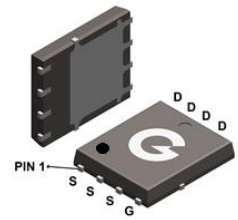
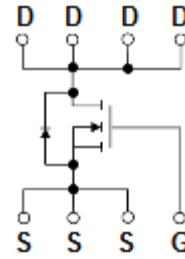


Features

- Super low $R_{DS(on)}$ and gate charge
- Advanced shielded-gate technology
- Green device available
- Excellent C_{dv} / d_t effect decline

HF



PDFN5x6-8L

Mechanical Data

- Case: PDFN5x6-8L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL019N04TH-5DL8	PDFN5x6-8L	5000 pcs / Tape & Reel	019N04TH

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	40	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_A = 25^\circ\text{C}$) *1	I_D	32	A
Continuous Drain Current ($T_A = 100^\circ\text{C}$) *1		22	A
Continuous Drain Current ($T_C = 25^\circ\text{C}$) silicon limited		168	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$) package limited		100	A
Pulsed Drain Current ($t_p=10\mu\text{s}$)	I_{DM}	318	A
Single Pulse Avalanche Energy *3	E_{AS}	135	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_A = 25^\circ\text{C}$)	P_D	3	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.5	K/W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	41	K/W
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 40V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Static Drain-Source On-resistance *2	V _{GS} = 10V, I _D = 50A	-	1.5	1.9	mΩ
		V _{GS} = 7V, I _D = 50A	-	1.9	2.5	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V f = 1MHz	-	5021	-	pF
C _{OSS}	Output Capacitance		-	1892	-	
C _{RSS}	Reverse Transfer Capacitance		-	177	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 20V V _{GS} = 10V R _G = 1.6Ω I _D = 85A	-	13.5	-	ns
t _r	Turn-on Rise Time		-	7.2	-	
t _{d(OFF)}	Turn-Off Delay Time		-	55	-	
t _f	Turn-Off Fall Time		-	8.6	-	
Q _G	Total Gate-Charge	V _{DD} = 32V V _{GS} = 10V I _D = 100A	-	79	-	nC
Q _{GS}	Gate to Source Charge		-	24	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	22	-	
V _{plateau}	Gate Plateau Voltage		-	5	-	V
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = 50A, V _{GS} = 0V	-	0.82	1.2	V
t _{rr}	Reverse Recovery Time	I _F = 40A, V _R =30V	-	87	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt = 100A/μs	-	135	-	nC

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
- The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH$
- The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

