

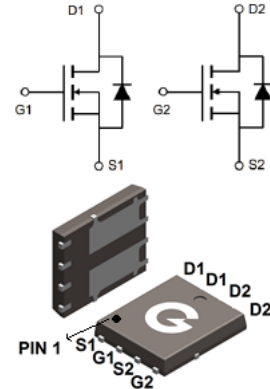
Features

- Ultra-low on-resistance and gate-charge
- Advanced shielded-gate technology
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

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
TGBLN4401-5DL8	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 _{θJC}	3.9	°C/W
Thermal Resistance Junction-to-Air *3	R _{θJA}	47	°C/W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ 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
t _{rr}	Reverse Recovery Time	I _S = 20A, V _{GS} = 0V	-	36	-	ns
Q _{rr}	Reverse Recovery Charge		di/dt = 100A/μs	-	21	-

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 $T_J = 25^\circ\text{C}$, $V_{DD} = 30V$, $V_{GS} = 10V$, $L = 0.1mH$
6. TBC: To be confirmed

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

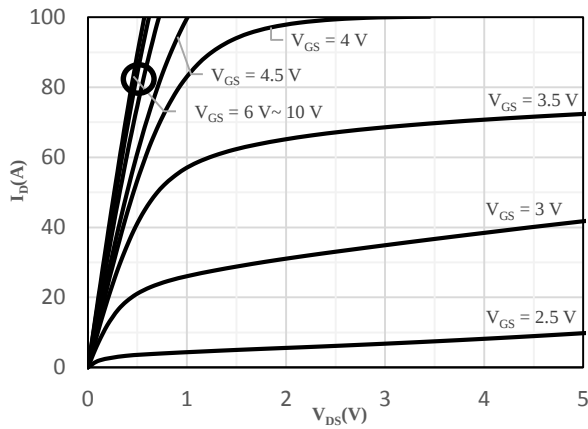


Fig 1 Typical Output Characteristics

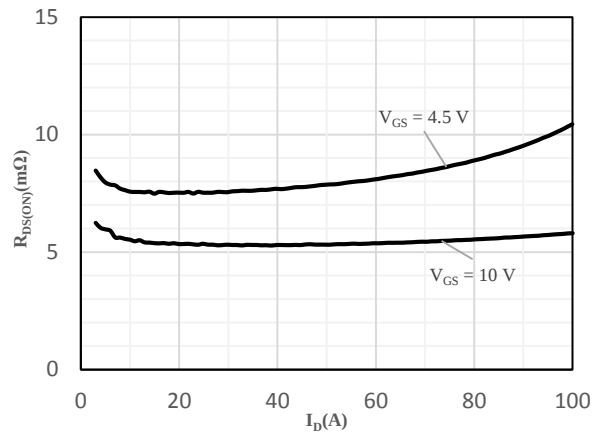


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

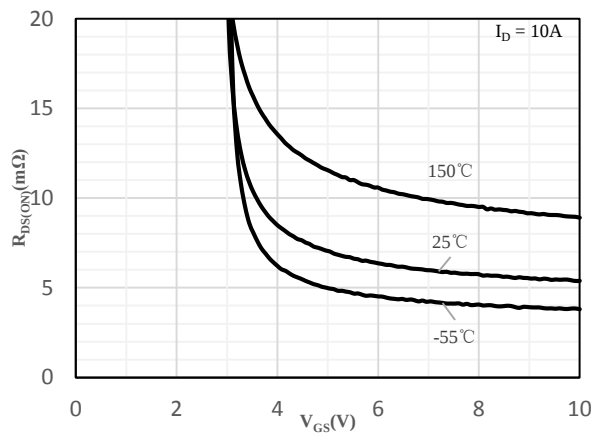


Fig 3 On-Resistance vs. Gate-Source Voltage

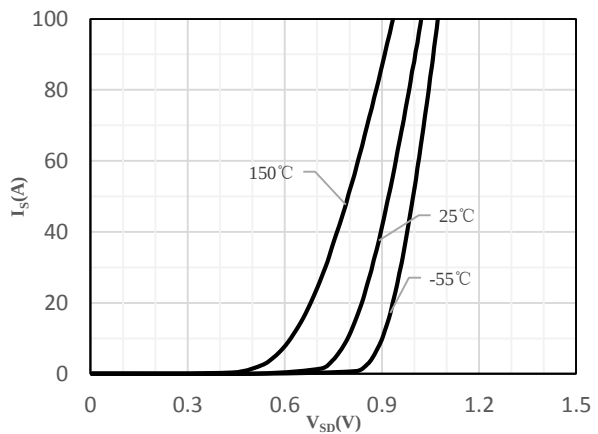


Fig 4 Body-Diode Characteristics

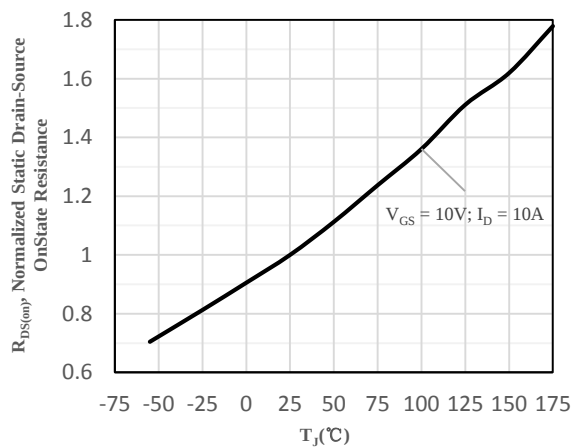


Fig 5 On-Resistance vs. Junction Temperature

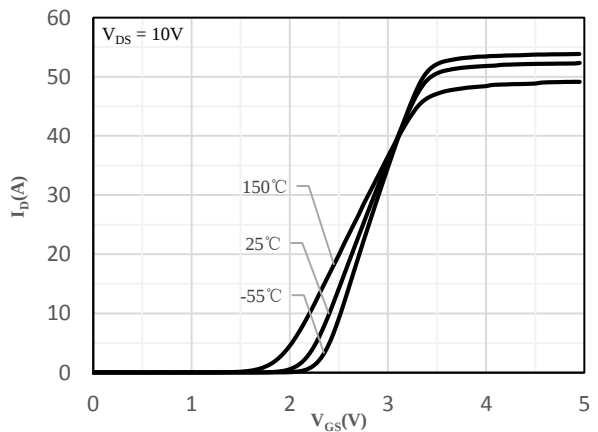


Fig 6 Transfer Characteristics

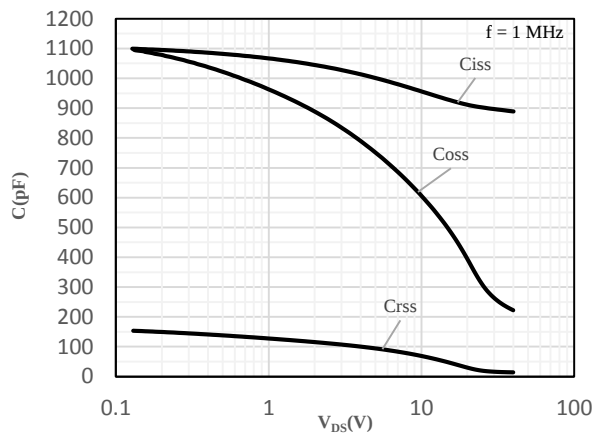


Fig 7 Capacitance Characteristics

