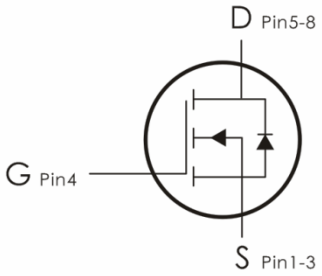
Description：

This N-Channel MOSFET uses advanced trench technology to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.





Features：

1) V_{DS}=60V,I_D=33A,$R_{DS(ON)}$ <21mΩ @V_{GS}=10V
2) Improved dv/dt capability
3) Fast switching
4) 100% EAS Guaranteed
5) Green Device Available.

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-Continuous (TC=25℃)	33	A
	Continuous Drain Current-TC=100℃	20	
I_{DM}	Drain Current – Pulsed[1]	132	A
P_D	Power Dissipation (TC=25℃)	44.6	W
	Power Dissipation – Derate above 25℃	0.36	W/℃
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	2.8	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	62	

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	60	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{GS}=0V, V_{DS}=60V, T_J=25℃	---	---	1	μA
		V_{GS}=0V, V_{DS}=48V, T_J=125℃			10	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.2	1.8	2.2	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=15A	---	17	21	mΩ
		V_{GS}=4.5V,I_D=8A	---	20	24	
G_{FS}	Forward Transconductance	V_{DS}=10V, I_D=10A	---	9	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz	---	1110	1665	pF
C_{oss}	Output Capacitance		---	110	165	
C_{rss}	Reverse Transfer Capacitance		---	60	90	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time[2.3]	V_{DD}=30V , V_{GS}=10V , R_G=6Ω ,I_D=1A	---	7.2	14	ns
t_r	Rise Time[2.3]		---	38	72	ns
$t_{d(off)}$	Turn-Off Delay Time[2.3]		---	34	65	ns
t_f	Fall Time[2.3]		---	8.2	16	ns
Q_g	Total Gate Charge[2.3]	V_{DS}=30V , V_{GS}=10V , I_D=15A	---	28	42	nC
Q_{gs}	Gate-Source Charge[2.3]		---	3.5	7	nC
Q_{gd}	Gate-Drain “Miller” Charge[2.3]		---	6.5	10	nC
Drain-Source Diode Characteristics						

V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V
LS	Reverse Recovery Time	·V_G=V_D=0V , Force Current		---	33	A
LSM_r	Reverse Recovery Charge			---	66	A
Trr	Reverse Recovery Time[2]	V_{GS}=0V,Is=-1A , dI/dt=100A/μs T_J=25℃		17	---	Ns
Qrr	Reverse Recovery Charge[2]			14.2	---	nc

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=29A.,R_G=25Ω, Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

Typical Characteristics: (T_C=25℃ unless otherwise noted)

