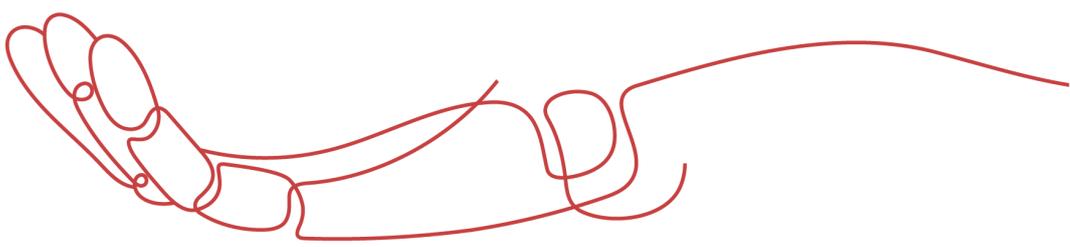


PRODUCT DATA SHEET



To learn more about JGSEMI, please visit our website at



Datasheet



Resources



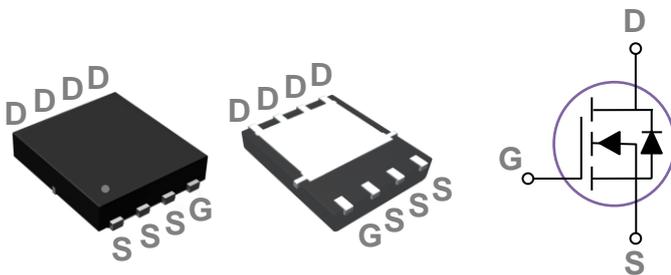
Samples

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 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.

PDFN5X6 Pin Configuration



BVDSS	RDSON	ID
30V	2.3mΩ	100A

Features

- 30V, 100A, $R_{DS(ON)} = 2.3m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

Applications

- Networking
- Load Switch
- LED applications

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	± 20	V
I_D	Drain Current – Continuous ($T_c=25^\circ\text{C}$)	100	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	64	A
I_{DM}	Drain Current – Pulsed ¹	400	A
EAS	Single Pulse Avalanche Energy ²	135	mJ
IAS	Single Pulse Avalanche Current ²	52	A
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	67	W
	Power Dissipation – Derate above 25°C	0.53	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	---	62	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	1.87	$^\circ\text{C}/\text{W}$

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
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	V _{GS} =10V, I _D =15A	---	2.3	3.5	mΩ
		V _{GS} =4.5V, I _D =12A	---	3.5	5.0	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	15	2.5	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	---	22	---	S

