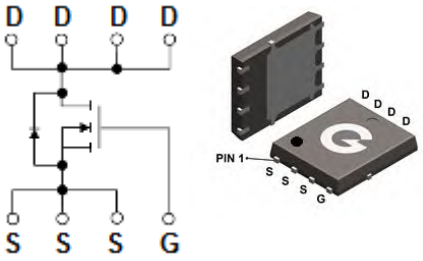
N-Channel Enhancement Mode MOSFET

BL046N04T-5DL8

Features

HF

- Low thermal resistance
- Advanced high cell density trench technology



PDFN5×6-8L

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

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL046N04T-5DL8	PDFN5×6-8L	5000 pcs / Tape & Reel	046N04T

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 (V_{GS} = 10V, T_C = 25°C) *1	I_D	74	A
Continuous Drain Current (V_{GS} = 10V, T_C = 100°C) *1		47	A
Pulsed Drain Current(V_{GS} = 10V, T_C = 25°C) *1, 2, 3	I_{DM}	390	A
Single Pulse Avalanche Energy(V_{DD} = 30V, L = 1mH)	E_{AS}	16	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_C = 25°C)	P_D	42	W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	3	°C/W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	42	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°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	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 32V, V_{GS} = 0V	-	-	1	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 = 15A	-	4	4.6	mΩ
		V_{GS} = 4.5V,I_D = 10A	-	6.2	7	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	5.8	-	Ω
Dynamic Characteristics *4						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 20V f = 1.0MHz	-	1045	-	pF
C_{OSS}	Output Capacitance		-	371	-	
C_{RSS}	Reverse Transfer Capacitance		-	40	-	
Switching Characteristics *4						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 20V, V_{GS} = 10V R_G = 3.9Ω, R_L = 1.33Ω I_D = 15A	-	5.7	-	ns
t_r	Turn-on Rise Time		-	24	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	24	-	
t_f	Turn-Off Fall Time		-	18	-	
Q_G	Total Gate-Charge	V_{DD} = 20V V_{GS} = 10V I_D = 15A	-	21.7	-	nC
Q_{GS}	Gate to Source Charge		-	3.2	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	5.3	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *2	I_{SD} = 15A, V_{GS} = 0V	-	0.8	1.3	V
I_S	Diode Continuous Forward Current	T_C = 25°C	-	-	52	A
trr	Reverse Recovery Time	I_{SD} = 15A, V_{GS} = 0V di/dt = 100A/μs	-	43	-	nS
Qrr	Reverse Recovery Charge		-	32	-	nC

Notes:

1. Surface mounted on 1 in2 pad area, t ≤ 10 sec
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
3. Limited by bonding wire
4. Guaranteed by design, not subject to production testing

