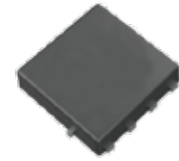


FEATURES

- Surface-mounted package
- Low Thermal Resistance



PDFN5×6-8L

APPLICATION

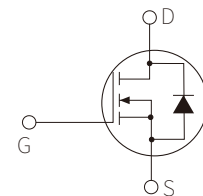
- Motor drivers
- DC - DC Converter



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}	40	V	
Drain Current (Pulsed) $T_c=25^\circ\text{C}$ $V_{GS}=10\text{V}$	I_{DM}^{***}	800	A	
Drain Current (DC)	I_D	$T_c=25^\circ\text{C}$ $V_{GS}=10\text{V}$	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	
Junction Temperature	T_J	175	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55 to 175	$^\circ\text{C}$	
Single Pulsed Avalanche Energy $V_{DD}=40\text{V}$, $L=1.0\text{mH}$	E_{AS}	544	mJ	
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 ≤ 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	V _{(BR)DSS}	V _{GS} =0V, I _{DS} =250μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	1		2	V
Drain Leakage Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V			1	uA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
On-State Resistance	R _{DS(on)} ^a	V _{GS} =10V, I _{DS} =30A		1.3	1.5	mΩ
		V _{GS} =4.5V, I _{DS} =20A		2.2	2.6	mΩ
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/μs		45		nS
Reverse Recovery Charge	Q _{rr}			26		nC
Diode Characteristics^b						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, Frequency = 1 MHz		2638		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 =3.9Ω, R _f =0.66Ω, I _{DS} =30A		10		nS
Turn-on Rise Time	t _r			68		nS
Turn-Off Delay Time	t _{d(off)}			51		nS
Turn-Off Fall Time	t _f			46		nS
Gate Charge Characteristics^b						
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _{DS} =30A		58		nC
Gate-Source Charge	Q _{gs}			11		nC
Gate-Drain Charge	Q _{gd}			15		nC

Notes:

a : Pulse test ; pulse width ≤ 300us, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

