



## PRODUCT DATA SHEET



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**Datasheet**



**Resources**



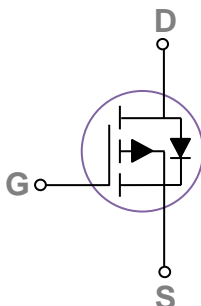
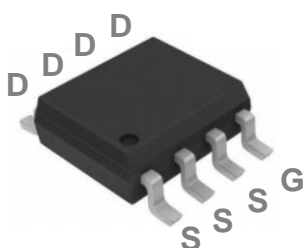
**Samples**

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](http://www.jg-semi.cn). Please email any questions regarding the system integration to [JINGAO\\_questions@jgsemi.com](mailto: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.

## SOP8 Pin Configuration



BVDSS	RDSON	ID
-30V	15.5mΩ	-10A

## Features

- -30V, -10A, RDS(ON) = 15.5mΩ@VGS = -10V
- Fast switching
- Green Device Available
- Suit for -4.5V Gate Drive Applications

## Applications

- MB / VGA / Vcore
- 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	-30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current – Continuous ( $T_A=25^{\circ}\text{C}$ )	-10	A
	Drain Current – Continuous ( $T_A=70^{\circ}\text{C}$ )	-8	A
$I_{DM}$	Drain Current – Pulsed <sup>1</sup>	-40	A
$P_D$	Power Dissipation ( $T_A=25^{\circ}\text{C}$ )	2.5	W
	Power Dissipation – Derate above $25^{\circ}\text{C}$	0.02	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
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	50	$^{\circ}\text{C/W}$

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**
**Off Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =-250uA	-30	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25°C , I <sub>D</sub> =-1mA	---	-0.03	---	V/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-30V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	-1	uA
		V <sub>DS</sub> =-24V , V <sub>GS</sub> =0V , T <sub>J</sub> =125°C	---	---	-10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA

**On Characteristics**

R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V , I <sub>D</sub> =-8A	---	12.4	15.5	mΩ
		V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-6A	---	19.2	25	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250uA	-1.0	-1.6	-2.5	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	4	---	mV/°C
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-10V , I <sub>D</sub> =-8A	---	10.5	---	S

