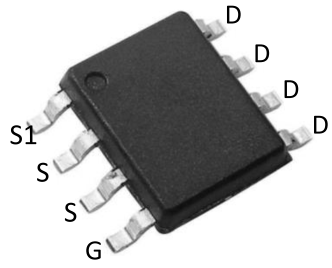
Description:

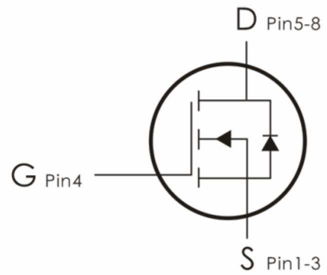
This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.



Features:

1) V_{DS}=30V,I_D=10.3A,$R_{DS(ON)}$<8mΩ @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: (Tc=25℃ 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[1] (T_A=25℃)	10.3	A
	Drain Current -Continuous[1] (T_A=70℃)	8.2	
I_{DM}	Drain Current – Pulsed[2]	42	
E_{AS}	Single Pulse Avalanche Energy[3]	61	mJ
I_{AS}	Avalanche Current	35	A
P_D	Power Dissipation[4] (T_A=25℃)	1.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{θJC}$	Thermal Resistance,Junction to Case[1]	36	℃/W
$R_{θJA}$	Thermal Resistance,Junction to Ambient[1]	85	

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	30	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V,T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V,T_J=55℃	---	---	5	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
On Characteristics[3]						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.2	1.5	2.5	V
$R_{DS(ON)}$	Static Drain-Source On Resistance[2]	V_{GS}=10V,I_D=10A	---	7	8	mΩ
		V_{GS}=4.5V,I_D=8A	---	11	14	mΩ
G_{FS}	Forward Transconductance	V_{DS}=5V, I_D=10A	---	5.8	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	1300	1840	pF
C_{oss}	Output Capacitance		---	160	225	
C_{rss}	Reverse Transfer Capacitance		---	130	180	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V,I_D=10A R_G=3.3Ω, V_{GS}=10V	---	6.2	12.4	ns
t_r	Rise Time		---	59	106	ns
$t_{d(off)}$	Turn-Off Delay Time		---	27.6	55	ns
t_f	Fall Time		---	8.4	16.8	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=15V, I_D=10A	---	12.6	17.6	nC
Q_{gs}	Gate-Source Charge		---	4.2	5.9	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	5.1	7.1	nC
R_G	Gate Resistance	Gate Resistance	---	2.2	3.8	Ω

Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage[2]	V_{GS}=0V,I_S=1A,T_J=25℃	---	---	1.2	V
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	10.3	A
I_{SM}	Pulsed Source Current[2,5]		---	---	42	A
Trr	Body Diode Reverse Recovery Time	I_F=10A , dI/dt=100A/µs , T_J=25℃	---	12.5	---	Ns
Qrr	Body Diode Reverse Recovery Charge		---	5	---	Nc

Notes:

1.The data tested by surface mounted on a 1 inch[2] FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=35A
4.The power dissipation is limited by 150℃ 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: (Tc=25℃ unless otherwise noted)

