

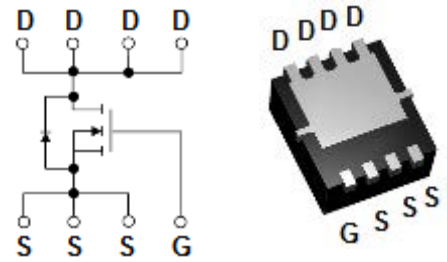


Features

- Super low gate charge
- Green device available
- Excellent c_{av} / d_t effect decline
- Advanced high cell density trench technology

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
LGE024N03-5DL8	PDFN5x6-8L	5000pcs / Tape & Reel	024N03

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ 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 ($T_C = 25^\circ\text{C}$) ^{*1}	I_D	130	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$) ^{*1}		95	A
Pulsed Drain Current ^{*2}	I_{DM}	350	A
Single Pulse Avalanche Energy ^{*3}	E_{AS}	168	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	48	W
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case ^{*1}	$R_{\theta JC}$	2.6	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Lead ^{*1}	$R_{\theta JL}$	2.0	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical Characteristics (@ T_A = 25°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	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 30V, V _{GS} = 0V, T _C = 25°C	-	-	1	μA
		V _{DS} = 30V, V _{GS} = 0V, T _C = 55°C	-	-	5	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 = 30A	-	-	2.4	mΩ
		V _{GS} = 4.5V, I _D = 20A	-	-	3.6	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.2	-	2.3	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz	-	3032	-	pF
C _{OSS}	Output Capacitance		-	1588	-	
C _{RSS}	Reverse Transfer Capacitance		-	207	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 15V V _{GS} = 10V R _G = 3.0Ω I _D = 20A	-	12	-	ns
t _r	Turn-on Rise Time		-	6	-	
t _{d(OFF)}	Turn-Off Delay Time		-	38.5	-	
t _f	Turn-Off Fall Time		-	11.5	-	
Q _G	Total Gate-Charge	V _{DD} = 15V V _{GS} = 10V I _D = 20A	-	21	-	nC
Q _{GS}	Gate to Source Charge		-	12.5	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	14.5	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{*2}	I _{SD} = 20A, V _{GS} = 0V, T _J = 25°C	-	-	1.2	V
I _S	Diode Continuous Forward Current ^{*1, 4}		-	-	130	A
I _{SM}	Pulsed Source-Drain Current ^{*2, 4}		-	-	350	A

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
- The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
- The EAS data shows Max. rating. The test condition is V_{DD} = 25V, 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)

