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BSS123LT1G
Power MOSFET
170 mAmps, 100 Volts

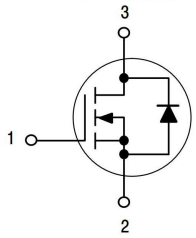
N−Channel SOT−23

170 mAMPS
100 VOLTS
$R_{DS(on)}$ = 6 Ω

Features

- These Devices are Pb−Free and are RoHS Compliant

N−Channel



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain−Source Voltage	V_{DSS}	100	Vdc
Gate−Source Voltage − Continuous − Non−repetitive ($t_p \le 50$ μs)	 V_{GS} V_{GSM}	 ±20 ±40	 Vdc Vpk
Drain Current − Continuous (Note 1) − Pulsed (Note 2)	 I_D I_{DM}	 0.17 0.68	Adc

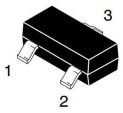
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

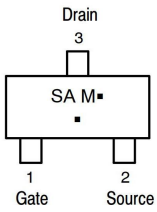
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board (Note 3) T_A = 25°C Derate above 25°C	P_D	 225 1.8	 mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	556	°C/W
Junction and Storage Temperature	T_J, T_{stg}	−55 to +150	°C

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
3. FR−5 = 1.0 × 0.75 × 0.062 in.

MARKING DIAGRAM & PIN ASSIGNMENT



SOT−23
CASE 318
STYLE 21



SA = Device Code
M = Date Code
▪ = Pb−Free Package

(*Note: Microdot may be in either location)

*Date Code orientation and/or position may vary depending upon manufacturing location.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain–Source Breakdown Voltage (V_{GS} = 0, I_D = 250 μAdc)		$V_{(BR)DSS}$	100	–	–	Vdc
Zero Gate Voltage Drain Current (V_{GS} = 0, V_{DS} = 100 Vdc)	T_J = 25°C	I_{DSS}	–	–	15	μAdc
	T_J = 125°C		–	–	60	
Gate–Body Leakage Current (V_{GS} = 20 Vdc, V_{DS} = 0)		I_{GSS}	–	–	50	nAdc
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1.0 mAdc)		$V_{GS(th)}$	1.6	–	2.6	Vdc
Static Drain–Source On–Resistance (V_{GS} = 10 Vdc, I_D = 100 mAdc)		$r_{DS(on)}$	–	–	6.0	Ω
Forward Transconductance (V_{DS} = 25 Vdc, I_D = 100 mAdc)		g_{fs}	80	–	–	mmhos
DYNAMIC CHARACTERISTICS						
Input Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{iss}	–	20	–	pF
Output Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{oss}	–	9.0	–	pF
Reverse Transfer Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{rss}	–	4.0	–	pF
SWITCHING CHARACTERISTICS(4)						
Turn–On Delay Time	(V_{CC} = 30 Vdc, I_C = 0.28 Adc, V_{GS} = 10 Vdc, R_{GS} = 50 Ω)	$t_{d(on)}$	–	20	–	ns
Turn–Off Delay Time		$t_{d(off)}$	–	40	–	ns
REVERSE DIODE						
Diode Forward On–Voltage (I_D = 0.34 Adc, V_{GS} = 0 Vdc)		V_{SD}	–	–	1.3	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

4. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

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TYPICAL ELECTRICAL CHARACTERISTICS

