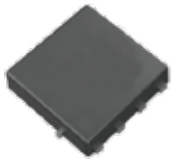
FEATURES

- Advanced trench cell design
- Low Thermal Resistance



PDFN5×6-8L

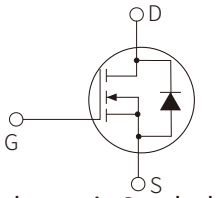
APPLICATION

- 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°C		V_{DS}	40	V
Drain Current (Pulsed) T_C=25°C V_{GS}=10V		I_{DM}*,**,***	800	A
Drain Current (DC)	T_C=25°C V_{GS}=10V	I_D*,***	200	A
	T_C=100°C V_{GS}=10V		200	A
Gate-Source Voltage T_C=25°C		V_{GS}	±20	V
Total Power Dissipation T_C=25°C		P_{tot}*	150	W
Diode Forward Current T_C=25°C		I_S	200	A
Junction Temperature		T_J	175	°C
Storage Temperature		T_{STG}	-55 to 175	°C
Single Pulsed Avalanche Energy V_{DD}= 40 V , L=1.0mH		E_{AS}*	1012	mJ
Thermal Resistance –Junction to Ambient		$R_{\theta JA}$*	56	°C/W
Thermal Resistance- Junction to Case		$R_{\theta JC}$*	1	°C/W

Notes:
* Surface Mounted on 1 in^2 pad area, t ⩽10 sec
** Pulse width⩽10us, duty cycle⩽ 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

