

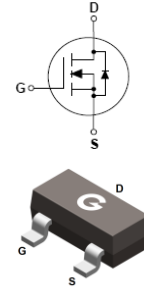
Features

- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable

HF

Mechanical Data

- Case: SOT-23-3L
- Molding Compound, UL Flammability Classification Rating 94V-0.
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208.



SOT-23-3L

Ordering Information

Part Number	Package	Shipping	Marking Code
BL2306BD-3L	SOT-23	3000 pcs / Tape & Reel	S6

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

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate -Source Voltage	V_{GS}	± 20	V
Continuous Drain Current $T_A = 25^{\circ}\text{C}$ $T_A = 70^{\circ}\text{C}$	I_D (Note1,2)	3.16 2.7	A
Pulsed Drain Current ,PW ≤ 300 us, Duty Cycle $\leq 2\%$	I_{DM}	20	A
Continuous Source Current	I_S (Note1,2)	0.62	A
Power Dissipation $T_A=25^{\circ}\text{C}$ $T_A=70^{\circ}\text{C}$	P_D (Note1,2)	0.75 0.48	W

Thermal Characteristics

Parameter	Symbol	Limits	Unit
Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$ (Note1)	166	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_j	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Notes:

1. Surface Mounted on FR4 Board, $t \leq 5$ sec.
2. Pulse width limited by maximum junction temperature.
3. Pulse test: PW ≤ 300 us duty cycle $\leq 2\%$.

Electrical Characteristics (@T_A=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	MIN	TYP	MAX	UNIT
OFF Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30	-	-	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =30V, V _{GS} =0V V _{DS} =30V, V _{GS} =0V, T _J = 55°C	-	-	0.5 10	μA
I _{GSS}	Gate-body Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
ON Characteristics ^(Note 3)						
R _{DS(ON)}	Static Drain-Source On-resistance	V _{GS} =10V, I _D =-3.5A	-	-	0.047	Ω
		V _{GS} =4.5V, I _D =2.8A	-	-	0.065	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =4.5 V, I _D =2.5 A	-	7	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V	-	420	-	pF
C _{oss}	Output Capacitance	V _{DS} = 15V	-	60	-	
C _{rss}	Reverse Transfer Capacitance	f = 1.0MHz	-	53	-	
Q _g	Gate Charge	V _{DS} =15 V, V _{GS} =4.5 V, I _D =1 A	-	5	-	nC
Q _{gs}	Gate-Source Charge		-	1.1	-	
Q _{gd}	Gate-Drain Charge		-	2.6	-	
t _{d(on)}	Turn-On Delay Time	V _{GS} = 10V, V _{DD} = 15V R _g = 3.3Ω I _D = 1A	-	2	-	ns
t _r	Rise Time		-	34	-	
t _{d(off)}	Turn-Off Delay Time		-	13	-	
t _f	Fall Time		-	6	-	
t _{rr}	Reverse Recovery Time	I _F =5 A ,di/dt =100 A/us		8.7		ns
Q _{rr}	Body Diode Reverse Recovery Charge			2.3		nC
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _S =1.25A, V _{GS} =0 V	-	0.8	1.2	V

Ratings and Characteristic Curves ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

