Dual N-Channel Enhancement Mode MOSFET

GBLN4404-5DL8

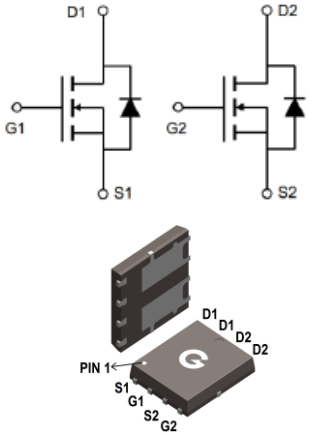
Features

- Advanced trench technology
- Small Surface Mount Package
- Low on-resistance
- Low gate charge
- HBM: JESD22-A114-B: 1B
- RoHS compliant with Halogen-free

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
GBLN4404-5DL8	PDFN5×6-8LC	5000 pcs / Tape & Reel	GBLN4404

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 (T_C = 25°C)	I_D	37	A
Continuous Drain Current (T_C = 100°C)		23	
Continuous Drain Current (T_A = 25°C) *1		10.7	
Continuous Drain Current (T_A = 100°C) *1		6.8	
Pulsed Drain Current (t_p =10μs, T_C = 25°C)	I_{DM}	148	A
Single Pulse Avalanche Energy (L = 0.5mH) *3	E_{AS}	50	mJ
Power Dissipation (T_C = 25°C)	P_D	33	W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	-	3.5	3.8	°C/W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	-	40	45	°C/W

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						
$R_{DS(ON)}$	Drain-Source On-resistance *2	V_{GS} = 10V, I_D = 5A	-	10	15	mΩ
		V_{GS} = 4.5V, I_D = 4A	-	12	19	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1	1.8	2.5	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	3.2	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 20V f = 1.0MHz	-	1697	-	pF
C_{OSS}	Output Capacitance		-	156	-	
C_{RSS}	Reverse Transfer Capacitance		-	141	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 30V V_{GS} = 15V I_D = 10A R_G = 2Ω	-	5	-	ns
t_r	Turn-on Rise Time		-	26	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	39	-	
t_f	Turn-Off Fall Time		-	30	-	
Q_G	Total Gate-Charge	V_{DD} = 20V V_{GS} = 4.5V I_D = 20A	-	19.3	-	nC
Q_{GS}	Gate to Source Charge		-	5.5	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	9.3	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *2	I_{SD} = 1A, V_{GS} = 0V	-	0.7	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0V, I_F = 12A d_{iF}/d_t = 100A/μs	-	35	-	ns
Q_{rr}	Reverse Recovery Charge		-	18	-	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 E_{AS} data shows Max. rating. The test condition is V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH

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

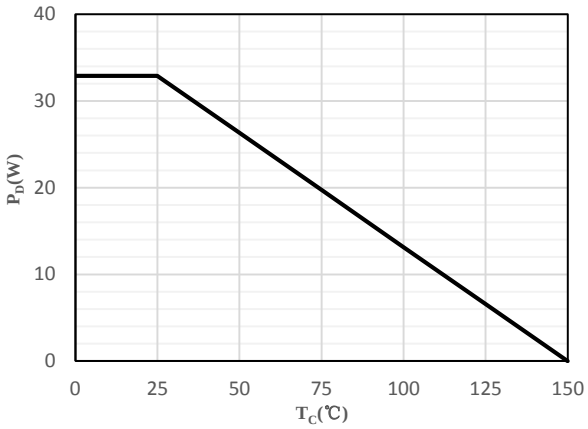


Fig 1 Power Dissipation

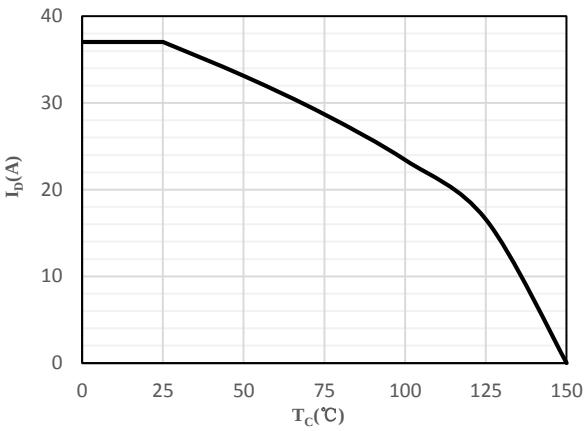


Fig 2 Drain Current

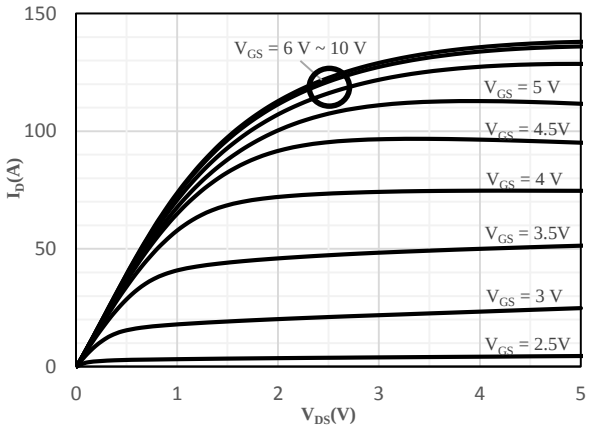


Fig 3 Typical Output Characteristics

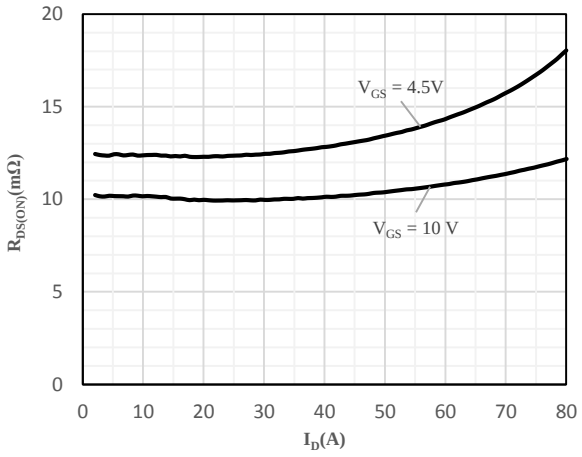


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

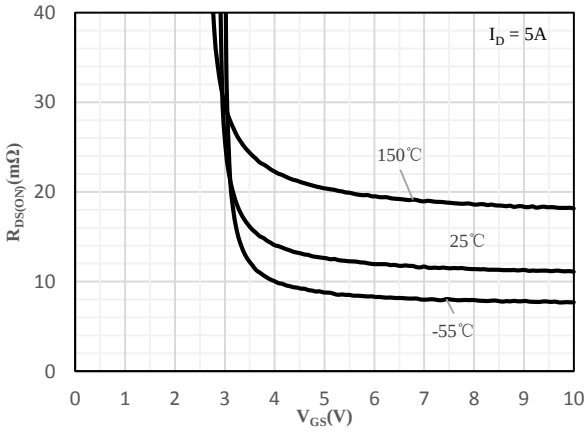


Fig 5 On-Resistance vs. Gate-Source Voltage

