N-Channel Enhancement MOSFET Transistor

BL2302 BL2302-3L

Features

HF

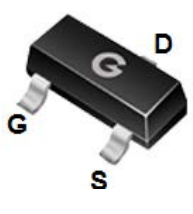
- $R_{DS(ON)}$≤45mΩ@ V_{GS}=4.5V.
- $R_{DS(ON)}$≤59mΩ@ V_{GS}=2.5V.
- Super High Density Cell Design For Extremely Low $R_{DS(ON)}$.
- Exceptional on-resistance and maximum DC current capability.
- Electrostatic Sensitive Devices.

Typical Applications

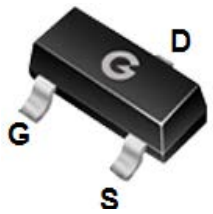
- Power Management In Note Book.
- Portable Equipment.
- DC/DC Converter.

Mechanical Data

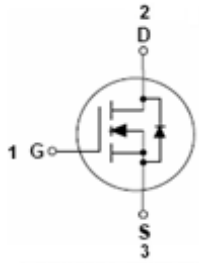
- Case: SOT-23, SOT-23-3L.
- Molding Compound, UL Flammability Classification Rating 94V-0.
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208.



BL2302
SOT-23



BL2302-3L
SOT-23-3L



Ordering Information

Part Number	Package	Shipping	Marking Code
BL2302	SOT-23	3000pcs / Tape & Reel	S2
BL2302-3L	SOT-23-3L	3000pcs / Tape & Reel	S2

Maximum Ratings (@T_A=25℃ unless otherwise specified)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DSS}	20	V
Gate -Source Voltage		V_{GSS}	±8	V
Continuous Drain Current	T_A=25℃	I_D	2.8	A
	T_A=70℃		2.2	A
Pulsed Drain current		I_{DM}	10	A
Power Dissipation	SOT-23	P_D	0.4	W
	SOT-23-3L		0.5	W

Thermal Characteristics

Parameter		Symbol	Limits	Unit
Thermal Resistance Junction to Ambient Air	SOT-23	$R_{\theta JA}$	312	℃/W
	SOT-23-3L			
Thermal Resistance Junction to Lead	SOT-23	$R_{\theta JL}$	214	℃/W
	SOT-23-3L			
Thermal Resistance Junction to Case	SOT-23	$R_{\theta JC}$	175	℃/W
	SOT-23-3L			
Operating Junction Temperature Range		T_j	-55 to +150	℃
Storage Temperature Range		T_{STG}	-55 to +150	℃

Electrical Characteristics (@T_A=25℃ 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	20	-	-	V
I_{DSS}	Drain to Source Leakage Current	T_A=25℃	V_{DS}=20V, V_{GS}=0V	-	-	1	uA
		T_J=55℃	V_{DS}=20V, V_{GS}=0V	-	-	10	uA
$I_{D(On)}$	On-state Drain Current		V_{GS}=4.5V, V_{DS}≥5.0V	6	-	-	A
			V_{GS}=2.5V, V_{DS}≥5.0V	4	-	-	
I_{GSS}	Gate-body Leakage		V_{GS}=±8V, V_{DS}=0V	-	-	±100	nA
ON Characteristics							
$R_{DS(ON)}$	Static Drain-Source On-resistance		V_{GS}=4.5V, I_D=2.9A	-	27	45	mΩ
			V_{GS}=2.5V, I_D=2.5A	-	37	59	
$V_{GS(TH)}$	Gate Threshold Voltage		V_{DS}= V_{GS}, I_D=250uA	0.6	0.9	1.2	V
Dynamic Characteristics							
Qg	Total Gate Charge		V_{DS}=10V	-	7.5	-	nC
Qgs	Gate-Source Charge		V_{GS}=4.5V	-	1.1	-	
Qgd	Gate-Drain Charge		I_D=3.6A	-	2	-	
C_{ISS}	Input capacitance		V_{DS}=10V	-	1046	-	pF
C_{OSS}	Output capacitance		V_{GS}=0V	-	76	-	
C_{RSS}	Reverse transfer capacitance		f=1.0MHz	-	66	-	
$t_{D(ON)}$	Turn-On Delay Time		V_{DD} = 10V, I_D= 3.6A, R_L = 2.8Ω, V_{GEN}= 4.5V, R_{GEN}= 6Ω	-	9	-	ns
t_R	Rise Time			-	23	-	
$t_{D(OFF)}$	Turn-Off Delay Time			-	38	-	
t_R	Fall Time			-	3	-	
Source-Drain Diode Characteristics							
V_{SD}	Diode Forward Voltage		I_S=1A, V_{GS}=0 V	-	0.79	1.2	V