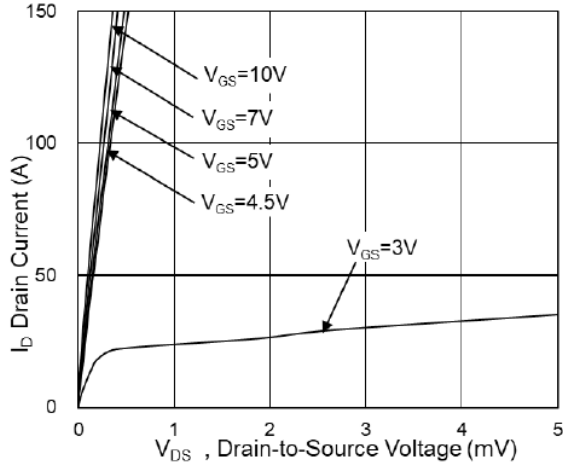


Fig.1 Typical Output Characteristics

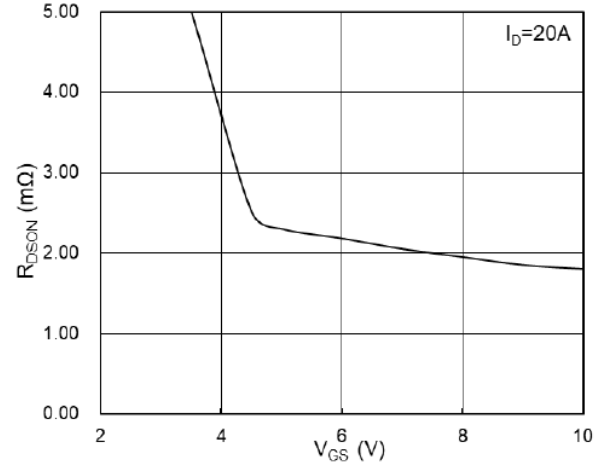


Fig.2 On-Resistance vs G-S Voltage

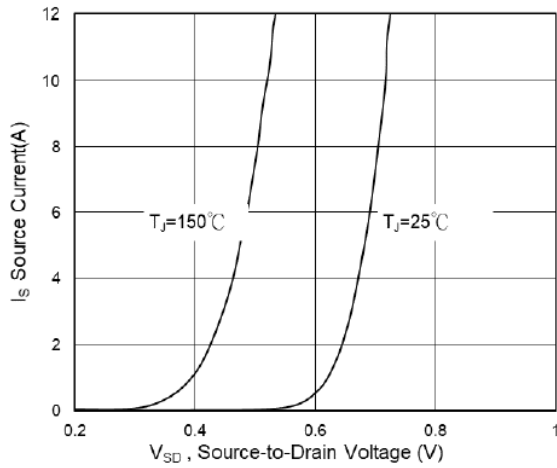


Fig.3 Source Drain Forward Characteristics

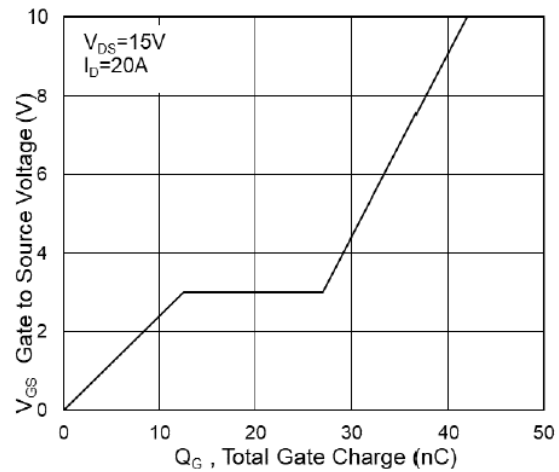


Fig.4 Gate-Charge Characteristics

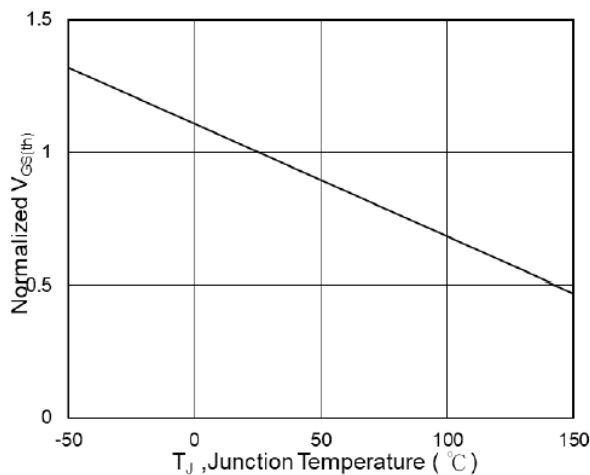


Fig.5 Normalized $V_{GS(th)}$ vs T_J

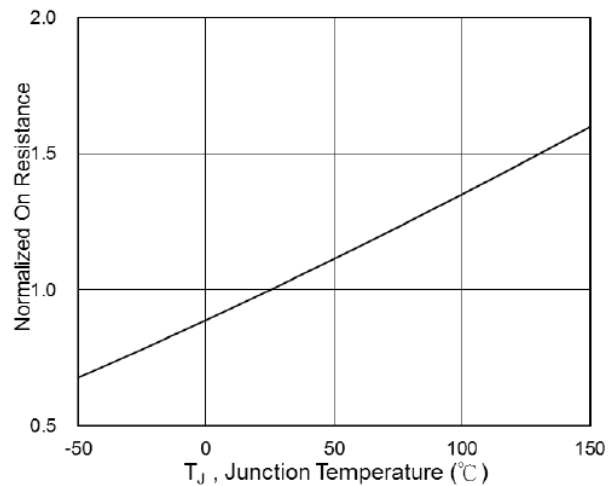


