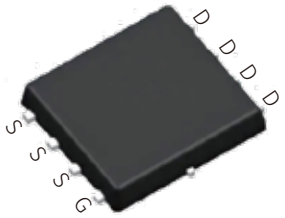
FEATURES

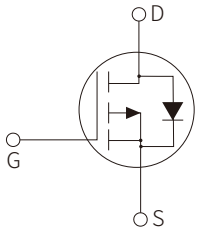
- Advanced trench cell design
- Low Thermal Resistance



PDFN3×3-8L

APPLICATION

- Motor Drivers
- DC - DC Converter



Schematic Symbol

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage T_C=25°C	V_{DS}	-30	V
Pulsed Source Current T_C=25°C,V_{GS}=-10V	I_{DM}*,**,***	-96	A
Drain Current T_C=25°C,V_{GS}=-10V	I_D*	-30	A
Gate-Source Voltage T_C=25°C	V_{GS}	±20	V
Total Power Dissipation T_C=25°C	P_{tot}*	20	W
Diode Forward Current T_C=25°C	I_S	-30	A
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Thermal Resistance –Junction to Ambient	$R_{\theta JC}$*	6	°C/W

Notes:
* Surface Mounted on 1 in^2 pad area, t ≤10 sec
** Pulse width≤10 us, duty cycle≤ 1 %
*** Limited by bonding wire

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=-250μA	-1.1	-1.6	-2.2	V
Zero Gate Voltage Source Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V			-1	μA
		V_{DS}=-24V,V_{GS}=0V,T_J=85°C			-30	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V ,V_{DS}=0V			±100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$[a]	V_{GS}=-10V,I_D=-8A		15	19.5	mΩ
		V_{GS}=-4.5V,I_D=-6A		23.5	29.5	mΩ
Diode Characteristics						
Diode Forward Voltage	V_{SD}[a]	I_{SD}=-20A,V_{GS}=0V			-1.3	V
Dynamic Characteristics[b]						
Input capacitance	C_{iss}	V_{GS}=0V,V_{DS}=-15V, Frequency = 1 MHz		1720		pF
Output capacitance	C_{oss}			163		pF
Reverse transfer capacitance	C_{rss}			127		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=-15V,V_{GEN}=-10V R_G= 4.5Ω, R_L=0.75Ω, I_D=-20A		14		nS
Turn-on Rise Time	t_r			68		nS
Turn-Off Delay Time	$t_{d(off)}$			184		nS
Turn-Off Fall Time	t_f			101		nS
Gate Charge Characteristics[b]						
Total Gate Charge	Q_g	V_{DS}=-15V,V_{GS}=-10V,I_{DS}=-20A		31		nC
Gate-Source Charge	Q_{gs}			8.6		nC
Gate-Drain Charge	Q_{gd}			4.8		nC

Notes:
a : Pulse test ; pulse width≤300μs, duty cycle≤2 %
b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