Ratings and Characteristic Curves (T_A=25℃ unless otherwise noted)

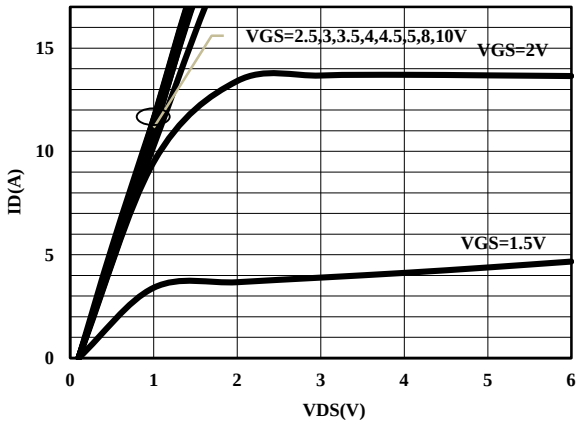


Fig.1- On-Region Characteristics

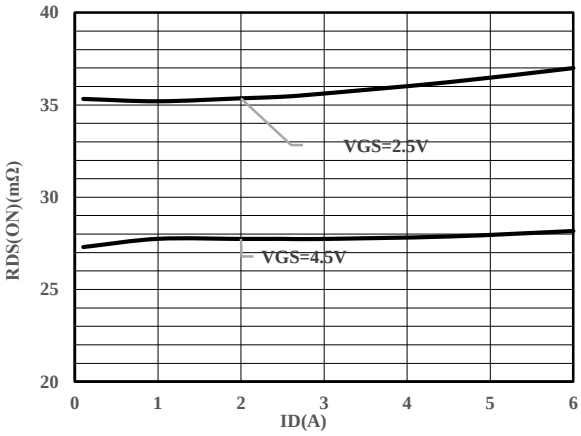


Fig.2-On-Resistance vs. Drain Current and Gate Voltage

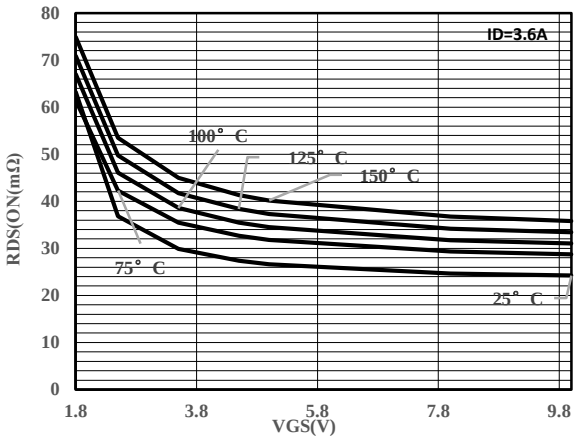


Fig.3-On-Resistance vs. Gate-Source Voltage

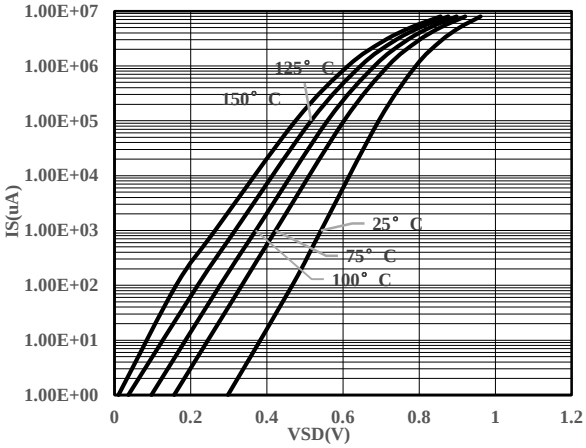


Fig.4- Body-Diode Characteristics

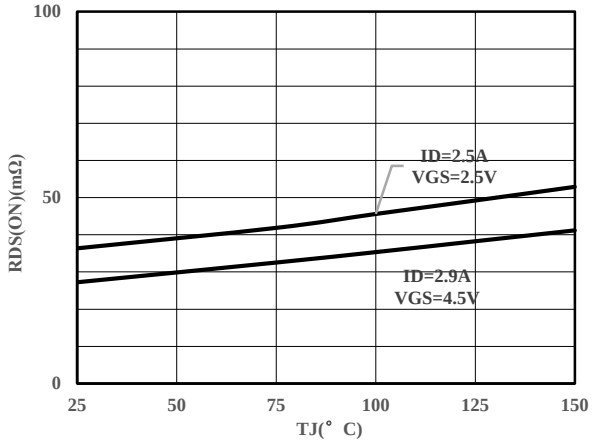


