JG® Techology

PRODUCT DATA SHEET

To learn more about JGSEMI, please visit our website at

Datasheet **Resources** **Samples**
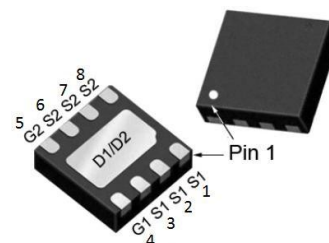
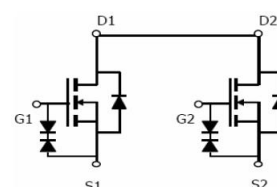| BVDSS	RDSON	ID
20V	3.2mΩ	50A

★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology

DFN3030-8L

FEATURE

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handing Capability
- Surface Mount Package
- ESD Rating:2000V HBM

ABSOLUTE MAXIMUM RATINGS (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	50	A
Pulsed Drain Current (note 1)	I_{DM}	100	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	38	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~+150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10 s)	T_L	260	℃

MOSFET ELECTRICAL CHARACTERISTICS T$_a$ =25 ℃ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERICTISCS						
Drain-source breakdown voltage	V$_{(BR)DSS}$	V$_{GS}$ = 0V, I$_D$ =250µA	20			V
Zero gate voltage drain current	I$_{DSS}$	V$_{DS}$ =19V, V$_{GS}$ = 0V			1	uA
Gate-body leakage current	I$_{GSS}$	V$_{GS}$ =±12V, V$_{DS}$ = 0V			±7	uA
Gate threshold voltage (note 3)	V$_{GS(th)}$	V$_{DS}$ =V$_{GS}$, I$_D$ =250µA	0.5	0.6	1.0	V
Drain-source on-resistance (note 3)	R$_{DS(on)}$	V$_{GS}$ =4.5V, I$_D$ =8.0A		3.2	3.7	mΩ
		V$_{GS}$ =2.5V, I$_D$ =6.0A		4.2	4.8	mΩ
Forward tranconductance (note 3)	g$_{FS}$	V$_{DS}$ =5V, I$_D$ =4A		10		S
Diode forward voltage (note 3)	V$_{SD}$	I$_S$=1.50A, V$_{GS}$ = 0V			1.0	V
DYNAMIC CHARACTERICTISCS (note4)						
Input Capacitance	C$_{iss}$	V$_{DS}$ =10V, V$_{GS}$ =0V,f =1MHz		2610		pF
Output Capacitance	C$_{oss}$			345		pF
Reverse Transfer Capacitance	C$_{rss}$			322		pF
SWITCHING CHARACTERICTISCS (note 4)						
Turn-on delay time	t$_{d(on)}$	V$_{GS}$=4.5V, V$_{DS}$ =10V, I$_D$=6A R$_{GEN}$=3Ω		8.2		ns
Turn-on rise time	t$_r$			35		ns
Turn-off delay time	t$_{d(off)}$			372		ns
Turn-off fall time	t$_f$			213		ns
Total Gate Charge	Q$_g$	V$_{DS}$ =10V, V$_{GS}$ =4.5V, I$_D$=6A		36		nC
Gate-Source Charge	Q$_{gs}$			3.2		nC
Gate-Drain Charge	Q$_{gd}$			13.0		nC

Notes：

1.Repetitive rating：Pluse width limited by maximum junction temperature

2.Surface Mounted on FR4 board，t≤10 sec.

