

Features

- Advanced shielded-gate technology
- Ultra-low on-resistance and gate-charge
- JESD22-A114-B ESD rating of class 1B per human body model

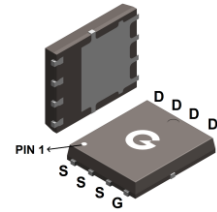
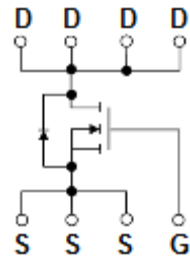
HF

Applications

- High-frequency DC-to-DC convertors
- Motor controllers
- Battery management and protection
- Server power

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



PDFN5x6-8L

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL030N03T-5DL8	PDFN5x6-8L	5000 pcs / Tape & Reel	030N03T

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	30	V
Gate-to-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$)	I_D	135	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)		85	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_C = 25^\circ\text{C}$)	I_{DM}	600	A
Single Pulse Avalanche Energy ²	E_{AS}	28	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	83	W
Thermal Resistance Junction-to-Air ¹	$R_{\theta JA}$	30	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.5	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics ^{*3}						
$R_{DS(ON)}$	Static Drain-Source On-resistance	$V_{GS} = 10V, I_D = 20A$	-	2.5	3.1	$m\Omega$
		$V_{GS} = 5V, I_D = 20A$	-	3.4	4.6	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.6	2.5	V
R_G	Gate Resistance	$V_{GS} = 0V, f = 1MHz$	-	3.5	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$	-	2472	-	pF
C_{OSS}	Output Capacitance	$V_{DS} = 15V$	-	1186	-	
C_{RSS}	Reverse Transfer Capacitance	$f = 1.0MHz$	-	64	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 15V, V_{GS} = 10V$ $R_G = 3.0\Omega, I_D = 20A$	-	14	-	ns
t_r	Turn-on Rise Time		-	6	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	28	-	
t_f	Turn-Off Fall Time		-	14	-	
Q_G	Total Gate-Charge	$V_{DD} = 15V$	-	36.5	-	nC
Q_{GS}	Gate to Source Charge	$V_{GS} = 10V$	-	8	-	
Q_{GD}	Gate to Drain (Miller) Charge	$I_D = 20A$	-	5.5	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	$I_{SD} = 20A, V_{GS} = 0V$	-	0.8	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	$I_F = 20A, V_{GS} = 0V$	-	95	-	ns
Q_{rr}	Body Diode Reverse Recovery charge	$di/dt = 100A/\mu s$	-	105	-	nC

Notes:

- Surface mounted on 1 inch² FR-4 board with 2OZ copper
- The E_{AS} test condition is $V_{DD} = 20V, L = 0.1mH, V_{GS} = 10V$, Starting $T_J = 25^\circ\text{C}$
- Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$

