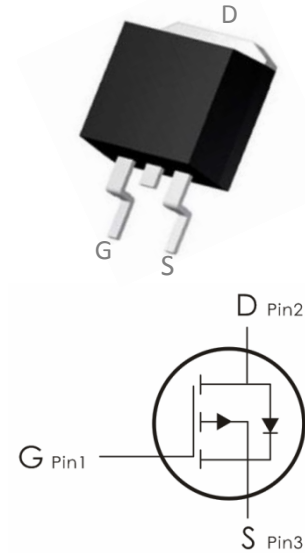


Description:

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) $V_{DS}=-40V, I_D=-110A, R_{DS(on)}<5.3m\Omega @V_{GS}=-10V$
- 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
	Continuous Drain Current- $T_C=25^\circ C$	-110	A
I_D	Continuous Drain Current- $T_C=100^\circ C$	-67	
	Pulsed Drain Current ¹	-360	
E_{AS}	Single Pulse Avalanche Energy	174	mJ
P_D	Power Dissipation($T_C=25^\circ C$)	101	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	1.23	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	62	

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250 μ A	-40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-40V , V _{GS} =0V , 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	-1.2	-1.6	-2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =-10V, I _D =-25A	---	3.8	5.3	m Ω
		V _{GS} =-4.5V, I _D =-15A	---	6.4	8.3	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V, f=1MHz	---	6100	9100	pF
C _{oss}	Output Capacitance		---	600	900	
C _{rss}	Reverse Transfer Capacitance		---	540	810	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =-20V , V _{GS} =-10V , R _G =6 Ω , I _D =-45A	---	41.6	82	ns
t _r	Rise Time ^{2,3}		---	12.7	26	ns
t _{d(off)}	Turn-Off Delay Time ^{2,3}		---	308	600	ns
t _f	Fall Time ^{3,3}		---	70	140	ns
Q _g	Total Gate Charge ^{2,3}	V _{GS} =-10 V, V _{DS} =-20V, I _D =-45A	---	115	160	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	16	25	nC
Q _{gd}	Gate-Drain “Miller” Charge ^{2,3}		---	25	40	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V , I _S =-1A , T _J =25℃	---	---	-1	V