3. Pulse test : Pulse width≤300µs, duty cycle≤2%.

4. Guaranteed by design, not subject to production.

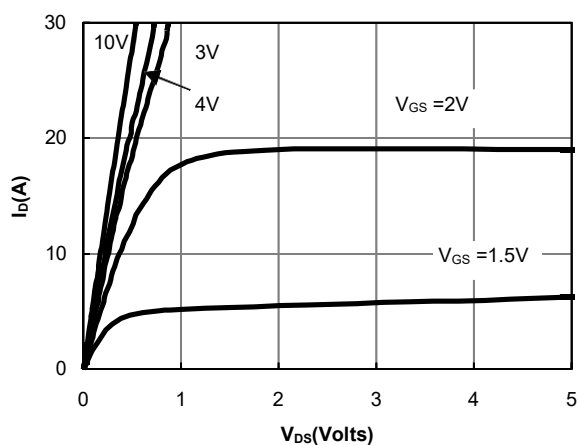## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTIC
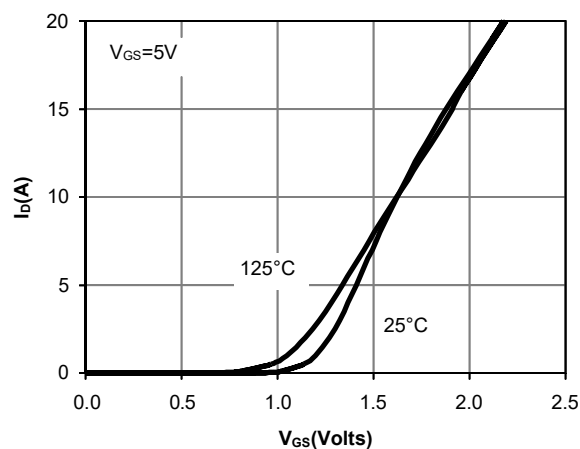
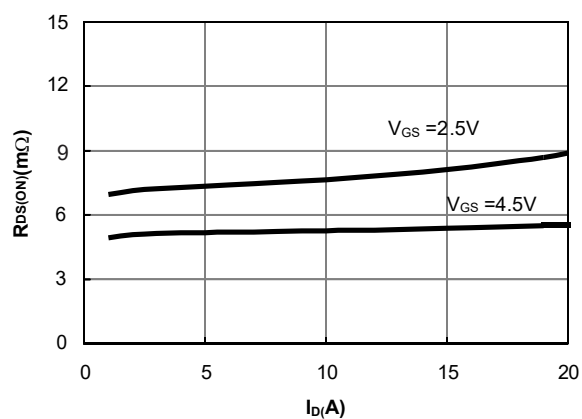**Figure 1: On-Regions Characteristi CS**

Figure 2: Transfer Characteristics

Figure 3: On-Resistance vs. Drain Current and Gate Voltage
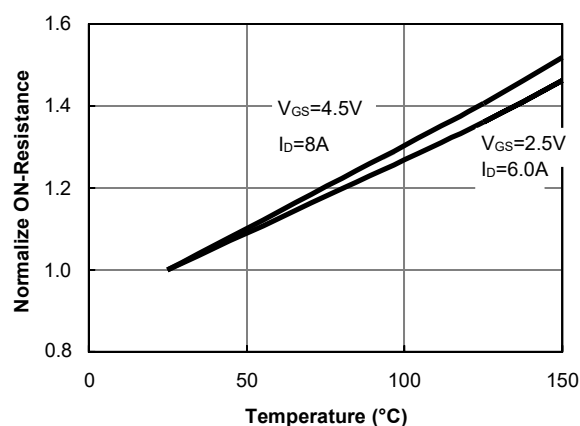
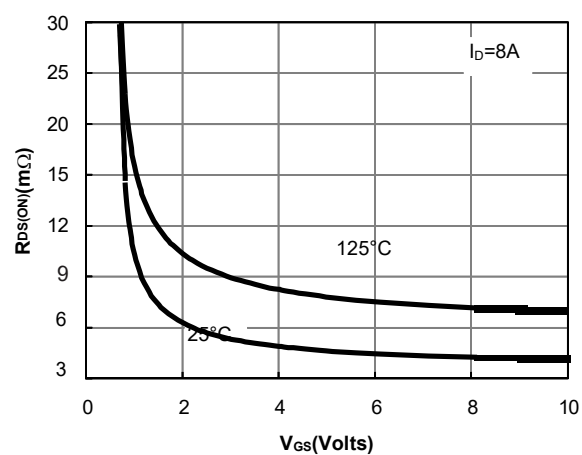**Figure 4: On-Resistance vs. Junction Temperature**
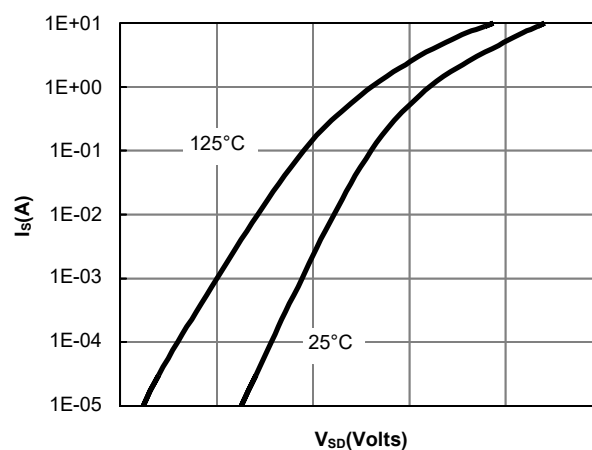
Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Body-Diode Characteristics

