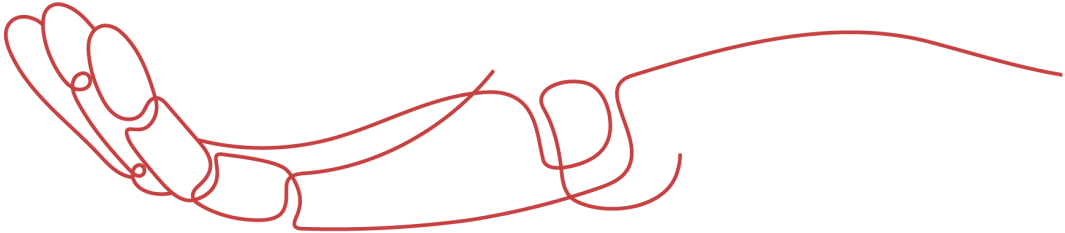




PRODUCT DATA SHEET



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

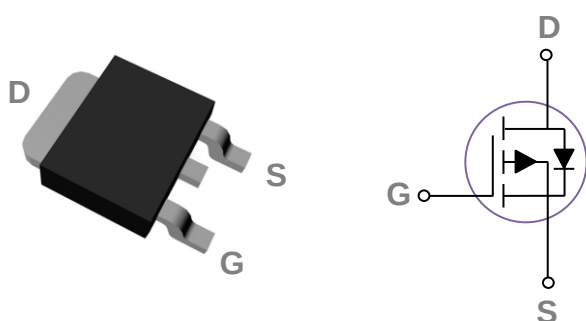
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BVDSS	RDS(on)	ID
-60V	22mΩ	-35A

Features

- -60V, -35A, $R_{DS(ON)} = 22m\Omega @ V_{GS} = -10V$
- Fast switching
- Green Device Available
- Suit for -4.5V Gate Drive Applications

TO252 Pin Configuration



Applications

- POL Applications
- Load Switch
- LED Application

Absolute Maximum Ratings $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_c=25^\circ\text{C}$)	-35	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	-22.1	A
I_{DM}	Drain Current – Pulsed ¹	-140	A
EAS	Single Pulse Avalanche Energy ²	105	mJ
IAS	Single Pulse Avalanche Current ²	-46	A
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	72.6	W
	Power Dissipation – Derate above 25°C	0.58	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	1.72	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	62	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-60V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{DS}=-48V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	-10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-8A$	---	22	28	m Ω
		$V_{GS}=-4.5V, I_D=-6A$	---	26	35	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.0	-1.6	-2.5	V
gfs	Forward Transconductance	$V_{DS}=-10V, I_D=-3A$	---	18	---	S