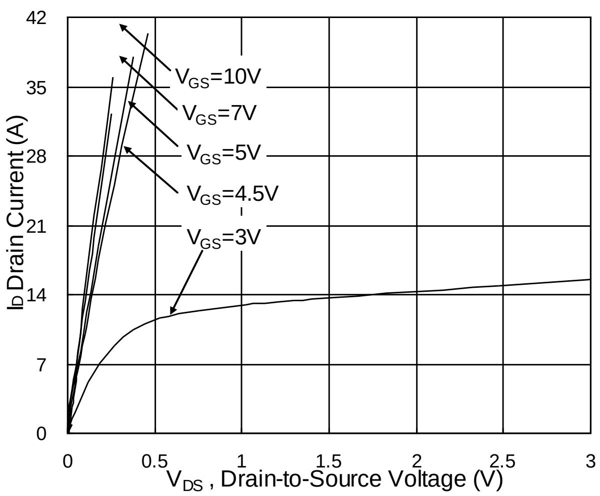


Fig.1 Typical Output Characteristics

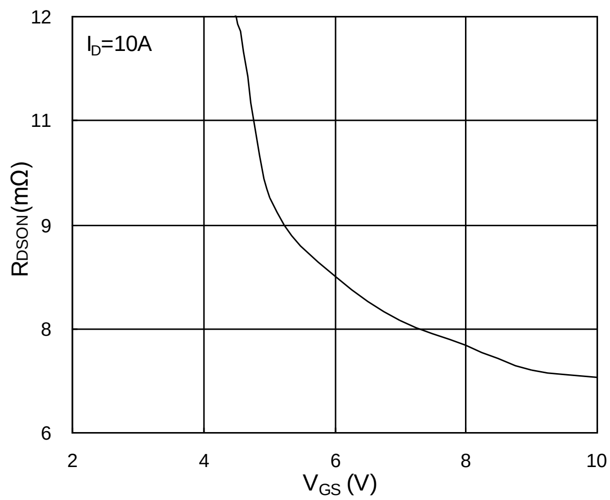


Fig.2 On-Resistance vs. Gate-Source

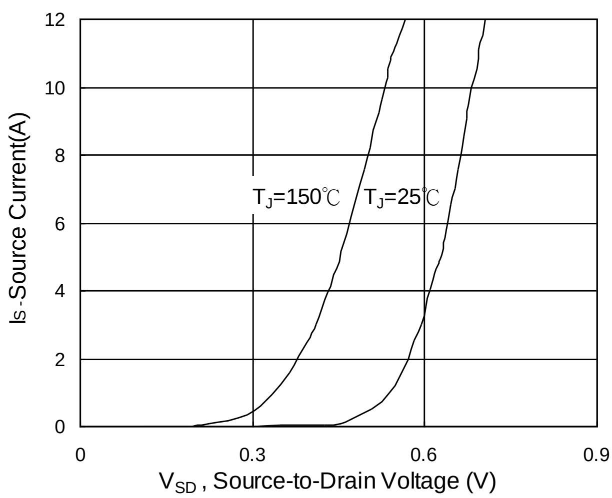


Fig.3 Forward Characteristics of reverse

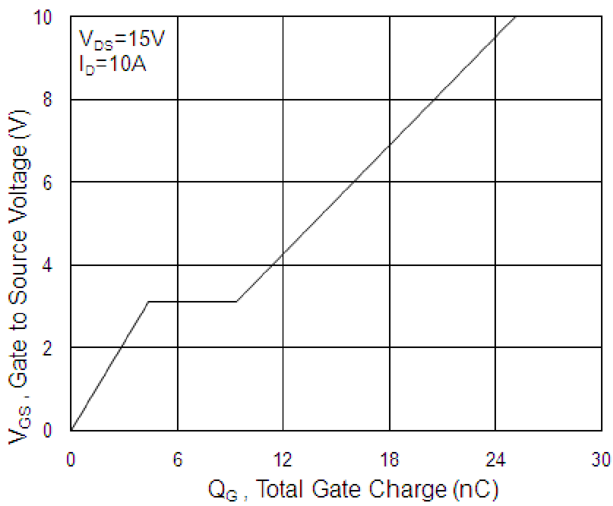


