

# 2SB1691

## Silicon PNP Epitaxial Planer Low Frequency Power Amplifier

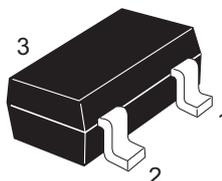
R07DS0272EJ0400  
Rev.4.00  
Jan 10, 2014

### Features

- Small size package: MPAK (SC-59A)
- Large Maximum current:  $I_C = -1$  A
- Low collector to emitter saturation voltage:  $V_{CE(sat)} = -0.3$  V max.(at  $I_C/I_B = -0.5$  A/ $-0.05$  A)
- High power dissipation:  $P_C = 800$  mW (when using alumina ceramic board (25 x 60 x 0.7 mm))
- Complementary pair with 2SD2655

### Outline

RENESAS Package code: PLSP0003ZB-A  
(Package name: MPAK)



1. Emitter
2. Base
3. Collector

Note: Marking is "WL-".

### Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

| Item                         | Symbol        | Ratings     | Unit             |
|------------------------------|---------------|-------------|------------------|
| Collector to base Voltage    | $V_{CBO}$     | -60         | V                |
| Collector to emitter voltage | $V_{CEO}$     | -50         | V                |
| Emitter to base voltage      | $V_{EBO}$     | -6          | V                |
| Collector current            | $I_C$         | -1          | A                |
| Collector peak current       | $i_{c(peak)}$ | -2          | A                |
| Collector power dissipation  | $P_C$         | 800*        | mW               |
| Junction temperature         | $T_j$         | 150         | $^\circ\text{C}$ |
| Storage temperature          | $T_{stg}$     | -55 to +150 | $^\circ\text{C}$ |

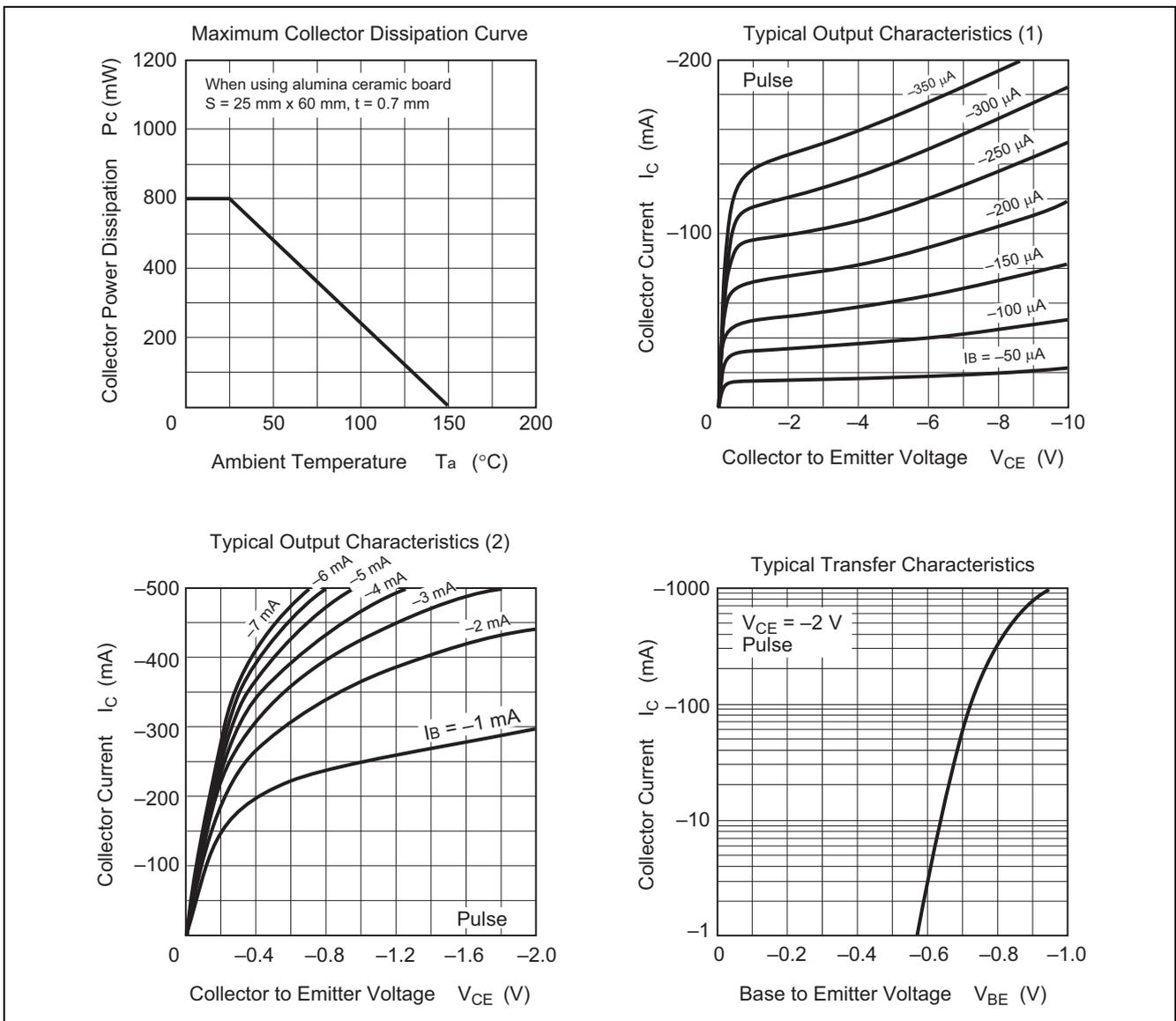
Note: \*When using alumina ceramic board (25 x 60 x 0.7 mm)