Dynamic and switching Characteristics

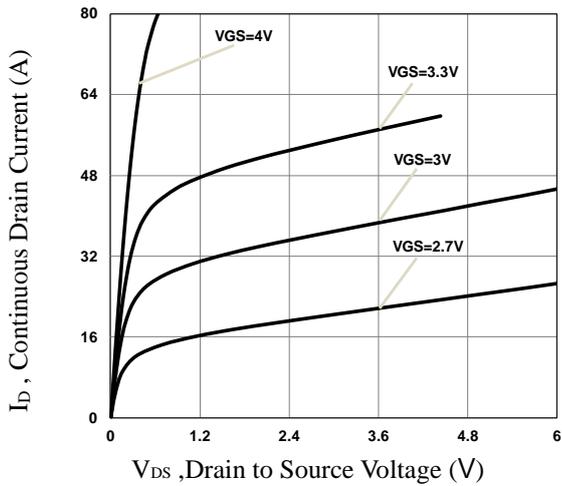
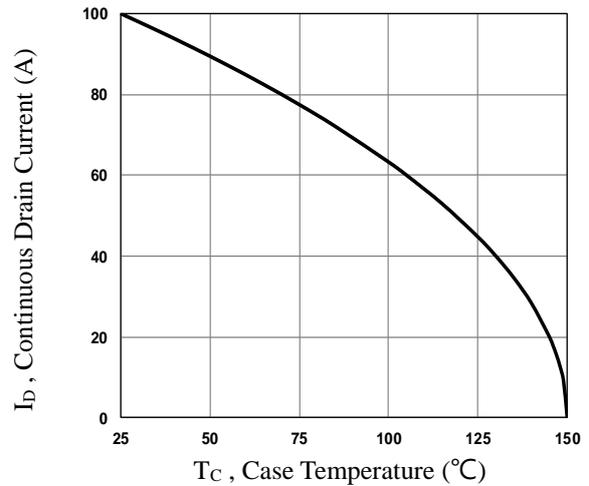
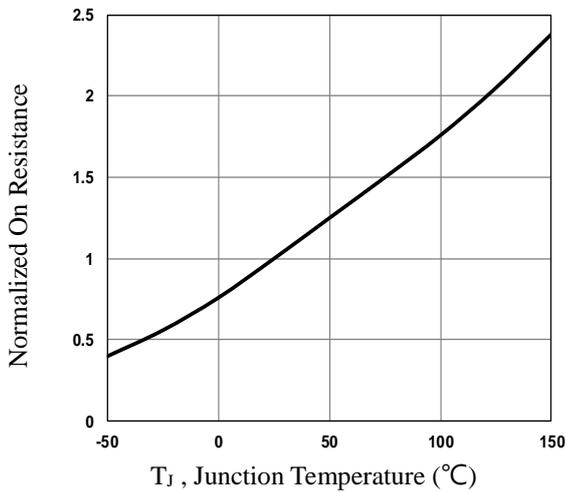
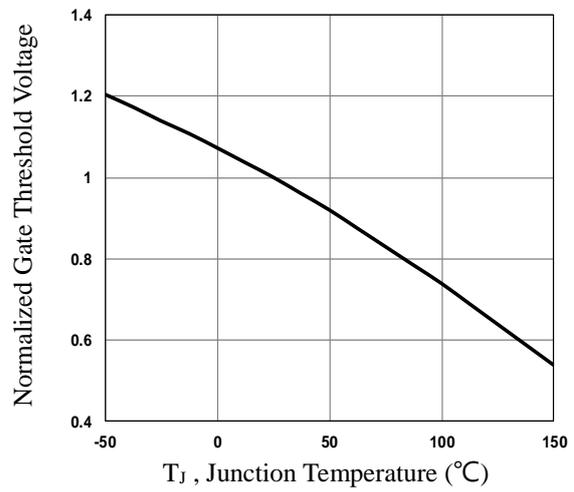
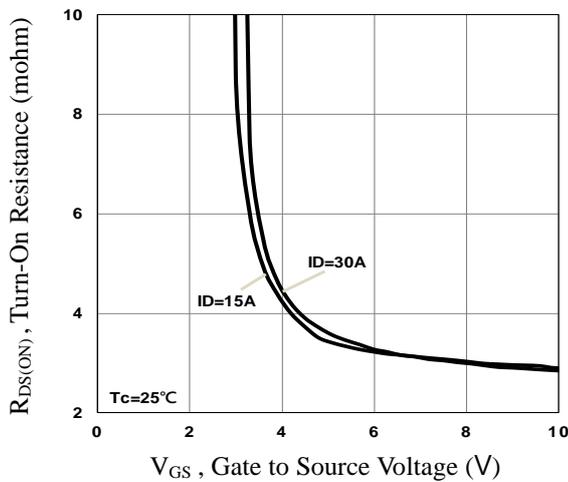
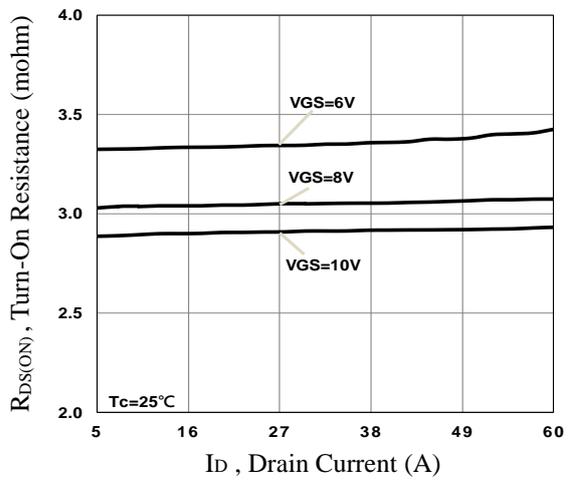
Q _g	Total Gate Charge ^{3, 4}	V _{DS} =15V, V _{GS} =10V, I _D =50A		36		nC
Q _{gs}	Gate-Source Charge ^{3, 4}			5		
Q _{gd}	Gate-Drain Charge ^{3, 4}			8		
T _{d(on)}	Turn-On Delay Time ^{3, 4}	V _{DD} =15V, V _{GS} =10V, R _G =6Ω I _D =50A		13		ns
T _r	Rise Time ^{3, 4}			20		
T _{d(off)}	Turn-Off Delay Time ^{3, 4}			28		
T _f	Fall Time ^{3, 4}			15		
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, F=1MHz		2200		pF
C _{oss}	Output Capacitance			325		
C _{rss}	Reverse Transfer Capacitance			240		
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		2		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	---	---	100	A
I _{SM}	Pulsed Source Current		---	---	200	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V
t _{rr}	Reverse Recovery Time	V _R =30V, I _S =10A	---	130	---	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs, T _J =25°C	---	215	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=52A., 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 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