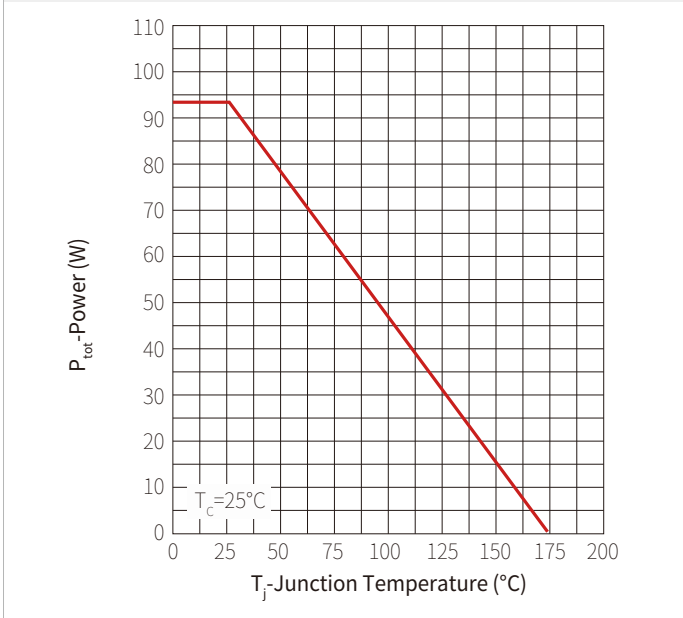


Figure2: Current Capability

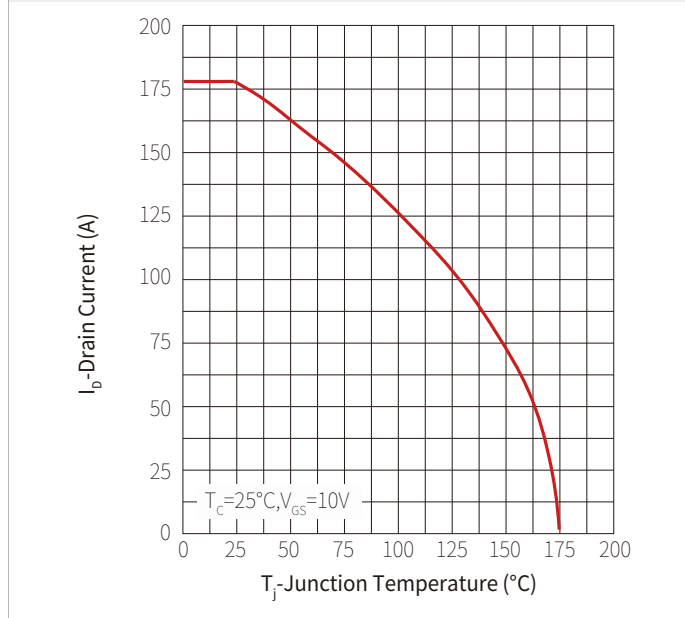


Figure3: Safe Operation Area

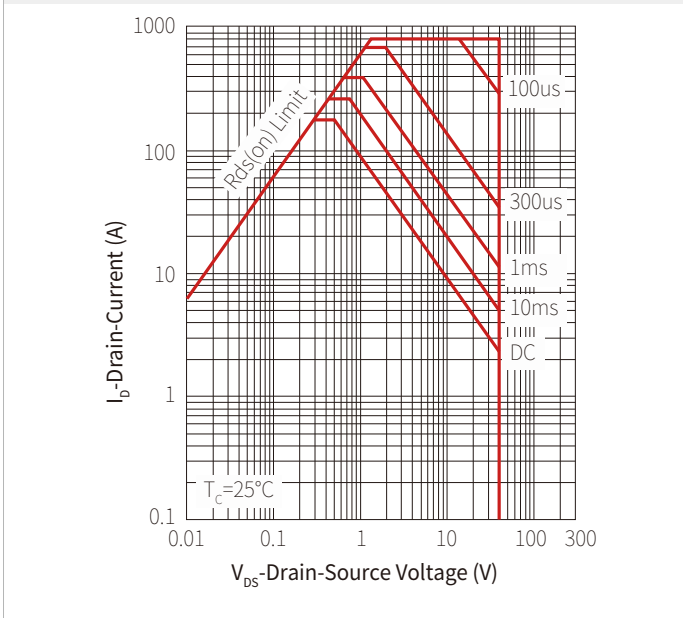


Figure 4: Transient Thermal Impedance

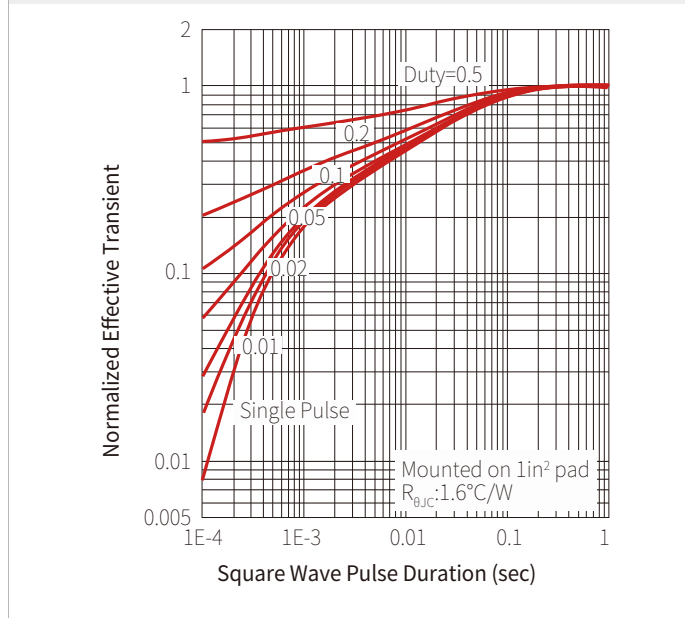


Figure 5: Output Characteristics

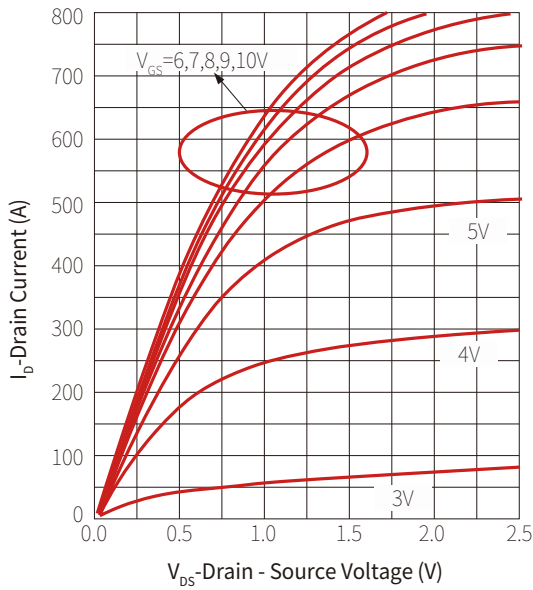


Figure 6: Drain-Source On Resistance

