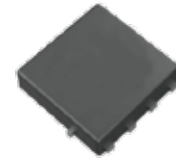


FEATURES

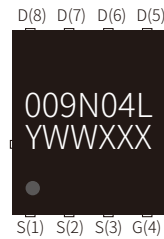
- | Advanced trench cell design
- | Low Thermal Resistance



PDFN5×6-8L

APPLICATION

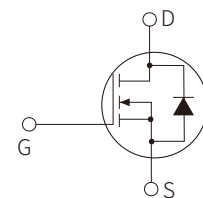
- | Motor drivers
- | DC - DC Converter



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^{***}	$T_c=25^\circ\text{C}$ $V_{GS}=10\text{V}$	200
		$T_c=100^\circ\text{C}$ $V_{GS}=10\text{V}$	200
Gate-Source Voltage $T_c=25^\circ\text{C}$	V_{GS}	± 20	V
Total Power Dissipation $T_c=25^\circ\text{C}$	P_{tot}^*	150	W
Diode Forward Current $T_c=25^\circ\text{C}$	I_S	200	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}^*	1012	mJ
Thermal Resistance –Junction to Ambient	$R_{\theta JA}^*$	56	$^\circ\text{C}/\text{W}$
Thermal Resistance- Junction to Case	$R_{\theta JC}^*$	1	$^\circ\text{C}/\text{W}$

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10$ sec
- ** Pulse width $\leq 10\mu\text{s}$, duty cycle $\leq 1\%$
- *** Limited by bonding wire

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	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		2.5	V
Drain Leakage Current	I _{DSS}	V _{DS} =32V, 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 _{DS} =30A		0.65	0.8	mΩ
		V _{GS} =4.5V, I _{DS} =20A		1.1	1.3	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		40		nS
Reverse Recovery Charge	Q _{rr}			28		nC
Diode Characteristics^b						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, Frequency = 1 MHz		5702		pF
Output capacitance	C _{oss}			1876		pF
Reverse transfer capacitance	C _{rss}			204		pF
Turn-on Delay Time	t _{d(on)}	V _{DS} =20V, V _{GEN} =10V R _G =3.9Ω, R _L =0.66Ω, I _{DS} =30A		54		nS
Turn-on Rise Time	t _r			65		nS
Turn-Off Delay Time	t _{d(off)}			101		nS
Turn-Off Fall Time	t _f			73		nS
Gate Charge Characteristics^b						
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _{DS} =30A		114		nC
Gate-Source Charge	Q _{gs}			23		nC
Gate-Drain Charge	Q _{gd}			25		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

