

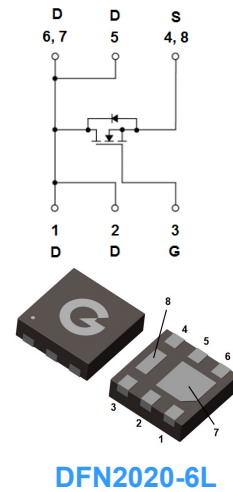
Features

- Super low gate charge
- Green device available
- Excellent C_{dV} / d_t effect decline
- Advanced high cell density trench technology

HF

Mechanical Data

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



Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL2312DF1	DFN2020-6L	3000 pcs / Tape & Reel	2312

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	20	V
Gate-to-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	9.5	A
Pulsed Drain Current *3	I_{DM}	38	A

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

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$) *3	P_D	2.4	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	52	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

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} = ±8V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Static Drain-Source On-resistance ^{*2}	V _{GS} = 4.5V, I _D = 5A	-	16	23	mΩ
		V _{GS} = 2.5V, I _D = 4.5A	-	20	29	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.8	1	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 8V f = 1.0MHz	-	754	-	pF
C _{OSS}	Output Capacitance		-	145	-	
C _{RSS}	Reverse Transfer Capacitance		-	139	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 10V V _{GS} = 4.5V R _G = 6Ω I _D = 1A	-	15	-	ns
t _r	Turn-on Rise Time		-	40	-	
t _{d(OFF)}	Turn-Off Delay Time		-	48	-	
t _f	Turn-Off Fall Time		-	31	-	
Q _G	Total Gate-Charge	V _{DD} = 10V V _{GS} = 4.5V I _D = 5A	-	12	-	nC
Q _{GS}	Gate to Source Charge		-	1.7	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	4.2	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{*2}	I _{SD} = 1.8A, V _{GS} = 0V, T _J = 25°C	-	-	1.2	V
I _S	Diode Continuous Forward Current ^{*1, 4}	T _A = 25°C	-	-	9.5	A
I _{SM}	Pulsed Source-Drain Current ^{*2, 4}		-	-	38	A

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper
- The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The power dissipation PD is based on $T_{J(MAX)} = 150^\circ\text{C}$, using junction-to-air thermal resistance

