



# THE DATASHEET OF BC856S-TP

## Features

- Multi-Chip Transistor
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

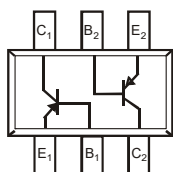
## Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 625°C/W Junction to Ambient

| Parameter                   | Symbol    | Rating | Unit |
|-----------------------------|-----------|--------|------|
| Collector-Base Voltage      | $V_{CBO}$ | -80    | V    |
| Collector-Emitter Voltage   | $V_{CEO}$ | -65    | V    |
| Emitter-Base Voltage        | $V_{EBO}$ | -5     | V    |
| Collector Current           | $I_C$     | -100   | mA   |
| Collector Power Dissipation | $P_C$     | 200    | mW   |

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

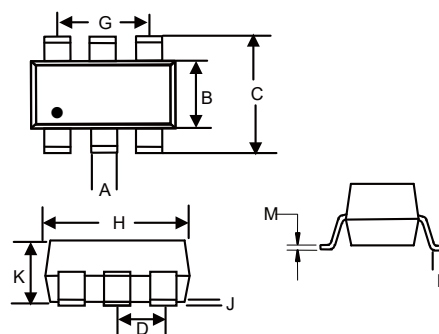
## Internal Structure



Marking: 5Ft

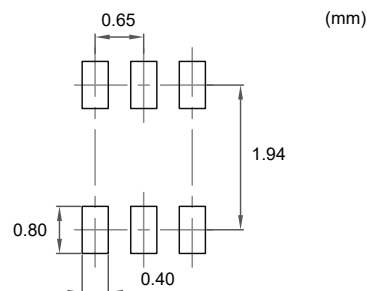
## PNP Plastic-Encapsulate Transistors

## SOT-363



| DIM | INCHES |       | MM    |      | NOTE |
|-----|--------|-------|-------|------|------|
|     | MIN    | MAX   | MIN   | MAX  |      |
| A   | 0.006  | 0.014 | 0.15  | 0.35 |      |
| B   | 0.045  | 0.053 | 1.15  | 1.35 |      |
| C   | 0.079  | 0.096 | 2.00  | 2.45 |      |
| D   | 0.026  |       | 0.65  |      | TYP. |
| G   | 0.047  | 0.055 | 1.20  | 1.40 |      |
| H   | 0.071  | 0.087 | 1.80  | 2.20 |      |
| J   | -----  | 0.004 | ----- | 0.10 |      |
| K   | 0.031  | 0.043 | 0.80  | 1.10 |      |
| L   | 0.010  | 0.018 | 0.26  | 0.46 |      |
| M   | 0.003  | 0.006 | 0.08  | 0.15 |      |

## Suggested Solder Pad Layout



**Electrical Characteristics @ 25°C Unless Otherwise Specified**

| Parameter                            | Symbol        | Min | Typ   | Max   | Units | Conditions                              |
|--------------------------------------|---------------|-----|-------|-------|-------|-----------------------------------------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | -80 |       |       | V     | $I_C = -10\mu A, I_E = 0$               |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | -65 |       |       | V     | $I_C = -10mA, I_B = 0$                  |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | -5  |       |       | V     | $I_E = -10\mu A, I_C = 0$               |
| Collector-Base Cutoff Current        | $I_{CBO}$     |     |       | -15   | nA    | $V_{CB} = -30V, I_E = 0$                |
| Emitter-Base Cutoff Current          | $I_{EBO}$     |     |       | -100  | nA    | $V_{EB} = -5V, I_C = 0$                 |
| DC Current Gain <sup>(Note 2)</sup>  | $h_{FE}$      | 110 |       |       |       | $V_{CE} = -5V, I_C = -2mA$              |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ |     |       | -0.3  | V     | $I_C = -10mA, I_B = -0.5mA$             |
|                                      |               |     |       | -0.65 | V     | $I_C = -100mA, I_B = -5mA$              |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ |     | -0.75 | -0.85 | V     | $I_C = -10mA, I_B = -0.5mA$             |
| Base-Emitter Voltage                 | $V_{BE}$      |     |       | -0.75 | V     | $V_{CE} = -5V, I_C = -2mA$              |
| Transition Frequency                 | $f_T$         | 100 |       |       | MHz   | $V_{CE} = -5V, I_C = -10mA, f = 100MHz$ |
| Collector Output Capacitance         | $C_{ob}$      |     |       | 2.5   | pF    | $V_{CB} = -10V, I_E = 0, f = 1MHz$      |

