MOSFET - Power, Single P-Channel, SOT-23
-50 V, 10 Ω

BSS84L, BVSS84L, SBSS84L

- SOT−23 Surface Mount Package Saves Board Space
- BV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free and are RoHS Compliant

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
Thermal Resistance − Junction−to−Ambient (Note 1)	$R_{\theta JA}$	377.2	°C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	°C

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.

1. $R_{\theta JA}$ is the sum of the junction−to−case and case−to−ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. And the $R_{\theta JA}$ is determined by the user's board design. The maximum rating presented here is based on mounting the part on JEDEC Standard 51−3/51−7.

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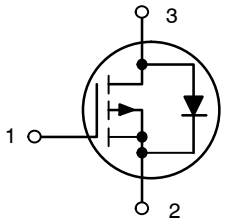
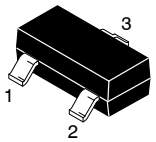
$V_{(BR)DSS}$	$R_{DS(ON)}$ MAX
−50 V	10 Ω @ −10 V

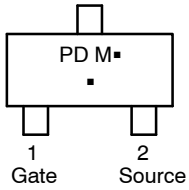


P−Channel



SOT−23
CASE 318
STYLE 21

MARKING DIAGRAM & PIN ASSIGNMENT



PD = Specific Device Code
M = Date Code
▪ = Pb−Free Package

(*Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
BSS84LT1G, BVSS84LT1G, SBSS84LT1G	SOT−23 (Pb−Free)	3,000 / Tape & Reel
BSS84LT7G	SOT−23 (Pb−Free)	3,500 / 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 2)						
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)		$R_{DS(on)}$	–	4.7	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}	–	36	–	pF
Output Capacitance	V_{DS} = 5.0 Vdc	C_{oss}	–	17	–	
Transfer Capacitance	V_{DG} = 5.0 Vdc	C_{rss}	–	6.5	–	
SWITCHING CHARACTERISTICS (Note 3)						
Turn−On Delay Time	V_{DD} = −15 Vdc, I_D = −2.5 Adc, R_L = 50 Ω	$t_{d(on)}$	–	3.6	–	ns
Rise Time		t_r	–	9.7	–	
Turn−Off Delay Time		$t_{d(off)}$	–	12	–	
Fall Time		t_f	–	1.7	–	
Gate Charge	V_{DD} = −40 Vdc, I_D = −0.5 A, V_{GS} = −10 V	Q_T	–	2.2	–	nC
SOURCE−DRAIN DIODE CHARACTERISTICS						
Continuous Current		I_S	–	–	−0.130	A
Pulsed Current		I_{SM}	–	–	−0.520	
Forward Voltage (Note 3)	V_{GS} = 0 V, I_S = −130 mA	V_{SD}	–	–	−2.2	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.

