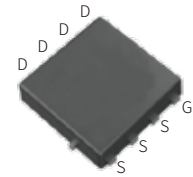


FEATURES

| Advanced trench cell design

| Low Thermal Resistance

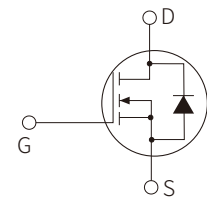


PDFN5×6-8L

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}	200	V
Drain Current (Pulsed) $T_c=25^{\circ}\text{C}$ $V_{GS}=10\text{V}$		I_{DM}^{**}	150	A
Drain Current (DC)	$T_c=25^{\circ}\text{C}$ $V_{GS}=10\text{V}$	I_D^{*}	75	A
	$T_c=100^{\circ}\text{C}$ $V_{GS}=10\text{V}$		53	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}	312	W
Diode Forward Current $T_c=25^{\circ}\text{C}$		I_S	75	A
Junction Temperature		T_J	-55 ~ +175	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ +175	$^{\circ}\text{C}$
Single Pulsed Avalanche Energy $V_{DD}=50\text{ V}$, $L=1.0\text{mH}$		E_{AS}	612	mJ
Thermal Resistance –Junction to Ambient		$R_{\theta JA}^{*}$	58	$^{\circ}\text{C/W}$
Thermal Resistance- Junction to Case		$R_{\theta JC}$	0.48	$^{\circ}\text{C/W}$

Notes:

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

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

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _{DS} =250μA	200			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _{DS} =250μA	2		4	V
Drain Leakage Current	I _{DSS}	V _{DS} =160V,V _{GS} =0V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V			±100	nA
On-State Resistance	R _{DS(on)} ^a	V _{GS} =10V,I _D =30A		16	18	mΩ
		V _{GS} =6V,I _D =20A		18	22	mΩ
Diode Characteristics						
Diode Forward Voltage	V _{SD} ^a	I _{SD} =30A,V _{GS} =0V			1.3	V
Reverse Recovery Time	t _{rr}	I _{SD} =30A,V _{GS} =0V dI _{SD} /dt=100A/μs		111		nS
Reverse Recovery Charge	Q _{rr}			427		nC
Diode Characteristics ^b						
Input capacitance	C _{iss}	V _{GS} =0V,V _{DS} =100V, Frequency = 1 MHz		3869		pF
Output capacitance	C _{oss}			190		pF
Reverse transfer capacitance	C _{rss}			37		pF
Turn-on Delay Time	t _{d(on)}	V _{DS} =100V,V _{GEN} =10V R _G = 3.9Ω, R _L =3.3Ω, I _{DS} =30A		15		nS
Turn-on Rise Time	t _r			35		nS
Turn-Off Delay Time	t _{d(off)}			39		nS
Turn-Off Fall Time	t _f			32		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q _g	V _{DS} =100V,V _{GS} =10V,I _{DS} =30A		64		nC
Gate-Source Charge	Q _{gs}			22		nC
Gate-Drain Charge	Q _{gd}			14		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