Dynamic and switching Characteristics

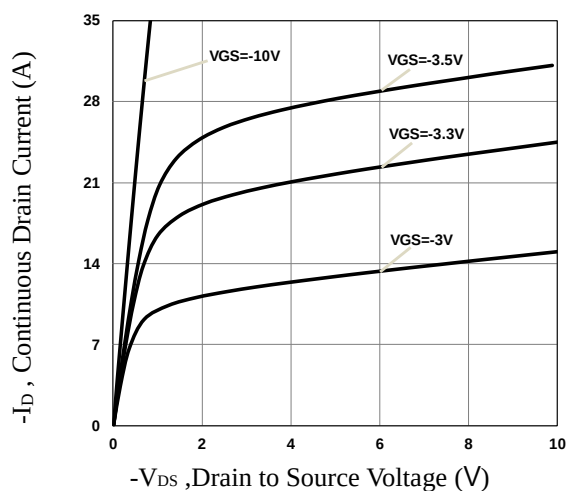
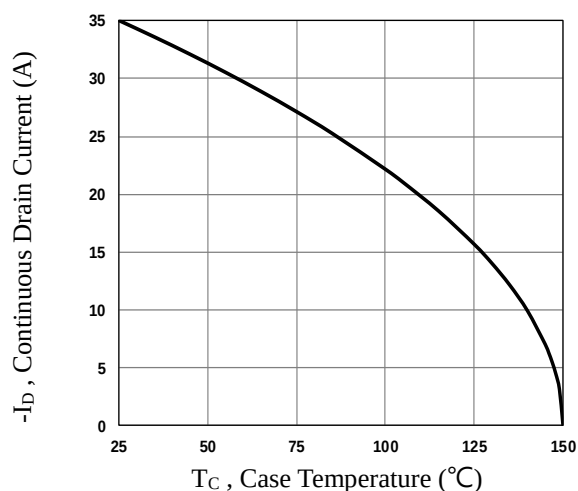
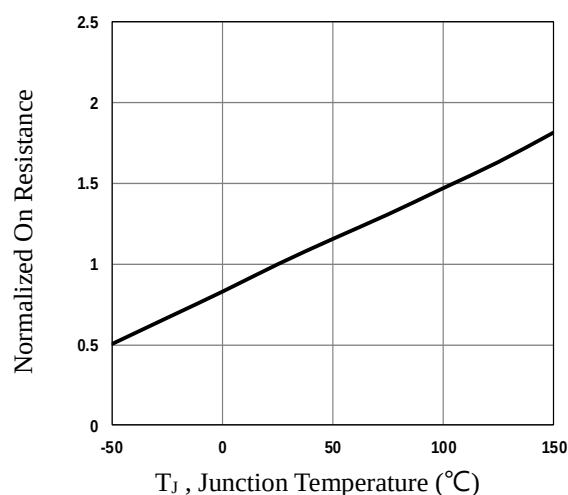
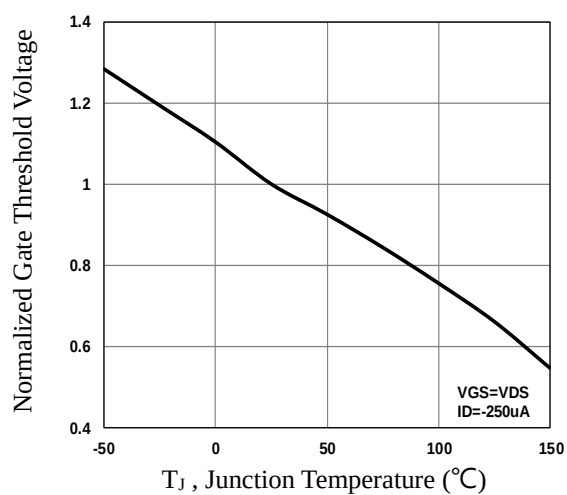
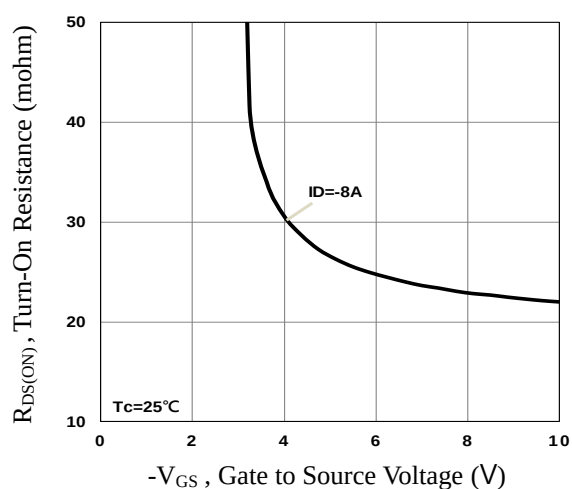
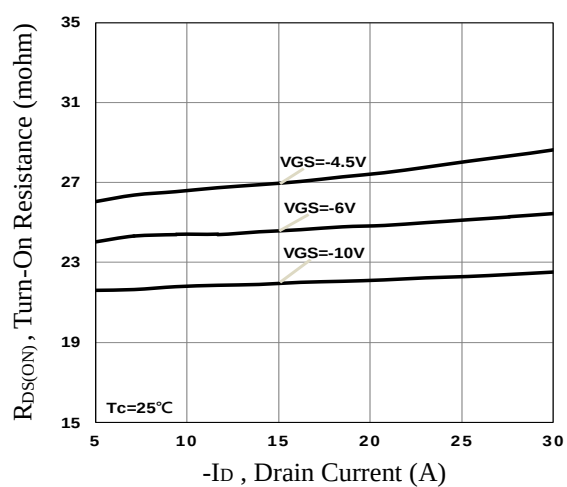
Q_g	Total Gate Charge ^{3, 4}	$V_{DS}=-30V, V_{GS}=-10V, I_D=-5A$	---	43.8	88	nC
			---	20	40	
Q_{gs}	Gate-Source Charge ^{3, 4}	$V_{DS}=-30V, V_{GS}=-4.5V, I_D=-5A$	---	4.6	9	
Q_{gd}	Gate-Drain Charge ^{3, 4}		---	8.3	17	
$T_{d(on)}$	Turn-On Delay Time ^{3, 4}	$V_{DD}=-30V, V_{GS}=-10V, R_G=6\Omega$ $I_D=-1A$	---	25	50	ns
T_r	Rise Time ^{3, 4}		---	13.8	28	
$T_{d(off)}$	Turn-Off Delay Time ^{3, 4}		---	148	290	
T_f	Fall Time ^{3, 4}		---	51	100	
C_{iss}	Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, F=1\text{MHz}$	---	2595	3900	pF
C_{oss}	Output Capacitance		---	162	240	
C_{rss}	Reverse Transfer Capacitance		---	115	170	