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

TYPICAL ELECTRICAL CHARACTERISTICS

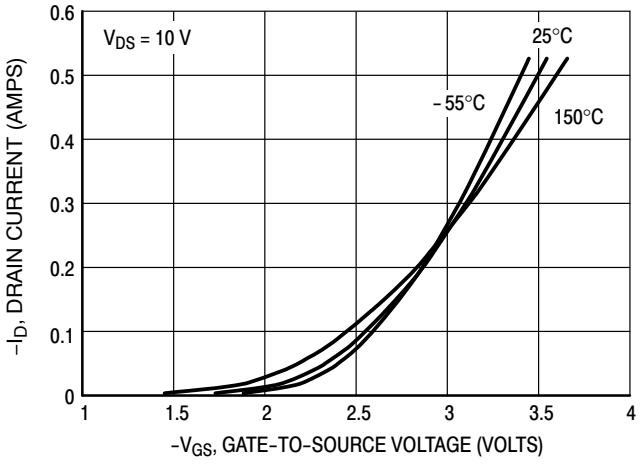


Figure 1. Transfer Characteristics

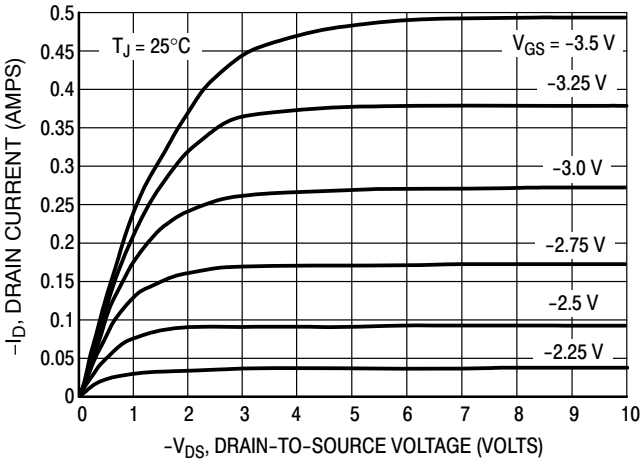


Figure 2. On−Region Characteristics

TYPICAL ELECTRICAL CHARACTERISTICS

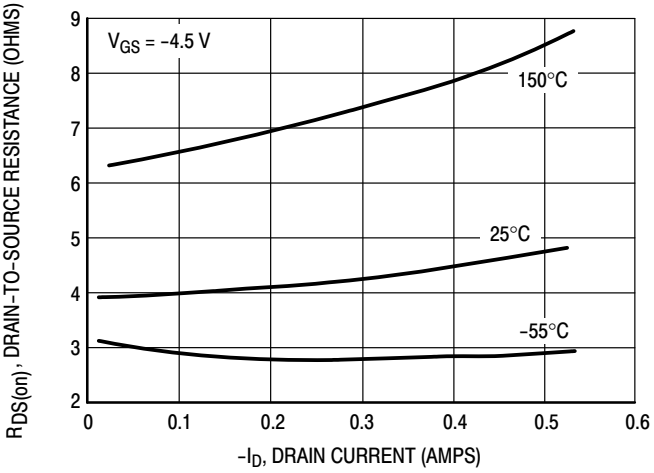


Figure 3. On−Resistance versus Drain Current

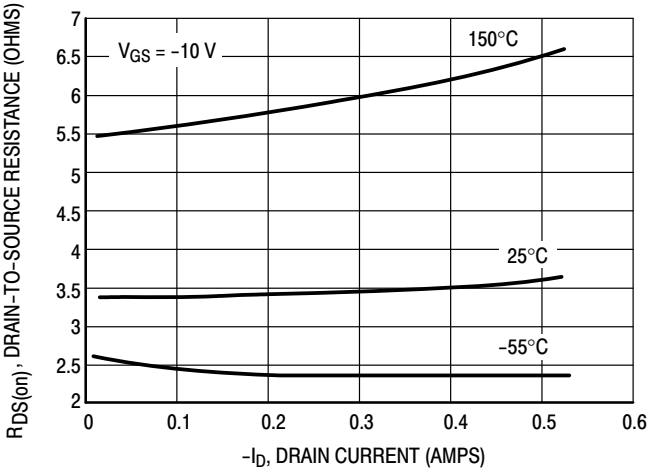


Figure 4. On−Resistance versus Drain Current

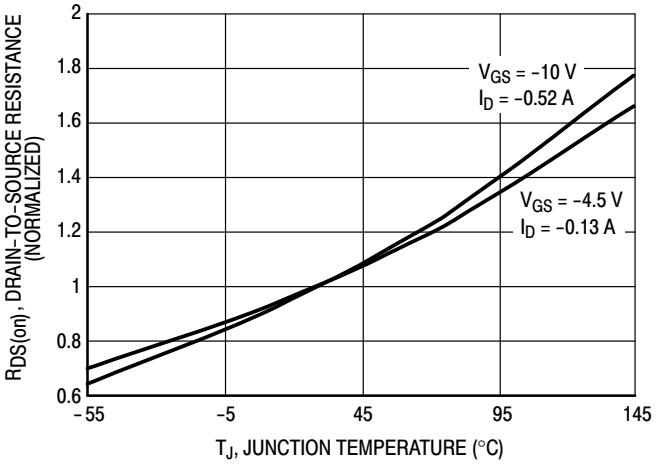


Figure 5. On−Resistance Variation with Temperature

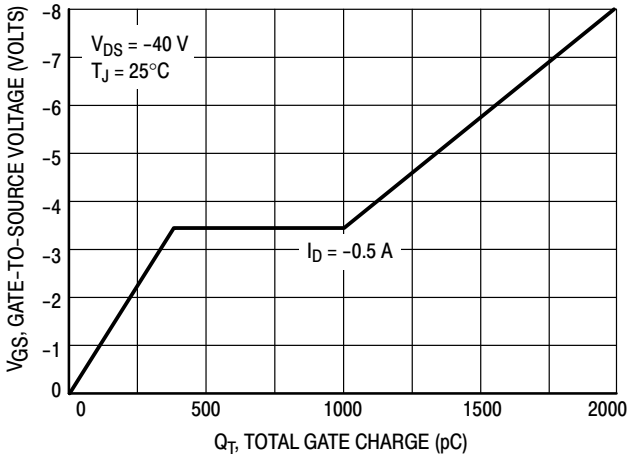


Figure 6. Gate Charge

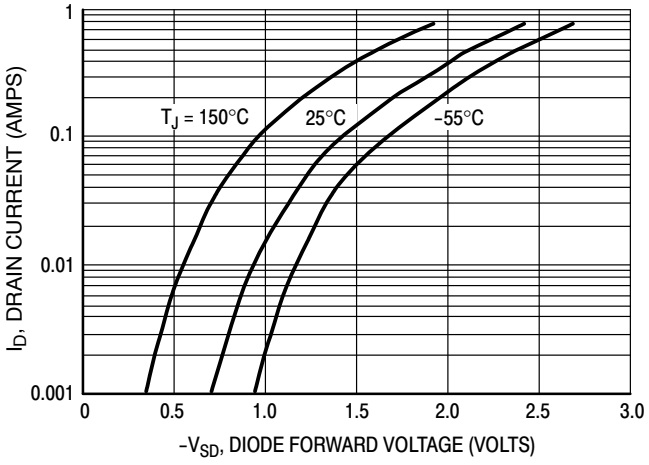
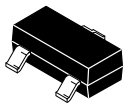


Figure 7. Body Diode Forward Voltage

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

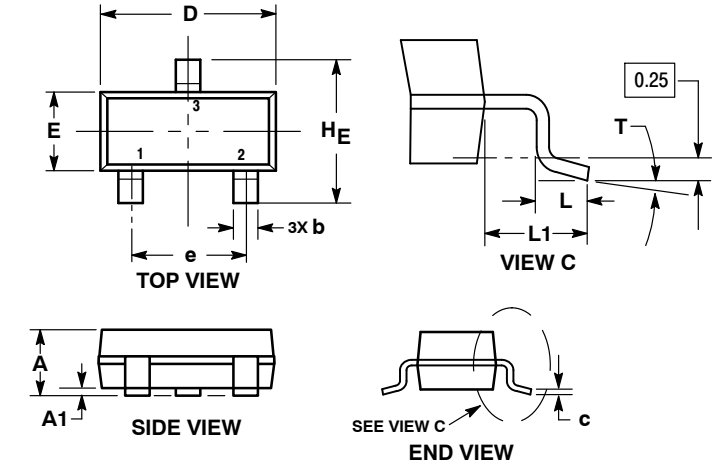
ON Semiconductor®



SOT−23 (TO−236)
CASE 318−08
ISSUE AS

DATE 30 JAN 2018

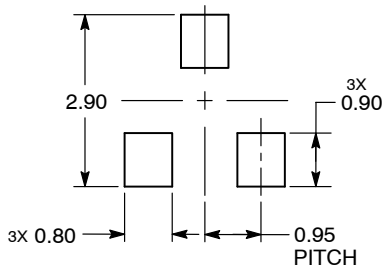
SCALE 4:1



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

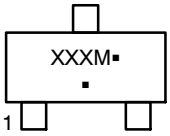
	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
H_E	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	−−−	10°	0°	−−−	10°

RECOMMENDED SOLDERING FOOTPRINT



DIMENSIONS: MILLIMETERS

GENERIC MARKING DIAGRAM*



XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