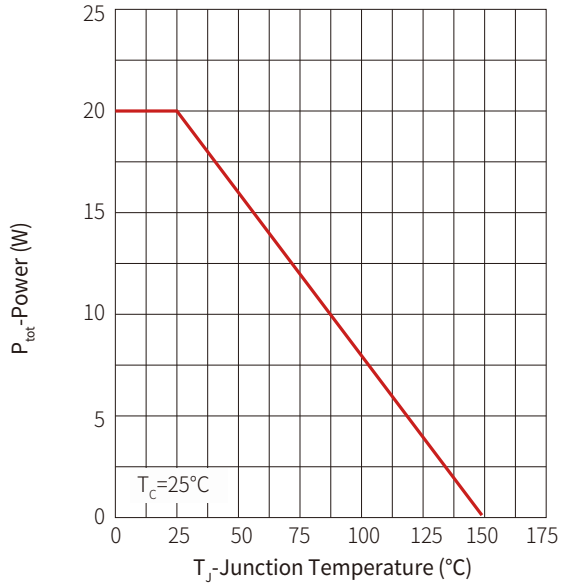


Figure2: Current Capability

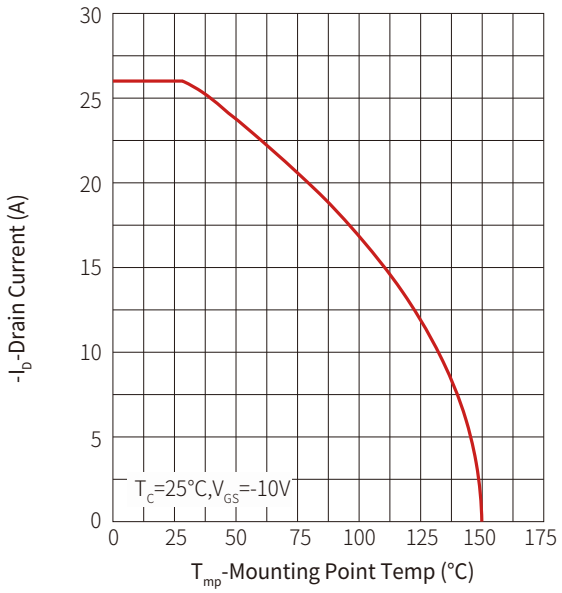


Figure3: Safe operating Area

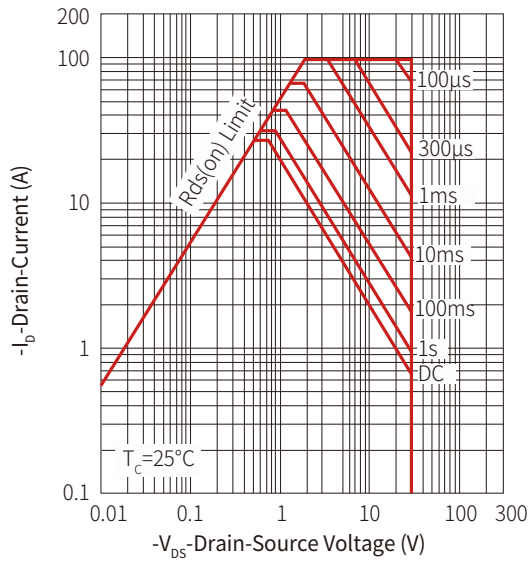


Figure 4: Transient Thermal Impedance

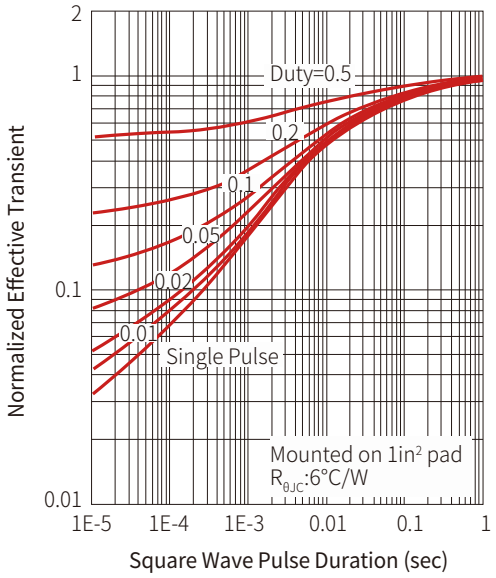


Figure 5:Output Characteristics

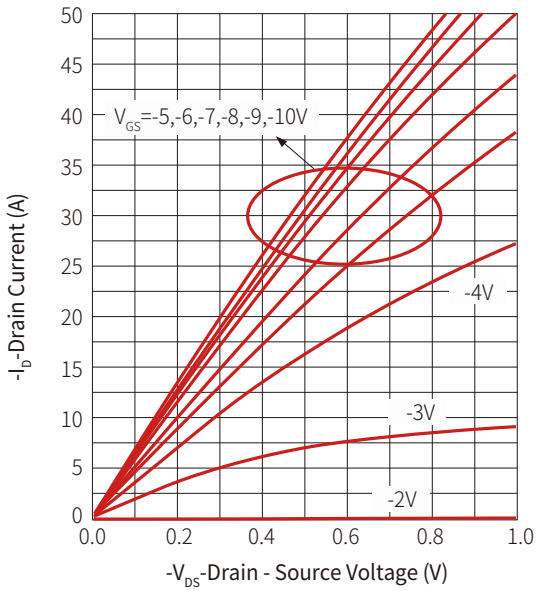


Figure 6: On Resistance

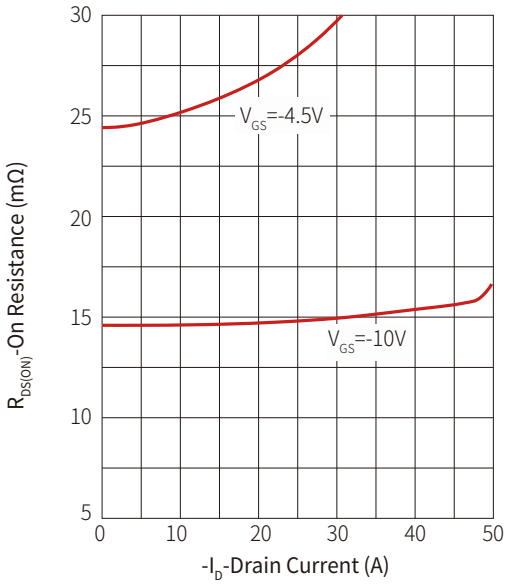


Figure 7:Transfer Characteristics

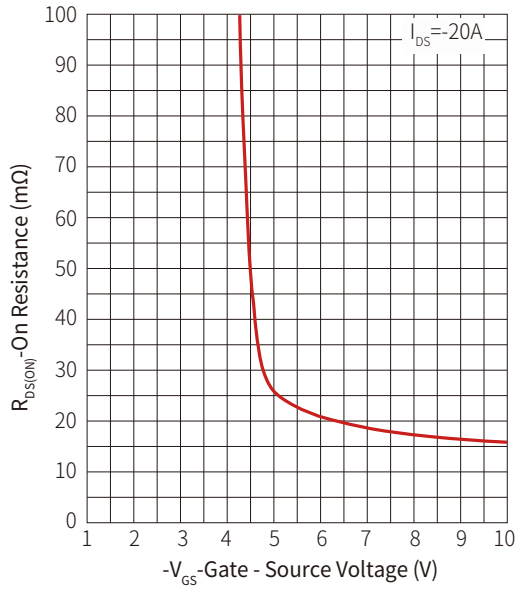


Figure 8: Normalized Threshold Voltage

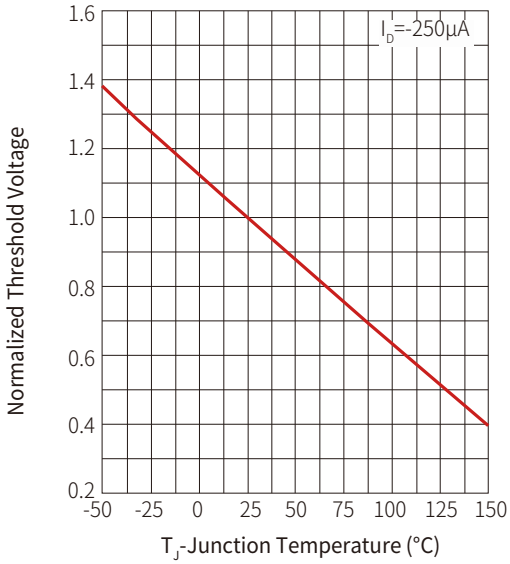


Figure 9:Normalized On Resistance

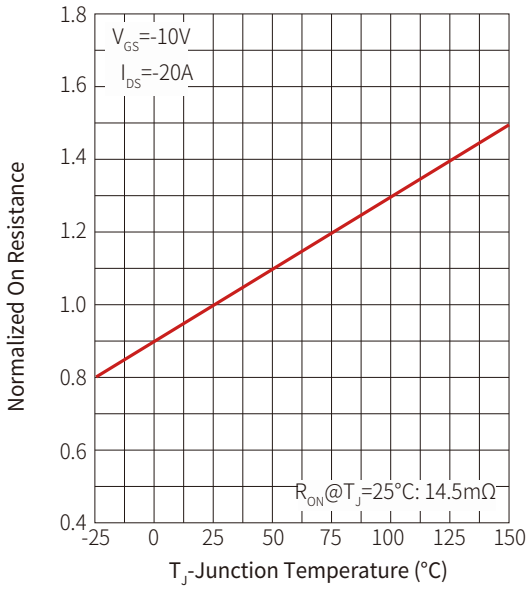


Figure 10: Diode Forward Current

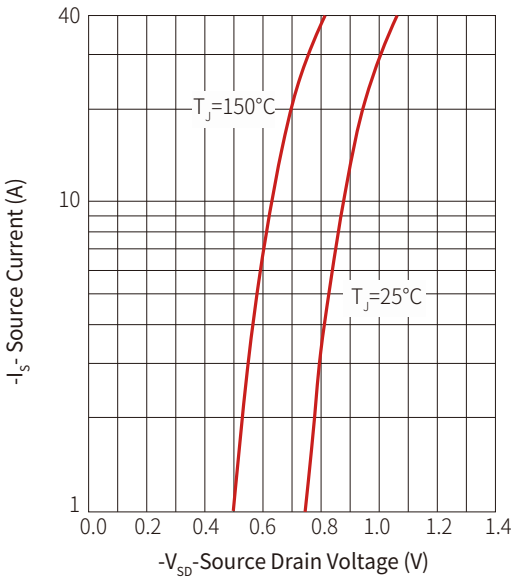


Figure 11:Capacitance

