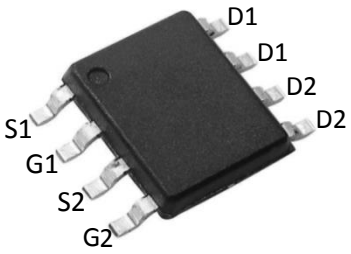
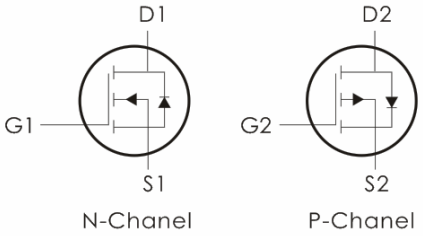
Description：

This N-Channel and P-Channel MOSFET use advanced trench Technology To provide excellent RDS(ON)， low gate charge. This device may be used to form a level shifted high side switch, and for a host of other application.





Features：

N-Channel:V_{DS}=100V,I_D=2.2A,$R_{DS(ON)}$<152m Ω @V_{GS}=10V

P-Channel: V_{DS}=-100V,I_D=-1.8A,$R_{DS(ON)}$<200m Ω @V_{GS}=-10V

1) Low gate charge.
2) Green device available.
3) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
4) Excellent package for good heat dissipation.

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

Symbol	Parameter	N-Channel	P-Channel	Units
V_{DS}	Drain-Source Voltage	100	-100	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D	Continuous Drain Current- T_A=25℃	2.2	-1.8	A
	Continuous Drain Current-T_A=70℃	1.7	-1.4	
I_{DM}	Pulsed Drain Current[1]	13.2	-7.2	A
P_D	Power Dissipation	1.5	2	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150		℃

Thermal Characteristics：

Symbol	Parameter	N-CH	P-CH	Units
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	85	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	25	---	℃/W

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N-Channel Electrical Characteristics: (T_A=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	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=80V,T_J=25℃	---	---	10	μA
		V_{GS}=0V, V_{DS}=80V,T_J=55℃	---	---	100	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	---	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[2]	V_{GS}=10V,I_D=2A	---	---	152	mΩ
		V_{GS}=4.5V,I_D=1A	---	---	158	
G_{FS}	Forward Transconductance	V_{DS}=5V, I_D=2A	---	10.2	---	S
R_G	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.1	---	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	1050	---	pF
C_{oss}	Output Capacitance		---	45	---	
C_{rss}	Reverse Transfer Capacitance		---	30	---	
Q_g	Gate Charge	V_{GS}=10V , V_{DS}=80V I_D=2A	---	18.4	---	nc
Q_{gs}	Gate-Source Charge		---	3	---	
Q_{gd}	Gate-Drain Charge		---	3.1	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=3.3, I_D=2A	---	5.6	---	ns
t_r	Rise Time		---	20	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	28	---	ns
t_f	Fall Time		---	24	---	ns

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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[1,4]	V_G=V_D=0V , Force Current	---	---	2.2	ns
I_{SM}	Pulsed Source Current[2,4]		---	---	13.2	nC