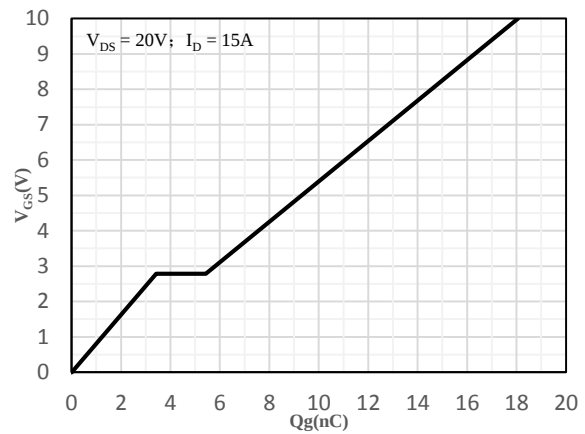


Fig 8 Gate-Charge Characteristics

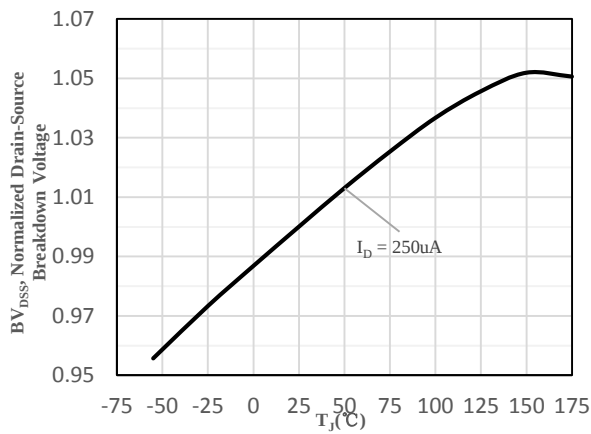


Fig 9 Normalized Breakdown Voltage
vs. Junction Temperature

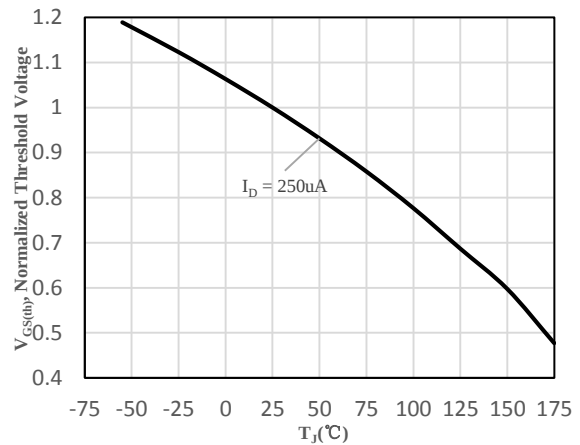


Fig 10 Normalized $V_{GS(th)}$ vs. Junction
Temperature

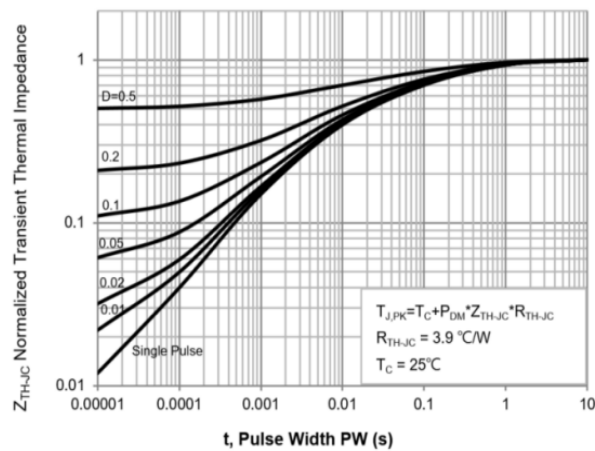


Fig 11 Normalized Transient Thermal Impedance

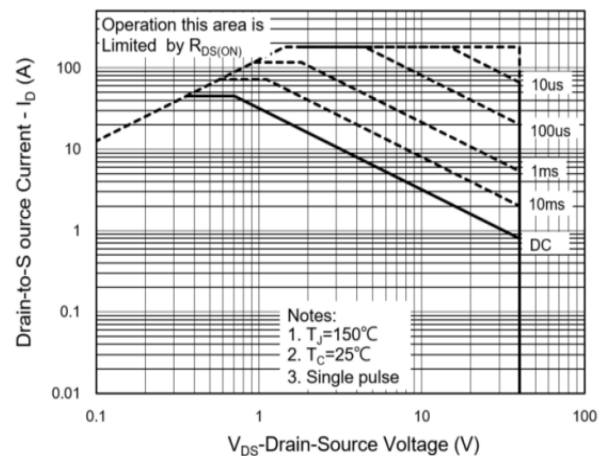
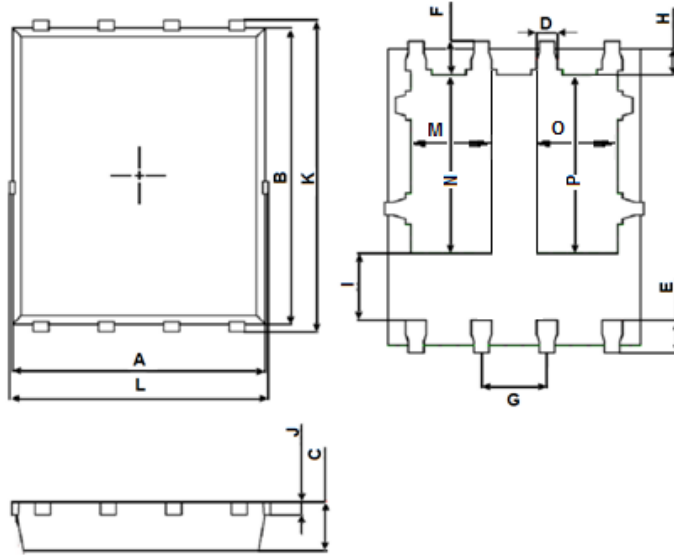


Fig 12 Maximum Safe Operating Area

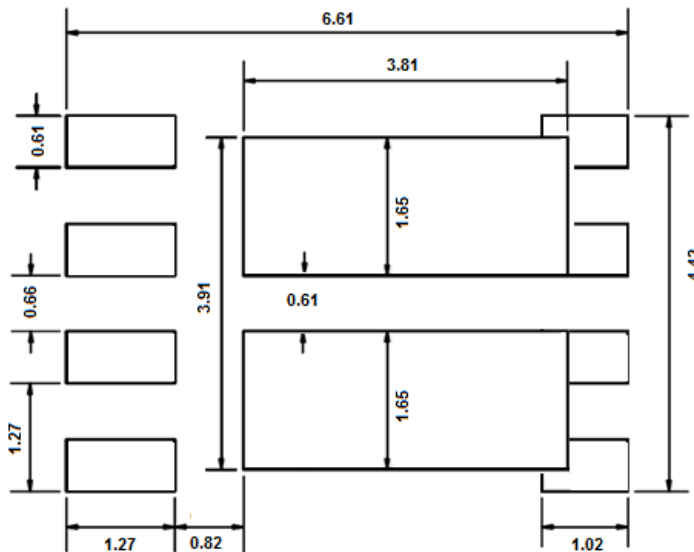
Package Outline Dimensions (Unit: mm)



PDFN5x6-8LC		
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)

PDFN5x6-8LC



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