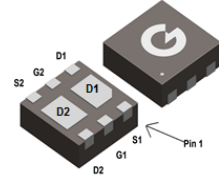
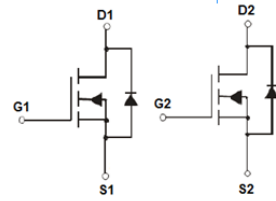


Features

- Advanced trench technology
- Low on-resistance
- Fast switching speed
- RoHS compliant with Halogen-free

HF



DFN2020-6LC

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

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GBLN3304DF2	DFN2020-6LC	3000 pcs / Tape & Reel	N3304

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	30	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}		6	A
Continuous Drain Current (T _A = 100°C) ^{*1}		3.8	A
Pulsed Drain Current (t _p = 10μs, T _A = 25°C)	I _{DM}	30	A
Single Pulse Avalanche Energy ^{*3}	E _{AS}	7	mJ
Power Dissipation (T _C = 25°C)	P _D	4.2	W
Power Dissipation (T _A = 25°C) ^{*1}		1.5	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 _{θJC}	-	-	30	°C/W
Thermal Resistance Junction-to-Air ^{*1}	R _{θJA}	-	-	83	°C/W

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	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 12V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance *2	$V_{GS} = 10V, I_D = 5.7A$	-	18	26.5	m Ω
		$V_{GS} = 4.5V, I_D = 5A$	-	22	32	
		$V_{GS} = 2.5V, I_D = 3A$	-	40	48	
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.7	0.8	1.4	V
R_G	Gate Resistance	$V_{GS} = 0V, f = 1MHz$	-	9	-	Ω
Dynamic Characteristics						
g_{FS}	Forward Transconductance	$V_{DS} = 5V, I_D = 5.7A$	-	26	-	S
C_{ISS}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 15V$ $f = 1.0MHz$	-	451	-	pF
C_{OSS}	Output Capacitance		-	64	-	
C_{RSS}	Reverse Transfer Capacitance		-	59	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time *4	$V_{GS} = 10V$ $V_{DD} = 15V$ $R_L = 2.6\Omega$ $R_G = 3\Omega$	-	3.2	-	ns
t_r	Turn-on Rise Time *4		-	3.5	-	
$t_{d(OFF)}$	Turn-Off Delay Time *4		-	21.5	-	
t_f	Turn-Off Fall Time *4		-	2.7	-	
Q_G	Total Gate-Charge	$V_{DS} = 15V$ $V_{GS} = 4.5V$ $I_D = 5.7A$	-	7	-	nC
Q_{GS}	Gate to Source Charge		-	1.4	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	2.2	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *2	$I_S = 1A, V_{GS} = 0V$	-	0.7	1.0	V
t_{rr}	Body Diode Reverse Recovery Time	$I_F = 5A, V_{GS} = 0V$ $di/dt = 100A / \mu s$	-	85	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	50	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 15V, V_{GS} = 6V, L = 0.1mH$
4. Guaranteed by design, not subject to production