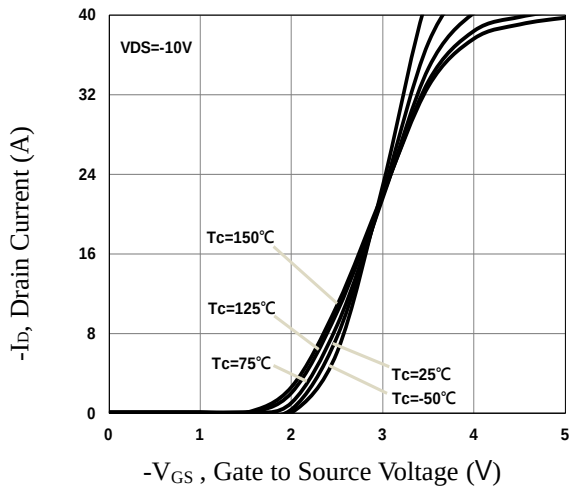
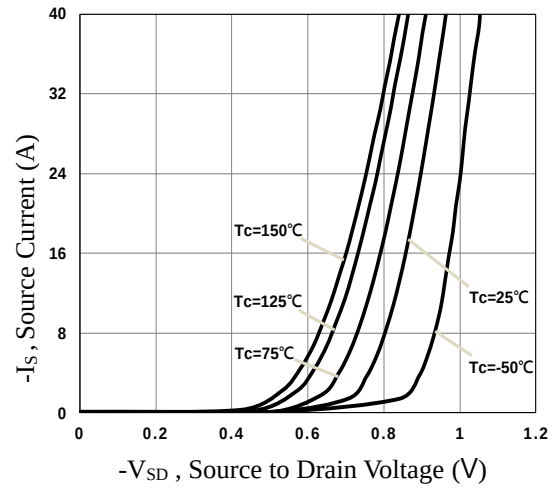
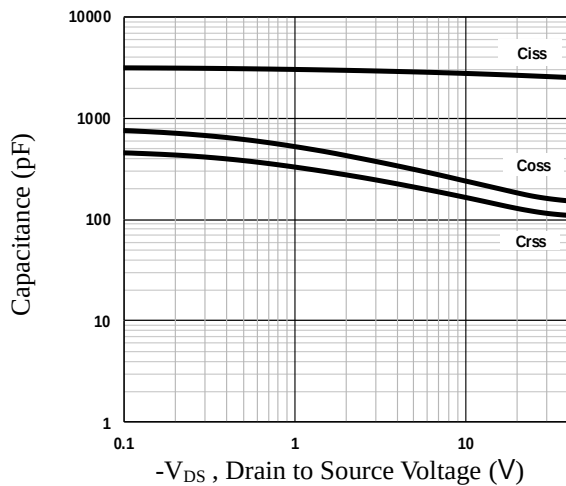
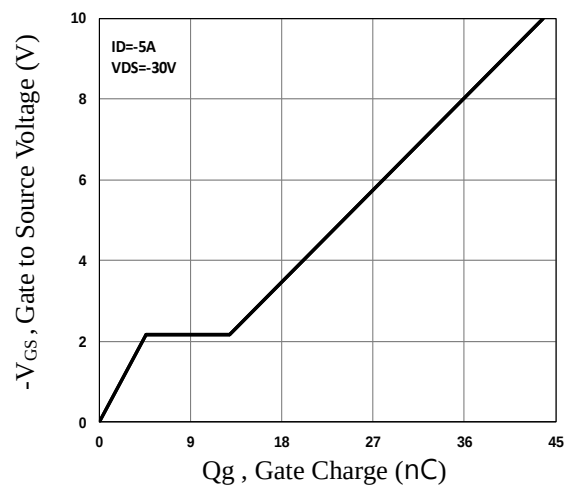
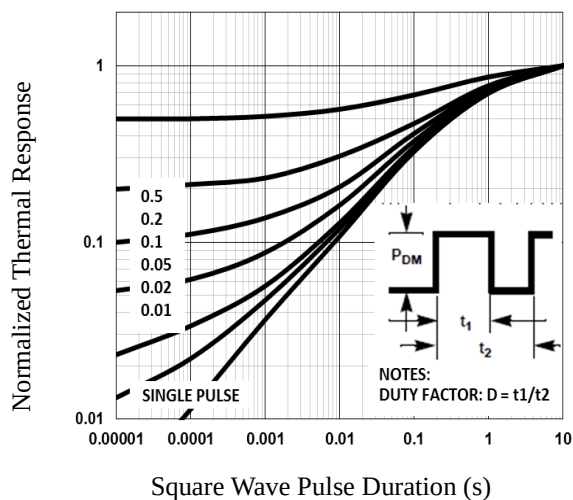
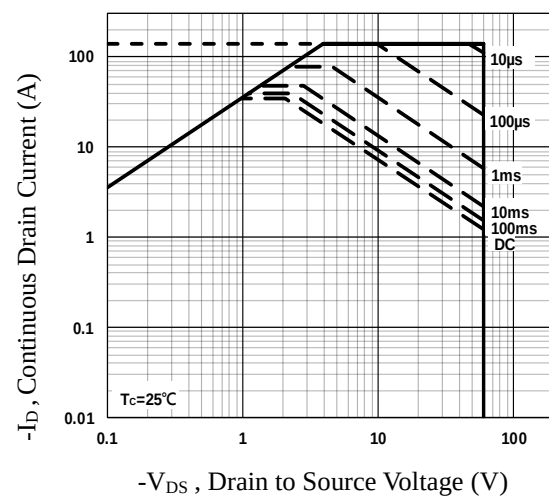
Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-35	A
I_{SM}	Pulsed Source Current		---	---	-70	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	---	---	-1	V

