N-Channel Enhancement Mode MOSFET

BL033N03-5DL8

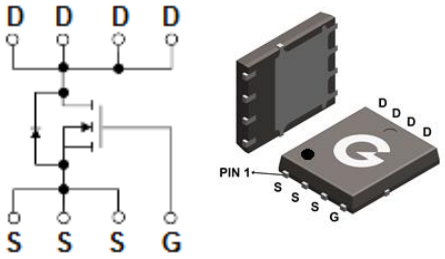
Features

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

HF

Mechanical Data

- Case: PDFN5×6-8L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



PDFN5×6-8L

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL033N03-5DL8	PDFN5×6-8L	5000 pcs / Tape & Reel	033N03

Maximum Ratings (@ T_A = 25°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°C) *1	I_D	150	A
Continuous Drain Current (T_C = 100°C) *1		100	A
Pulsed Drain Current *2	I_{DM}	450	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_C = 25°C) *3	P_D	130	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	25	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	2.8	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (@ T_A = 25℃ 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} = 24V, V_{GS} = 0V, T_C = 25°C	-	-	1	μA
		V_{DS} = 24V, 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	-	2.3	3.3	mΩ
		V_{GS} = 4.5V,I_D = 20A	-	4.0	6.3	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.2	-	2.5	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 25V f = 1.0MHz	-	3580	-	pF
C_{OSS}	Output Capacitance		-	358	-	
C_{RSS}	Reverse Transfer Capacitance		-	305	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 20V V_{GS} = 10V R_G = 3.0Ω I_D = 20A	-	13	-	ns
t_r	Turn-on Rise Time		-	115	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	23	-	
t_f	Turn-Off Fall Time		-	58	-	
Q_G	Total Gate-Charge	V_{DD} = 15V V_{GS} = 10V I_D = 20A	-	63	-	nC
Q_{GS}	Gate to Source Charge		-	9	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	13.5	-	
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		-	-	150	A
I_{SM}	Pulsed Source-Drain Current *2, 4		-	-	450	A
t_{rr}	Reverse Recovery Time	T_J = 25°C, I_F = 20A, di/dt=100A/μs	-	54	-	nS
Q_{rr}	Reverse Recovery Charge		-	98	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
3. The power dissipation is limited by 175℃ junction temperature
4. 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°C unless otherwise specified)