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

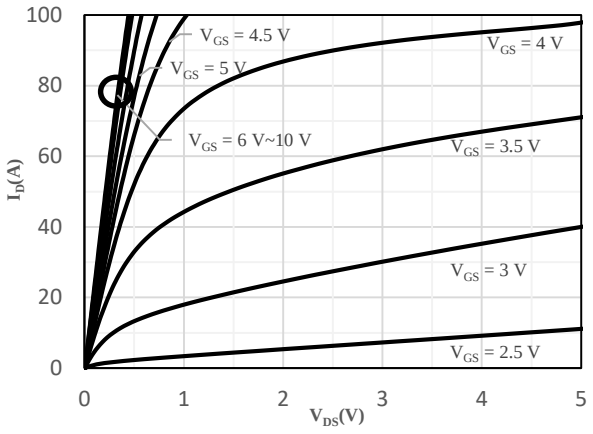


Fig 1 Typical Output Characteristics

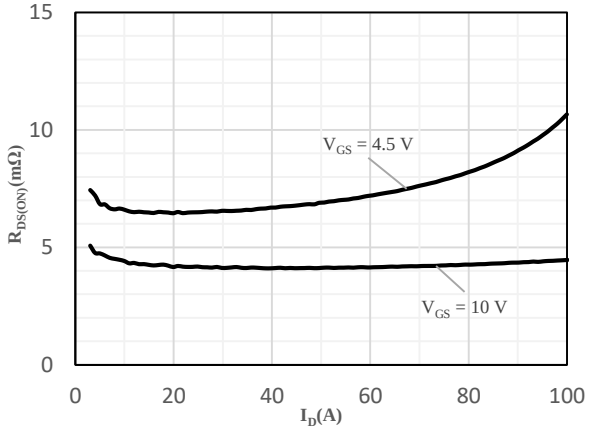


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

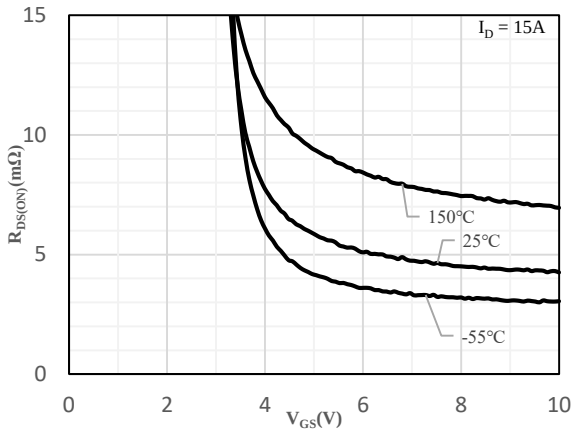


Fig 3 On-Resistance vs. Gate-Source Voltage

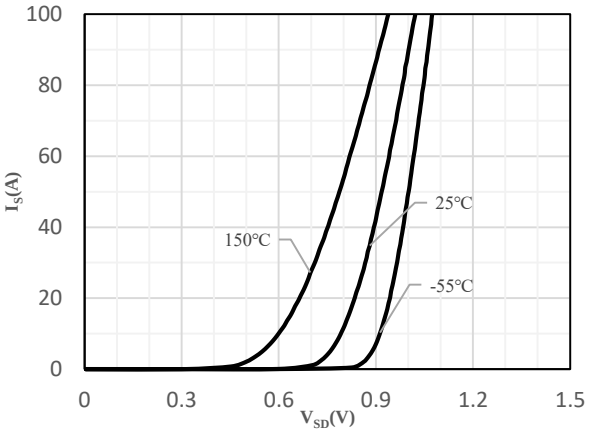


Fig 4 Body-Diode Characteristics

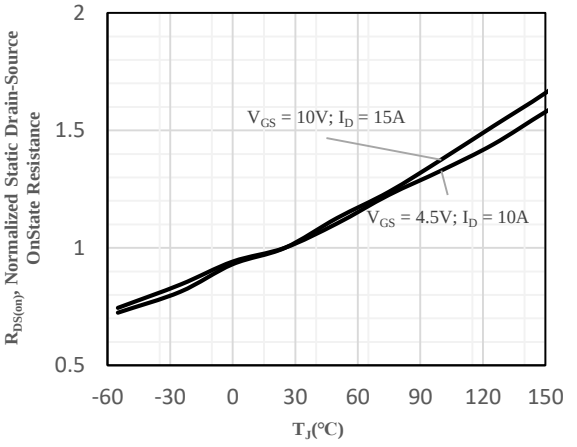


Fig 5 On-Resistance vs. Junction Temperature

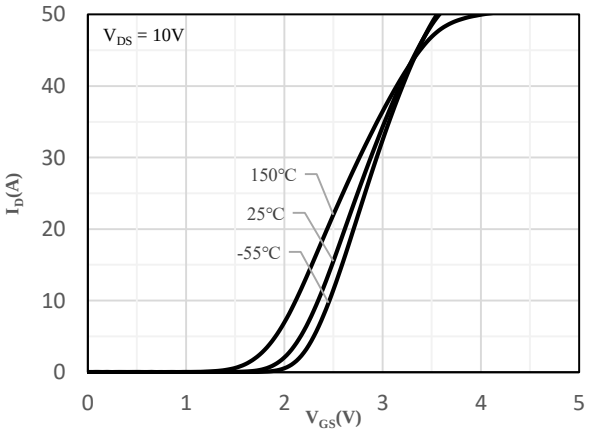


Fig 6 Transfer Characteristics

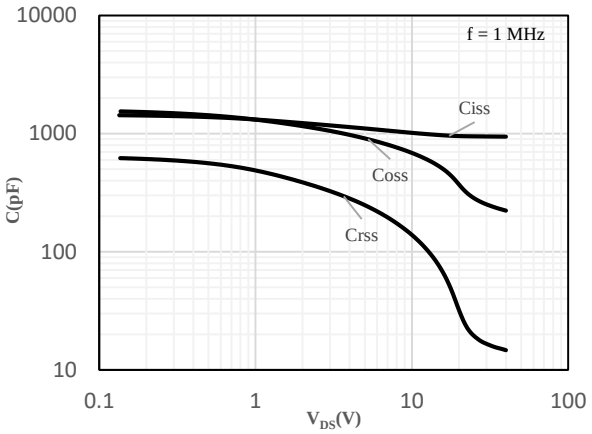


Fig 7 Capacitance Characteristics

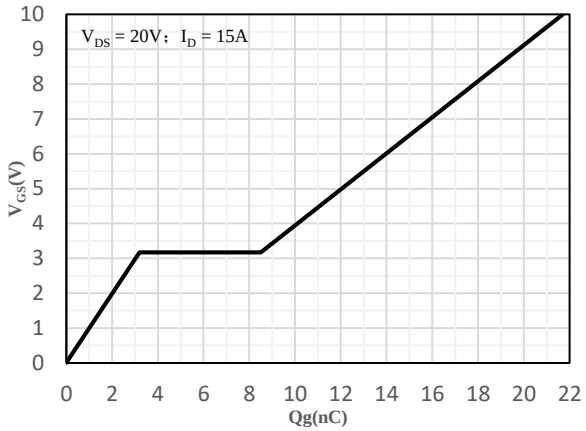


