

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

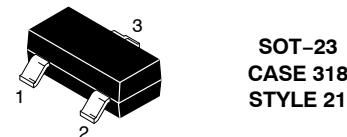
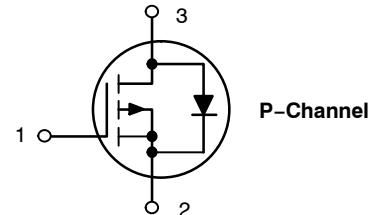
MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

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 ≤ 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 _{θJA}	556	°C/W
Thermal Resistance – Junction-to-Ambient (Note 1)	R _{θJA}	377.2	°C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T _L	260	°C

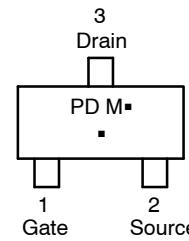
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. R_{θJA} 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_{θJA} 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.

V _{(BR)DSS}	R _{DS(ON)} MAX
-50 V	10 Ω @ -10 V



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.

BSS84L, BVSS84L, SBSS84L

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit	
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage ($V_{GS} = 0 \text{ Vdc}$, $I_D = -250 \mu\text{A}$)	$V_{(BR)DSS}$	-50	-	-	Vdc	
Zero Gate Voltage Drain Current ($V_{DS} = -25 \text{ Vdc}$, $V_{GS} = 0 \text{ Vdc}$) ($V_{DS} = -50 \text{ Vdc}$, $V_{GS} = 0 \text{ Vdc}$) ($V_{DS} = -50 \text{ Vdc}$, $V_{GS} = 0 \text{ Vdc}$, $T_J = 125^\circ\text{C}$)	I_{DSS}	- - -	- - -	-0.1 -15 -60	μA	
Gate-Body Leakage Current ($V_{GS} = \pm 20 \text{ Vdc}$, $V_{DS} = 0 \text{ Vdc}$)	I_{GSS}	-	-	± 10	nAdc	
ON CHARACTERISTICS (Note 2)						
Gate-Source Threshold Voltage ($V_{DS} = V_{GS}$, $I_D = -250 \mu\text{A}$)	$V_{GS(\text{th})}$	-0.9	-	-2.0	Vdc	
Static Drain-to-Source On-Resistance ($V_{GS} = -5.0 \text{ Vdc}$, $I_D = -100 \text{ mA}$)	$R_{DS(\text{on})}$	-	4.7	10	Ω	
Transfer Admittance ($V_{DS} = -25 \text{ Vdc}$, $I_D = -100 \text{ mA}$, $f = 1.0 \text{ kHz}$)	$ y_{fs} $	50	-	-	mS	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	-	36	-	pF	
Output Capacitance	C_{oss}	-	17	-		
Transfer Capacitance	C_{rss}	-	6.5	-		
SWITCHING CHARACTERISTICS (Note 3)						
Turn-On Delay Time	$V_{DD} = -15 \text{ Vdc}$, $I_D = -2.5 \text{ Adc}$, $R_L = 50 \Omega$	$t_{d(\text{on})}$	-	3.6	ns	
Rise Time		t_r	-	9.7		
Turn-Off Delay Time		$t_{d(\text{off})}$	-	12		
Fall Time		t_f	-	1.7		
Gate Charge	$V_{DD} = -40 \text{ Vdc}$, $I_D = -0.5 \text{ A}$, $V_{GS} = -10 \text{ V}$	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_{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 $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.