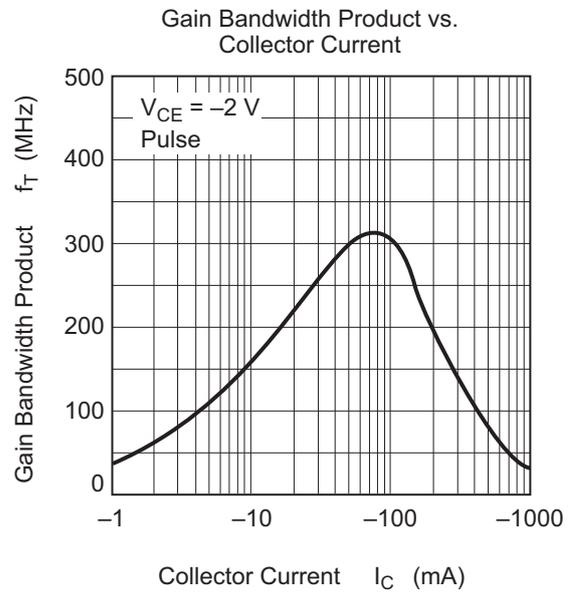
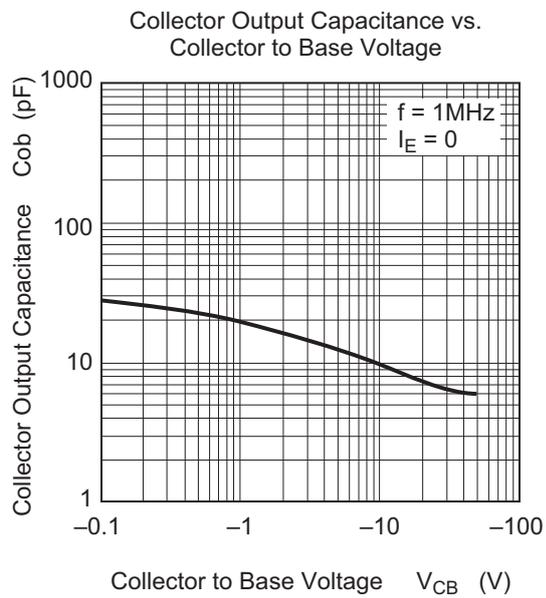
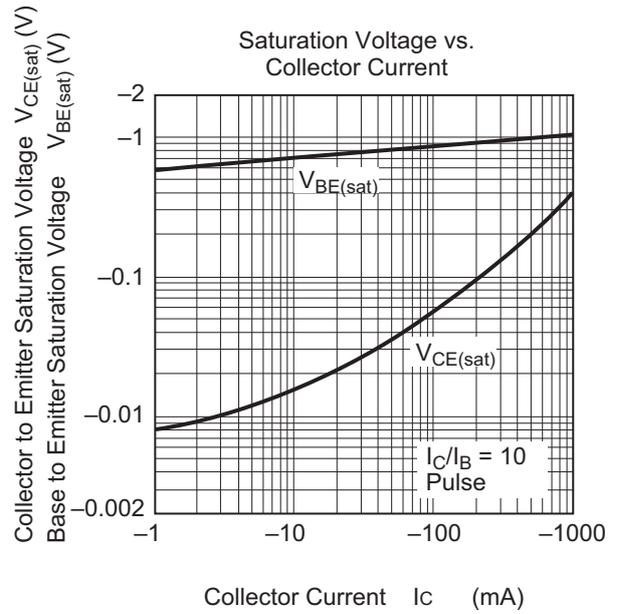
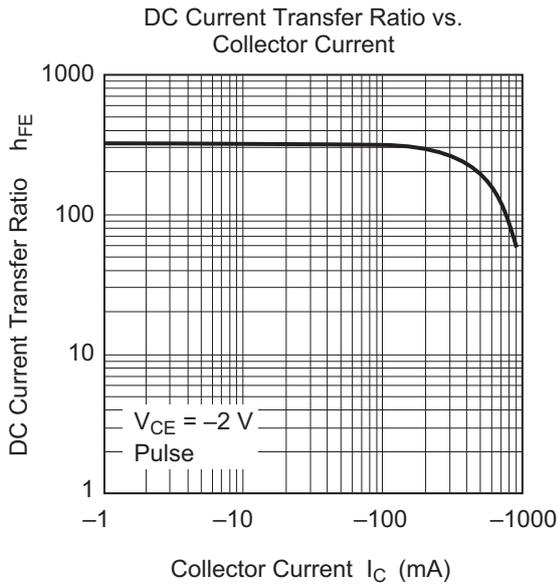
### Electrical Characteristics