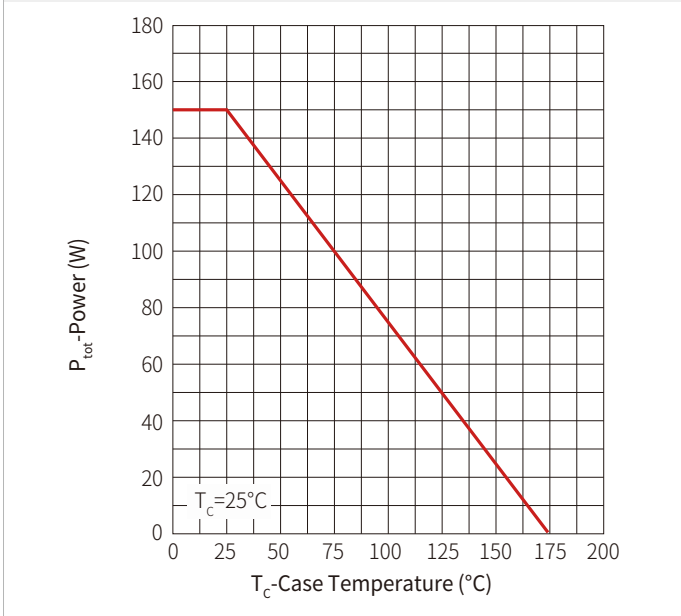


Figure2: Current Capability

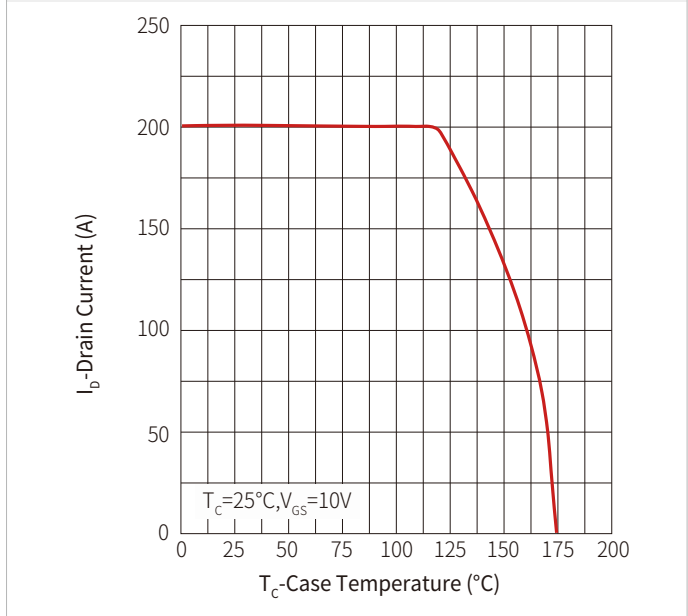


Figure3: Safe Operation Area

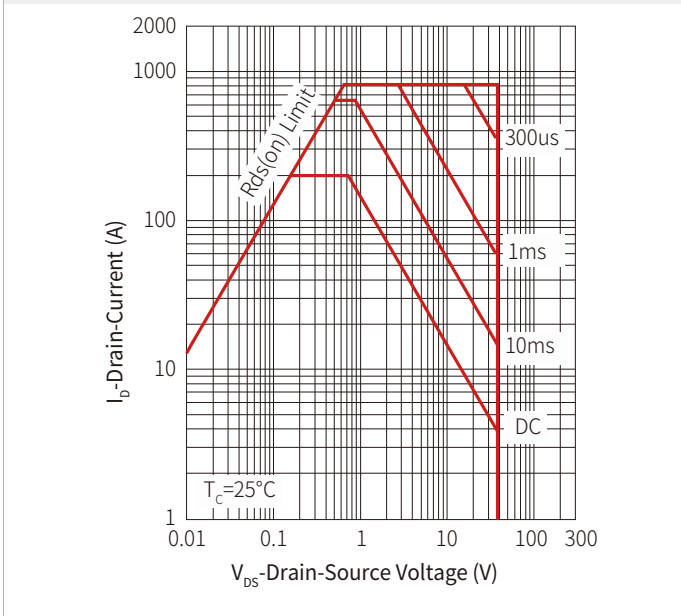


Figure 4: Transient Thermal Impedance

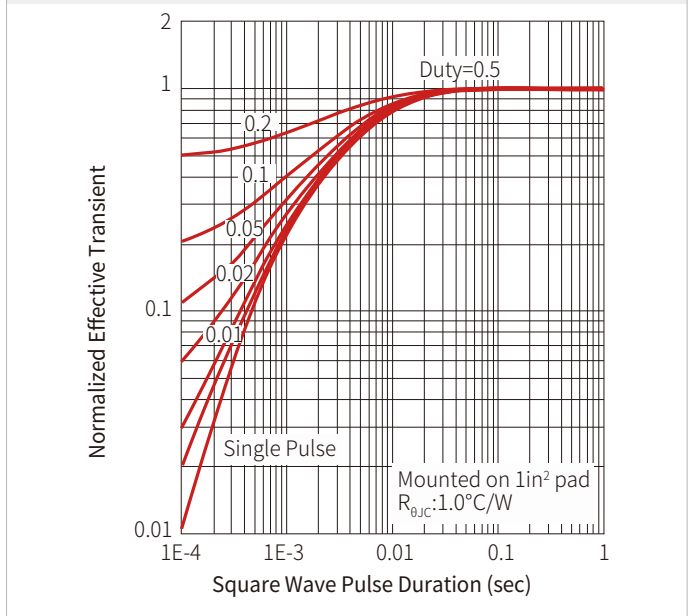


