Dual N-Channel Enhancement Mode MOSFET

GBLN6605-5DL8

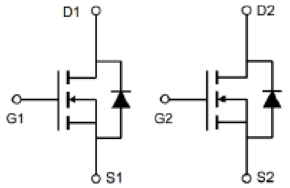
Features

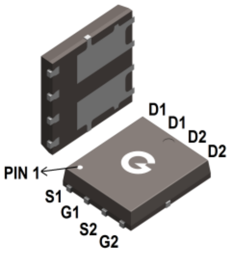
- Advanced Shielded-Gate Trench technology
- Low on-resistance
- Fast switching speed
- Low thermal resistance
- HBM: JESD22-A114-B: 1B
- RoHS compliant with Halogen-free

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
GBLN6605-5DL8	PDFN5×6-8LC	5000 pcs / Tape & Reel	GBLN6605

Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	60	V
Gate-to-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (T_C = 25°C)	I_D	58	A
Continuous Drain Current (T_C = 100°C)		37	A
Continuous Drain Current (T_A = 25°C) [*1]		14	A
Continuous Drain Current (T_A = 100°C) [*1]		9	A
Pulsed Drain Current (t_p =10μs, T_C = 25°C)	I_{DM}	232	A
Single Pulse Avalanche Energy [*3]	E_{AS}	80	mJ
Power Dissipation (T_C = 25°C)	P_D	42	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	°C/W
Thermal Resistance Junction-to-Air [*1]	$R_{\theta JA}$	-	-	50	°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	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 48V, 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 = 30A	-	6	7	mΩ
		V_{GS} = 4.5V, I_D = 20A	-	8.5	10	mΩ
$V_{GS(th)}$	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	-	2.2	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 30V f = 1.0MHz	-	1527	-	pF
C_{OSS}	Output Capacitance		-	638	-	
C_{RSS}	Reverse Transfer Capacitance		-	16	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 30V V_{GS} = 15V I_D = 15A R_G = 3.3Ω	-	17	-	ns
t_r	Turn-on Rise Time		-	19	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	45	-	
t_f	Turn-Off Fall Time		-	10	-	
Q_G	Total Gate-Charge	V_{DD} = 48V V_{GS} = 10V I_D = 15A	-	30.7	-	nC
Q_{GS}	Gate to Source Charge		-	4.2	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	9.3	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage [*2]	I_S = 30A, V_{GS} = 0V	-	0.9	1.2	V
trr	Reverse Recovery Time	I_F = 30A, V_{GS} = 0V di/dt = 100A/μs	-	41	-	ns
Qrr	Reverse Recovery Charge		-	37	-	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} = 25V, V_{GS} = 10V, L = 0.5mH

