

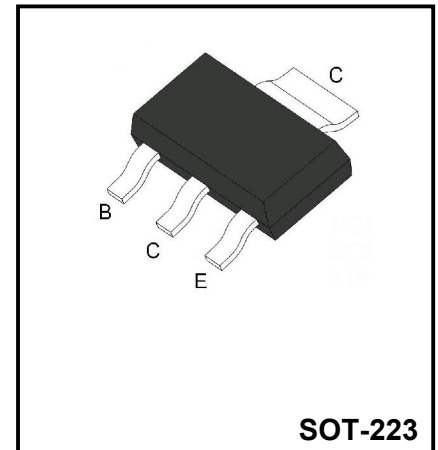
**NPN Plastic-Encapsulate Transistors**

**Application**

- ♦ Power management
  - DC/DC converters
  - Supply line switching
  - Battery charger
  - Linear voltage regulation (LDO).
- ♦ Peripheral drivers
  - Driver in low supply voltage applications, e.g. lamps, LEDs
  - Inductive load driver, e.g. relays, buzzers, motors.

**Feature**

- ♦ Low collector-emitter saturation voltage
- ♦ High collector current capability:  $I_C$  and  $I_{CM}$
- ♦ High collector current gain ( $h_{FE}$ ) at high  $I_C$
- ♦ Higher efficiency leading to less heat generation
- ♦ Complement to PBSS4350Z



**Marking: PB4350**

**Absolute Maximum Rating ( $T_C=25^{\circ}C$  unless otherwise noted)**

| Parameter                      | Symbol     | Value   | Unit        |
|--------------------------------|------------|---------|-------------|
| Collector-Base Voltage         | $BV_{CBO}$ | 60      | V           |
| Collector-Emitter Voltage      | $BV_{CEO}$ | 50      | V           |
| Emitter-Base Voltage           | $BV_{EBO}$ | 6       | V           |
| Collector Current(DC)          | $I_C$      | 3       | A           |
| Peak collector current Current | $I_{CM}$   | 5       | A           |
| Collector Power Dissipation    | $P_C$      | 1.35    | W           |
| Junction Temperature           | $T_j$      | 150     | $^{\circ}C$ |
| Storage Temperature            | $T_{stg}$  | -55~150 | $^{\circ}C$ |

**Thermal Characteristics**

| Parameter                              | Symbol          | Conditions           | Value | Unit          |
|--|-----------------|----------------------|-------|---------------|
| Resistance from junction to ambient in | $R_{\theta JA}$ | in free air; notes 1 | 92    | $^{\circ}C/W$ |
|  |                 | in free air; notes 2 | 62.5  | $^{\circ}C/W$ |

**Notes**

1. Device mounted on a printed-circuit board; single sided copper; tin plated; mounting pad for collector  $1\text{cm}^2$
2. Device mounted on a printed-circuit board; single sided copper; tin plated; mounting pad for collector  $6\text{cm}^2$