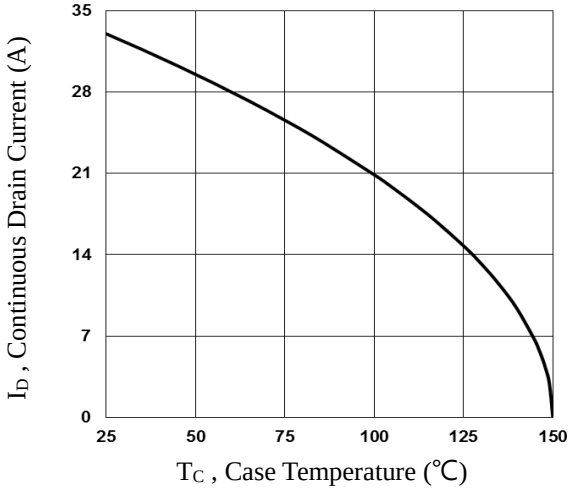


Fig.1 Continuous Drain Current vs. T_C

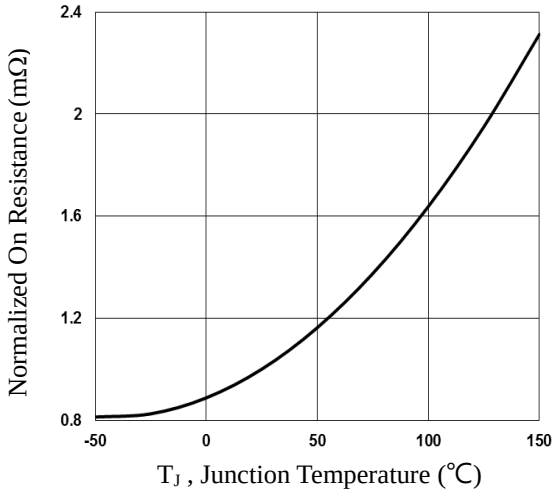


Fig.2 Normalized RDSON vs. T_J

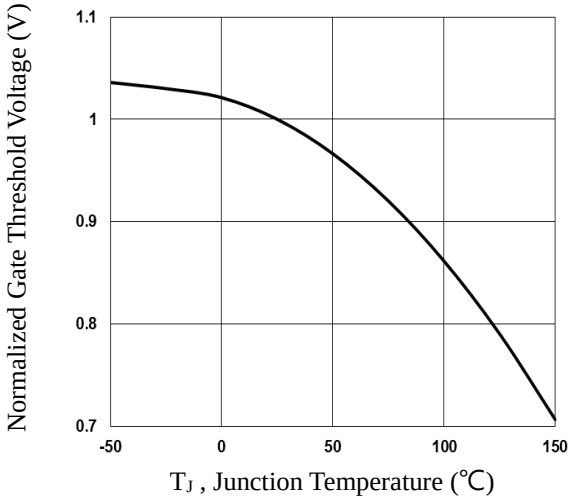


Fig.3 Normalized V_{th} vs. T_J

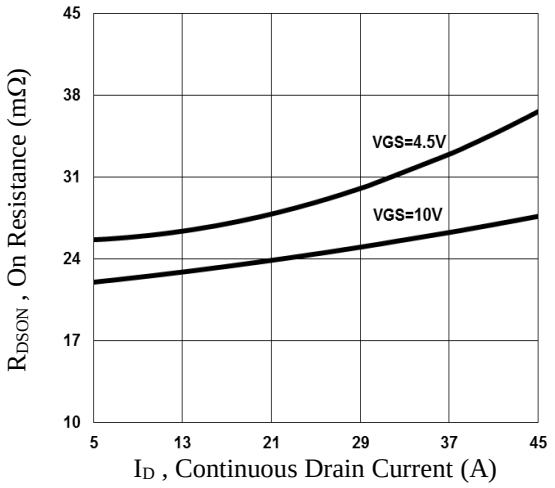


Fig.4 RDSON vs. Continuous Drain Current

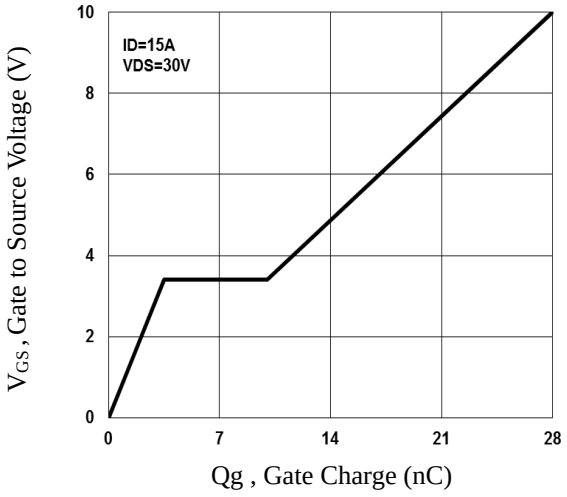


Fig.5 Gate Charge Waveform

