

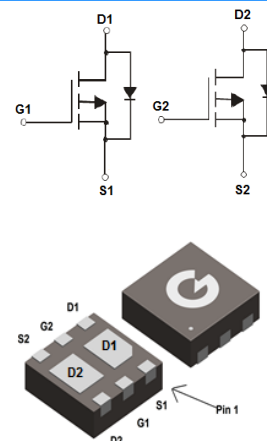
Features

- Advanced trench technology
- High-speed switching
- Low threshold voltage
- HBM: JESD22-A114-B: 1A
- RoHS compliant with Halogen-free

HF

Mechanical Data

- Case: DFN2020-6LC
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



DFN2020-6LC

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GBLP2202DF2	DFN2020-6LC	3000 pcs / Tape & Reel	P2202

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	-20	V
Gate-to-Source Voltage	V _{GSS}	±12	V
Continuous Drain Current (T _C = 25°C)	I _D	-10	A
Continuous Drain Current (T _A = 25°C) ^{*1}		-5	
Continuous Drain Current (T _A = 70°C) ^{*1}		-4	
Pulsed Drain Current (t _p = 10μs, T _A = 25°C)	I _{DM}	-30	A
Single Pulse Avalanche Energy ^{*4}	E _{AS}	10	mJ
Power Dissipation (T _A = 25°C) ^{*1}	P _D	1.78	W
Power Dissipation (T _A = 25°C) ^{*2}		0.73	
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 _{θJC}	-	-	20	°C/W
Thermal Resistance Junction-to-Air ^{*1}	R _{θJA}	-	62	70	°C/W
Thermal Resistance Junction-to-Air ^{*2}		-	-	171	

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ 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	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20V, V _{GS} = 0V	-	-	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±12V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *3	V _{GS} = -4.5V, I _D = -2.8A	-	35	50	mΩ
		V _{GS} = -2.5V, I _D = -2A	-	50	70	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.5	-0.75	-0.9	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	29	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	1009	-	pF
C _{OSS}	Output Capacitance	V _{DS} = -5V	-	134	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	111	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *5	V _{DD} = -15V, I _D = -4.2A R _L = 3.6Ω, V _{GS} = -10V R _G = 6Ω	-	5.9	-	ns
t _r	Turn-on Rise Time *5		-	3.6	-	
t _{d(OFF)}	Turn-Off Delay Time *5		-	32.4	-	
t _f	Turn-Off Fall Time *5		-	2.6	-	
Q _G	Total Gate-Charge	V _{DD} = -16V	-	10.7	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = -4.5V	-	2.2	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = -4.2A	-	2.7	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *3	I _{SD} = -4.1A, V _{GS} = 0V	-	-0.85	-1.2	V

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
2. The data tested by surface mounted on a minimum recommended FR-4 board
3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
4. The E_{AS} data shows Max. rating. The test condition is $V_{DD} = -10V, V_{GS} = -6V, L = 0.5mH$
5. Guaranteed by design, not subject to production

