

PRODUCT DATA SHEET



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Datasheet

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.

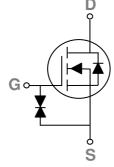
BVDSS	RDSON	ID
60V	2.2Ω	0.3A

Features

- $60V, 0.3A, RDS(ON) = 2.2\Omega@VGS = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- G-S ESD Protection Diode Embedded
- ESD protected up to 2KV

SOT-23 Pin Configuration





Applications

- Motor Drive
- Power Tools
- LED Lighting

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I_	Drain Current – Continuous (Tc=25°C)	0.3	А
ID	Drain Current − Continuous (T _C =100°C)	0.1	Α
І _{рм}	Drain Current – Pulsed ¹	0.8	Α
D-	Power Dissipation (T _C =25°C)	0.35	W
P _D	Power Dissipation – Derate above 25°C	0.003	W/°C
T _{STG}	Storage Temperature Range	-50 to 150	°C
TJ	Operating Junction Temperature Range	-50 to 150	°C

Thermal Characteristics

Symbol	Parameter	Тур.	Max.	Unit
Reja	Thermal Resistance Junction to ambient		357	°C/ W



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

Off Characteristics

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250uA$	60			V
I _{DSS} Drain-Source Leakage Current	Dunin Course London Current	V _{DS} =60V , V _{GS} =0V , T _J =25°C			1	uA
	V _{DS} =48V , V _{GS} =0V , T _J =125°C			10	uA	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V			±10	uA

On Characteristics

R _{DS(ON)} Static Drain-Source On-Resistance	Statio Drain Source On Registance	V _{GS} =10V , I _D =0.3A	:=10V , I _D =0.3A 2	2.2	2.8	Ω
	V_{GS} =4.5 V , I_D =0.2 A		2.4	3.0	Ω	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250uA$	1	1.6	2.5	V
gfs	Forward Transconductance	$V_{DS}=10V$, $I_{D}=0.3A$		0.5		S

Dynamic and switching Characteristics

Qg	Total Gate Charge ^{2,3}		 3.7	
Q_{gs}	Gate-Source Charge ^{2,3}	V_{DS} =30 V , V_{GS} =10 V , I_{D} =1 A	 0.9	nC
Q_{gd}	Gate-Drain Charge ^{2, 3}		 0.4	
T _{d(on)}	Turn-On Delay Time ^{2,3}		 3	
Tr	Rise Time ^{2, 3}	$V_{\text{DD}}{=}30V$, $V_{\text{GS}}{=}10V$, $R_{\text{G}}{=}6\Omega$	 5	no
$T_{d(off)}$	Turn-Off Delay Time ^{2,3}	I _D =0.2A	 14	ns
T_f	Fall Time ^{2,3}		 9	
C _{iss}	Input Capacitance		 25.5	
Coss	Output Capacitance	V_{DS} =30 V , V_{GS} =0 V , F =1 MHz	 17	pF
Crss	Reverse Transfer Capacitance		 7.8	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
ls	Continuous Source Current	V- V- OV Force Current			0.3	Α
I _{SM}	Pulsed Source Current	V _G =V _D =0V , Force Current			1.2	Α
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =1A , T _J =25°C			1	V
t _{rr}	Reverse Recovery Time	$V_{GS}=50V$, $I_{S}=1A$, $dI/dt=100A/\mu s$		3.4		ns
Qrr	Reverse Recovery Charge	T _J =25°C		0.7		nC

Note

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

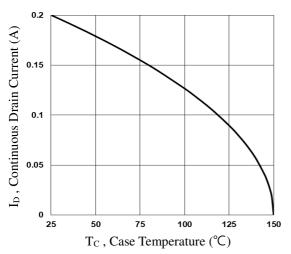


Fig.1 Continuous Drain Current vs. Tc

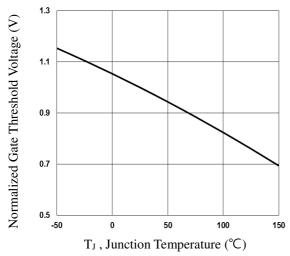


Fig.3 Normalized V_{th} vs. T_J

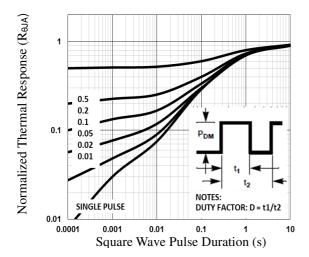


Fig.5 Normalized Transient Impedance

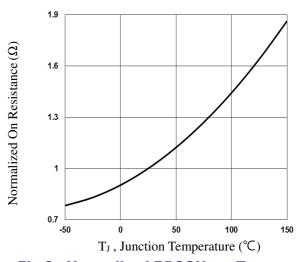


Fig.2 Normalized RDSON vs. T_J

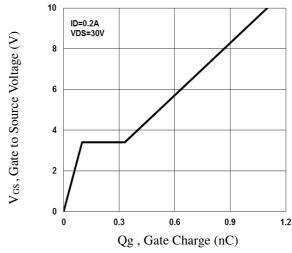


Fig.4 Gate Charge Waveform

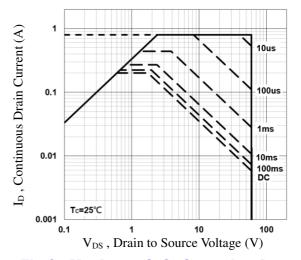
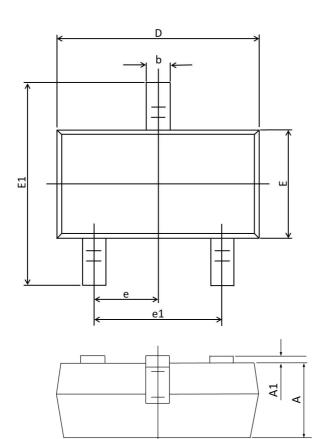
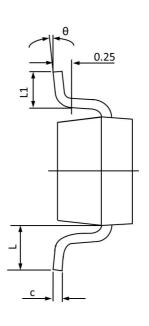


Fig.6 Maximum Safe Operation Area



SOT-23 PACKAGE INFORMATION





Cymbol	Dimensions In Millimeters		Dimensions	s In Inches
Symbol	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
b	0.300	0.500	0.012	0.020
c	0.090	0.110	0.003	0.004
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950	TYP.	0.037	TYP.
e1	1.800	2.000	0.071	0.079
L	0.550	REF.	0.022	REF.
L1	0.300	0.500	0.012	0.020
θ	1°	7°	1°	7°



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