

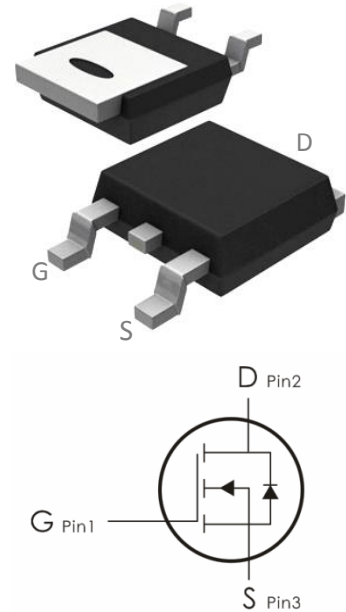
Description:

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) $V_{DS}=40V, I_D=80A, R_{DS(on)} < 5.5m\ \Omega @ V_{GS}=10V$
- 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: ($T_C=25^\circ\text{C}$ 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- $T_C=25^\circ\text{C}$	80	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	50	
	Pulsed Drain Current ¹	320	
E_{AS}	Single Pulse Avalanche Energy	---	mJ
P_D	Power Dissipation, $T_C=25^\circ\text{C}$	88	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.7	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	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	$V_{GS}=0V, I_D=250\ \mu\text{A}$	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=40V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	1.6	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance ³	$V_{GS}=10V, I_D=20A$	---	4.2	5.5	$m\ \Omega$
		$V_{GS}=4.5V, I_D=10A$	---	5.3	7	
G_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=10A$	---	16	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	2410	3600	pF
C_{oss}	Output Capacitance		---	233	400	
C_{rss}	Reverse Transfer Capacitance		---	152	230	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time ^{2,3}	$V_{DD}=20V, I_D=1A,$ $V_{GS}=10V, R_{GEN}=3.3\ \Omega$	---	14.2	28	ns
t_r	Rise Time ^{2,3}		---	18.3	36	ns
$t_{d(off)}$	Turn-Off Delay Time ^{2,3}		---	38.8	76	ns
t_f	Fall Time ^{2,3}		---	13.9	28	ns
Q_g	Total Gate Charge ³	$V_{GS}=4.5V, V_{DS}=32V,$ $I_D=10A$	---	25	50	nC
Q_{gs}	Gate-Source Charge		---	6.5	13	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	12.1	24	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ³	$V_{GS}=0V, I_S=1A$	---	---	1	V

Is	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	80	A
Ism	Pulsed Source Current		---	---	160	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)

