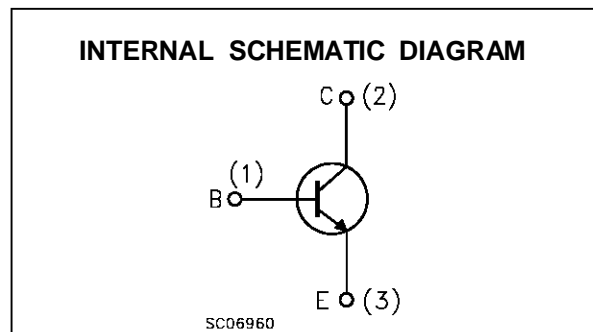
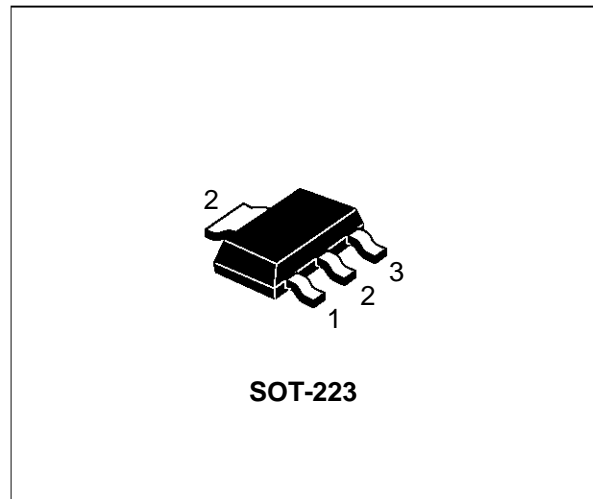


**MEDIUM POWER AMPLIFIER**

ADVANCE DATA

- SILICON EPITAXIAL PLANAR NPN 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
- PNP COMPLEMENTS ARE STZT2907 AND STZT2907A RESPECTIVELY



**ABSOLUTE MAXIMUM RATINGS**

| Symbol    | Parameter                                     | Value      |           | Unit             |
|-----------|---|------------|-----------|------------------|
|           |   | STZT2222   | STZT2222A |                  |
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )          | 60         | 75        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )       | 30         | 40        | V                |
| $V_{EBO}$ | Emitter-Base Voltage ( $I_C = 0$ )            | 5          | 6         | V                |
| $I_C$     | Collector Current                             | 0.8        |           | A                |
| $P_{tot}$ | Total Dissipation at $T_c = 25^\circ\text{C}$ | 1.5        |           | W                |
| $T_{stg}$ | Storage Temperature                           | -65 to 150 |           | $^\circ\text{C}$ |
| $T_j$     | Max. Operating Junction Temperature           | 150        |           | $^\circ\text{C}$ |

## STZT2222/STZT2222A

### THERMAL DATA

|               |   |     |      |                             |
|---------------|---|-----|------|-----------------------------|
| $R_{thj-amb}$ | Thermal Resistance Junction-Ambient       | Max | 83.3 | $^{\circ}\text{C}/\text{W}$ |
| $R_{thj-tab}$ | Thermal Resistance Junction-Collector Tab | Max | 10   | $^{\circ}\text{C}/\text{W}$ |