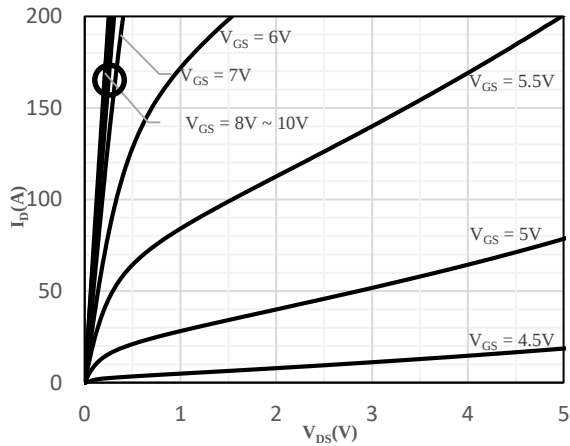


Fig 1 Output Characteristics

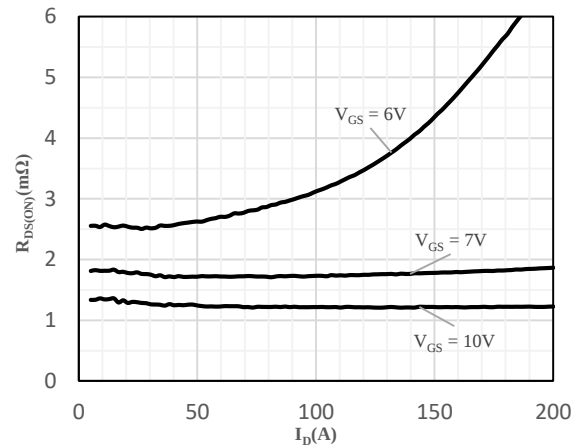


Fig 2 On-Resistance vs. Drain Current
and Gate Voltage

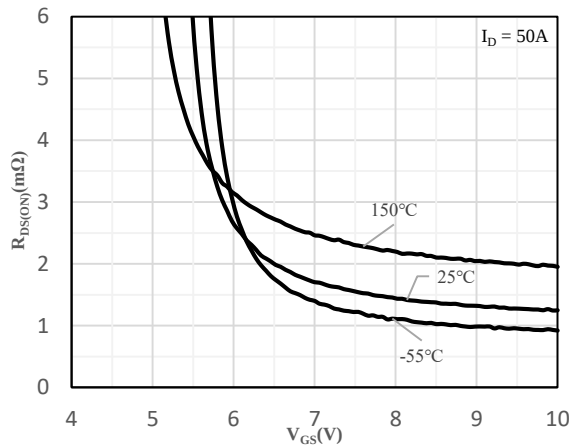


Fig 3 On-Resistance vs. Gate-Source Voltage

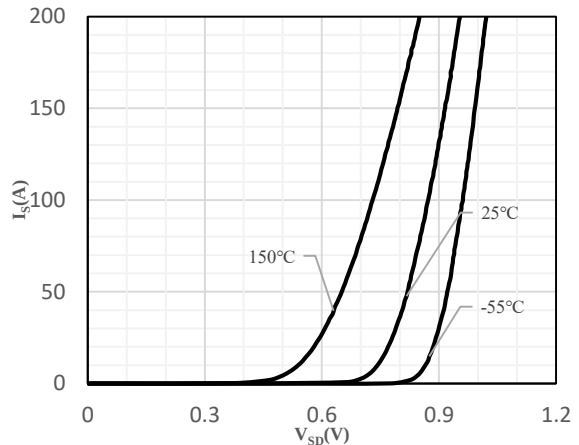


Fig 4 Body-Diode Characteristics

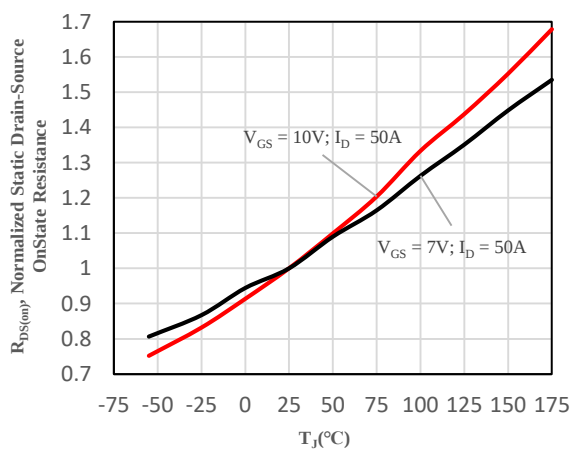


Fig 5 Normalized On-Resistance vs. Junction
Temperature

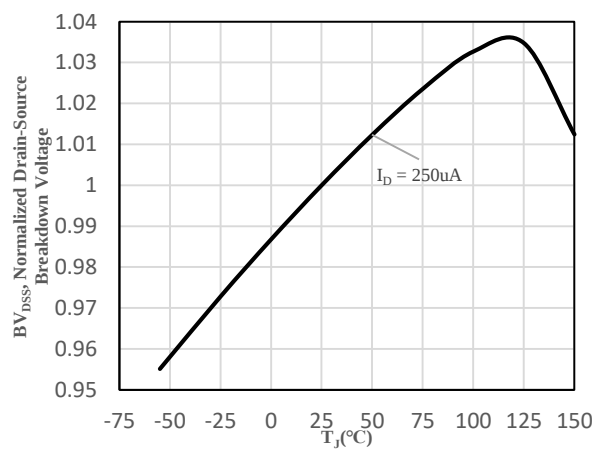