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

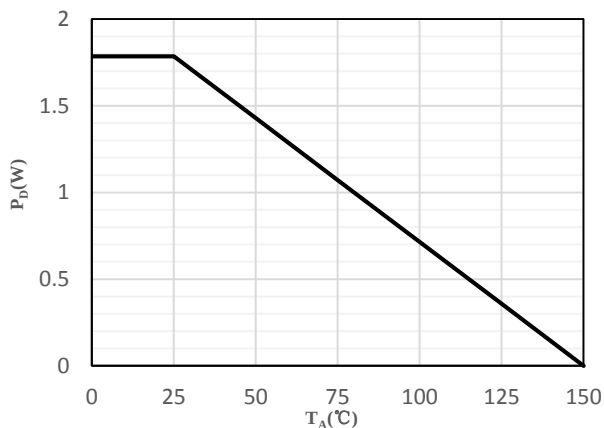


Fig 1 Power Dissipation

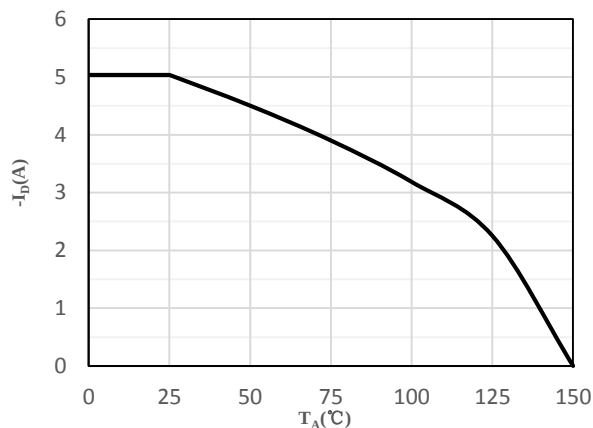


Fig 2 Drain Current

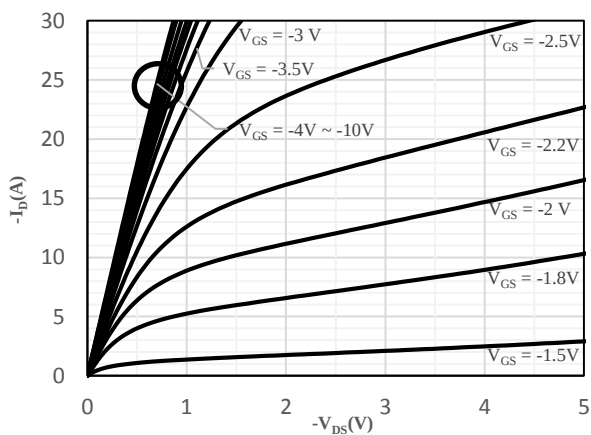


Fig 3 Typical Output Characteristics

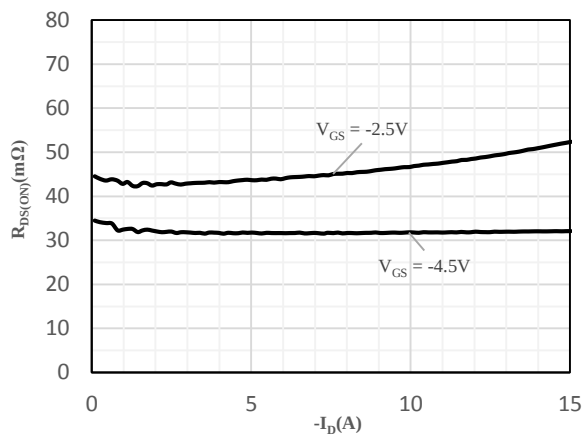


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

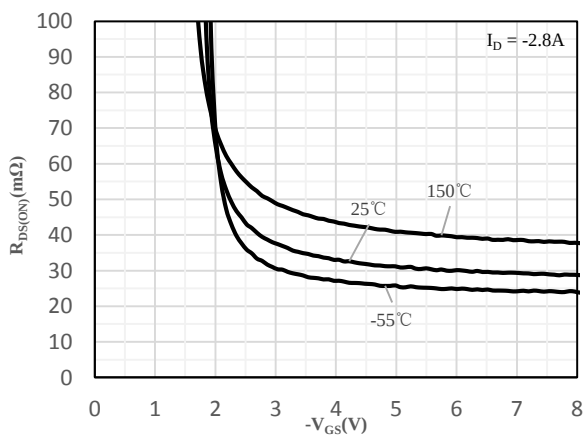


Fig 5 On-Resistance vs. Gate-Source Voltage

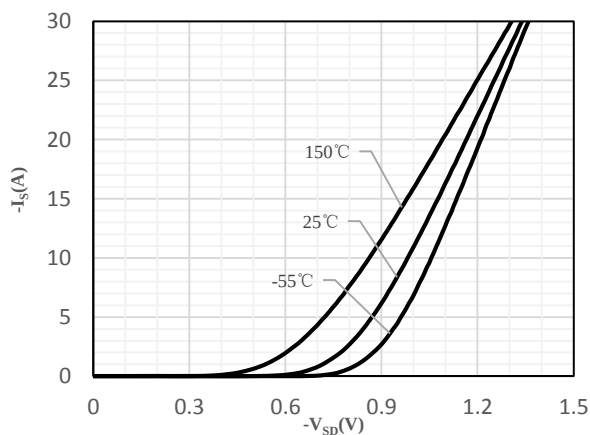


