

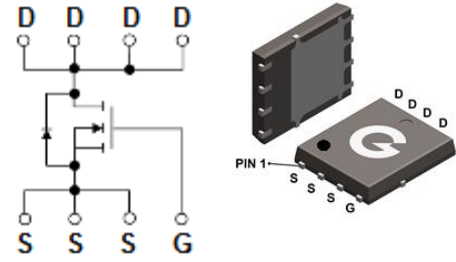
Features

- Low gate charge minimize switching loss
- Fast recovery body diode

HF

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
BL021N04T-5DL8	PDFN5x6-8L	5000 pcs / Tape & Reel	021N04T

Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	40	V
Gate-to-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (T _C = 25°C, silicon limited)	I _D	140	A
Continuous Drain Current (T _C = 25°C, package limited)	I _D	100	A
Continuous Drain Current (T _C = 100°C)	I _D	88	A
Pulsed Drain Current (t _p =10us, T _A = 25°C)	I _{DM}	320	A
Single Pulse Avalanche Energy ^{*2}	E _{AS}	120	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T _C = 25°C)	P _D	62.5	W
Power Dissipation (T _A = 25°C)	P _D	3.4	W
Thermal Resistance Junction-to-Air ^{*3}	R _{θJA}	37	°C/W
Thermal Resistance Junction-to-Case	R _{θJC}	2	°C/W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°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	$V_{GS} = 0V, I_D = 250\mu A$	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 32V, V_{GS} = 0V$	-	-	1	μA
		$V_{DS} = 32V, V_{GS} = 0V, T_J = 85^\circ\text{C}$	-	-	30	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance	$V_{GS} = 10V, I_D = 20A$	-	1.5	2.1	m Ω
		$V_{GS} = 4.5V, I_D = 10A$	-	2.2	3.0	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.1	1.9	2.5	V
R_G	Gate Resistance	$V_{GS} = 0V, f = 1\text{MHz}$	-	2.6	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 20V$ $f = 150\text{KHz}$	-	4878	-	pF
C_{OSS}	Output Capacitance		-	1190	-	
C_{RSS}	Reverse Transfer Capacitance		-	60	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DS} = 20V$ $V_{GS} = 10V$ $R_G = 0.5\Omega$ $I_D = 20A$	-	12	-	ns
t_r	Turn-on Rise Time		-	56	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	65	-	
t_f	Turn-Off Fall Time		-	8.5	-	
Q_G	Total Gate-Charge	$V_{DS} = 20V$ $V_{GS} = 4.5V$ $I_D = 10A$	-	34.2	-	nC
Q_{GS}	Gate to Source Charge		-	12	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	10	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	$I_{SD} = 20A, V_{GS} = 0V$	-	0.77	1.3	V
t_{rr}	Reverse Recovery Time	$I_{SD} = 20A, V_{GS} = 0V$ $di_{SD}/dt = 100A/\mu s$	-	90	-	ns
Q_{rr}	Reverse Recovery Charge		-	145	-	nC

Notes:

- Pulse width $\leq 380\mu s$; duty cycle $\leq 2\%$
- The E_{AS} data shows Max. rating. The test condition is $L = 0.5\text{mH}$, $V_{DD} = 20V$, $V_{GS} = 10V$
- The data tested by surface mounted on 1 inch² FR-4 board with 2OZ copper

