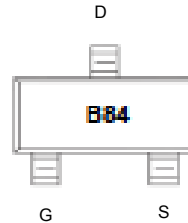


## Main Product Characteristics

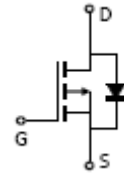
$V_{(BR)DSS}$	-50V
$R_{DS(on)MAX}$	8Ω@-10V
	10Ω@ -5V
$I_D$	-0.13A



SOT-23



Marking and Pin Assignment



Schematic Diagram

## Features and Benefits

- Advanced MOSFET process technology
- Ideal for DC-DC converter, power management in portable battery, computer, printer, cellular and general purpose applications
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



## Description

The BSS84 utilizes the latest processing techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in DC-DC converter, power management in portable battery, computer, printer, cellular and general purpose applications.

## Absolute Maximum Ratings ( $T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-50	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	-0.13	A
Pulsed Drain Current (note 1) @tp <10 μs	$I_{DM}$	-0.52	A
Power Dissipation	$P_D$	225	mW
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	556	°C/W
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C
Maximum Lead Temperature for Soldering Purposes , Duration for 5 Seconds	$T_L$	260	°C

### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)

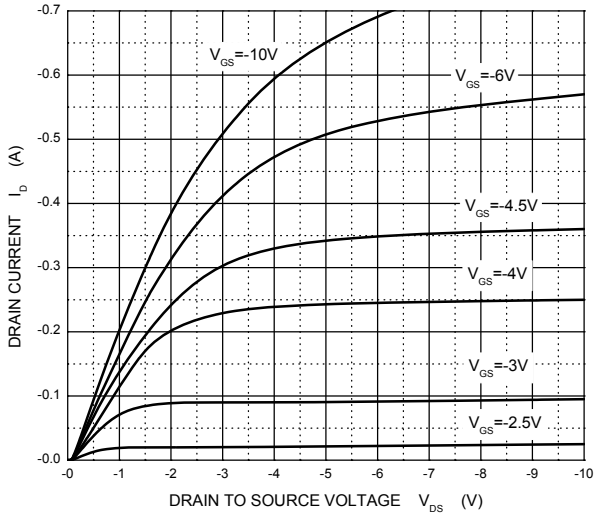
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-50	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -50V, V <sub>GS</sub> = 0V	-	-	-15	μA
		V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V	-	-	-0.1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±5	μA
Gate Threshold Voltage (note 3)	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.9	-	-2	V
Drain-Source On-Resistance (note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> = -5V, I <sub>D</sub> = -0.1A	-	-	10	Ω
		V <sub>GS</sub> = -10V, I <sub>D</sub> = -0.1A	-	-	8	Ω
Forward Transconductance (note 1)	g <sub>FS</sub>	V <sub>DS</sub> = -25V; I <sub>D</sub> = -100mA	50	-	-	mS
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 5V, V <sub>GS</sub> = 0V, f = 1MHz	-	30	-	pF
Output Capacitance	C <sub>oss</sub>		-	10	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	5	-	pF
<b>SWITCHING CHARACTERISTICS</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, R <sub>L</sub> = 50Ω, I <sub>D</sub> = -2.5A	-	2.5	-	ns
Turn-on Rise Time	t <sub>r</sub>		-	1	-	ns
Turn-off Delay Time	t <sub>d(off)</sub>		-	16	-	ns
Turn-off Fall Time	t <sub>f</sub>		-	8	-	ns
<b>SOURCE-DRAIN DIODE CHARACTERISTICS</b>						
Continuous Current	I <sub>S</sub>		-	-	-0.13	A
Pulsed Current	I <sub>SM</sub>		-	-	-0.52	A
Diode Forward Voltage (note 3)	V <sub>SD</sub>	I <sub>S</sub> = -0.13A, V <sub>GS</sub> = 0V	-	-	-2.2	V

**Notes :**

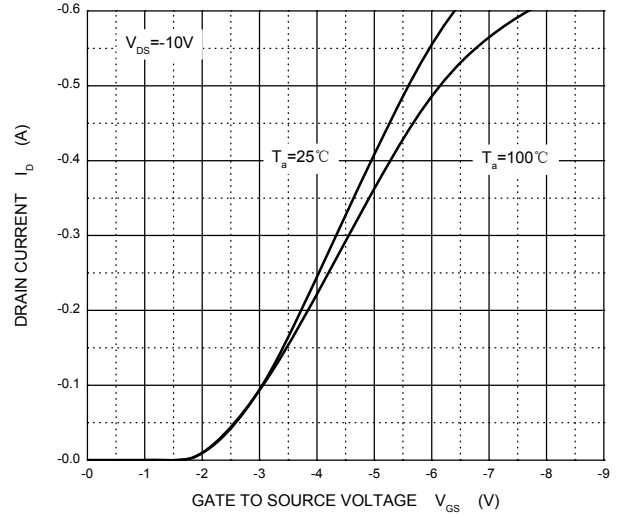
1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t<sub>s</sub> ≤ 10s.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