Fig.4 Gate-Charge Characteristics

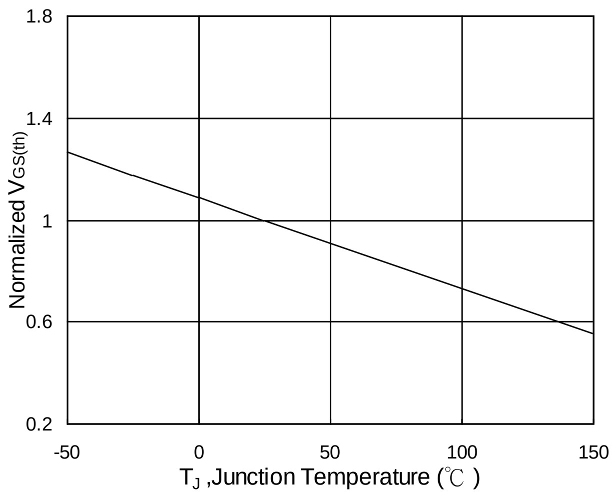


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

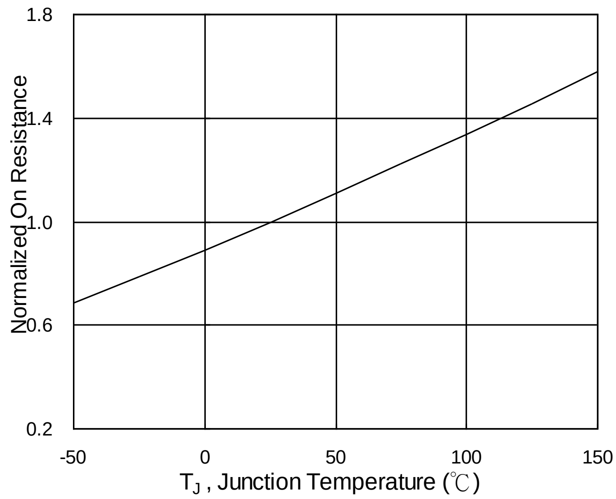


Fig.6 Normalized R_{DSON} vs. T_J

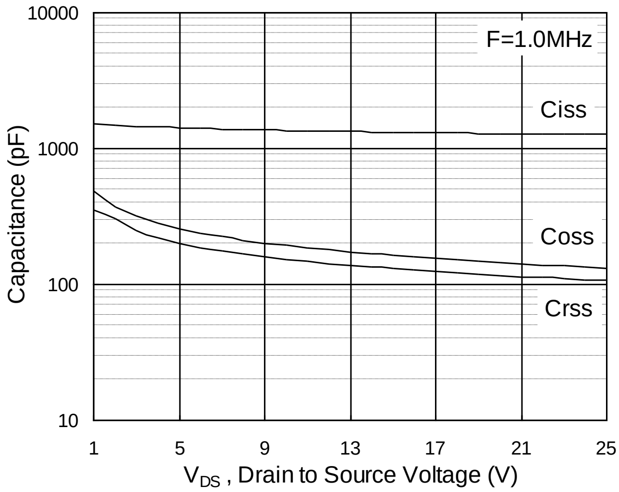


Fig.7 Capacitance

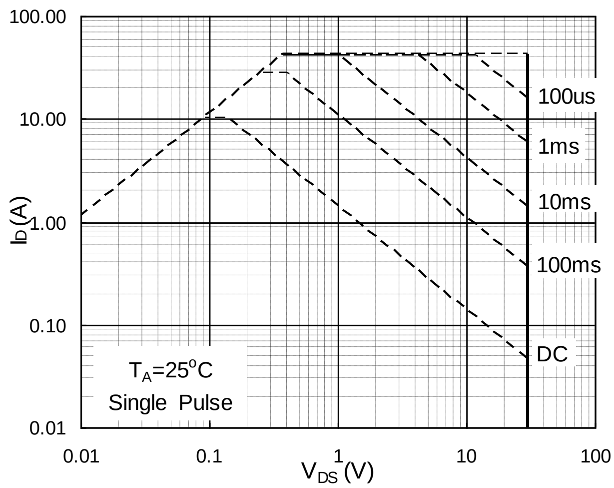