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

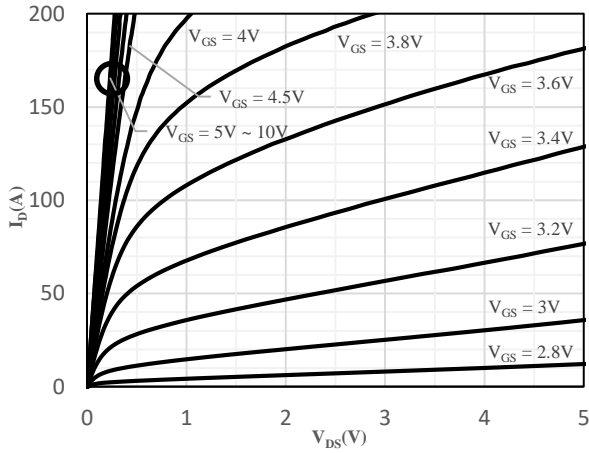


Fig 1 Typical Output Characteristics

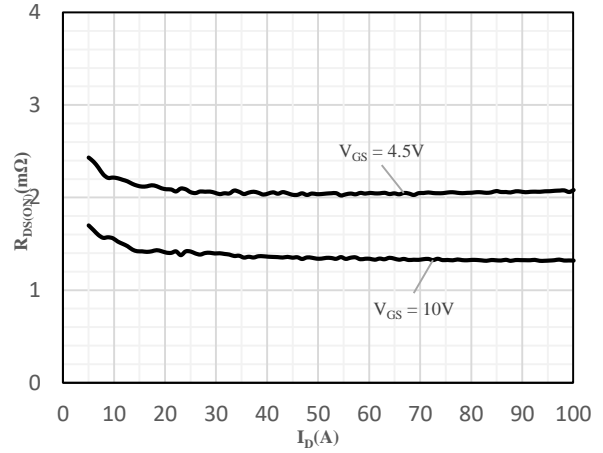


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

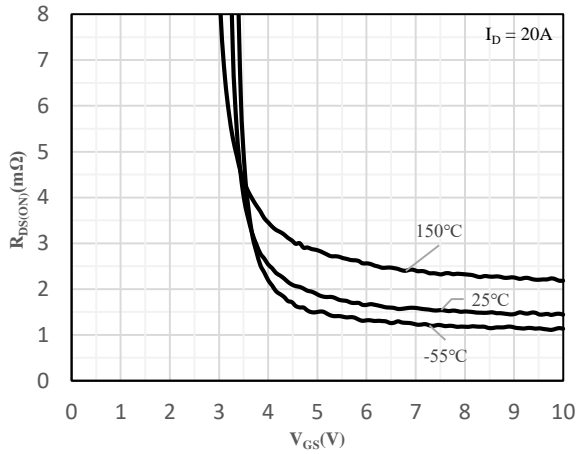


Fig 3 On-Resistance vs. Gate-Source Voltage

