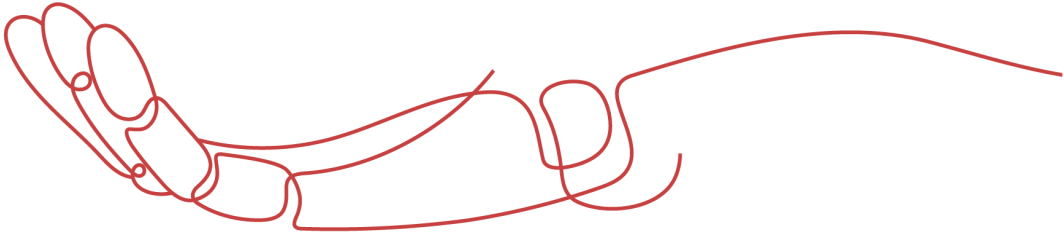




PRODUCT DATA SHEET



To learn more about JGSEMI, please visit our website at



Datasheet



Resources

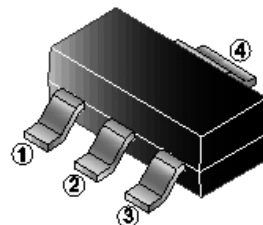
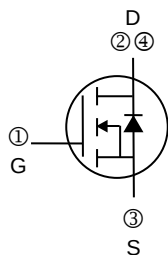


Samples

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.

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available


SOT-223

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DS}	60	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current ¹ @V _{GS} =10V	T _A =25°C	I _D	5	A
	T _A =70°C		4	A
Pulsed Drain Current ³		I _{DM}	14	A
Power Dissipation	T _A =25°C	P _D	1.5	W
Operating Junction & Storage Temperature		T _J , T _{STG}	-55~150	°C
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient ¹		R _{θJA}	85	°C/W
Thermal Resistance Junction-Ambient ²		R _{θJA}	125	
Thermal Resistance Junction-Case ¹		R _{θJC}	50	

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV _{DSS}	60	-	-	V	V _{GS} =0, I _D =250μA
Breakdown Voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _J	-	0.063	-	V/°C	Reference to 25°C, I _D =1mA
Gate-Threshold Voltage		V _{GS(th)}	1	-	2.5	V	V _{DS} =V _{GS} , I _D =250μA
Forward Transfer Conductance		g _{fs}	-	20	-	S	V _{DS} =5V, I _D =5A
Gate-Source Leakage Current		I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current	T _J =25°C	I _{DSS}	-	-	1	mA	V _{DS} =48V, V _{GS} =0
	T _J =55°C		-	-	5		V _{DS} =48V, V _{GS} =0
Static Drain-Source On-Resistance ⁴		R _{DS(ON)}	-	-	36	mΩ	V _{GS} =10V, I _D =5A
			-	-	45		V _{GS} =4.5V, I _D =2.5A
Total Gate Charge		Q _g	-	11.74	-	nC	I _D =5A
Gate-Source Charge		Q _{gs}	-	4.35	-		V _{DS} =48V
Gate-Drain Change		Q _{gd}	-	4.12	-		V _{GS} =4.5V
Turn-on Delay Time		T _{d(on)}	-	5.5	-	nS	V _{DD} =30V
Rise Time		T _r	-	21.2	-		I _D =5A
Turn-off Delay Time		T _{d(off)}	-	20.7	-		V _{GS} =10V
Fall Time		T _f	-	16	-		R _G =3.3Ω R _L =6Ω
Input Capacitance		C _{iss}	-	1231	-	pF	V _{GS} =0
Output Capacitance		C _{oss}	-	109	-		V _{DS} =25V
Reverse Transfer Capacitance		C _{rss}	-	17	-		f=1MHz
Source-Drain Diode							
Continuous Source Current ¹		I _S	-	5	-	A	
Pulsed Source Current ³		I _{SM}	-	14	-		
Diode Forward Voltage ⁴		V _{SD}	-	-	1.2	V	I _S =1.6A, V _{GS} =0

Notes:

1. Surface mounted on a 1 inch² FR-4 board with 2oz copper.
2. When mounted on Min. copper pad.
3. The power dissipation is limited by 150°C junction temperature.
4. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVES

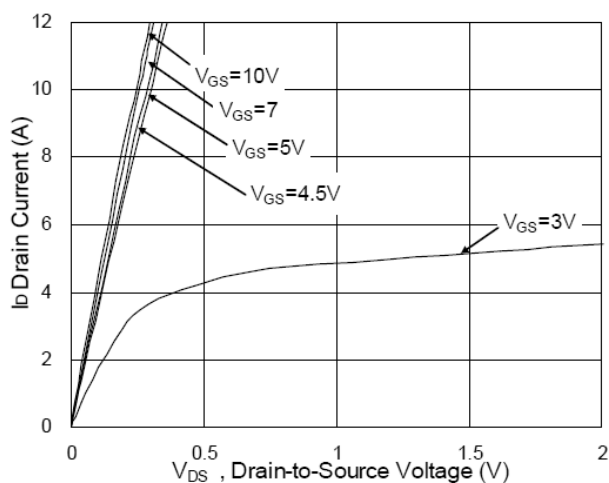


Fig.1 Typical Output Characteristics

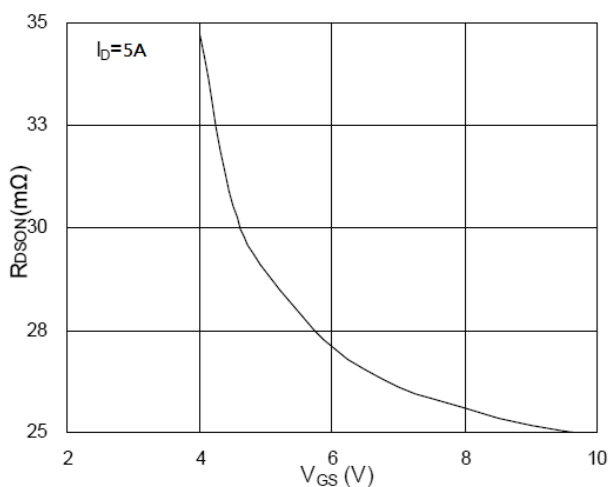


Fig.2 On-Resistance v.s Gate-Source

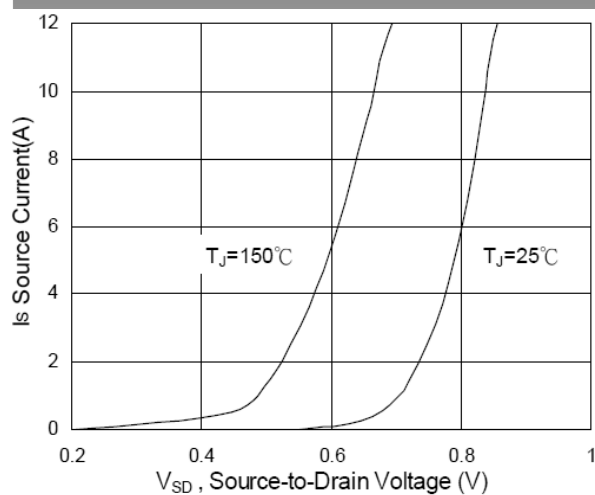


Fig.3 Forward Characteristics of Reverse

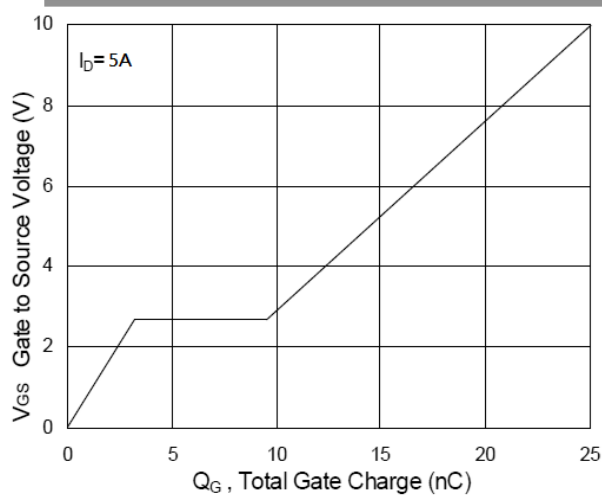


Fig.4 Gate-Charge Characteristics

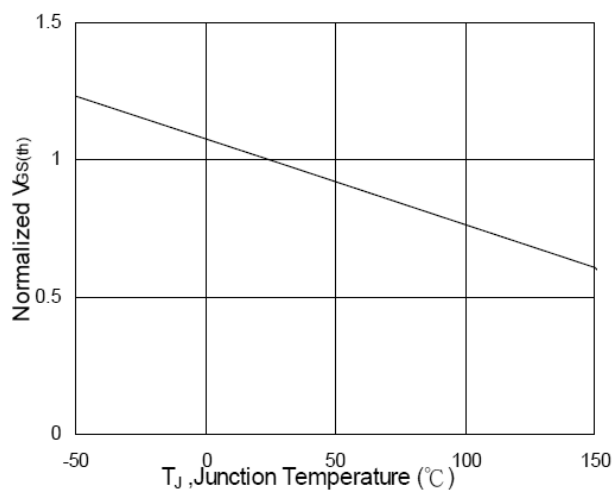


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

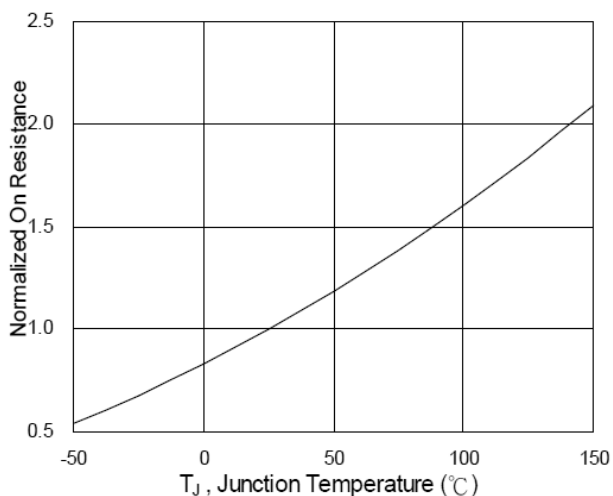


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

CHARACTERISTIC CURVES

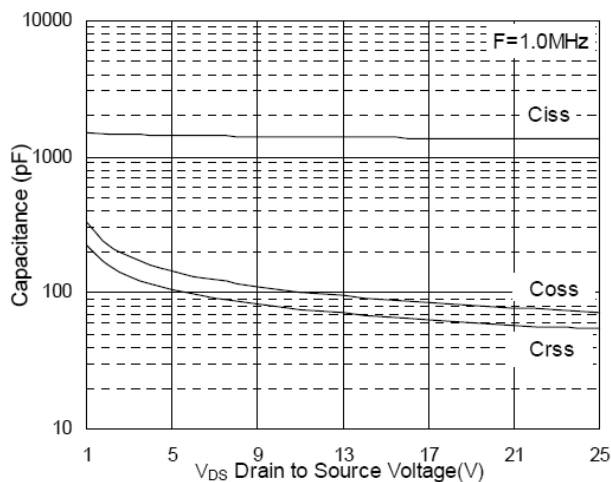


Fig.7 Capacitance