Fig.5-On-Resistance vs. Junction Temperature

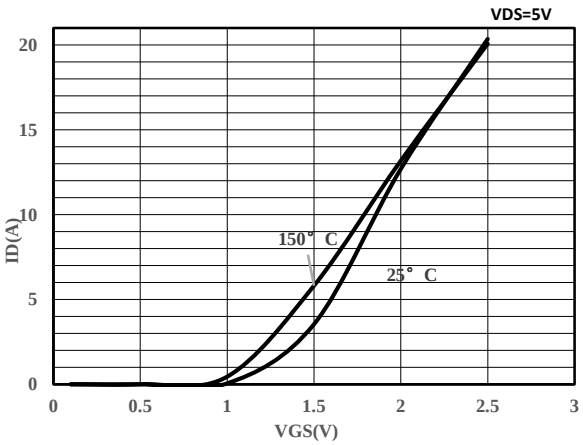


Fig.6-Transfer Characteristics

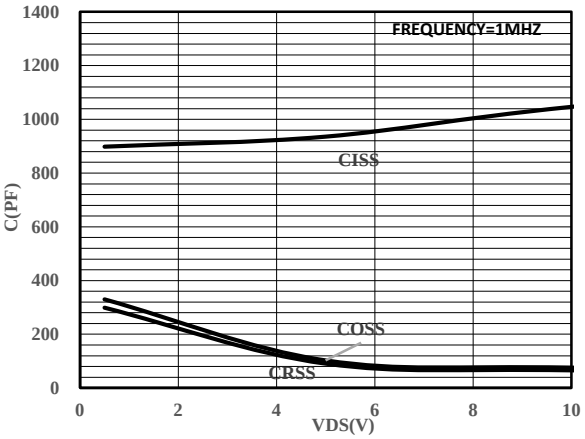


Fig.7-Capacitance Characteristics

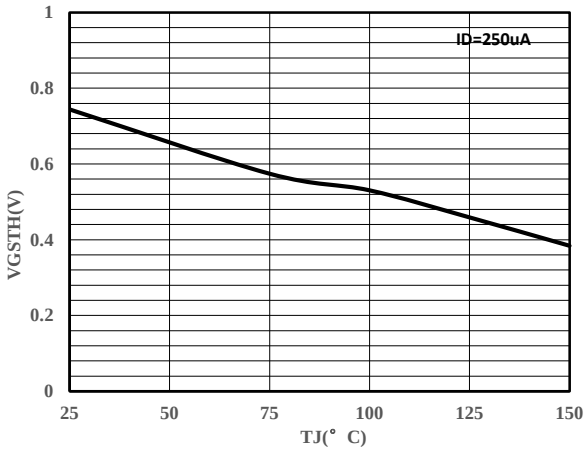


Fig.8- Gate Voltage vs. Junction Temperature

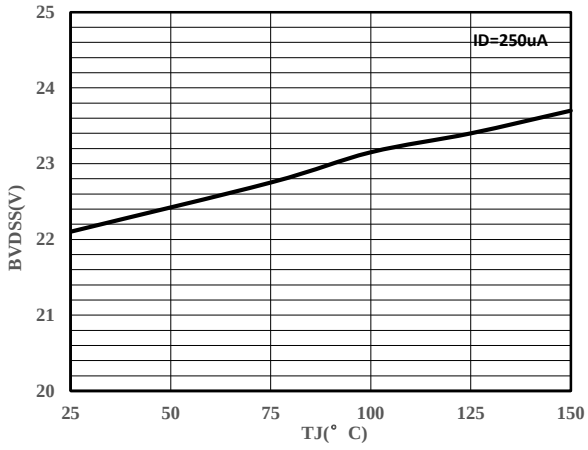
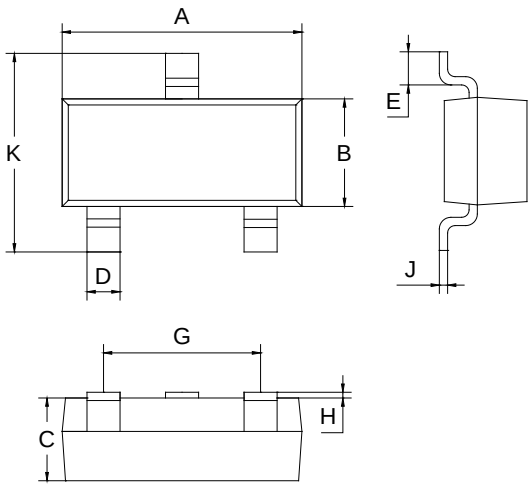


Fig.9- Drain-Source vs. Junction Temperature

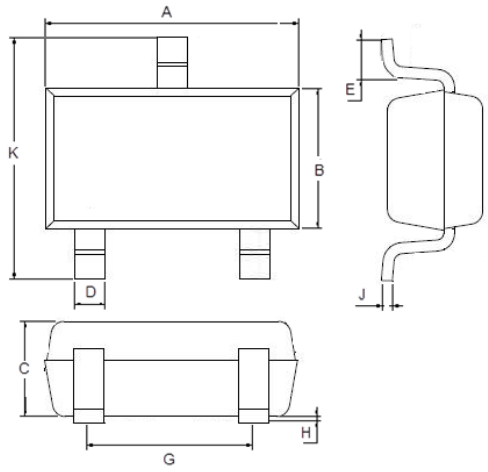
Package Outline Dimensions(unit:mm)

SOT-23



SOT-23		
Dim	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

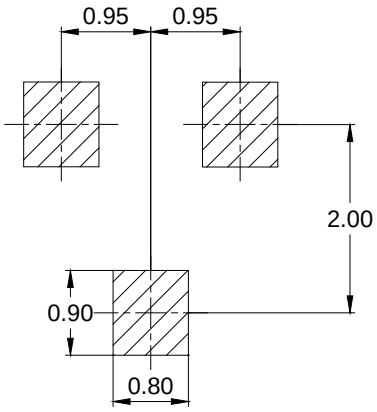
SOT-23-3L



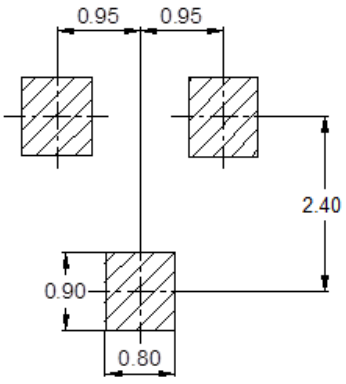
SOT-23-3L		
Dim	Min	Max
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
G	1.80	2.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

Mounting Pad Layout (unit:mm)

SOT-23



SOT-23-3L



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