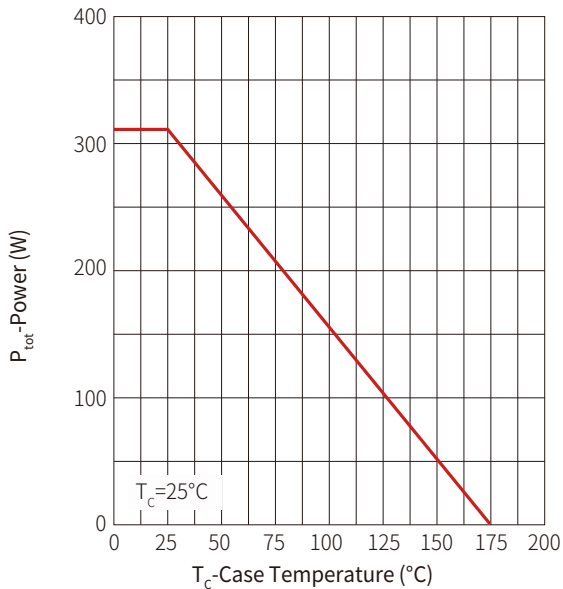


Figure2: Current Capability

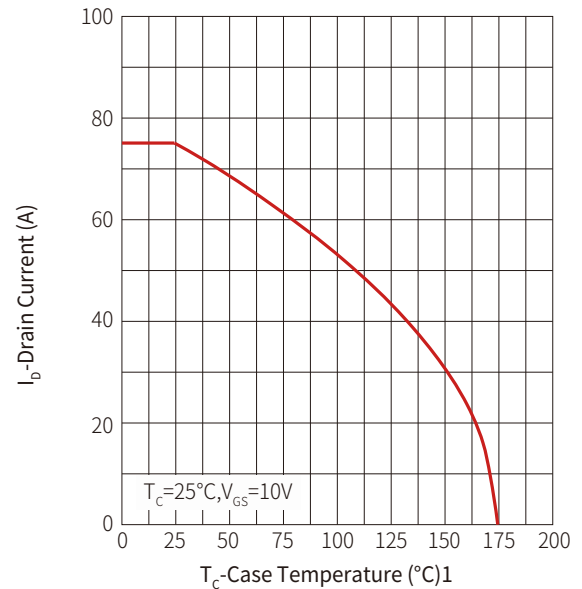


Figure3: Safe Operating Area

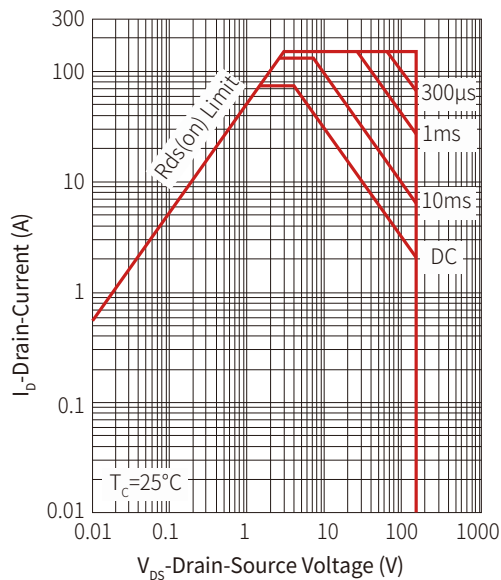


Figure 4: Transient Thermal Impedance

