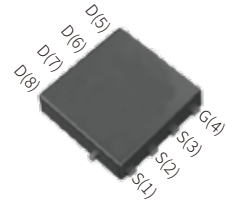


FEATURES

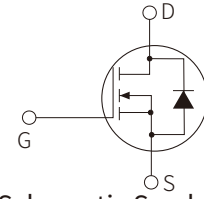
- Surface-mounted package
- Low Thermal Resistance



PDFN5×6-8L

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 $T_c=25^{\circ}\text{C}$		V_{DS}	40	V
Drain Current (Pulsed) $T_c=25^{\circ}\text{C}$ $V_{GS}=10\text{V}$		I_{DM}^{**}	800	A
Drain Current (DC)	$T_c=25^{\circ}\text{C}$ $V_{GS}=10\text{V}$	I_D^*	178	A
	$T_c=100^{\circ}\text{C}$ $V_{GS}=10\text{V}$		126	A
Gate-Source Voltage $T_c=25^{\circ}\text{C}$		V_{GS}	± 20	V
Drain power dissipation $T_c=25^{\circ}\text{C}$		P_{tot}	93	W
Continuous-Source Current $T_c=25^{\circ}\text{C}$		I_S	178	A
Single Pulsed Avalanche Energy $V_{DD}=40\text{V}$, $L=1.0\text{mH}$		E_{AS}^*	544	mJ
Junction Temperature		T_J	175	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 to 175	$^{\circ}\text{C}$
Thermal Resistance –Junction to Ambient		$R_{\theta JA}^*$	62.5	$^{\circ}\text{C/W}$
Thermal Resistance- Junction to Case		$R_{\theta JC}^{**}$	1.6	$^{\circ}\text{C/W}$

Notes:

* Surface Mounted on 1 in² pad area, $t \leq 10$ sec

** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

** 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}	$V_{GS}=0V, I_{DS}=250\mu A$	40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1		2	V
Drain Leakage Current	I_{DSS}	$V_{DS}=32V, V_{GS}=0V$			1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=10V, I_{DS}=30A$		1.6	1.8	m Ω
		$V_{GS}=4.5V, I_{DS}=20A$		2.5	3.0	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=30A, V_{GS}=0V$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS}=30A, V_{GS}=0V$ $dI_{SD}/dt=100A/\mu s$		45		ns
Reverse Recovery Charge	Q_{rr}			26		nC
Dynamic Characteristics ^b						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=20V,$ Frequency = 1 MHz		2838		pF
Output capacitance	C_{oss}			1233		pF
Reverse transfer capacitance	C_{rss}			123		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=20V, V_{GEN}=10V$ $R_G=3.9\Omega, R_L=0.66\Omega,$ $I_{DS}=30A$		12		nS
Turn-on Rise Time	t_r			58		nS
Turn-Off Delay Time	$t_{d(off)}$			41		nS
Turn-Off Fall Time	t_f			48		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_{DS}=30A$		60		nC
Gate-Source Charge	Q_{gs}			12		nC
Gate-Drain Charge	Q_{gd}			13		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

