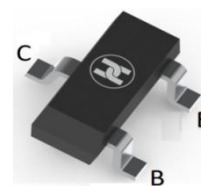


## BIPOLAR TRANSISTOR (PNP)

### FEATURES

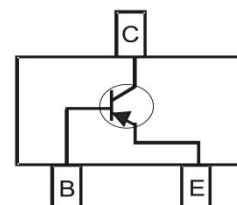
- Complementary to BC846
- Ideally suited for automatic insertion
- For switching and AF amplifier applications
- Surface Mount device



**SOT-23**

### MECHANICAL DATA

- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.008 grams (approximate)



### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter                                   | Symbol          | Value     | 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                 |
| Thermal Resistance From Junction To Ambient | $R_{\theta JA}$ | 625       | $^\circ\text{C/W}$ |
| Junction Temperature                        | $T_J$           | 150       | $^\circ\text{C}$   |
| Storage Temperature                         | $T_{STG}$       | -55 ~+150 | $^\circ\text{C}$   |

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

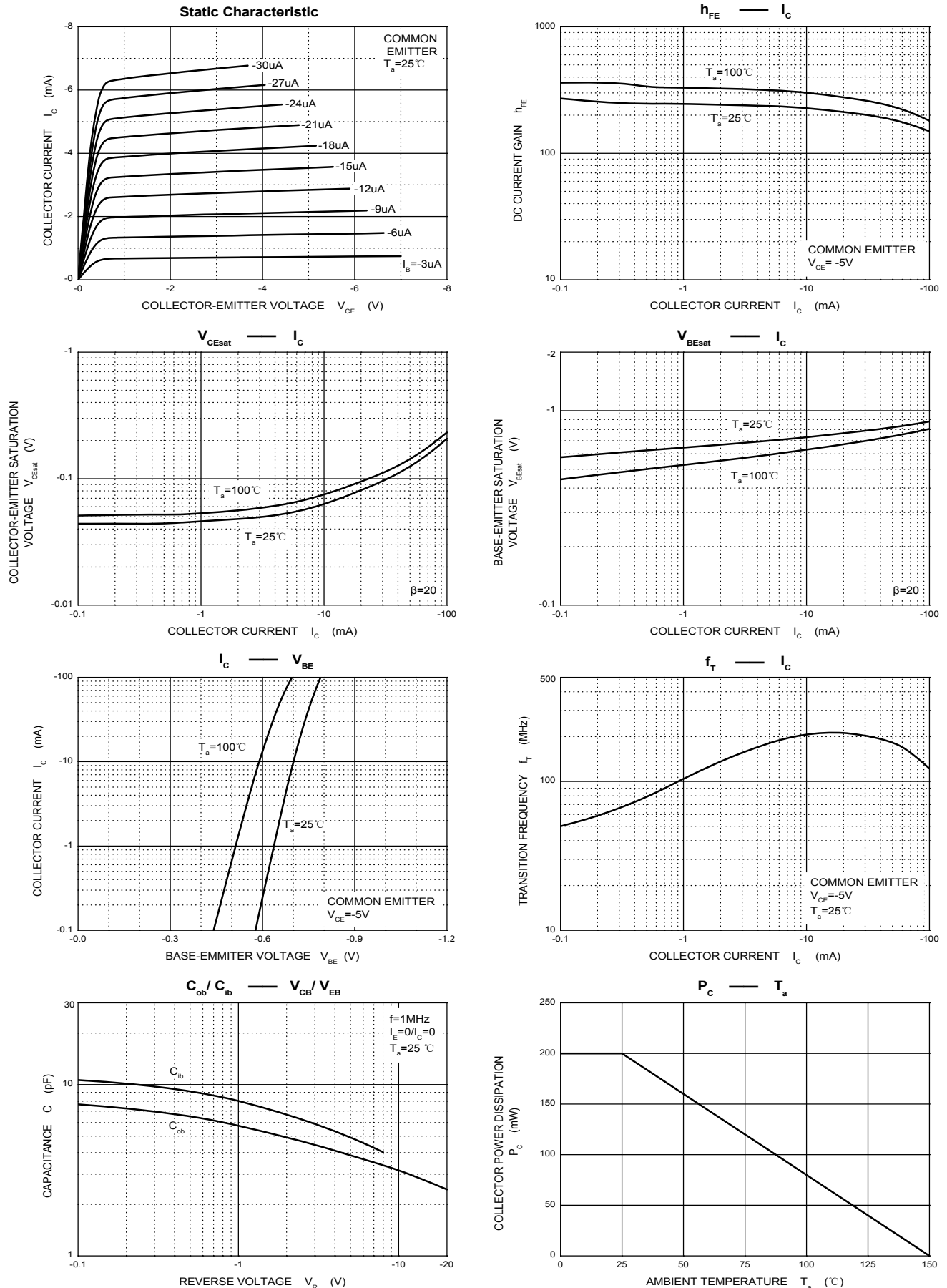
| Parameter                            | Symbol        | Min | Typ | Max  | Unit          | Conditions                                                         |
|--------------------------------------|---------------|-----|-----|------|---------------|--------------------------------------------------------------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | -80 |     |      | V             | $I_C = -10\mu\text{A}$ , $I_E = 0$                                 |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | -65 |     |      | V             | $I_C = -10\text{mA}$ , $I_B = 0$                                   |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | -5  |     |      | V             | $I_E = -1\mu\text{A}$ , $I_C = 0$                                  |
| Collector cut-off current            | $I_{CBO}$     |     |     | -0.1 | $\mu\text{A}$ | $V_{CB} = -70\text{V}$ , $I_E = 0$                                 |
| Emitter cut-off current              | $I_{EBO}$     |     |     | -0.1 | $\mu\text{A}$ | $V_{EB} = -5\text{V}$ , $I_C = 0$                                  |
| DC current gain                      | $h_{FE1}$     | 125 |     | 800  |               | $V_{CE} = -5\text{V}$ , $I_C = -2\text{mA}$                        |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ |     |     | -0.5 | V             | $I_C = -100\text{mA}$ , $I_B = -5\text{mA}$                        |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ |     |     | -1.1 | V             | $I_C = -100\text{mA}$ , $I_B = -5\text{mA}$                        |
| Transition frequency                 | $f_T$         | 100 |     |      | MHz           | $V_{CE} = -5\text{V}$ , $I_C = -10\text{mA}$ , $f = 100\text{MHz}$ |
| Collector output capacitance         | $C_{ob}$      |     |     | 4.5  | pF            | $V_{CE} = -10\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$             |

