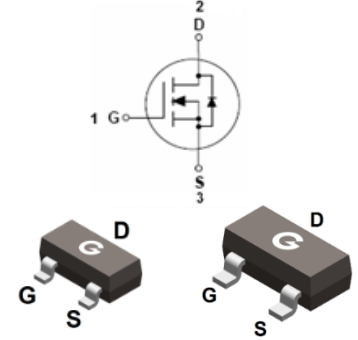


Features

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

HF



BL03N06LC

SOT-23

BL03N06LC-3L

SOT-23-3L

Mechanical Data

- Case: SOT-23, SOT-23-3L
- 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
BL03N06LC	SOT-23	3000 pcs / Tape & Reel	3N06L
BL03N06LC-3L	SOT-23-3L	3000 pcs / Tape & Reel	3N06L

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	60	V
Gate-to-Source Voltage	V _{GSS}	±16	V
Continuous Drain Current (T _A = 25°C) *1	I _D	3	A
Continuous Drain Current (T _A = 70°C) *1		2.4	
Pulsed Drain Current (t _p = 10μs, T _A = 25°C)	I _{DM}	20	A
Single Pulse Avalanche Energy (L = 0.5mH) *4	E _{AS}	9	mJ
Power Dissipation (T _A = 25°C) *1	P _D	1.25	W
Power Dissipation (T _A = 25°C) *2		0.35	
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}	-	-	50	°C/W
Thermal Resistance Junction-to-Air *1	R _{θJA}	-	-	100	°C/W
Thermal Resistance Junction-to-Air *2		-	-	357	

Electrical Characteristics (@ $T_c = 25^\circ\text{C}$ 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	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±16V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *3	V _{GS} = 10V, I _D = 3A	-	100	130	mΩ
		V _{GS} = 4.5V, I _D = 2A	-	105	150	
		V _{GS} = 2.5V, I _D = 1A	-	110	200	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.5	0.7	1	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	2.3	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 30V f = 1MHz	-	680	-	pF
C _{OSS}	Output Capacitance		-	26	-	
C _{RSS}	Reverse Transfer Capacitance		-	20	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *5	V _{DD} = 30V V _{GS} = 10V R _G = 1Ω I _D = 1.5A	-	6.5	-	ns
t _r	Turn-on Rise Time *5		-	15.2	-	
t _{d(OFF)}	Turn-Off Delay Time *5		-	15.2	-	
t _f	Turn-Off Fall Time *5		-	10.3	-	
Q _G	Total Gate-Charge (V _{GS} = 10V)	V _{DD} = 30V V _{GS} = 4.5V I _D = 3A	-	21	-	nC
	Total Gate-Charge (V _{GS} = 4.5V)			8.8		
Q _{GS}	Gate to Source Charge		-	1	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	2.1	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *3	I _{SD} = 3A, V _{GS} = 0V	-	0.82	1.2	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0V, I _F = 3A	-	8	-	ns
Q _{rr}	Reverse Recovery Charge	dI _F /dt = 100A/μs	-	3	-	nC

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 $V_{DD} = 30V, V_{GS} = 10V, L = 0.5mH$
5. Guaranteed by design, not subject to production