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

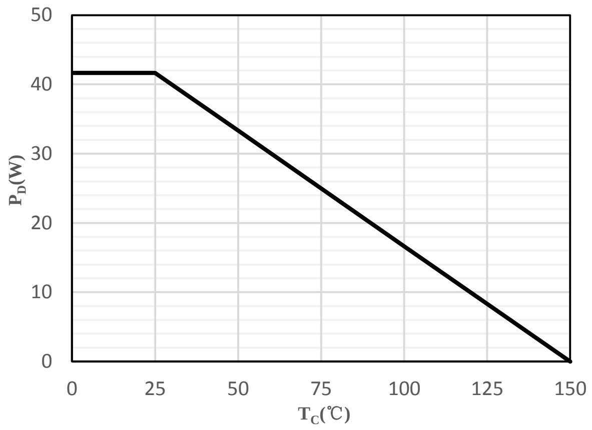


Fig 1 Power Dissipation

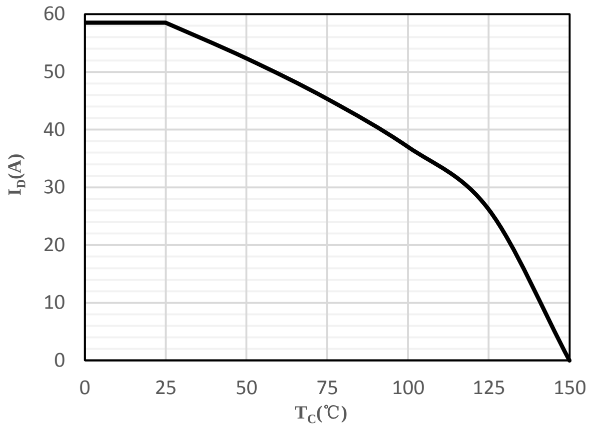


Fig 2 Drain Current

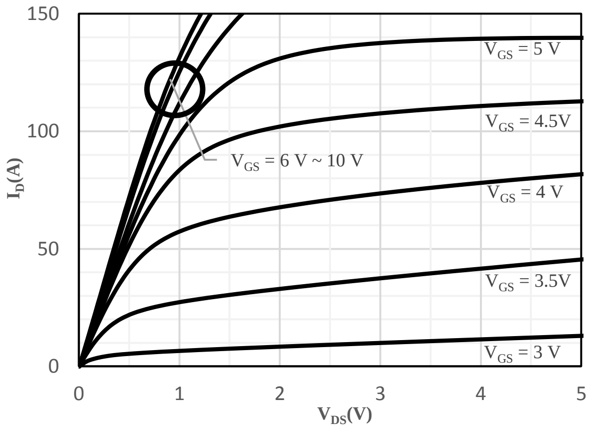


Fig 3 Typical Output Characteristics

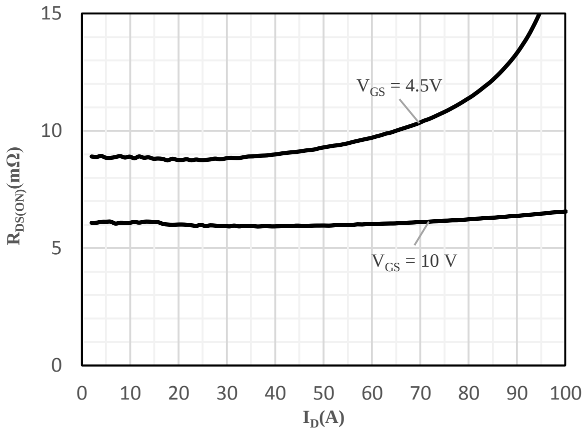


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

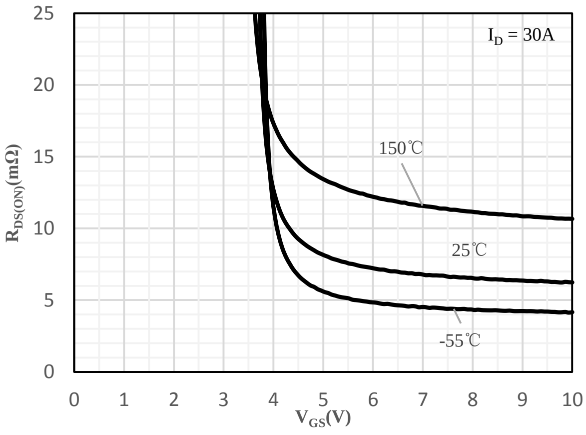


Fig 5 On-Resistance vs. Gate-Source Voltage

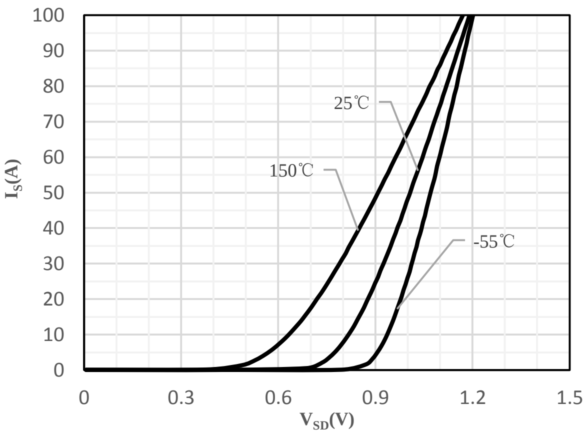


Fig 6 Body-Diode Characteristics

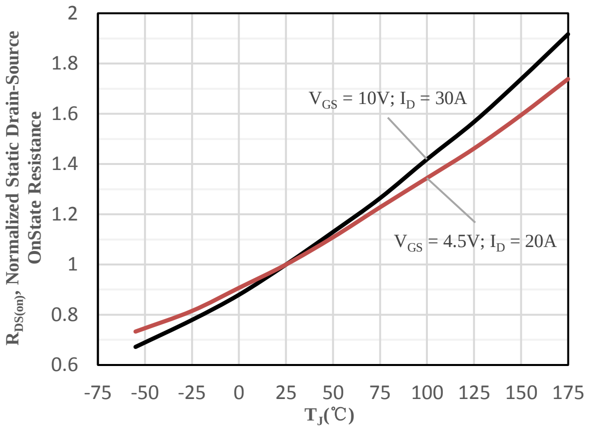