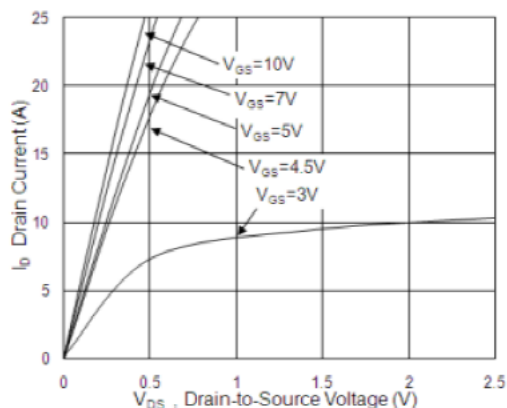


Fig.1 Typical Output Characteristics

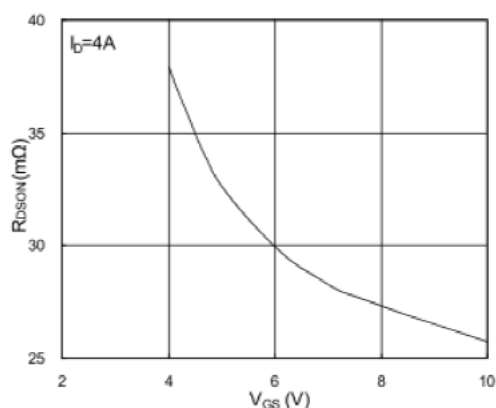


Fig.2 On-Resistance vs. G-S Voltage

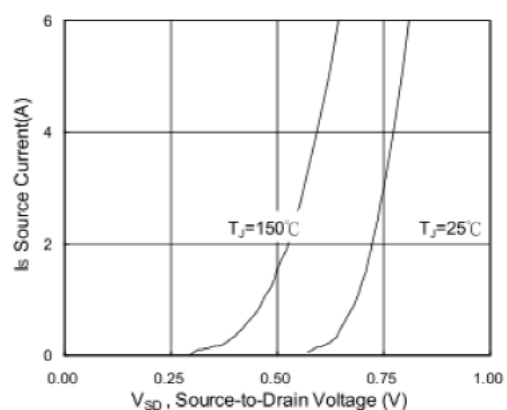


Fig.3 Forward Characteristics of Reverse Diode

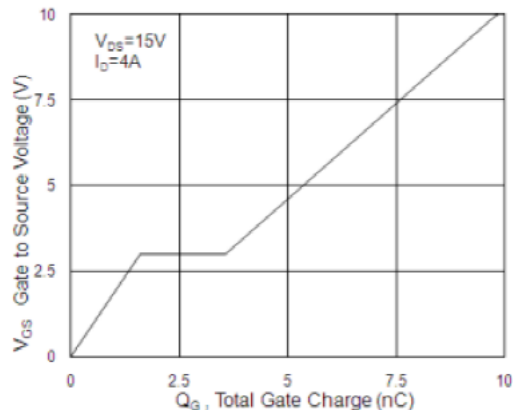


Fig.4 Gate-Charge Characteristics

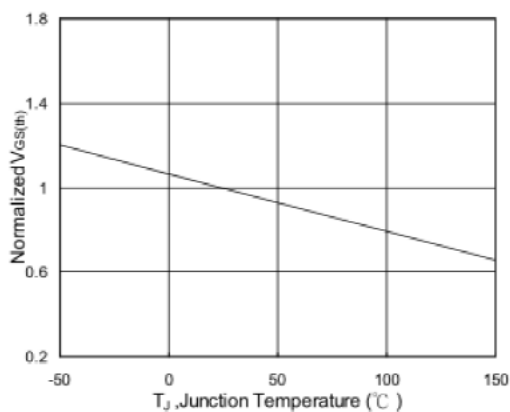


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

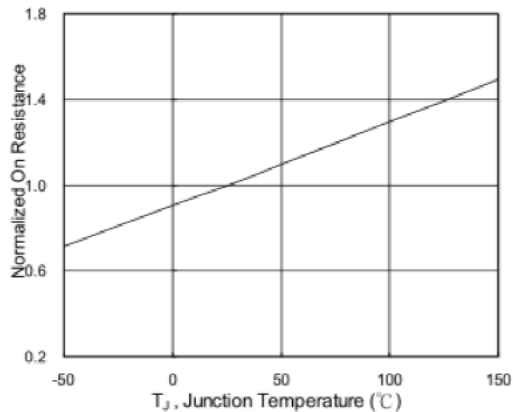


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