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

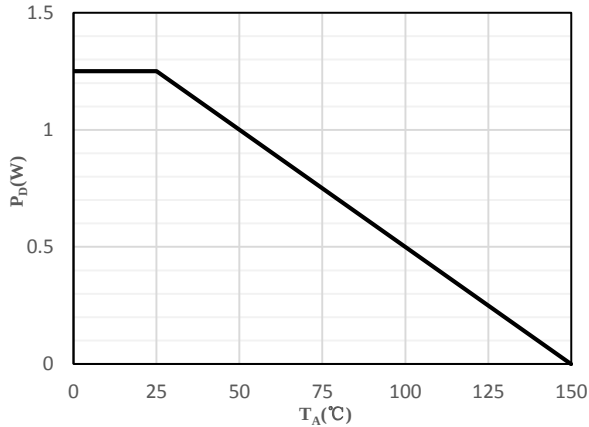


Fig 1 Power Dissipation

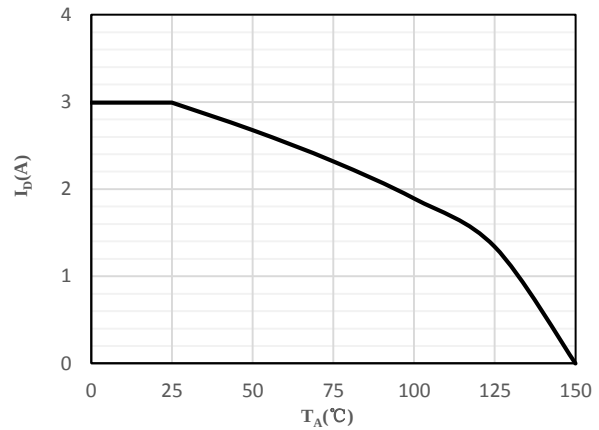


Fig 2 Drain Current

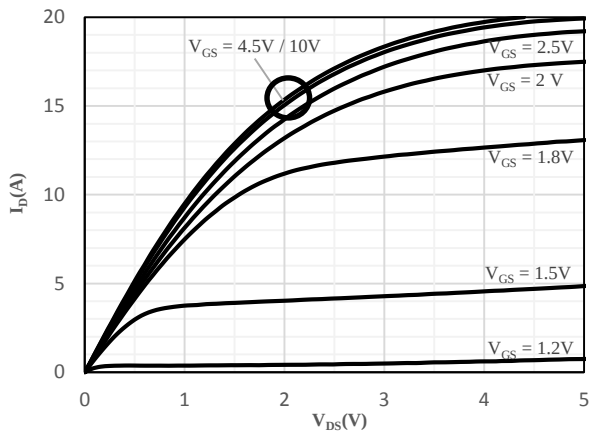
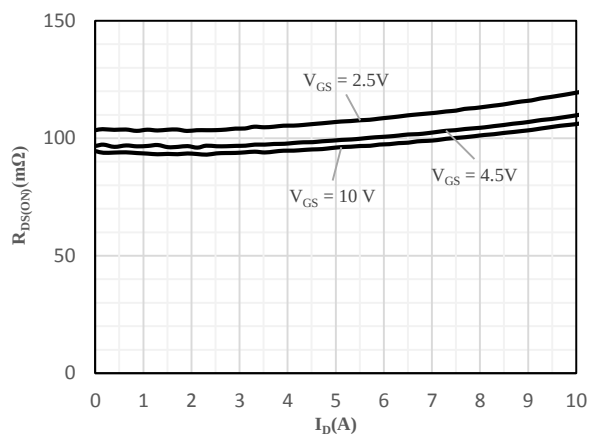


