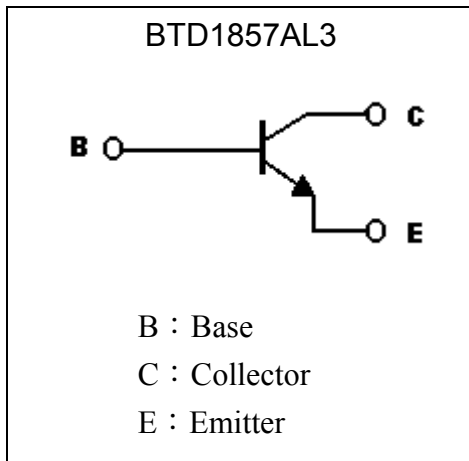
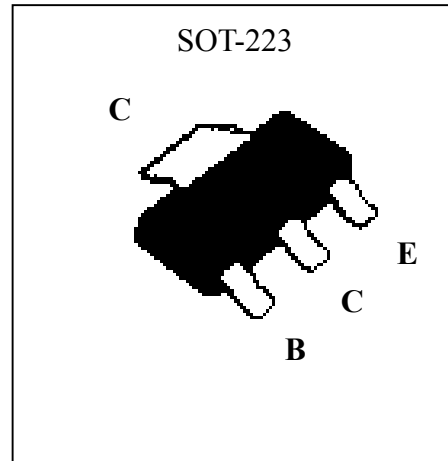


**Silicon NPN Epitaxial Planar Transistor**

# BTD1857AL3

**Description**

- High  $BV_{CEO}$
- High current capability
- Complementary to BTB1236AL3
- Pb-free package

**Symbol**

**Outline**

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

| Parameter                                    | Symbol    | Limits   | Unit               |
|--|-----------|----------|--------------------|
| Collector-Base Voltage                       | $V_{CB0}$ | 180      | V                  |
| Collector-Emitter Voltage                    | $V_{CEO}$ | 160      | V                  |
| Emitter-Base Voltage                         | $V_{EBO}$ | 5        | V                  |
| Collector Current (DC)                       | $I_C$     | 1.5      | A                  |
| Collector Current (Pulse)                    | $I_{CP}$  | 3        | A                  |
| Power Dissipation @ $T_c=25^{\circ}\text{C}$ | $P_D$     | 5        | W                  |
| Junction Temperature                         | $T_j$     | 150      | $^{\circ}\text{C}$ |
| Storage Temperature                          | $T_{stg}$ | -55~+150 | $^{\circ}\text{C}$ |

**Characteristics (Ta=25°C)**

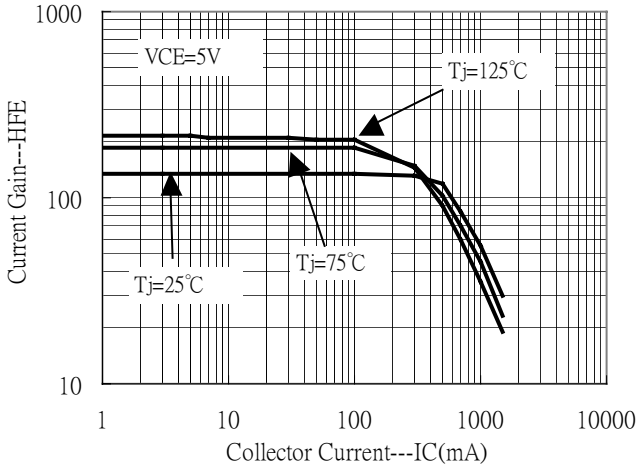
| Symbol          | Min. | Typ. | Max. | Unit    | Test Conditions             |
|-----------------|------|------|------|---------|-----------------------------|
| $BV_{CBO}$      | 180  | -    | -    | V       | $I_C=50\mu A, I_E=0$        |
| $BV_{CEO}$      | 160  | -    | -    | V       | $I_C=1mA, I_B=0$            |
| $BV_{EBO}$      | 5    | -    | -    | V       | $I_E=50\mu A, I_C=0$        |
| $I_{CBO}$       | -    | -    | 1    | $\mu A$ | $V_{CB}=160V, I_E=0$        |
| $I_{EBO}$       | -    | -    | 1    | $\mu A$ | $V_{EB}=4V, I_C=0$          |
| * $V_{CE(sat)}$ | -    | -    | 0.6  | V       | $I_C=1A, I_B=100mA$         |
| * $V_{BE(on)}$  | -    | -    | 1.5  | V       | $V_{CE}=2V, I_C=150mA$      |
| $h_{FE1}$       | 82   | -    | 390  | -       | $V_{CE}=2V, I_C=150mA$      |
| $h_{FE2}$       | 30   | -    | -    | -       | $V_{CE}=2V, I_C=500mA$      |
| $f_T$           | -    | 140  | -    | MHz     | $V_{CE}=5V, I_C=150mA$      |
| Cob             | -    | 27   | -    | pF      | $V_{CB}=10V, I_E=0, f=1MHz$ |