Fig.8 Safe Operating Area

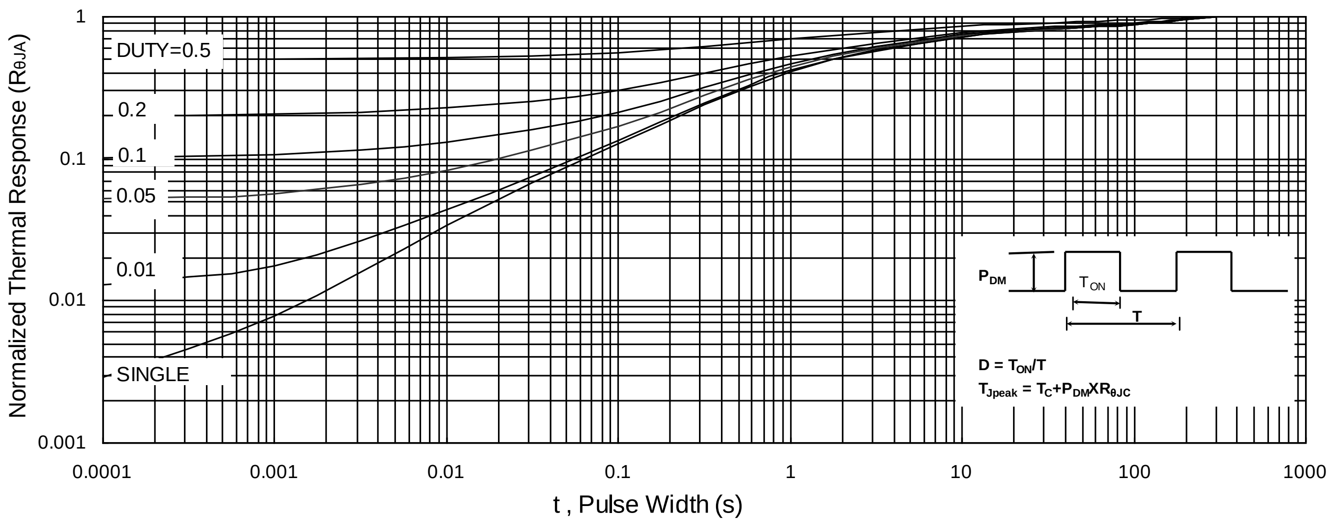


Fig.9 Normalized Maximum Transient Thermal Impedance

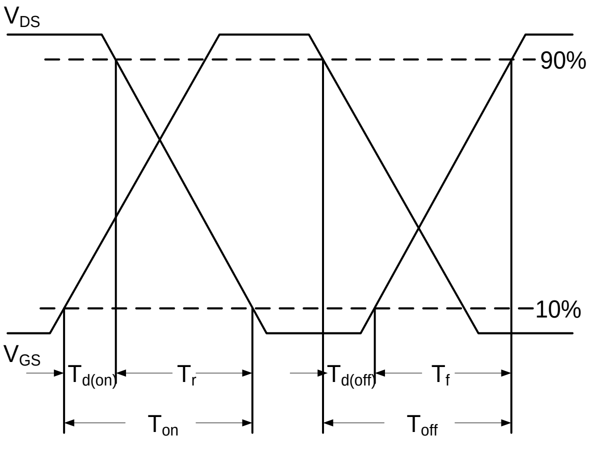


Fig.10 Switching Time Waveform

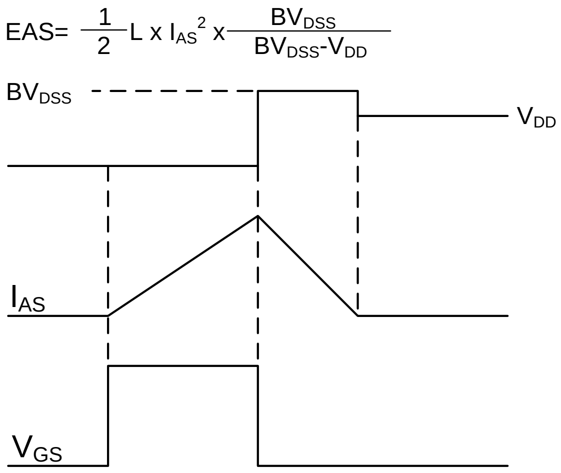


Fig.11 Unclamped Inductive Switching Waveform