• 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 ( $I_E = 0$ )             | $V_{CB} = \text{rated } V_{CBO}$<br>$V_{CB} = \text{rated } V_{CBO} \quad T_{amb} = 125^{\circ}\text{C}$  |   |      | 10<br>10               | nA<br>$\mu\text{A}$ |
| $I_{CEX}$       | Collector Cut-off Current ( $V_{BE} = -3\text{V}$ ) | $V_{CE} = 60\text{ V}$ for <b>STZT2222A</b>   |   |      | 10                     | nA                  |
| $I_{BEX}$       | Base Cut-off Current ( $V_{BE} = -3\text{V}$ )      | $V_{CE} = 60\text{ V}$ for <b>STZT2222A</b>   |   |      | 20                     | nA                  |
| $I_{EBO}$       | Emitter Cut-off Current ( $I_E = 0$ )               | $V_{EB} = 3\text{ V}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b>  |   |      | 30<br>15               | nA<br>nA            |
| $V_{(BR)CBO}$   | Collector-Base Breakdown Voltage ( $I_E = 0$ )      | $I_C = 10\ \mu\text{A}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b>  | 60<br>75                                      |      |                        | V<br>V              |
| $V_{(BR)CEO}^*$ | Collector-Emitter Breakdown Voltage ( $I_B = 0$ )   | $I_C = 10\text{ mA}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b>   | 30<br>40                                      |      |                        | V<br>V              |
| $V_{(BR)EBO}$   | Emitter-Base Breakdown Voltage ( $I_C = 0$ )        | $I_E = 10\ \mu\text{A}$<br>for <b>STZT2222</b><br>for <b>STZT2222</b>   | 5<br>6  |      |                        | V<br>V              |
| $V_{CE(sat)}^*$ | Collector-Emitter Saturation Voltage                | $I_C = 150\text{ mA} \quad I_B = 15\text{ mA}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b><br>$I_C = 500\text{ mA} \quad I_B = 50\text{ mA}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b>  |   |      | 0.4<br>0.3<br>1.6<br>1 | V<br>V<br>V<br>V    |
| $V_{BE(sat)}^*$ | Base-Emitter Saturation Voltage                     | $I_C = 150\text{ mA} \quad I_B = 15\text{ mA}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b><br>$I_C = 500\text{ mA} \quad I_B = 50\text{ mA}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b>  |   | 0.6  | 1.3<br>1.2<br>2.6<br>2 | V<br>V<br>V<br>V    |
| $h_{FE}^*$      | DC Current Gain                                     | $I_C = 0.1\text{ mA} \quad V_{CE} = 10\text{ V}$<br>$I_C = 1\text{ mA} \quad V_{CE} = 10\text{ V}$<br>$I_C = 10\text{ mA} \quad V_{CE} = 10\text{ V}$<br>$I_C = 150\text{ mA} \quad V_{CE} = 10\text{ V}$<br>$I_C = 150\text{ mA} \quad V_{CE} = 1\text{ V}$<br>$I_C = 500\text{ mA} \quad V_{CE} = 10\text{ V}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b><br>$I_C = 10\text{ mA} \quad V_{CE} = 10\text{ V} \quad T_c = -55^{\circ}\text{C}$<br>for <b>STZT2222</b> | 35<br>50<br>75<br>100<br>50<br>30<br>40<br>35 |      | 300                    |                     |

