Dual N-Channel Enhancement Mode Power MOSFE

GBLN4401-5DL8

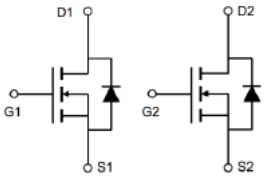
Features

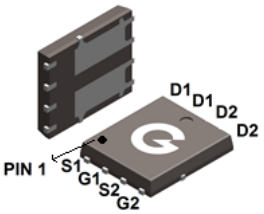
- Ultra-low on-resistance and gate-charge
- Advanced shielded-gate technology

HF

Mechanical Data

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





PDFN5×6-8LC

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GBLN4401-5DL8	PDFN5×6-8LC	5000 pcs / Tape & Reel	GBLN4401

Maximum Ratings (@ T_A = 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) *1	I_D	48	A
Continuous Drain Current (T_C = 100°C) *1		31	A
Continuous Drain Current (T_A = 25°C) *2, 3		14	A
Continuous Drain Current (T_A = 100°C) *2, 3		9	A
Pulsed Drain Current *4	I_{DM}	180	A
Single Pulse Avalanche Energy *5, 6	E_{AS}	11	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_C = 25°C)	P_D	31	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	3.9	°C/W
Thermal Resistance Junction-to-Air *3	$R_{\theta JA}$	47	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (@ T_J = 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} = 40V, 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	V_{GS} = 10V,I_D = 10A	-	6.8	7.5	mΩ
		V_{GS} = 4.5V,I_D = 10A	-	9.2	12.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1	1.6	2.5	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	3.8	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 20V f = 1.0MHz	-	825	-	pF
C_{OSS}	Output Capacitance		-	377	-	
C_{RSS}	Reverse Transfer Capacitance		-	28	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 20V V_{GS} = 10V R_G = 3Ω I_D = 20A	-	8	-	ns
t_r	Turn-on Rise Time		-	6	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	16	-	
t_f	Turn-Off Fall Time		-	4	-	
Q_G	Total Gate-Charge	V_{DD} = 20V V_{GS} = 10V I_D = 15A	-	17	-	nC
Q_{GS}	Gate to Source Charge		-	3.1	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	2	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_S = 10A, V_{GS} = 0V	-	0.8	-	V
trr	Reverse Recovery Time	I_S = 20A, V_{GS} = 0V di/dt = 100A/μs	-	36	-	ns
Qrr	Reverse Recovery Charge		-	21	-	nC

Notes:

1. Rated according to $R_{\theta JC}$
2. Rated according to $R_{\Theta ja}$
3. Surface−mounted on 1 inch² FR4 board, 2 oz Cu
4. Limited by maximum T_J
5. Starting T_J = 25°C, V_{DD} = 30V, V_{GS} = 10V, L = 0.1mH
6. TBC: To be confirmed