(Ta = 25°C)

| Item                                    | Symbol        | Min | Typ   | Max  | Unit | Test Condition  |
|---|---------------|-----|-------|------|------|---|
| Collector to base breakdown voltage     | $V_{(BR)CBO}$ | -60 | —     | —    | V    | $I_C = -10 \mu A, I_E = 0$                                    |
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$ | -50 | —     | —    | V    | $I_C = -1 \text{ mA}, R_{BE} = \infty$                        |
| Emitter to base breakdown voltage       | $V_{(BR)EBO}$ | -6  | —     | —    | V    | $I_E = -10 \mu A, I_C = 0$                                    |
| Collector cutoff current                | $I_{CBO}$     | —   | —     | -100 | nA   | $V_{CB} = -50 \text{ V}, I_E = 0$                             |
| Emitter cutoff current                  | $I_{EBO}$     | —   | —     | -100 | nA   | $V_{EB} = -5 \text{ V}, I_C = 0$                              |
| DC current transfer ratio               | $h_{FE}$      | 200 | —     | 500  | —    | $V_{CE} = -2 \text{ V}, I_C = -0.1 \text{ A}$                 |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —   | -0.2  | -0.3 | V    | $I_C = -0.5 \text{ A}, I_B = -0.05 \text{ A}$ ,<br>Pulse test |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | —   | -0.95 | -1.2 | V    | $I_C = -0.5 \text{ A}, I_B = -0.05 \text{ A}$ ,<br>Pulse test |
| Gain bandwidth product                  | $f_T$         | —   | 310   | —    | MHz  | $V_{CE} = -2 \text{ V}, I_C = -0.1 \text{ A}$                 |
| Collector output capacitance            | $C_{ob}$      | —   | 9.8   | —    | pF   | $V_{CB} = -10 \text{ V}, I_E = 0$ ,<br>$f = 1 \text{ MHz}$    |

