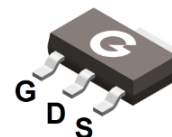
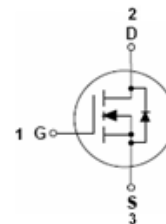


Features

- Advanced Trench technology
- Low gate drive voltage (Logic level capable)
- Low input capacitance
- Low on-resistance
- Fast switching speed
- RoHS compliant with Halogen-free

HF



SOT-223

Mechanical Data

- Case: SOT-223
- 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
BL3N20R	SOT-223	4000 pcs / Tape & Reel	3N20

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	200	V
Gate-to-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	3	A
Pulsed Drain Current (t _p = 10μs, T _A = 25°C)	I _{DM}	12	A
Single Pulse Avalanche Energy *3	E _{AS}	1	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T _A = 25°C) *1	P _D	3.1	W
Thermal Resistance Junction-to-Air *1	R _{θJA}	40.3	°C/W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°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	200	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 200V, 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 = 3A	-	0.65	0.75	Ω
		V _{GS} = 5V, I _D = 3A	-	0.67	0.78	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	1.6	2.5	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V f = 1.0MHz	-	580	-	pF
C _{OSS}	Output Capacitance		-	90	-	
C _{RSS}	Reverse Transfer Capacitance		-	3	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *4	V _{DD} = 100V V _{GS} = 10V R _G = 2.5Ω R _L = 15Ω	-	10	-	ns
t _r	Turn-on Rise Time *4		-	12	-	
t _{d(OFF)}	Turn-Off Delay Time *4		-	15	-	
t _f	Turn-Off Fall Time *4		-	15	-	
Q _G	Total Gate-Charge	V _{DD} = 100V V _{GS} = 10V I _D = 2A	-	12	-	nC
Q _{GS}	Gate to Source Charge		-	2.5	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	3.8	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = 2A, V _{GS} = 0V	-	0.86	0.95	V
t _{rr}	Reverse recovery time	I _S = 2A, V _{GS} = 0V,	-	177	-	ns
Q _{rr}	Reverse recovery charge	di/dt = 100A/μs	-	1.4	-	μC

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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
3. The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 50\text{V}, V_{GS} = 10\text{V}, L = 0.5\text{mH}$
4. Guaranteed by design, not subject to production