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

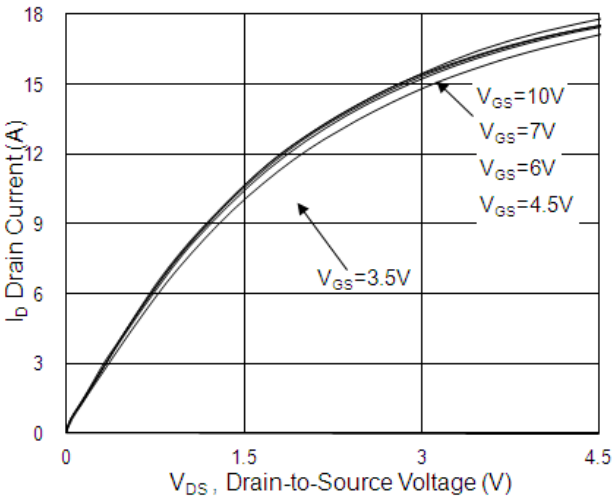

Fig.1 Typical Output Characteristics

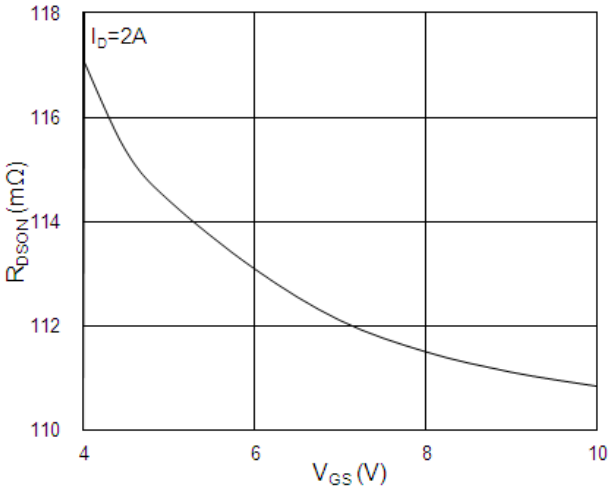

Fig.2 On-Resistance vs. Gate-Source

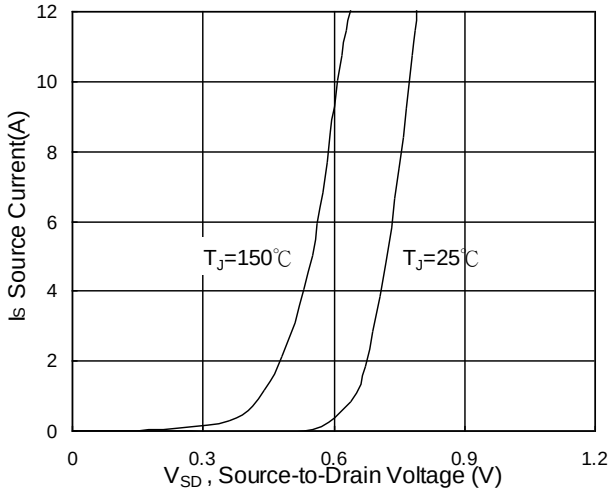

Fig.3 Forward Characteristics Of Reverse

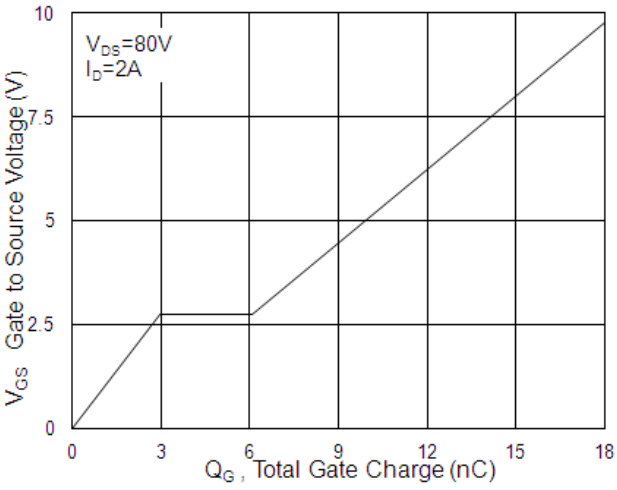

Fig.4 Gate-Charge Characteristics

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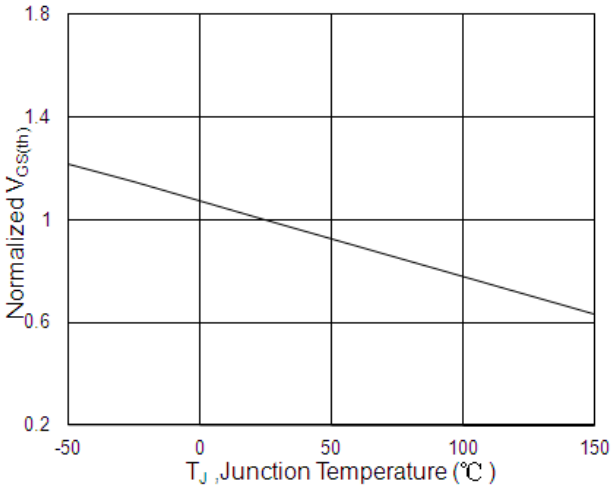