**Dynamic and switching Characteristics**

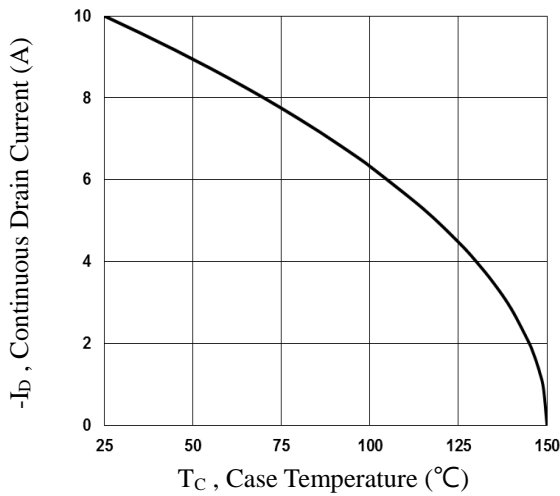
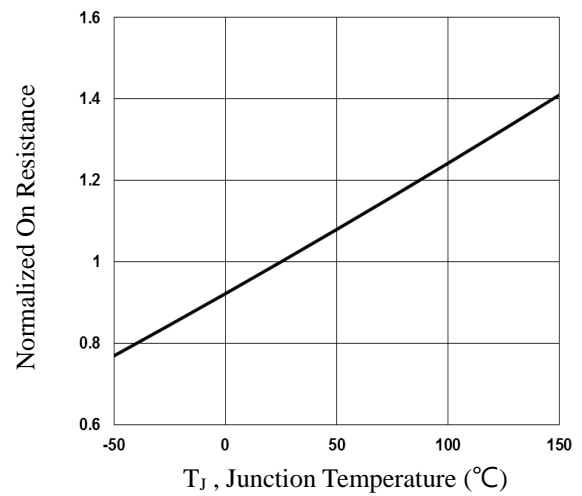
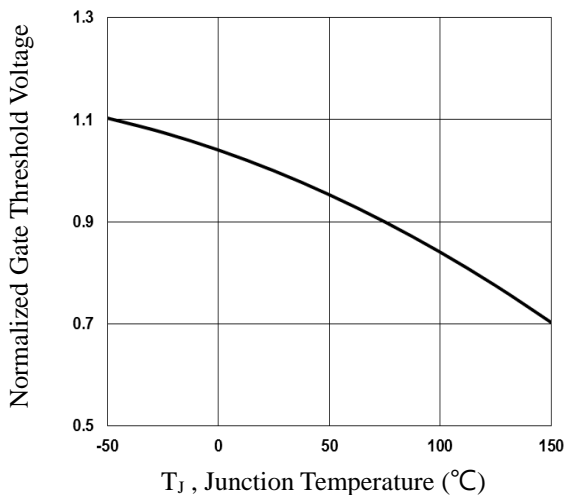
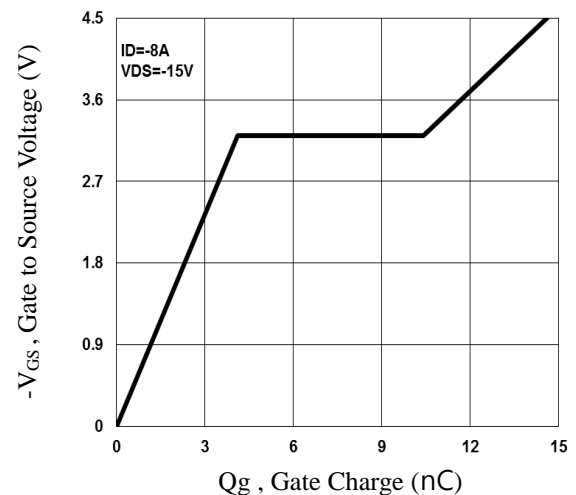
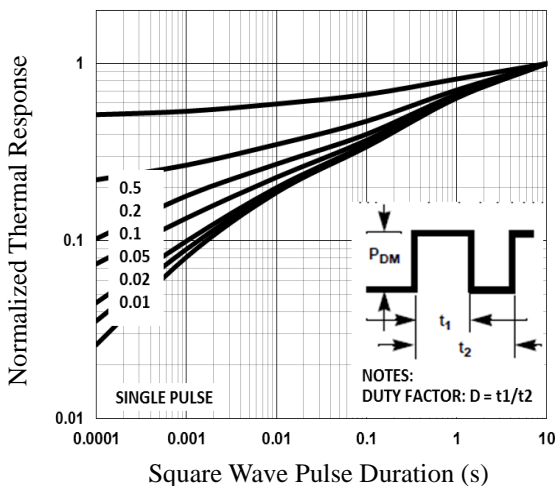
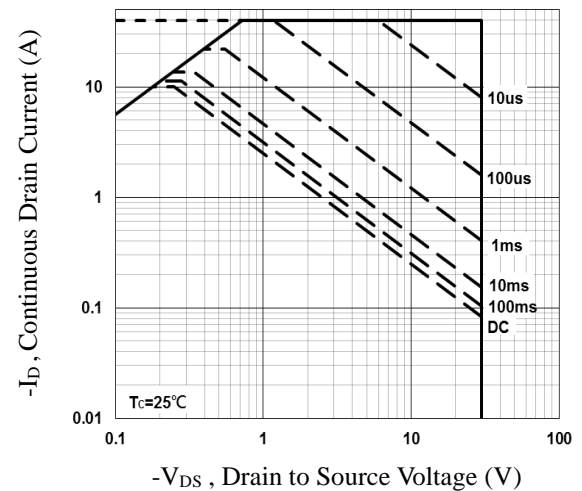
Q <sub>g</sub>	Total Gate Charge <sup>2, 3</sup>	V <sub>DS</sub> =-15V , V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-8A	---	14.6	21	nC
Q <sub>gs</sub>	Gate-Source Charge <sup>2, 3</sup>		---	4.1	6	
Q <sub>gd</sub>	Gate-Drain Charge <sup>2, 3</sup>		---	6.3	9	
T <sub>d(on)</sub>	Turn-On Delay Time <sup>2, 3</sup>	V <sub>DD</sub> =-15V , V <sub>GS</sub> =-10V , R <sub>G</sub> =6Ω I <sub>D</sub> =-1A	---	9	17	ns
T <sub>r</sub>	Rise Time <sup>2, 3</sup>		---	21.8	41	
T <sub>d(off)</sub>	Turn-Off Delay Time <sup>2, 3</sup>		---	59.8	114	
T <sub>f</sub>	Fall Time <sup>2, 3</sup>		---	14.4	27	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-15V , V <sub>GS</sub> =0V , F=1MHz	---	1730	2510	pF
C <sub>oss</sub>	Output Capacitance		---	180	260	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	125	180	