Fig 7 Normalized On-Resistance vs. Junction Temperature

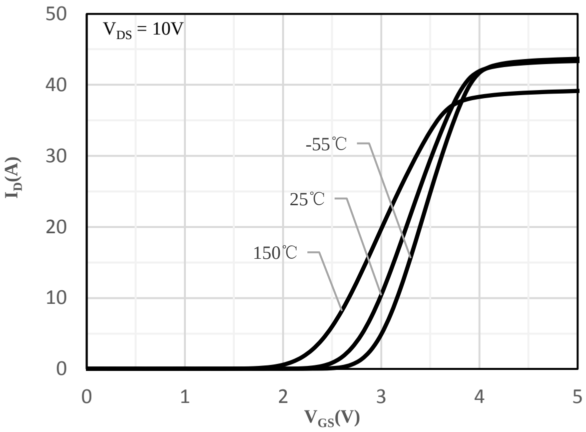


Fig 8 Transfer Characteristics

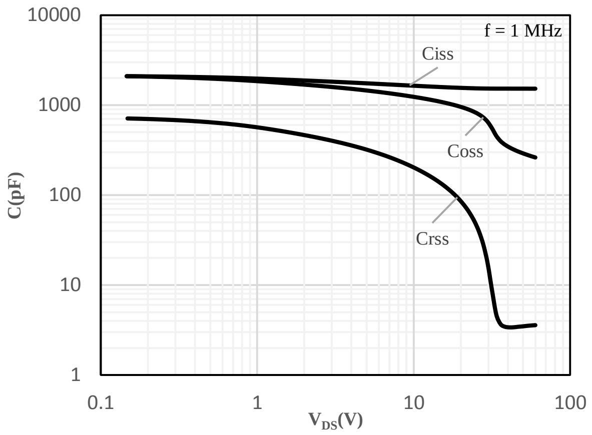


Fig 9 Capacitance Characteristics

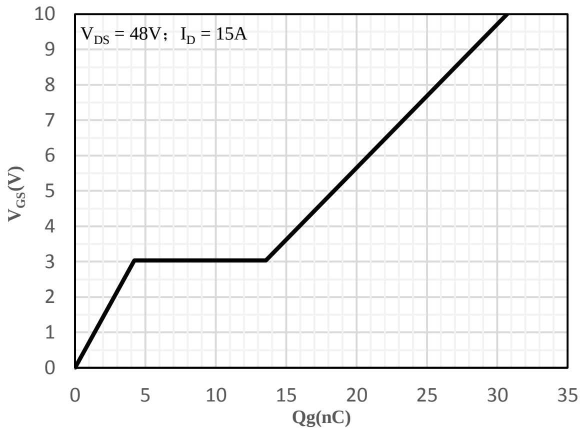


Fig 10 Gate-Charge Characteristics

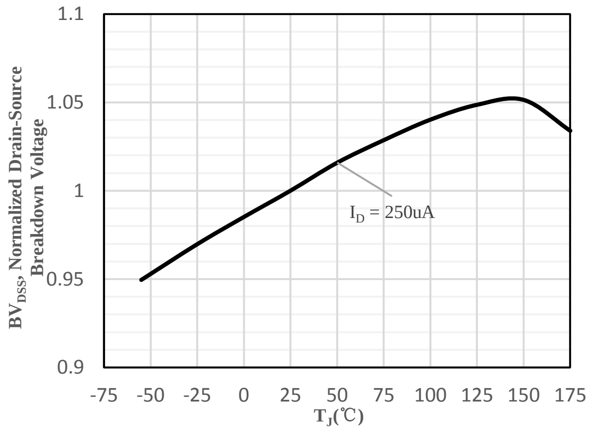


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

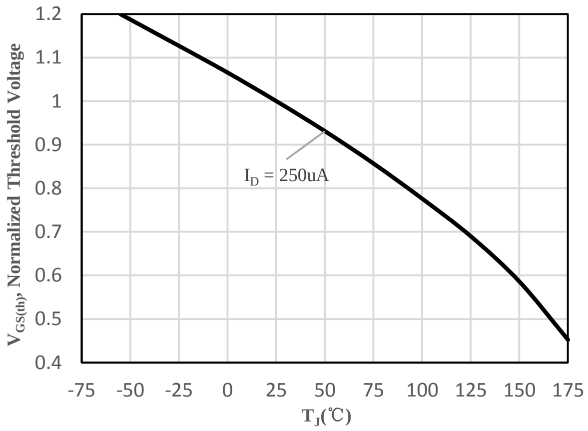
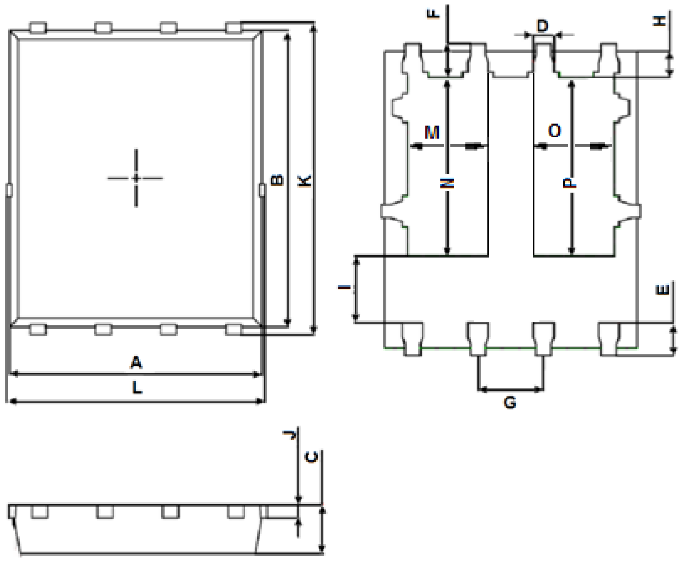


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

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