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

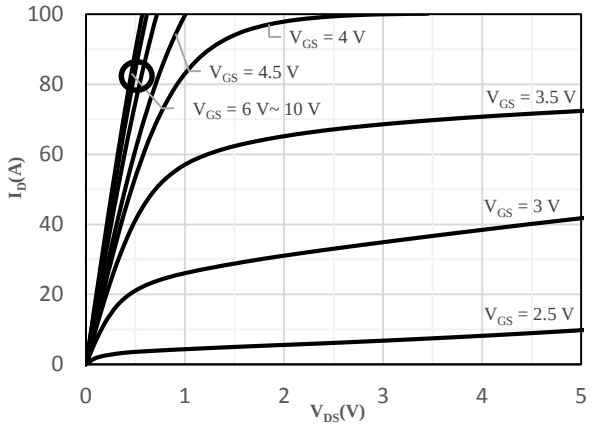


Fig 1 Typical Output Characteristics

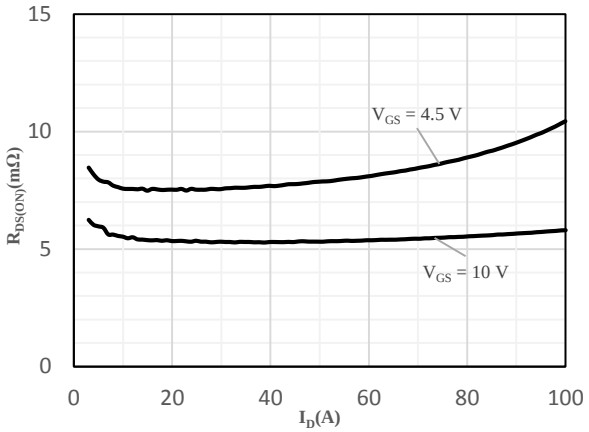


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

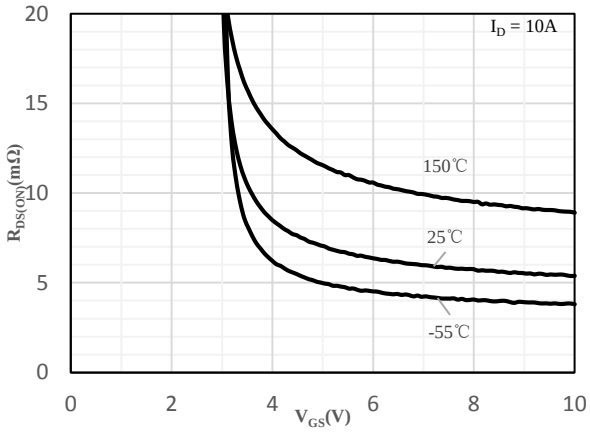


Fig 3 On-Resistance vs. Gate-Source Voltage

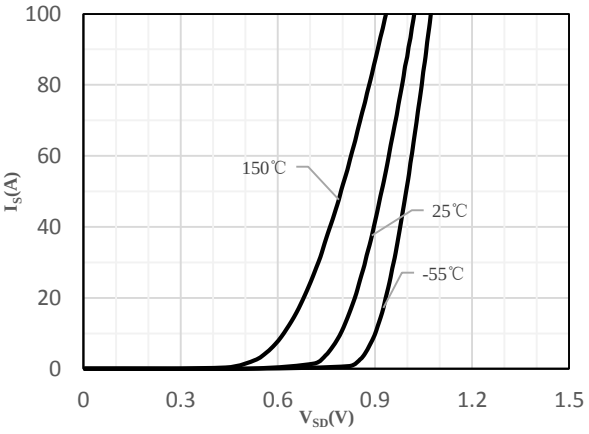


Fig 4 Body-Diode Characteristics

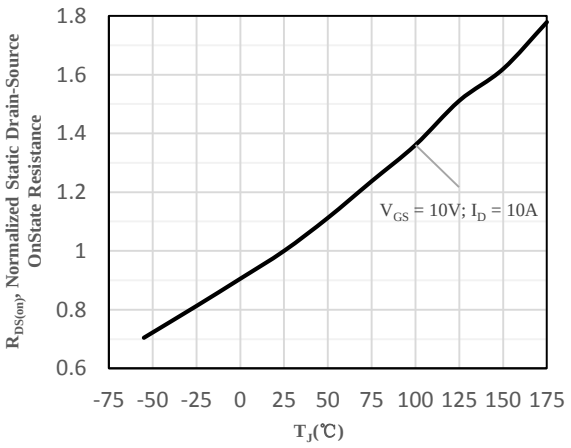


Fig 5 On-Resistance vs. Junction Temperature