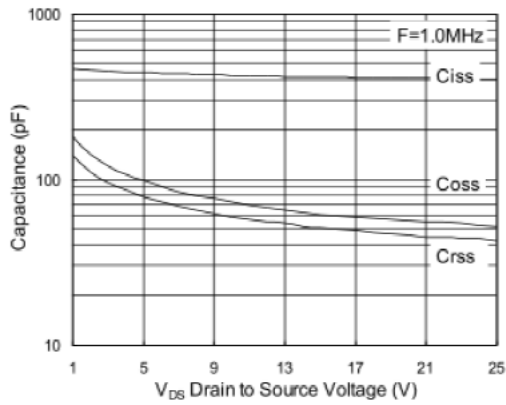


Fig.7 Capacitance

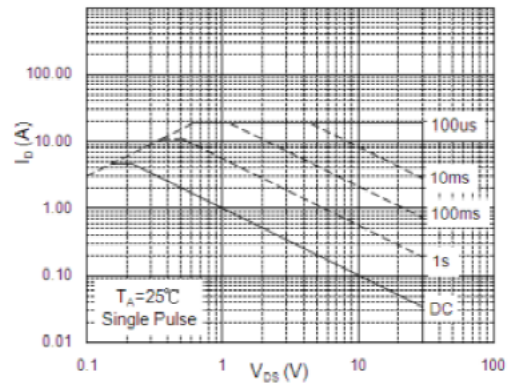


Fig.8 Safe Operating Area

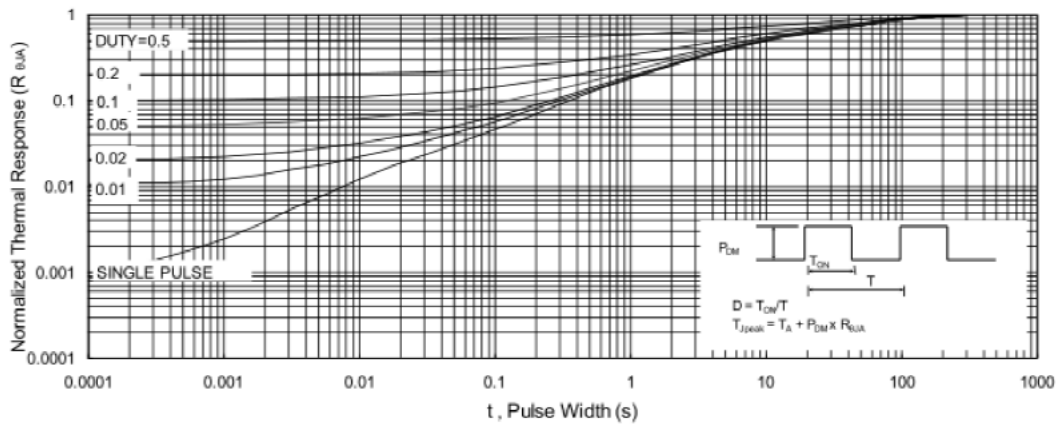
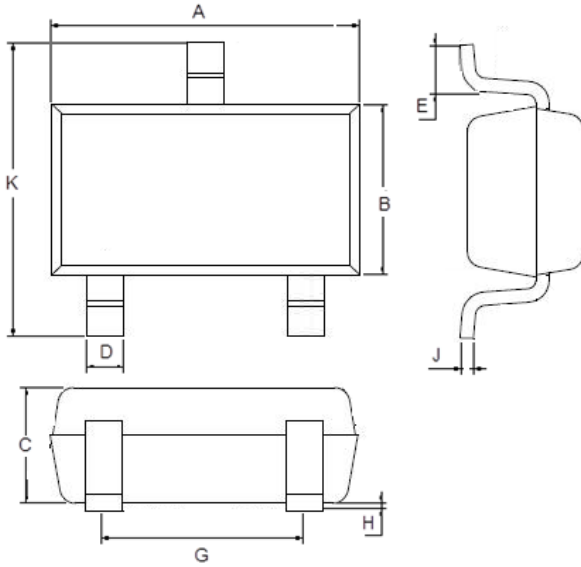


Fig.9 Normalized Maximum Transient Thermal Impedance

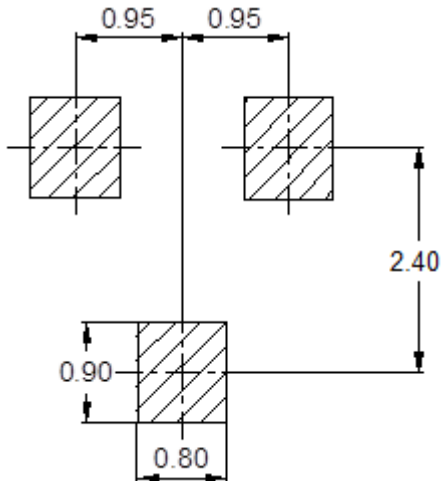
Package Outline Dimensions (Unit: mm)



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

Mounting Pad Layout (Unit: mm)

SOT-23-3L



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