

## BCW68

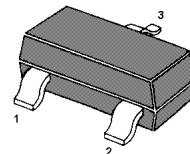
### PNP Silicon Epitaxial Planar Transistor

for high current application

The transistor is subdivided into three groups F, G and H according to its DC current gain.

#### Features

- Halogen and Antimony Free(HAF), RoHS compliant



1. Base 2. Emitter 3. Collector  
SOT-23 Plastic Package

#### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

| Parameter                 | Symbol     | Value         | Unit             |
|---------------------------|------------|---------------|------------------|
| Collector Base Voltage    | $-V_{CBO}$ | 60            | V                |
| Collector Emitter Voltage | $-V_{CEO}$ | 45            | V                |
| Emitter Base Voltage      | $-V_{EBO}$ | 5             | V                |
| Collector Current         | $-I_C$     | 800           | mA               |
| Peak Collector Current    | $-I_{CM}$  | 1             | A                |
| Base Current              | $-I_B$     | 100           | mA               |
| Peak Base Current         | $-I_{BM}$  | 200           | mA               |
| Power Dissipation         | $P_{tot}$  | 200           | mW               |
| Junction Temperature      | $T_j$      | 150           | $^\circ\text{C}$ |
| Storage Temperature Range | $T_{stg}$  | - 55 to + 150 | $^\circ\text{C}$ |

#### Thermal Characteristics

| Parameter                                                 | Symbol          | Max. | Unit               |
|-----------------------------------------------------------|-----------------|------|--------------------|
| Thermal Resistance from Junction to Ambient <sup>1)</sup> | $R_{\theta JA}$ | 625  | $^\circ\text{C/W}$ |

<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

**Characteristics at  $T_a = 25^\circ\text{C}$** 

| Parameter                                                                                                                                      | Symbol         | Min.                             | Max.              | Unit              |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------|-------------------|-------------------|
| DC Current Gain                                                                                                                                |                |                                  |                   |                   |
| at $-V_{CE} = 10\text{ V}$ , $-I_C = 100\text{ }\mu\text{A}$                                                                                   | F<br>G<br>H    | $h_{FE}$<br>$h_{FE}$<br>$h_{FE}$ | 35<br>50<br>80    | -<br>-<br>-       |
| at $-V_{CE} = 1\text{ V}$ , $-I_C = 10\text{ mA}$                                                                                              | F<br>G<br>H    | $h_{FE}$<br>$h_{FE}$<br>$h_{FE}$ | 75<br>120<br>180  | -<br>-<br>-       |
| at $-V_{CE} = 1\text{ V}$ , $-I_C = 100\text{ mA}$                                                                                             | F<br>G<br>H    | $h_{FE}$<br>$h_{FE}$<br>$h_{FE}$ | 100<br>160<br>250 | 250<br>400<br>630 |
| at $-V_{CE} = 2\text{ V}$ , $-I_C = 500\text{ mA}$                                                                                             | F<br>G<br>H    | $h_{FE}$<br>$h_{FE}$<br>$h_{FE}$ | 35<br>60<br>100   | -<br>-<br>-       |
| Collector Base Cutoff Current<br>at $-V_{CB} = 45\text{ V}$                                                                                    | $-I_{CBO}$     | -                                | 20                | nA                |
| Emitter Base Cutoff Current<br>at $-V_{EB} = 4\text{ V}$                                                                                       | $-I_{EBO}$     | -                                | 20                | nA                |
| Collector Base Breakdown Voltage<br>at $-I_C = 10\text{ }\mu\text{A}$                                                                          | $-V_{(BR)CBO}$ | 60                               | -                 | V                 |
| Collector Emitter Breakdown Voltage<br>at $-I_C = 10\text{ mA}$                                                                                | $-V_{(BR)CEO}$ | 45                               | -                 | V                 |
| Emitter Base Breakdown Voltage<br>at $-I_E = 10\text{ }\mu\text{A}$                                                                            | $-V_{(BR)EBO}$ | 5                                | -                 | V                 |
| Collector Emitter Saturation Voltage<br>at $-I_C = 100\text{ mA}$ , $-I_B = 10\text{ mA}$<br>at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$ | $-V_{CE(sat)}$ | -<br>-                           | 0.3<br>0.7        | V                 |
| Base Emitter Saturation Voltage<br>at $-I_C = 100\text{ mA}$ , $-I_B = 10\text{ mA}$<br>at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$      | $-V_{BE(sat)}$ | -<br>-                           | 1.25<br>2         | V                 |
| Transition Frequency<br>at $-V_{CE} = 10\text{ V}$ , $-I_C = 20\text{ mA}$ , $f = 100\text{ MHz}$                                              | $f_T$          | 100                              | -                 | MHz               |
| Collector Base Capacitance<br>at $-V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                                                                  | $C_{ob}$       | -                                | 18                | pF                |

## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

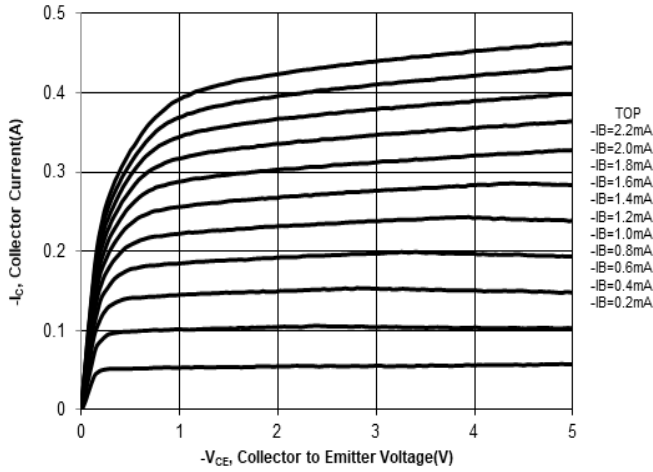


Fig. 2 Output Characteristics Curve

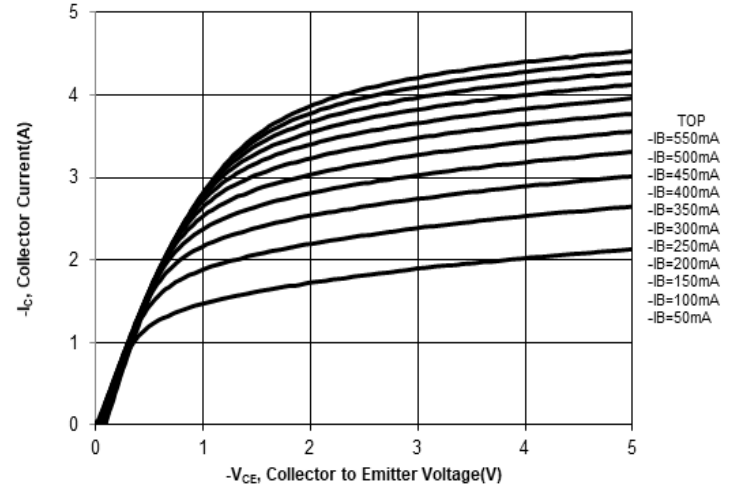


Fig. 3 Collector Current vs. Base to Emitter Voltage

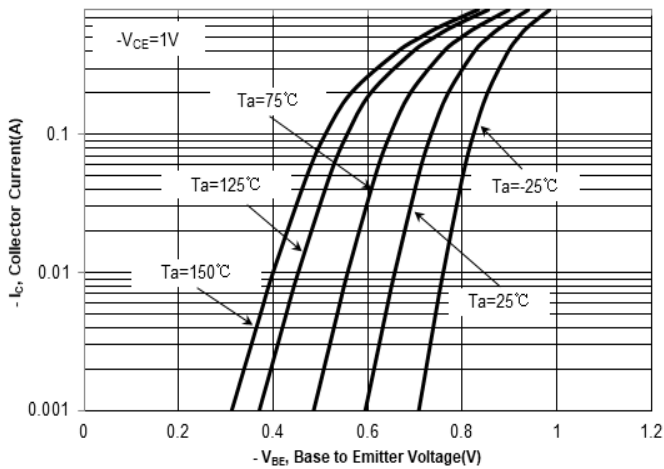
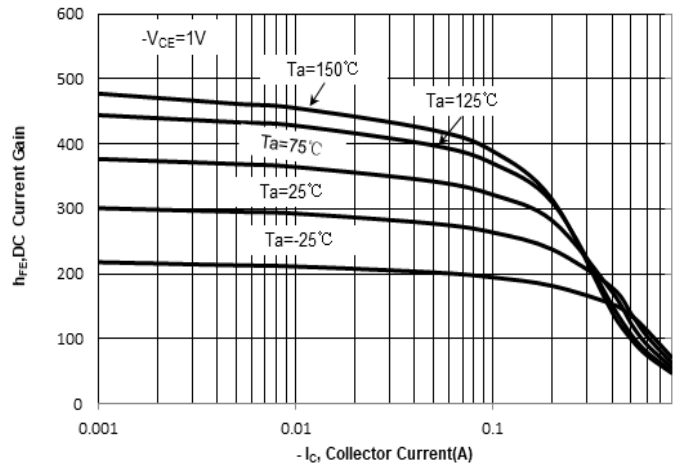