Note: 2. Pluse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

## Curve Characteristics

Fig. 1 - Static Characteristics

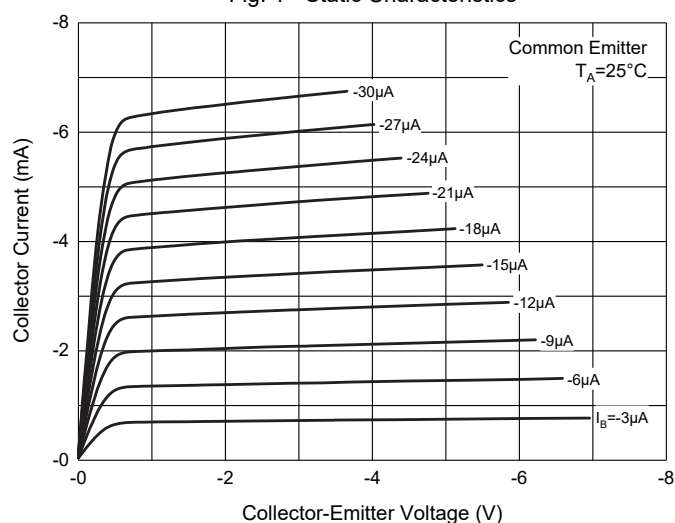


Fig. 2 - DC Current Gain Characteristics

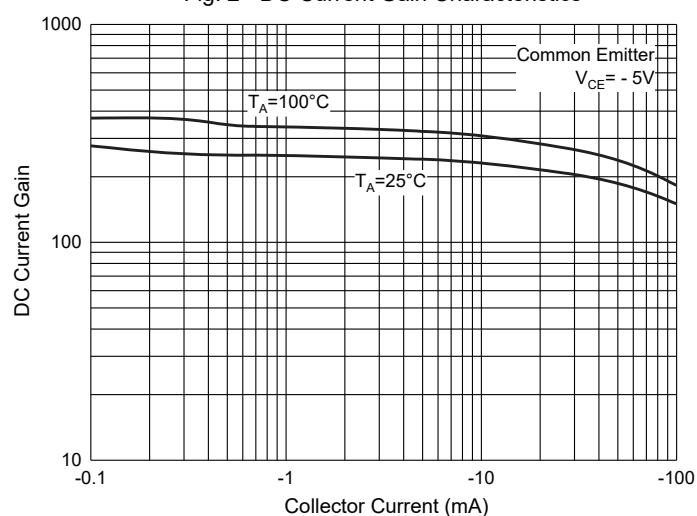


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

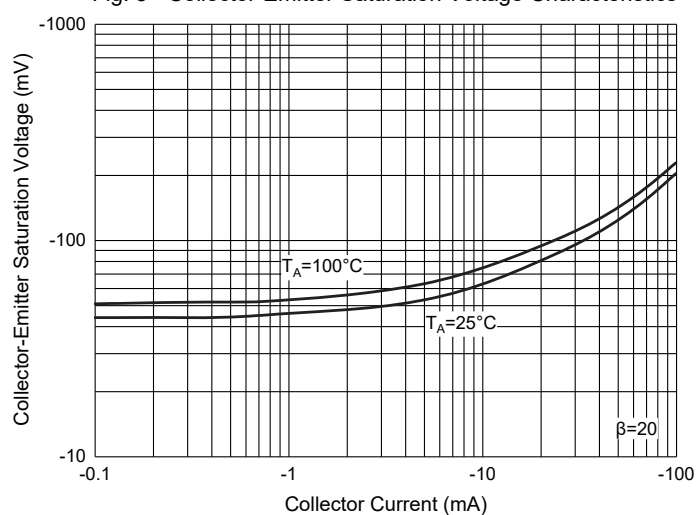


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

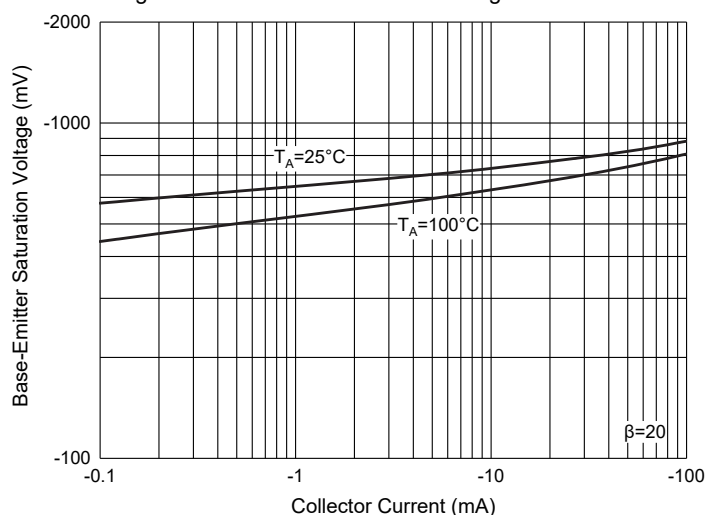


