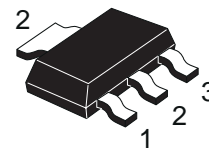
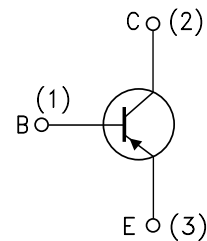


## MEDIUM POWER AMPLIFIER

**ADVANCE DATA**

- SILICON EPITAXIAL PLANAR PNP TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- GENERAL PURPOSE MAINLY INTENDED FOR USE IN MEDIUM POWER INDUSTRIAL APPLICATION AND FOR AUDIO AMPLIFIER OUTPUT STAGE
- NPN COMPLEMENTS ARE BSP40, BSP41, BSP42 AND BSP43 RESPECTIVELY


**SOT-223**
**INTERNAL SCHEMATIC DIAGRAM**


SC08810

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value		Unit
		BSP30/BSP31	BSP32/BSP33	
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	-70	-90	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	-60	-80	V
$V_{CES}$	Collector-Emitter Voltage ( $R_{BE} = 1K\Omega$ )	-70	-90	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	-5		V
$I_C$	Collector Current	-1		A
$I_B$	Base Current	-0.1		A
$P_{tot}$	Total Dissipation at $T_c = 25^\circ C$	2		W
$T_{stg}$	Storage Temperature	-65 to 150		$^\circ C$
$T_j$	Max. Operating Junction Temperature	150		$^\circ C$

## BSP30/31/32/33

### THERMAL DATA

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	62.5	$^{\circ}\text{C}/\text{W}$
$R_{thj-tab}$ •	Thermal Resistance Junction-Collector Tab	Max	8	$^{\circ}\text{C}/\text{W}$

