



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. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

General Description

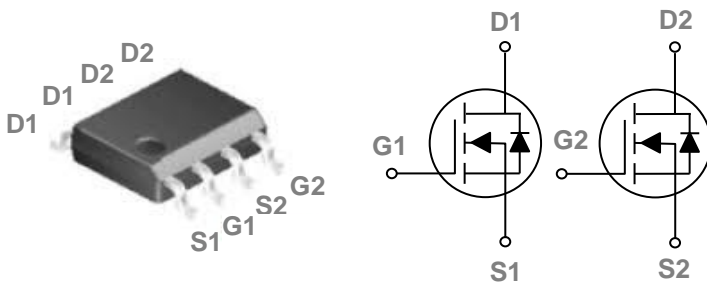
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BVDSS	RDSON	ID
60V	28mΩ	6A

Features

- 60V,6A,RDS(ON) =28mΩ@VGS = 10V
- Excellent CdV/dt effect decline
- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available

SOP8 Dual Pin Configuration



Applications

- Motor Drive
- Power Tools
- LED Lighting

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 ($T_A=25^\circ\text{C}$)	6	A
	Drain Current – Continuous ($T_A=70^\circ\text{C}$)	4.5	A
I_{DM}	Drain Current – Pulsed ¹	22	A
EAS	Single Pulse Avalanche Energy ²	22	mJ
IAS	Single Pulse Avalanche Current ²	23	A
P_D	Power Dissipation ($T_A=25^\circ\text{C}$)	1.5	W
	Power Dissipation – Derate above 25°C	0.016	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-50 to 125	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	85	$^\circ\text{C/W}$

Electrical Characteristics (T_J=25 °C, unless otherwise noted)
Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, V _{GS} =0V, T _J =25°C	---	---	1	μA
		V _{DS} =42V, V _{GS} =0V, T _J =125°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 =8A	---	28	40	mΩ
		V _{GS} =4.5V, I _D =4A	---	36	50	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	1.0	1.6	2.5	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =1A	---	5	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2, 3}	V _{DS} =30V, V _{GS} =10V, I _D =2.5A	---	20.3	---	nC
Q _{gs}	Gate-Source Charge ^{2, 3}		---	3.7	---	
Q _{gd}	Gate-Drain Charge ^{2, 3}		---	5.3	---	
T _{d(on)}	Turn-On Delay Time ^{2, 3}	V _{DD} =15V, V _{GS} =10V, R _G =3.3Ω I _D =1A	---	7.6	---	ns
T _r	Rise Time ^{2, 3}		---	20	---	
T _{d(off)}	Turn-Off Delay Time ^{2, 3}		---	15	---	
T _f	Fall Time ^{2, 3}		---	25	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, F=1MHz	---	1148	---	pF
C _{oss}	Output Capacitance		---	58.5	---	
C _{rss}	Reverse Transfer Capacitance		---	49.4	---	
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	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	---	---	5	A
I _{SM}	Pulsed Source Current		---	---	20	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V

Note :

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : T_J=25 °C, V_{DD}=30V, V_G=10V, L=0.5mH, R_G=25Ω, I_{AS}=8.7A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