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

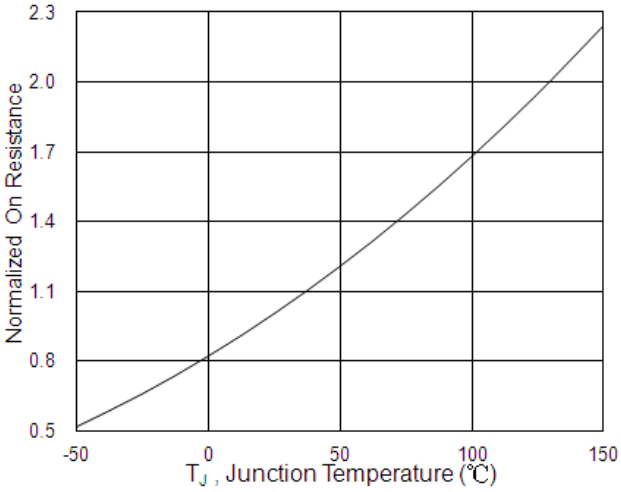

Fig.6 Normalized R_{DSON} vs. T_J

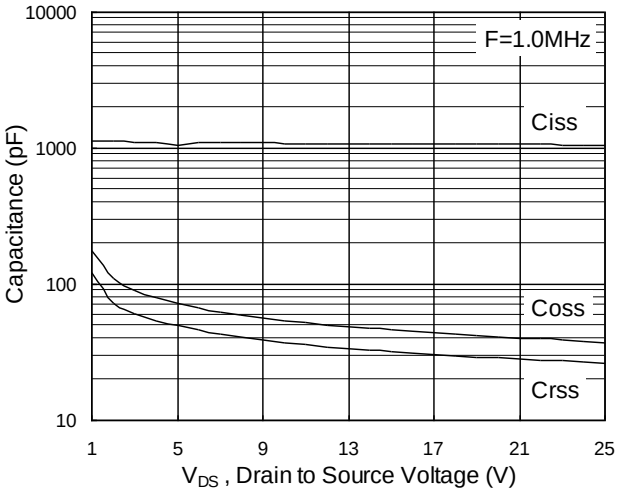

Fig.7 Capacitance

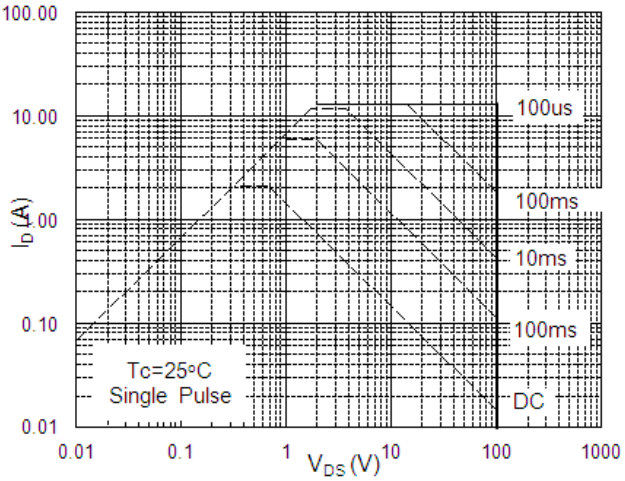

Fig.8 Safe Operating Area

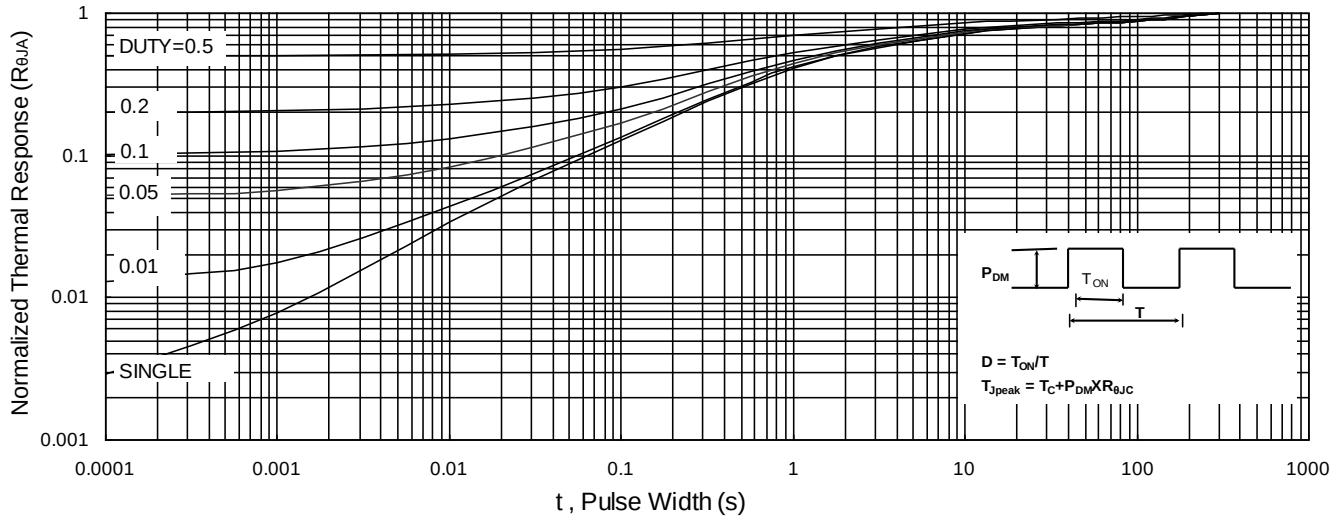

Fig.9 Normalized Maximum Transient Thermal Impedance

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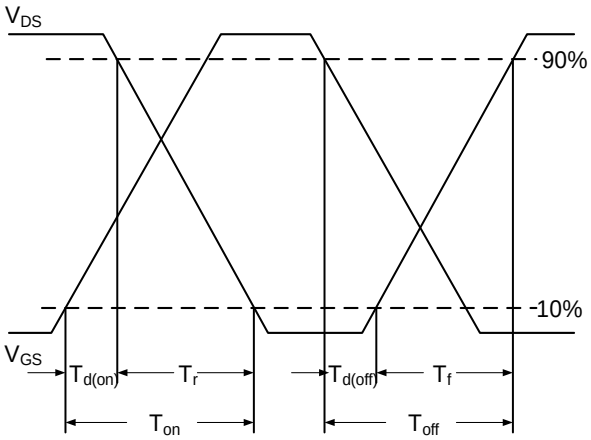

Fig.10 Switching Time Waveform

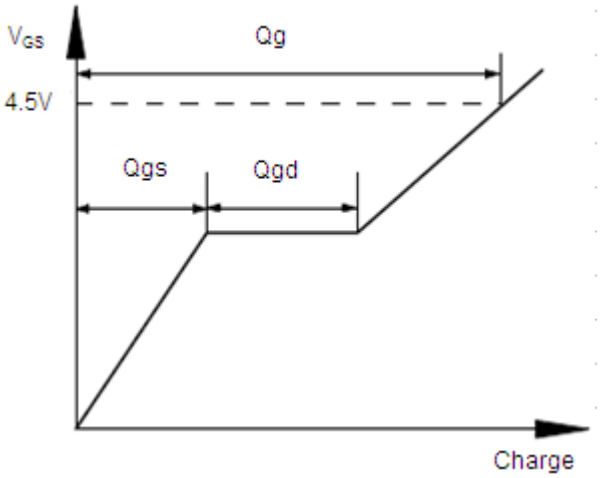

Fig.11 Gate Charge Waveform

P-Channel Electrical Characteristics: (T_A=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	-100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-100V,T_J=25℃	---	---	-1	μA
		V_{GS}=0V, V_{DS}=-80V,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	-1.6	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=-10V,I_D=-1.8A	---	165	200	mΩ
		V_{GS}=-4.5V,I_D=-1.5A	---	180	230	
G_{FS}	Forward Transconductance	V_{DS}=-10V, I_D=-3A	---	6.5	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-50V, V_{GS}=0V, f=1MHz	---	1455	2200	pF
C_{oss}	Output Capacitance		---	880	1300	
C_{rss}	Reverse Transfer Capacitance		---	58	85	
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	16	---	Ω