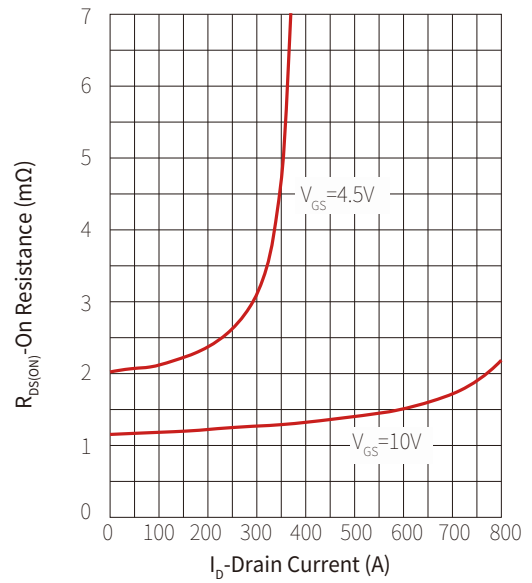


Figure 7: Transfer Characteristics

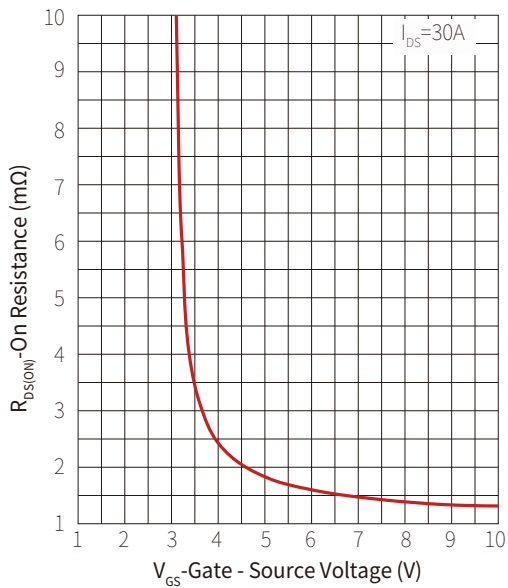


Figure 8: Gate Threshold Voltage

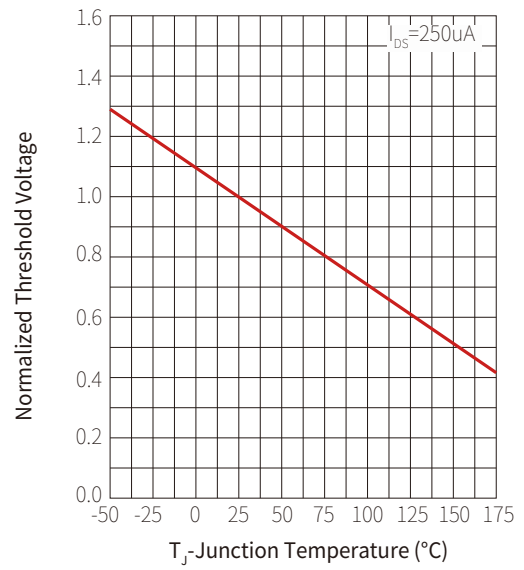


Figure 9: Drain-Source On Resistance

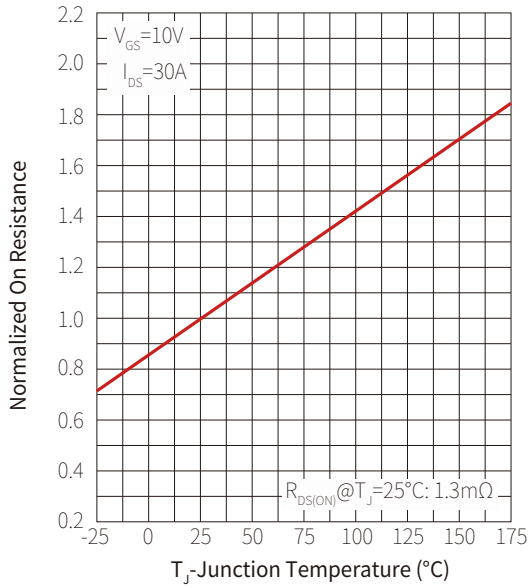


Figure 10: Body Diode Characteristics

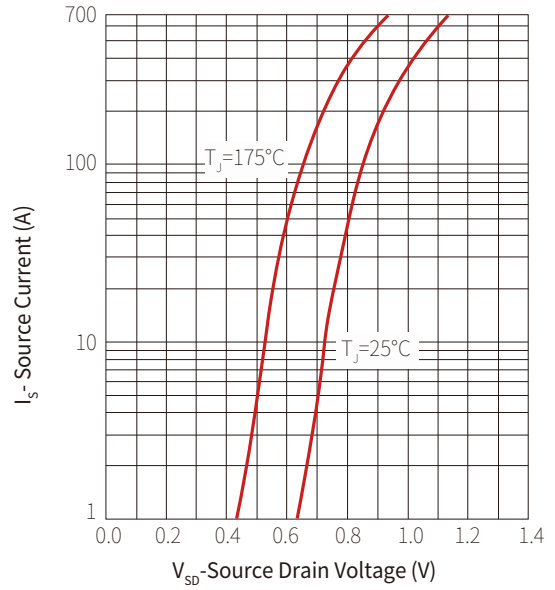


Figure 11: Capacitance

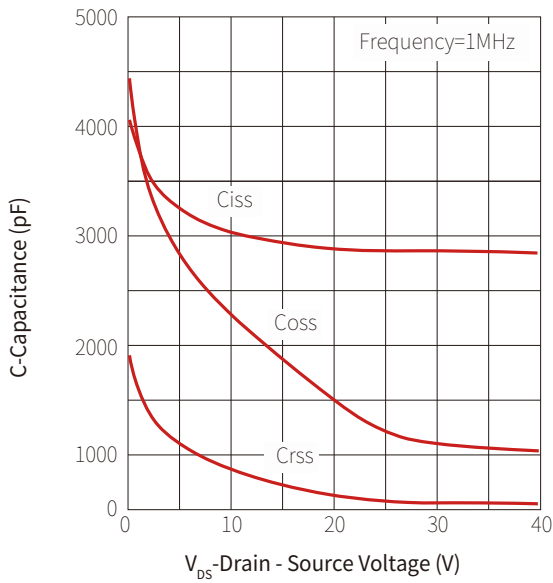