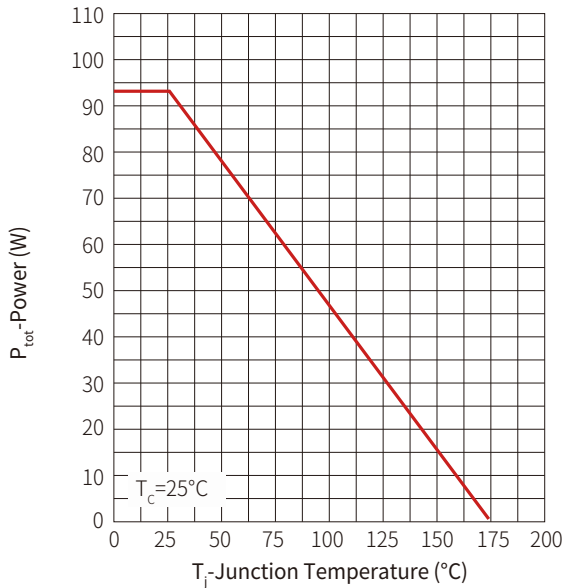


Figure2: Current Capability

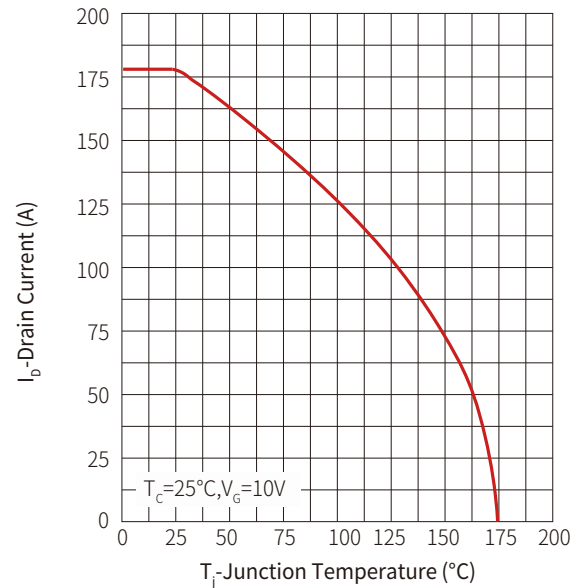


Figure3: Safe operating Area

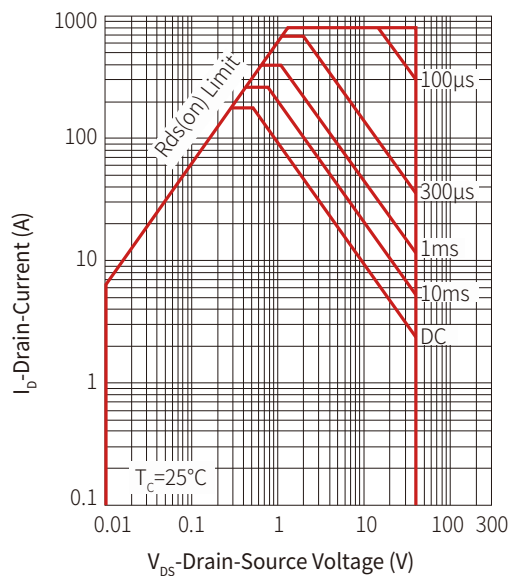


Figure 4: Transient Thermal Impedance

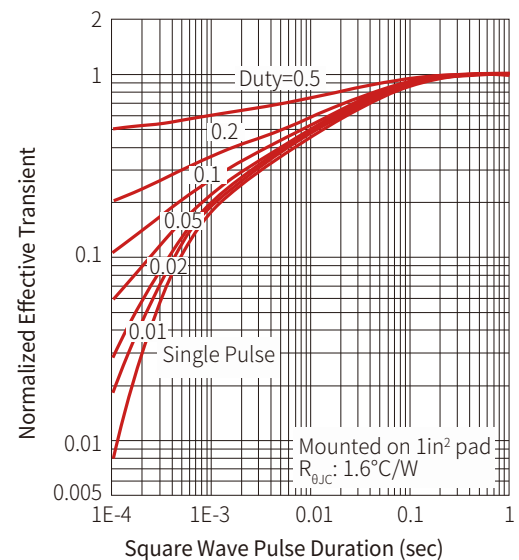


Figure 5: Output Characteristics