Fig 3 Typical Output Characteristics



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

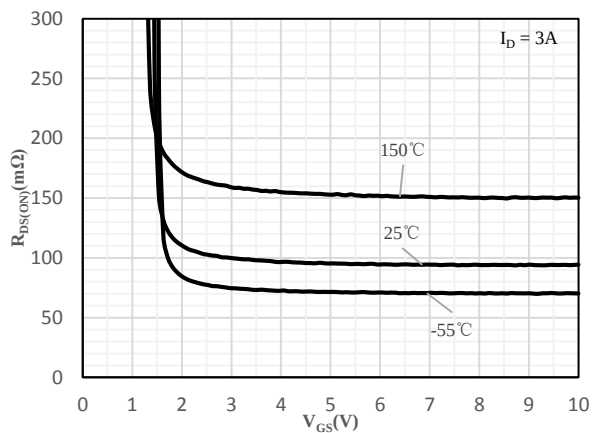


Fig 5 On-Resistance vs. Gate-Source Voltage

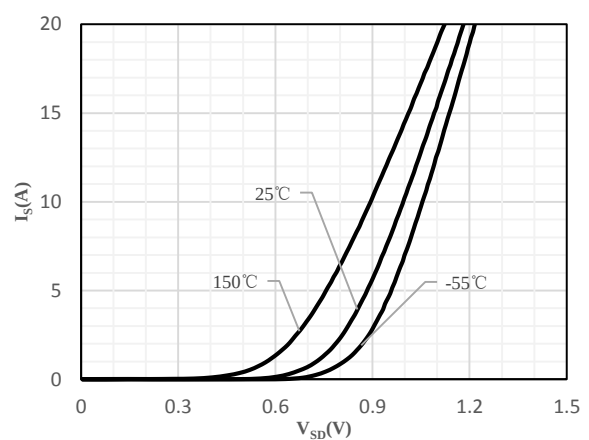


Fig 6 Body-Diode Characteristics

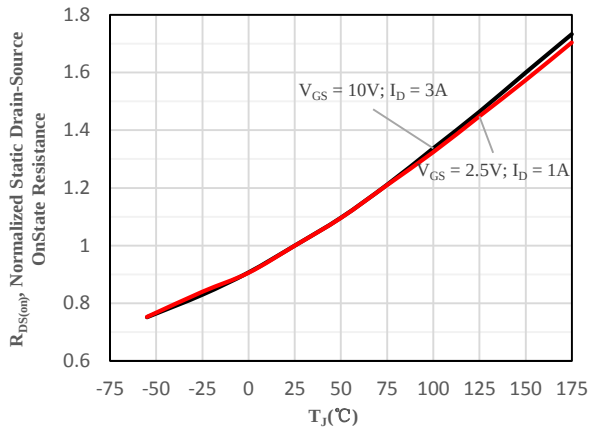


Fig 7 Normalized On-Resistance vs. Junction Temperature

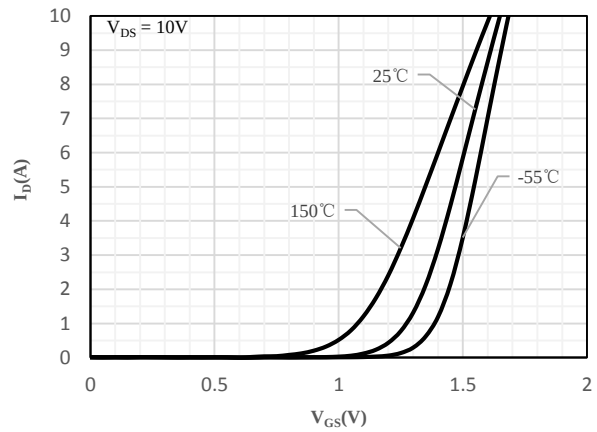


Fig 8 Transfer Characteristics

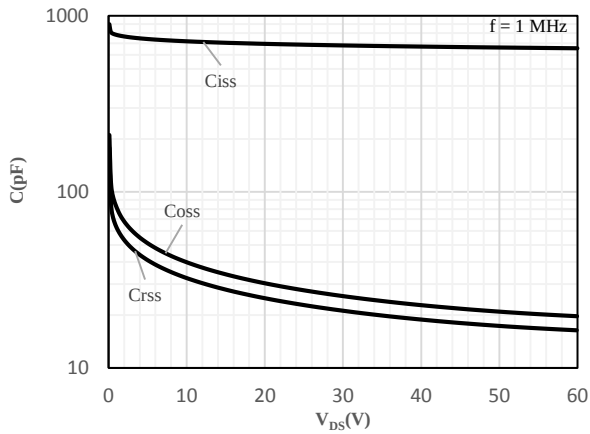


Fig 9 Capacitance Characteristics

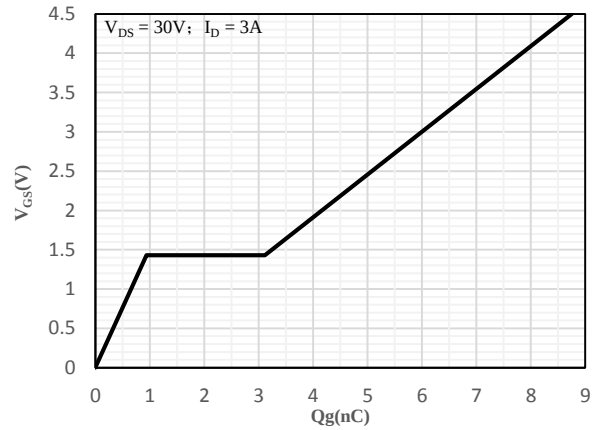


Fig 10 Gate-Charge Characteristics

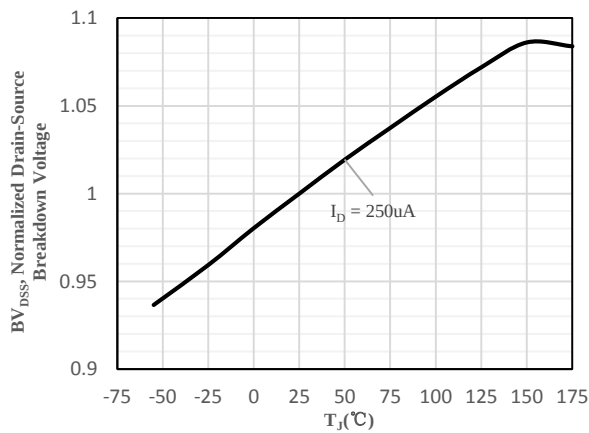


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