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

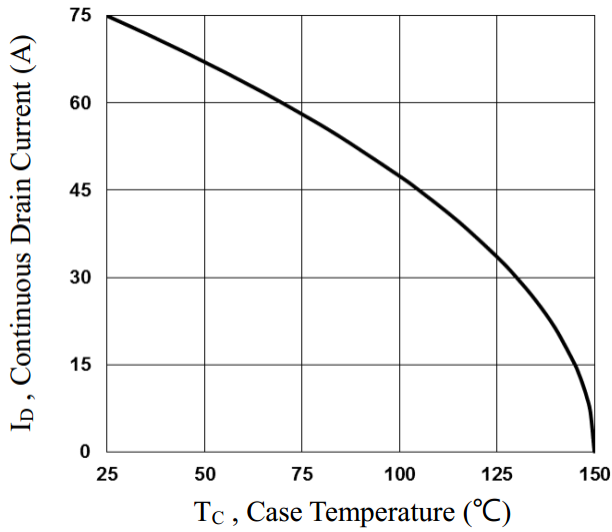


Fig.1 Continuous Drain Current vs. T_C

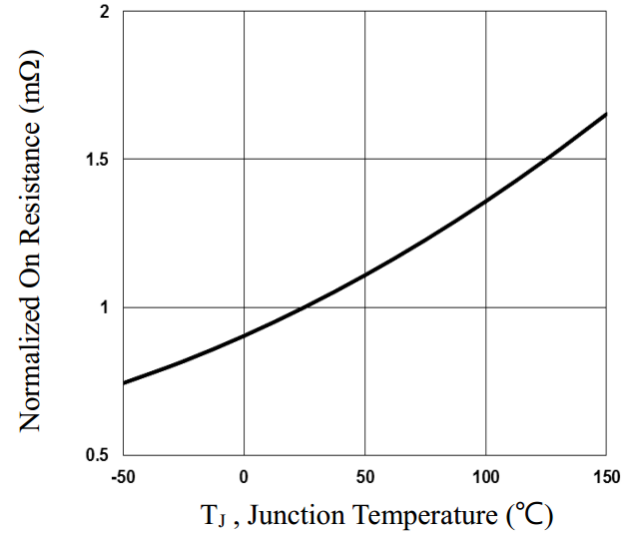


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

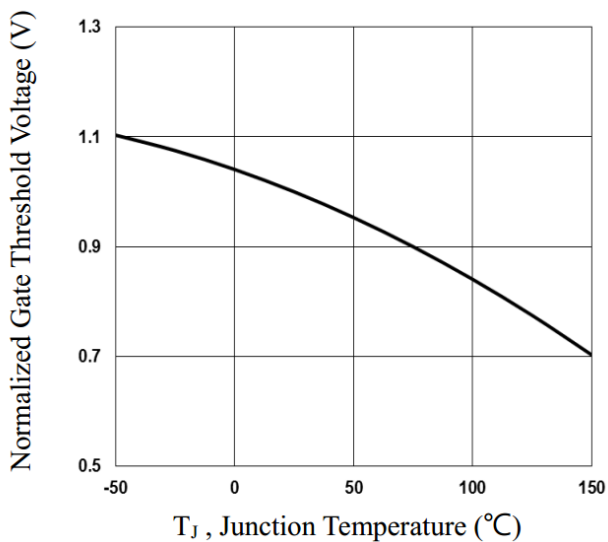


Fig.3 Normalized V_{th} vs. T_J

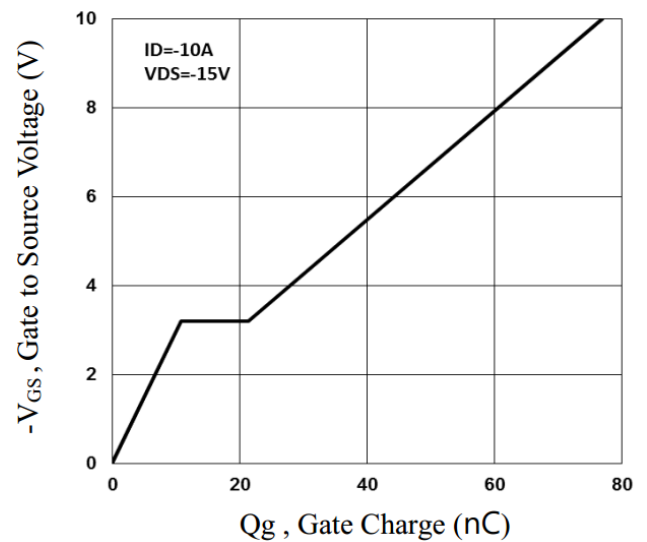
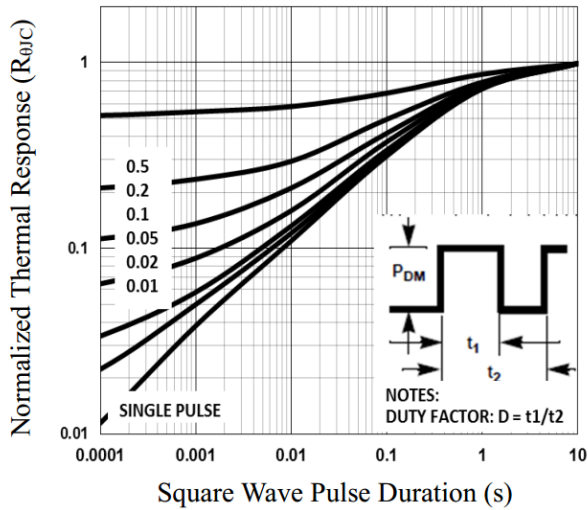
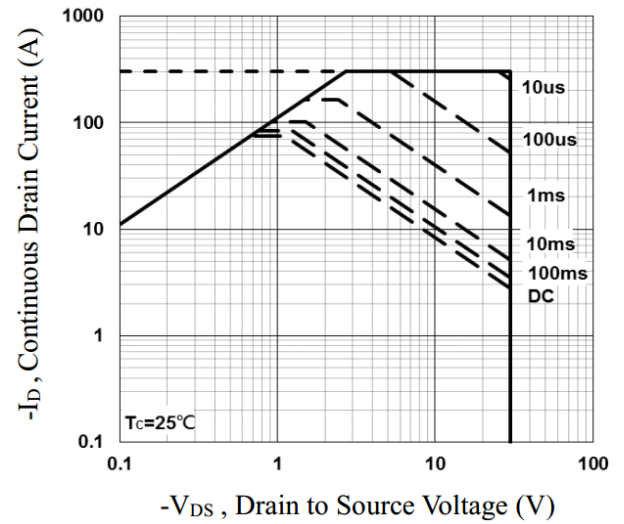
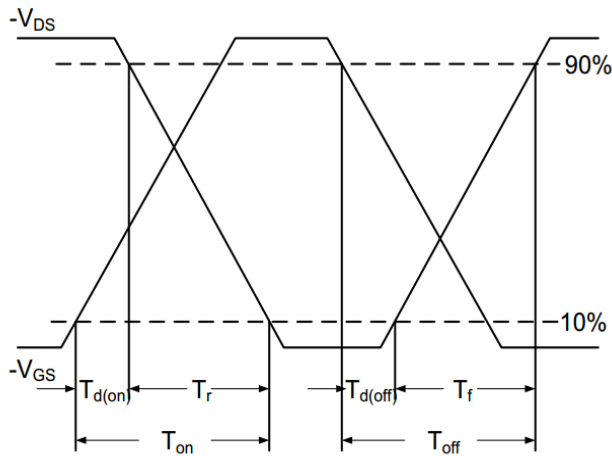
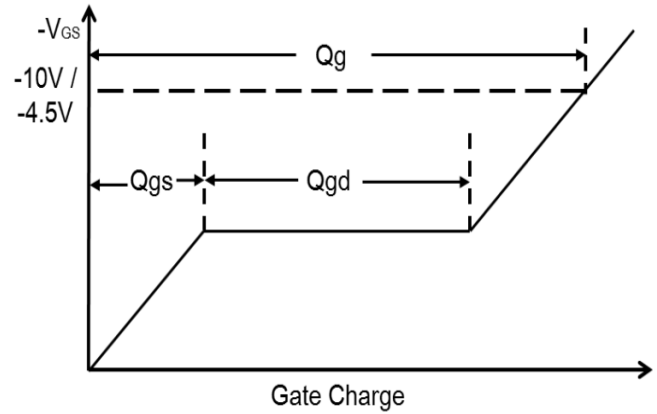


Fig.4 Gate Charge Waveform


Fig.5 Normalized Transient Impedance

Fig.6 Maximum Safe Operation Area

Fig.7 Switching Time Waveform

Fig.8 Gate Charge Waveform