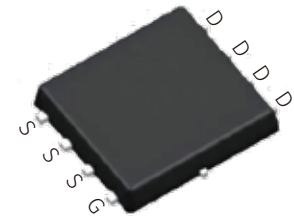


FEATURES

- | Surface-mounted package
- | Low Thermal Resistance



PDFN3×3-8L

APPLICATION

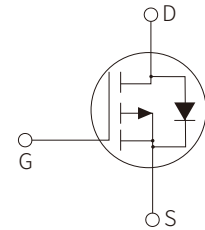
- | Motor Drivers
- | DC - DC Converter



Marking

APPROVALS

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



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage $T_c=25^\circ\text{C}$	V_{DS}	-60	V
Pulsed Source Current $T_c=25^\circ\text{C}, V_{GS}=-10\text{V}$	I_{DM}^{***}	-28.4	A
Drain Current $V_{GS}=-10\text{V}$	$T_c=25^\circ\text{C}$	-13	A
	$T_c=100^\circ\text{C}$	-7.4	A
Gate-Source Voltage $T_c=25^\circ\text{C}$	V_{GS}	± 20	V
Total Power Dissipation $T_c=25^\circ\text{C}$	P_{tot}^*	9.6	W
Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Thermal Resistance - Junction to Ambient	$R_{\theta JA}^*$	70	$^\circ\text{C}/\text{W}$
Thermal Resistance- Junction to Case	$R_{\theta JC}^*$	13	$^\circ\text{C}/\text{W}$

Notes:

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

** Pulse width ≤ 300 us, 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 _D =-250μA	-60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =-250μA	-1		-2.5	V
Zero Gate Voltage Source Current	I _{DSS}	V _{DS} =-48V, V _{GS} =0V			-1	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 =-5A		83	95	mΩ
		V _{GS} =-4.5V, I _D =-3A		105	120	mΩ
Diode Characteristics						
Diode Forward Voltage	V _{SD} ^a	I _{SD} =-5A, V _{GS} =0V			-1.3	V
Reverse Recovery Time	t _{rr}	I _{SD} =-5A, dI _{SD} /dt=100A/μs		15		nS
Reverse Recovery Charge	Q _{rr}			13		nC
Dynamic Characteristics^b						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-30V, Frequency = 1 MHz		911		pF
Output capacitance	C _{oss}			44		pF
Reverse transfer capacitance	C _{rss}			40		pF
Turn-on Delay Time	t _{d(on)}	V _{DS} =-30V, V _{GEN} =-10V R _G =3.9Ω, R _L =6Ω, I _D =-5A		5.5		nS
Turn-on Rise Time	t _r			8.3		nS
Turn-Off Delay Time	t _{d(off)}			21		nS
Turn-Off Fall Time	t _f			10		nS
Gate Charge Characteristics^b						
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-5A		16		nC
Gate-Source Charge	Q _{gs}			4.3		nC
Gate-Drain Charge	Q _{gd}			2.2		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