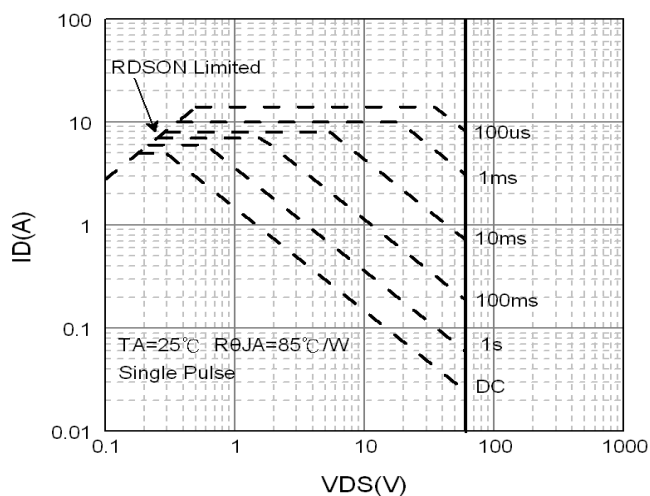


Fig.8 Safe Operating Area

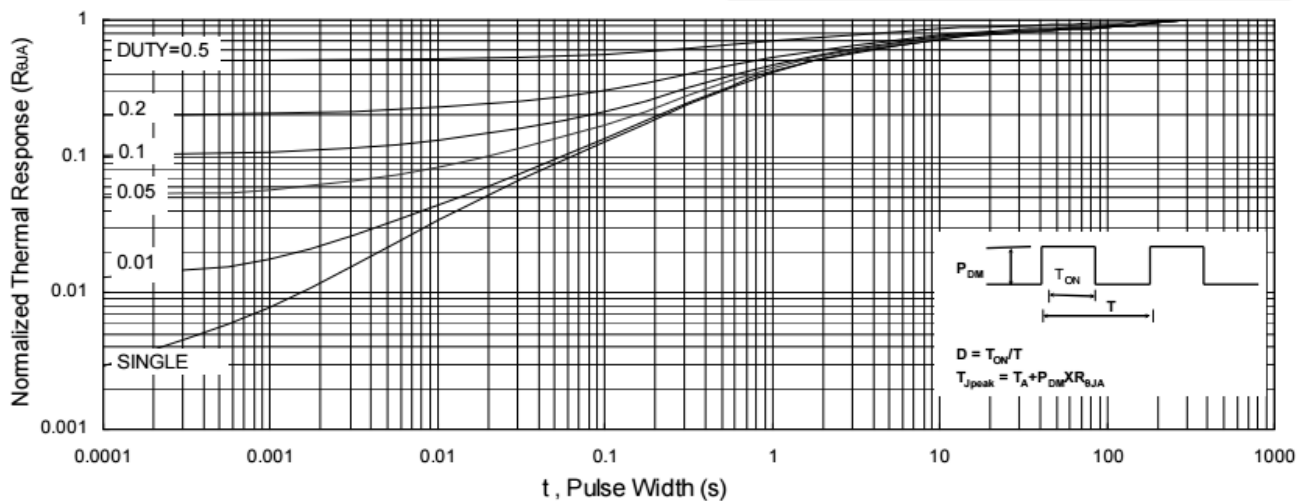


Fig.9 Normalized Maximum Transient Thermal Impedance

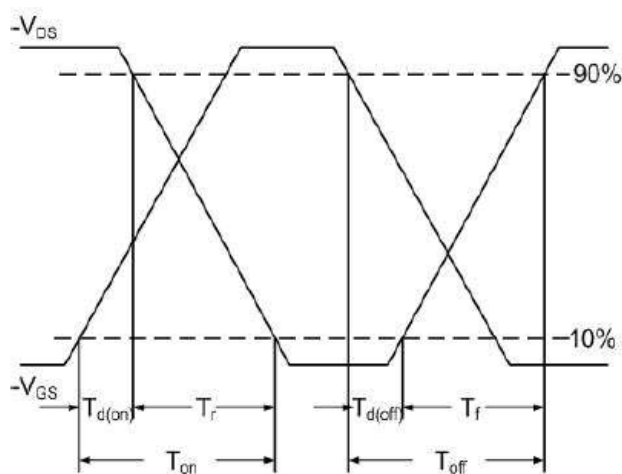


Fig.10 Switching Time Waveform

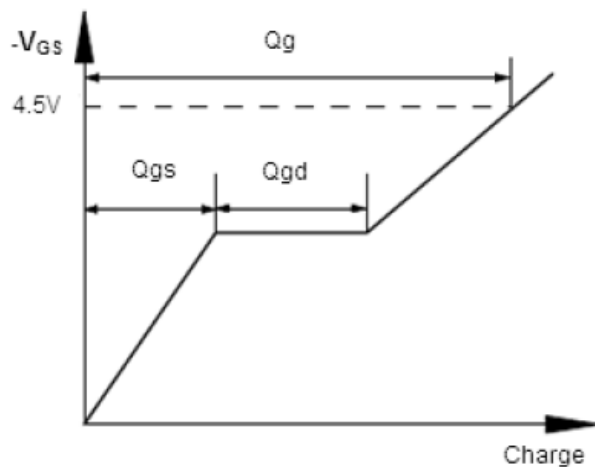


Fig.11 Gate Charge Waveform

Attention

1, Any and all JGSEMI products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical or material damage. Consult with your JGSEMI representative nearest you before using any JGSEMI products described or contained herein in such applications.

2, JGSEMI assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all JGSEMI products described or contained herein.

3, Specifications of any and all JGSEMI products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

4, In the event that any or all JGSEMI products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

5, No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of JGSEMI Semiconductor CO., LTD.

6, Any and all information described or contained herein are subject to change without notice due to product technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the JGSEMI product that you intend to use.