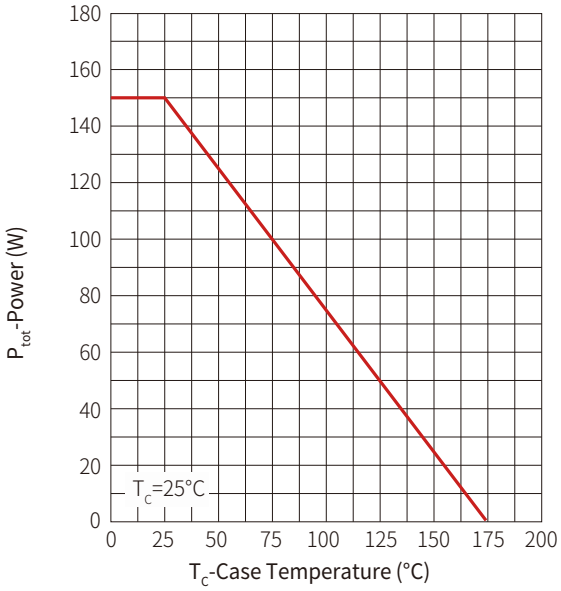


Figure2: Current Capability

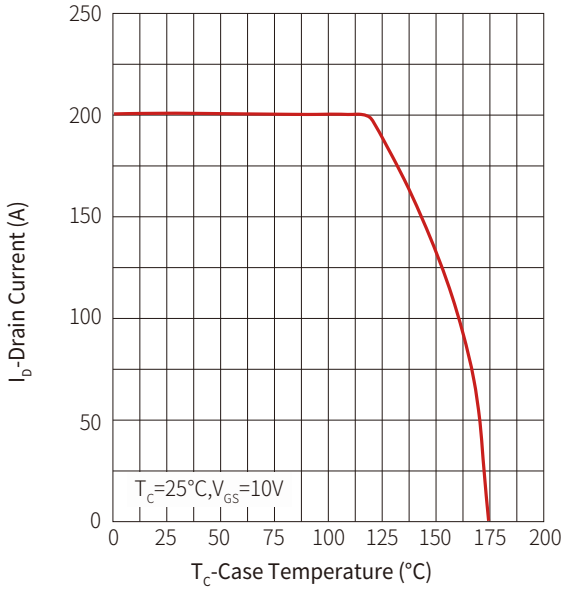


Figure3: Safe Operation Area

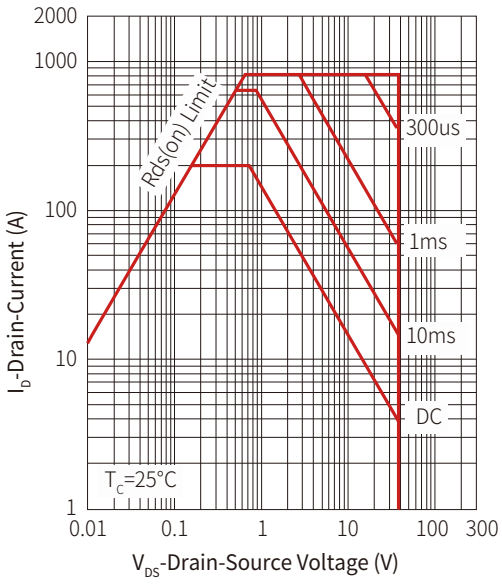


Figure 4: Transient Thermal Impedance

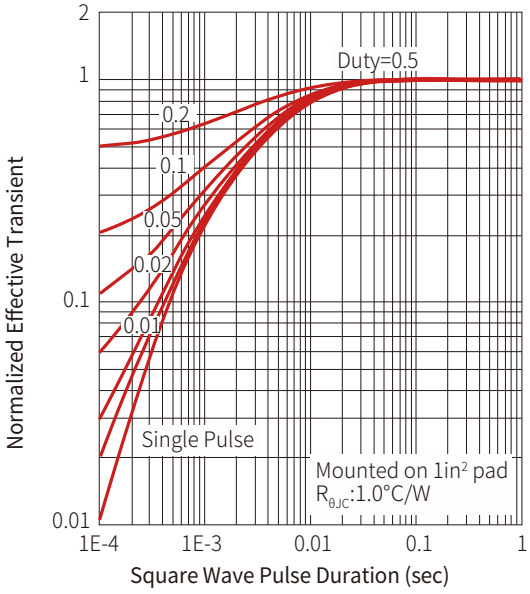


Figure 5:Output Characteristics

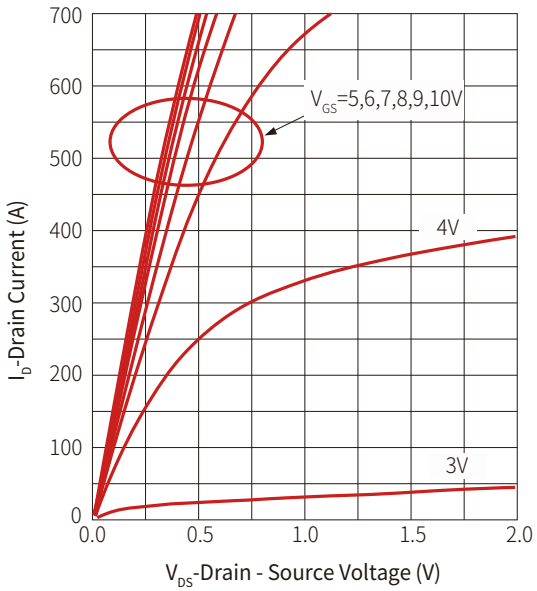


Figure 6: On Resistance

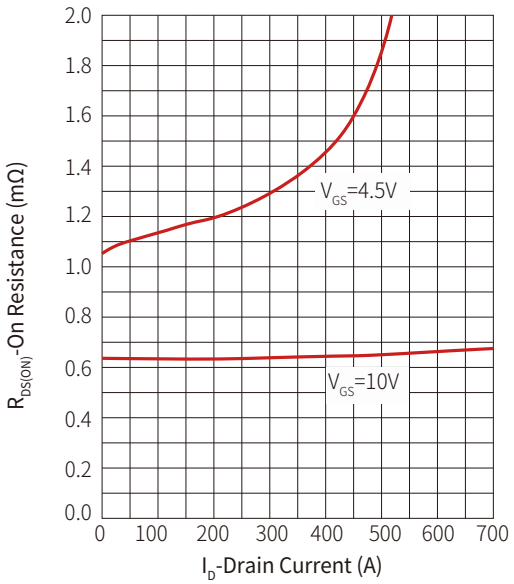


Figure 7:Transfer Characteristics