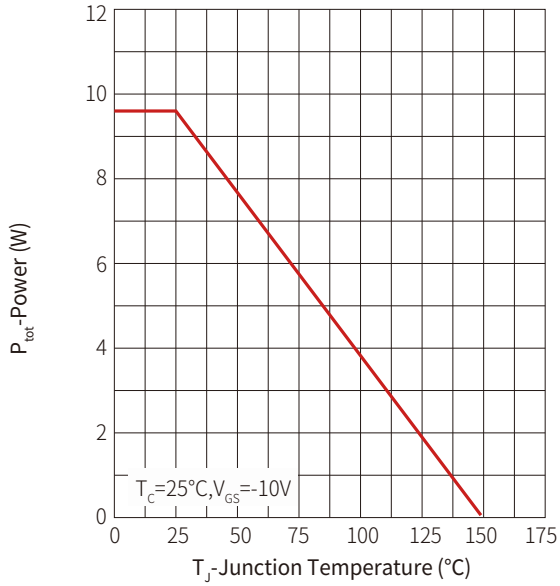


Figure2: Current Capability

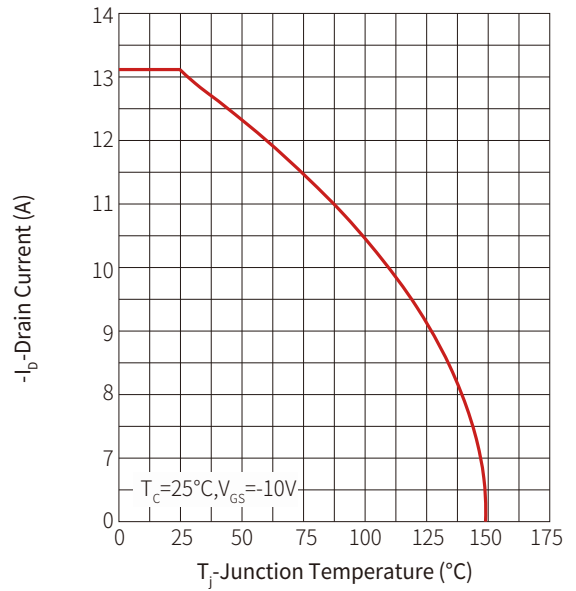


Figure3: Safe operating Area

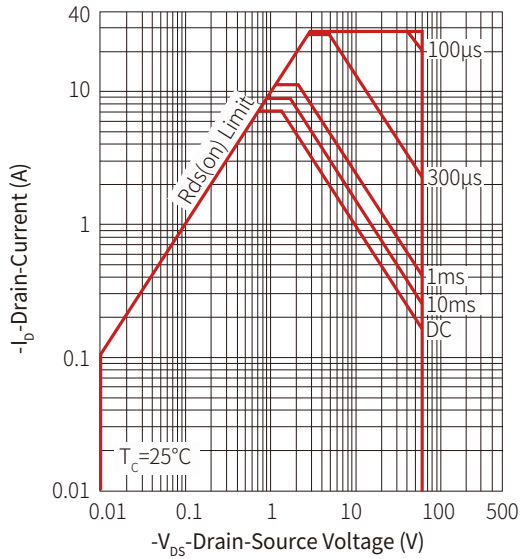


Figure 4: Transient Thermal Impedance

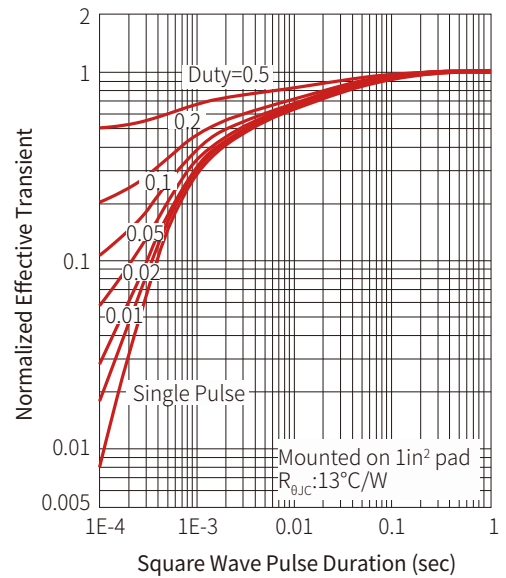


Figure 5: Output Characteristics

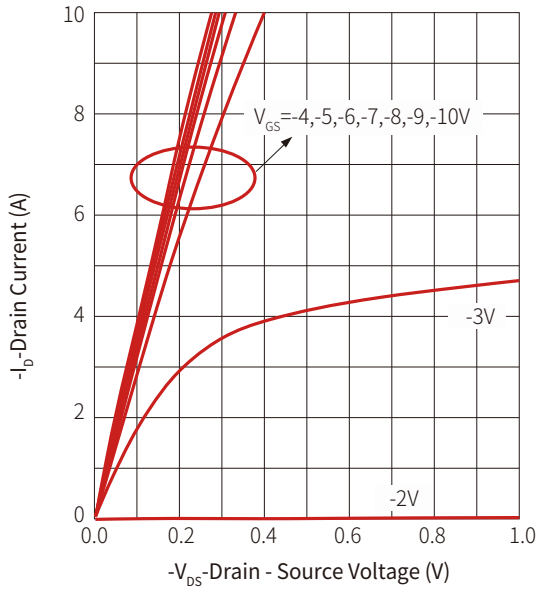


Figure 6: On Resistance

