

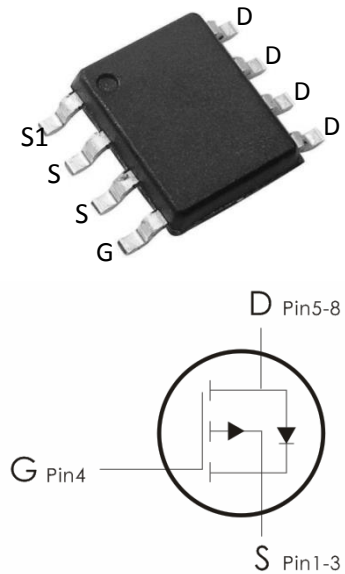
Description:

This P-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) $V_{DS}=-40V, I_D=-10A, R_{DS(on)} < 15m\Omega @ V_{GS}=-10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	-10	A
	Continuous Drain Current- $T_C=100^\circ C$	-6.3	
	Pulsed Drain Current ¹	-40	
E_{AS}	Single Pulse Avalanche Energy	---	mJ
P_D	Power Dissipation	4.2	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	30	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	60	

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourtce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-40V, T _J =25℃	---	---	-1	μ A
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 =250 μ A	-1.0	-1.6	-2.5	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =-10V, I _D =-10A	---	11.5	15	m Ω
		V _{GS} =-4.5V, I _D =-8A	---	16	22	
G _{FS}	Forward Transconductance	V _{DS} =-10V, I _D =-10A	---	13	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	2757	4000	pF
C _{oss}	Output Capacitance		---	240	360	
C _{rss}	Reverse Transfer Capacitance		---	137	200	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DS} =-20V, V _{GS} =-10V I _D =-1A, R _{GEN} =6 Ω	---	23	40	ns
t _r	Rise Time ^{2,3}		---	10	20	ns
t _{d(off)}	Turn-Off Delay Time ^{2,3}		---	135	250	ns
t _f	Fall Time ^{2,3}		---	46	90	ns
Q _g	Total Gate Charge ^{2,3}	V _{DS} =-32V , V _{GS} =-4.5V , I _D =-10A	---	22.2	40	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	8.2	16	nC
Q _{gd}	Gate-Drain “Miller” Charge ^{2,3}		---	8.8	16	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25℃	---	---	-1	V

LS	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	-10	A
LSM	Pulsed Source Current		---	-20	A

Notes:

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

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

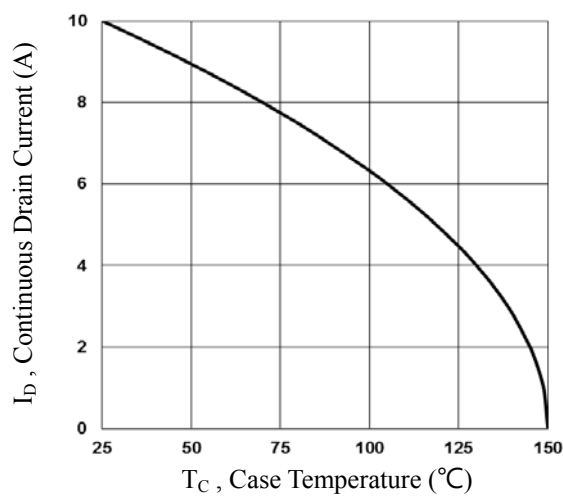


Fig.1 Continuous Drain Current vs. T_C

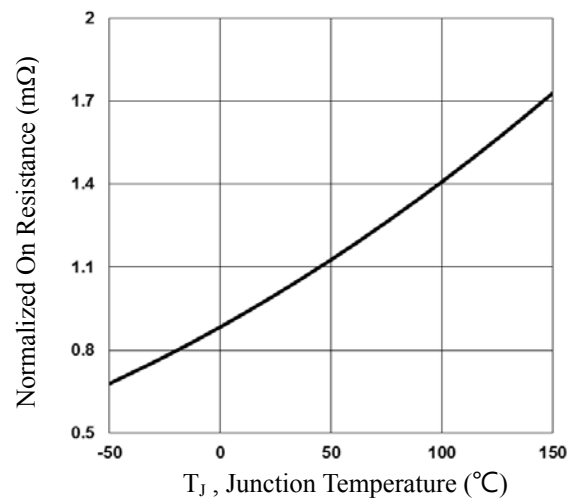


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

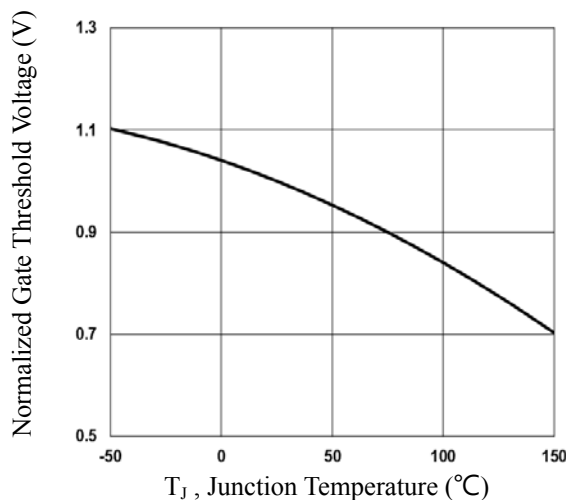


Fig.3 Normalized V_{th} vs. T_J

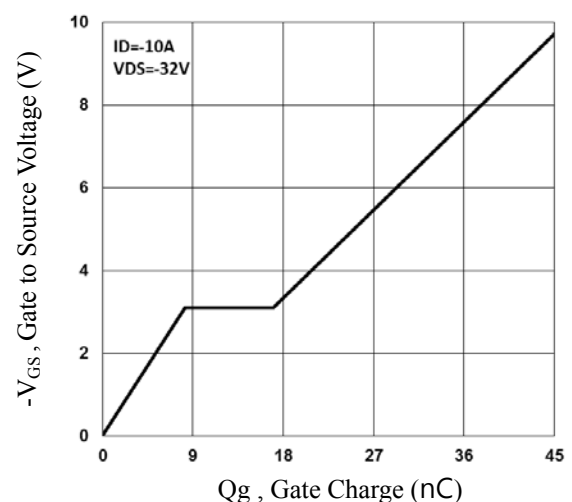


Fig.4 Gate Charge Waveform

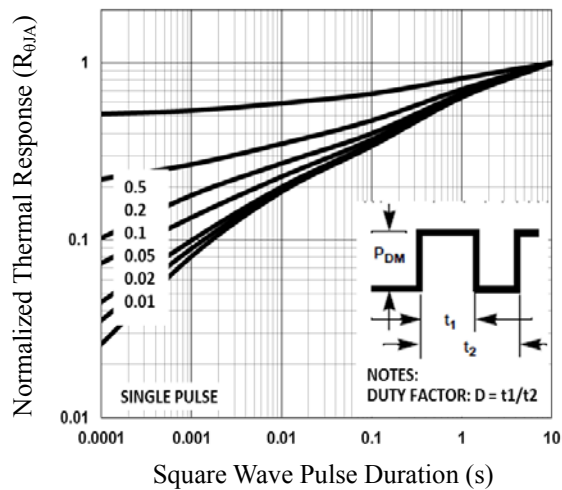


Fig.5 Normalized Transient Impedance

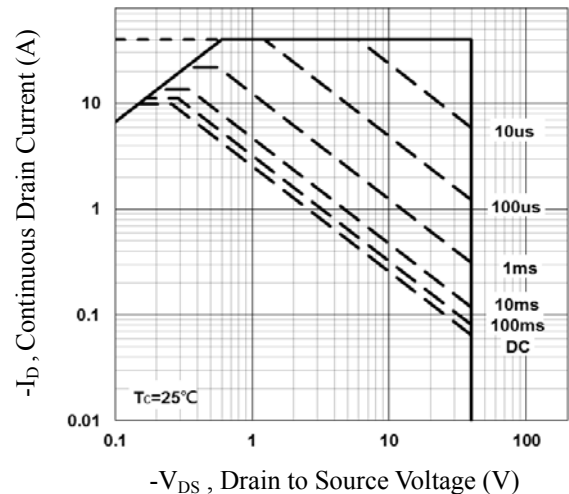


Fig.6 Maximum Safe Operation Area

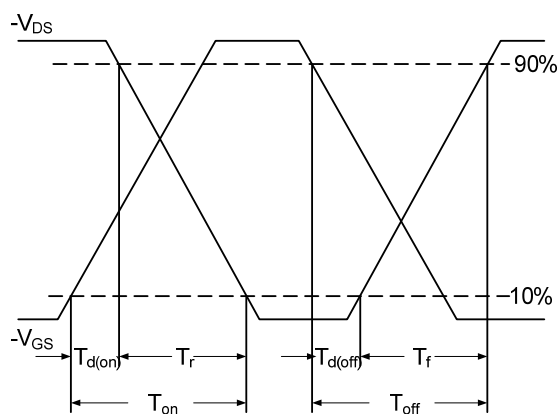


Fig.7 Switching Time Waveform

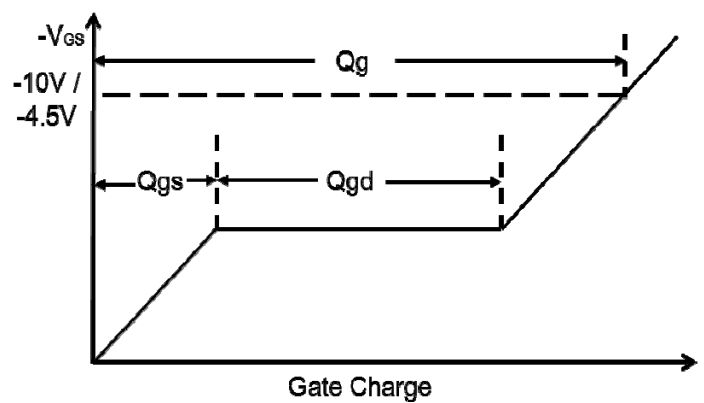


Fig.8 Gate Charge Waveform



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