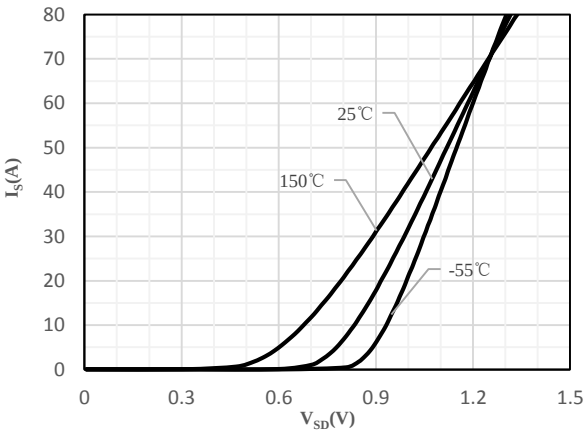


Fig 6 Body-Diode Characteristics

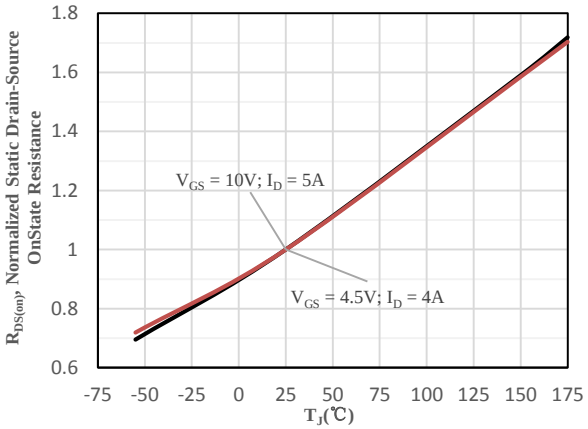


Fig 7 Normalized On-Resistance vs. Junction Temperature

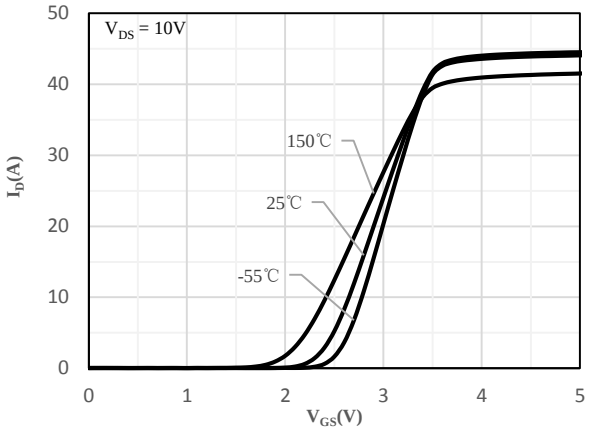


Fig 8 Transfer Characteristics

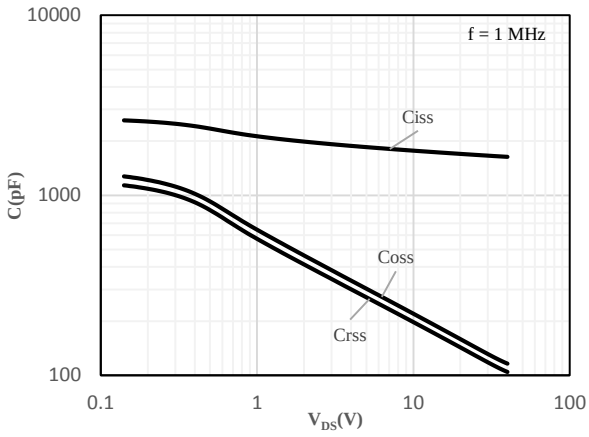


Fig 9 Capacitance Characteristics

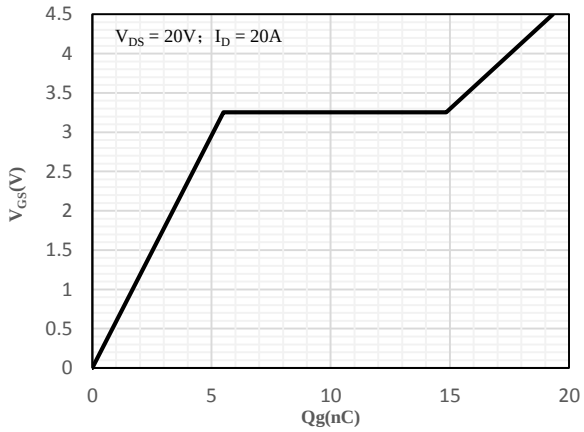


Fig 10 Gate-Charge Characteristics