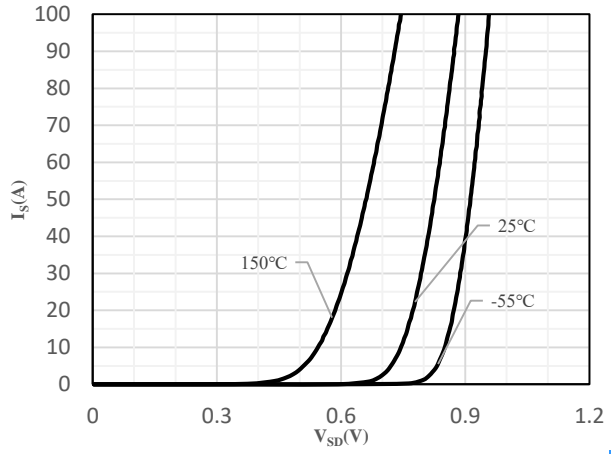


Fig 4 Body-Diode Characteristics

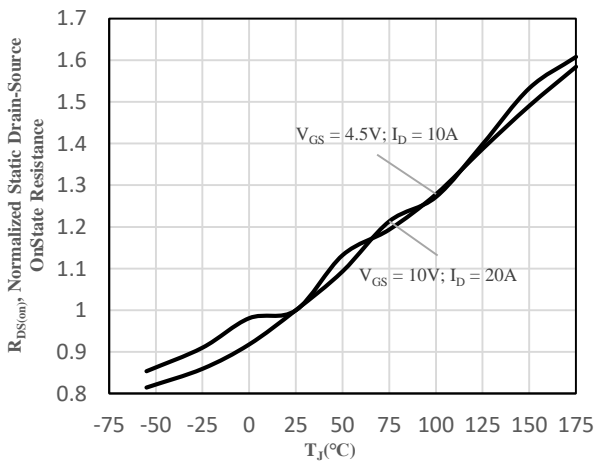


Fig 5 Normalized On-Resistance vs. Junction Temperature

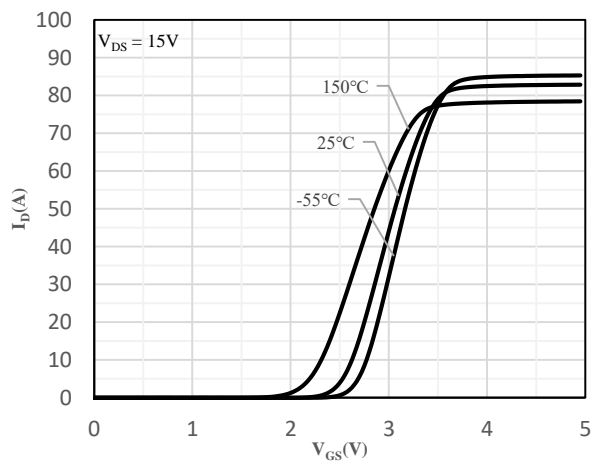


Fig 6 Transfer Characteristics

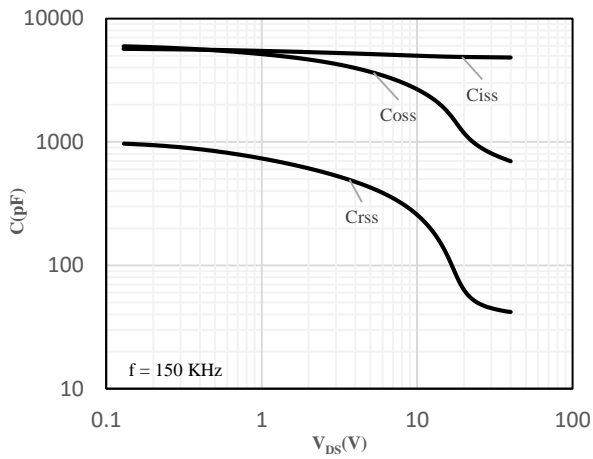