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Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time[2,3]	V_{GS}=-10V,V_{DD}=-50V R_G=25Ω ,I_D=-1.8A	---	18	36	ns
t_r	Rise Time[2,3]		---	8	16	ns
$t_{d(off)}$	Turn-Off Delay Time[2,3]		---	100	200	ns
t_f	Fall Time[2,3]		---	30	60	ns
Q_g	Total Gate Charge[2,3]	V_{GS}=-10V,V_{DS}=-80V,I_D=-1.8A	---	20	40	nC
Q_{gs}	Gate-Source Charge[2,3]		---	3.5	7	nC
Q_{gd}	Gate-Drain Charge[2,3]		---	4.6	9	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=-1A,T_J=25℃	---	---	-1	V
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-1.8	V
I_{SM}	Pulsed Source Current		---	---	-3.6	V
T_{rr}	Reverse Recovery Time	V_R=-100V, I_S=-1A di/dt=100A/μs, T_J=25℃	---	13	---	ns
Q_{rr}	Reverse Recovery Charge		---	15	---	nC

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

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

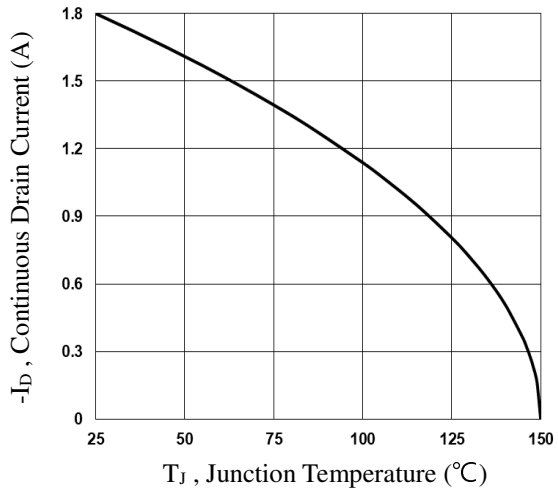

Fig.1 Continuous Drain Current vs. T_J

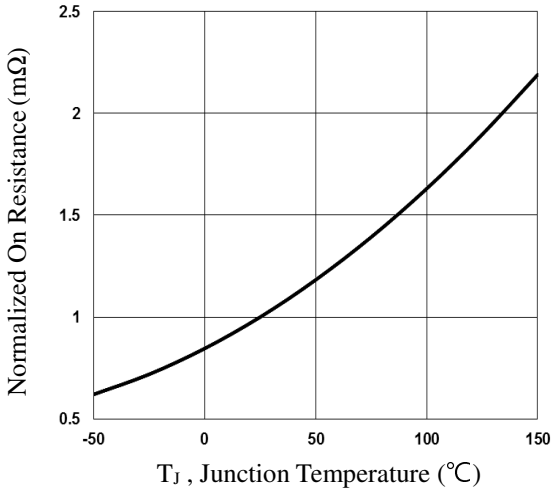

Fig.2 Normalized RDSON vs. T_J

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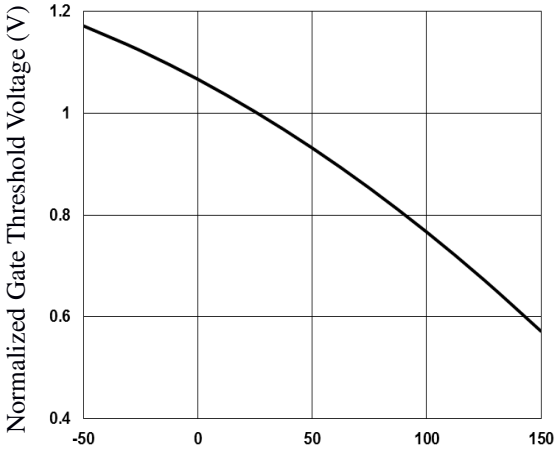