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

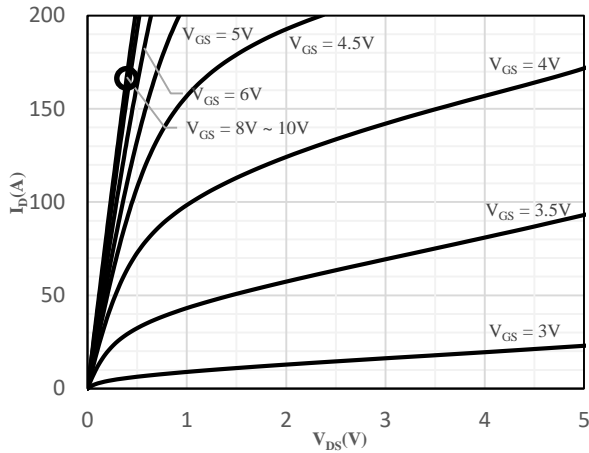


Fig 1 Typical Output Characteristics

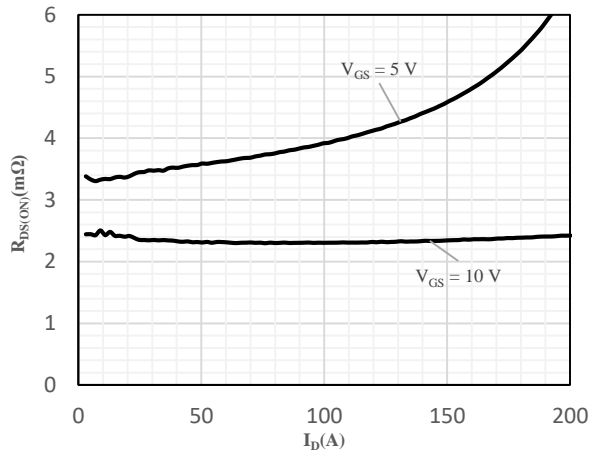


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

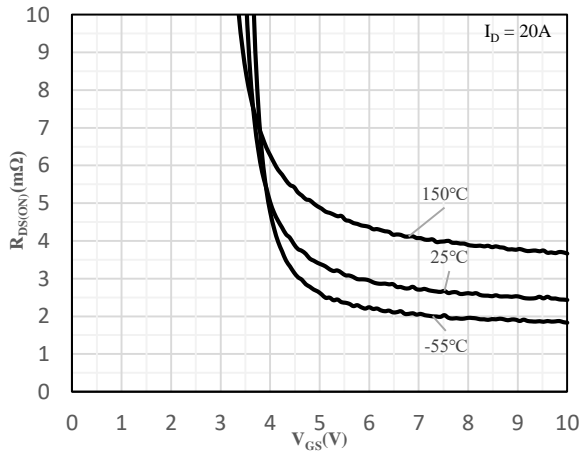


Fig 3 On-Resistance vs. Gate-Source Voltage

