

**General Purpose NPN Epitaxial Planar Transistor**

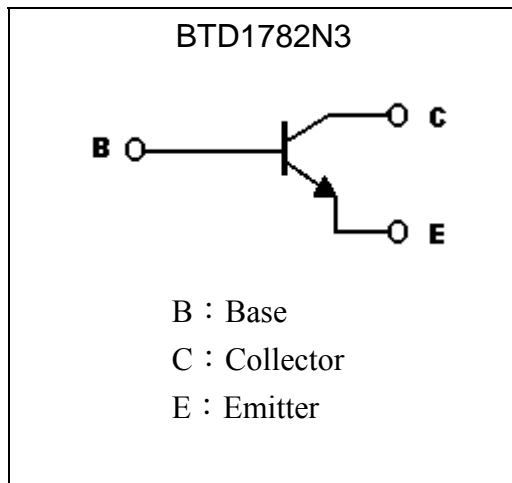
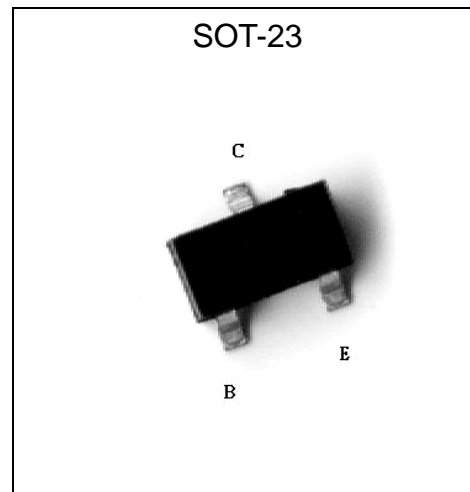
# BTD1782N3

**Description**

The BTD1782N3 is designed for use in driver and output stages of AF amplifier and general purpose application.

**Features**

- Low  $V_{CE(SAT)}$ ,  $V_{CE(SAT)} = 0.15V(\text{typ}) @ I_C = 500mA / I_B = 50mA$
- High breakdown voltage,  $V_{CEO} = 80V$  (min.)
- Complements to BTB1198N3
- Pb-free package

**Symbol**

**Outline**

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

| Parameter                               | Symbol          | Limits   | Unit                      |
|---|-----------------|----------|---------------------------|
| Collector-Base Voltage                  | $V_{CB0}$       | 80       | V                         |
| Collector-Emitter Voltage               | $V_{CE0}$       | 80       | V                         |
| Emitter-Base Voltage                    | $V_{EB0}$       | 5        | V                         |
| Collector Current (DC)                  | $I_C$           | 0.5      | A                         |
| Power Dissipation                       | $P_D$           | 200      | mW                        |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 625      | $^\circ\text{C}/\text{W}$ |
| Junction Temperature                    | $T_j$           | 150      | $^\circ\text{C}$          |
| Storage Temperature                     | $T_{stg}$       | -55~+150 | $^\circ\text{C}$          |

Note : Pulse test,  $P_w \leq 10\text{ms}$ , Duty  $\leq 50\%$ .

**Characteristics (Ta=25°C)**

| Symbol                | Min. | Typ. | Max. | Unit | Test Conditions                                      |
|-----------------------|------|------|------|------|--|
| BV <sub>CBO</sub>     | 80   | -    | -    | V    | I <sub>C</sub> =50μA                                 |
| BV <sub>CEO</sub>     | 80   | -    | -    | V    | I <sub>C</sub> =2mA                                  |
| BV <sub>EBO</sub>     | 5    | -    | -    | V    | I <sub>E</sub> =50μA                                 |
| I <sub>CBO</sub>      | -    | -    | 0.5  | μA   | V <sub>CB</sub> =50V, I <sub>E</sub> =0              |
| I <sub>EBO</sub>      | -    | -    | 0.5  | μA   | V <sub>EB</sub> =4V, I <sub>C</sub> =0               |
| *V <sub>CE(SAT)</sub> | -    | 0.15 | 0.5  | V    | I <sub>C</sub> =500mA, I <sub>B</sub> =20mA          |
| *h <sub>FE</sub>      | 120  | -    | 390  | -    | V <sub>CE</sub> =3V, I <sub>C</sub> =100mA           |
| f <sub>T</sub>        | -    | 180  | -    | MHz  | V <sub>CE</sub> =10V, I <sub>C</sub> =50mA, f=100MHz |
| C <sub>ob</sub>       | -    | 7.5  | -    | pF   | V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz     |

