



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

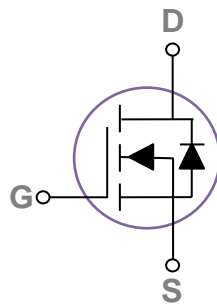
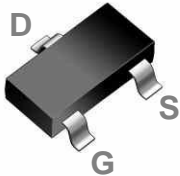
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BVDSS	R _{DS(ON)}	ID
30V	18mΩ	6.0A

Features

- 30V, 6.0A, R_{DS(ON)} = 18mΩ @V_{GS} = 10V
- Improved dv/dt capability
- Fast switching
- Green Device Available

SOT-23-3 Pin Configuration



Applications

- MB / VGA / Vcore
- Load Switch
- Hand-Held Instrument

Absolute Maximum Ratings T_c=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous (T _C =25°C)	6.0	A
	Drain Current – Continuous (T _C =100°C)	3.8	A
I _{DM}	Drain Current – Pulsed ¹	23	A
P _D	Power Dissipation (T _C =25°C)	1.4	W
	Power Dissipation – Derate above 25°C	0.012	W/°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to ambient	---	80	°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 =250uA	30	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.04	---	V/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =24V, V _{GS} =0V, T _J =125°C	---	---	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 ³	V _{GS} =10V, I _D =5.5A	---	18	25	mΩ
		V _{GS} =4.5V, I _D =4A	---	27	40	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	1.6	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-4	---	mV/°C