\*Pulse Test: Pulse Width  $\leq 380\mu s$ , Duty Cycle  $\leq 2\%$ **Classification of  $h_{FE} 1$** 

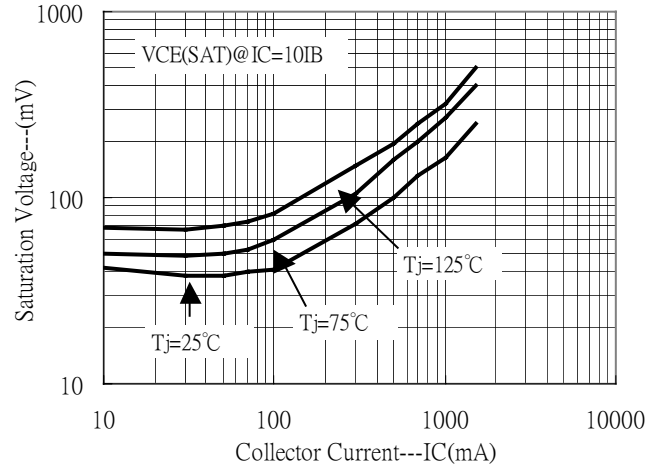
| Rank  | P      | Q       | R       |
|-------|--------|---------|---------|
| Range | 82~180 | 120~270 | 180~390 |

