

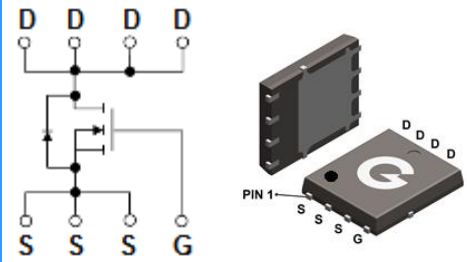
### Features

- Ultra-low on-resistance and gate-charge
- Advanced shielded-gate technology

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
BL014N04T-5DL8	PDFN5x6-8L	5000 pcs / Tape & Reel	014N04T

### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>	40	V
Gate-to-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current (Package Limited)	I <sub>D</sub>	80	A
Continuous Drain Current (T <sub>C</sub> = 25°C, Silicon Limited) *1		219	A
Continuous Drain Current (T <sub>C</sub> = 100°C, Silicon Limited) *1		138	A
Continuous Drain Current (T <sub>A</sub> = 25°C, Silicon Limited) *2, 3		35	A
Continuous Drain Current (T <sub>A</sub> = 100°C, Silicon Limited) *2, 3		25	A
Pulsed Drain Current (t <sub>p</sub> = 10μs) *4		I <sub>DM</sub>	345
Single Pulse Avalanche Energy *5	E <sub>AS</sub>	69	mJ
Avalanche Current *6	I <sub>AS</sub>	39	A

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T <sub>C</sub> = 25°C)	P <sub>D</sub>	114	W
Thermal Resistance Junction-to-Case	R <sub>θJC</sub>	1.1	°C/W
Thermal Resistance Junction-to-Air *3	R <sub>θJA</sub>	43.2	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	-55 ~ +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +150	°C

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
$V_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	40	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 40V, V_{GS} = 0V$	-	-	1	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$R_{DS(ON)}$	Static Drain-Source On-resistance	$V_{GS} = 10V, I_D = 20A$	-	1.1	1.4	m $\Omega$
		$V_{GS} = 4.5V, I_D = 20A$	-	1.4	1.8	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.5	2	V
$R_G$	Gate Resistance	$V_{GS} = 0V, f = 1MHz$	-	1.5	-	$\Omega$
<b>Dynamic Characteristics</b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0V$	-	6461	-	pF
$C_{OSS}$	Output Capacitance	$V_{DS} = 20V$	-	3257	-	
$C_{RSS}$	Reverse Transfer Capacitance	$f = 150KHz$	-	196	-	
<b>Switching Characteristics</b>						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 20V$	-	24	-	ns
$t_r$	Turn-on Rise Time	$V_{GS} = 4.5V$	-	84	-	
$t_{d(OFF)}$	Turn-Off Delay Time	$R_G = 3\Omega$	-	62	-	
$t_f$	Turn-Off Fall Time	$I_D = 20A$	-	20	-	
$Q_G$	Total Gate-Charge	$V_{DD} = 20V$	-	55	-	nC
$Q_{GS}$	Gate to Source Charge	$V_{GS} = 4.5V$	-	15	-	
$Q_{GD}$	Gate to Drain (Miller) Charge	$I_D = 20A$	-	19	-	
<b>Source-Drain Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$I_S = 50A, V_{GS} = 0V$	-	0.8	-	V
$t_{rr}$	Reverse Recovery Time	$I_S = 20A, V_{GS} = 0V$	-	171	-	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt = 100A/\mu s$	-	381	-	nC

Notes:

1. Rated according to  $R_{\theta JC}$
2. Rated according to  $R_{\theta JA}$
3. Surface-mounted on 1 inch<sup>2</sup> FR-4 board with 2OZ copper
4. Limited by maximum  $T_J$
5. Starting  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 30V$ ,  $V_{GS} = 10V$ ,  $L = 0.1mH$
6. Pulse width limited by maximum  $T_J$