Fig 8 Gate-Charge Characteristics

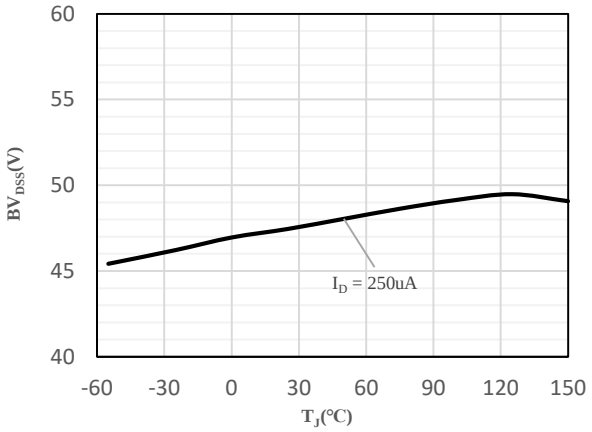


Fig 9 Breakdown Voltage vs. Junction Temperature

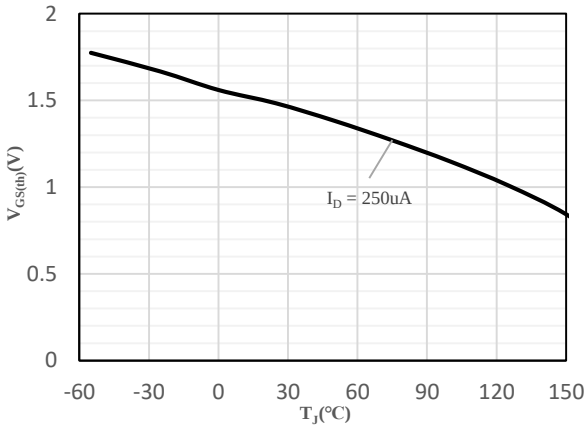
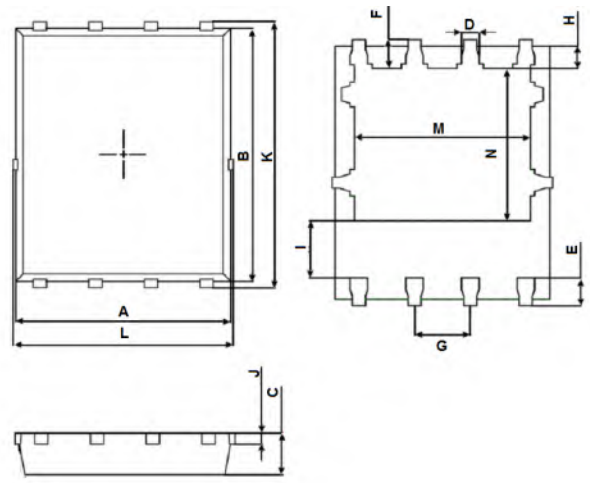


Fig 10 $V_{GS(th)}$ vs. Junction Temperature

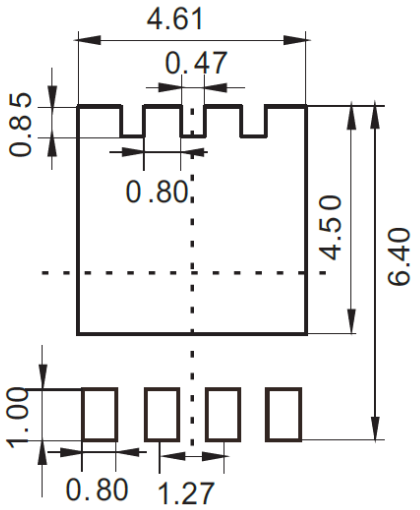
Package Outline Dimensions (Unit: mm)



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



Important Notice

Changzhou Galaxy Century Microelectronics (GME) reserves the right to make changes without further notice to any product information (copyrighted) herein to make corrections, modifications, improvements, or other changes. GME does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others.