**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

| Parameter                             | Symbol        | Conditions  | Value |     |      | Unit       |
|---------------------------------------|---------------|---|-------|-----|------|------------|
|                                       |               |   | Min   | Typ | Max  |            |
| Collector-base breakdown voltage      | $BV_{CBO}$    | $I_C = 100\mu\text{A}, I_E = 0$                       | 60    |     |      | V          |
| Collector-emitter breakdown voltage   | $BV_{CEO}$    | $I_C = 1\text{mA}, I_B = 0$                           | 50    |     |      | V          |
| Emitter-base breakdown voltage        | $BV_{EBO}$    | $I_E = 100\mu\text{A}, I_C = 0$                       | 6     |     |      | V          |
| Collector cut-off current             | $I_{CBO}$     | $V_{CB} = 50\text{V}, I_B = 0$                        |       |     | 100  | nA         |
| Emitter cut-off current               | $I_{EBO}$     | $V_{EB} = 5\text{V}, I_C = 0$                         |       |     | 100  | nA         |
| DC current gain*                      | $h_{FE}$      | $V_{CE} = 2\text{V}, I_C = 500\text{mA}$              | 200   |     |      |            |
|                                       |               | $V_{CE} = 2\text{V}, I_C = 1\text{A}$                 | 200   |     |      |            |
|                                       |               | $V_{CE} = 2\text{V}, I_C = 2\text{A}$                 | 100   |     |      |            |
| Collector-emitter saturation voltage* | $V_{CE(sat)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$               |       |     | -90  | mV         |
|                                       |               | $I_C = 1\text{A}, I_B = 50\text{mA}$                  |       |     | -170 | mV         |
|                                       |               | $I_C = 2\text{A}, I_B = 200\text{mA}$                 |       |     | -290 | mV         |
| Equivalent on-resistance*             | $R_{CEsat}$   | $I_C = 2\text{A}, I_B = 200\text{mA}$                 |       |     | 145  | m $\Omega$ |
| Base-emitter saturation voltage*      | $V_{BE(sat)}$ | $I_C = -2\text{A}, I_B = -200\text{mA}$               |       |     | -1.2 | V          |
| *Base-emitter turn-on voltage*        | $V_{BE(on)}$  | $V_{CE} = 2\text{V}, I_C = 1\text{A}$                 |       |     | -1.1 | V          |
| Transition frequency                  | $f_T$         | $V_{CE} = 5\text{V}, I_C = 100\text{mA}$              | 100   |     |      | MHz        |
| Collector capacitance                 | $C_C$         | $V_{CB} = 10\text{V}, I_E = I_C = 0, f = 1\text{MHz}$ |       |     | 30   | pF         |

Note:

\* Pulse test:  $PW \leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$  Pulse