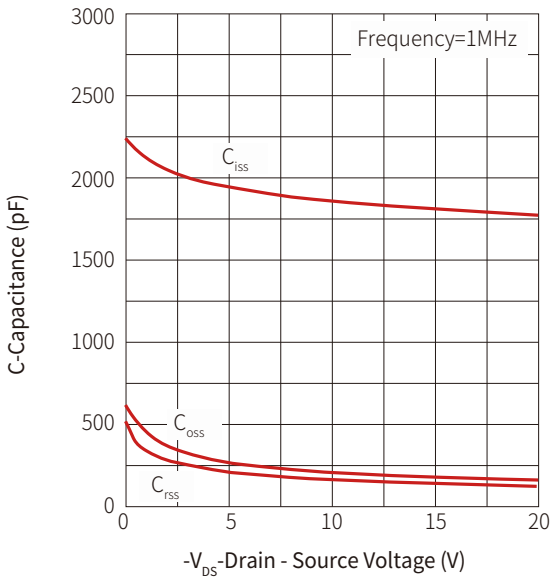
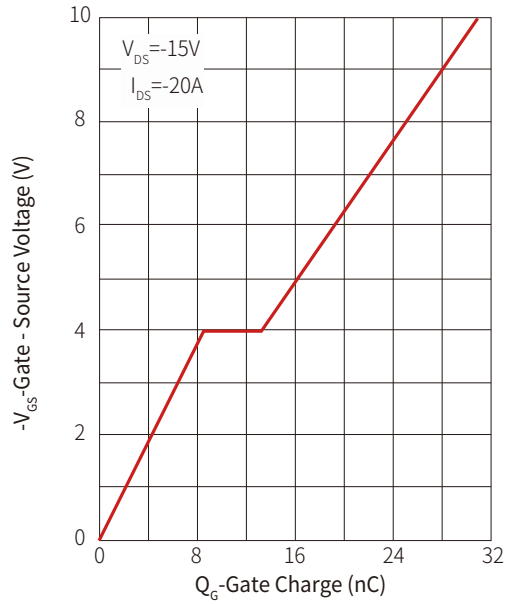
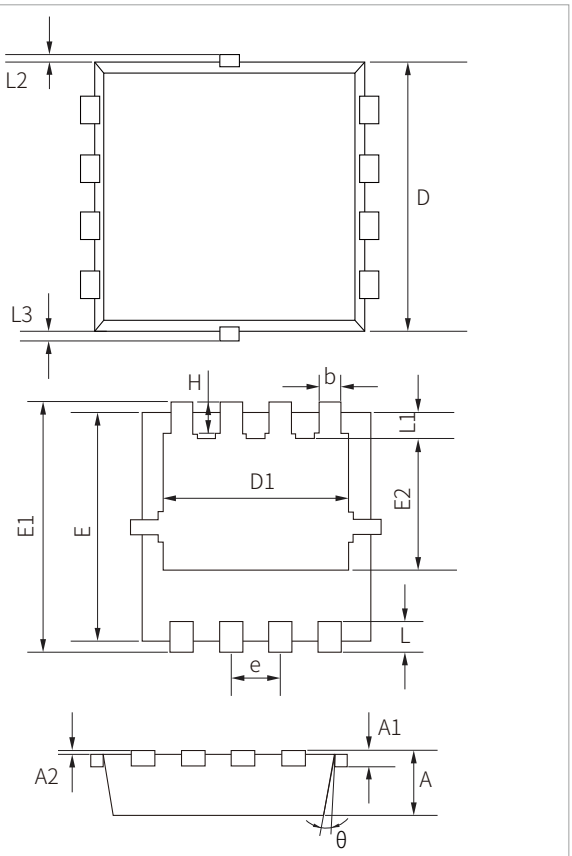


Figure 12: Gate Charge



PDFN3x3-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152REF		0.006REF	
A2	0~0.05		0~0.002	
D	2.900	3.300	0.114	0.130
D1	2.250	2.650	0.089	0.104
E	2.900	3.300	0.114	0.130
E1	3.150	3.550	0.124	0.140
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

ORDERING INFORMATION

Part Number	Component Package	Marking	QTY/Reel	Reel Size
SPM20P03Q	PDFN3x3-8L	20P03 XXXX	5000PCS	13”

Headquarters
No.3387 Shendu Road
Pujiang I&E Park
Minhang Shanghai China
201000

Hotline
400-021-5756

Web
Https://www.semiware.com

Sales Center
Tel: 86-21-3463-7458
Email: sales18@semiware.com

Customer Service
Tel: 86-21-5484-1001
Email: sales17@semiware.com

Technical Support
Tel: 86-21-3463-7654
Email: fae01@semiware.com

Complaint & Suggestions
Tel: 86-21-3463-7172
Ext: 8868
Email: cs03@semiware.com

By QR Code
Website
Wechat

To find your local partner within Semiware' s global website: www.semiware.com

© 2022 Semiware Semiconductor Inc.

The content of this document has been carefully checked and understood. However, neither Semiware nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Semiware does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Chinese law and resulting disputes shall be settled by the courts at the place of business of Semiware. Latest publications and a complete disclaimer can be downloaded from the Semiware website. All trademarks recognized.