

General Description

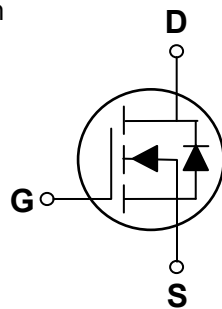
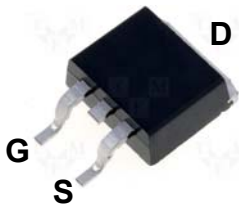
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

BVDSS	R _{DS(ON)}	ID
100V	6.5mΩ	100A

Features

- 100V,100A, R_{DS(ON)} = 6.5mΩ@V_{GS} = 10V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

TO263 Pin Configuration



Applications

- Networking
- Load Switch
- LED applications
- Quick Charger



Absolute Maximum Ratings T_c=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	100	V
V _{GS}	Gate-Source Voltage	+20/-12	V
I _D	Drain Current – Continuous (T _C =25°C)	100	A
	Drain Current – Continuous (T _C =100°C)	63	A
I _{DM}	Drain Current – Pulsed ¹	400	A
EAS	Single Pulse Avalanche Energy ²	320	mJ
IAS	Single Pulse Avalanche Current ²	80	A
P _D	Power Dissipation (T _C =25°C)	184	W
	Power Dissipation – Derate above 25°C	1.47	W/°C
T _{STG}	Storage Temperature Range	-50 to 150	°C
T _J	Operating Junction Temperature Range	-50 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to ambient	---	62	°C/W
R _{θJC}	Thermal Resistance Junction to Case	---	0.68	°C/W



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

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	---	---	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ C$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=20V, V_{DS}=0V$	---	---	100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$	---	5.5	6.5	m Ω
		$V_{GS}=5V, I_D=10A$	---	7	9	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.8	2.5	V
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=5A$	---	8	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge ^{3,4}	$V_{DS}=80V, V_{GS}=10V, I_D=10A$	---	58.2	100	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	9.2	18	
Q_{gd}	Gate-Drain Charge ^{3,4}		---	20.8	30	
$T_{d(on)}$	Turn-On Delay Time ^{3,4}	$V_{DD}=50V, V_{GS}=10V, R_G=6\Omega$ $I_D=1A$	---	24	48	ns
T_r	Rise Time ^{3,4}		---	19.8	39	
$T_{d(off)}$	Turn-Off Delay Time ^{3,4}		---	46	92	
T_f	Fall Time ^{3,4}		---	26	52	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1MHz$	---	3110	7500	pF
C_{oss}	Output Capacitance		---	1705	4200	
C_{rss}	Reverse Transfer Capacitance		---	178	220	
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	---	2	4	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	100	A
I_{SM}	Pulsed Source Current		---	---	200	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	---	---	1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=80A, R_G=25\Omega, \text{Starting } T_J=25^\circ C$.
3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