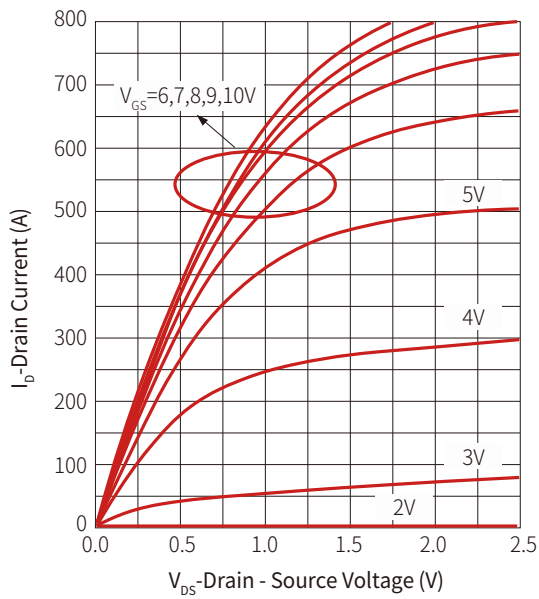


Figure 6: Drain-Source On Resistance

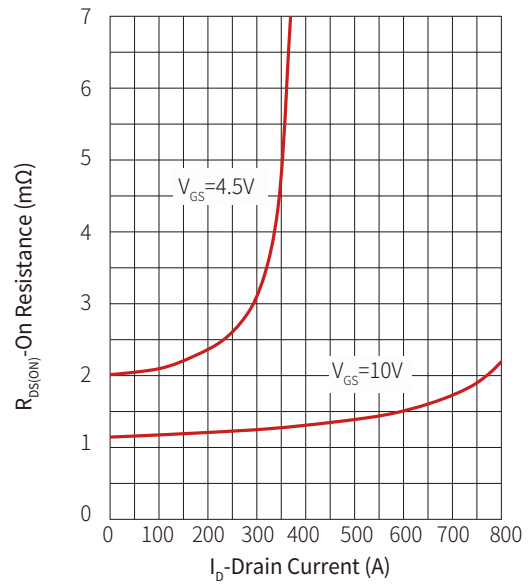


Figure 7: Transfer Characteristics

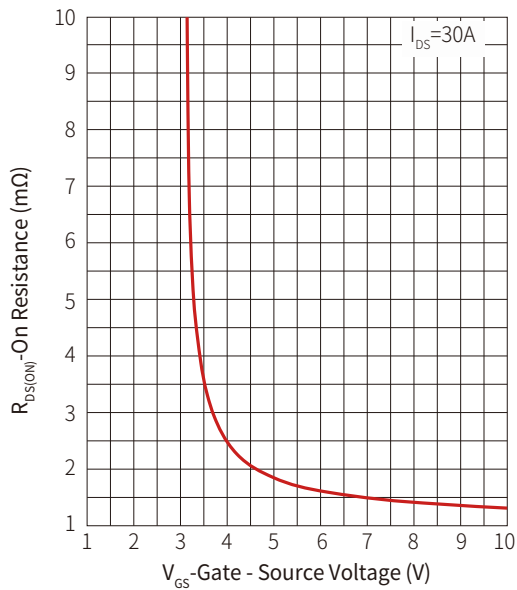


Figure 8: Gate Threshold Voltage

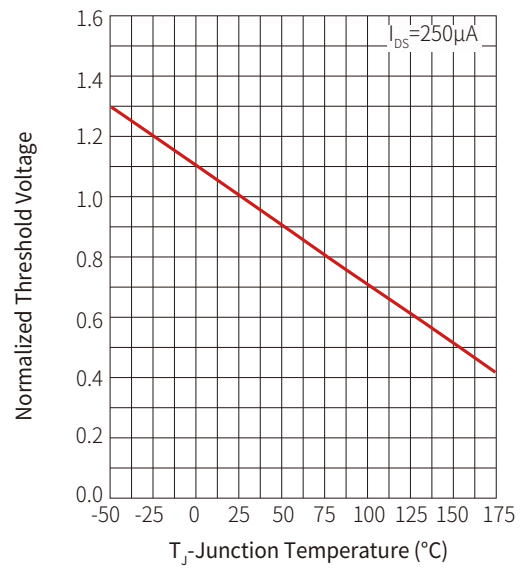
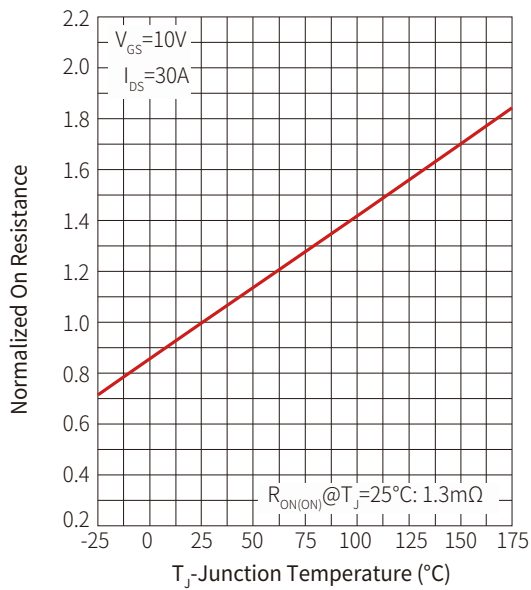