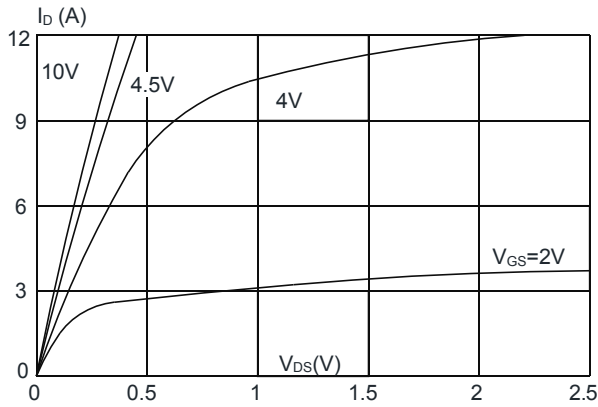


Fig.1 Output Characteristics

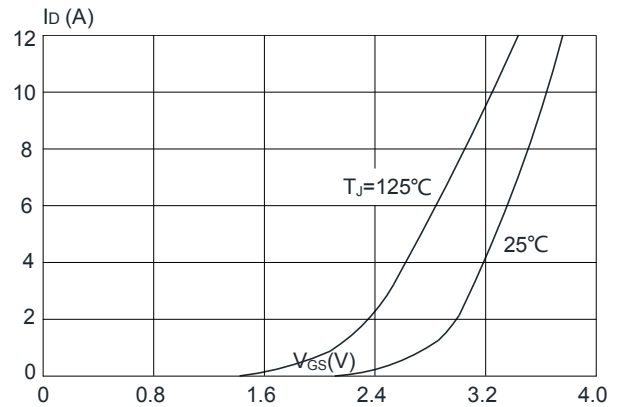


Fig.2 Typical Transfer Characteristics

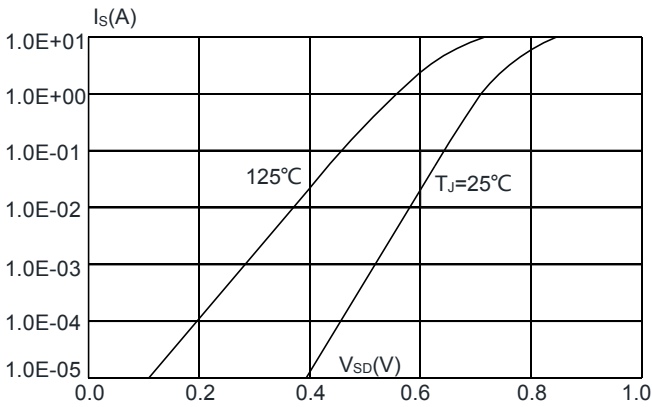


Fig.3 Body Diode Characteristics

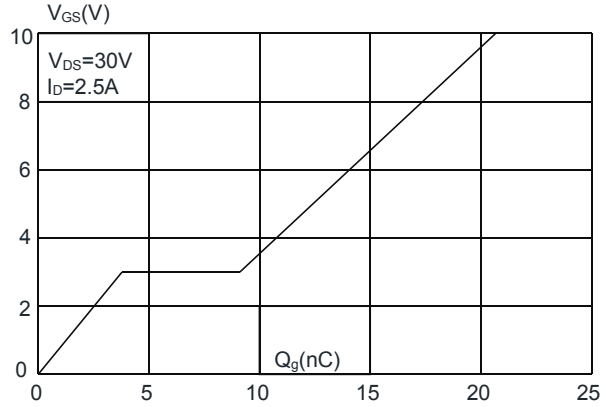


Fig.4 Gate Charge Characteristics

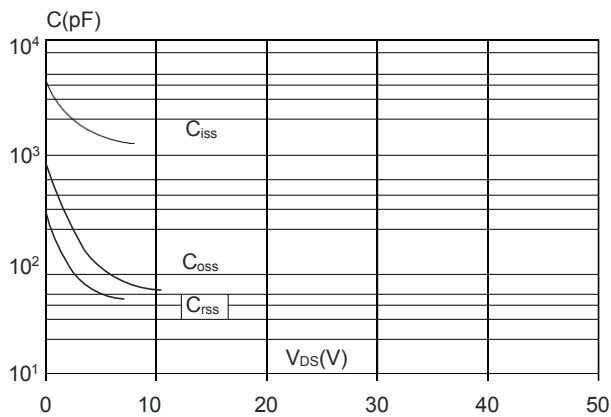


Fig.5 Normalized Transient Impedance

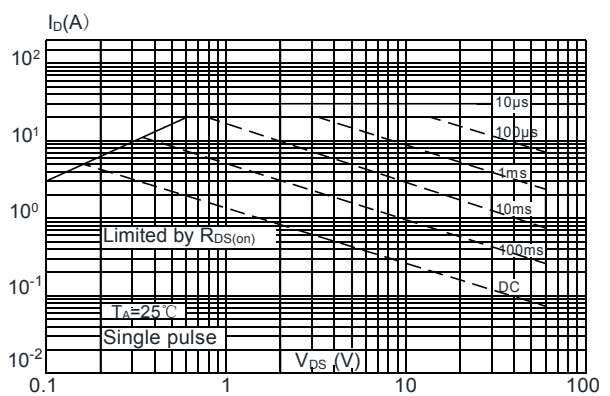
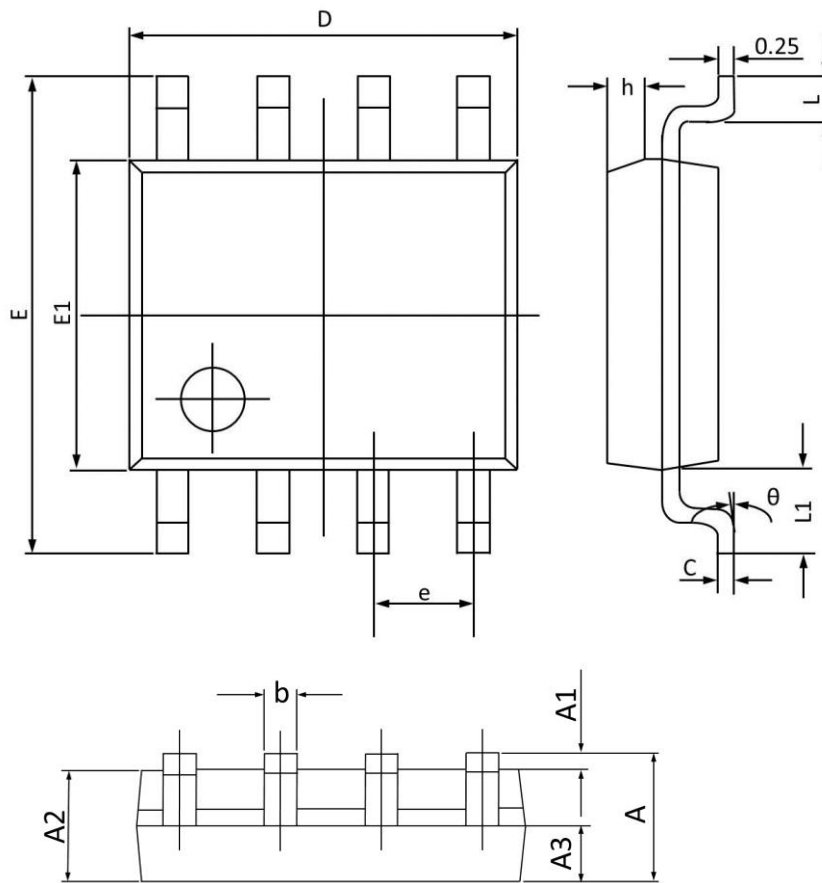


Fig.6 Maximum Safe Operation Area

SOP8 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	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	0.019
L	0.500	0.800	0.019	0.031
L1	1.050(BSC)		0.041(BSC)	
θ	0°	8°	0°	8°

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