Fig. 4 DC Current Gain vs. Collector Current



## Electrical Characteristics Curves

Fig. 5  $V_{BE(sat)}$  vs. Collector Current

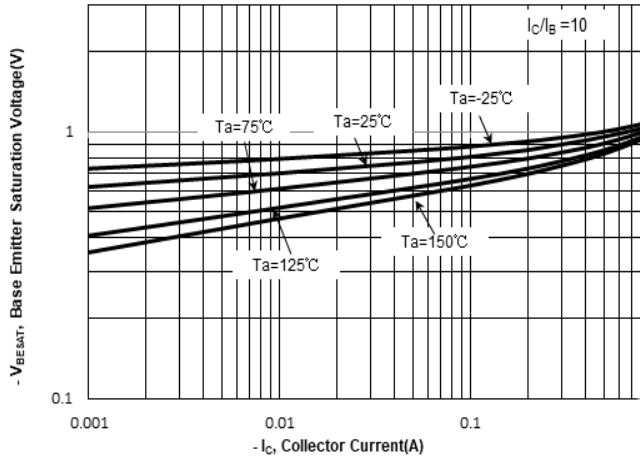


Fig. 6  $V_{CE(sat)}$  vs. Collector Current

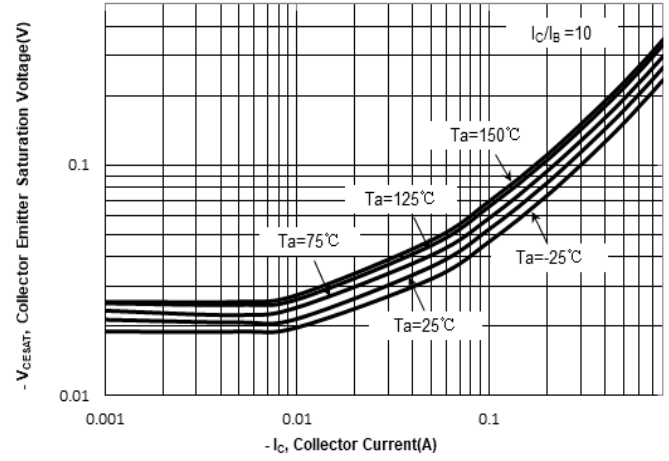
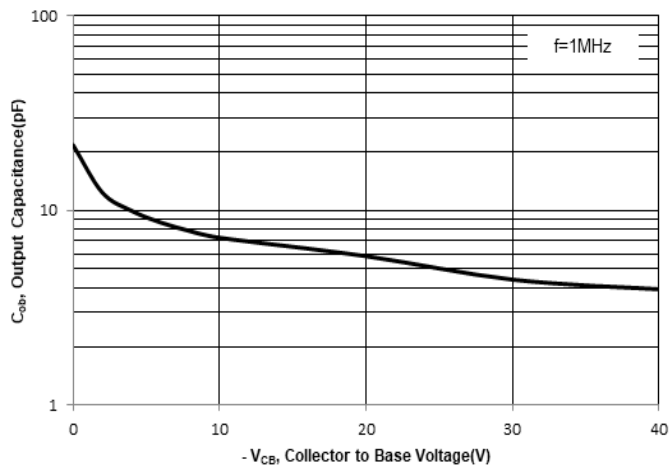
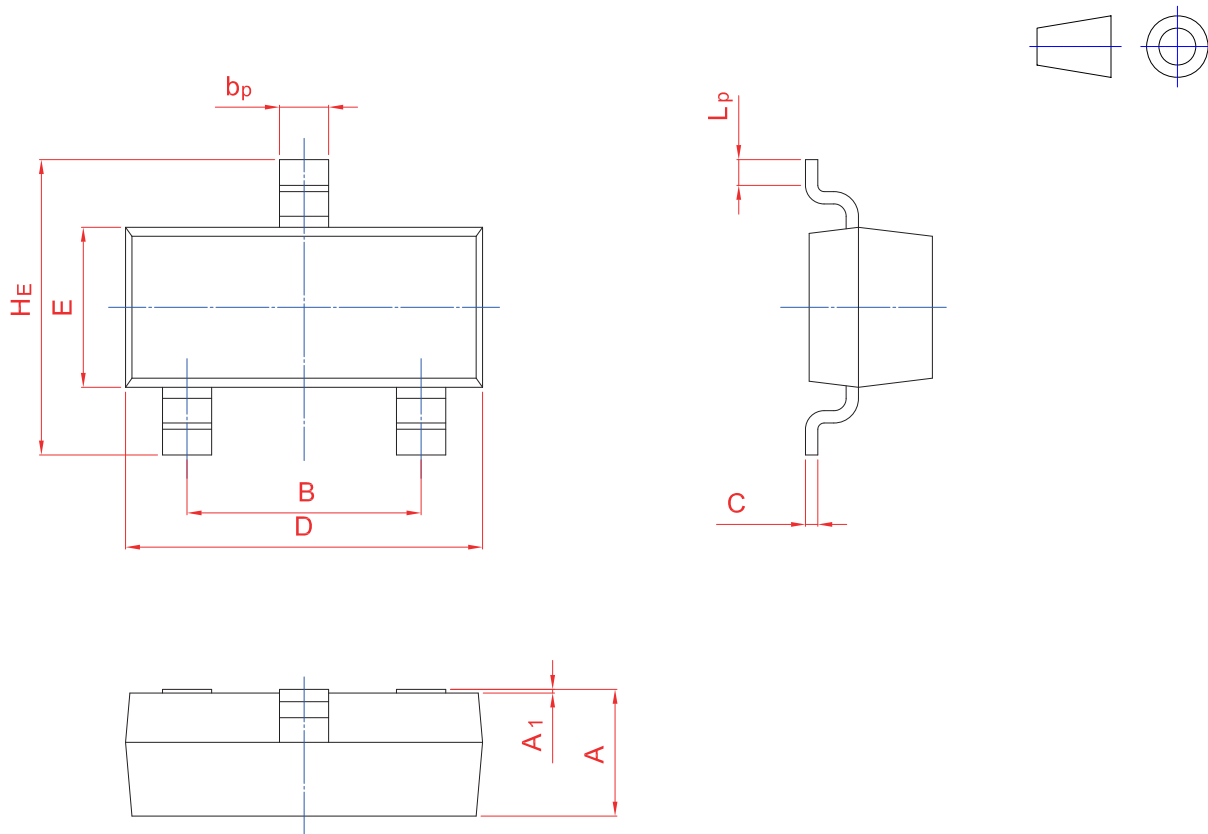


Fig. 7 Output Capacitance



## Package Outline

SOT-23



| UNIT | A            | B            | $b_p$        | C            | D            | E            | $H_E$        | $A_1$          | $L_p$        |
|------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|--------------|
| mm   | 1.40<br>0.89 | 2.04<br>1.78 | 0.51<br>0.30 | 0.19<br>0.08 | 3.10<br>2.70 | 1.65<br>1.20 | 3.00<br>2.20 | 0.100<br>0.013 | 0.50<br>0.20 |