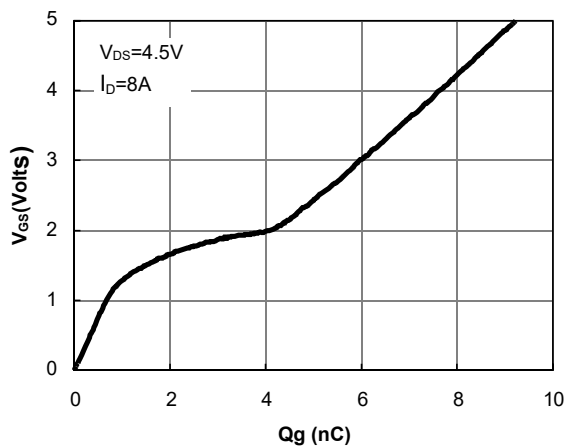## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTIC

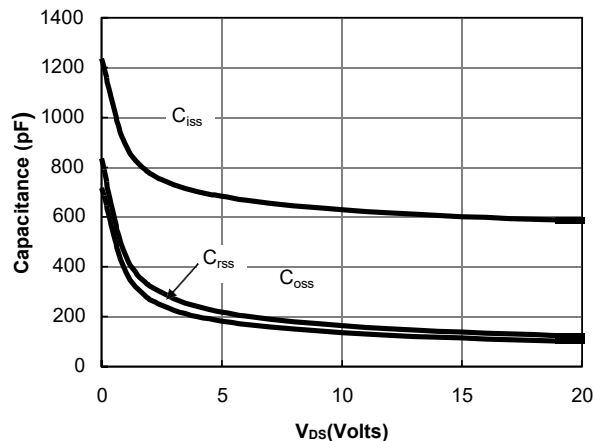**Figure 7: Gate-Charge Characteristics**
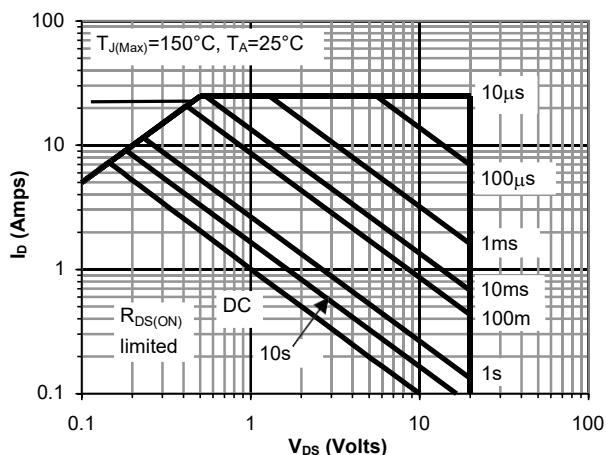

Figure 8: Capacitance Characteristics

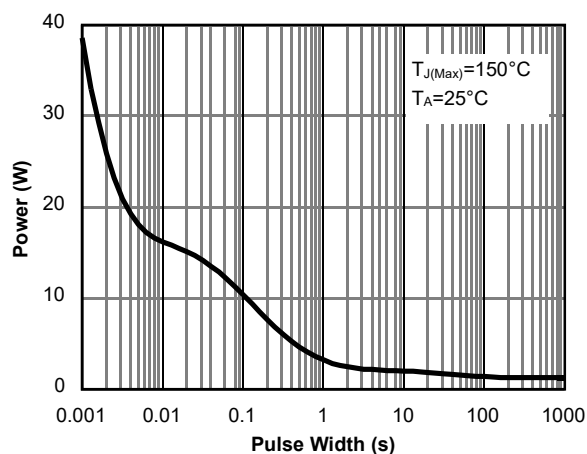**Figure 9: Maximum Forward Biased Safe Operating Area (Note E)**

Figure 10: Single Pulse Power Rating Junction-to-
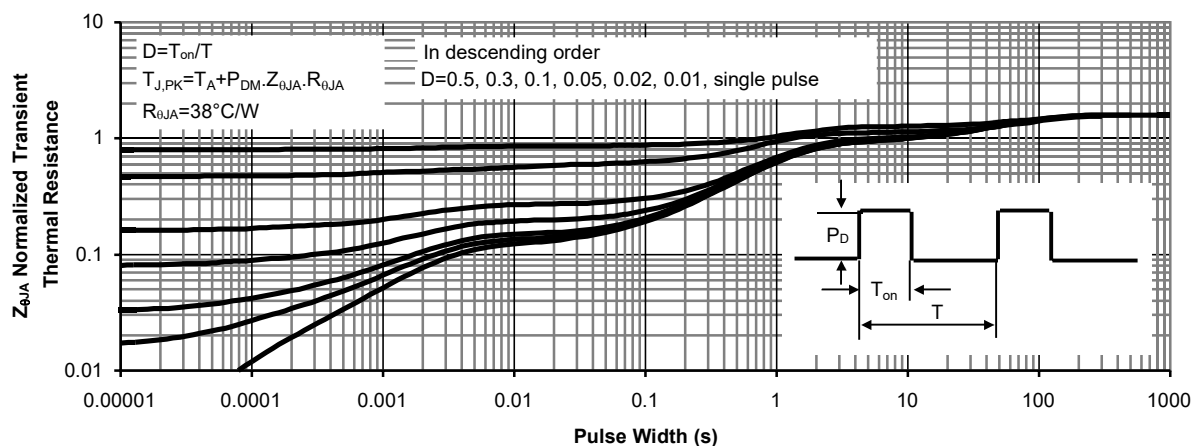
Figure 11: Normalized Maximum Transient Thermal Impedance

