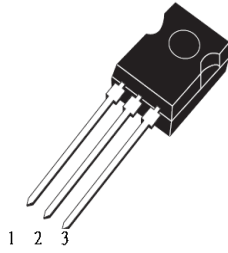
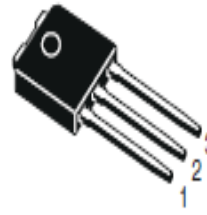


### High Voltage NPN Transistor



**SOT-82**

**Pin Definition**  
1. Base  
2. Collector  
3. Emitter



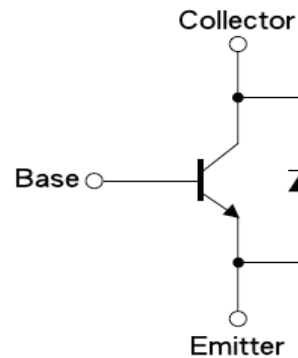
**TO-251 ( I-Pak )**

**Pin Definition**  
1. Base  
2. Collector  
3. Emitter

### Features

- High Voltage
- Very High Switch Speed
- $BV_{CEO}$  : 400V
- $BV_{CBO}$  : 800V
- $I_C$  : 6A
- Silicon Triple Diffused Type

### INTERNAL SCHEMATIC DIAGRAM



### Application

- Electronic Ballasts
- Adapter
- Lighting

### ABSOLUTE MAXIMUM RATINGS ( $T_c = 25^\circ\text{C}$ )

| Parameter                                        | Symbol | Max Rating | Unit |
|--------------------------------------------------|--------|------------|------|
| Collector-Base Voltage                           | VCBO   | 800        | V    |
| Collector-Emitter Voltage                        | VCEO   | 400        | V    |
| Emitter-Base Voltage                             | VEBO   | 9          | V    |
| Collector Current(DC)                            | IC     | 6          | A    |
| Collector Current(Pulse)                         | ICP    | 10         | A    |
| Total Power Dissipation(TO251)                   | PD     | 35         | W    |
| Junction Temperature                             | TJ     | 150        | °C   |
| Operating Junction and Storage Temperature Range | TSTG   | -55 ~ +150 | °C   |

**ELECTRICAL CHARACTERISTICS ( T<sub>c</sub> = 25°C )**

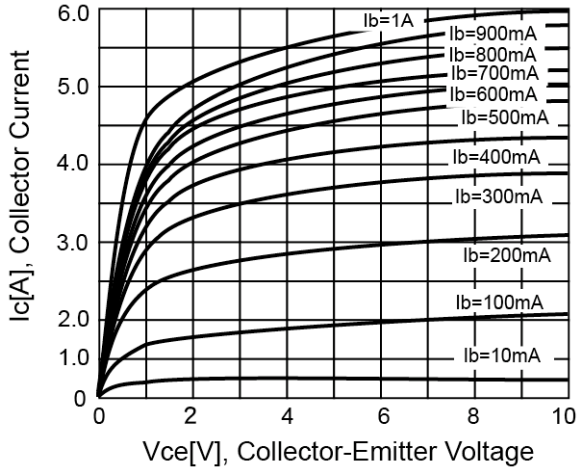
| Parameter                            | Symbol    | Test Condition    | Min | Typ | Max | Unit |
|--------------------------------------|-----------|-------------------|-----|-----|-----|------|
| Collector-Base Voltage               | BVCBO     | IC = 1mA, IB=0    | 800 | –   | –   | V    |
| Collector-Emitter Breakdown Voltage  | BVCEO     | IC = 10mA, IE=0   | 400 | –   | –   | V    |
| Emitter- Base Breakdown Voltage      | BVEBO     | IE = 1mA, IC=0    | 9   | –   | –   | V    |
| Collector Cutoff Current             | ICBO      | VCE = 700V, IE=0  | –   | –   | 110 | μA   |
| Emitter Cutoff Current               | IEBO      | VEB = 7V, IC=0    | –   | –   | 225 | μA   |
| DC Current Gain                      | hFE1      | VCE = 5V, IC=5mA  | 10  | –   | –   |      |
|                                      | hFE2      | VCE = 5V, IC=1A   | 20  | –   | 40  |      |
|                                      | hFE3      | VCE = 5V, IC=2A   | 5   | –   | –   |      |
| Collector-Emitter Saturation Voltage | VCE(SAT1) | IC/IB = 2A / 0.5A | –   | –   | 1   | V    |
|                                      | VCE(SAT2) | IC/IB = 4A / 1A   | –   | –   | 1.2 |      |
| Base-Emitter Saturation Voltage      | VBE(SAT1) | IC/IB = 2A / 0.5A | –   | –   | 1.3 | V    |
|                                      | VBE(SAT2) | IC/IB = 4A / 1A   | –   | –   | 1.8 |      |