Fig.6 Normalized $R_{DS(on)}$ vs T_J

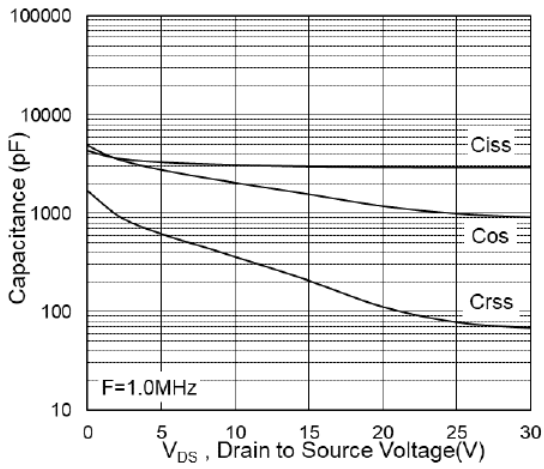


Fig.7 Capacitance

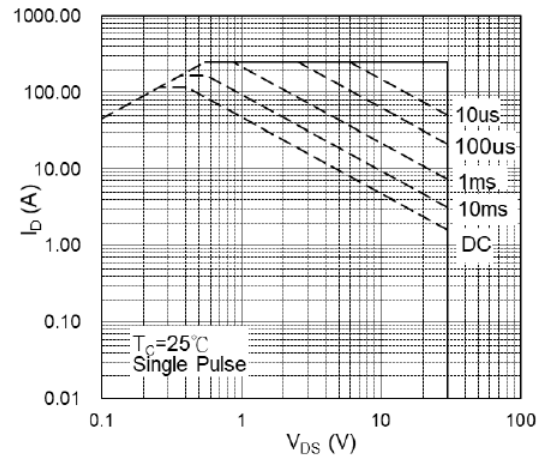


Fig.8 Safe Operating Area

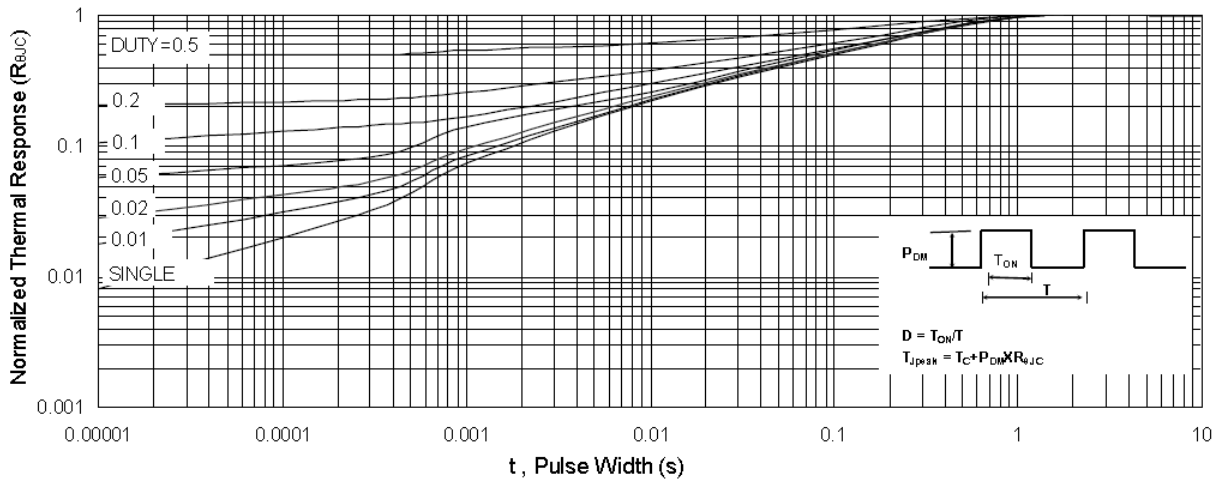
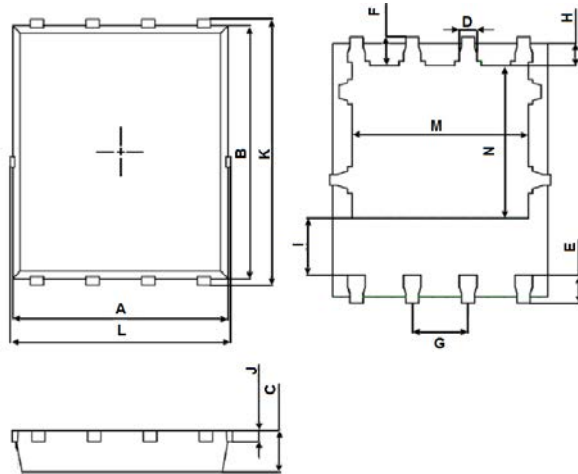


Fig.9 Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (Unit: mm)



PDFN5x6-8L		
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)

PDFN5x6-8L