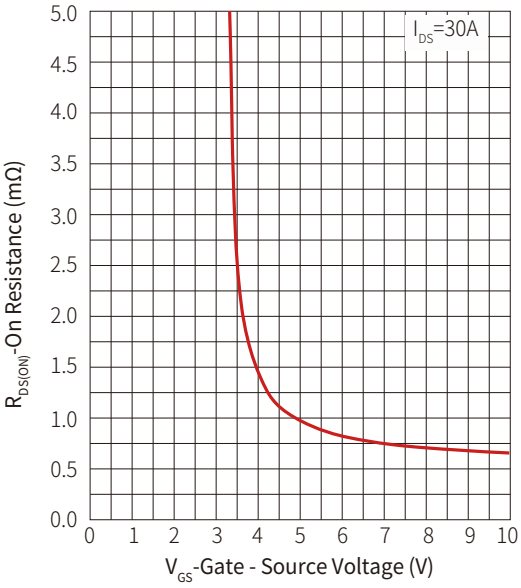


Figure 8: Normalized Threshold Voltage

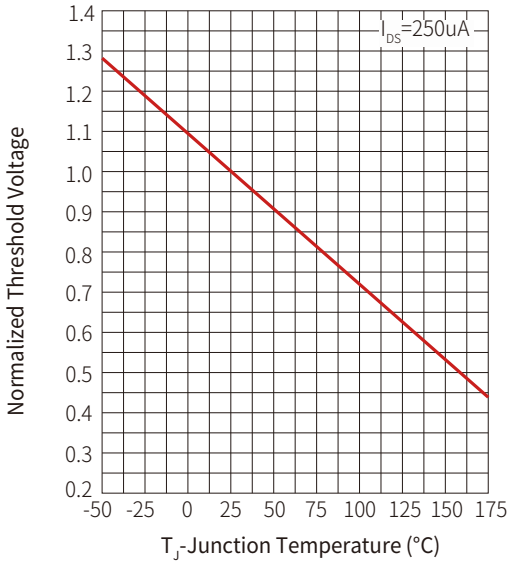


Figure 9:Normalized On Resistance

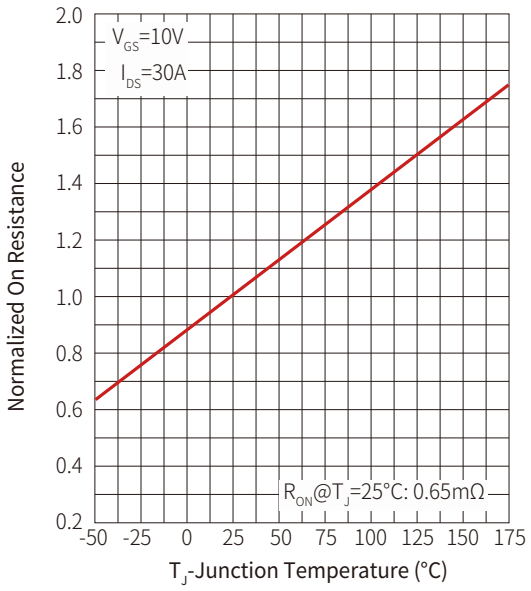


Figure 10: Diode Forward Current

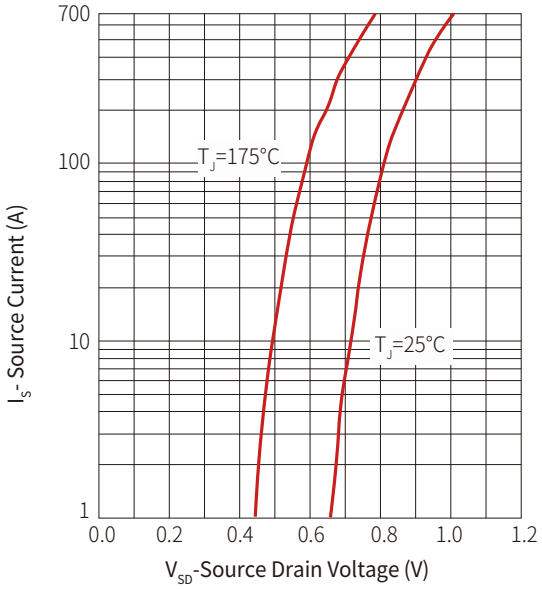


Figure 11:Capacitance

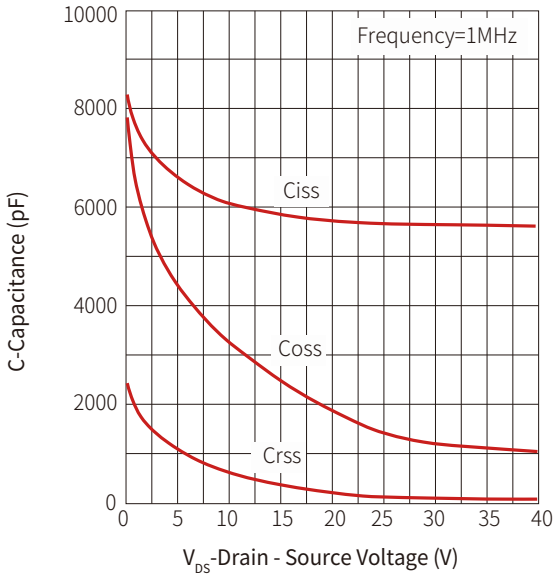
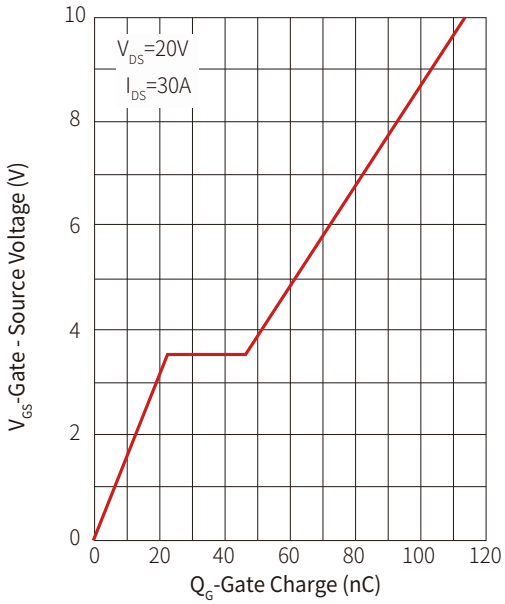


Figure 12: Gate Charge



