BSS84LT1

Power MOSFET
130 mA, 50 V
P−Channel SOT−23

These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry. Typical applications are DC−DC converters, load switching, power management in portable and battery−powered products such as computers, printers, cellular and cordless telephones.

Features

- Energy Efficient
- Miniature SOT−23 Surface Mount Package Saves Board Space
- Pb−Free Package is Available

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain−to−Source Voltage	V_{DSS}	50	Vdc
Gate−to−Source Voltage − Continuous	V_{GS}	± 20	Vdc
Drain Current − Continuous @ T_A = 25°C − Pulsed Drain Current ($t_p \le 10$ μs)	 I_D I_{DM}	 130 520	mA
Total Power Dissipation @ T_A = 25°C	P_D	225	mW
Operating and Storage Temperature Range	T_J, T_{stg}	− 55 to 150	°C
Thermal Resistance − Junction−to−Ambient	$R_{\theta JA}$	556	°C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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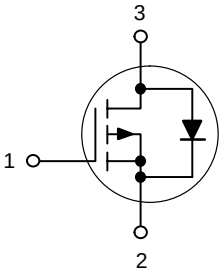
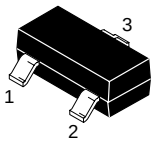
130 mA, 50 V $R_{DS(on)}$ = 10 Ω

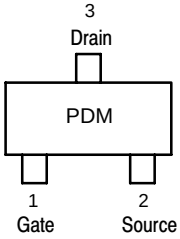
P−Channel





SOT−23
CASE 318
STYLE 21

MARKING DIAGRAM & PIN ASSIGNMENT



PD = Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
BSS84LT1	SOT−23	3000 Tape & Reel
BSS84LT1G	SOT−23 (Pb−Free)	3000 Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain−to−Source Breakdown Voltage (V_{GS} = 0 Vdc, I_D = 250 μAdc)		$V_{(BR)DSS}$	50	−	−	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 25 Vdc, V_{GS} = 0 Vdc) (V_{DS} = 50 Vdc, V_{GS} = 0 Vdc) (V_{DS} = 50 Vdc, V_{GS} = 0 Vdc, T_J = 125°C)		I_{DSS}	 − − −	 − − −	 0.1 15 60	μAdc
Gate−Body Leakage Current (V_{GS} = ± 20 Vdc, V_{DS} = 0 Vdc)		I_{GSS}	−	−	±10	nAdc
ON CHARACTERISTICS (Note 1)						
Gate−Source Threaded Voltage (V_{DS} = V_{GS}, I_D = 250 μA)		$V_{GS(th)}$	0.9	−	2.0	Vdc
Static Drain−to−Source On−Resistance (V_{GS} = 5.0 Vdc, I_D = 100 mAdc)		$R_{DS(on)}$	−	5.0	10	Ω
Transfer Admittance (V_{DS} = 25 Vdc, I_D = 100 mAdc, f = 1.0 kHz)		$\|y_{fs}\|$	50	−	−	mS
DYNAMIC CHARACTERISTICS						
Input Capacitance	V_{DS} = 5.0 Vdc	C_{iss}	−	30	−	pF
Output Capacitance	V_{DS} = 5.0 Vdc	C_{oss}	−	10	−	
Transfer Capacitance	V_{DG} = 5.0 Vdc	C_{rss}	−	5.0	−	
SWITCHING CHARACTERISTICS (Note 2)						
Turn−On Delay Time	V_{DD} = −15 Vdc, I_D = −2.5 Adc, R_L = 50 Ω	$t_{d(on)}$	−	2.5	−	ns
Rise Time		t_r	−	1.0	−	
Turn−Off Delay Time		$t_{d(off)}$	−	16	−	
Fall Time		t_f	−	8.0	−	
Gate Charge		Q_T	−	6000	−	pC
SOURCE−DRAIN DIODE CHARACTERISTICS						
Continuous Current		I_S	−	−	0.130	A
Pulsed Current		I_{SM}	−	−	0.520	
Forward Voltage (Note 2)	V_{GS} = 0 V, I_S = 130 mA	V_{SD}	−	−	2.2	V

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperature.