Fig 6 Body-Diode Characteristics

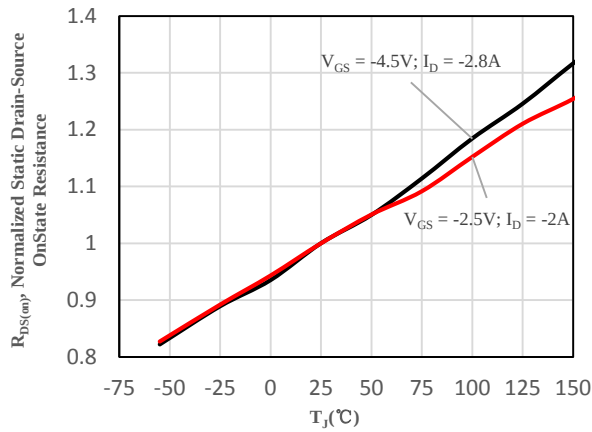


Fig 7 Normalized On-Resistance vs. Junction Temperature

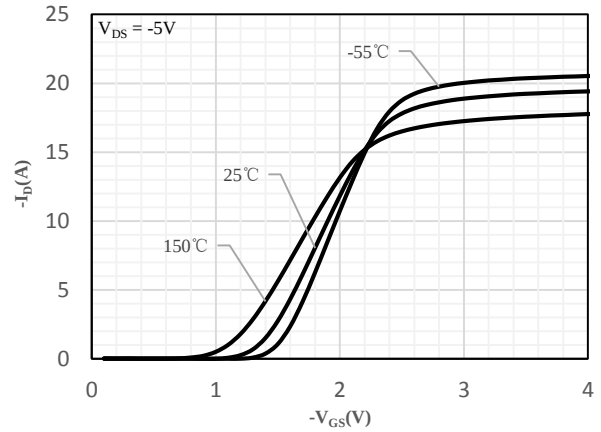


Fig 8 Transfer Characteristics

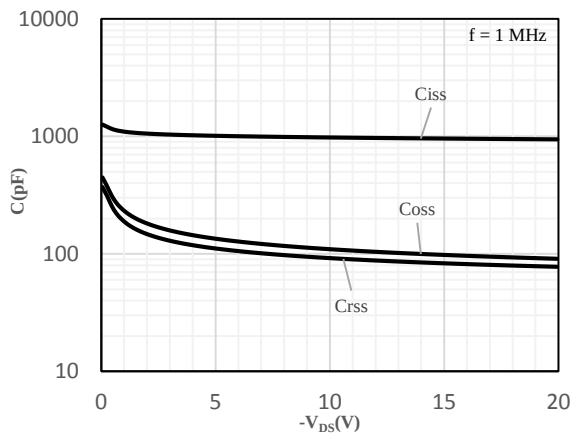


Fig 9 Capacitance Characteristics

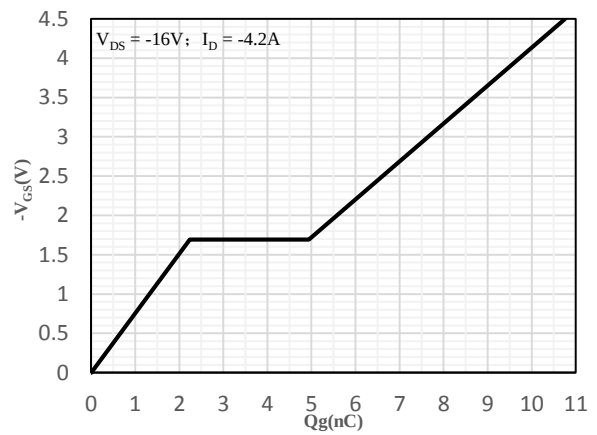


Fig 10 Gate-Charge Characteristics

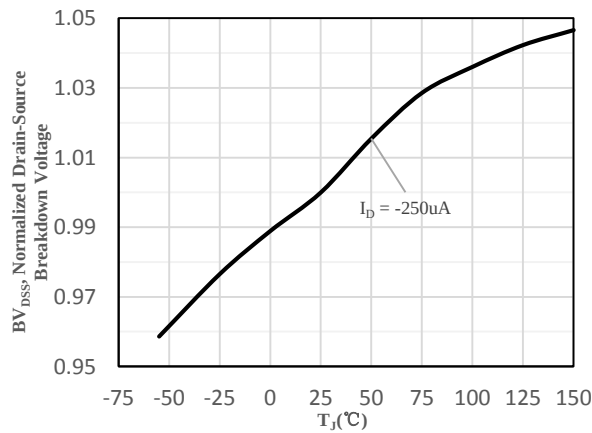


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

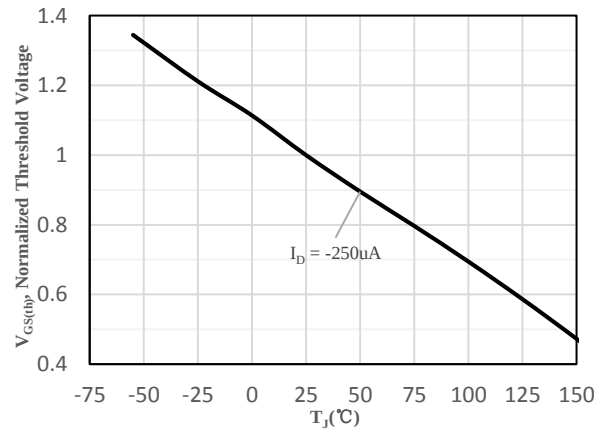