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

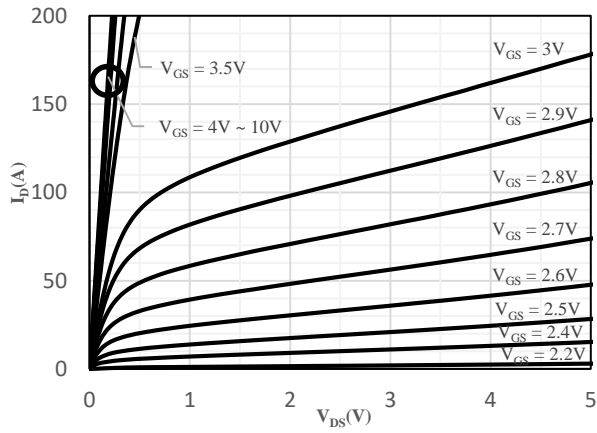


Fig 1 Typical Output Characteristics

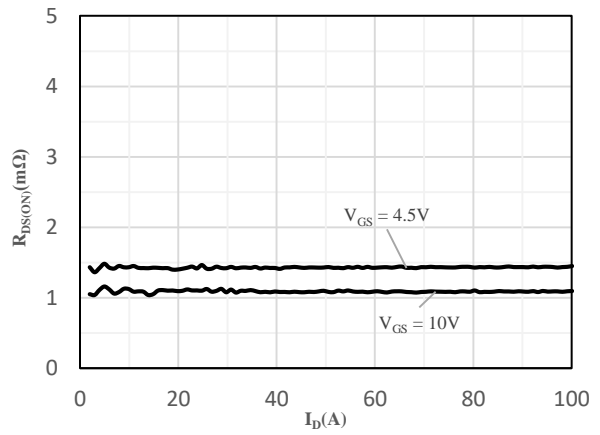


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

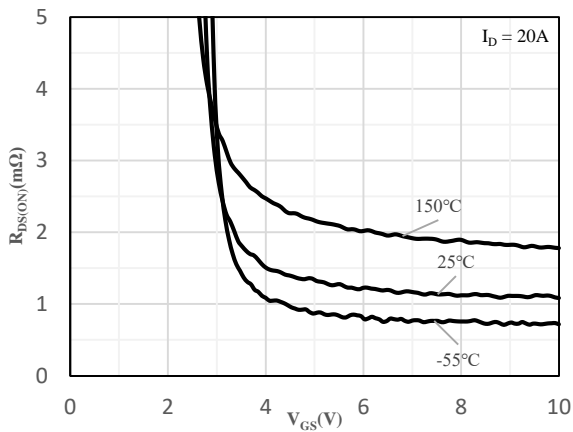


Fig 3 On-Resistance vs. Gate-Source Voltage