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

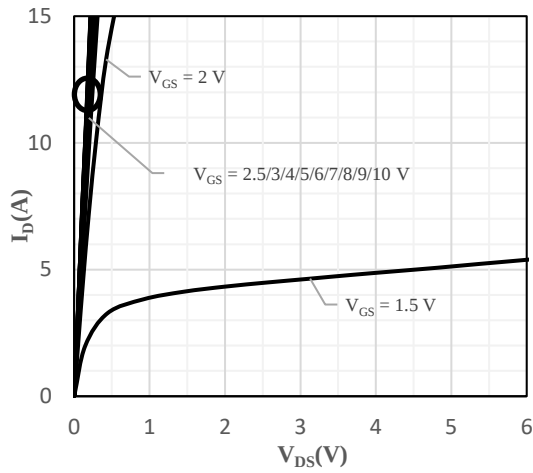


Fig 1 On-Region Characteristics

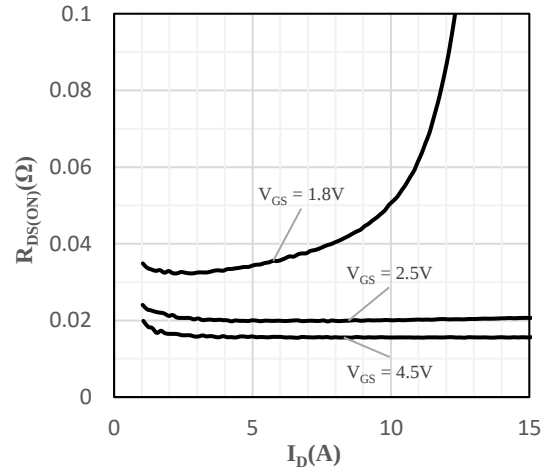


Fig 2 $R_{DS(on)}$ vs. Drain Current

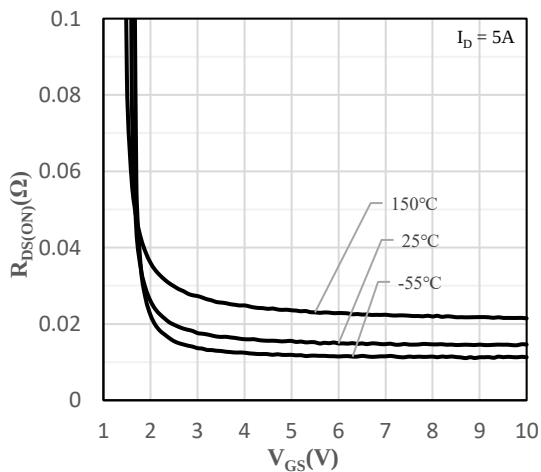


Fig 3 On-Resistance vs. Gate-Source Voltage

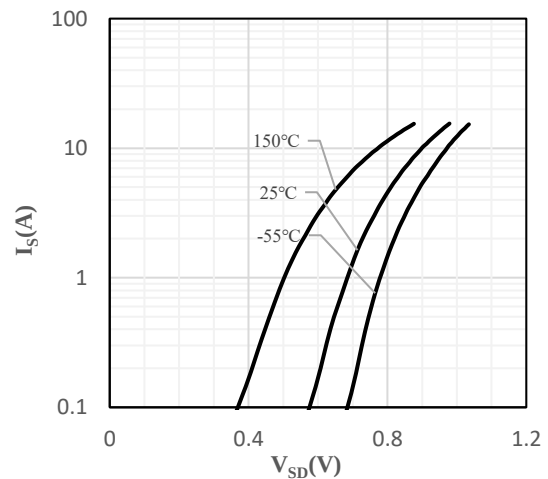


Fig 4 Body-Diode Characteristics

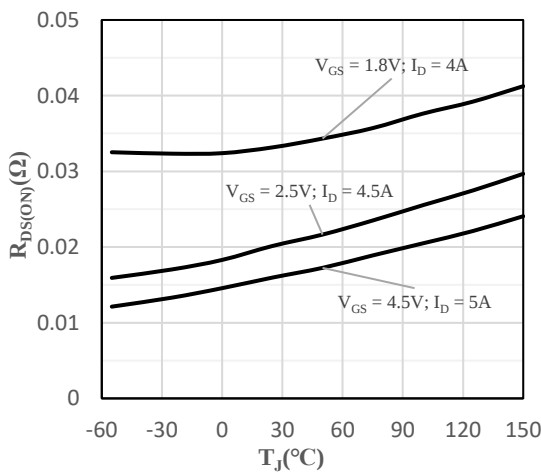


Fig 5 On-Resistance vs. Junction Temperature

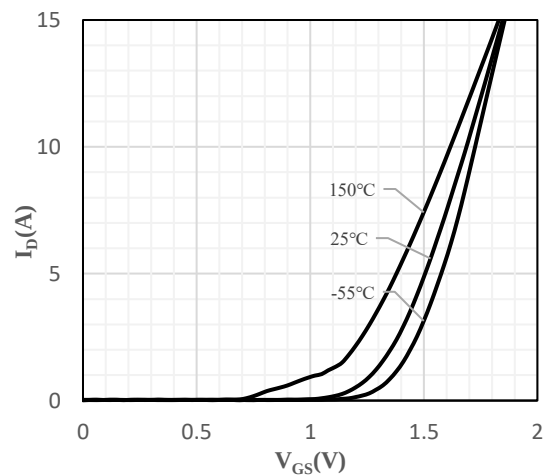


Fig 6 Transfer Characteristics

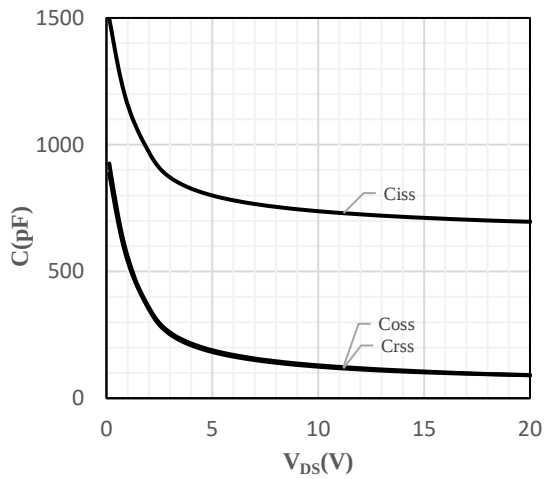


Fig 7 Capacitance Characteristics