Fig.3 Normalized V_{th} vs. T_J

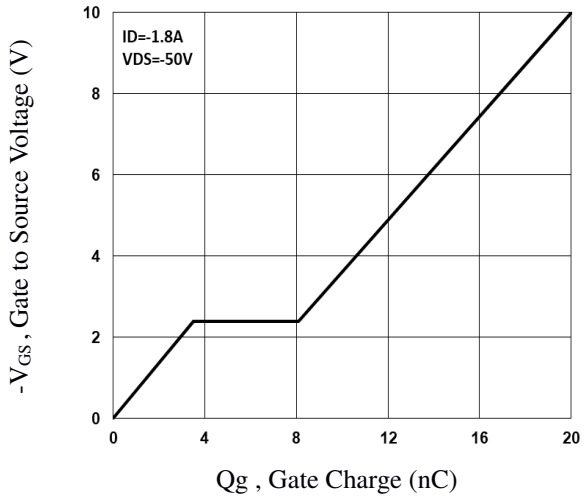

Fig.4 Gate Charge Waveform

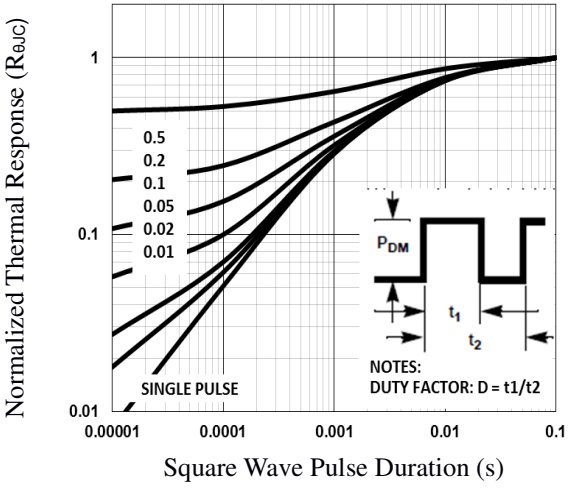

Fig.5 Normalized Transient Impedance

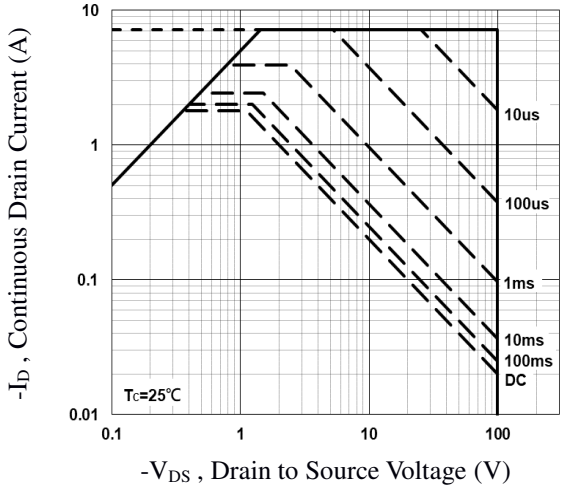

Fig.6 Maximum Safe Operation Area

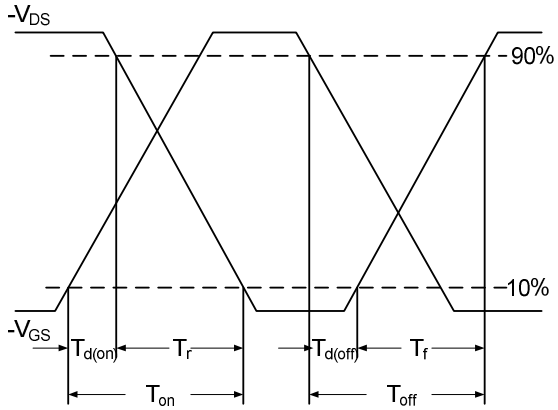

Fig.7 Switching Time Waveform

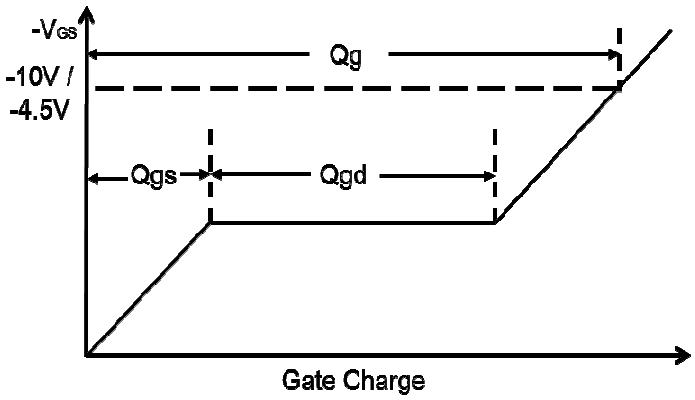

Fig.8 Gate Charge Waveform

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