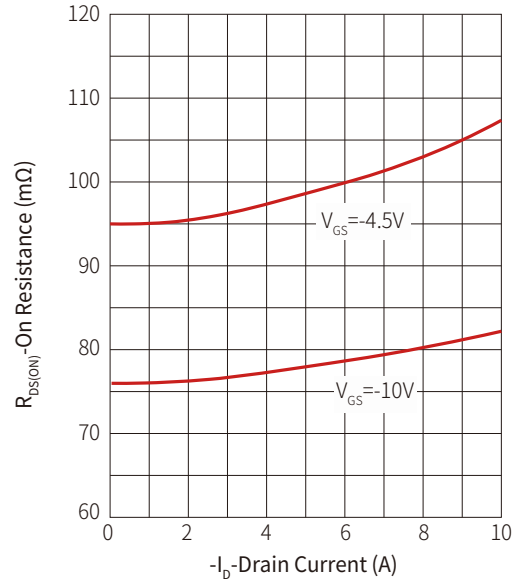


Figure 7: Transfer Characteristics

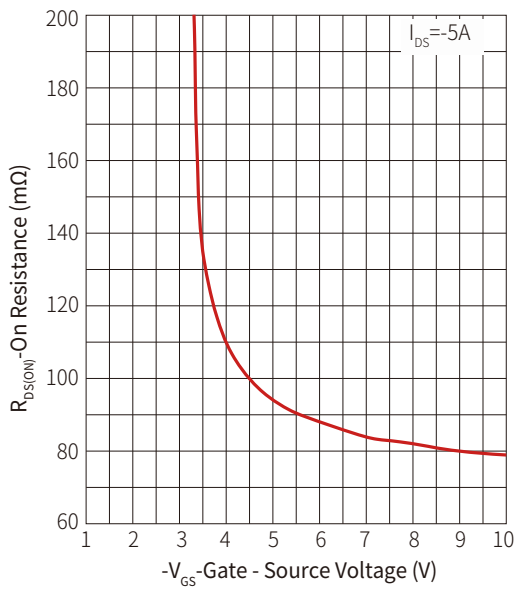


Figure 8: Normalized Threshold Voltage

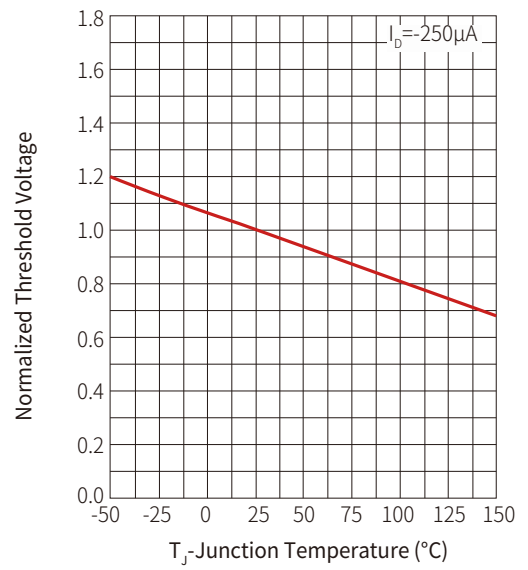


Figure 9: Normalized On Resistance

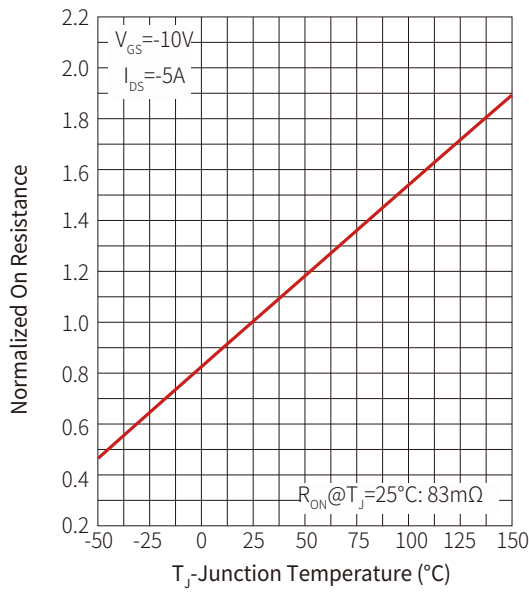


Figure 10: Diode Forward Current

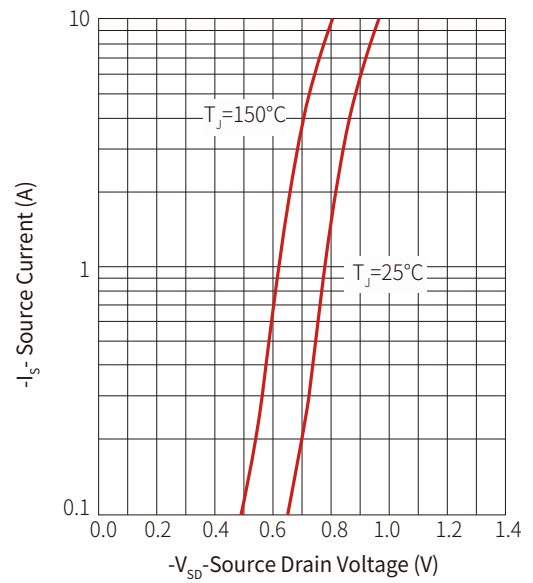


Figure 11: Capacitance

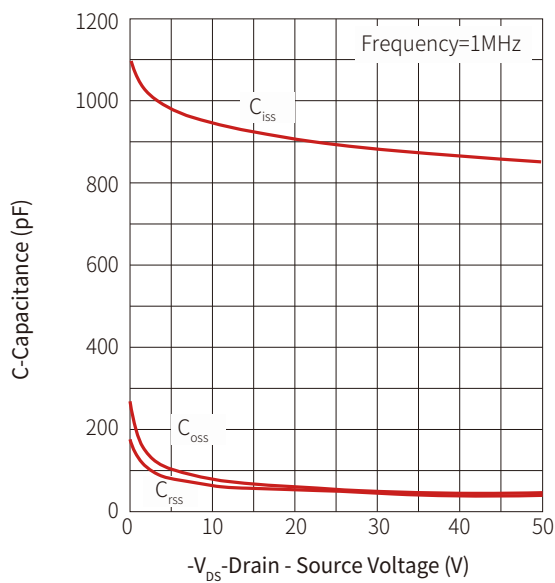