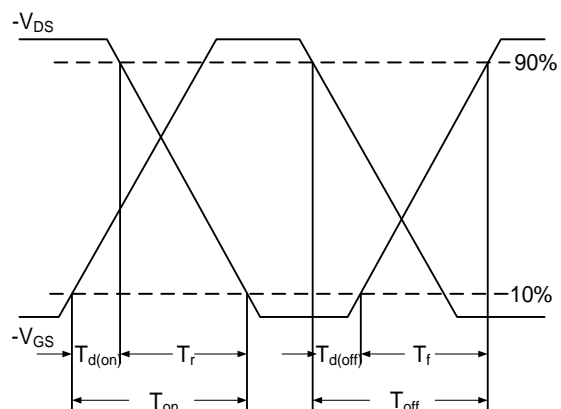
**Drain-Source Diode Characteristics and Maximum Ratings**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	-10	A
I <sub>SM</sub>	Pulsed Source Current		---	---	-40	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =-1A , T <sub>J</sub> =25°C	---	---	-1	V

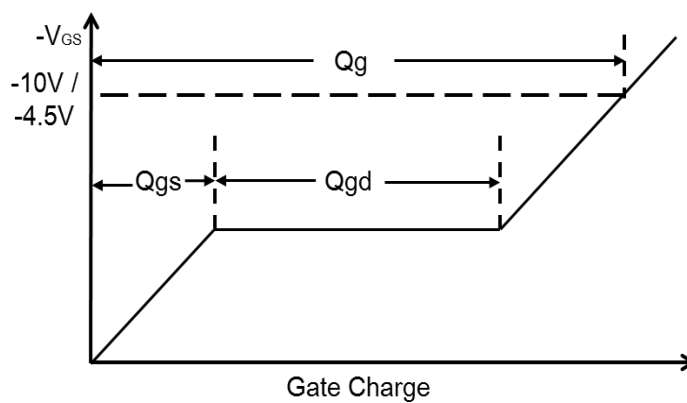
Note :

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.


**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**

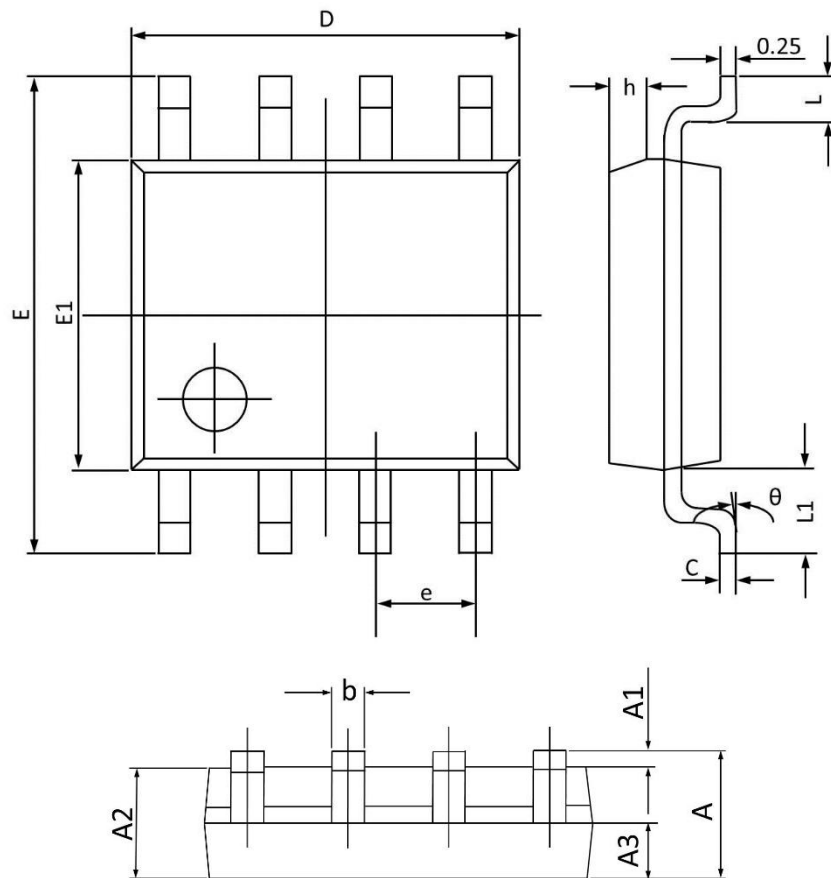


**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

## SOP8 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.800	0.053	0.069
A1	0.050	0.250	0.002	0.010
A2	1.250	1.650	0.049	0.065
A3	0.500	0.700	0.020	0.028
b	0.300	0.510	0.012	0.020
c	0.150	0.260	0.006	0.010
D	4.700	5.100	0.185	0.201
E	5.800	6.200	0.228	0.244
E1	3.700	4.100	0.146	0.161
e	1.270(BSC)		0.050(BSC)	
h	0.250	0.500	0.010	0.020
L	0.400	1.000	0.016	0.039
L1	1.050(BSC)		0.041(BSC)	
$\theta$	0°	8°	0°	8°

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