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

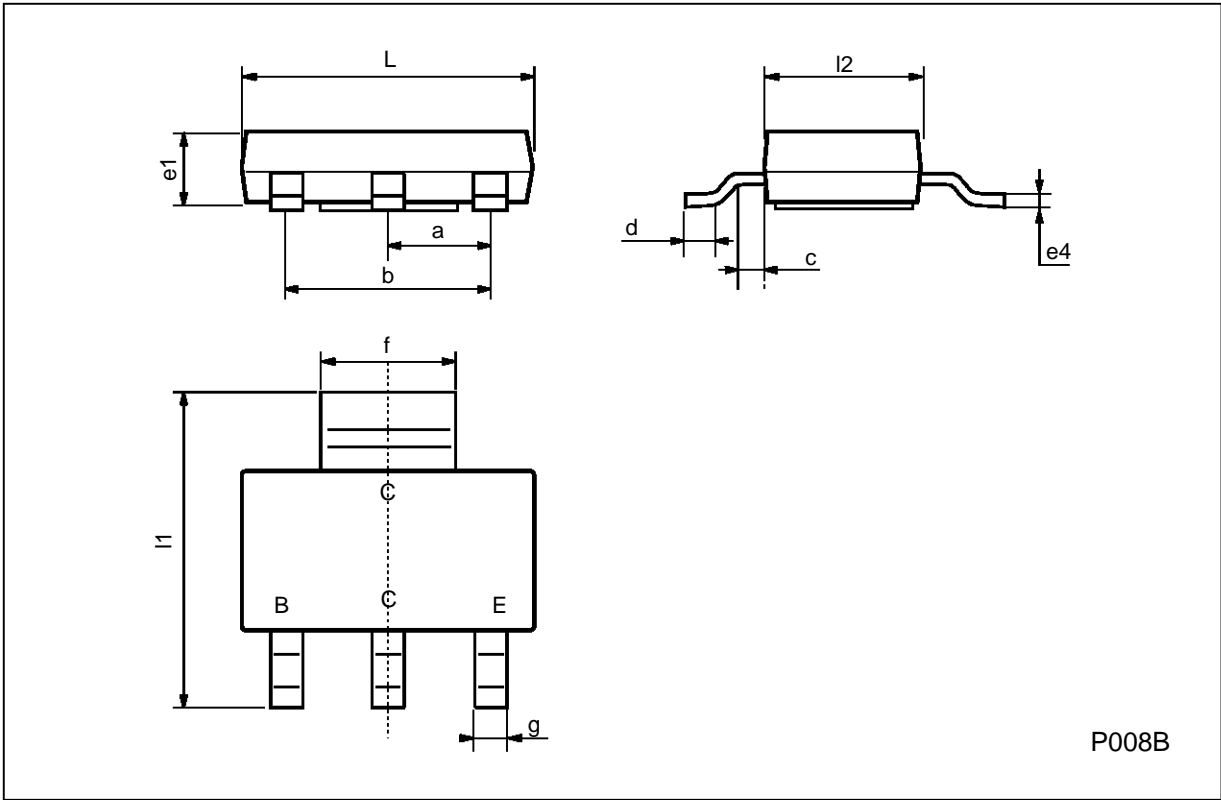
| Symbol      | Parameter                  | Test Conditions   | Min.       | Typ. | Max.       | Unit       |
|-------------|----------------------------|---|------------|------|------------|------------|
| $h_{fe}$ ** | Small Signal Current Gain  | $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$<br>$I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ | 50<br>75   |      | 300<br>375 | $K\Omega$  |
| $h_{ie}$ ** | Input Impedance            | $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$<br>$I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ | 2<br>0.25  |      | 8<br>1.25  |            |
| $h_{re}$ ** | Reverse Voltage Ratio      | $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$<br>$I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ |            |      | 8<br>4     | $10^{-4}$  |
| $h_{oe}$ ** | Output Impedance           | $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$<br>$I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ | 5<br>25    |      | 35<br>375  | S          |
| $f_T$       | Transition Frequency       | $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 100\text{ MHz}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b>                 | 250<br>300 |      |            | MHz<br>MHz |
| $C_{CBO}$   | Collector-Base Capacitance | $I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$   |            |      | 8          | pF         |
| $C_{EBO}$   | Emitter-Base Capacitance   | $I_C = 0$ $V_{EB} = 0.5\text{ V}$ $f = 1\text{ MHz}$<br>for <b>STZT2222</b><br>for <b>STZT2222A</b>                             |            |      | 30<br>25   | pF<br>pF   |
| NF          | Noise Figure               | $f = 1\text{ KHz}$ $\Delta F = 200\text{ Hz}$ $R_G = 1K\Omega$<br>$I_C = 0.1\text{ mA}$ $V_{CE} = 10\text{ V}$                  |            |      | 4          | dB         |
| $t_d$       | Delay Time                 | $I_C = 150\text{ mA}$ $I_{C1} = 15\text{ mA}$<br>$V_{BE} = -0.5\text{ V}$   |            |      | 10         | ns         |
| $t_r$       | Rise Time                  |   |            |      | 25         | ns         |
| $t_s$       | Storage Time               | $I_C = 150\text{ mA}$ $I_{C1} = 15\text{ mA}$   |            |      | 225        | ns         |
| $t_f$       | Fall Time                  | $I_{B2} = 15\text{ mA}$   |            |      | 60         | ns         |

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

\*\* Only for STZT2222A

**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