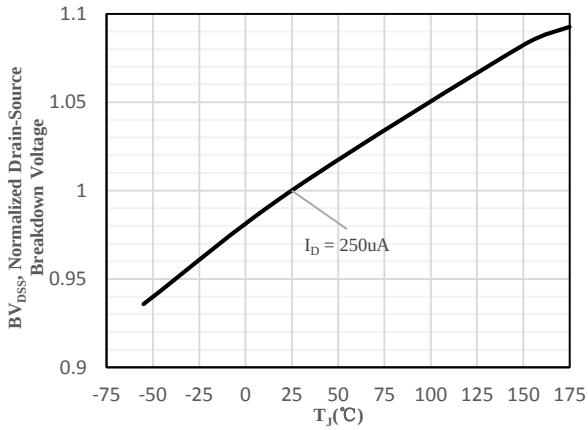


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

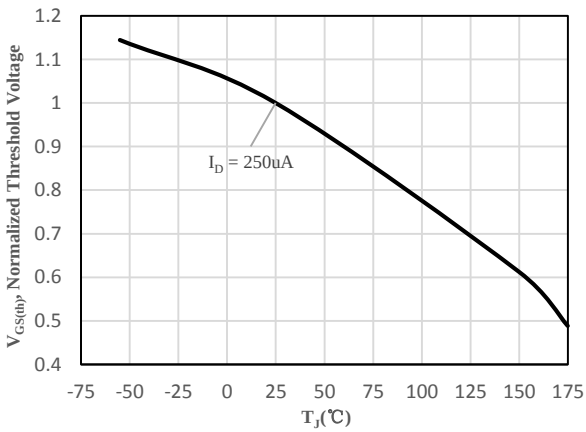


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

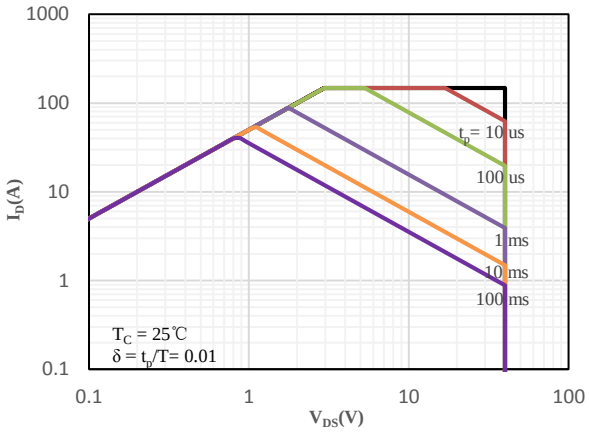


Fig 13 Safe Operating Area

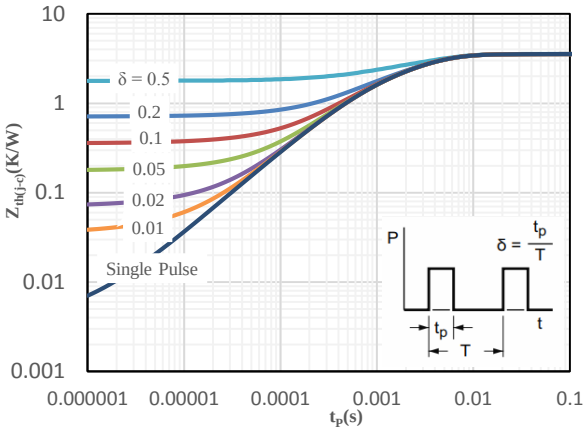
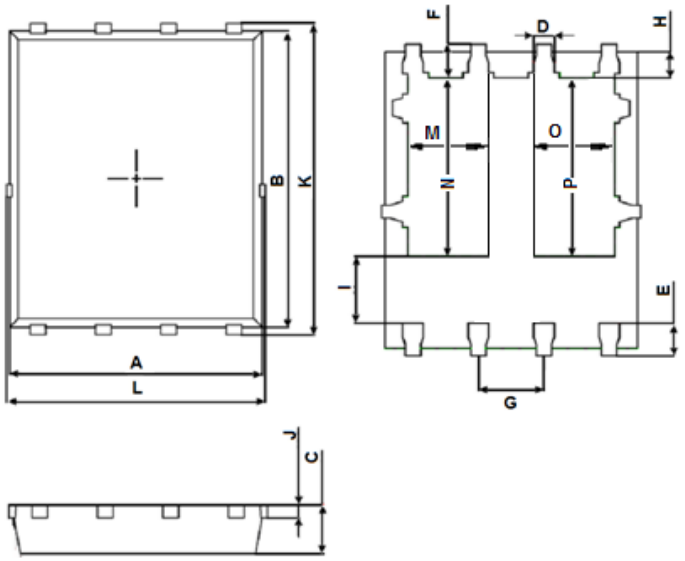


Fig 14 Maximum transient thermal impedance

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