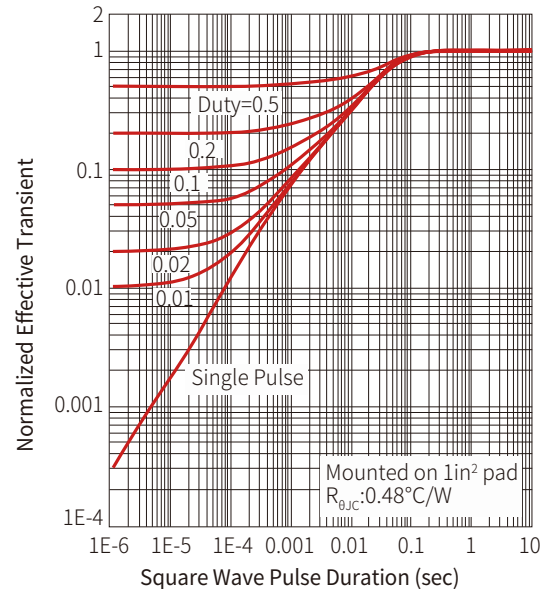


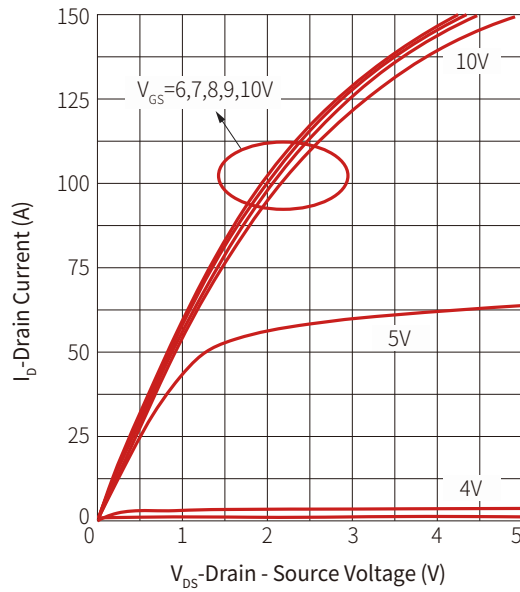
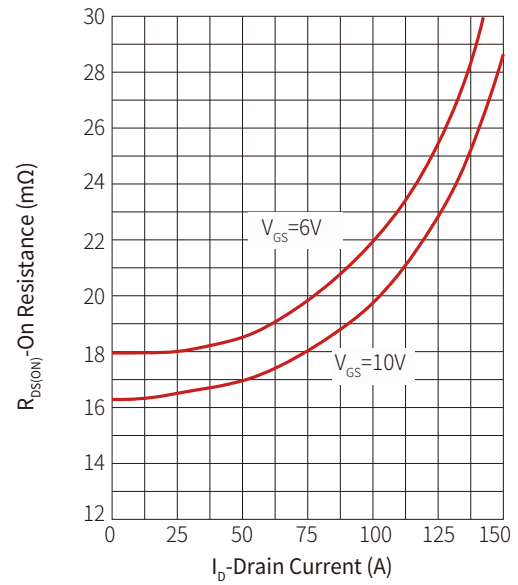
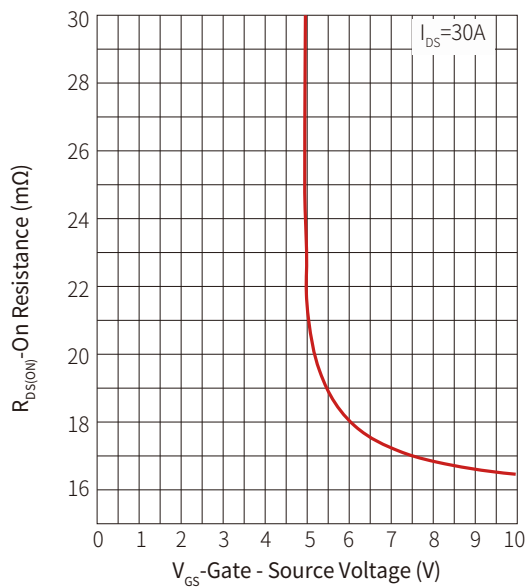
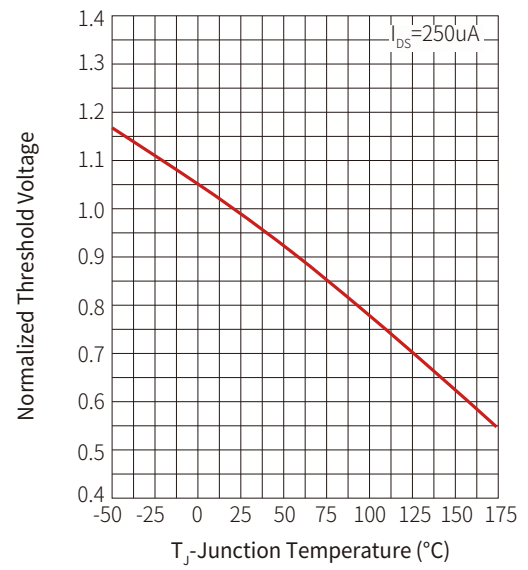
Figure 5: Output Characteristics