TYPICAL ELECTRICAL CHARACTERISTICS

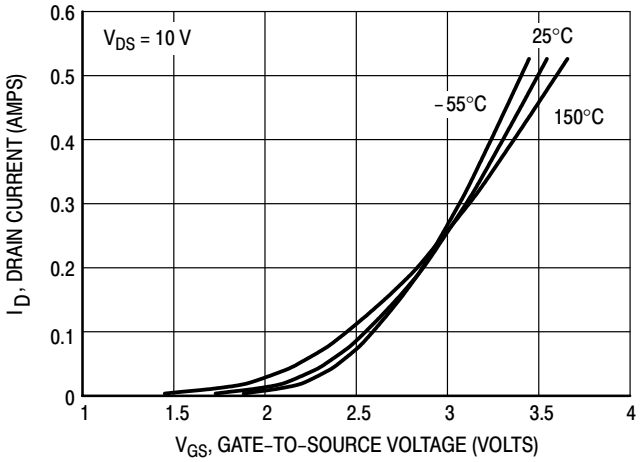


Figure 1. Transfer Characteristics

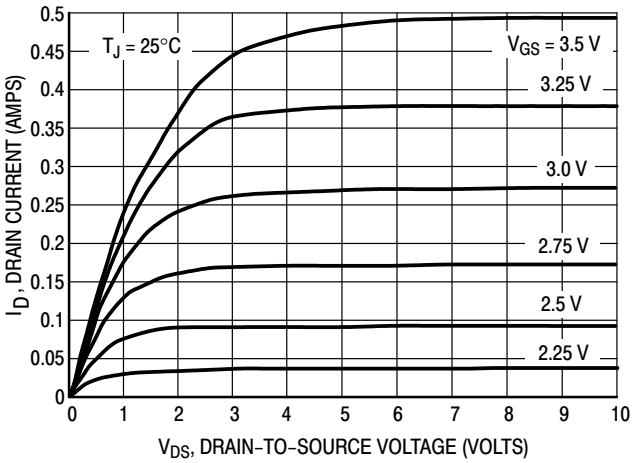


Figure 2. On−Region Characteristics

TYPICAL ELECTRICAL CHARACTERISTICS

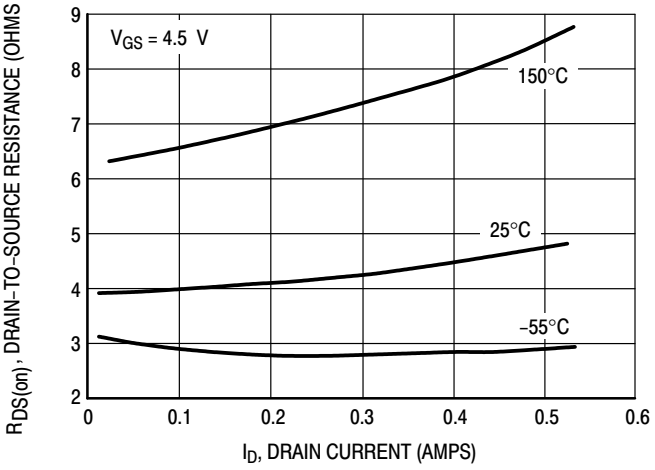


Figure 3. On−Resistance versus Drain Current

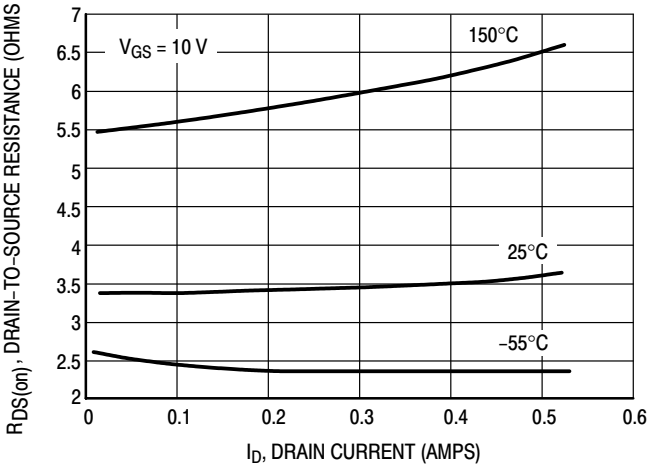


Figure 4. On−Resistance versus Drain Current

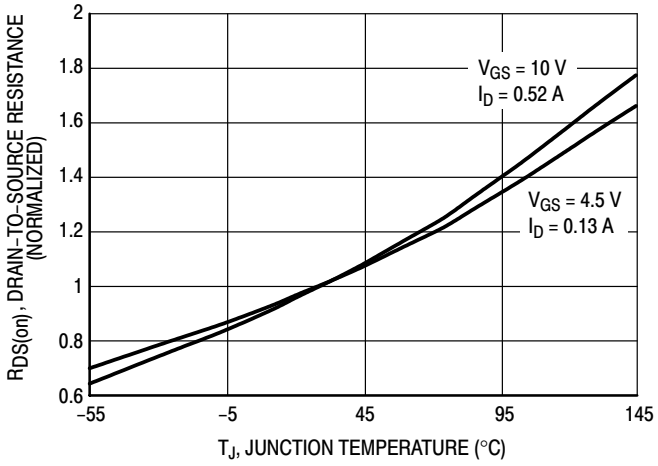


Figure 5. On−Resistance Variation with Temperature

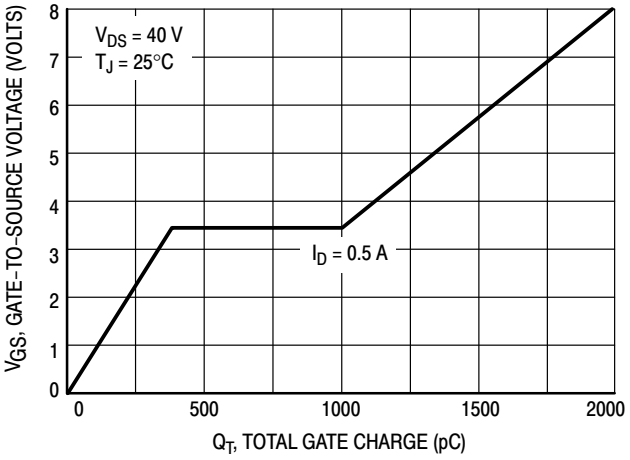


Figure 6. Gate Charge

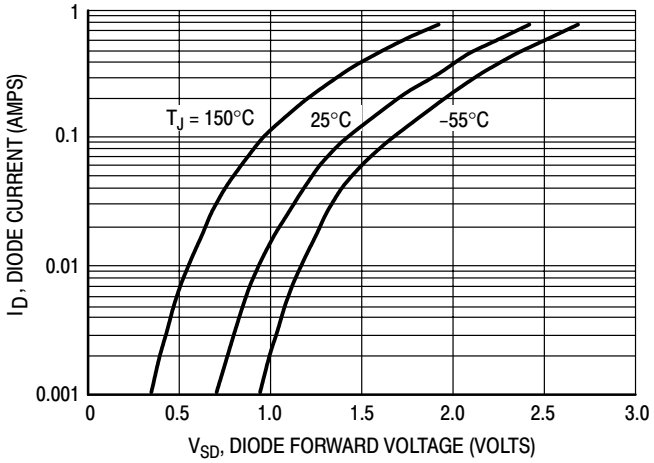