Ver.1.0

DFN3030-8L Package Outline Data
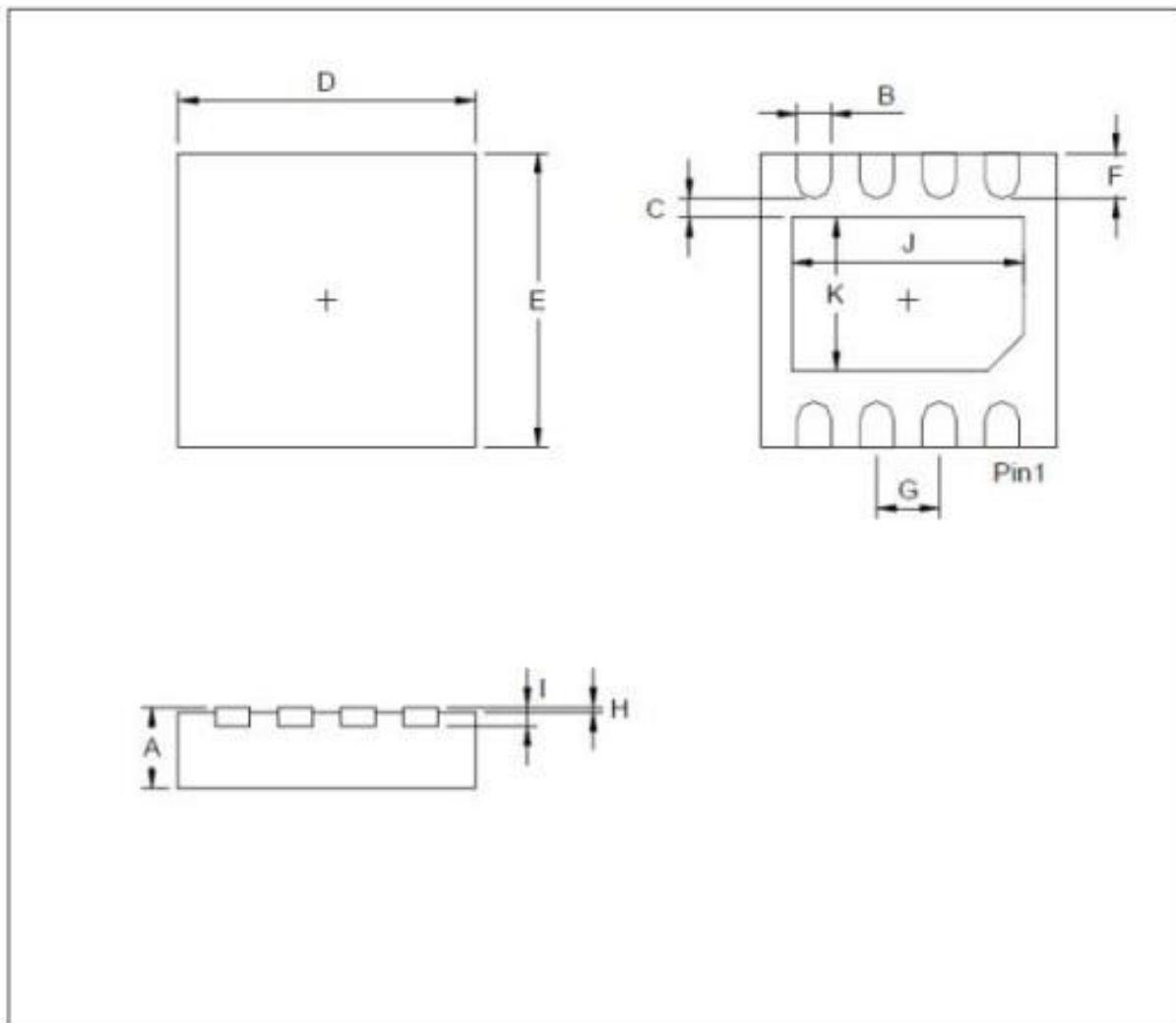
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.7		0.8	I		0.203	
B	0.25		0.35	J	2.2		2.4
C	0.2			K	1.4		1.6
D	2.924		3.076				
E	2.924		3.076				
F	0.324		0.476				
G		0.65					
H	0		0.05				

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.