Figure 5: Output Characteristics

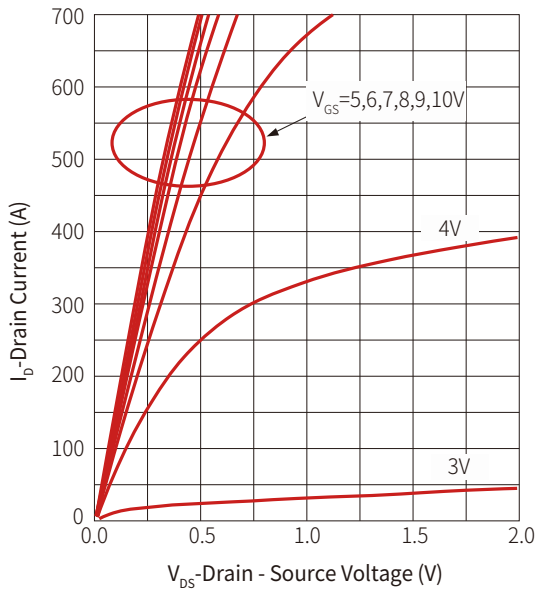


Figure 6: On Resistance

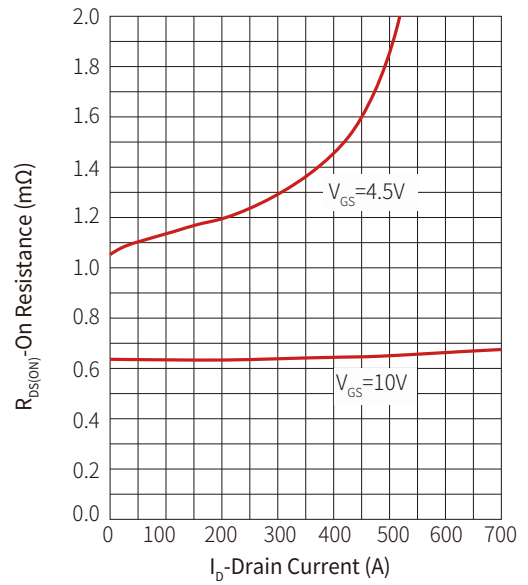


Figure 7: Transfer Characteristics

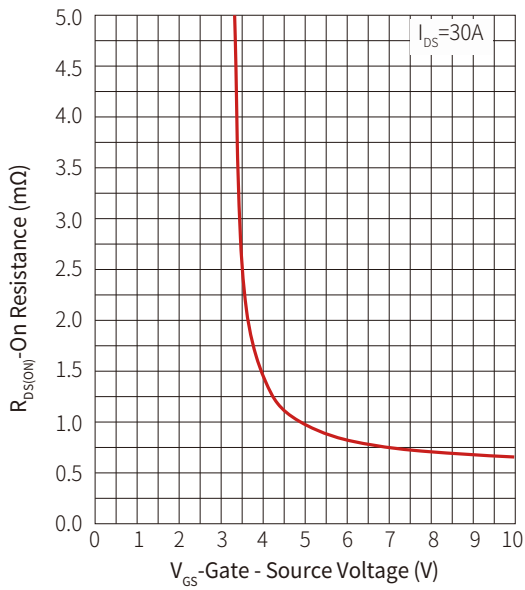


Figure 8: Normalized Threshold Voltage

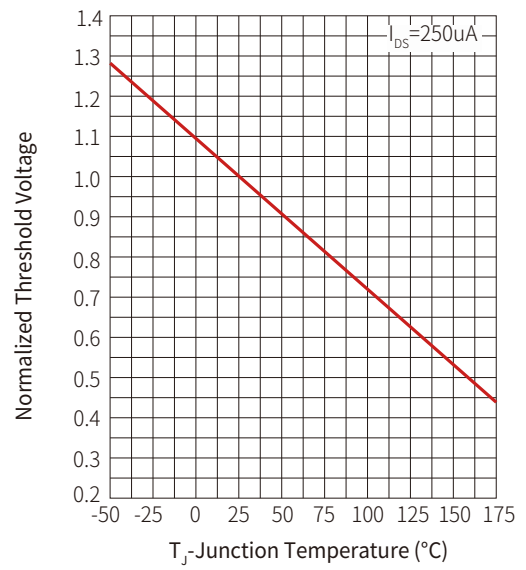