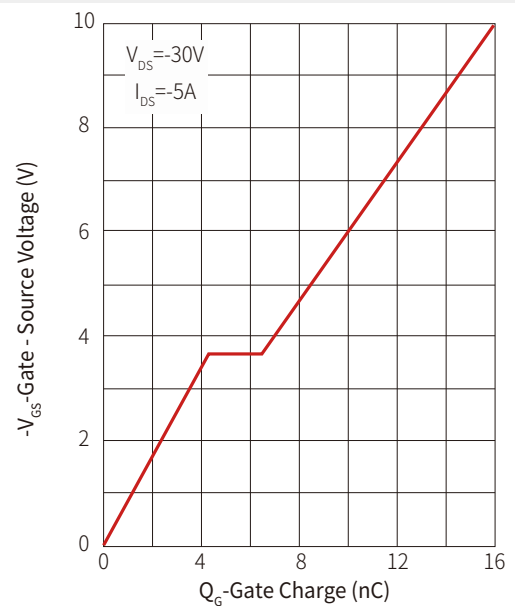
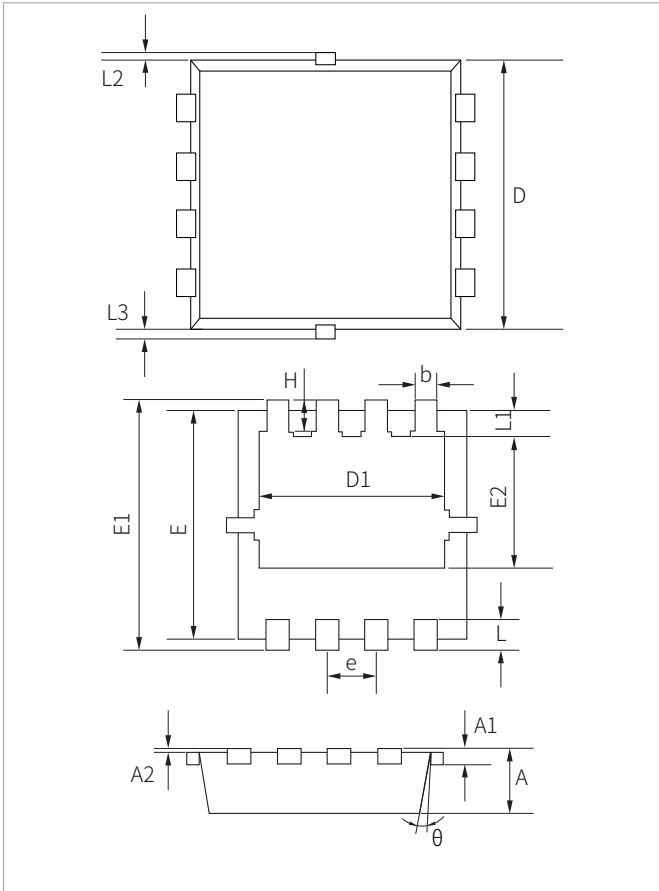


Figure 12: Gate Charge



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	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
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	QTY/Reel	Reel Size
SPM13P06Q	PDFN3x3-8L	5000PCS	13"

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