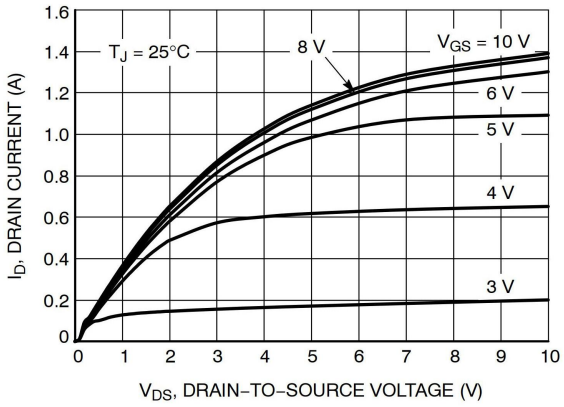


Figure 1. On−Region Characteristics

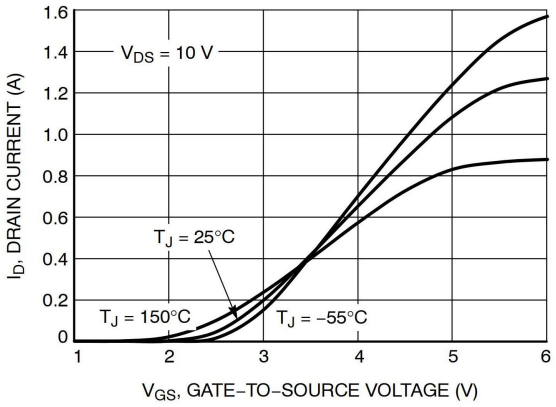


Figure 2. Transfer Characteristics

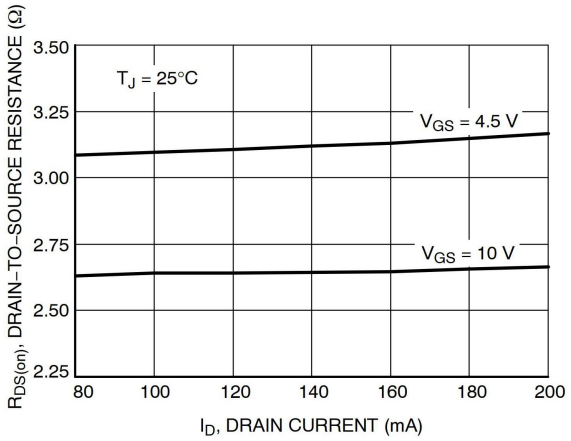


Figure 3. On−Resistance vs. Drain Current and Gate Voltage

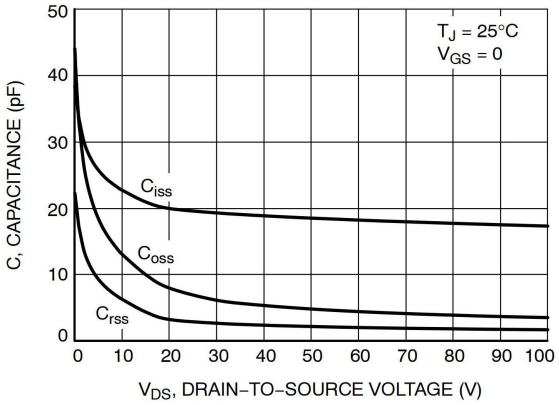


Figure 4. Capacitance Variation

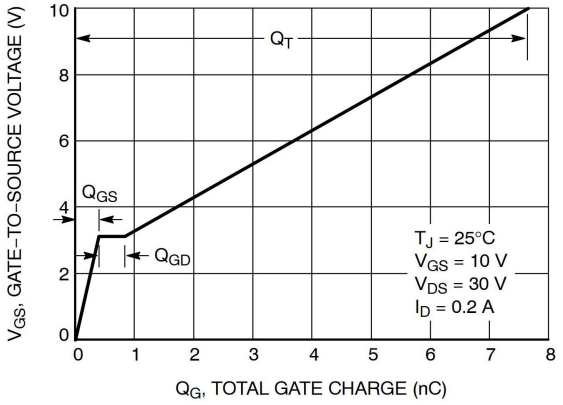


Figure 5. Gate−to−Source and Drain−to−Source Voltage vs. Total Charge

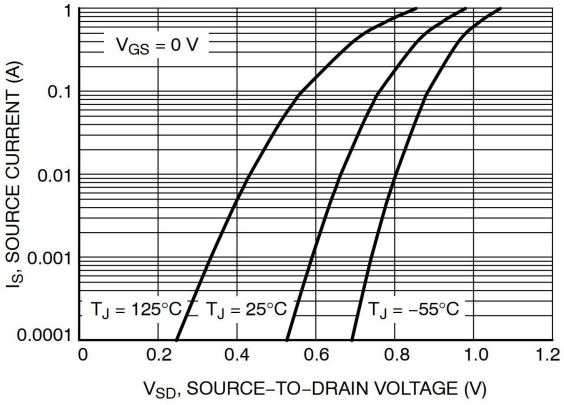


Figure 6. Diode Forward Voltage vs. Current

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TYPICAL ELECTRICAL CHARACTERISTICS