\*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

**Classification Of h<sub>FE</sub>**

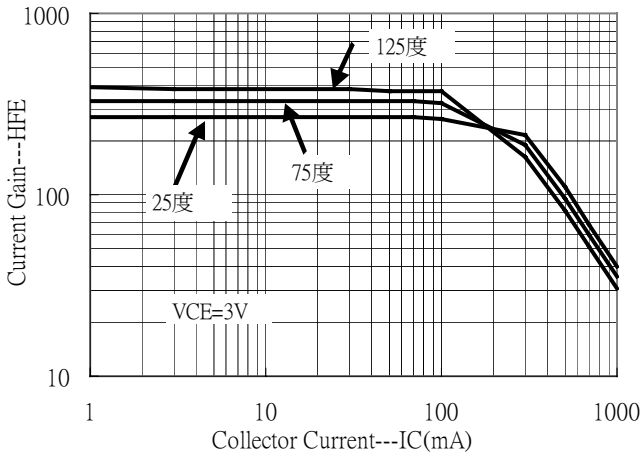
| Rank  | Q       | R       |
|-------|---------|---------|
| Range | 120~270 | 180~390 |

**Ordering Information**

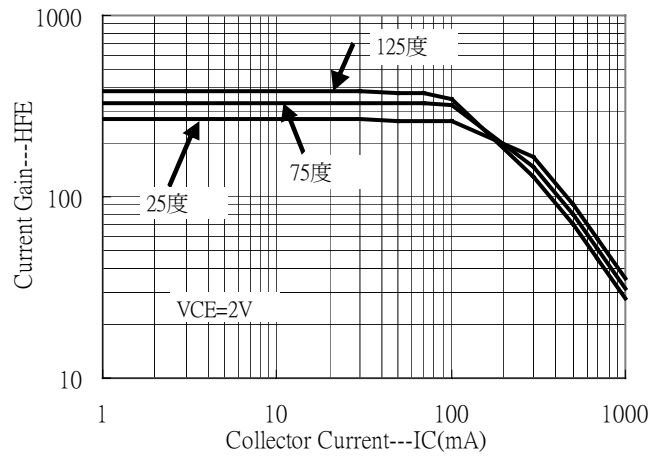
| Device    | Package             | Shipping               | Marking |
|-----------|---------------------|------------------------|---------|
| BTD1782N3 | SOT-23<br>(Pb-free) | 3000 pcs / Tape & Reel | AJ      |