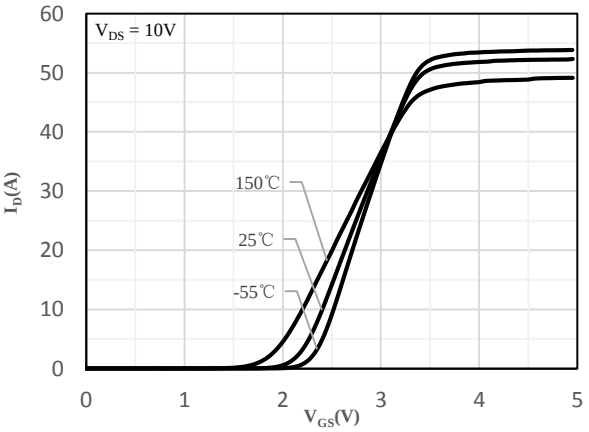


Fig 6 Transfer Characteristics

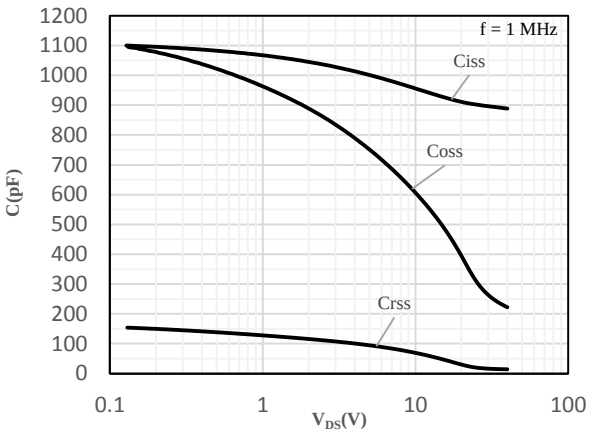


Fig 7 Capacitance Characteristics

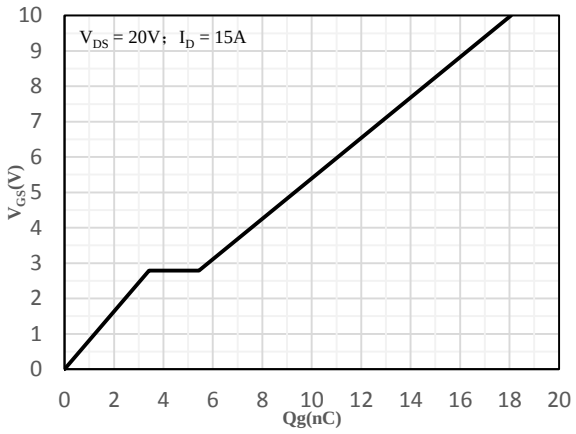


Fig 8 Gate-Charge Characteristics

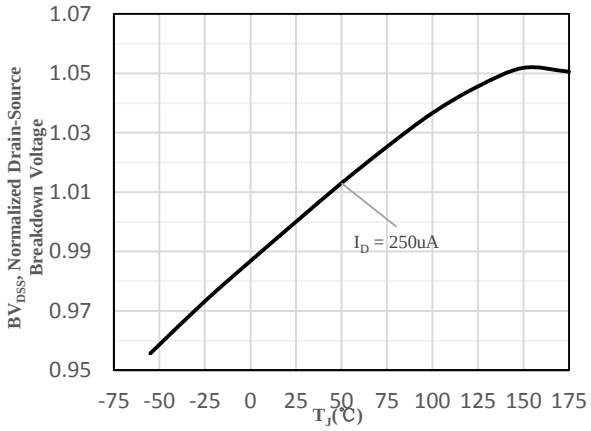


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

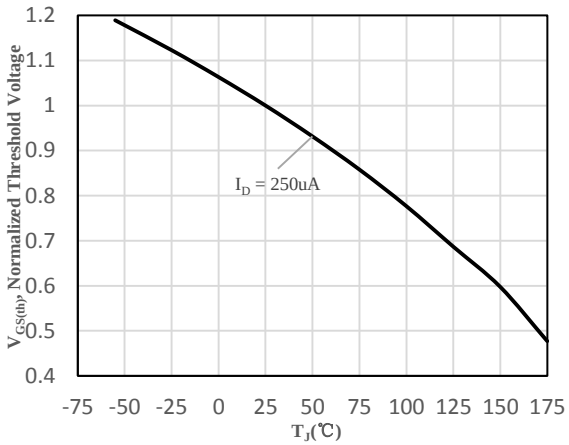


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

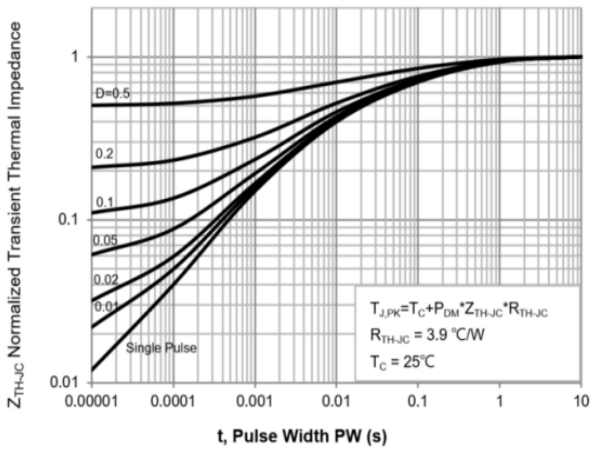