Dynamic and switching Characteristics

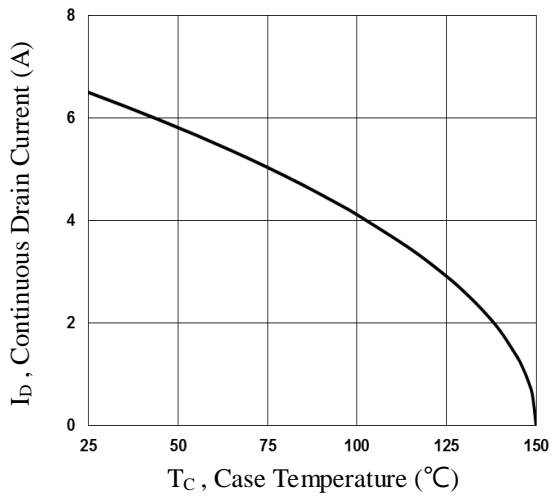
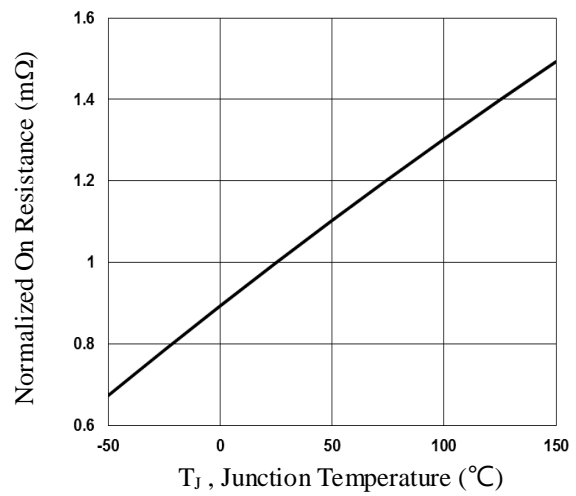
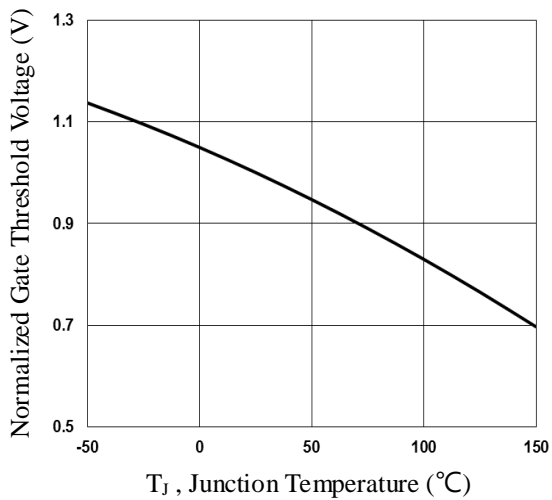
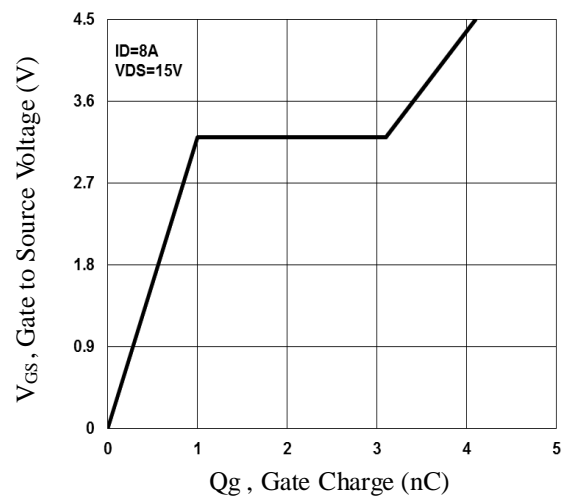
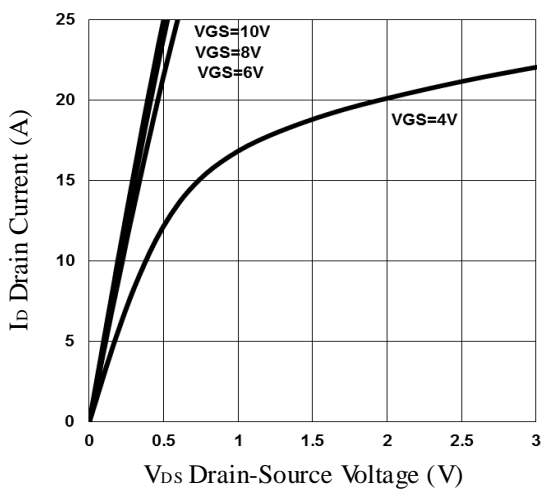
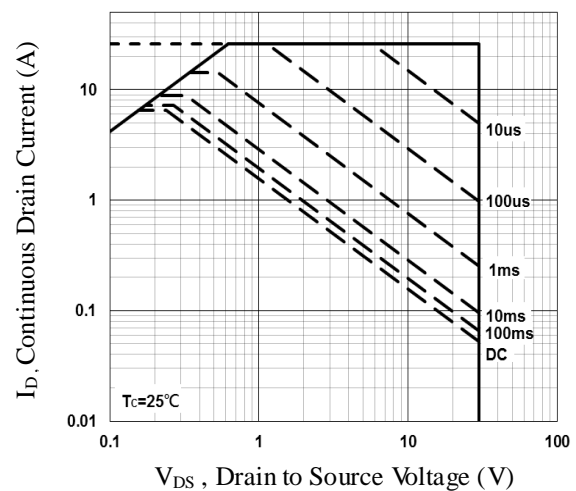
Q _g	Total Gate Charge ^{3,4}	V _{DS} =15V, V _{GS} =4.5V, I _D =6A	---	4.1	---	nC
Q _{gs}	Gate-Source Charge ^{3,4}		---	1	---	
Q _{gd}	Gate-Drain Charge ^{3,4}		---	2.1	---	
T _{d(on)}	Turn-On Delay Time ^{3,4}	V _{DD} =15V, V _{GS} =10V, R _G =6Ω I _D =1A	---	2.8	---	ns
T _r	Rise Time ^{3,4}		---	7.2	---	
T _{d(off)}	Turn-Off Delay Time ^{3,4}		---	15.8	---	
T _f	Fall Time ^{3,4}		---	4.6	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, F=1MHz	---	345	---	pF
C _{oss}	Output Capacitance		---	55	---	
C _{riss}	Reverse Transfer Capacitance		---	32	---	

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	---	---	6.0	A
I _{SM}	Pulsed Source Current ³		---	---	23	A
V _{SD}	Diode Forward Voltage ³	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =1A, di/dt=100A/μs	---	---	---	ns
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	---	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=1mH, I_{AS}=8A, R_G=25Ω, Starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.