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

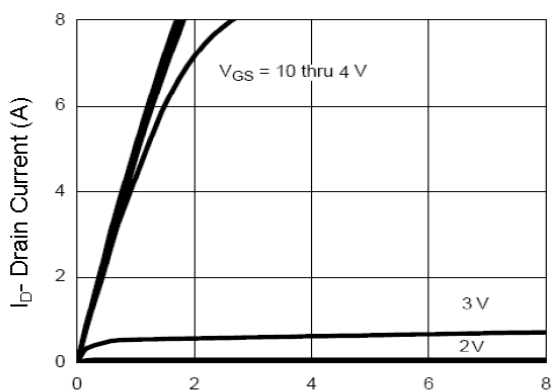


Figure 1 Output Characteristics

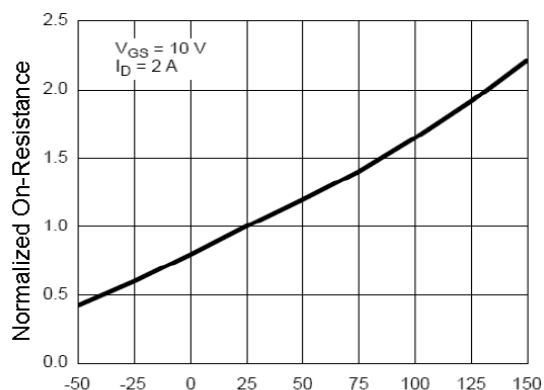


Figure 4 $R_{ds(on)}$ -Junction Temperature

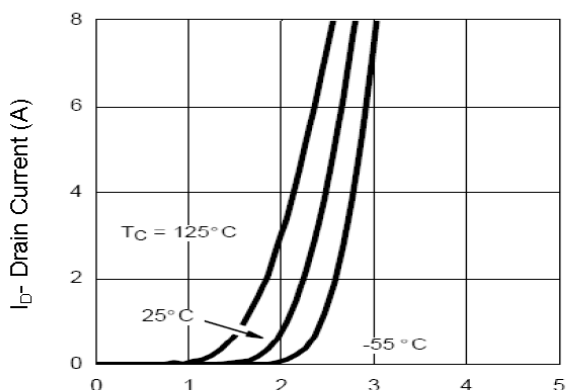


Figure 2 Transfer Characteristics

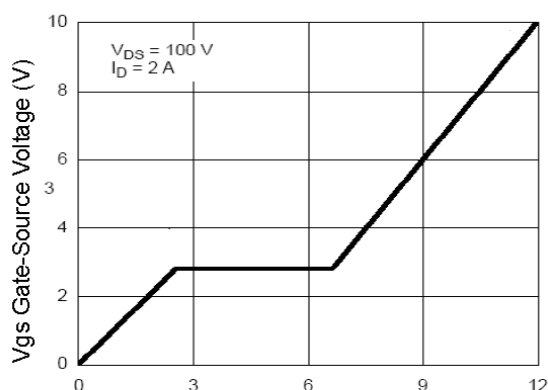


Figure 5 Gate Charge

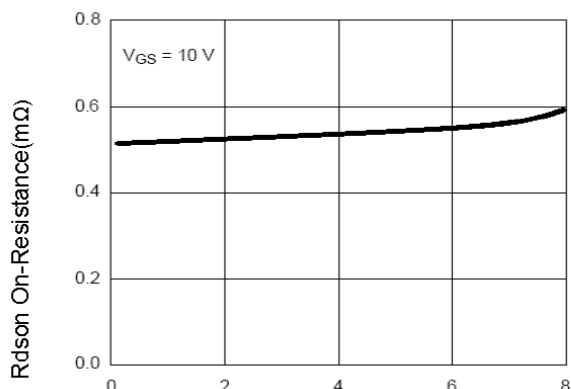


Figure 3 $R_{ds(on)}$ - Drain Current

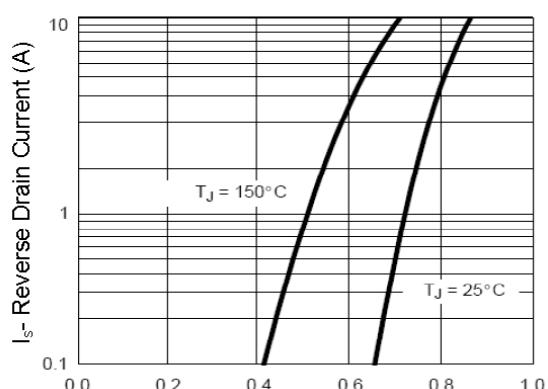


Figure 6 Source- Drain Diode Forward

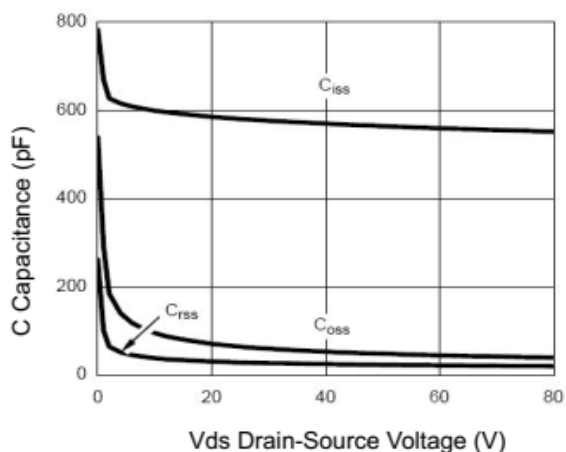


Figure 7 Capacitance vs Vds

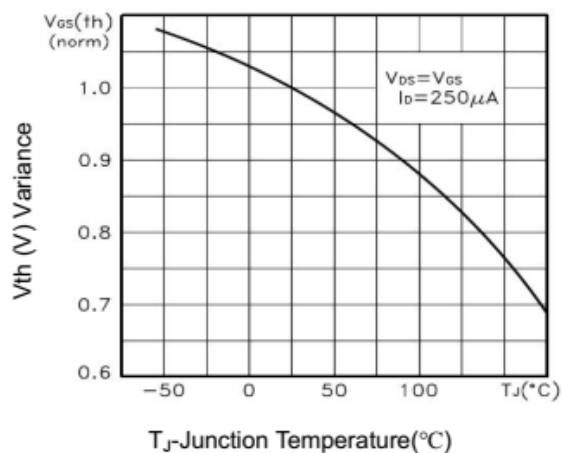


Figure 9 $V_{GS(th)}$ vs Junction Temperature

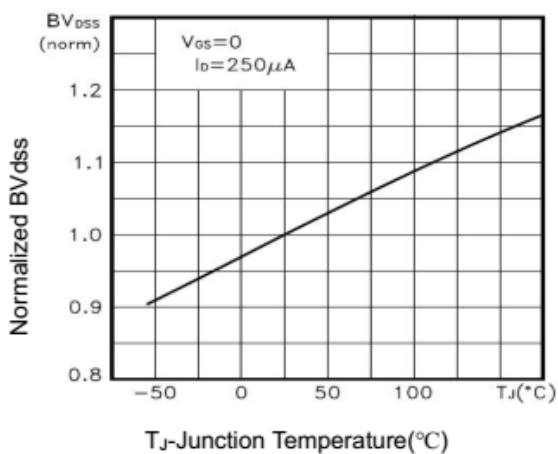
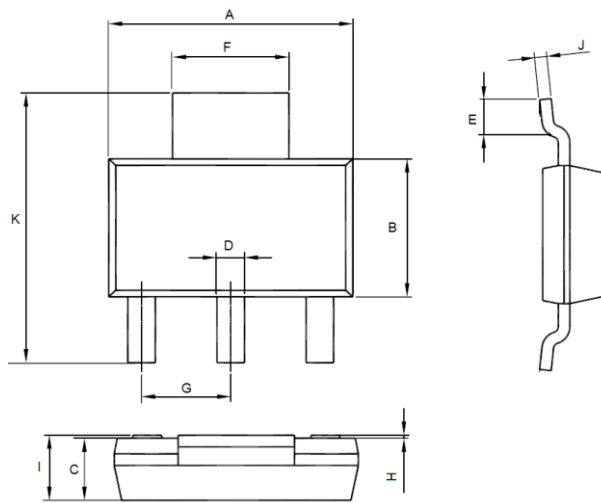


Figure 8 BV_{DSS} vs Junction Temperature

Package Outline Dimensions (Unit: mm)



SOT-223		
Dimension	Min.	Max.
A	6.10	6.50
B	3.30	3.70
C	1.50	1.70
D	0.66	0.82
E	0.90	1.15
F	2.90	3.10
G	2.20	2.40
H	0.02	0.10
I	1.52	1.80
J	0.20	0.40
K	6.70	7.30

Mounting Pad Layout (Unit: mm)

SOT-223