Figure 9: Normalized On Resistance

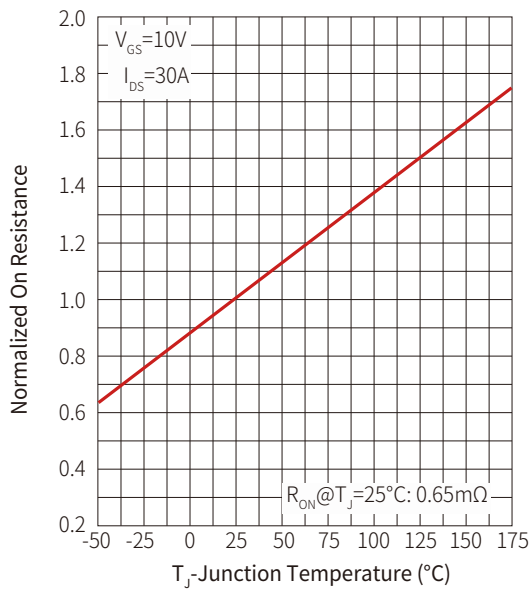


Figure 10: Diode Forward Current

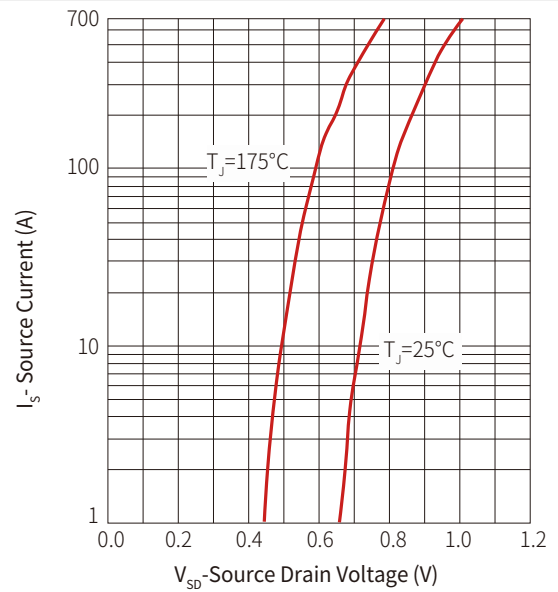


Figure 11: Capacitance

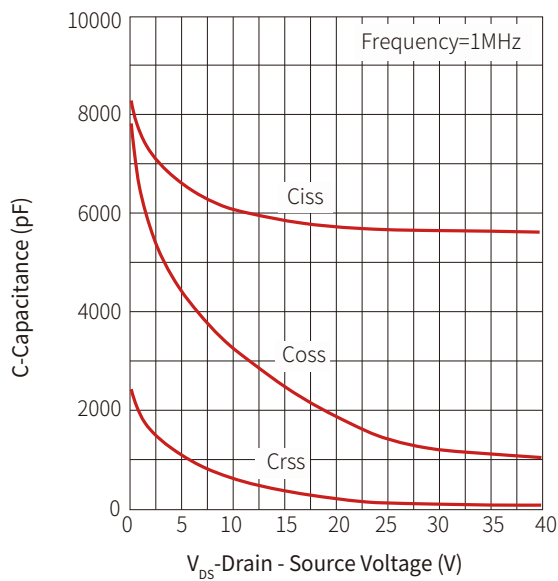
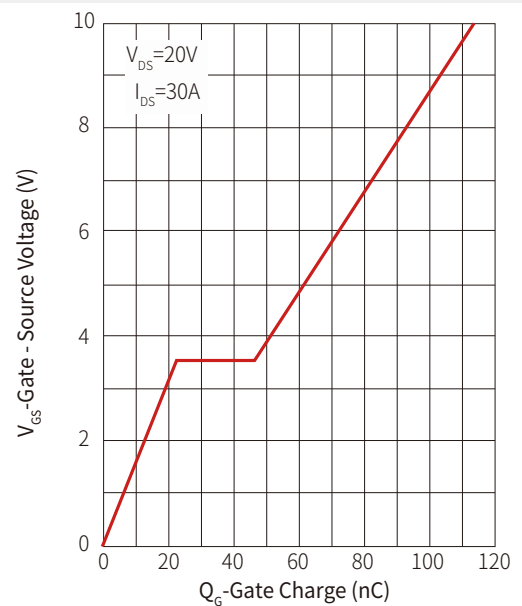
