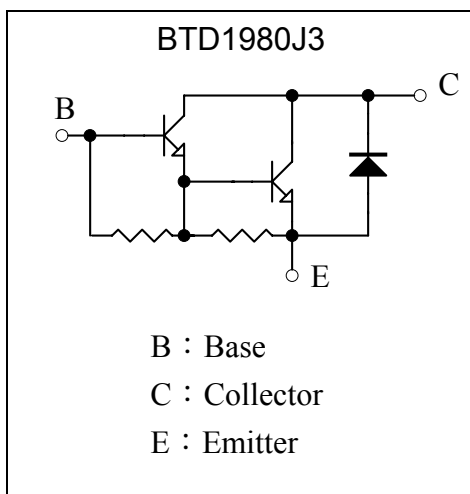
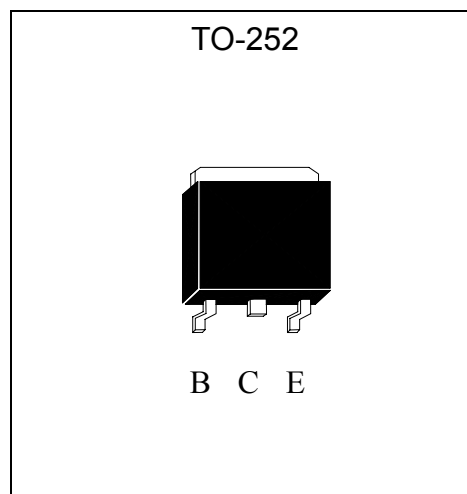


**NPN Epitaxial Planar Transistor**

# BTD1980J3

**Description**

The BTD1980J3 is a NPN Darlington transistor, designed for use in general purpose amplifier and low speed switching application.

**Equivalent Circuit**

**Outline**

**Absolute Maximum Ratings** (Ta=25°C)

| Parameter                               | Symbol                                | Limits   | Unit |
|---|---------------------------------------|----------|------|
| Collector-Base Voltage                  | V <sub>CBO</sub>                      | 130      | V    |
| Collector-Emitter Voltage               | V <sub>CEO</sub>                      | 120      | V    |
| Emitter-Base Voltage                    | V <sub>EBO</sub>                      | 5        | V    |
| Collector Current (DC)                  | I <sub>C</sub>                        | 4        | A    |
| Collector Current (Pulse)               | I <sub>CP</sub>                       | 6 (Note) | A    |
| Power Dissipation                       | P <sub>d</sub> (T <sub>A</sub> =25°C) | 1.5      | W    |
|   | P <sub>d</sub> (T <sub>C</sub> =25°C) | 20       | W    |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                      | 83.3     | °C/W |
| Thermal Resistance, Junction to Case    | R <sub>θJC</sub>                      | 6.25     | °C/W |
| Junction Temperature                    | T <sub>j</sub>                        | 150      | °C   |
| Storage Temperature                     | T <sub>stg</sub>                      | -55~+150 | °C   |

Note : Single Pulse P<sub>w</sub> ≤ 350μs, Duty ≤ 2%.



**Characteristics (Ta=25°C)**

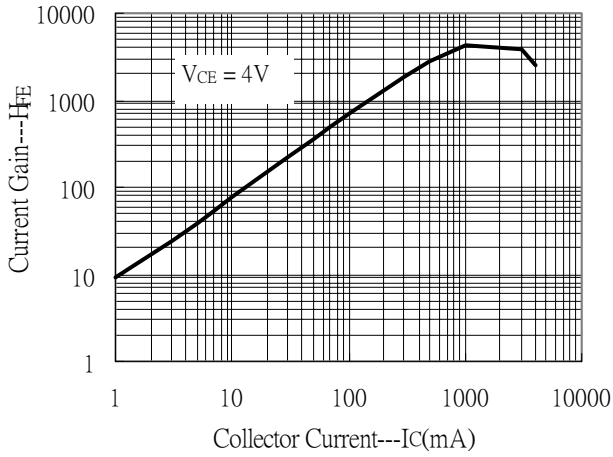
| Symbol                | Min. | Typ. | Max. | Unit | Test Conditions                                  |
|-----------------------|------|------|------|------|--|
| BV <sub>CEO</sub>     | 120  | -    | -    | V    | I <sub>C</sub> =1mA, I <sub>B</sub> =0           |
| BV <sub>CBO</sub>     | 130  | -    | -    | V    | I <sub>C</sub> =100μA, I <sub>E</sub> =0         |
| I <sub>CBO</sub>      | -    | -    | 1    | mA   | V <sub>CB</sub> =100V, I <sub>E</sub> =0         |
| I <sub>CEO</sub>      | -    | -    | 2    | mA   | V <sub>CE</sub> =50V, I <sub>E</sub> =0          |
| I <sub>EBO</sub>      | -    | -    | 2    | mA   | V <sub>EB</sub> =5V, I <sub>C</sub> =0           |
| *V <sub>CE(sat)</sub> | -    | -    | 2.5  | V    | I <sub>C</sub> =2A, I <sub>B</sub> =8mA          |
| *V <sub>BE(on)</sub>  |      |      | 2.8  | V    | V <sub>CE</sub> =4V, I <sub>C</sub> =2A          |
| *h <sub>FE1</sub>     | 1000 | -    | -    | -    | V <sub>CE</sub> =4V, I <sub>C</sub> =1A          |
| *h <sub>FE2</sub>     | 500  | -    | -    | -    | V <sub>CE</sub> =4V, I <sub>C</sub> =2A          |
| C <sub>ob</sub>       | -    |      | 200  | pF   | V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz |

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

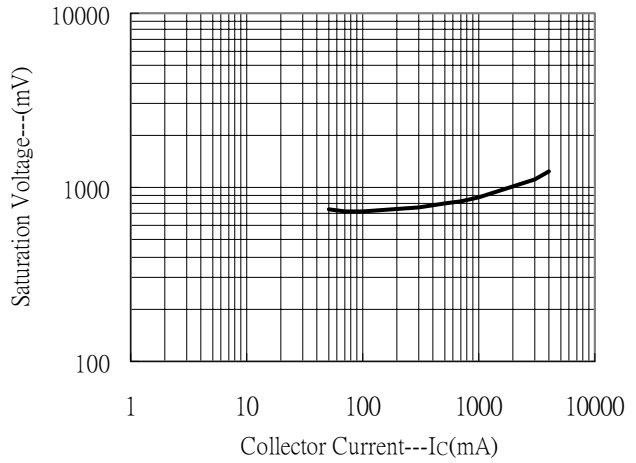


### Characteristic Curves

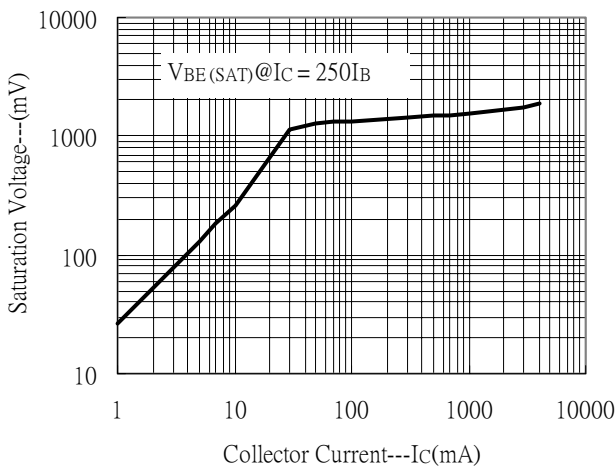
Current Gain vs Collector Current



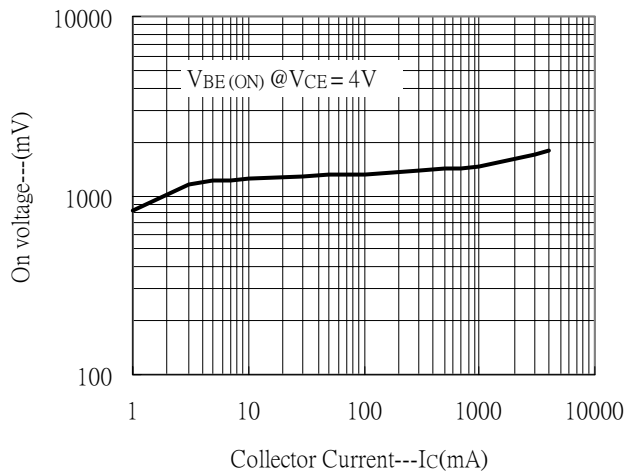
Saturation Voltage vs Collector Current



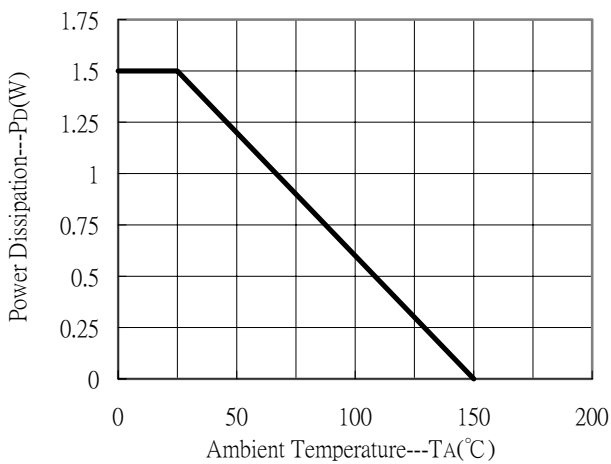
Saturation Voltage vs Collector Current



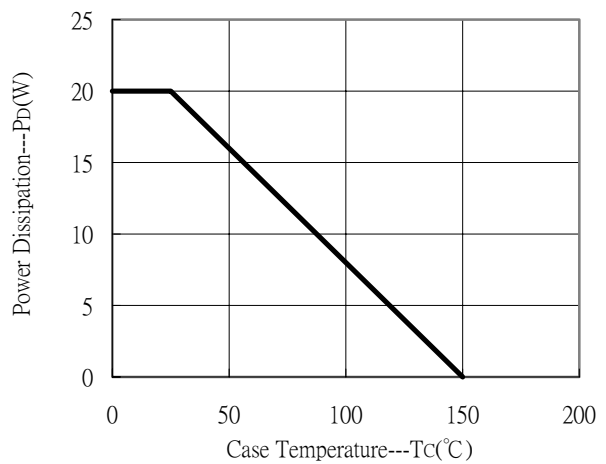
On voltage vs Collector Current



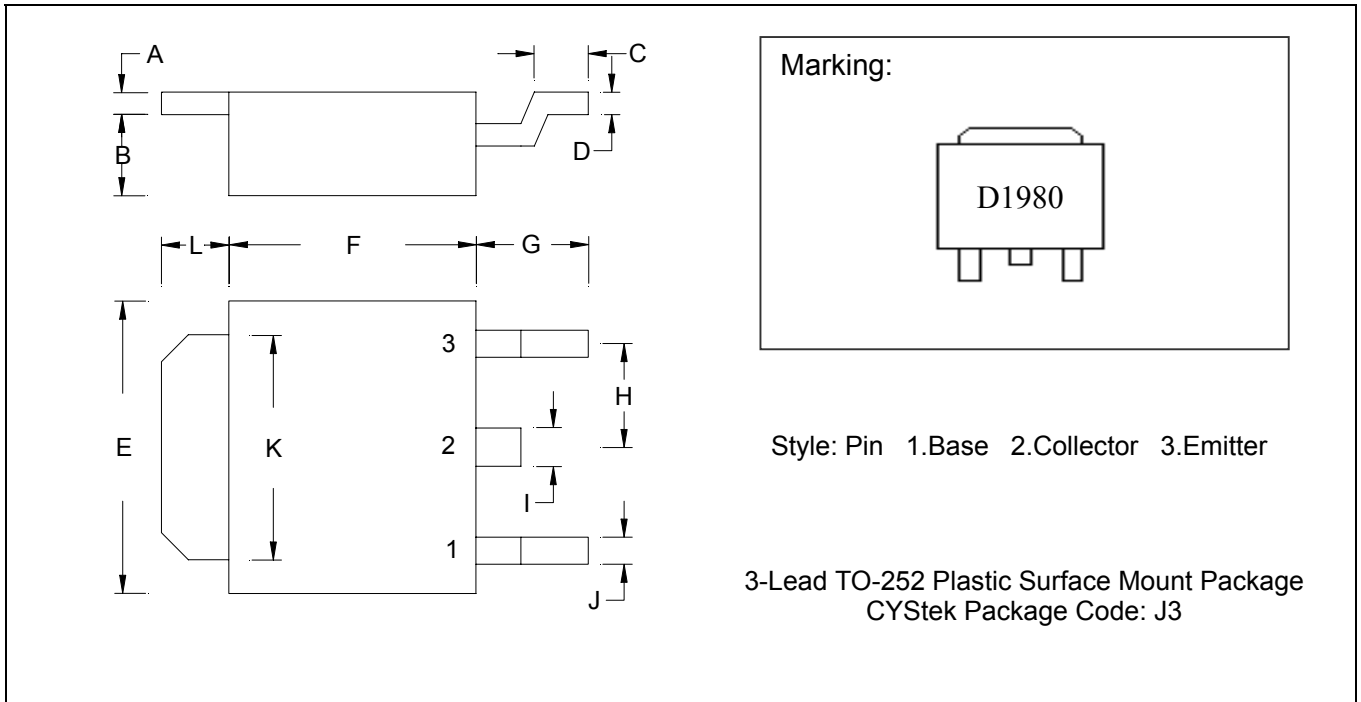
Power Derating Curve



Power Derating Curve



**TO-252 Dimension**



\*: Typical

| DIM | Inches |        | Millimeters |      | DIM | Inches |         | Millimeters |       |
|-----|--------|--------|-------------|------|-----|--------|---------|-------------|-------|
|     | Min.   | Max.   | Min.        | Max. |     | Min.   | Max.    | Min.        | Max.  |
| A   | 0.0177 | 0.0217 | 0.45        | 0.55 | G   | 0.0866 | 0.1102  | 2.20        | 2.80  |
| B   | 0.0650 | 0.0768 | 1.65        | 1.95 | H   | -      | *0.0906 | -           | *2.30 |
| C   | 0.0354 | 0.0591 | 0.90        | 1.50 | I   | -      | 0.0354  | -           | 0.90  |
| D   | 0.0177 | 0.0236 | 0.45        | 0.60 | J   | -      | 0.0315  | -           | 0.80  |
| E   | 0.2520 | 0.2677 | 6.40        | 6.80 | K   | 0.2047 | 0.2165  | 5.20        | 5.50  |
| F   | 0.2125 | 0.2283 | 5.40        | 5.80 | L   | 0.0551 | 0.0630  | 1.40        | 1.60  |

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

**Important Notice:**

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.