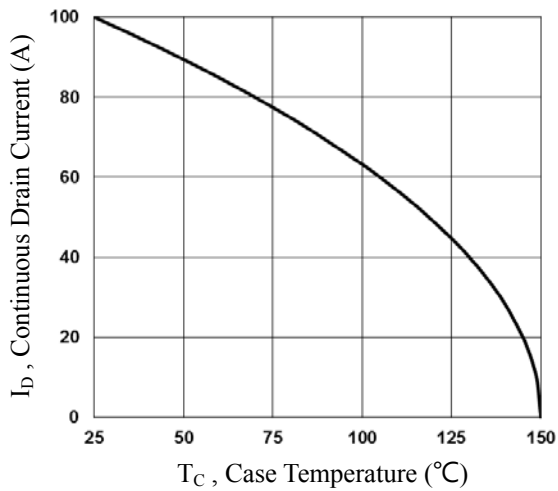


Fig.1 Continuous Drain Current vs. T_C

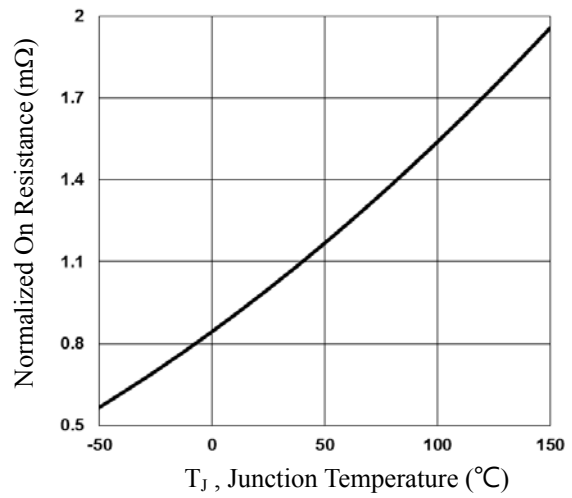


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

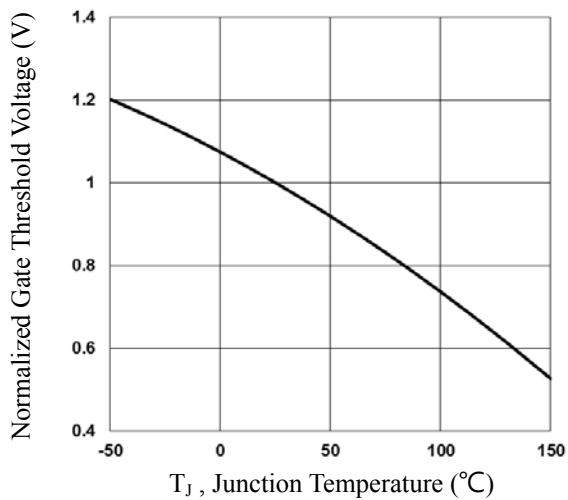


Fig.3 Normalized V_{th} vs. T_J

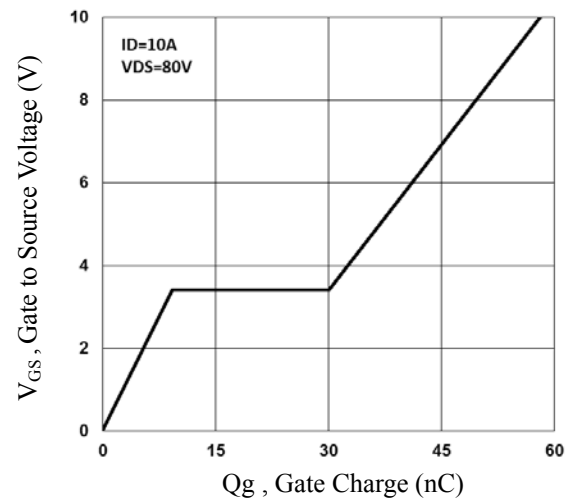


Fig.4 Gate Charge Characteristics

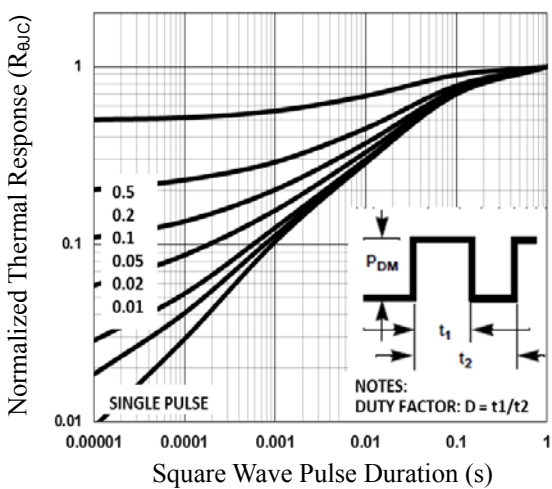


Fig.5 Normalized Transient Impedance

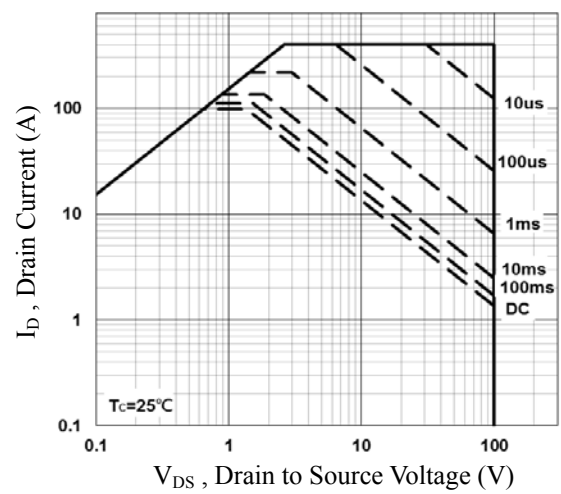


Fig.6 Maximum Safe Operation Area

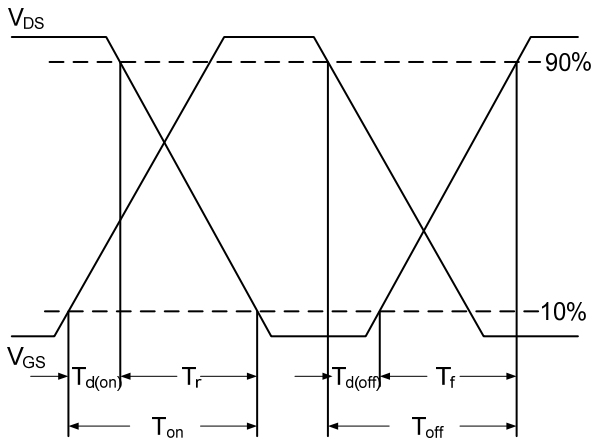


Fig.7 Switching Time Waveform

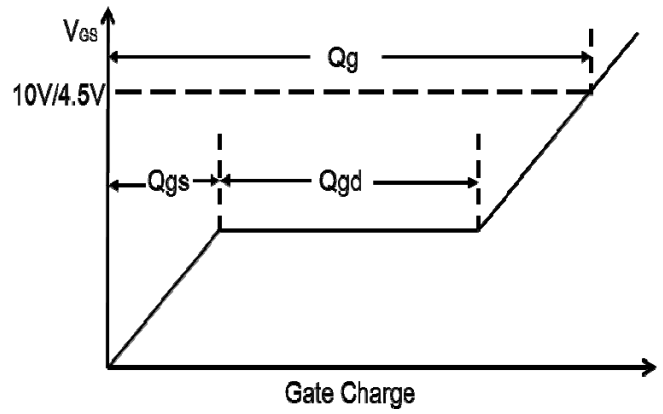


Fig.8 Gate Charge Waveform