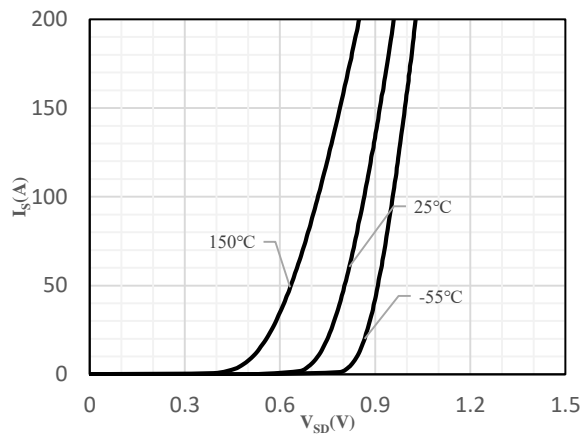


Fig 4 Body-Diode Characteristics

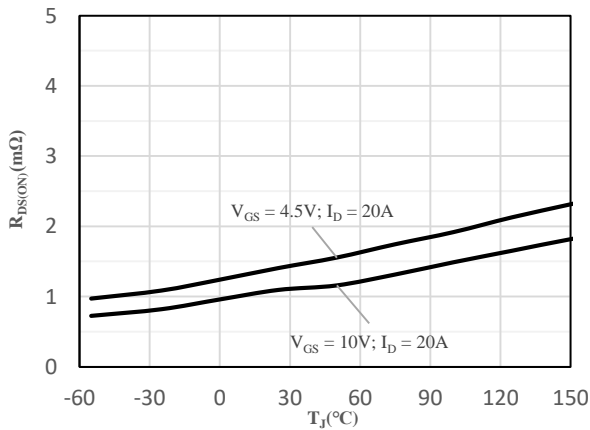


Fig 5 On-Resistance vs. Junction Temperature

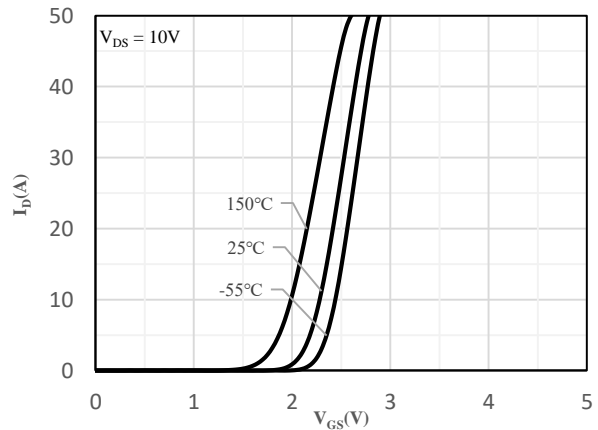


Fig 6 Transfer Characteristics

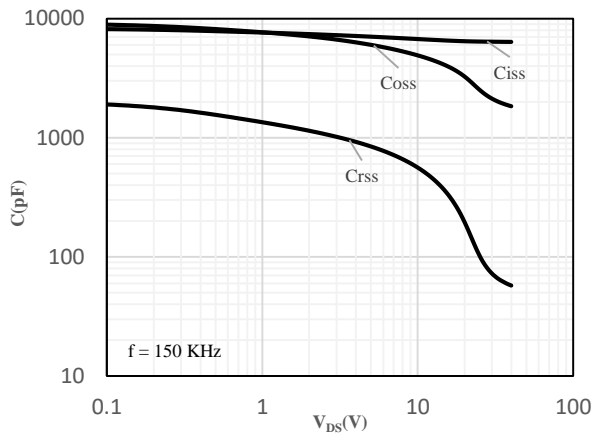


Fig 7 Capacitance Characteristics

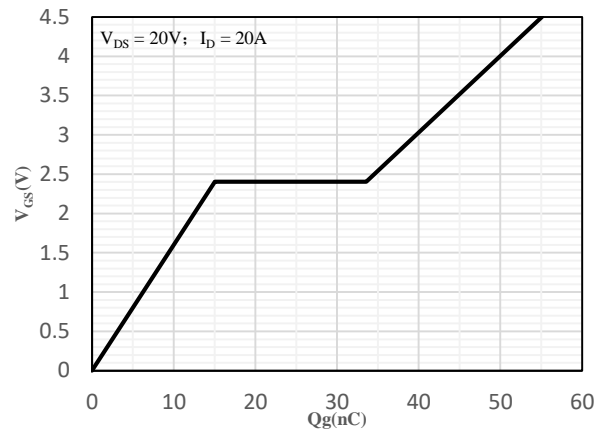