Fig 6 Normalized Drain-Source vs. Junction
Temperature

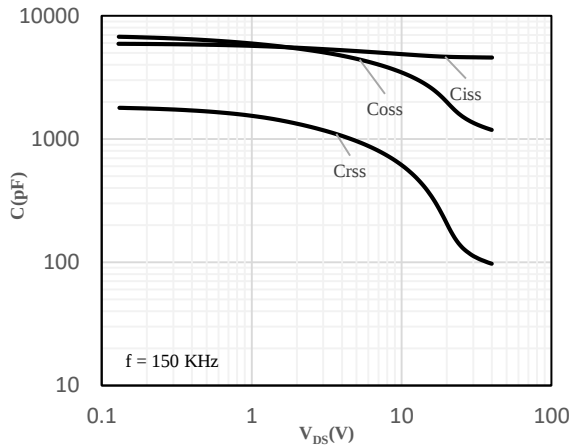


Fig 7 Capacitance Characteristics

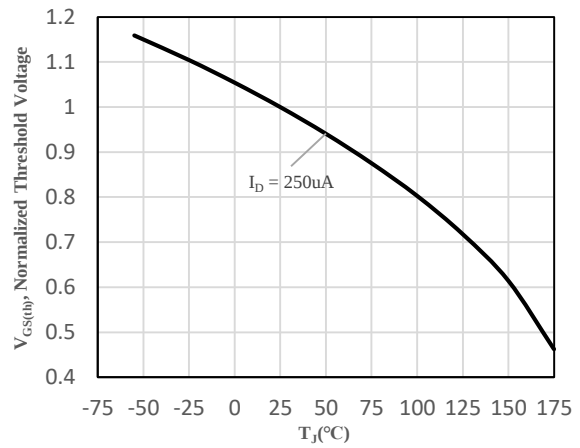


Fig 8 Normalized Gate Voltage vs. Junction Temperature

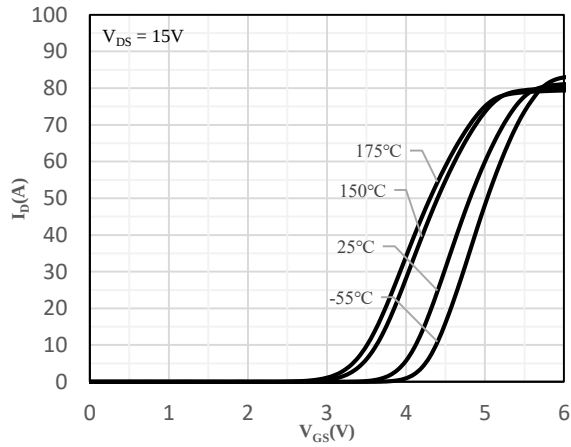


Fig 9 Transfer Characteristics

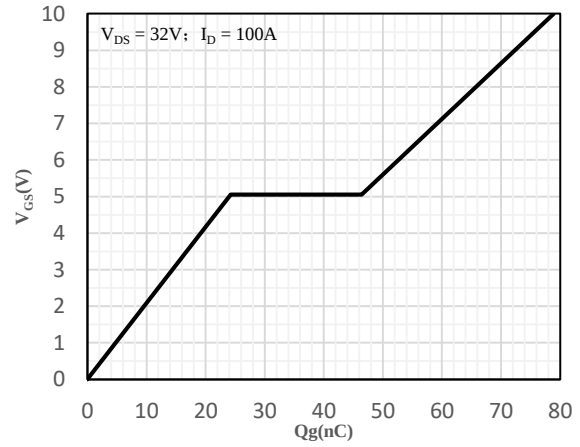


Fig 10 Gate-Charge Characteristics

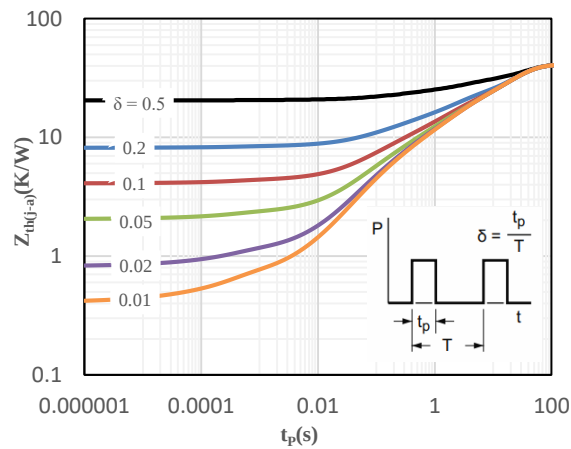


Fig 11 Maximum transient thermal impedance

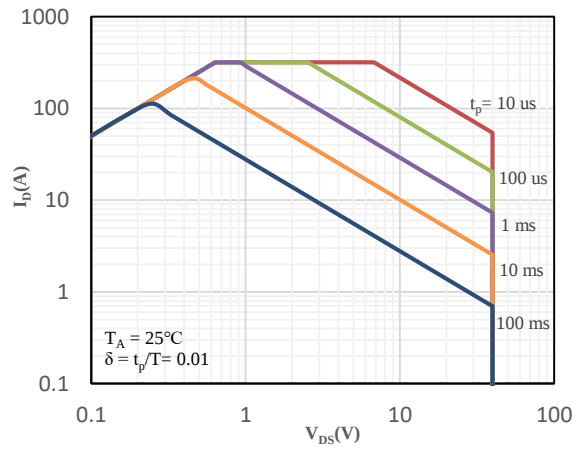