**Characteristic Curves**

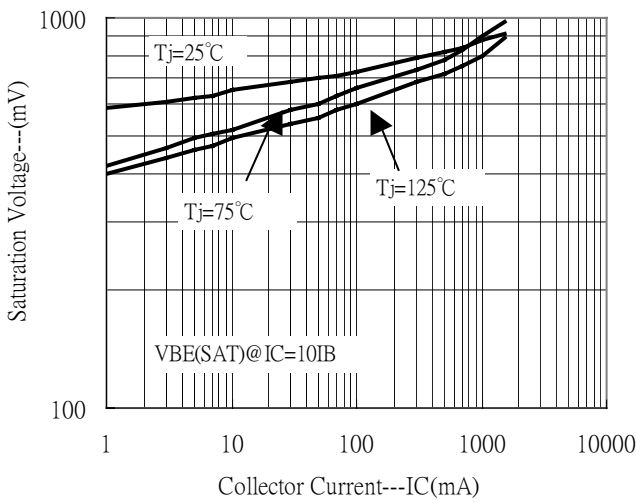
Current Gain vs Collector Current



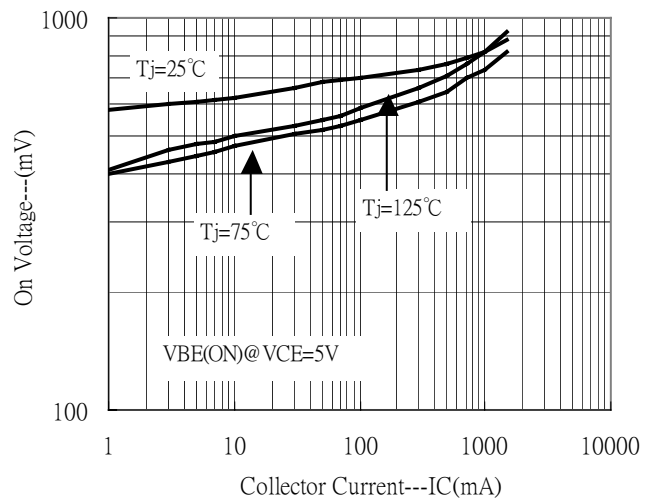
Saturation Voltage vs Collector Current



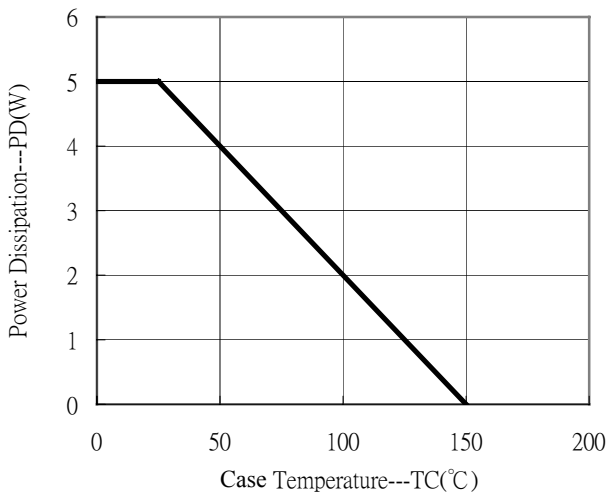
Saturation Voltage vs Collector Current



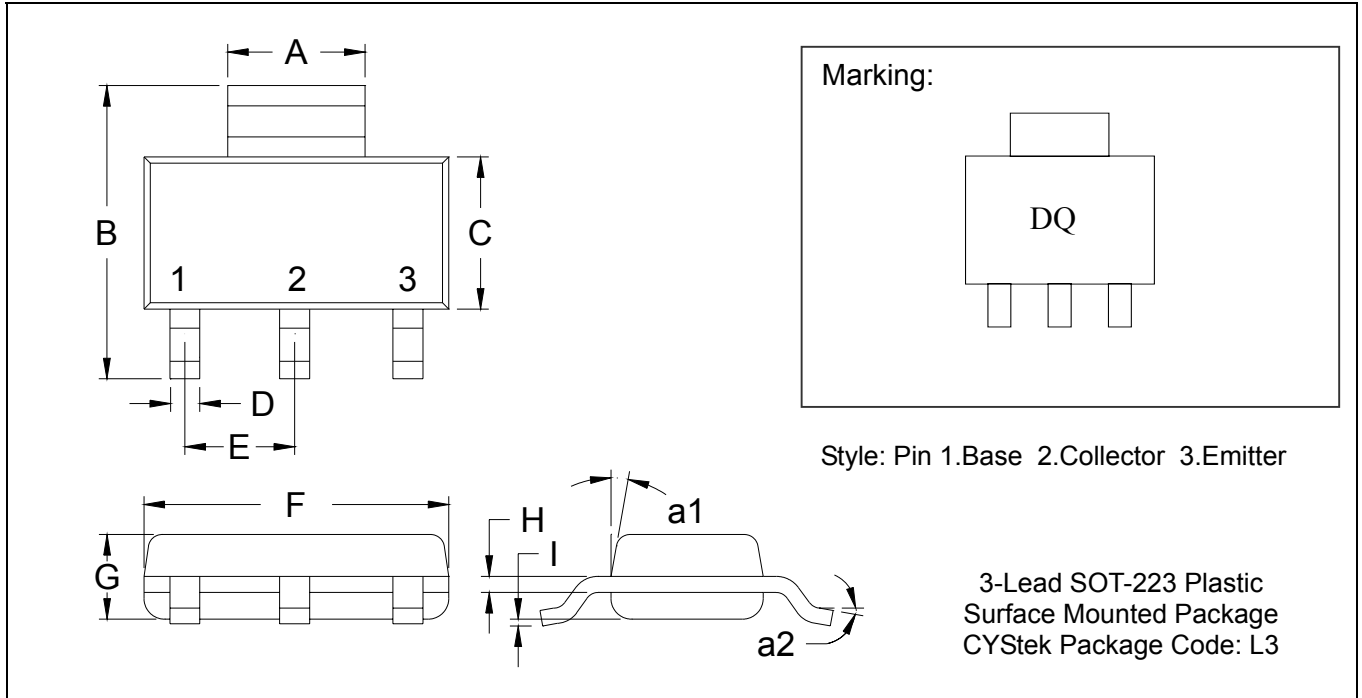
On Voltage vs Collector Current



Power Derating Curve



**SOT-223 Dimension**



\*: Typical

| DIM | Inches  |        | Millimeters |      | DIM | Inches |        | Millimeters |      |
|-----|---------|--------|-------------|------|-----|--------|--------|-------------|------|
|     | Min.    | Max.   | Min.        | Max. |     | Min.   | Max.   | Min.        | Max. |
| A   | 0.1142  | 0.1220 | 2.90        | 3.10 | G   | 0.0551 | 0.0709 | 1.40        | 1.80 |
| B   | 0.2638  | 0.2874 | 6.70        | 7.30 | H   | 0.0098 | 0.0138 | 0.25        | 0.35 |
| C   | 0.1299  | 0.1457 | 3.30        | 3.70 | I   | 0.0008 | 0.0039 | 0.02        | 0.10 |
| D   | 0.0236  | 0.0315 | 0.60        | 0.80 | a1  | *13°   | -      | *13°        | -    |
| E   | *0.0906 | -      | *2.30       | -    | a2  | 0°     | 10°    | 0°          | 10°  |
| F   | 0.2480  | 0.2638 | 6.30        | 6.70 |     |        |        |             |      |

- Notes: 1.Controlling dimension: millimeters.  
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

**Material:**

- Lead: 42 Alloy; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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