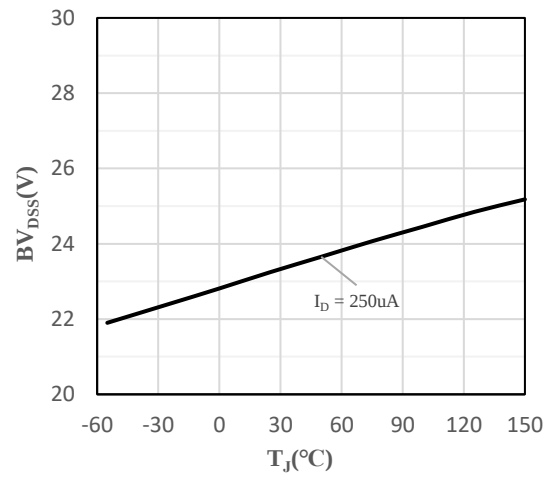


Fig 8 Drain-Source vs. Junction Temperature

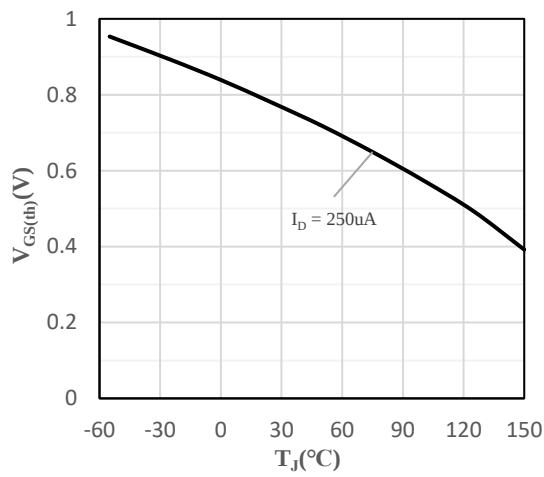


Fig 9 Gate Voltage vs. Junction Temperature

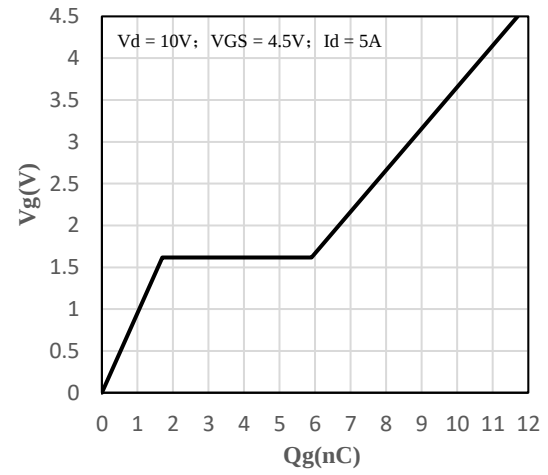


Fig 10 Gate Charge Characteristics

Package Outline Dimensions (Unit: mm)

DFN2020-6L			
Dimension	Min.	Max.	
A	1.924	2.076	
B	1.924	2.076	
C	0.500	0.600	
D	0.250	0.350	
E	0.900	1.100	
F	0.850	1.050	
G	0.200	0.400	
H	0.000	0.050	
I	0.550	0.750	
J	0.103	0.303	
K	0.150	0.350	
L	0.200	0.400	
M	0.700	0.900	

Mounting Pad Layout (Unit: mm)

DFN2020-6L	

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