Fig 11 Normalized Transient Thermal Impedance

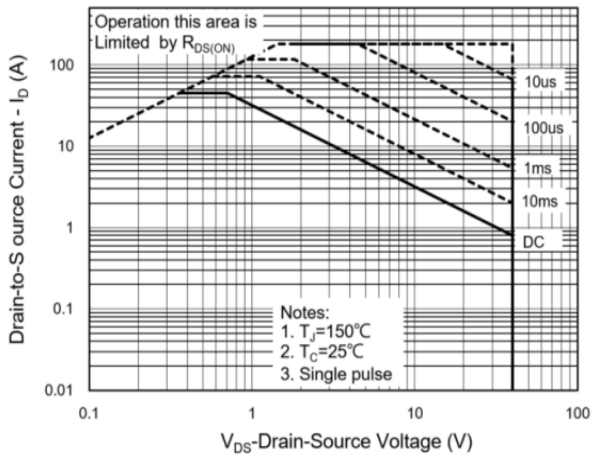
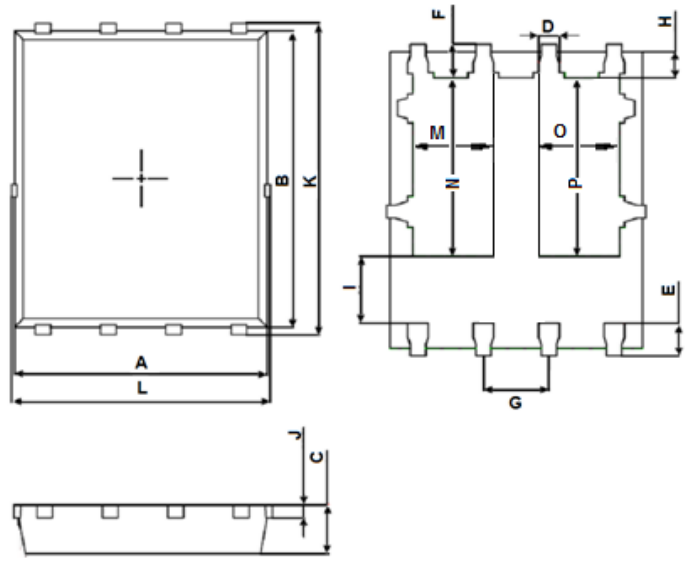


Fig 12 Maximum Safe Operating Area

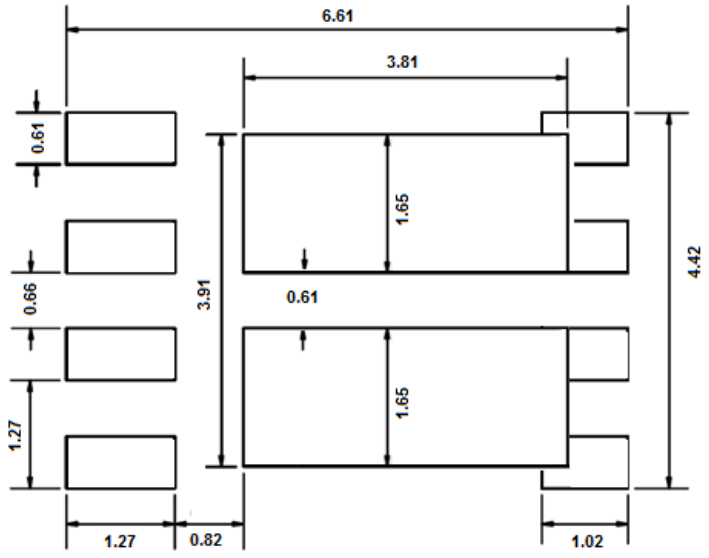
Package Outline Dimensions (Unit: mm)



PDFN5×6-8LC		
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/O	1.595	1.795
N/P	3.375	3.575

Mounting Pad Layout (Unit: mm)

PDFN5×6-8LC



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.