3. Switching characteristics are independent of operating junction temperature.

TYPICAL ELECTRICAL CHARACTERISTICS

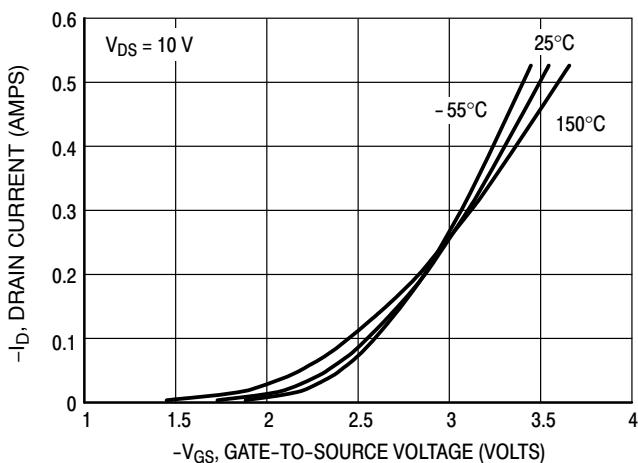


Figure 1. Transfer Characteristics

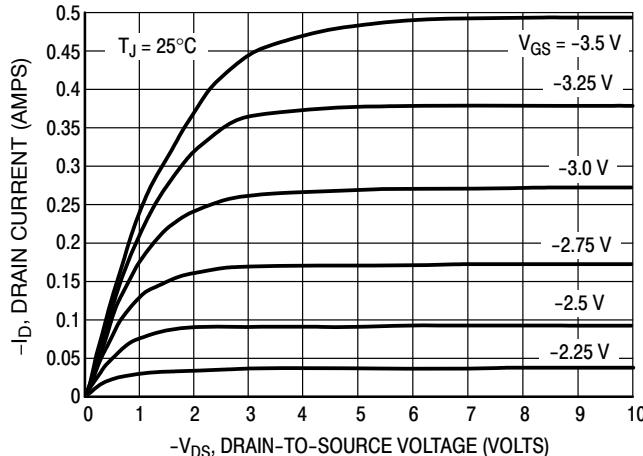


Figure 2. On-Region Characteristics

BSS84L, BVSS84L, SBSS84L

TYPICAL ELECTRICAL CHARACTERISTICS

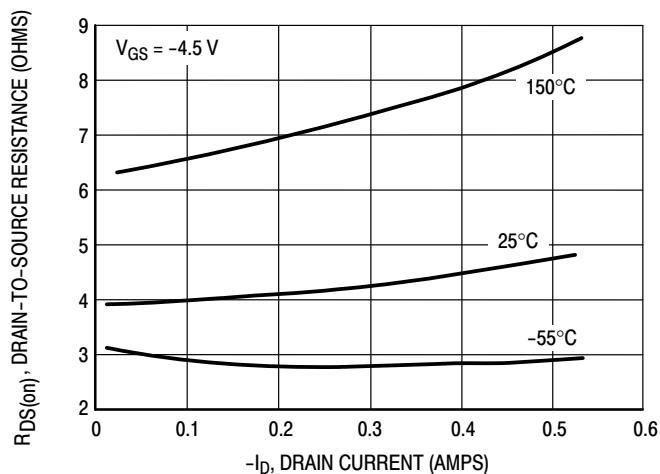


Figure 3. On-Resistance versus Drain Current

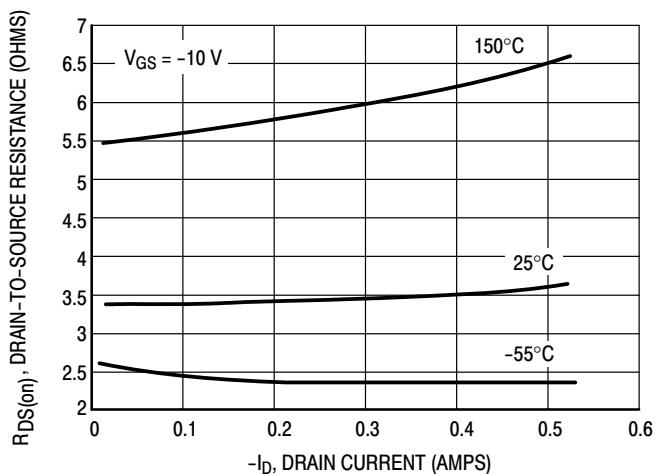


Figure 4. On-Resistance versus Drain Current

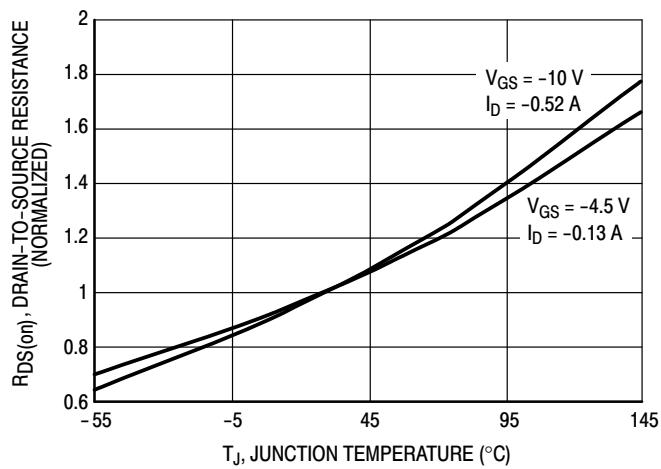


Figure 5. On-Resistance Variation with Temperature

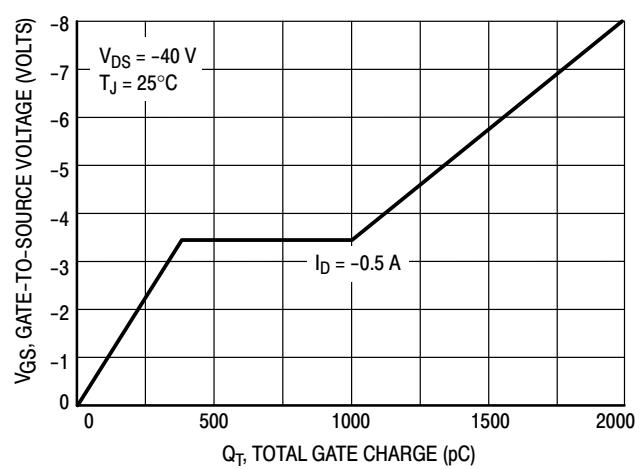


Figure 6. Gate Charge

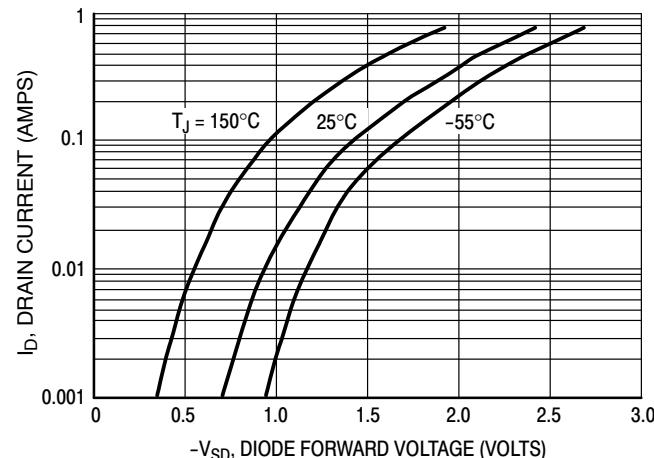
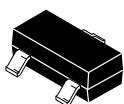


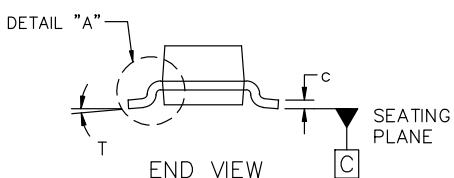
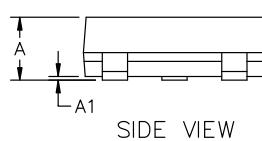
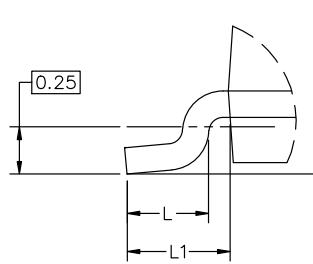
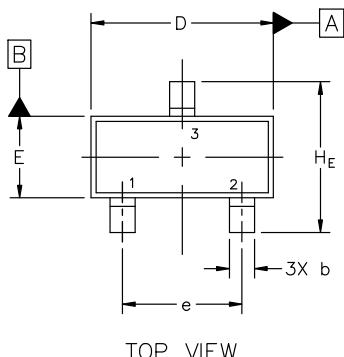
Figure 7. Body Diode Forward Voltage



SCALE 4:1

SOT-23 (TO-236) 2.90x1.30x1.00 1.90P
CASE 318
ISSUE AU

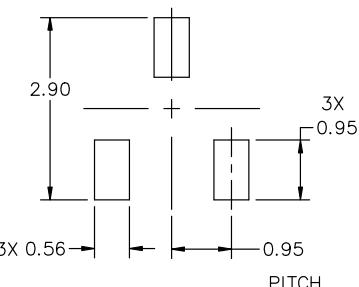
DATE 14 AUG 2024



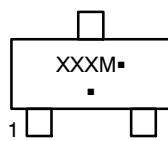
MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.89	1.00	1.11
A1	0.01	0.06	0.10
b	0.37	0.44	0.50
c	0.08	0.14	0.20
D	2.80	2.90	3.04
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.43	0.55
L1	0.35	0.54	0.69
H _E	2.10	2.40	2.64
T	0°	---	10°

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: 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.

RECOMMENDED
MOUNTING FOOTPRINT

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

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. Some products may not follow the Generic Marking.

STYLES ON PAGE 2

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CASE 318

ISSUE AU

DATE 14 AUG 2024

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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