PRODUCT DATA SHEET

To learn more about JGSEMI, please visit our website at

Datasheet Resources Samples

Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

General Description

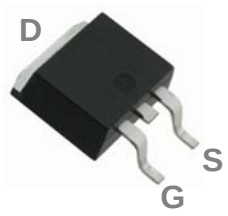
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

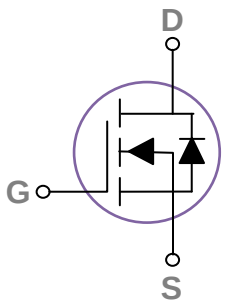
BVDSS	RDSON	ID
100V	75mΩ	15A

Features

- *100V,15A, RDS(ON) =75mΩ@VGS = 10V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

TO252 Pin Configuration





Applications

- *Networking*
- *Load Switch*
- *LED applications*

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25˚C)	15	A
	Drain Current – Continuous (T_C=100˚C)	9.5	A
I_{DM}	Drain Current – Pulsed[1]	60	A
P_D	Power Dissipation (T_C=25˚C)	50	W
	Power Dissipation – Derate above 25˚C	0.4	W/˚C
T_{STG}	Storage Temperature Range	-50 to 150	˚C
T_J	Operating Junction Temperature Range	-50 to 125	˚C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62	˚C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	2.5	˚C/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	100	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.05	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=100V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=125℃	---	---	10	uA
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=5A	---	75	95	mΩ
		V_{GS}=4.5V , I_D=3A	---	85	110	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	1.8	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5	---	mV/℃
gfs	Forward Transconductance	V_{DS}=10V , I_D=3A	---	8.7	---	S

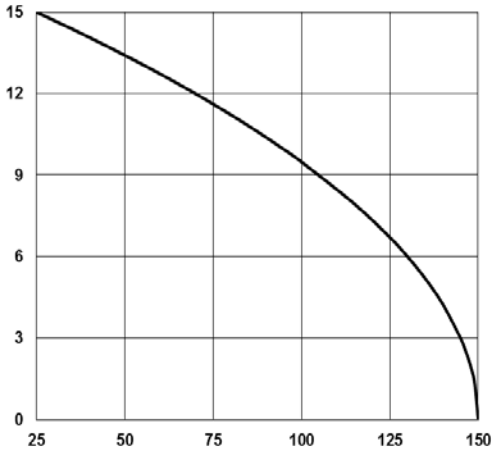
Dynamic and switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=48V , V_{GS}=10V , I_D=5A	---	9.3	13	nC
Q_{gs}	Gate-Source Charge[2,3]		---	2.1	4.2	
Q_{gd}	Gate-Drain Charge[2,3]		---	1.8	4	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=30V , V_{GS}=10V , R_G=3.3Ω I_D=1A	---	2.9	6	ns
T_r	Rise Time[2,3]		---	9.5	18	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	18.4	35	
T_f	Fall Time[2,3]		---	5.3	10	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	1480	2150	pF
C_{oss}	Output Capacitance		---	480	700	
C_{rss}	Reverse Transfer Capacitance		---	35	55	
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	1.3	2.6	Ω

Drain-Source Diode Characteristics and Maximum Ratings

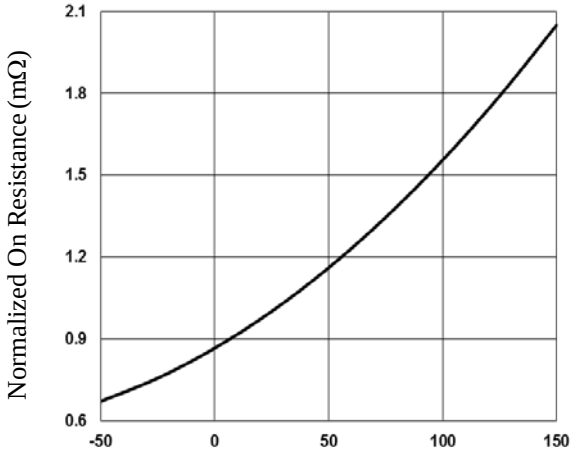
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	15	A
I_{SM}	Pulsed Source Current		---	---	60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V
t_{rr}	Reverse Recovery Time[2]	V_{GS}=30V,I_S=1A , dI/dt=100A/μs T_J=25℃	---	---	---	ns
Q_{rr}	Reverse Recovery Charge[2]		---	---	---	nC

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.



