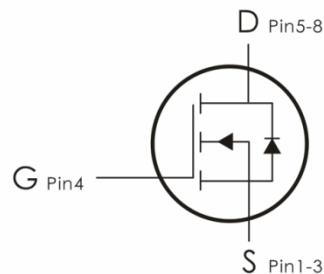
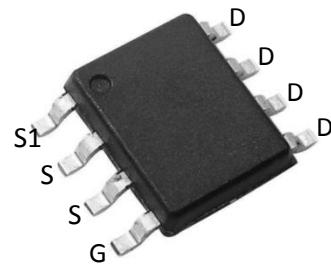


Description:

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) $V_{DS}=30V, I_D=20A, R_{DS(on)}<6m\Omega @V_{GS}=10V$
- 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	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_C=25^\circ C$)	20	A
	Drain Current – Continuous ($T_C=100^\circ C$)	12.6	
I_{DM}	Drain Current – Pulsed ¹	80	
P_D	Power Dissipation ($T_C=25^\circ C$)	5.4	W
	Power Dissipation – Derate above 25°C	0.043	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Thermal Characteristics:

Symbol	Parameter	Max	Units
R_{eJC}	Thermal Resistance,Junction to Case	23	°C/W
R_{eJA}	Thermal Resistance,Junction to Ambient	85	

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	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250 \mu\text{A}$	30	---	---	V
$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	BVDSS Temperature Coefficient	Reference to 25°C , $I_{\text{D}}=1\text{mA}$	---	0.04	---	$\text{V}/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{\text{DS}}=30\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{\text{DS}}=24\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	---	---	± 100	nA
On Characteristics						
$V_{\text{GS}(\text{th})}$	GATE-Source Threshold Voltage	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=250 \mu\text{A}$	1.2	1.6	2.5	V
$\Delta V_{\text{GS}(\text{th})}$	$V_{\text{GS}(\text{th})}$ Temperature Coefficient		---	4	---	$\text{mV}/^\circ\text{C}$
$R_{\text{DS}(\text{ON})}$	Static Drain-Source On Resistance	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=10\text{A}$	---	5	6	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=5\text{A}$	---	6.5	9	
G_{FS}	Forward Transconductance	$V_{\text{DS}}=10\text{V}, I_{\text{D}}=10\text{A}$	---	18	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{\text{DS}}=25\text{V}, V_{\text{GS}}=0\text{V}, f=1\text{MHz}$	---	1160	1900	pF
C_{oss}	Output Capacitance		---	200	400	
C_{rss}	Reverse Transfer Capacitance		---	180	360	
Switching Characteristics						
$t_{\text{d}(\text{on})}$	Turn-On Delay Time ^{2,3}	$V_{\text{DS}}=15\text{V}, I_{\text{D}}=15\text{A}, R_{\text{GEN}}=3.3 \Omega, V_{\text{GS}}=10\text{V}$	---	7.5	15	ns
t_r	Rise Time ^{2,3}		---	14.5	28	ns
$t_{\text{d}(\text{off})}$	Turn-Off Delay Time ^{2,3}		---	35.2	60	ns
t_f	Fall Time ^{2,3}		---	9.6	19	ns



Q_g	Total Gate Charge ^{2,3}	$V_{GS}=4.5V, V_{DS}=15V,$ $I_D=20A$	---	11.1	22	nC
Q_{gs}	Gate-Source Charge ^{2,3}		---	1.85	3.7	nC
Q_{gd}	Gate-Drain "Miller" Charge ^{2,3}		---	6.8	13	nC

Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ³	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}C$	---	---	1	V
I_S	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	40	A

Notes:

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

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

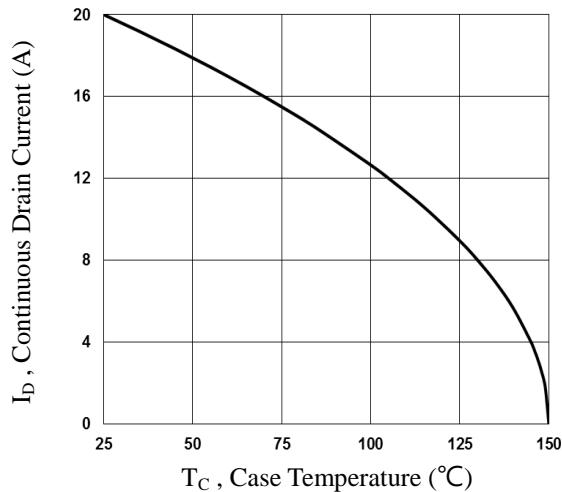


Fig.1 Continuous Drain Current vs. T_c

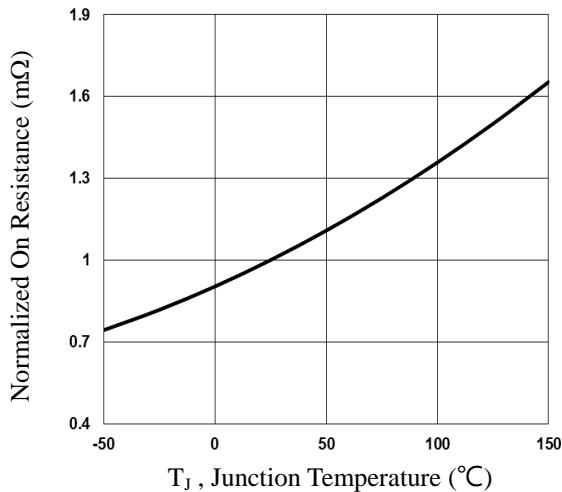


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

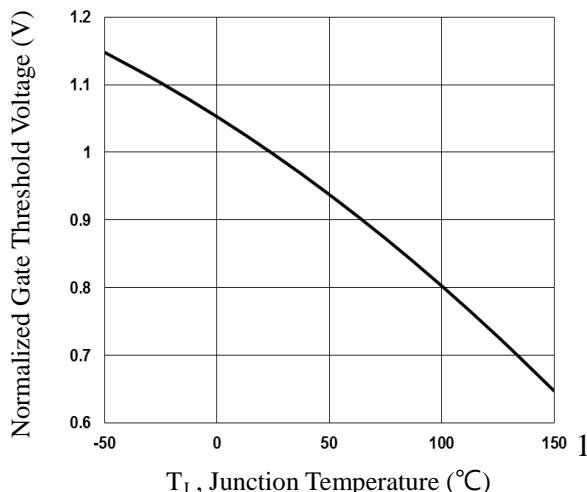


Fig.3 Normalized V_{th} vs. T_j

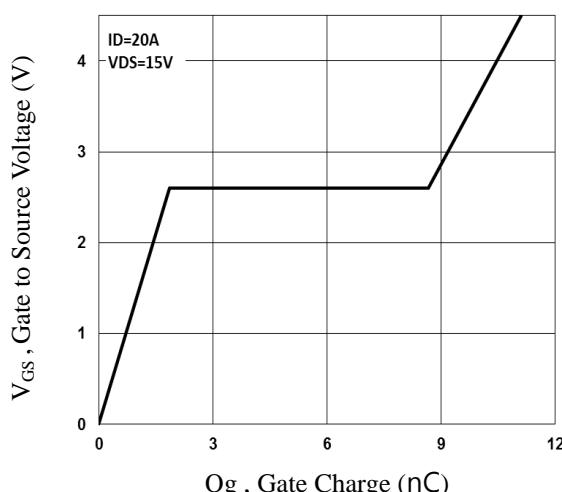


Fig.4 Gate Charge Waveform

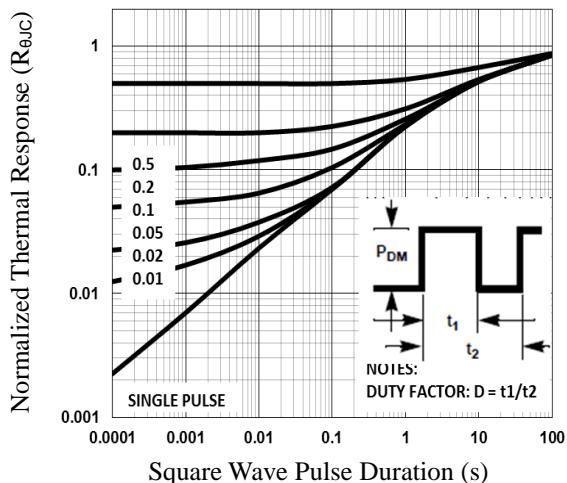


Fig.5 Normalized Transient Impedance

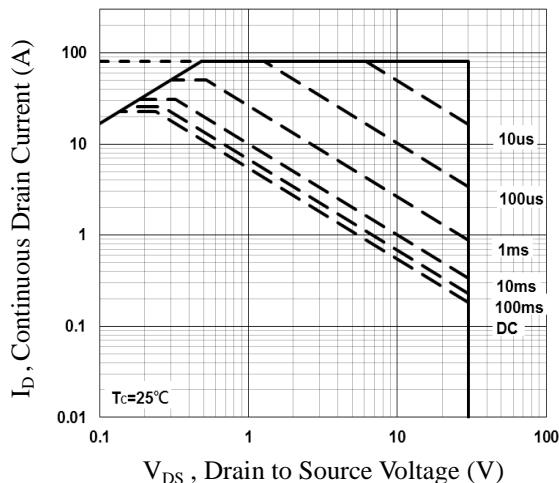


Fig.6 Maximum Safe Operation Area

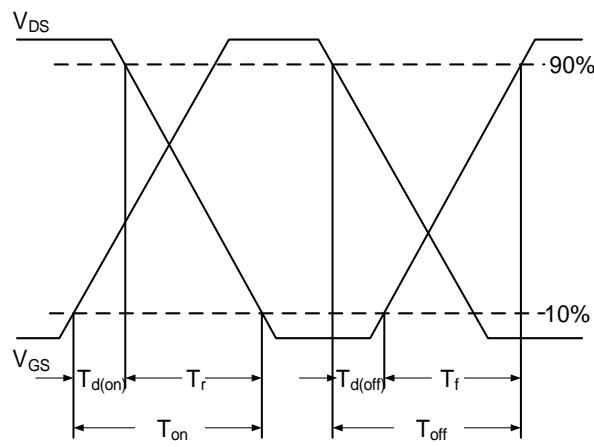


Fig.7 Switching Time Waveform

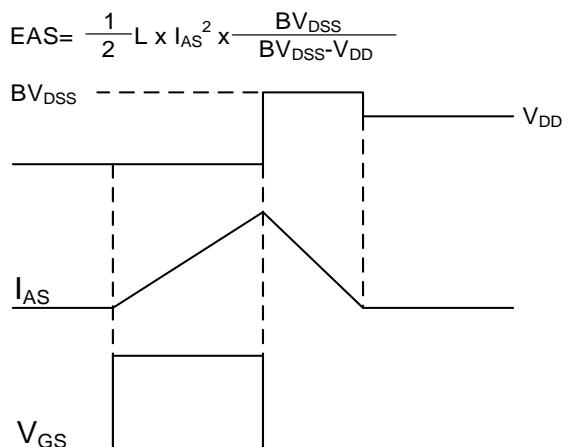


Fig.8 EAS Waveform



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