**Typical Electrical and Thermal Characteristics**

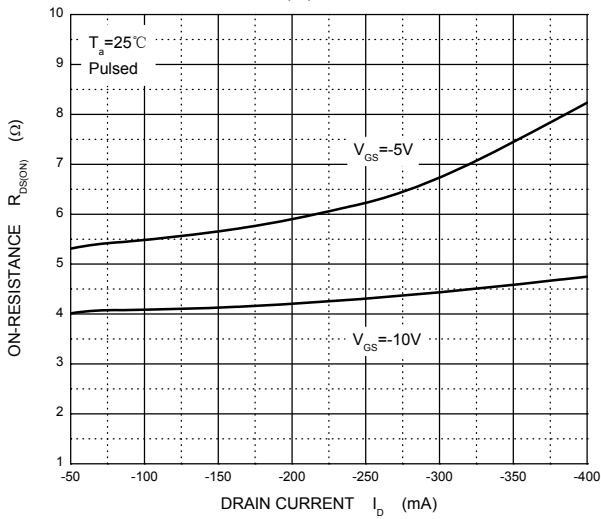
**Output Characteristics**



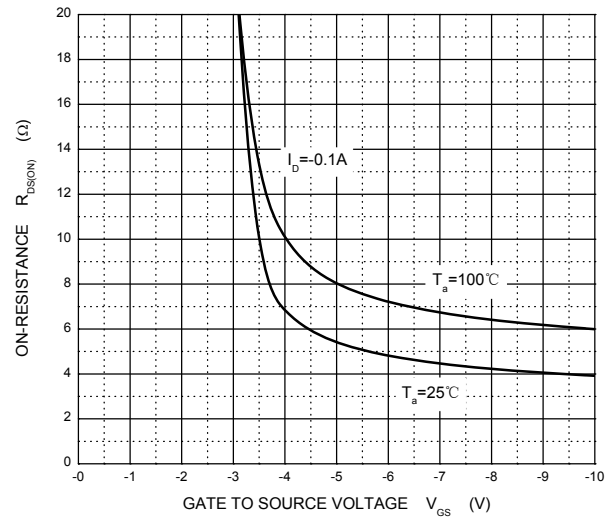
**Transfer Characteristics**



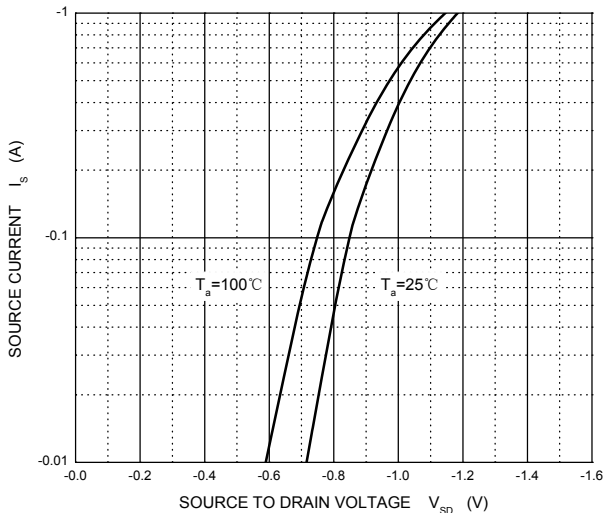
**$R_{DS(ON)}$  —  $I_D$**



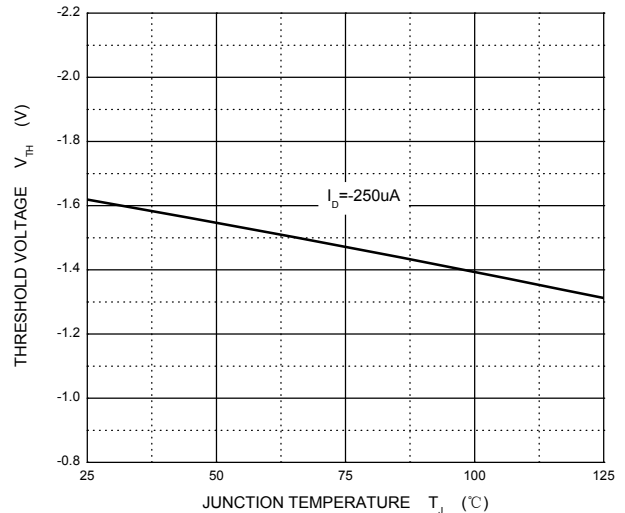
**$R_{DS(ON)}$  —  $V_{GS}$**



**$I_S$  —  $V_{SD}$**

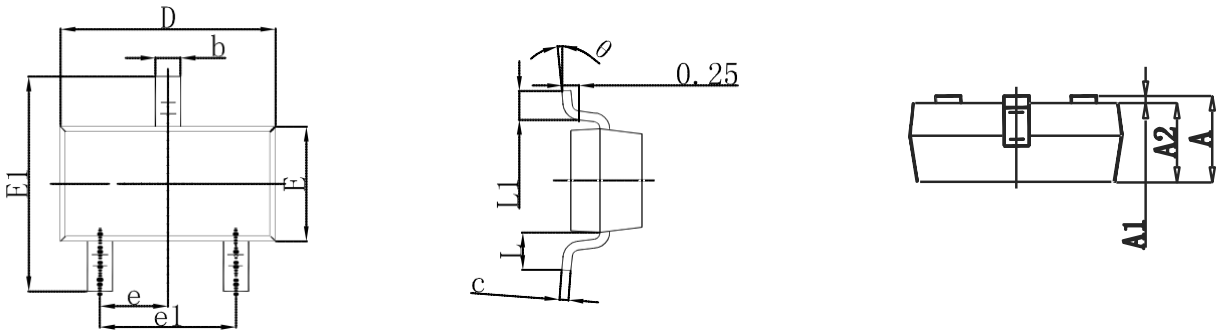


**Threshold Voltage**



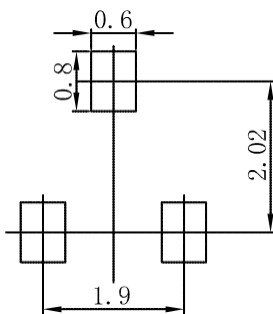
**Package Outline Dimensions**

**SOT-23**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

**Suggested Pad Layout**



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.