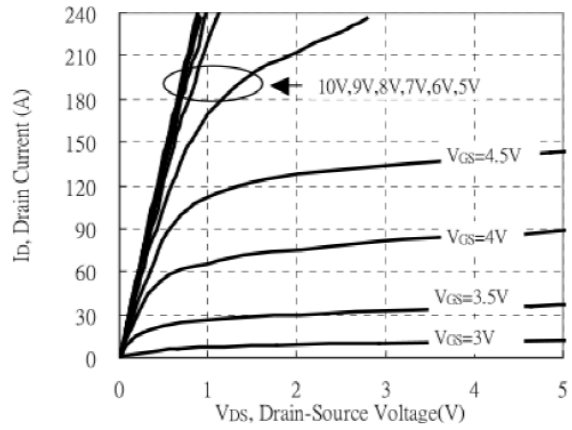


Figure1: Typical Output Characteristics

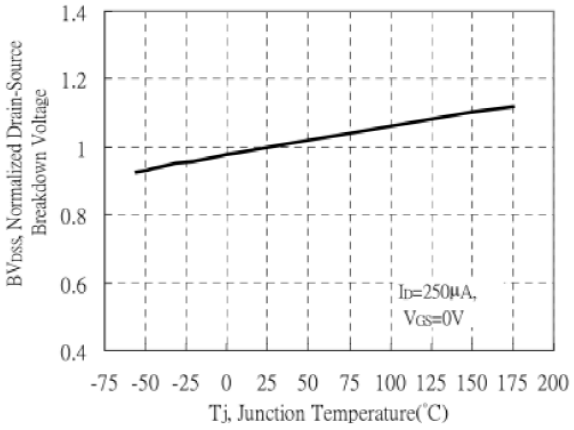


Figure2: Brekdown Voltage vs Ambient Temperature

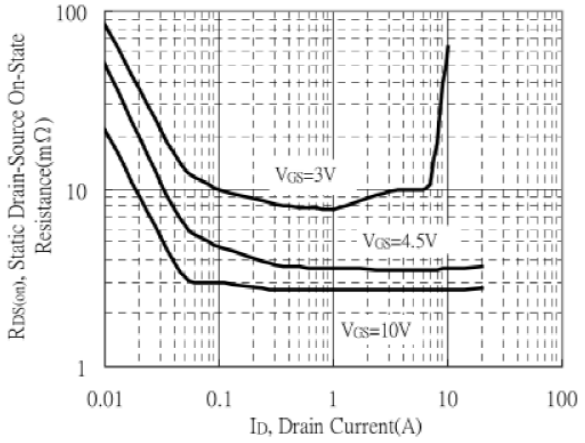


Figure3: Static Drain-Source On-State resistance vs Drain Current

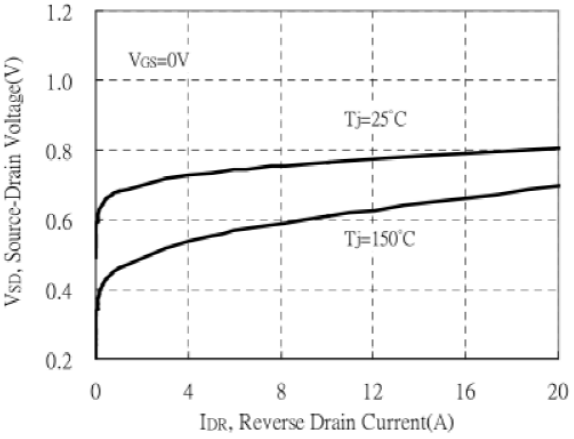


Figure4:Reverse Drain Current vs Source-Drain Voltage

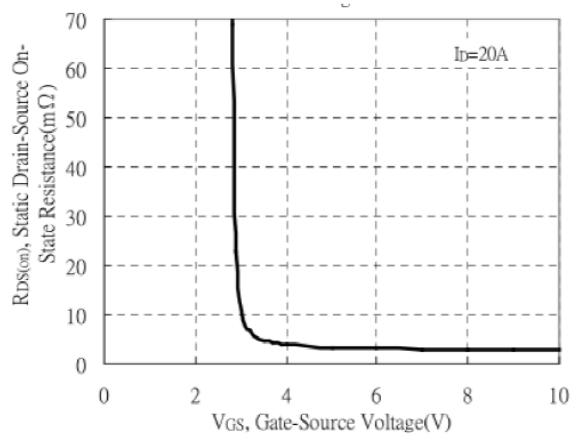


Figure5: Static Drain-Source On-State Resistance vs Gate-Source

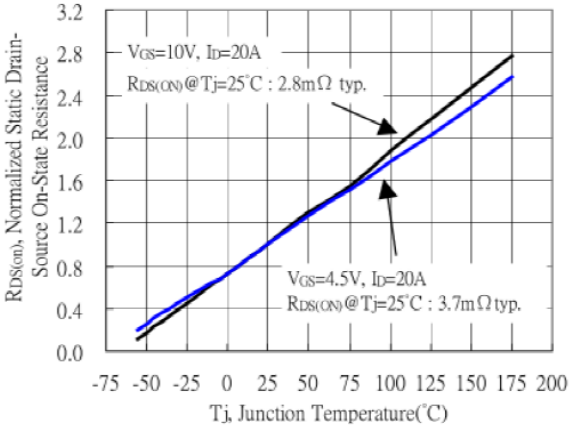


Figure6: Drain-Source On-State Resistance vs Junction Tempearture

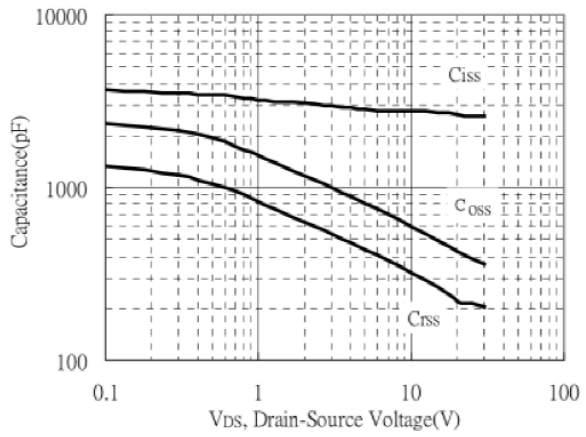


Figure7: Capacitance vs Drain-to-Source Voltage