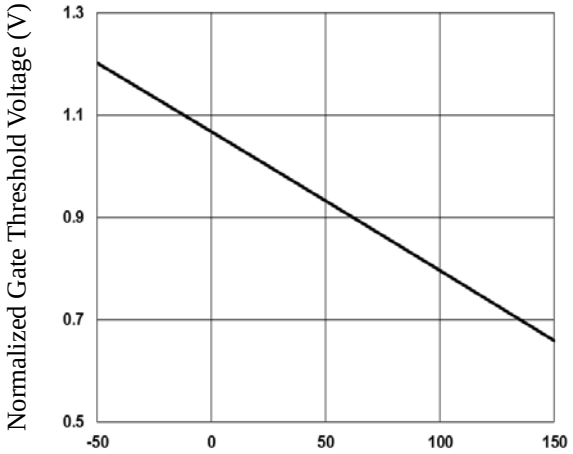
T_C , Case Temperature (℃)

Fig.1 Continuous Drain Current vs. TC



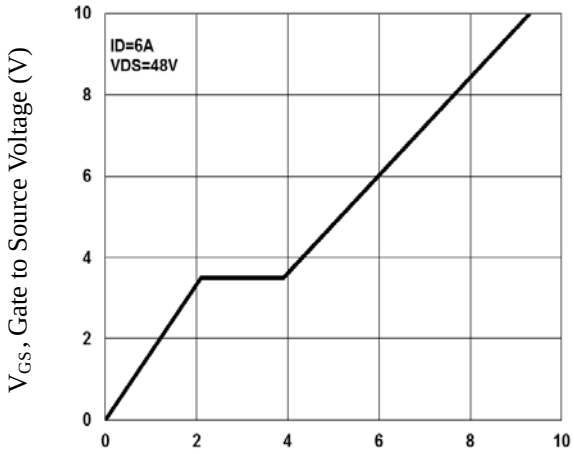
T_J , Junction Temperature (℃)

Fig.2 Normalized RDSON vs. TJ



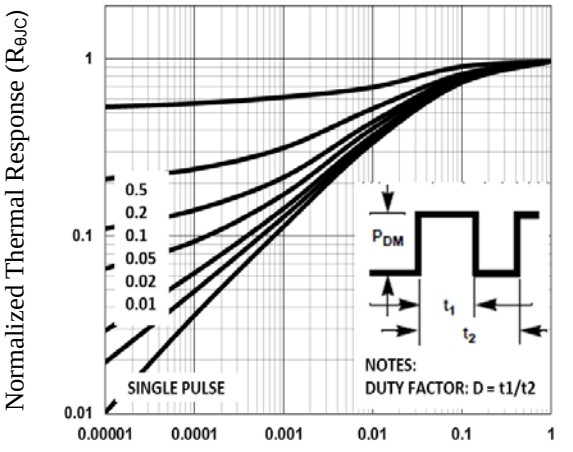
T_J , Junction Temperature (℃)

Fig.3 Normalized V_{th} vs. T_J



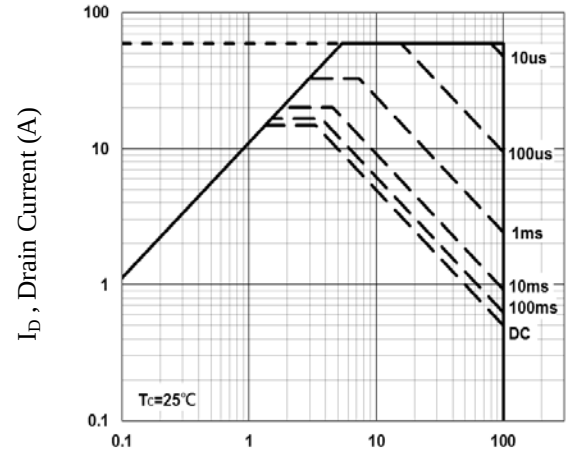
Qg , Gate Charge (nC)

Fig.4 Gate Charge Characteristics



Square Wave Pulse Duration (s)

Fig.5 Normalized Transient Impedance



V_{DS} , Drain to Source Voltage (V)