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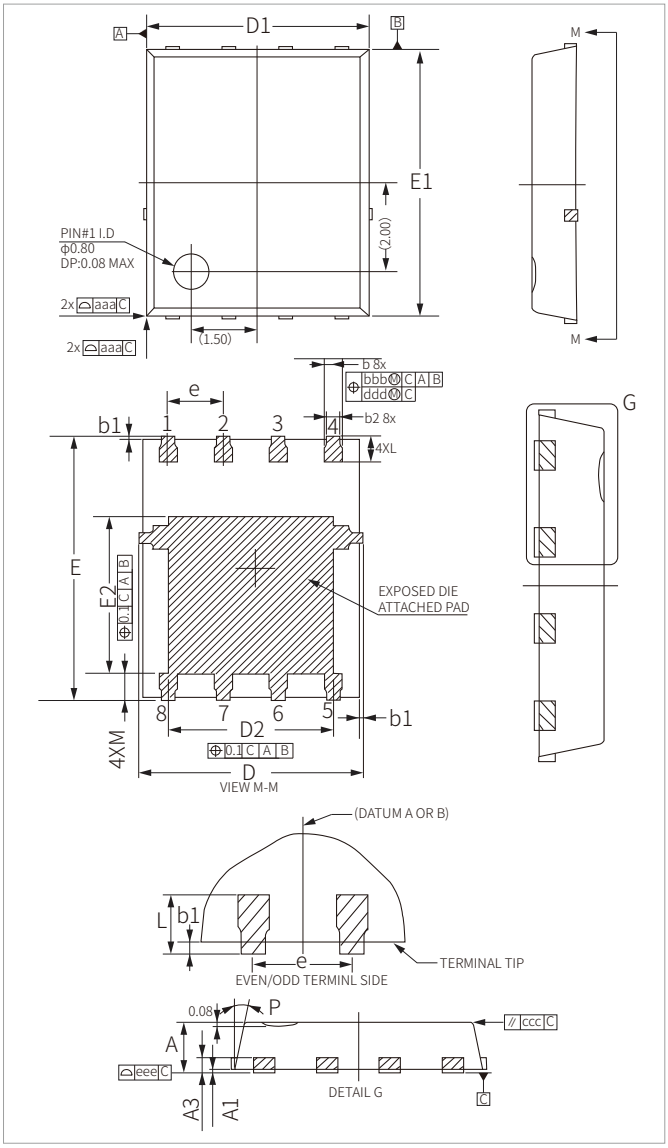

Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.00	0.05	0.000	0.002
A3	0.254REF		0.010REF	
b	0.31	0.51	0.012	0.020
b1	0.03	0.13	0.001	0.005
b2	0.21	0.41	0.008	0.016
D	5.15BSC		0.203BSC	
D1	5.00BSC		0.197BSC	
D2	3.70	3.90	0.146	0.154
E	6.15BSC		0.242BSC	
E1	6.00BSC		0.236BSC	
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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