STYLE 1 THRU 5:
CANCELLED

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 7:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

STYLE 8:
PIN 1. ANODE
2. NO CONNECTION
3. CATHODE

STYLE 9:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 10:
PIN 1. DRAIN
2. SOURCE
3. GATE

STYLE 11:
PIN 1. ANODE
2. CATHODE
3. CATHODE−ANODE

STYLE 12:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 13:
PIN 1. SOURCE
2. DRAIN
3. GATE

STYLE 14:
PIN 1. CATHODE
2. GATE
3. ANODE

STYLE 15:
PIN 1. GATE
2. CATHODE
3. ANODE

STYLE 16:
PIN 1. ANODE
2. CATHODE
3. CATHODE

STYLE 17:
PIN 1. NO CONNECTION
2. ANODE
3. CATHODE

STYLE 18:
PIN 1. NO CONNECTION
2. CATHODE
3. ANODE

STYLE 19:
PIN 1. CATHODE
2. ANODE
3. CATHODE−ANODE

STYLE 20:
PIN 1. CATHODE
2. ANODE
3. GATE

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

STYLE 22:
PIN 1. RETURN
2. OUTPUT
3. INPUT

STYLE 23:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 24:
PIN 1. GATE
2. DRAIN
3. SOURCE

STYLE 25:
PIN 1. ANODE
2. CATHODE
3. GATE

STYLE 26:
PIN 1. CATHODE
2. ANODE
3. NO CONNECTION

STYLE 27:
PIN 1. CATHODE
2. CATHODE
3. CATHODE

STYLE 28:
PIN 1. ANODE
2. ANODE
3. ANODE

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DESCRIPTION:	SOT−23 (TO−236)	PAGE 1 OF 1

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