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

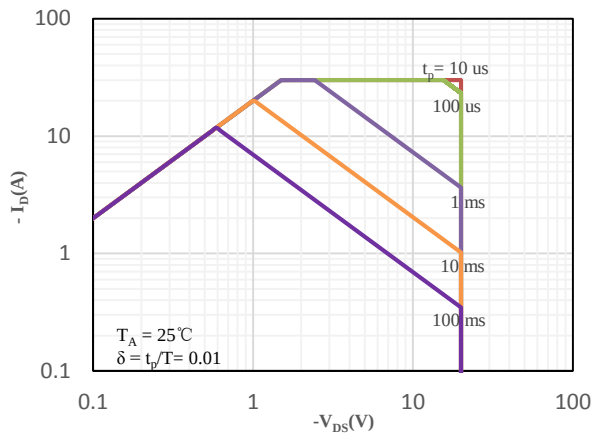


Fig 13 Safe Operation Area

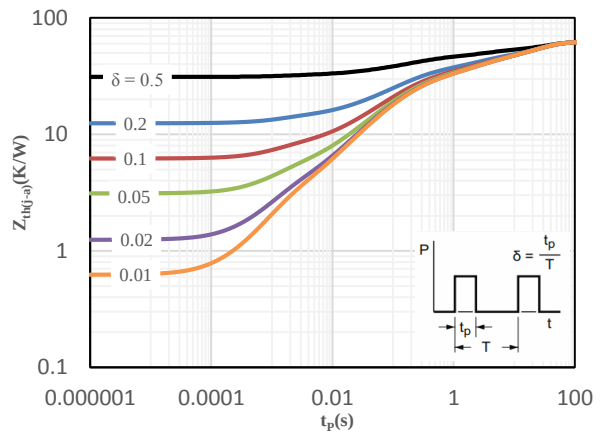
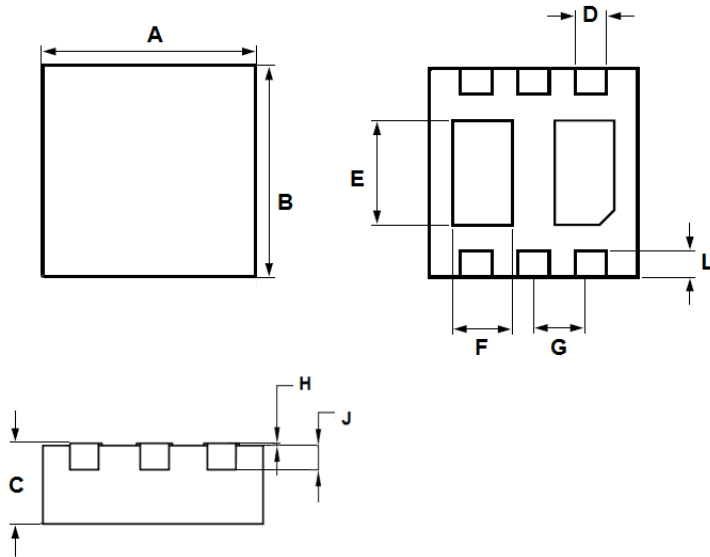


Fig 14 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



DFN2020-6LC		
Dimension	Min.	Max.
A	1.900	2.100
B	1.900	2.100
C	0.500	0.600
D	0.250	0.350
E	0.800	1.000
F	0.600	0.800
G	0.550	0.750
H	0.000	0.050
J	0.103	0.303
L	0.174	0.326

Mounting Pad Layout (Unit: mm)

DFN2020-6LC