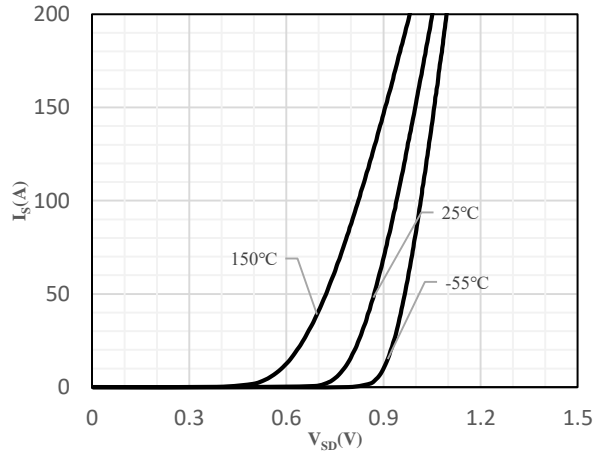


Fig 4 Body-Diode Characteristics

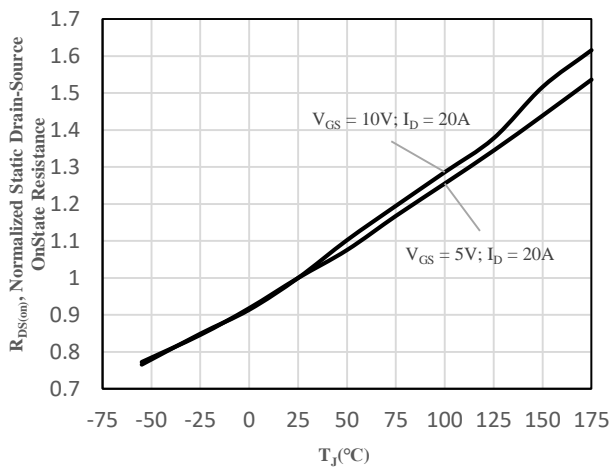


Fig 5 Normalized On-Resistance vs. Junction Temperature

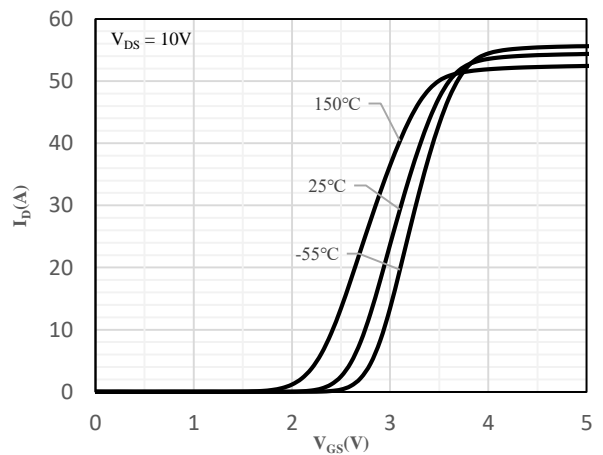


Fig 6 Transfer Characteristics

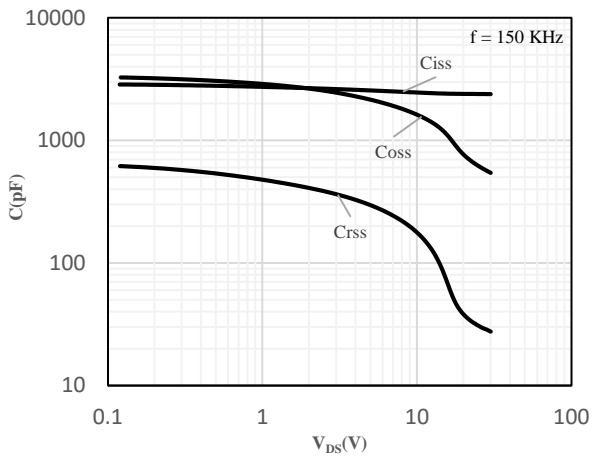