Fig 8 Gate-Charge Characteristics

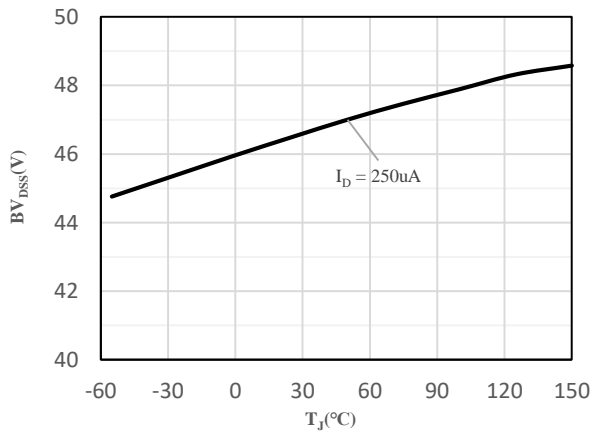


Fig 9 Breakdown Voltage vs. Junction Temperature

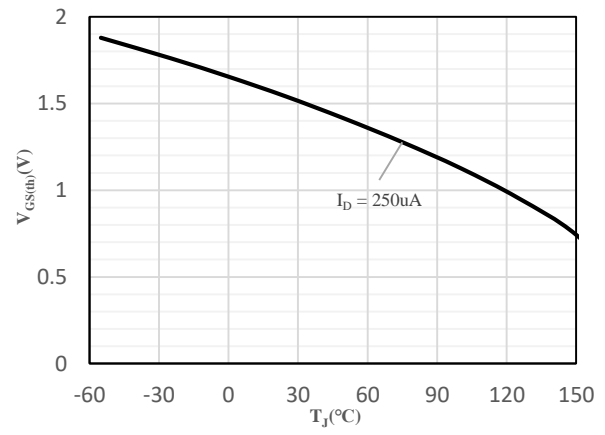


Fig 10  $V_{GS(th)}$  vs. Junction Temperature

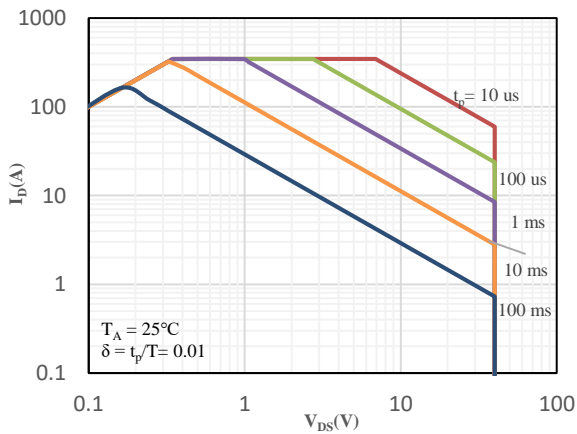


Fig 11 Safe Operation Area

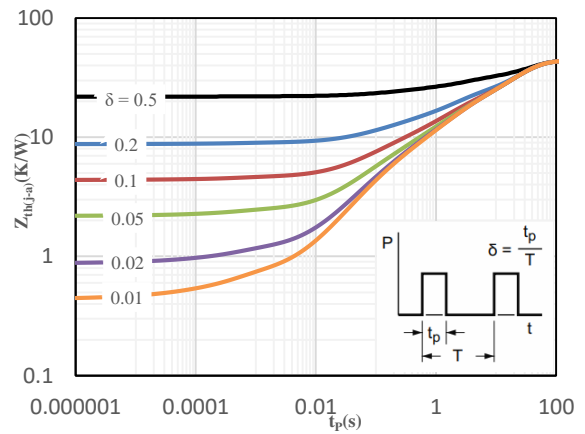