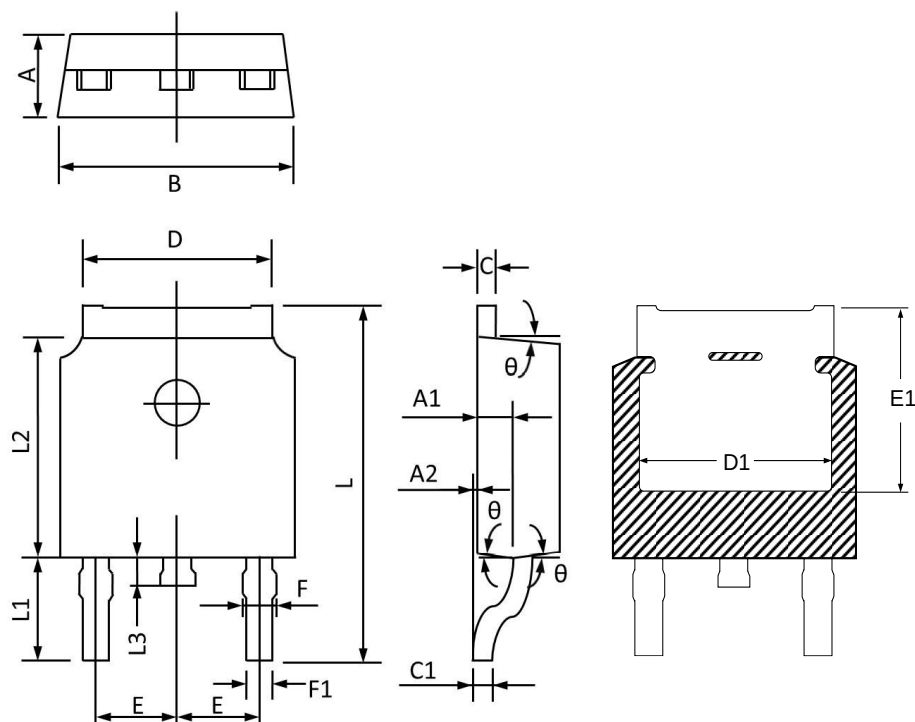
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=-25V, V_{GS}=-10V, L=0.1\text{mH}, I_{AS}=-46A$, Starting $T_J=25^\circ\text{C}$
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.