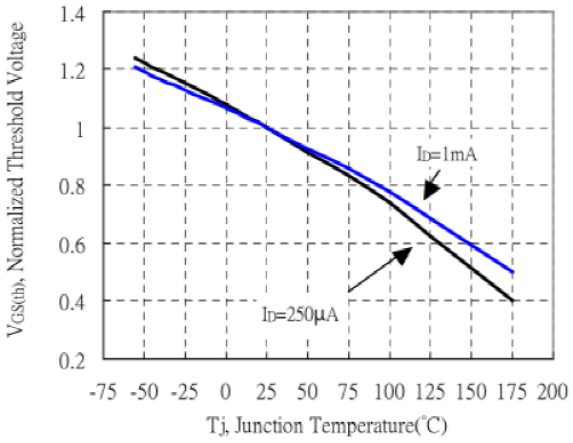


Figure8: Threshold Voltage vs Junction Tempearture

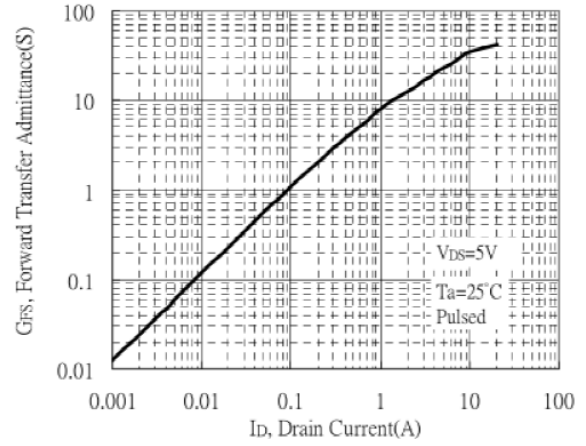


Figure9: Forward Transfer Admittance vs Drain Current

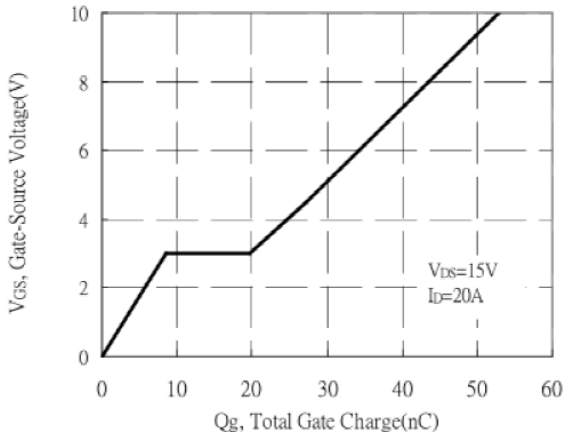


Figure10: Gate Charge Characteristics

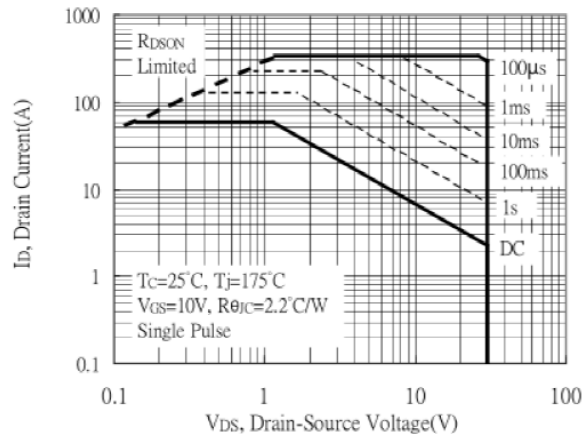


Figure11: Maximum Safe Operating Area

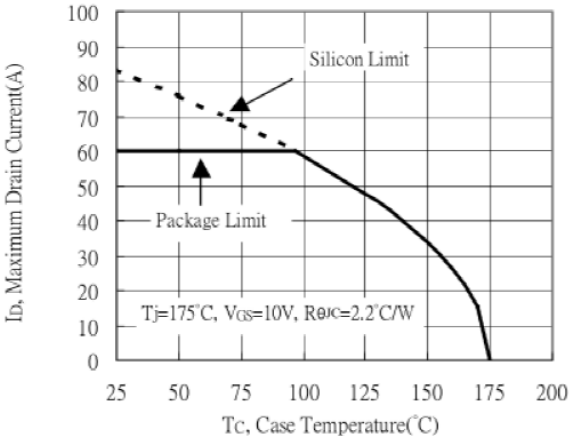
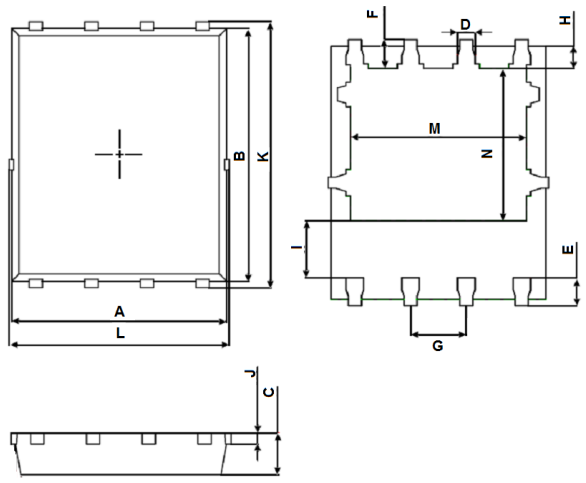


Figure12: Maximum Drain Current vs Case Temperature

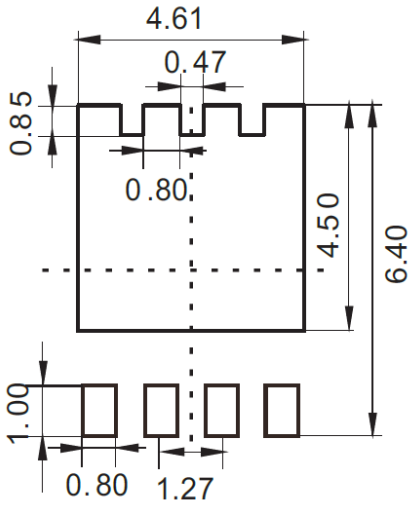
Package Outline Dimensions (Unit: mm)



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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