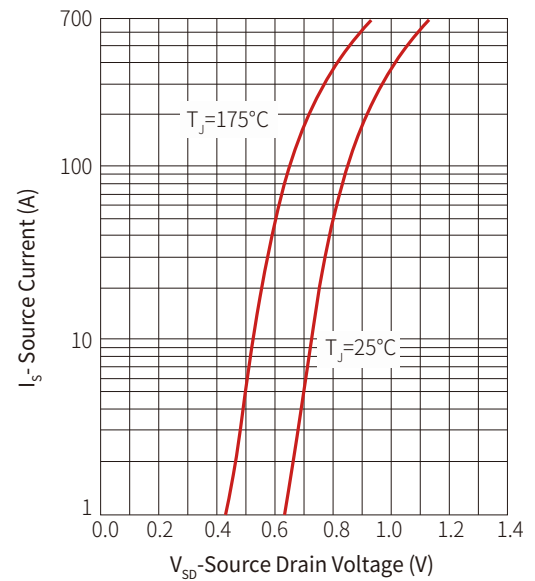
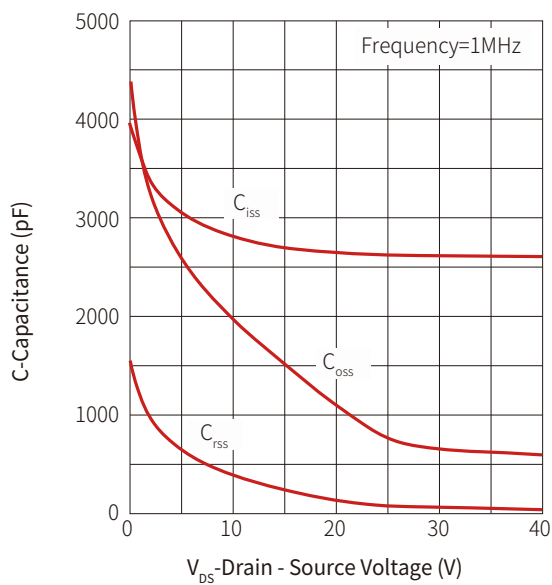
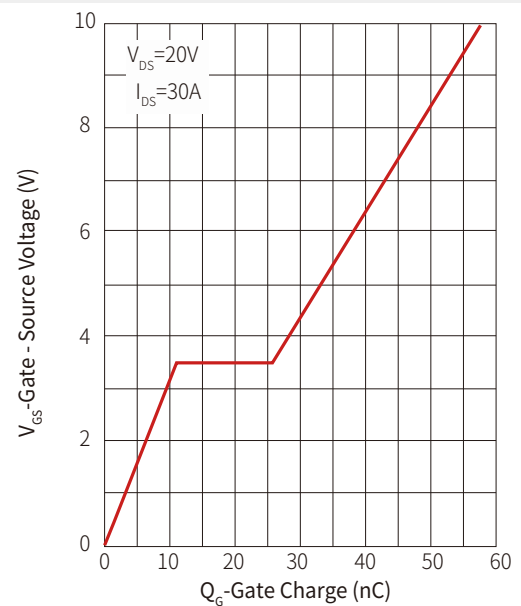


Figure 9: Normalized On Resistance

Figure 10: Body Diode Characteristics

Figure 11: Capacitance

Figure 12: Gate Charge


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.