Fig. 5 - Base-Emitter Voltage Characteristics

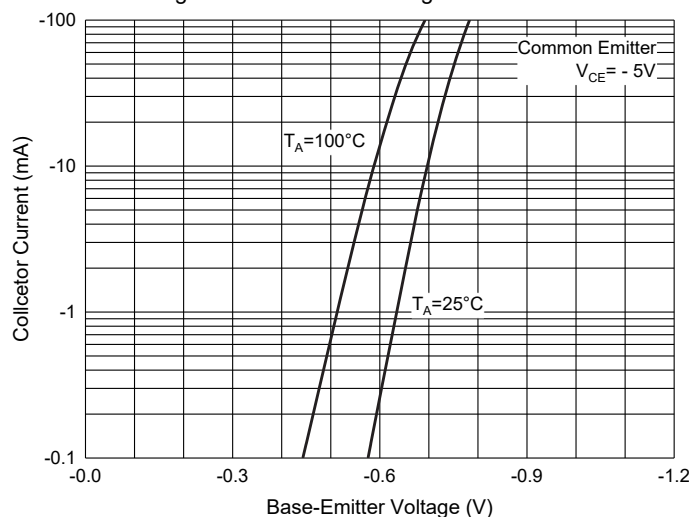
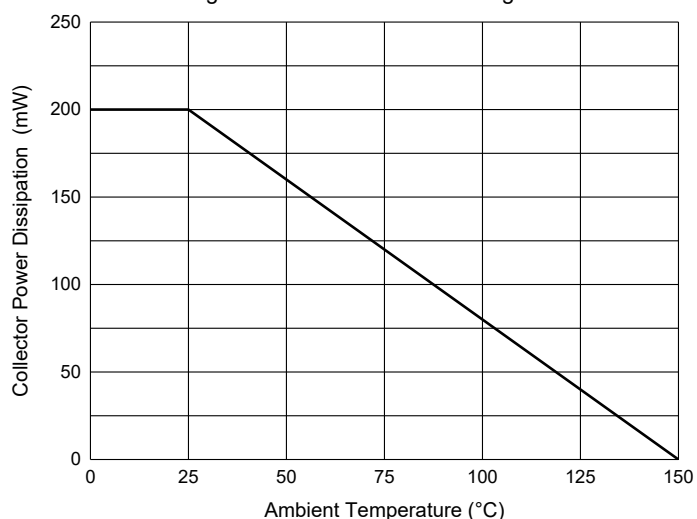


Fig. 6 - Collector Power Derating Curve



## Ordering Information

| Device          | Packing               |
|-----------------|-----------------------|
| Part Number-TP  | Tape&Reel:3Kpcs/Reel  |
| Part Number-13P | Tape&Reel:10Kpcs/Reel |

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