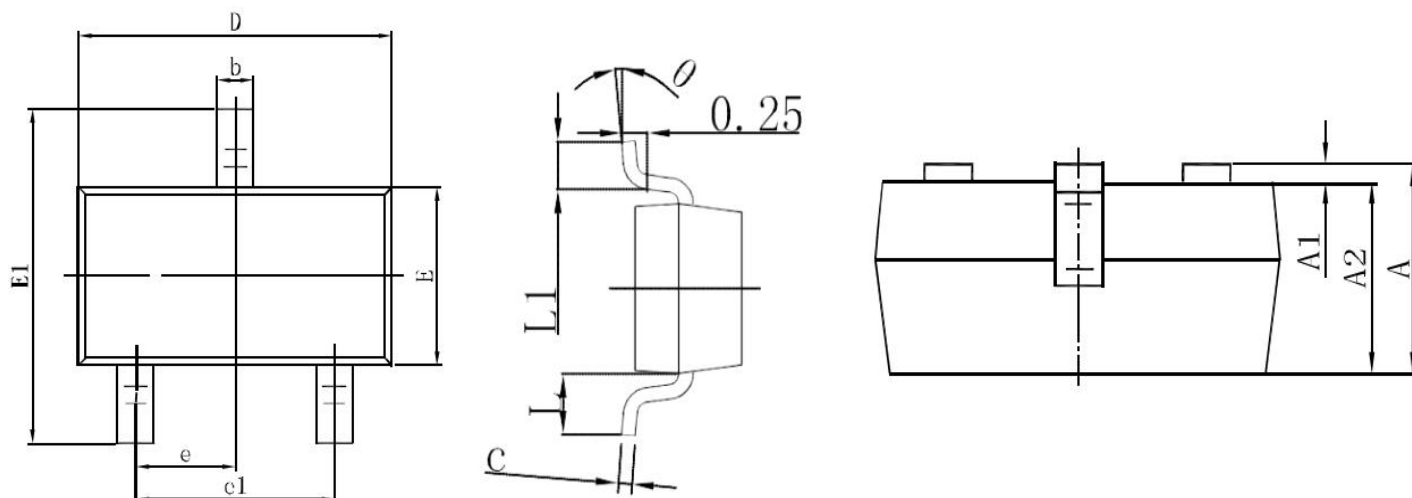
### CLASSIFICATION OF $h_{FE}$

|         |         |         |         |
|---------|---------|---------|---------|
| Rank    | 856A    | 856B    | 856C    |
| Range   | 125-250 | 220-475 | 420-800 |
| Marking | 3A      | 3B      | 3C      |

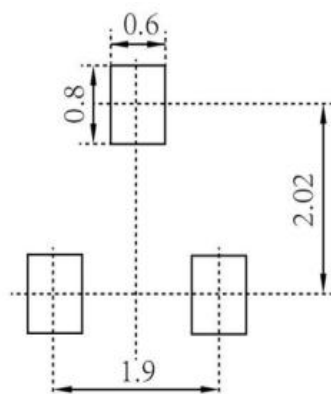
## BIPOLAR TRANSISTOR (PNP)