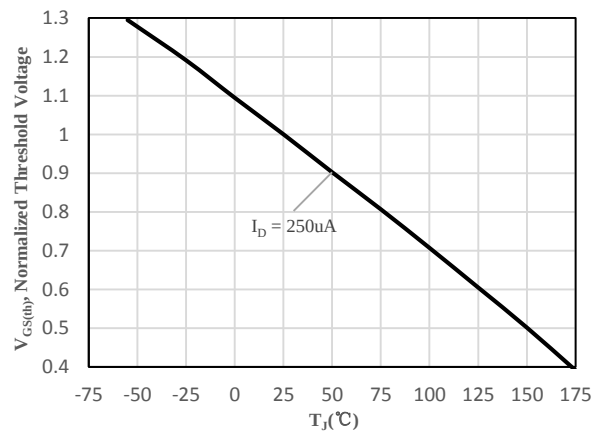


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

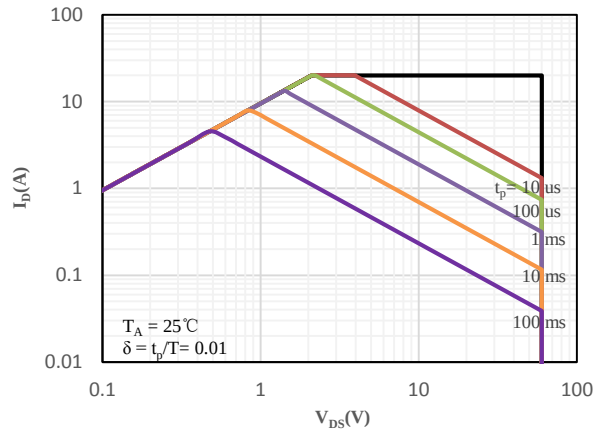


Fig 13 Safe Operating Area

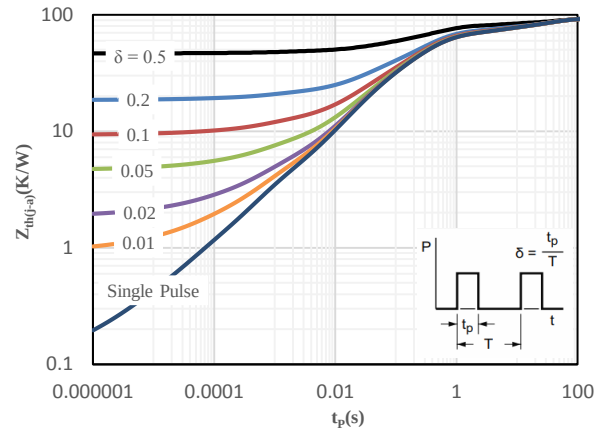
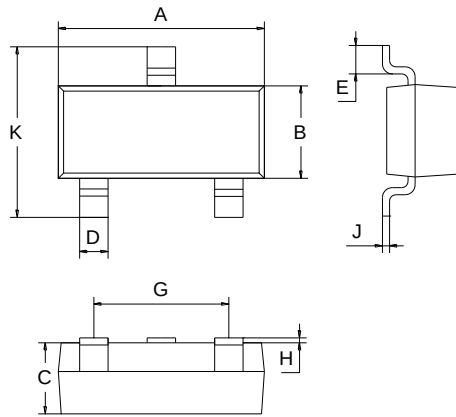
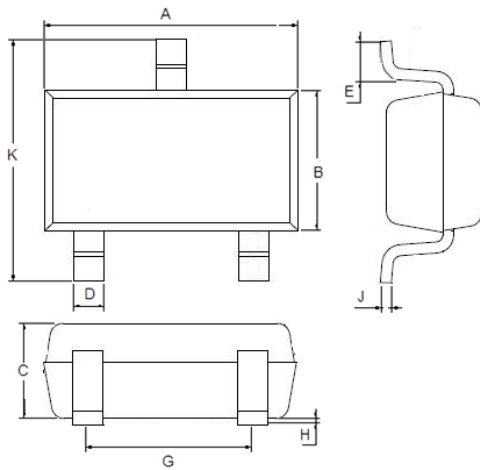


Fig 14 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



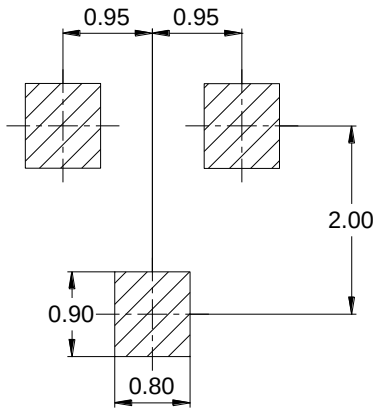
SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60



SOT-23-3L		
Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
G	1.80	2.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

Package Outline Dimensions (Unit: mm)

SOT-23



SOT-23-3L