**Characteristic Curves**

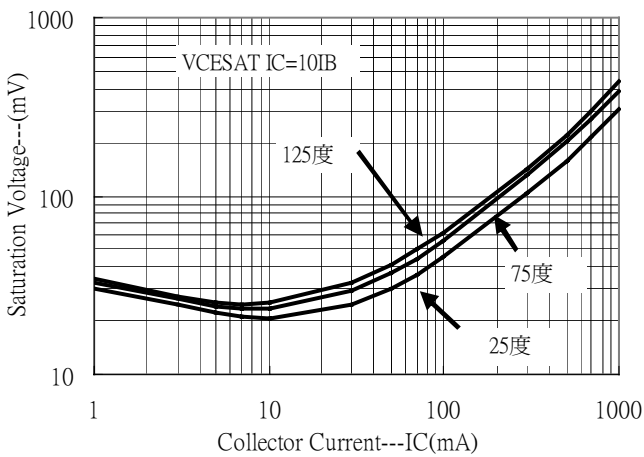
Current Gain vs Collector Current



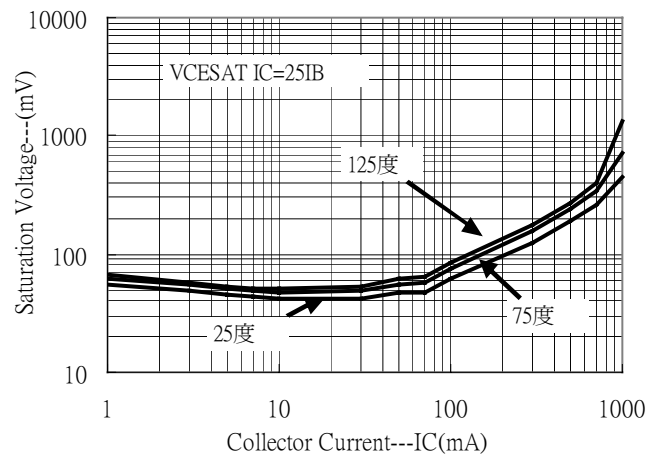
Current Gain vs Collector Current



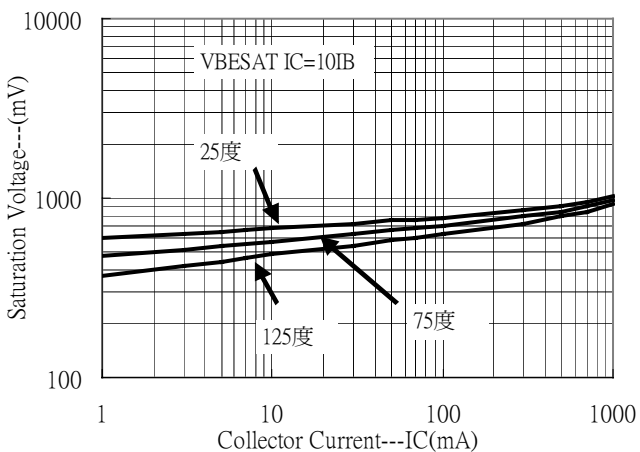
Saturation Voltage vs Collector Current



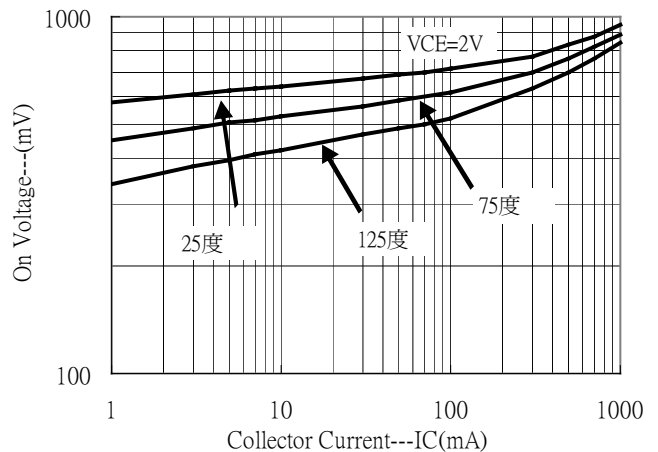
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