Fig.6 Maximum Safe Operation Area

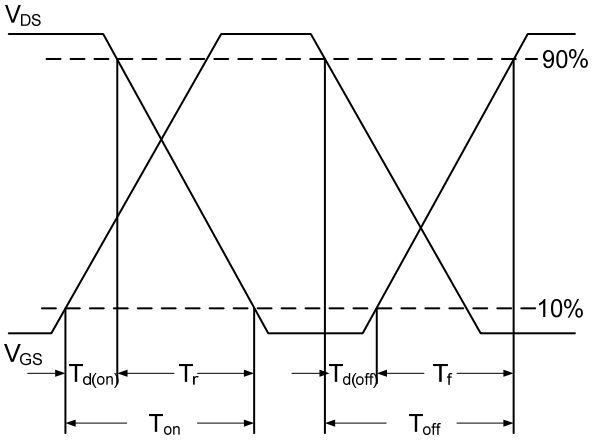


Fig.7 Switching Time Waveform

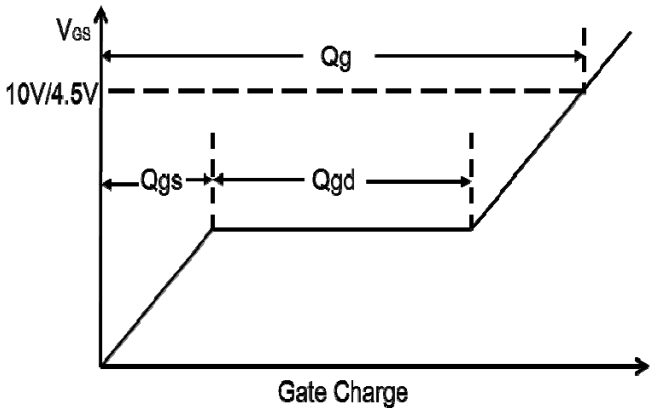
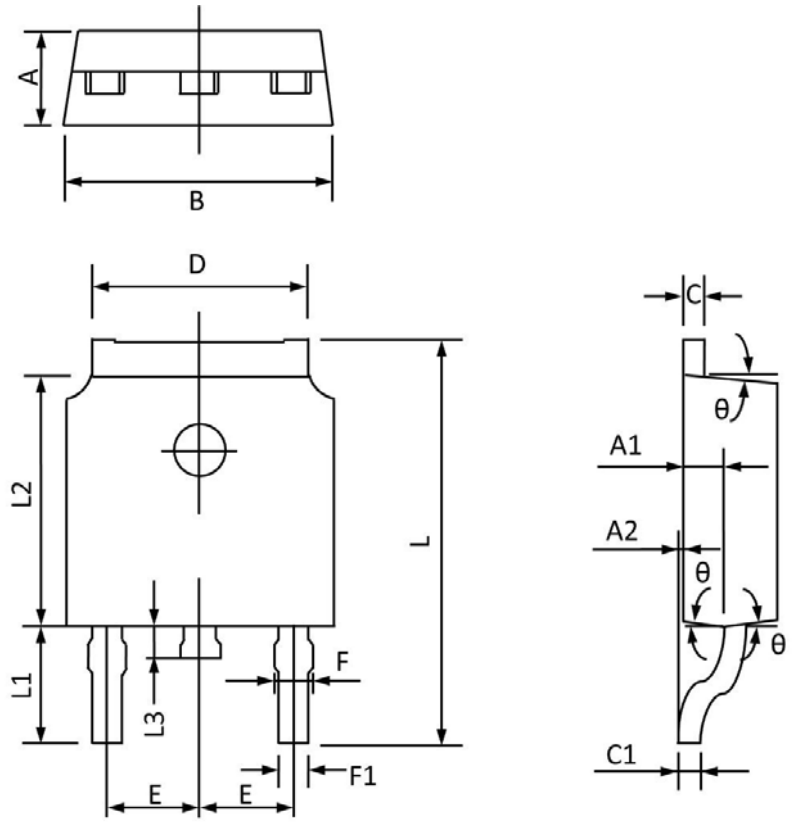


Fig.8 Gate Charge Waveform

TO252 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.20	2.40	0.087	0.094
A1	0.91	1.11	0.036	0.044
A2	0.00	0.15	0.000	0.006
B	6.50	6.70	0.256	0.264
C	0.46	0.580	0.018	0.230
C1	0.46	0.580	0.018	0.030
D	5.10	5.46	0.201	0.215
E	2.186	2.386	0.086	0.094
F	0.74	0.94	0.029	0.037
F1	0.660	0.860	0.026	0.034
L	9.80	10.40	0.386	0.409
L1	2.9REF		0.114REF	
L2	6.00	6.20	0.236	0.244
L3	0.60	1.00	0.024	0.039
θ	3°	9°	3°	9°

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