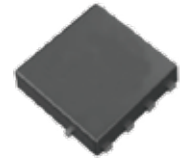


FEATURES

- Surface-mounted package
- Low Thermal Resistance

APPLICATION

- Motor drivers
- DC - DC Converter



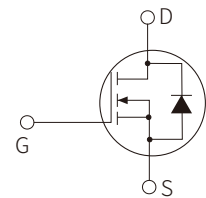
PDFN5×6-8L



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)	$T_c=25^{\circ}\text{C}$ $V_{GS}=10\text{V}$	I_D^*	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 $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$

*** Limited by bonding wire

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_{DS}=250\mu A$	40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1		2	V
Drain Leakage Current	I_{DSS}	$V_{DS}=32V, V_{GS}=0V$			1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=10V, I_{DS}=30A$		1.3	1.5	m Ω
		$V_{GS}=4.5V, I_{DS}=20A$		2.2	2.6	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=30A, V_{GS}=0V$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS}=30A, V_{GS}=0V$ $dI_{SD}/dt=100A/\mu s$		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	$t_{d(on)}$	$V_{DS}=20V, V_{GEN}=10V$ $R_G=3.9\Omega, R_L=0.66\Omega,$ $I_{DS}=30A$		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 $\leq 300\mu s$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

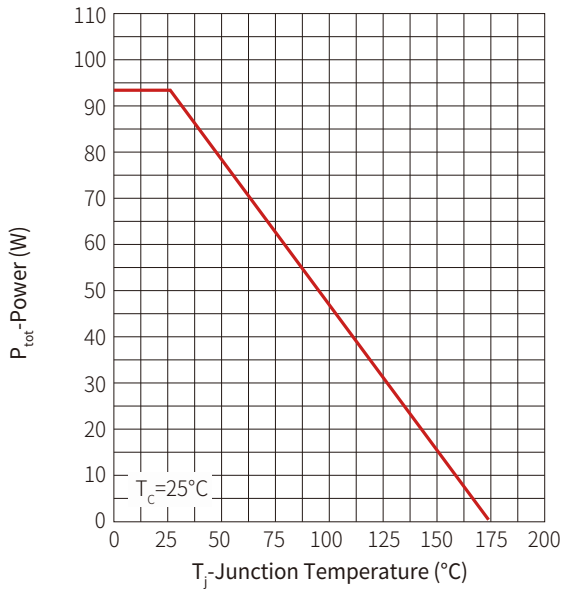


Figure2: Current Capability

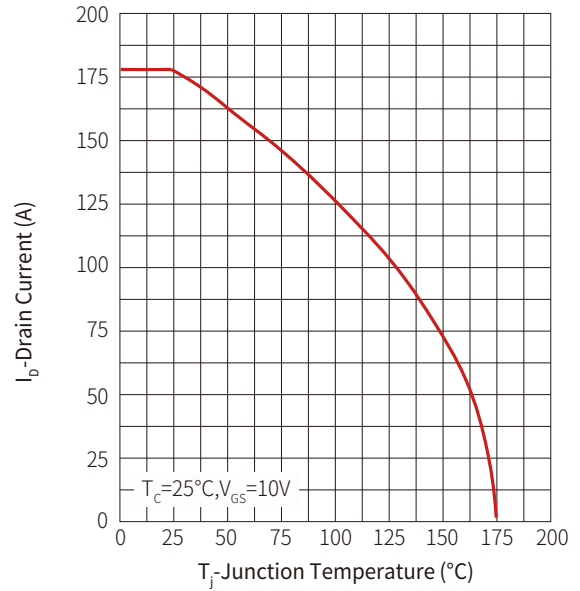


Figure3: Safe Operation Area

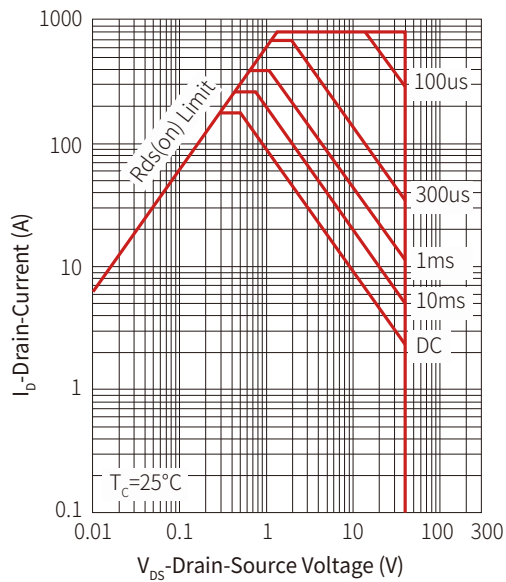


Figure 4: Transient Thermal Impedance

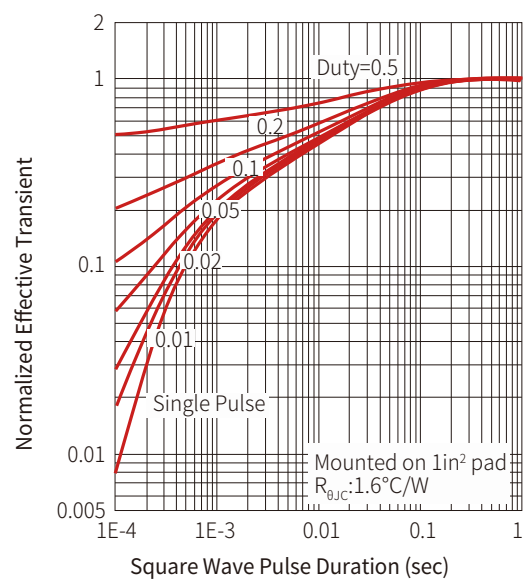


Figure 5: Output Characteristics