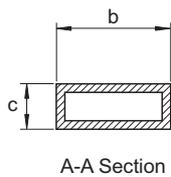
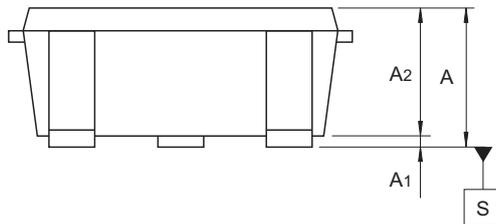
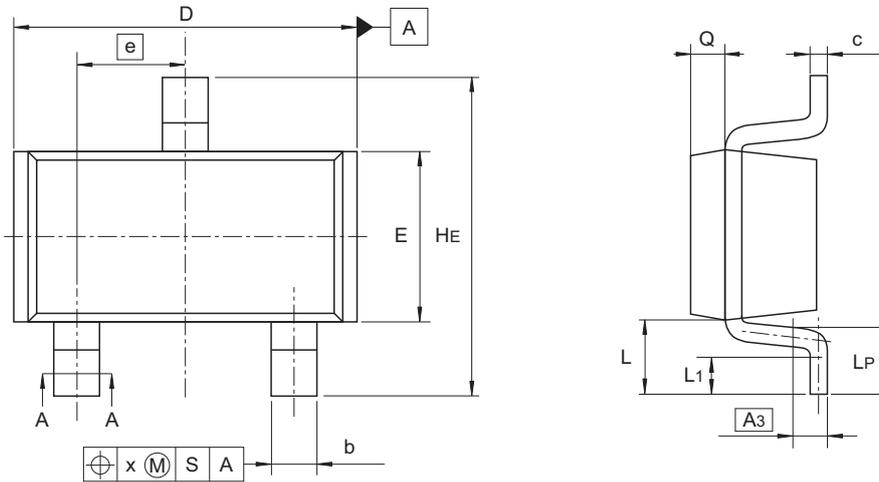
### Main Characteristics





### Package Dimensions

| JEITA Package Code | RENESAS Code | Previous Code      | MASS (Typ) [g] |
|--------------------|--------------|--------------------|----------------|
| SC-59A             | PLSP0003ZB-A | MPAK(T) / MPAK(T)V | 0.011          |



| Reference Symbol | Dimensions in millimeters |      |      |
|------------------|---------------------------|------|------|
|                  | Min                       | Nom  | Max  |
| A                | 1.0                       | —    | 1.3  |
| A1               | 0                         | —    | 0.1  |
| A2               | 1.0                       | 1.1  | 1.2  |
| A3               | —                         | 0.25 | —    |
| b                | 0.35                      | 0.4  | 0.5  |
| c                | 0.1                       | 0.16 | 0.26 |
| D                | 2.7                       | —    | 3.1  |
| E                | 1.35                      | 1.5  | 1.65 |
| e                | —                         | 0.95 | —    |
| HE               | 2.2                       | 2.8  | 3.0  |
| L                | 0.35                      | —    | 0.75 |
| L1               | 0.15                      | —    | 0.55 |
| LP               | 0.25                      | —    | 0.65 |
| x                | —                         | —    | 0.05 |
| Q                | —                         | 0.3  | —    |

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### Ordering Information

| Orderable Part Number            | Quantity | Shipping Container  |
|----------------------------------|----------|---------------------|
| 2SB1691WL-TL-E<br>2SB1691WL-TL-H | 3000 pcs | φ178 mm Taping Reel |

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