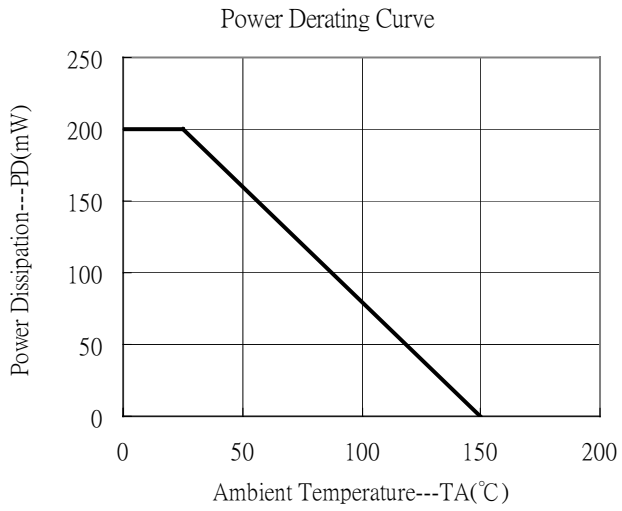


On Voltage vs Collector Current

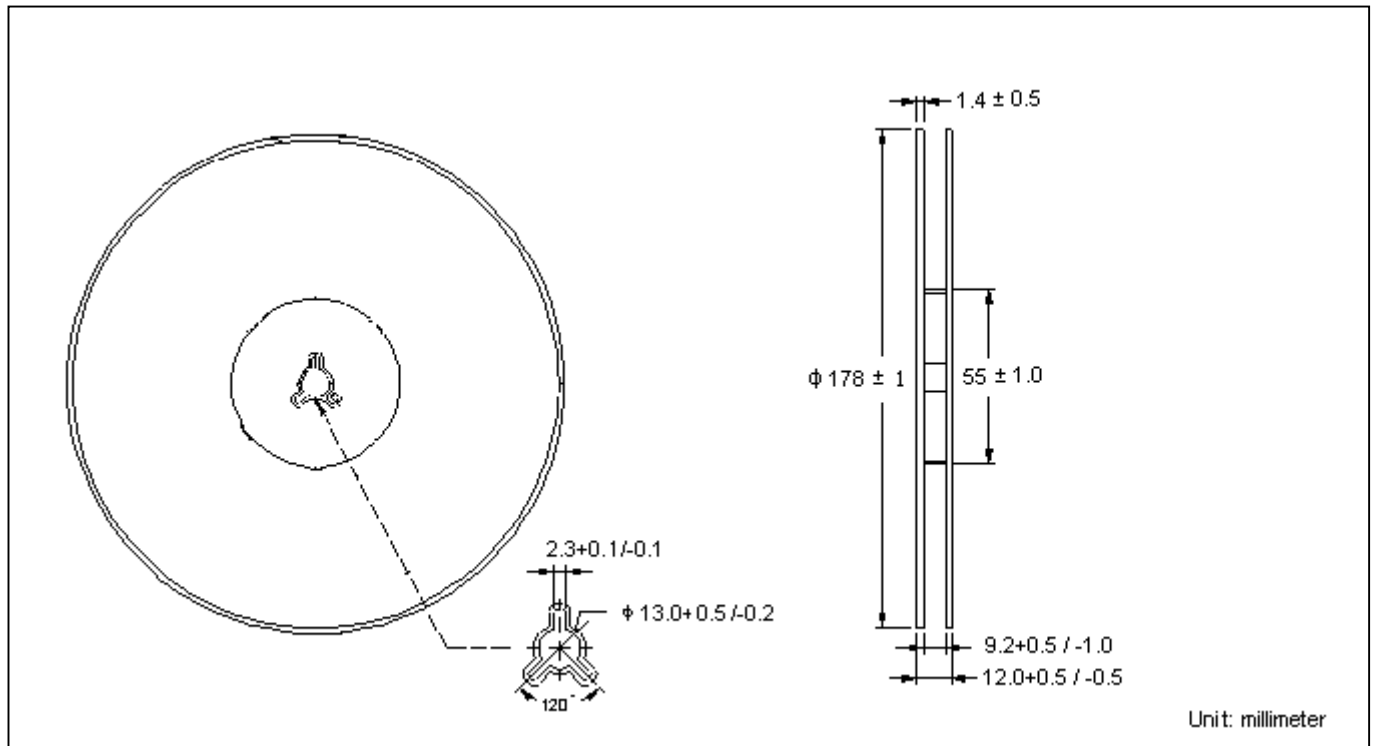