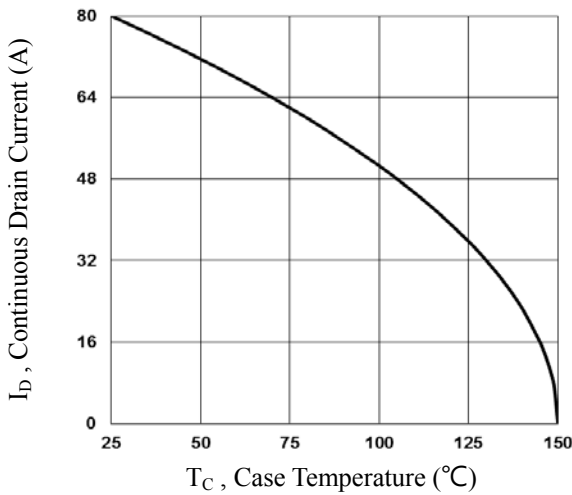


Fig.1 Continuous Drain Current vs. T_C

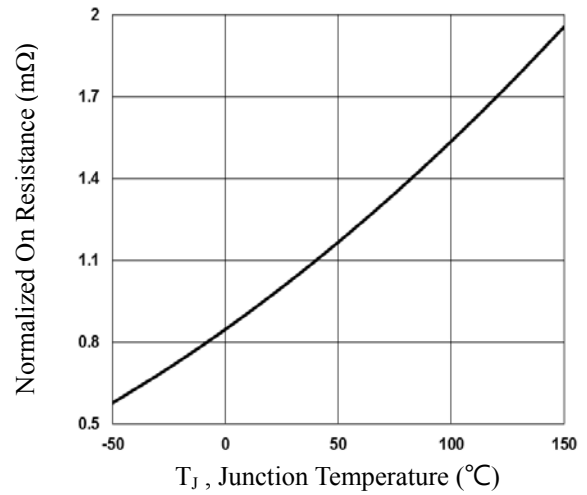


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

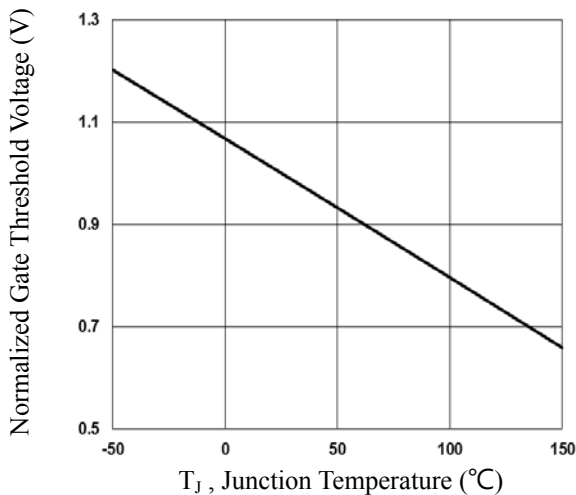


Fig.3 Normalized V_{th} vs. T_J

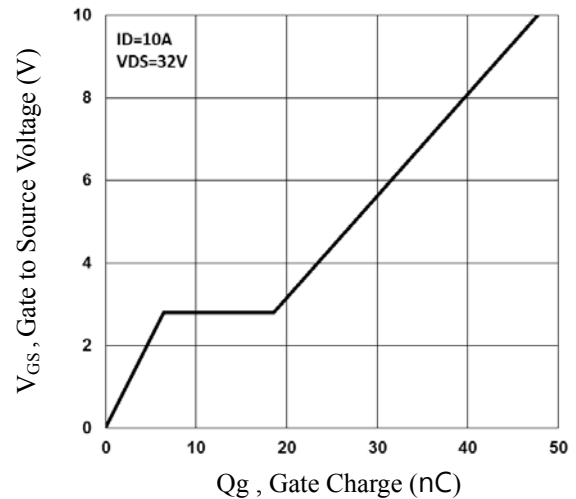


Fig.4 Gate Charge Waveform

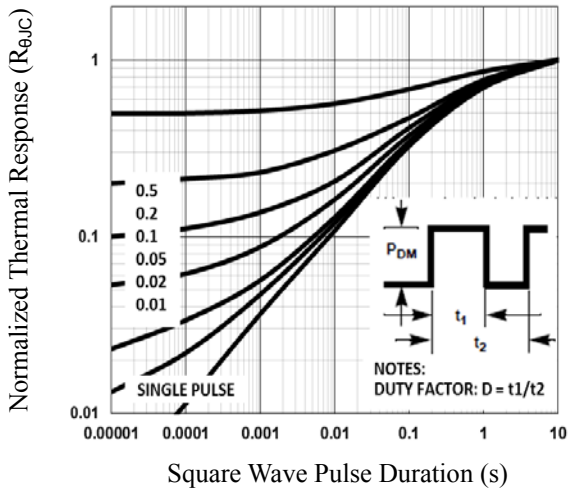


Fig.5 Normalized Transient Impedance

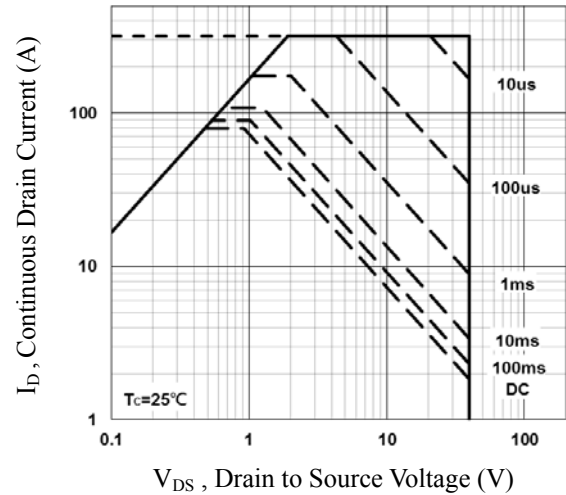


Fig.6 Maximum Safe Operation Area

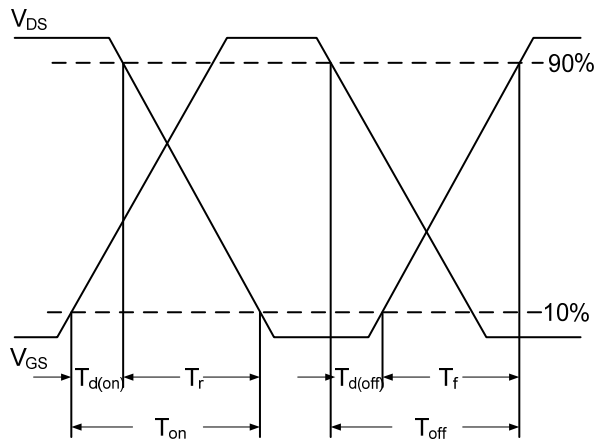


Fig.7 Switching Time Waveform

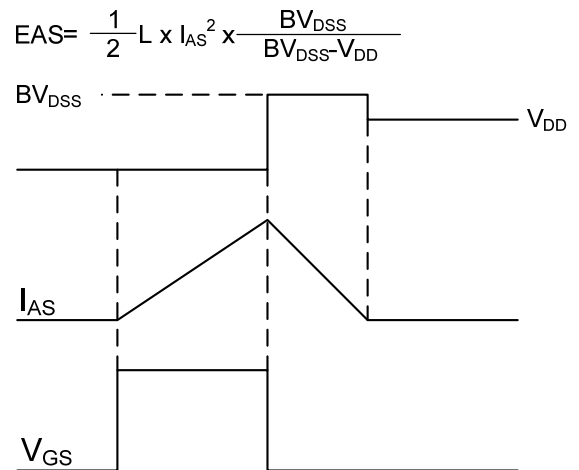


Fig.8 EAS Waveform



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