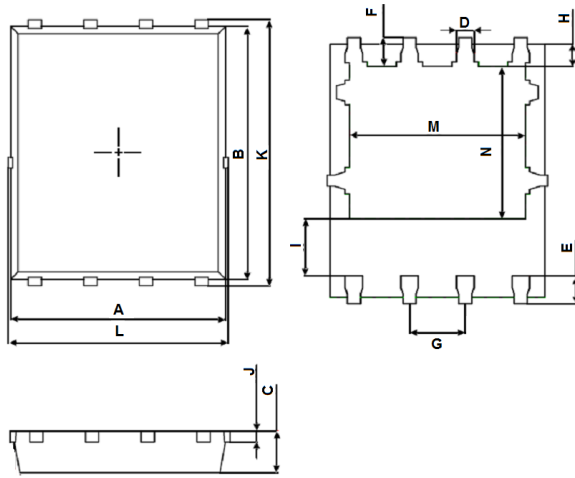


Fig 12 Safe Operation Area

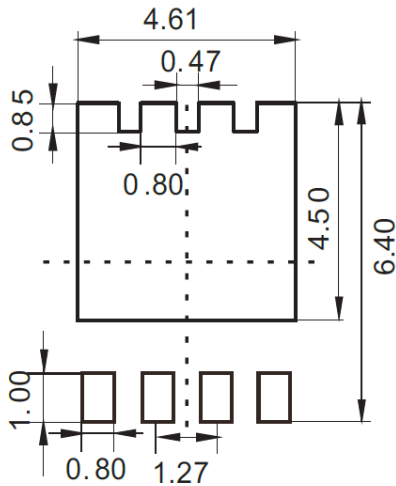
Package Outline Dimensions (Unit: mm)



PDFN5×6-8L		
Dimension	Min.	Max.
A	4.824	4.976
B	5.674	5.826
C	0.900	1.000
D	0.350	0.450
E	0.559	0.711
F	0.574	0.726
G	1.250	1.290
H	0.424	0.576
I	1.190	1.390
J	0.154	0.354
K	5.974	6.126
L	4.944	5.096
M	3.910	4.110
N	3.375	3.575

Mounting Pad Layout (Unit: mm)

PDFN5×6-8L



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