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

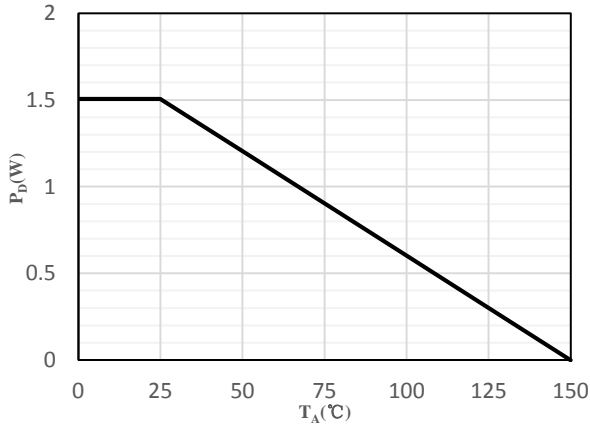


Fig 1 Power Dissipation

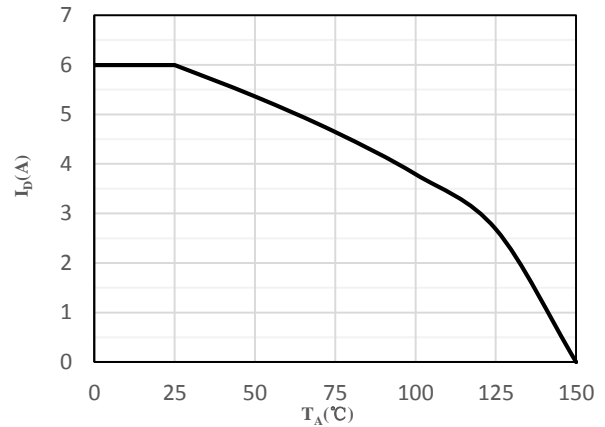


Fig 2 Drain Current

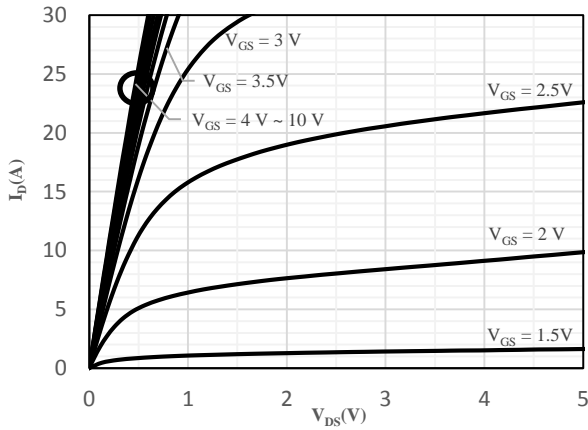


Fig 3 Typical Output Characteristics

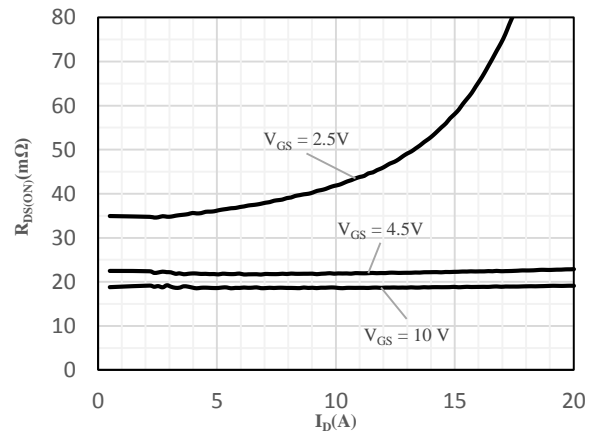


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