Figure 6: On Resistance

Figure 7: Transfer Characteristics

Figure 8: Normalized Threshold Voltage


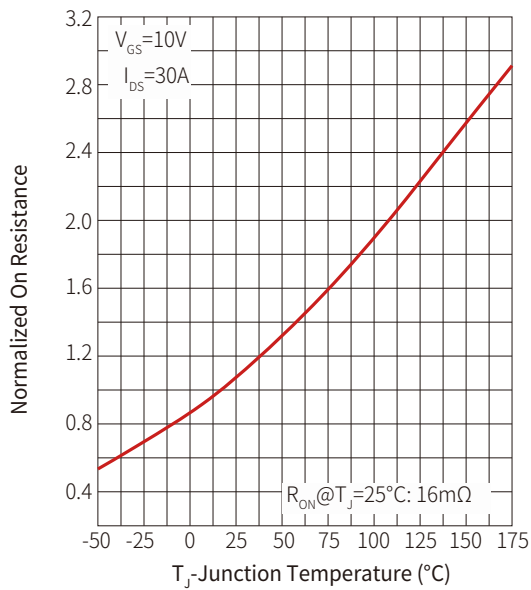
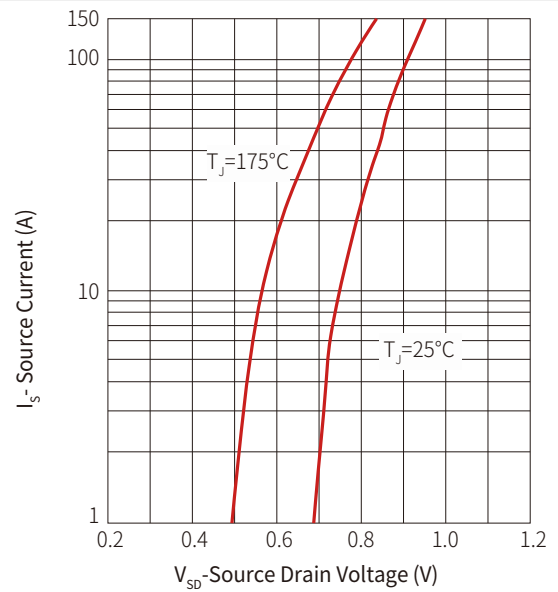
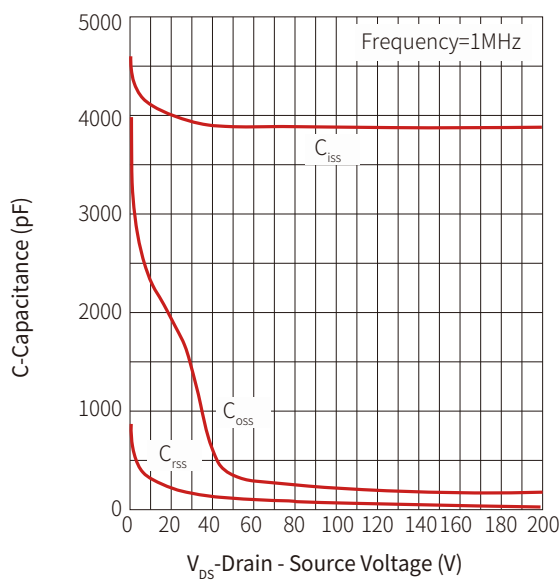
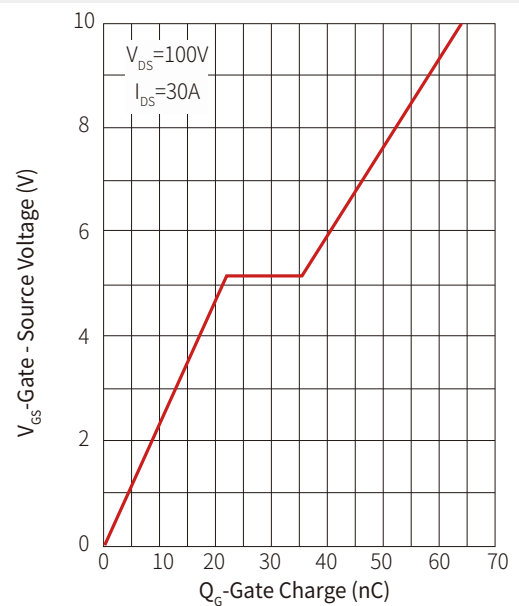
Figure 9: Normalized On Resistance

Figure 10: Diode Forward Current

Figure 11: Capacitance

Figure 12: Gate Charge


Figure 1: Mechanical drawing of the package. The drawing includes a top view showing dimensions D1, E1, and a central pin with dimensions PIN#1 I.D., Ø0.80, and DP:0.08 MAX. A side view shows the package height M. A cross-section view shows the package profile with dimensions b1, e, 4XL, and 4XM. A detailed view of the exposed die attached pad shows dimensions b1, b2, 8x, and 4XL. A detail view of the terminal tip shows dimensions L, b1, e, and 0.08. A detail view of the package profile shows dimensions A, A1, A3, and P. The drawing also includes various callouts for material and finish, such as 'bbaa C A B', 'ddd C C', 'ccc C', and 'eee C'.

Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.17	0.035	0.046
A1	0.00	0.05	0.000	0.002
A3	0.254REF		0.010REF	
b	0.31	0.51	0.012	0.020
b1	0.03	0.13	0.001	0.005
b2	0.21	0.41	0.008	0.016
D	5.15BSC		0.203BSC	
D1	5.00BSC		0.197BSC	
D2	3.70	3.90	0.146	0.154
E	6.15BSC		0.242BSC	
E1	6.00BSC		0.236BSC	
E2	3.56	3.76	0.140	0.148
e	1.27BSC		0.050BSC	
L	0.51	0.71	0.020	0.028
M	0.51	0.71	0.020	0.028
P	10°	12°	0.394°	0.472°
aaa	0.10		0.004	
bbb	0.10		0.004	
ccc	0.10		0.004	
ddd	0.05		0.002	
eee	0.08		0.003	

Part Number	Component Package	Marking	QTY/Reel	Reel Size
SNM220N20G	PDFN5×6-8L	220N20 YWWXXX	5000PCS	13"

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