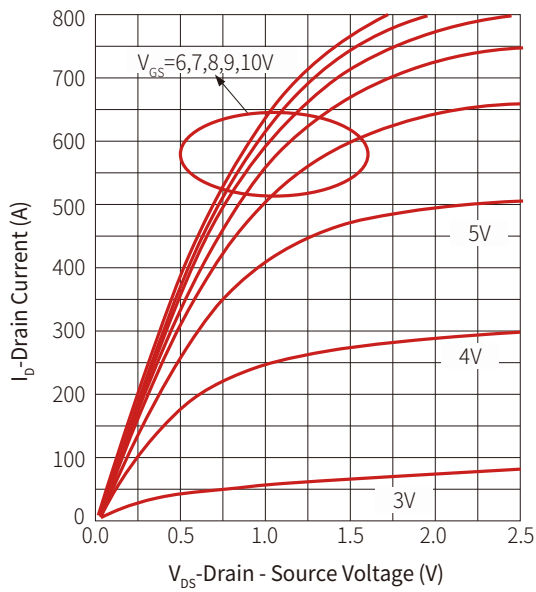


Figure 6: Drain-Source On Resistance

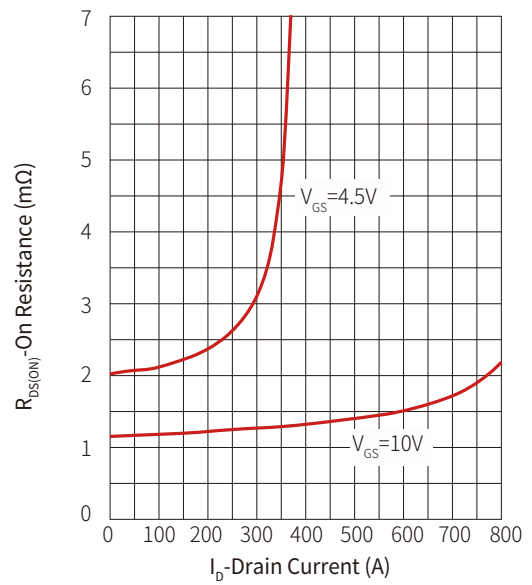


Figure 7: Transfer Characteristics

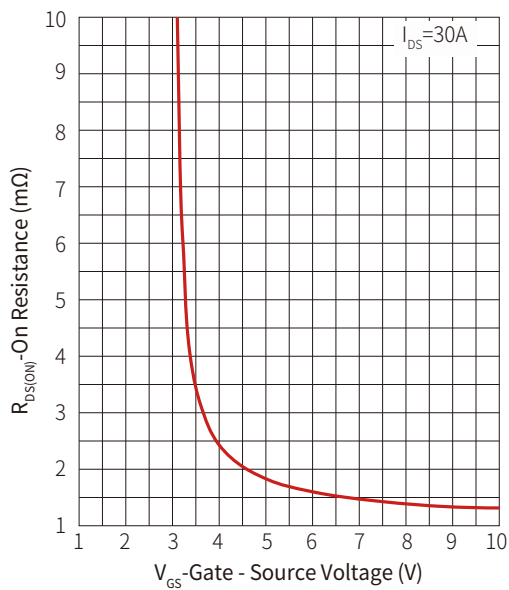


Figure 8: Gate Threshold Voltage

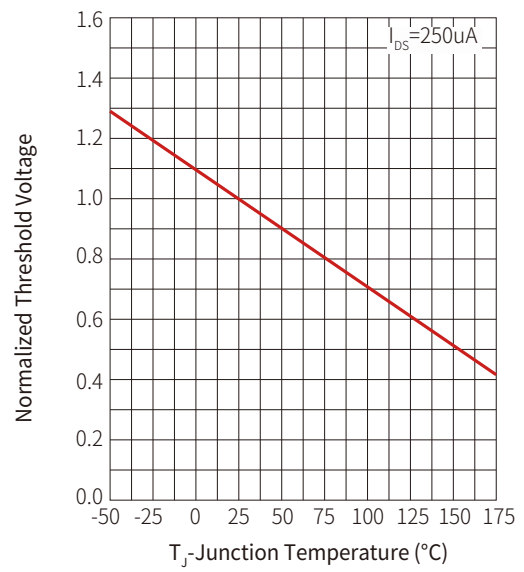
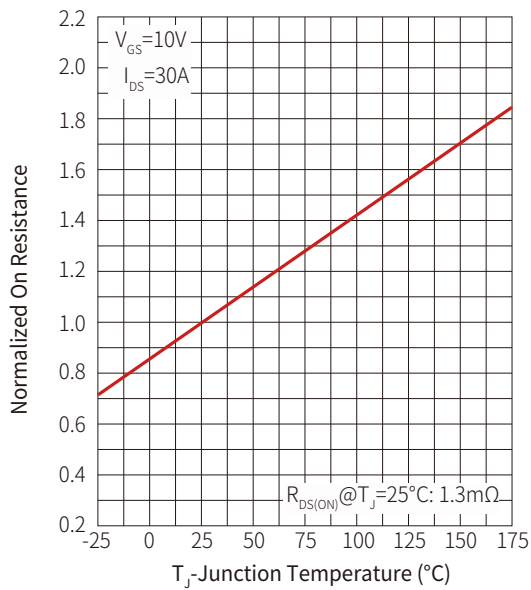
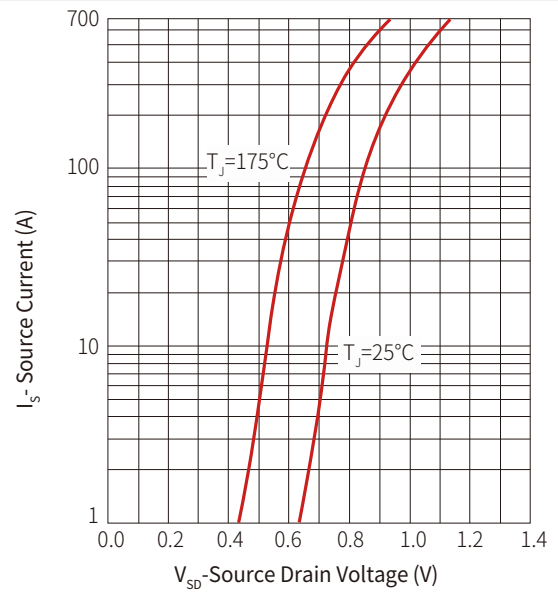
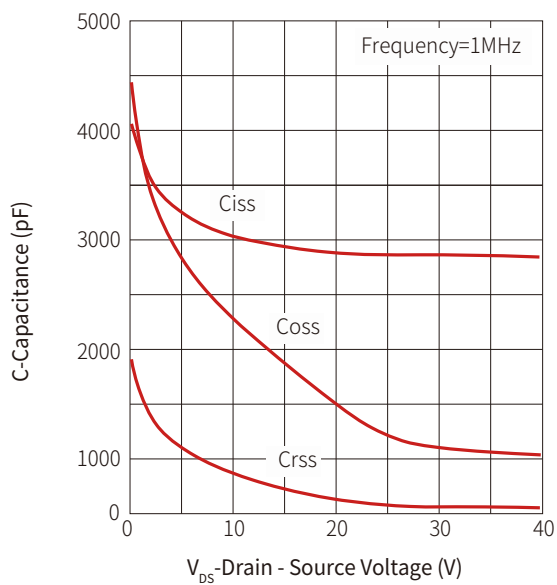
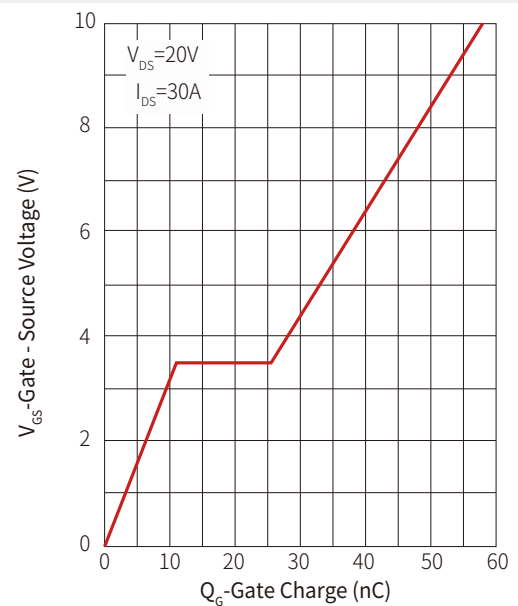


Figure 9: Drain-Source On Resistance

Figure 10: Body Diode Characteristics

Figure 11: Capacitance

Figure 12: Gate Charge


[illegible]

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	

Part Number	Component Package	QTY/Reel	Reel Size
SNM1R5N04G	PDFN5×6-8L	5000PCS	13"

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