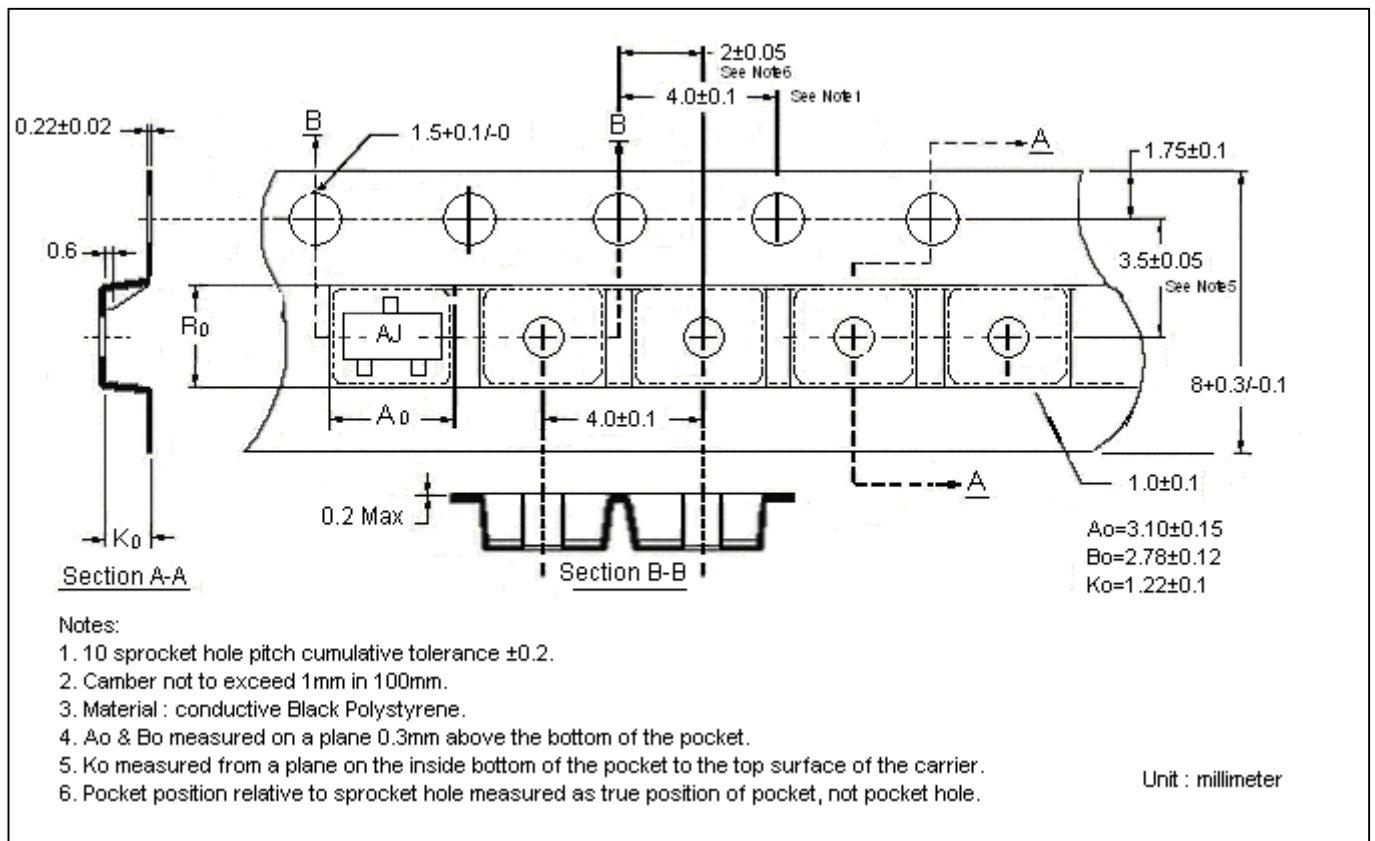
### Characteristic Curves(Cont.)