Fig.1 Continuous Drain Current vs. T_C

Fig.2 Normalized RDSON vs. T_J

Fig.3 Normalized V_{th} vs. T_J

Fig.4 Gate Charge Waveform

Fig.5 On Region Characteristics

Fig.6 Maximum Safe Operation Area

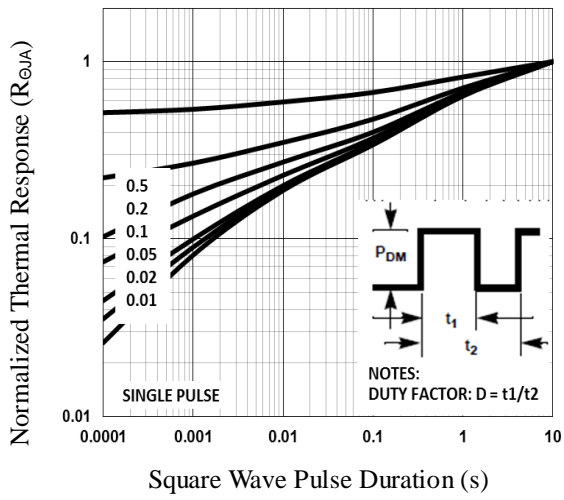


Fig.7 Normalized Transient Response

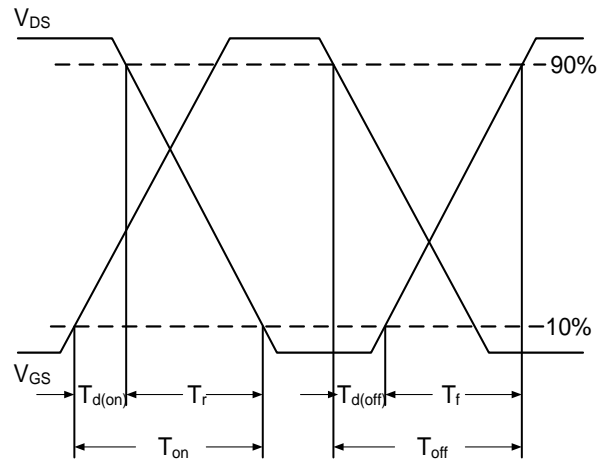
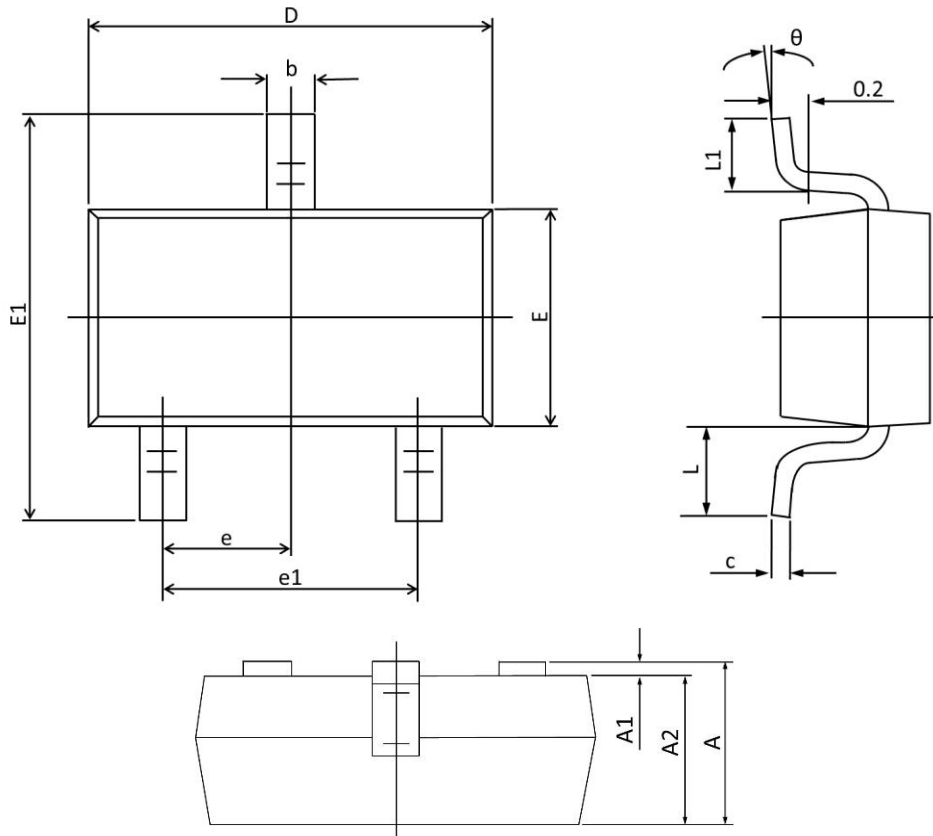


Fig.8 Switching Time Waveform

SOT23-3 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.450	0.041	0.057
A1	---	0.150	---	0.006
A2	0.900	1.300	0.035	0.051
b	0.300	0.490	0.012	0.019
c	0.100	0.200	0.004	0.008
D	2.820	3.050	0.111	0.120
E	1.500	1.750	0.059	0.069
E1	2.600	3.000	0.102	0.118
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.700 REF.		0.028 REF.	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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