Fig 7 Capacitance Characteristics

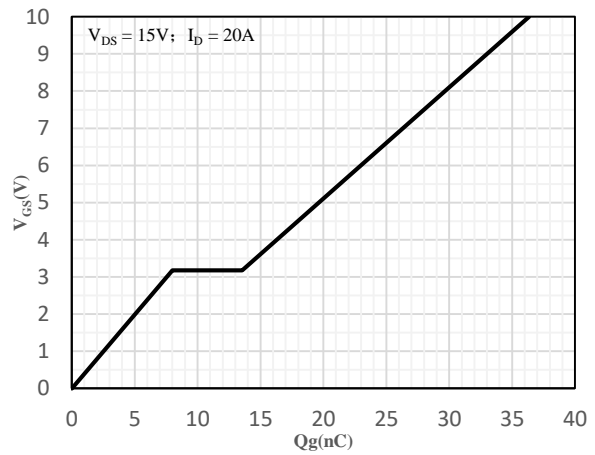


Fig 8 Gate-Charge Characteristics

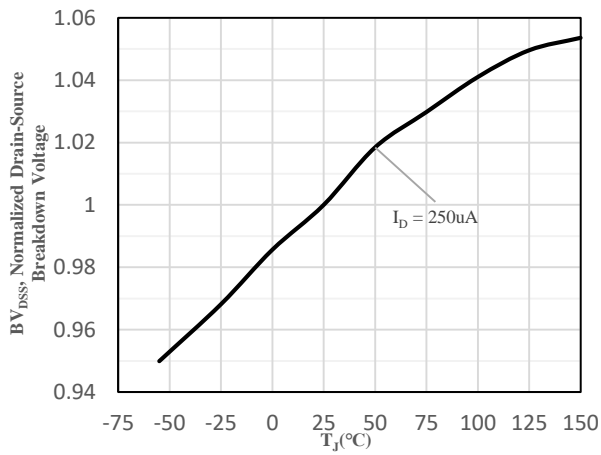


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

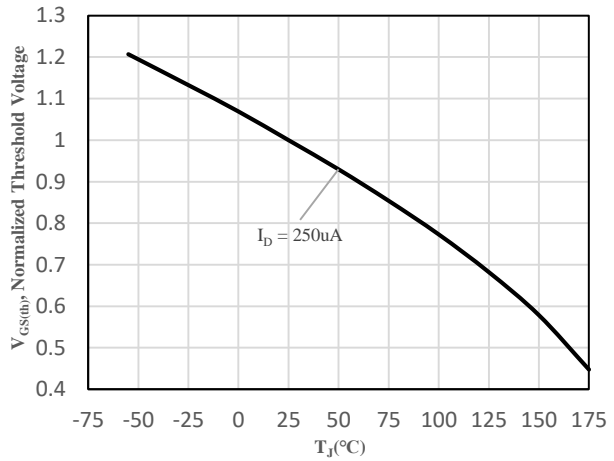


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