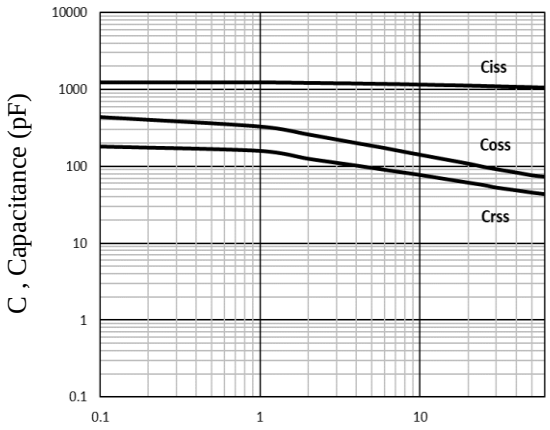


Fig.6 Capacitance Characteristics

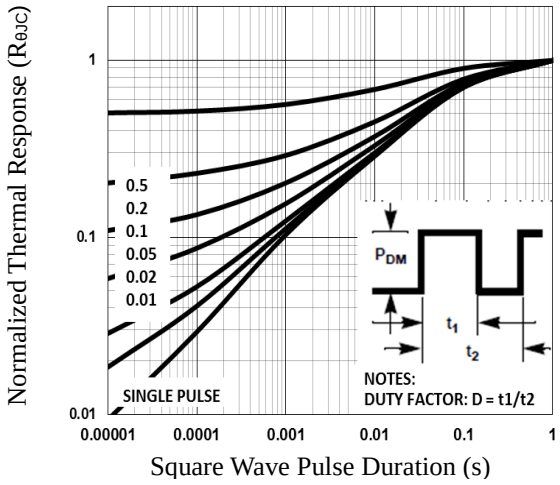


Fig.7 Normalized Transient Impedance

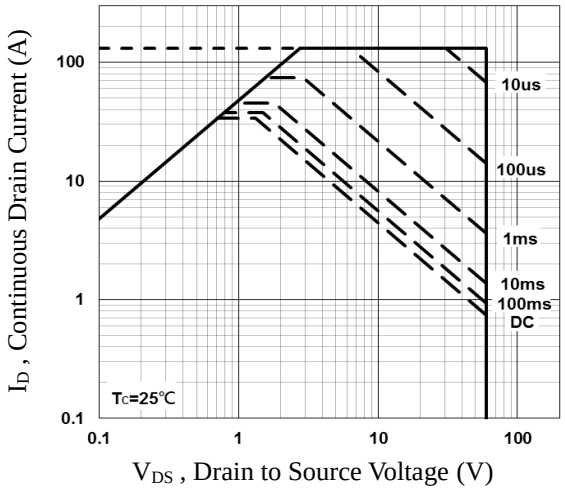


Fig.8 Maximum Safe Operation Area

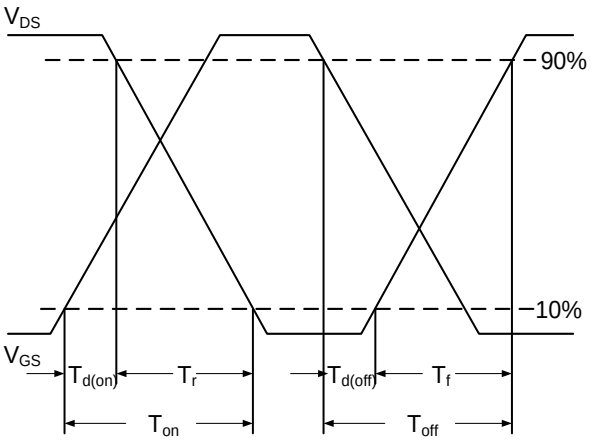


Fig.9 Switching Time Waveform

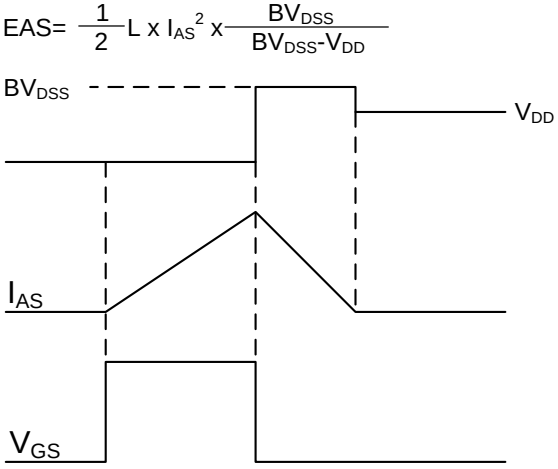


Fig.10 EAS Waveform