Fig 12 Maximum transient thermal impedance

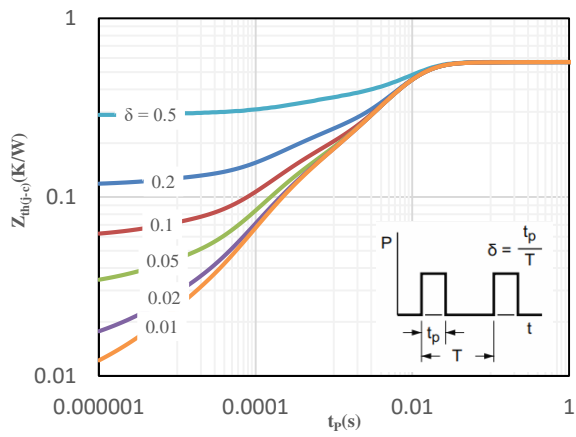
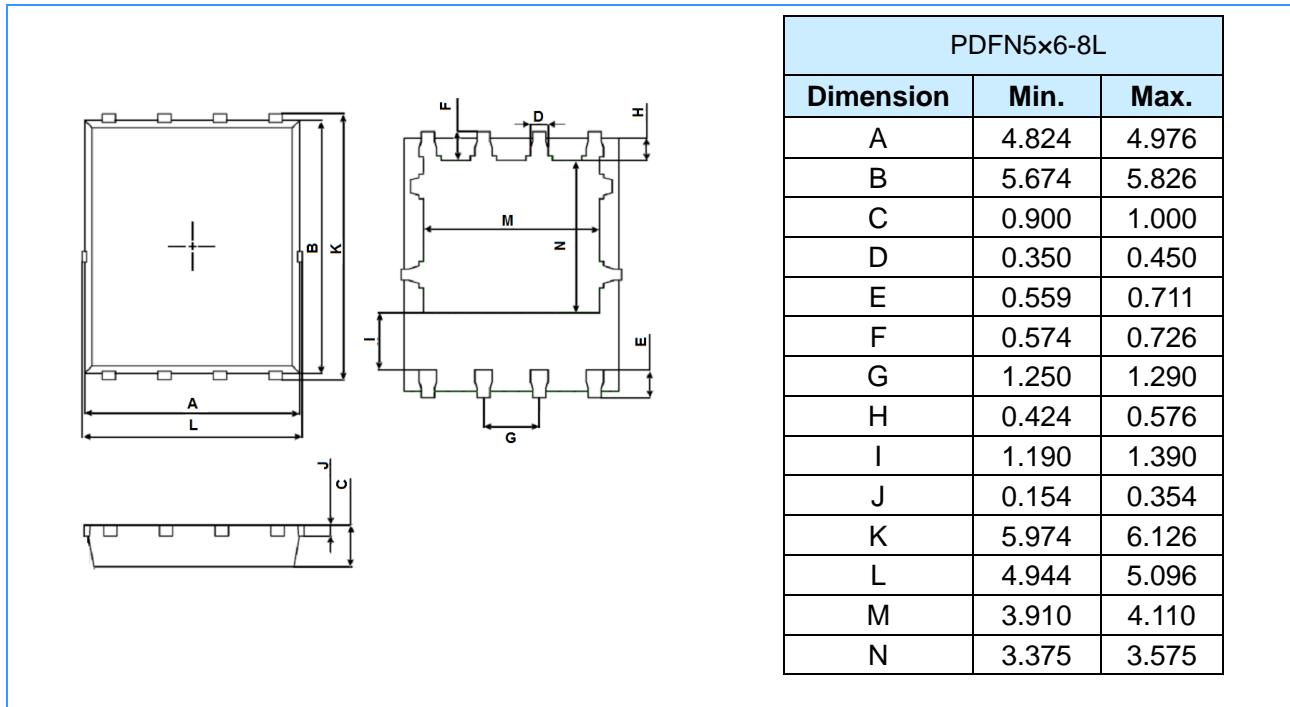
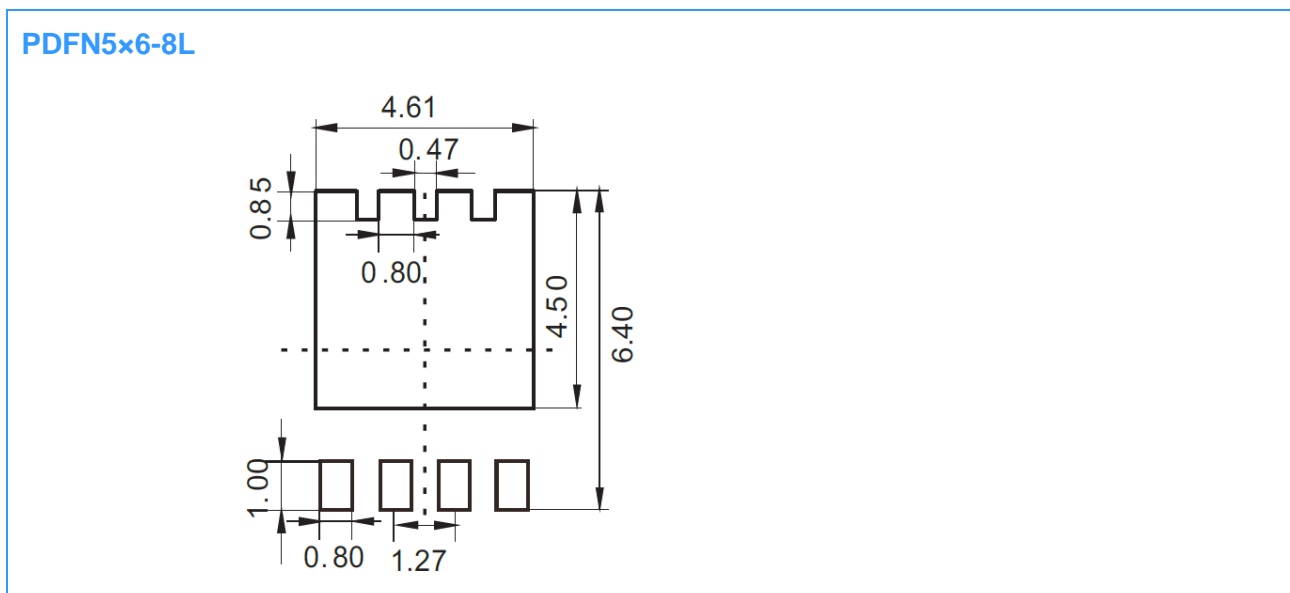


Fig 13 Maximum transient thermal impedance

### Package Outline Dimensions (Unit: mm)



### Mounting Pad Layout (Unit: mm)



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