Typical Characteristics

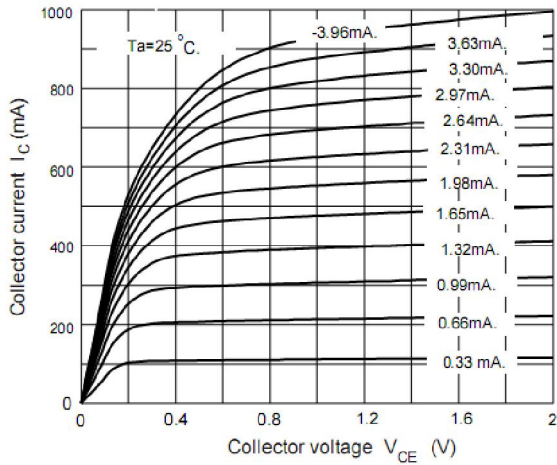


Figure 1. Static Characteristic

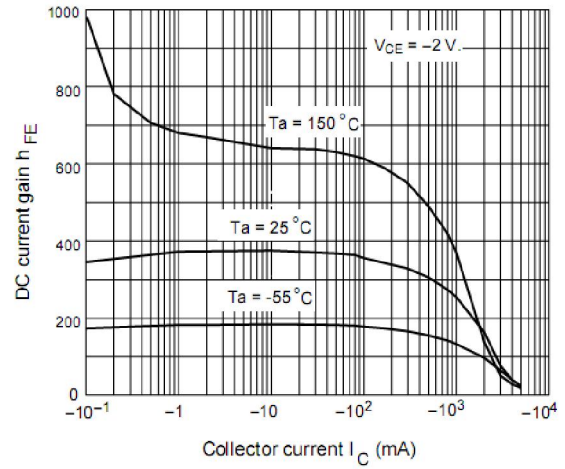


Figure 2. DC current Gain

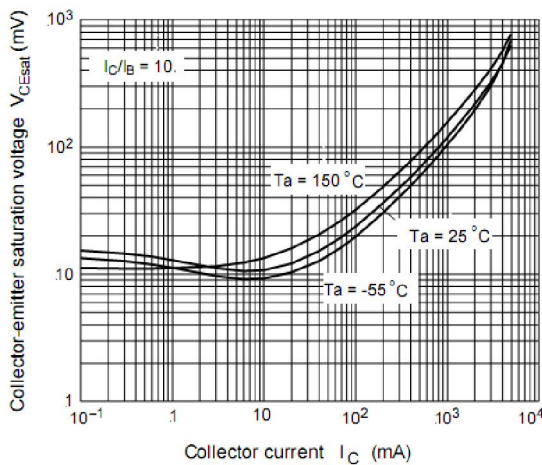


Figure 3. Collector-Emitter Saturation Voltage

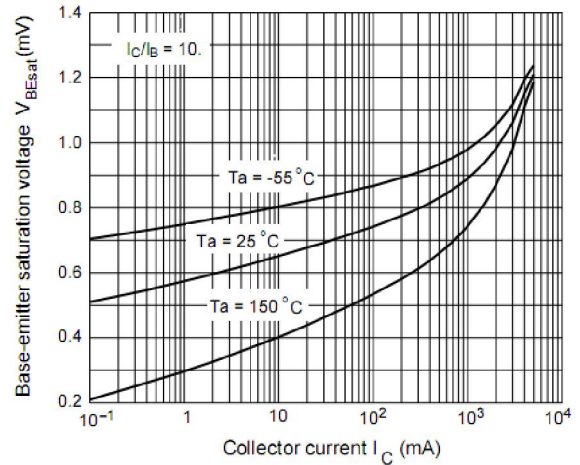


Figure 4. Base-Emitter Saturation Voltage

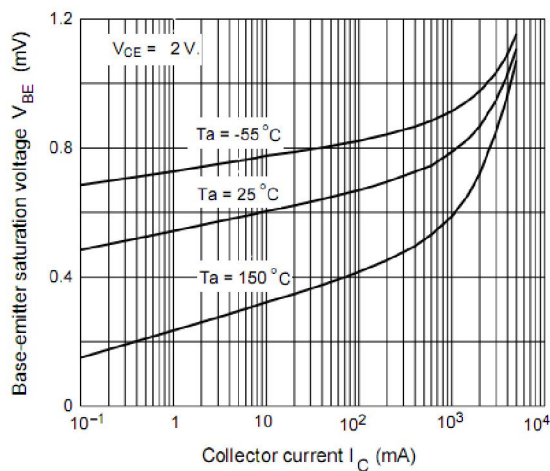


Figure 5. Base-Emitter on Voltage

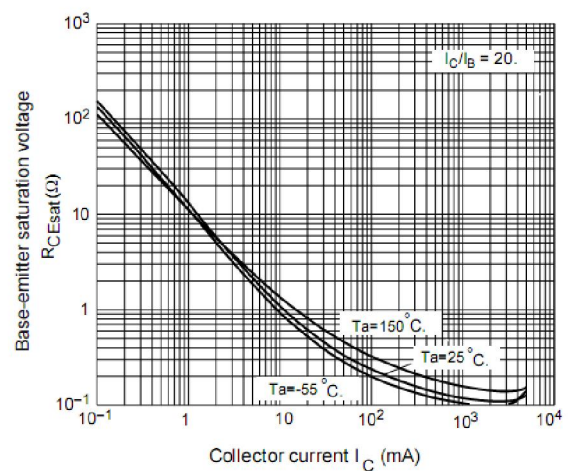


Figure 6. Equivalent on-resistance

| Symbol | Millimeter |      | Inches |       |
|--------|------------|------|--------|-------|
|        | Min.       | Max. | Min.   | Max.  |
| A      | 1.50       | 1.80 | 0.059  | 0.071 |
| A1     | 0.00       | 0.10 | 0.000  | 0.004 |
| A2     | 1.50       | 1.70 | 0.059  | 0.067 |
| b      | 0.65       | 0.75 | 0.026  | 0.030 |
| c      | 0.20       | 0.30 | 0.008  | 0.012 |
| D      | 6.40       | 6.60 | 0.252  | 0.260 |
| D1     | 2.90       | 3.10 | 0.114  | 0.122 |
| E      | 3.30       | 3.70 | 0.130  | 0.146 |
| E1     | 6.85       | 7.15 | 0.270  | 0.281 |
| e      | 2.20       | 2.40 | 0.087  | 0.094 |
| e1     | 4.40       | 4.80 | 0.173  | 0.189 |
| L      | 1.65       | 1.85 | 0.065  | 0.073 |
| L1     | 0.90       | 1.15 | 0.035  | 0.045 |

**Summary of Packing Options**

| Package | Package Description | Packing Quantity | Industry Standard |
|---------|---------------------|------------------|-------------------|
| SOT-223 | Tape/Reel,7"reel    | 2500             | EIA-481-1         |