### Typical Characteristics



**BIPOLAR TRANSISTOR (PNP)**
**SOT-23 Package Outline Dimensions**


| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.354                | 0.453 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.039 |
| A2     | 0.900                     | 1.050 | 0.354                | 0.413 |
| b      | 0.300                     | 0.500 | 0.118                | 0.197 |
| c      | 0.080                     | 1.150 | 0.031                | 0.453 |
| D      | 2.900                     | 3.100 | 1.142                | 1.220 |
| E      | 1.200                     | 1.400 | 0.472                | 0.551 |
| E1     | 2.250                     | 2.550 | 0.886                | 1.004 |
| e      | 0.95REF                   |       | 0.374REF             |       |
| e1     | 1.800                     | 2.000 | 0.709                | 0.787 |
| L      | 0.55REF                   |       | 0.215REF             |       |
| L1     | 0.300                     | 0.500 | 0.118                | 0.197 |

**SOT-23 Suggested Pad Layout**


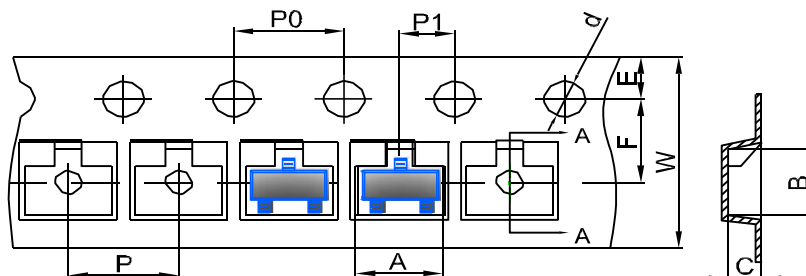
Note:

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

## BIPOLAR TRANSISTOR (PNP)

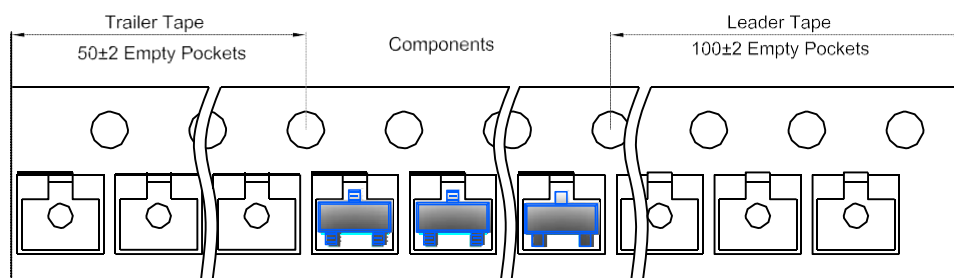
### SOT-23 Tape and Reel

#### SOT-23 Embossed Carrier Tape

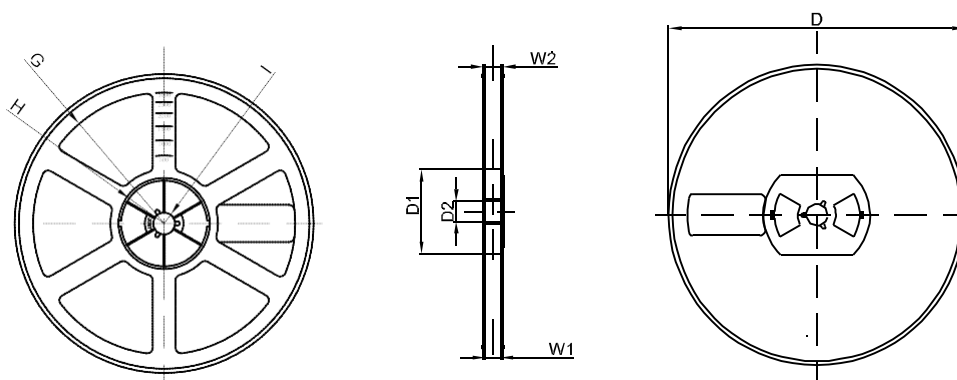


|           | DIMENSIONS ARE IN MILLIMETER |      |      |       |      |      |      |      |      |      |
|-----------|------------------------------|------|------|-------|------|------|------|------|------|------|
| TYPE      | A                            | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOT-23    | 3.15                         | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |
| TOLERANCE | ±0.1                         | ±0.1 | ±0.1 | ±0.1  | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 |

#### SOT-23 Tape Leader and Trailer



#### SOT-23 Reel



|             | DIMENSIONS ARE IN MILLIMETER |       |       |     |        |       |      |       |
|-------------|------------------------------|-------|-------|-----|--------|-------|------|-------|
| REEL OPTION | D                            | D1    | D2    | G   | H      | I     | W1   | W2    |
| 7" DIA      | Ø178                         | 54.40 | 13.00 | R78 | R25.60 | R6.50 | 9.50 | 12.30 |
| TOLERANCE   | ±2                           | ±1    | ±1    | ±1  | ±1     | ±1    | ±1   | ±1    |