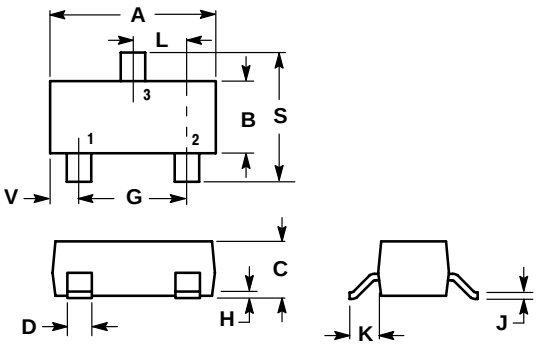


Figure 7. Body Diode Forward Voltage

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−08
ISSUE AH

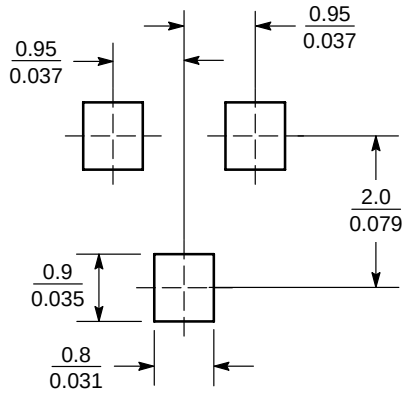


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−03 AND −07 OBSOLETE, NEW STANDARD 318−08.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

STYLE 21:
PIN 1. GATE
2. SOURCE
3. DRAIN

SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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ON Semiconductor Website: http://onsemi.com

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