Fig.1 Typical Output Characteristics

Fig.2 Continuous Drain Current vs. T_C

Fig.3 Normalized $R_{DS(on)}$ vs. T_J

Fig.4 Normalized V_{th} vs. T_J

Fig.5 Turn-On Resistance vs. V_{GS}

Fig.6 Turn-On Resistance vs. I_D

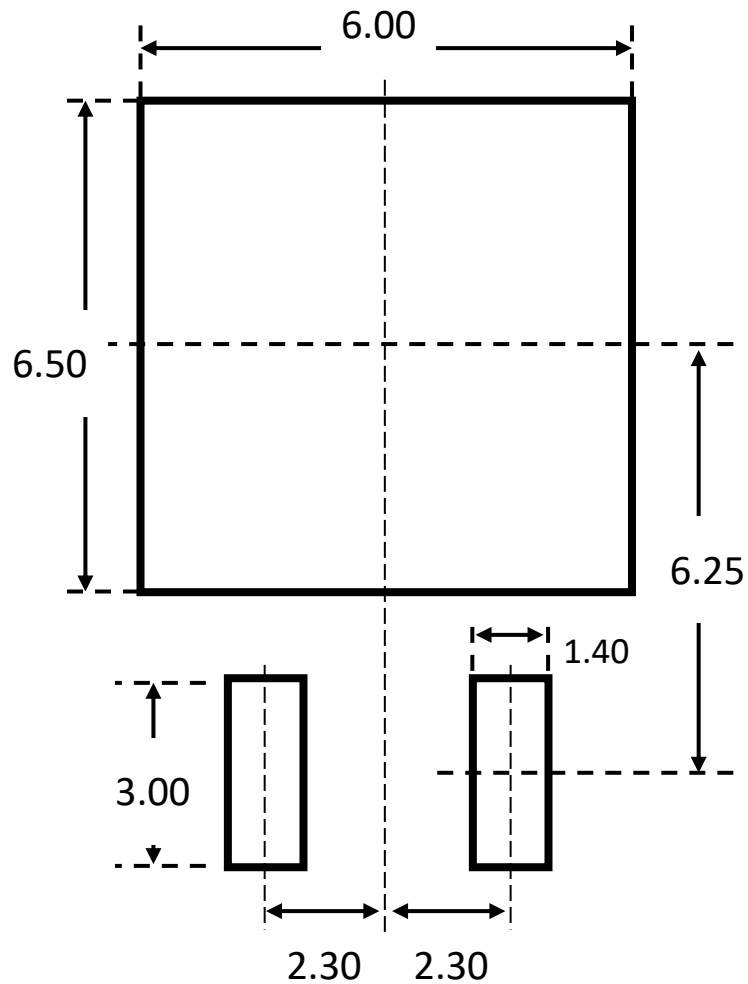

Fig.7 Transfer Characteristics

Fig.8 Source Current vs. V_{SD}

Fig.9 Capacitance Characteristics

Fig.10 Gate Charge Characteristics

Fig.11 Normalized Transient Impedance

Fig.12 Maximum Safe Operation Area

TO252 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.450	2.150	0.096	0.085
A1	1.200	0.900	0.047	0.035
A2	0.250	0.000	0.010	0.000
B	6.800	6.300	0.268	0.248
C	0.600	0.350	0.024	0.014
C1	0.600	0.380	0.024	0.015
D	5.500	5.100	0.217	0.201
D1	5.400	4.950	0.212	0.195
E	2.400	2.000	0.094	0.079
E1	5.650	4.950	0.222	0.194
F	1.150	0.600	0.045	0.024
F1	0.900	0.500	0.035	0.020
L	10.400	9.400	0.409	0.370
L1	3.100	2.400	0.122	0.094
L2	6.300	5.300	0.248	0.209
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°

TO252 RECOMMENDED LAND PATTERN



unit : mm

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