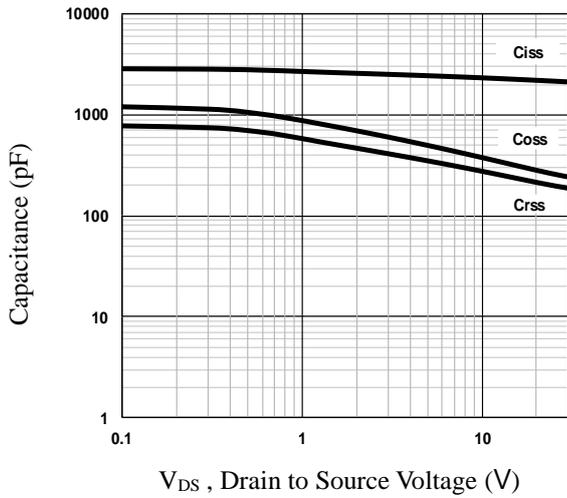


Fig.7 Capacitance Characteristics

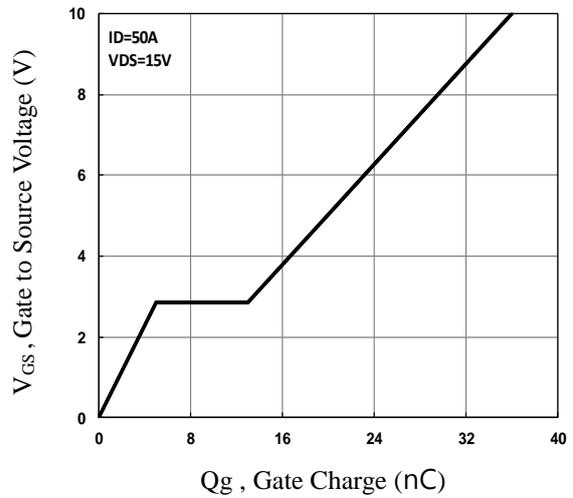


Fig.8 Gate Charge Characteristics

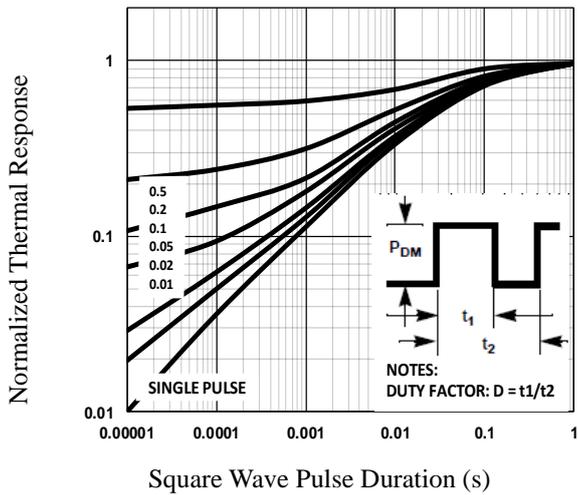


Fig.9 Normalized Transient Impedance

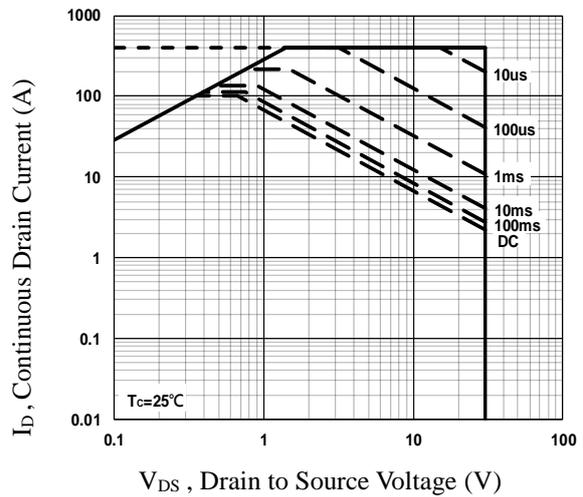


Fig.10 Maximum Safe Operation Area

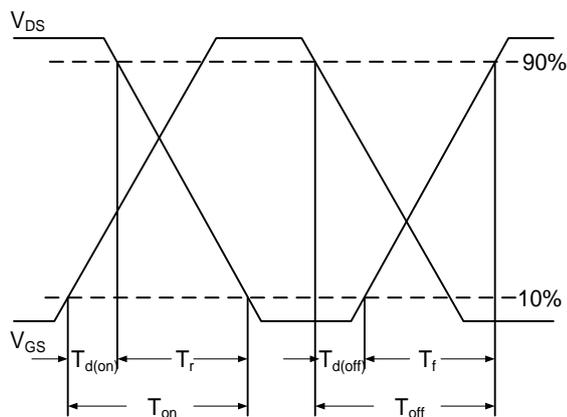


Fig.11 Switching Time Waveform

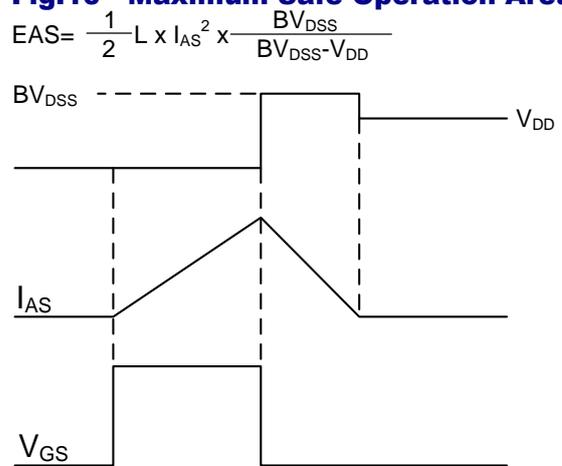
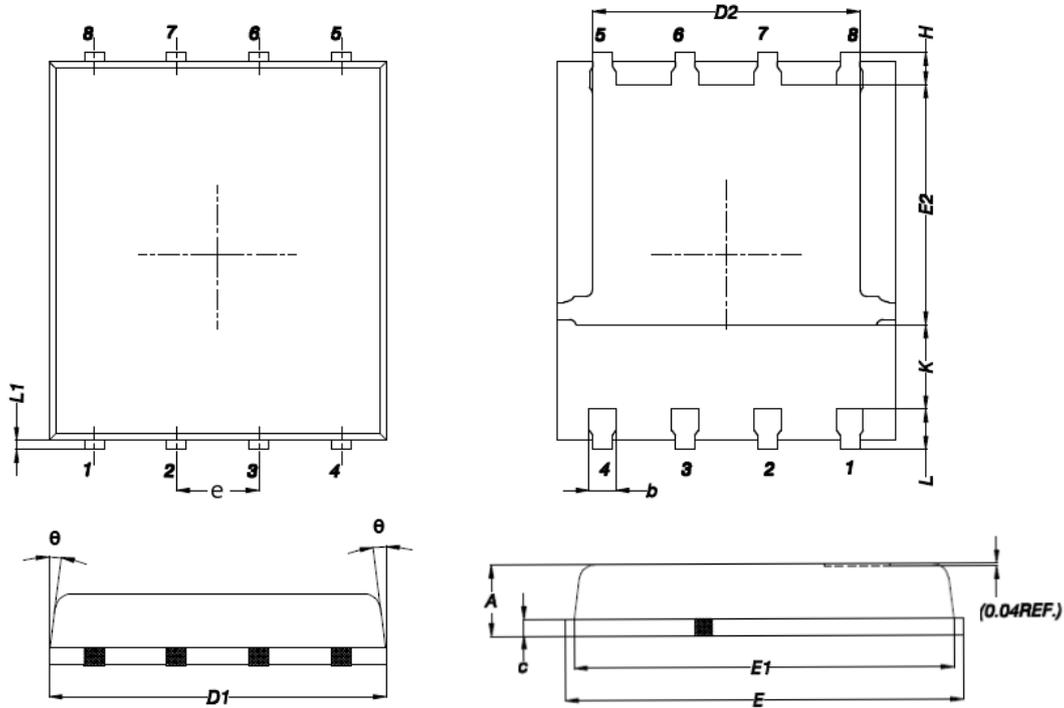


Fig.12 EAS Waveform

PDFN5x6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.200	0.850	0.047	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.400	4.800	0.212	0.189
D2	4.310	3.610	0.170	0.142
E	6.300	5.850	0.248	0.230
E1	5.960	5.450	0.235	0.215
E2	3.920	3.300	0.154	0.130
e	1.27BSC		0.05BSC	
H	0.650	0.380	0.026	0.015
K	---	1.100	---	0.043
L	0.710	0.380	0.028	0.015
L1	0.250	0.050	0.009	0.002
θ	12°	0°	12°	0°

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