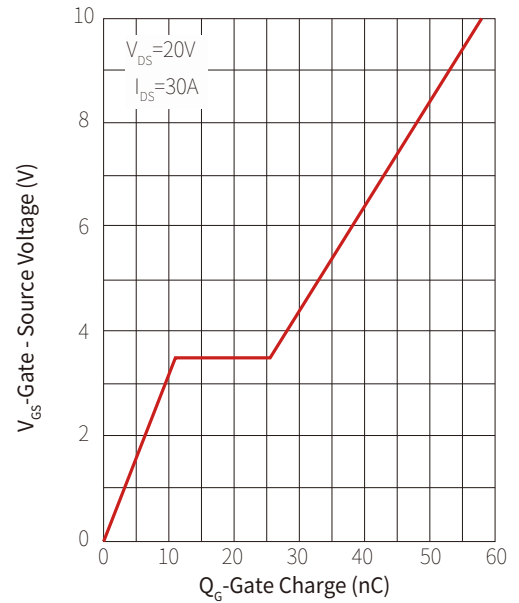
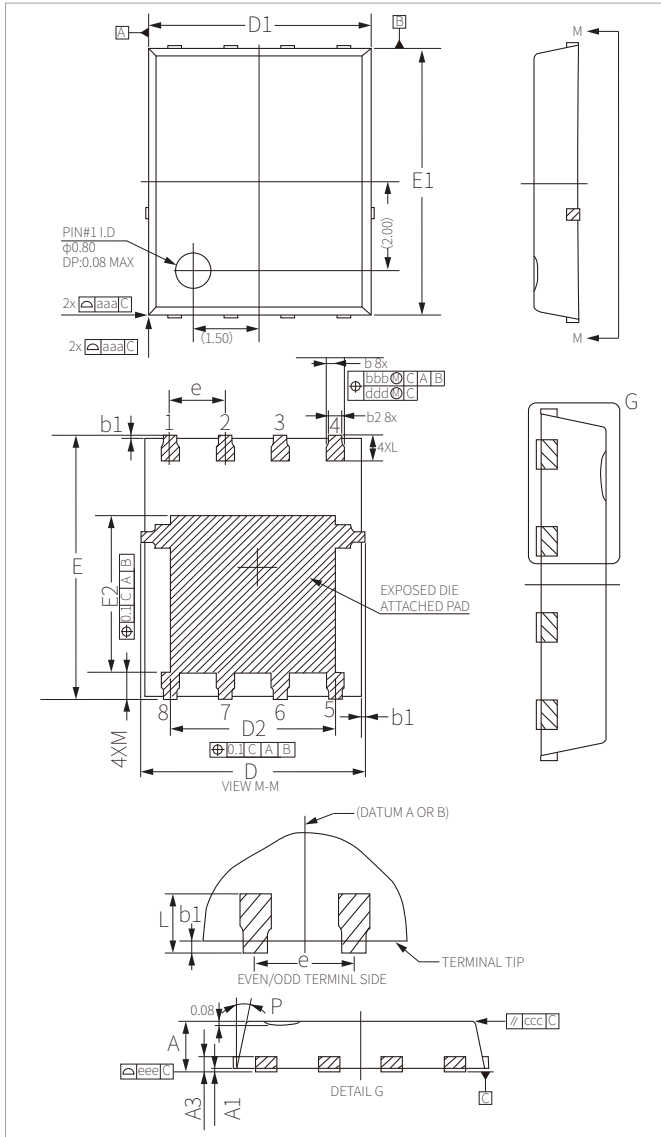


Figure 12: Gate Charge



PDFN5×6-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.95	1.05	0.037	0.041
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	

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNM1R5N04	PDFN5×6-8L	5000PCS	13"

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