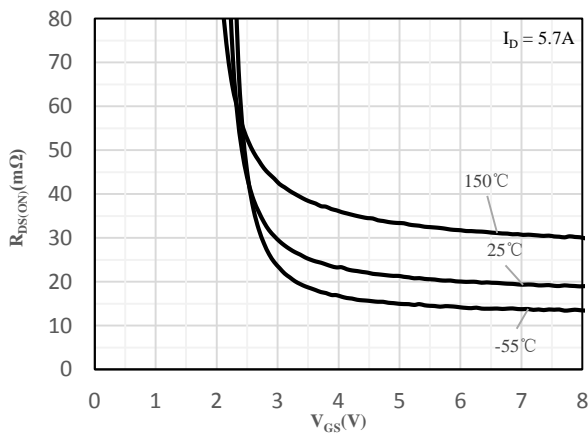


Fig 5 On-Resistance vs. Gate-Source Voltage

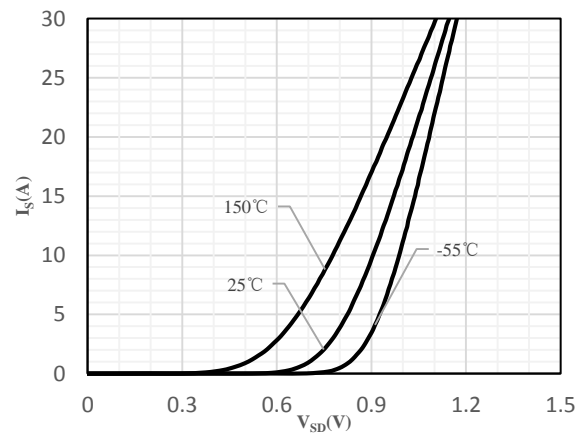


Fig 6 Body-Diode Characteristics

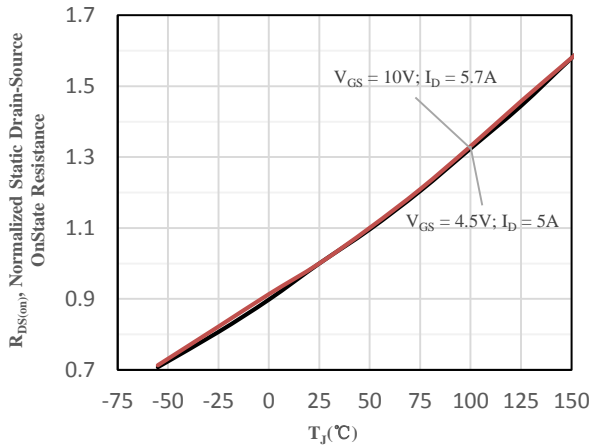


Fig 7 Normalized On-Resistance vs. Junction Temperature

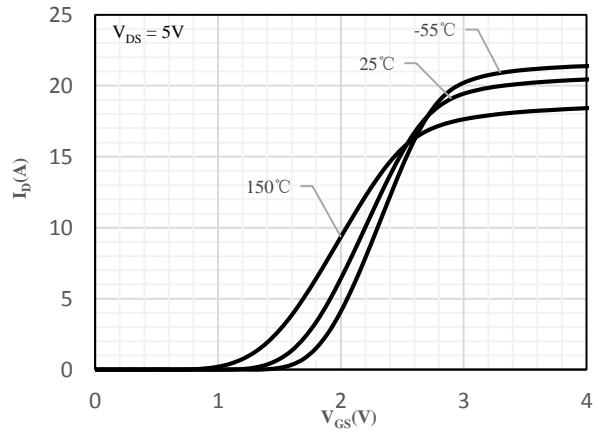


Fig 8 Transfer Characteristics

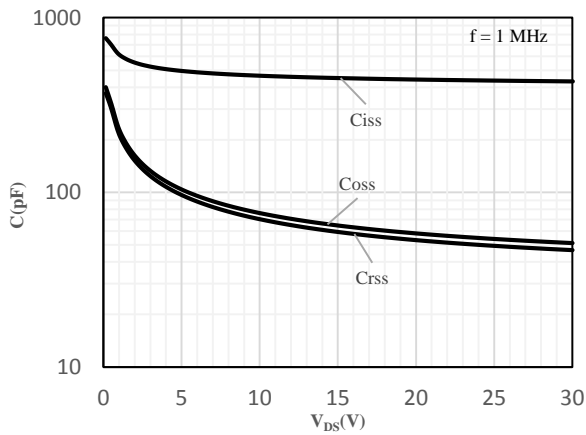