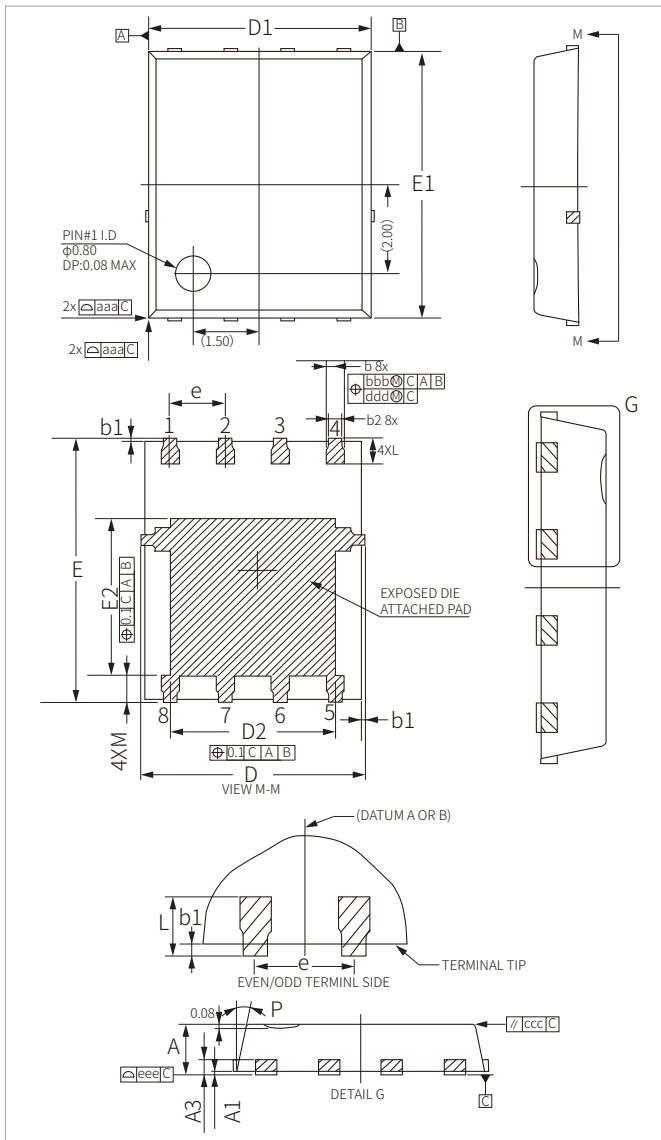


Figure 12: Gate Charge



PDFN5×6-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
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
SNM009N04GL	PDFN5×6-8L	5000PCS	13"

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