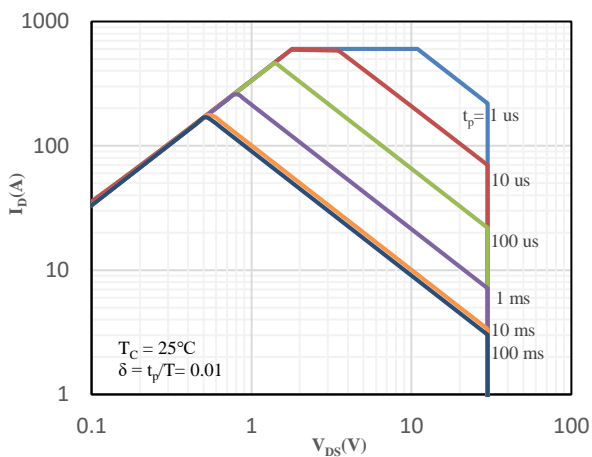


Fig 11 Safe Operation Area

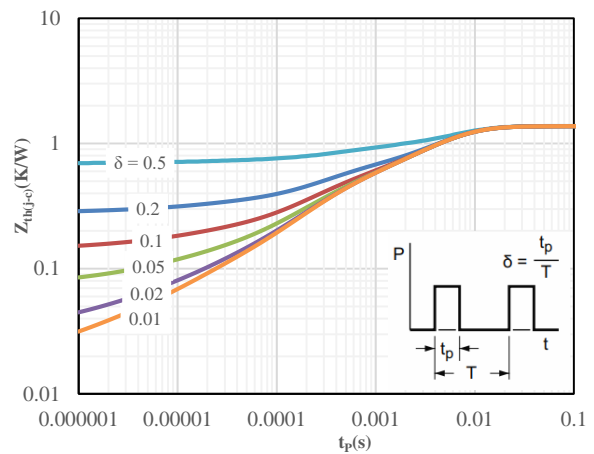
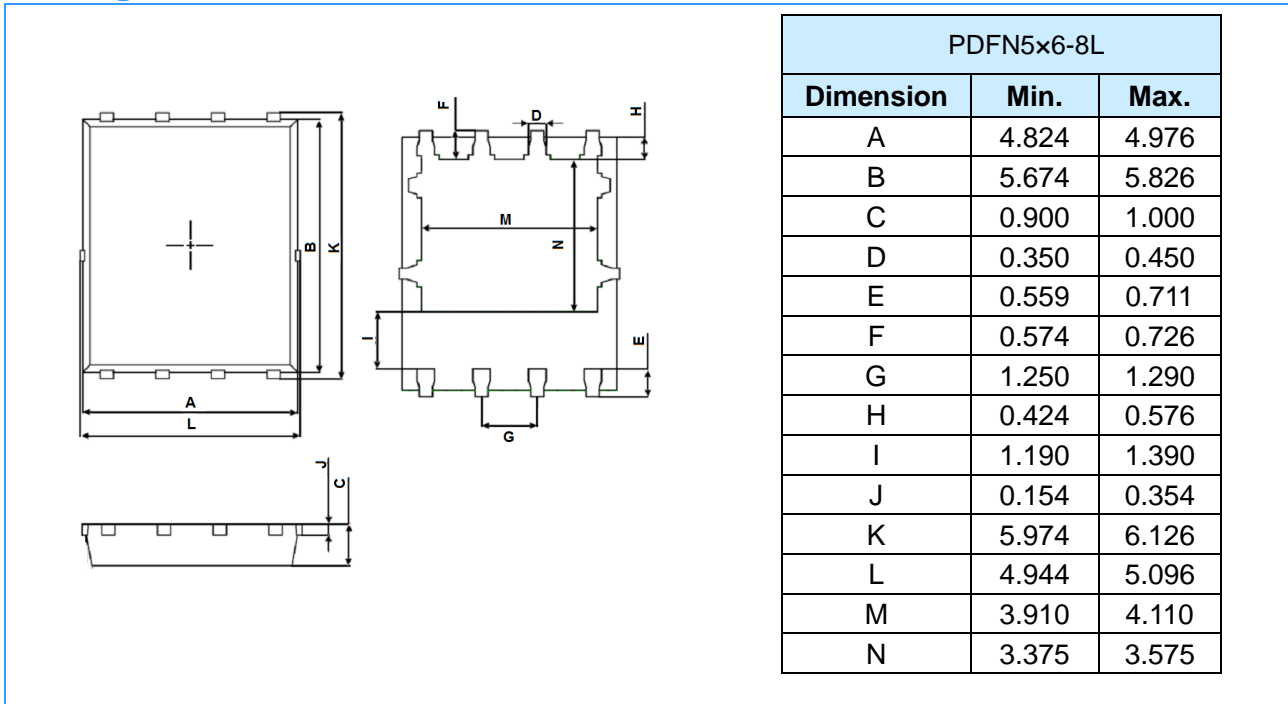
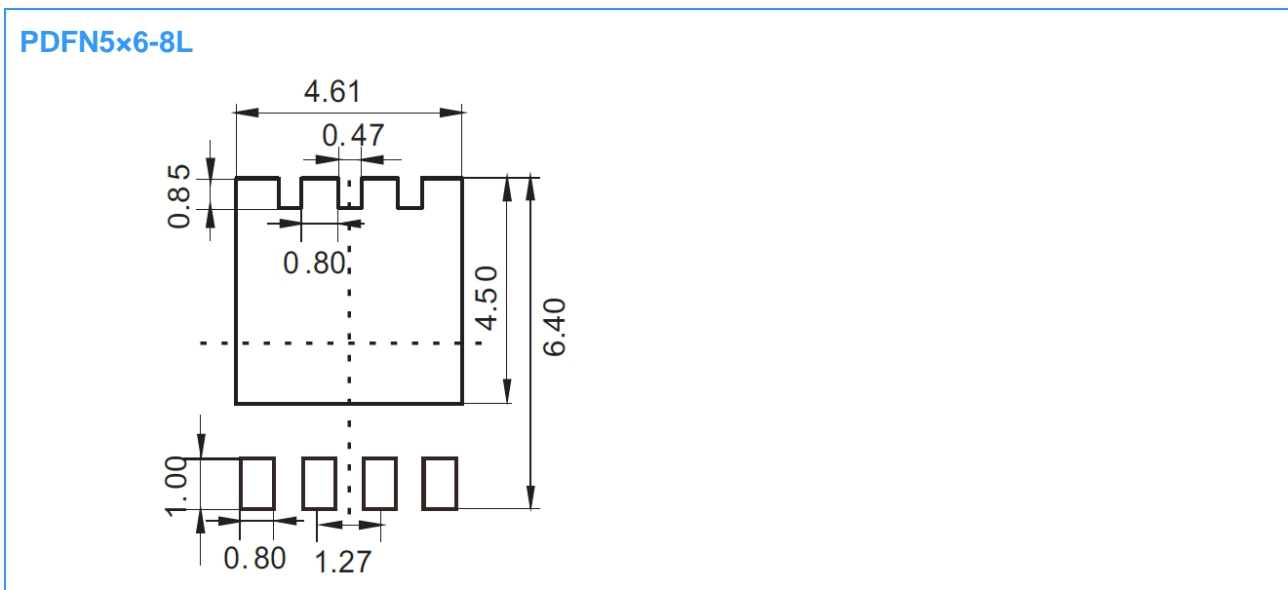


Fig 12 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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