• Mounted on a ceramic substrate area = 30 x 35 x 0.7 mm

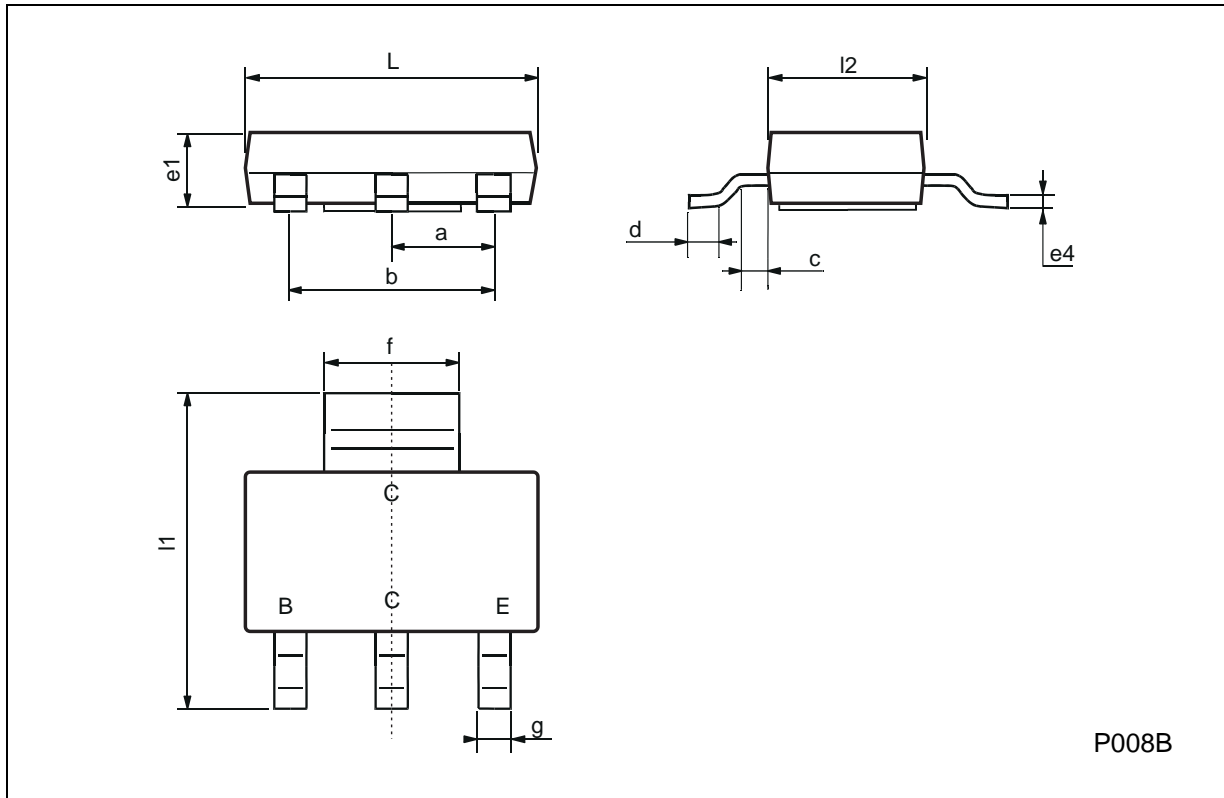
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	$V_{CB} = -60\text{ V}$ $V_{CB} = -60\text{ V}$ $T_j = 150^{\circ}\text{C}$			-100 -50	nA $\mu\text{A}$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = -100\ \mu\text{A}$ for <b>BSP30/BSP31</b> for <b>BSP32/BSP33</b>	-70 -90			V V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -10\text{ mA}$ for <b>BSP30/BSP31</b> for <b>BSP32/BSP33</b>	-60 -80			V V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage ( $V_{BE} = 0$ )	$I_C = -10\ \mu\text{A}$ for <b>BSP30/BSP31</b> for <b>BSP32/BSP33</b>	-70 -90			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_C = 0$ )	$I_C = -10\ \mu\text{A}$	-5			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = -150\text{ mA}$ $I_B = -15\text{ mA}$ $I_C = -500\text{ mA}$ $I_B = -50\text{ mA}$			-0.25 -0.5	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = -150\text{ mA}$ $I_B = -15\text{ mA}$ $I_C = -500\text{ mA}$ $I_B = -50\text{ mA}$			-1 -1.2	V V
$h_{FE}^*$	DC Current Gain	for <b>BSP30/BSP31</b> $I_C = -100\ \mu\text{A}$ $V_{CE} = -5\text{ V}$ $I_C = -100\text{ mA}$ $V_{CE} = -5\text{ V}$ $I_C = -500\text{ mA}$ $V_{CE} = -5\text{ V}$ for <b>BSP32/BSP33</b> $I_C = -100\ \mu\text{A}$ $V_{CE} = -5\text{ V}$ $I_C = -100\text{ mA}$ $V_{CE} = -5\text{ V}$ $I_C = -500\text{ mA}$ $V_{CE} = -5\text{ V}$	10 40 30		120	
$f_T$	Transition Frequency	$I_C = -50\text{ mA}$ $V_{CE} = -10\text{ V}$ $f = 35\text{ MHz}$	100			MHz
$C_{CBO}$	Collector-Base Capacitance	$I_E = 0$ $V_{CB} = -10\text{ V}$ $f = 1\text{ MHz}$			20	pF
$C_{EBO}$	Emitter-Base Capacitance	$I_C = 0$ $V_{EB} = -0.5\text{ V}$ $f = 1\text{ MHz}$			120	pF
$t_{on}$	Turn-on Time	$I_C = -100\text{ mA}$ $I_{B1} = -I_{B2} = -5\text{ mA}$			500	ns
$t_{off}$	Turn-off Time				650	ns

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1.5\%$

**SOT223 MECHANICAL DATA**

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a	2.27	2.3	2.33	89.4	90.6	91.7
b	4.57	4.6	4.63	179.9	181.1	182.3
c	0.2	0.4	0.6	7.9	15.7	23.6
d	0.63	0.65	0.67	24.8	25.6	26.4
e1	1.5	1.6	1.7	59.1	63	66.9
e4			0.32			12.6
f	2.9	3	3.1	114.2	118.1	122.1
g	0.67	0.7	0.73	26.4	27.6	28.7
l1	6.7	7	7.3	263.8	275.6	287.4
l2	3.5	3.5	3.7	137.8	137.8	145.7
L	6.3	6.5	6.7	248	255.9	263.8



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -  
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A