Fig 7 Capacitance Characteristics

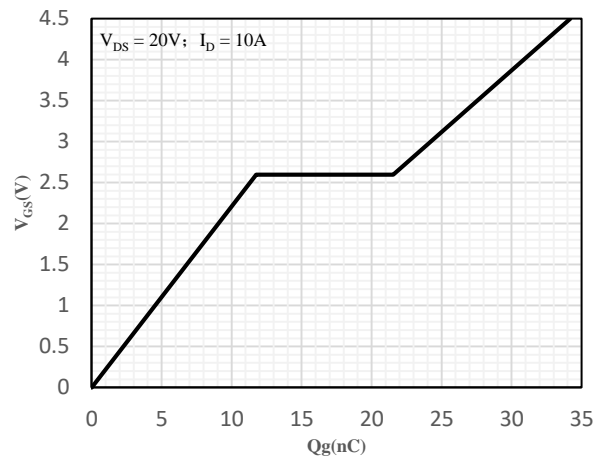


Fig 8 Gate-Charge Characteristics

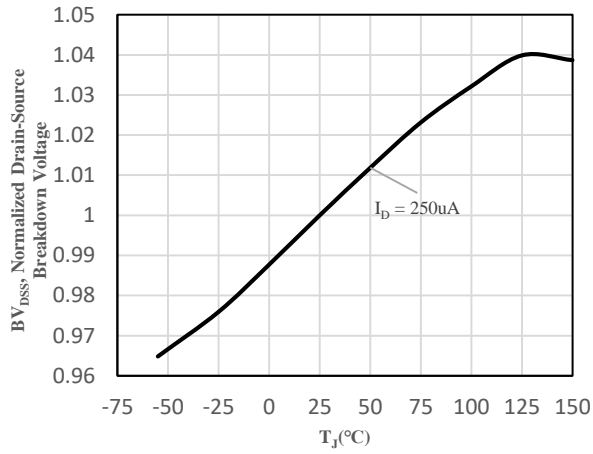


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

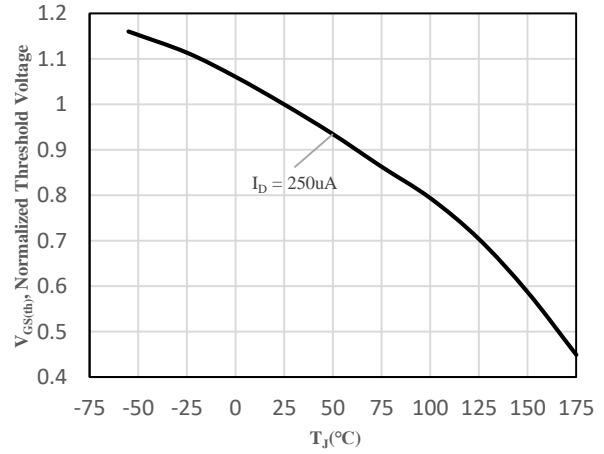


Fig 10 $V_{GS(th)}$ vs. Junction Temperature