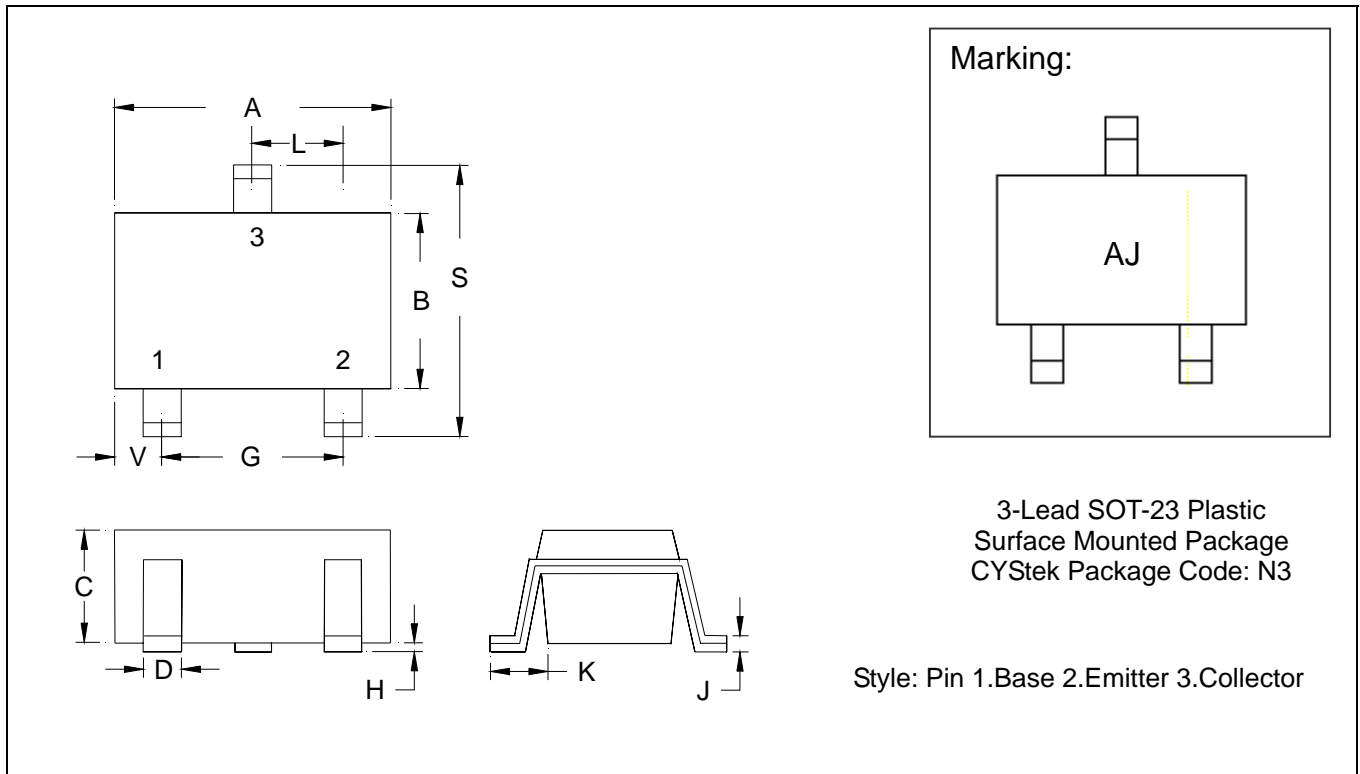
### Reel Dimension



### Carrier Tape Dimension



**SOT-23 Dimension**



\*: Typical

| DIM | Inches |        | Millimeters |      | DIM | Inches |        | Millimeters |       |
|-----|--------|--------|-------------|------|-----|--------|--------|-------------|-------|
|     | Min.   | Max.   | Min.        | Max. |     | Min.   | Max.   | Min.        | Max.  |
| A   | 0.1102 | 0.1204 | 2.80        | 3.04 | J   | 0.0034 | 0.0070 | 0.085       | 0.177 |
| B   | 0.0472 | 0.0630 | 1.20        | 1.60 | K   | 0.0128 | 0.0266 | 0.32        | 0.67  |
| C   | 0.0335 | 0.0512 | 0.89        | 1.30 | L   | 0.0335 | 0.0453 | 0.85        | 1.15  |
| D   | 0.0118 | 0.0197 | 0.30        | 0.50 | S   | 0.0830 | 0.1083 | 2.10        | 2.75  |
| G   | 0.0669 | 0.0910 | 1.70        | 2.30 | V   | 0.0098 | 0.0256 | 0.25        | 0.65  |
| H   | 0.0005 | 0.0040 | 0.013       | 0.10 |     |        |        |             |       |

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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