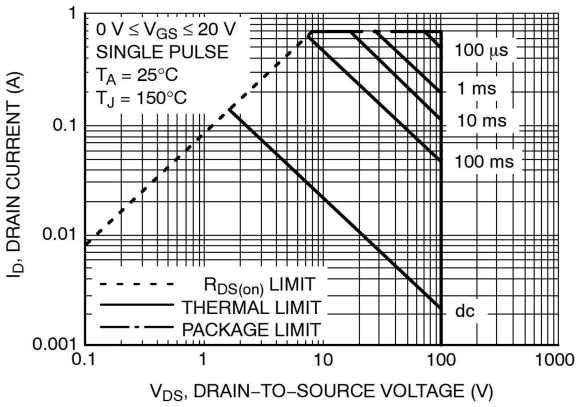


Figure 7. Maximum Rated Forward Biased Safe Operating Area

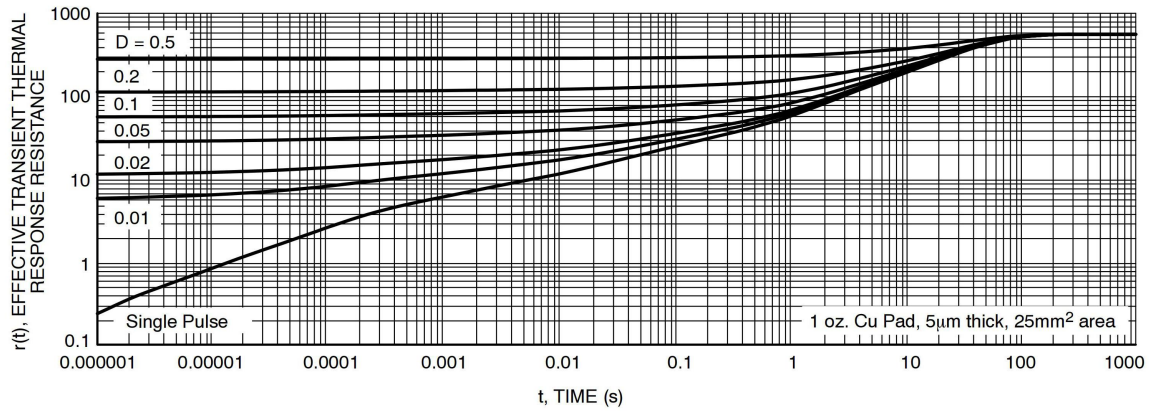


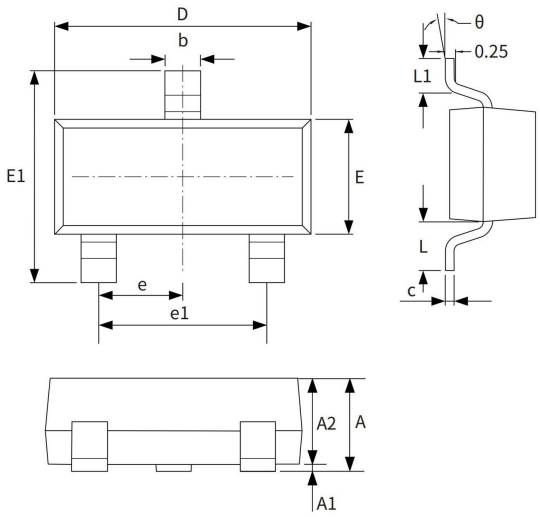
Figure 8. Thermal Response

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Ordering Information

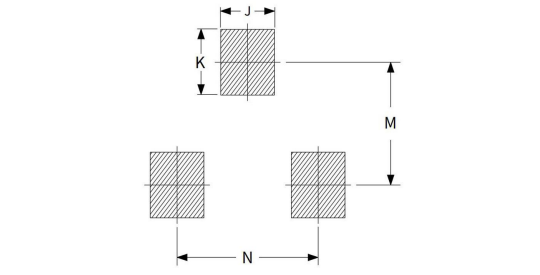
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	30000	240000	7''

Package Outline Dimensions (SOT-23)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.75	0.85	0.030	0.033
K	0.85	0.95	0.033	0.037
M	1.95	2.05	0.077	0.081
N	1.85	1.95	0.073	0.077