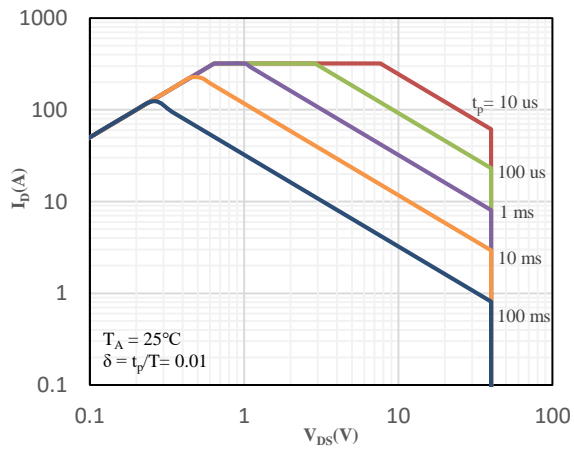


Fig 11 Safe Operation Area

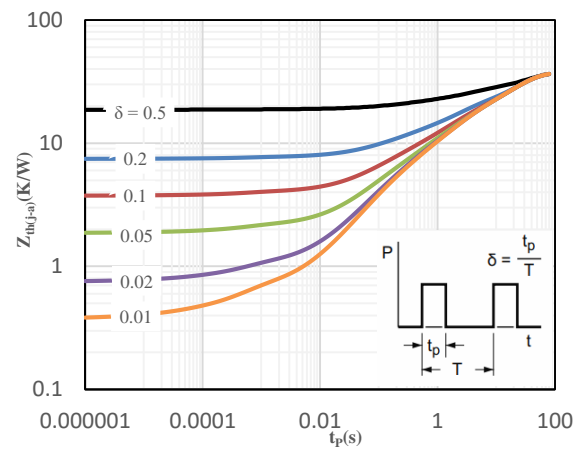
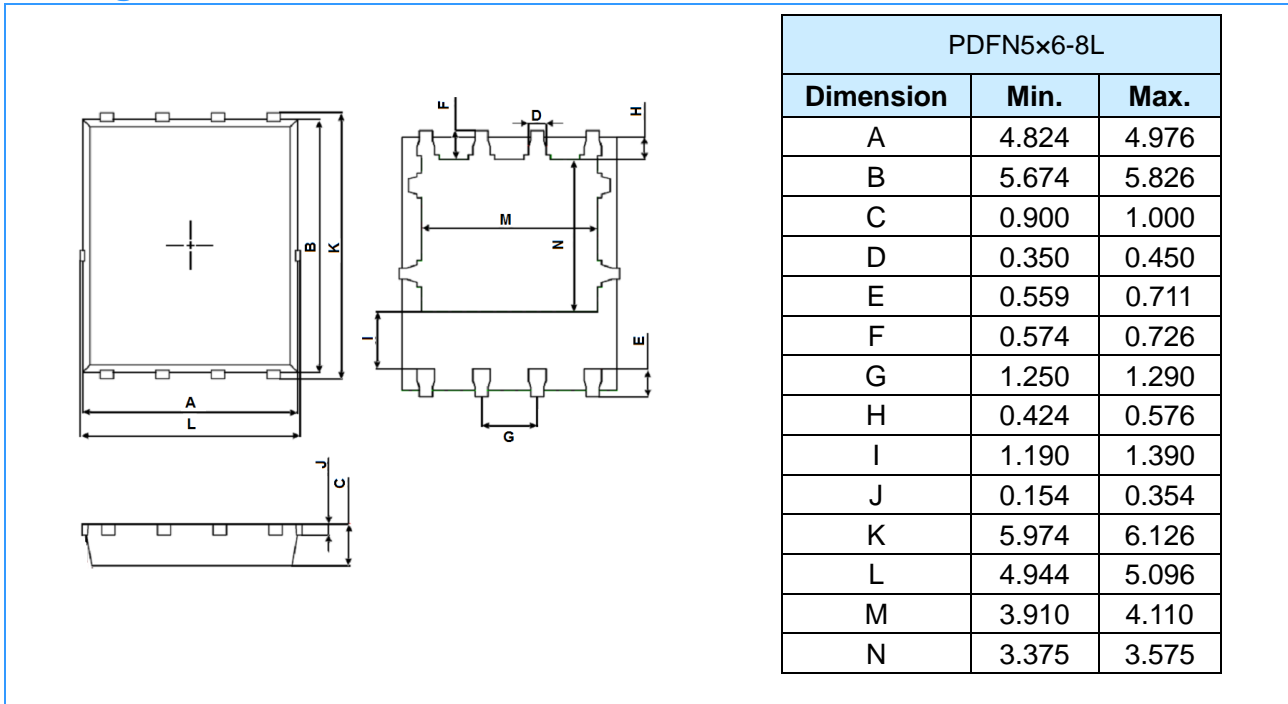
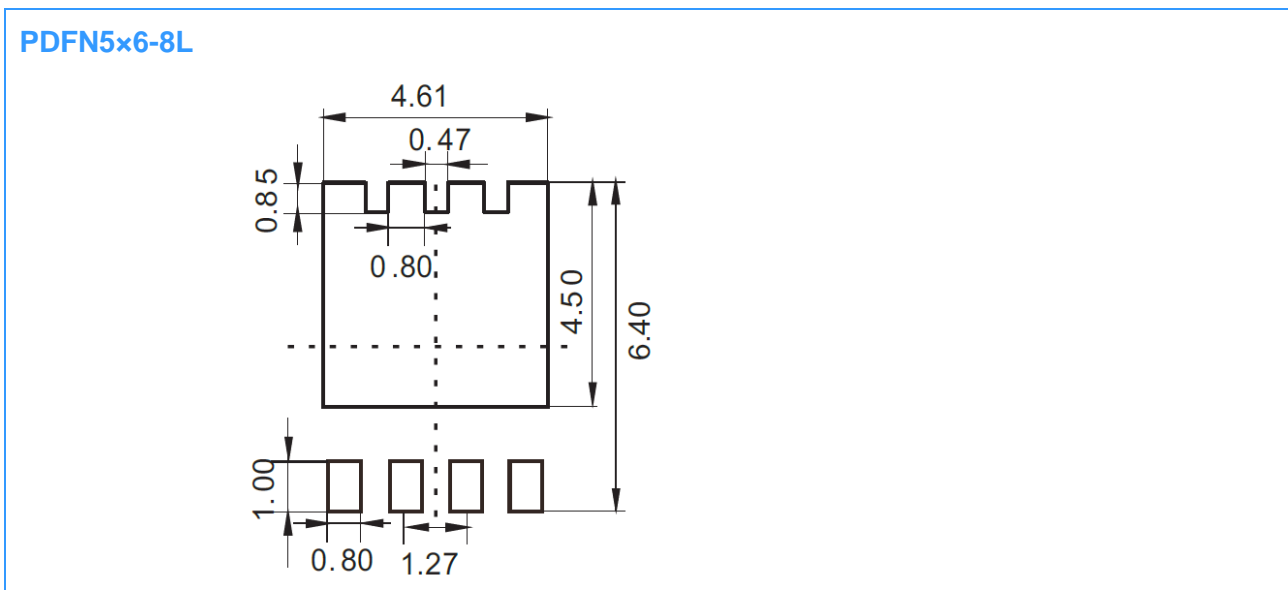


Fig 12 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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