Fig 9 Capacitance Characteristics

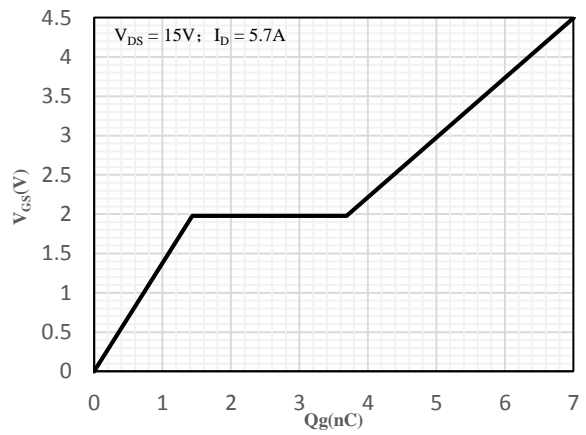


Fig 10 Gate-Charge Characteristics

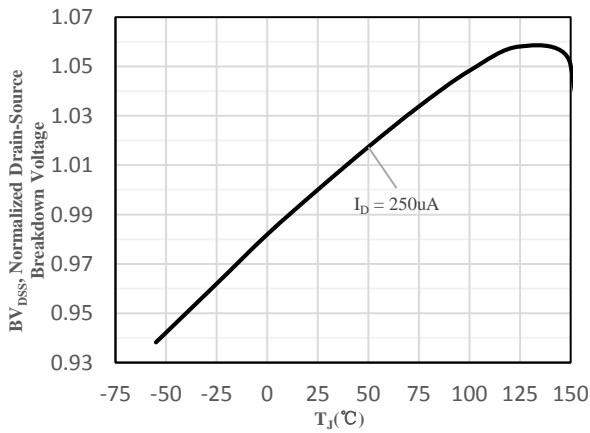


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

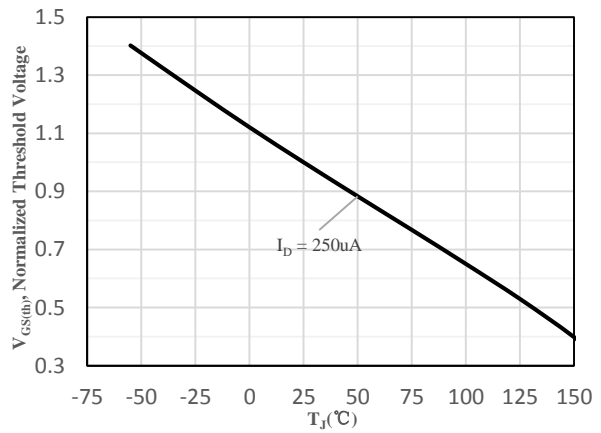
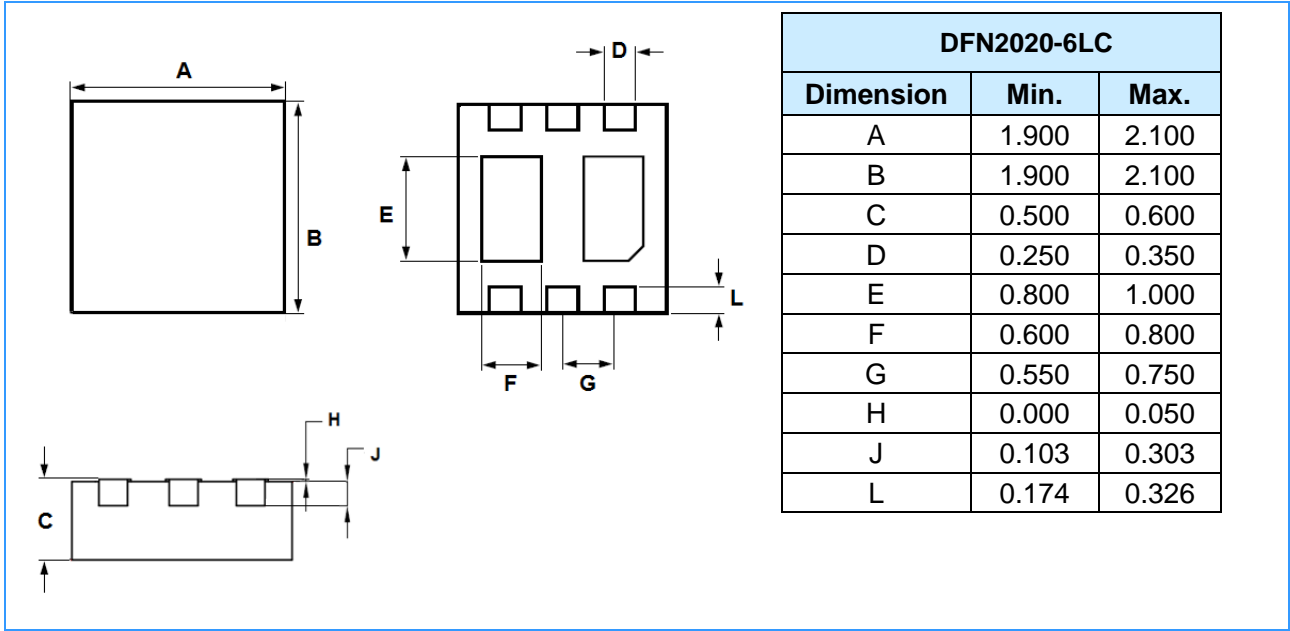


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)