**Resistive Load Switching Time (Ratings)**

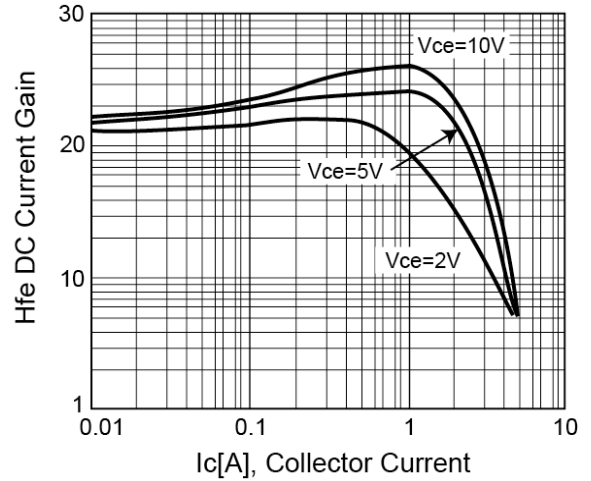
|              |                  |                                |   |     |     |    |
|--------------|------------------|--------------------------------|---|-----|-----|----|
| Rise Time    | T <sub>on</sub>  | V <sub>cc</sub> =250V, IC=1A,  | – | –   | 0.7 | μS |
| Storage Time | t <sub>STG</sub> | IB1 = IB2 = 0.2A,<br>tp = 25μS | – | 3.5 | 5   | μS |
| Fall Time    | t <sub>f</sub>   | Duty Cycle ≤ 1%                | – | 0.2 | 0.6 | μS |

**Electrical Characteristics Curve** ( $T_a = 25^\circ\text{C}$ , unless otherwise noted)

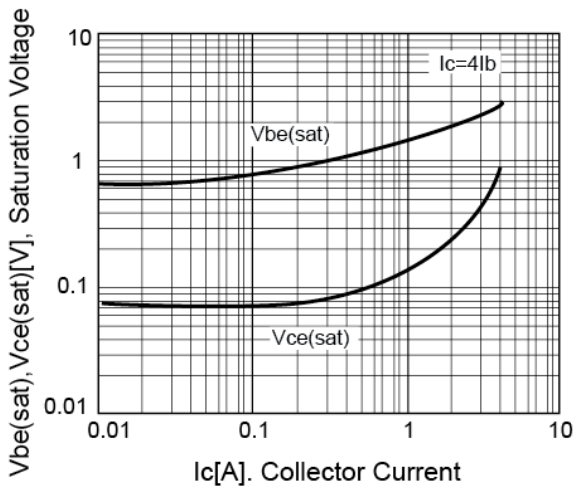
**Figure 1. Static Characteristics**



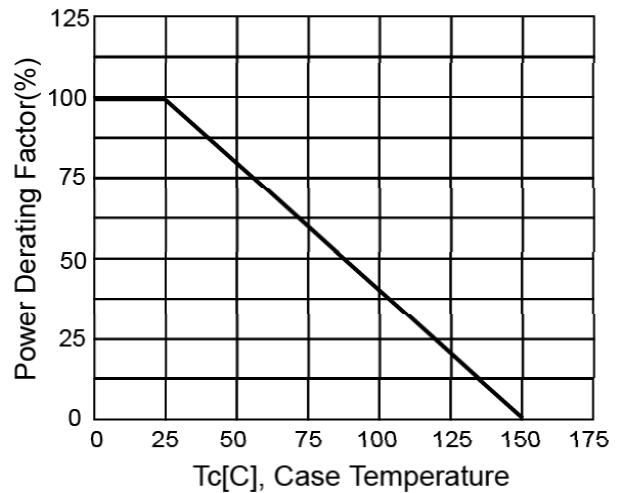
**Figure 2. DC Current Gain**



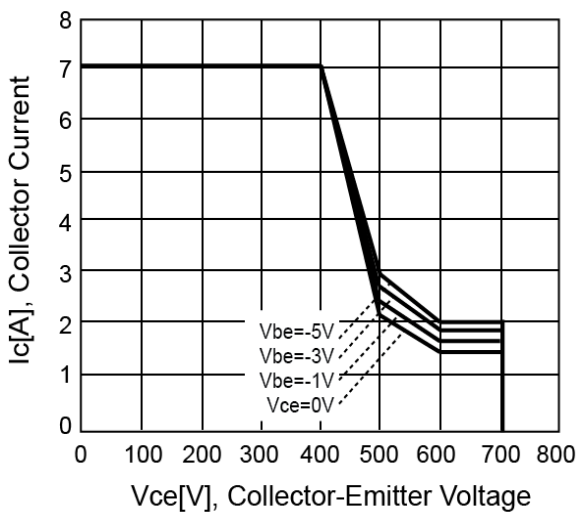
**Figure 3. Vce(sat) v.s. Vbe(sat)**



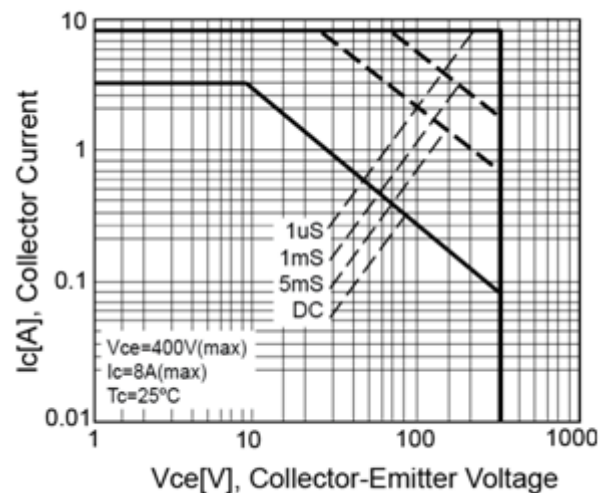
**Figure 4. Power Derating**



**Figure 5. Reverse Bias SOA**



**Figure 6. Safety Operating Area**



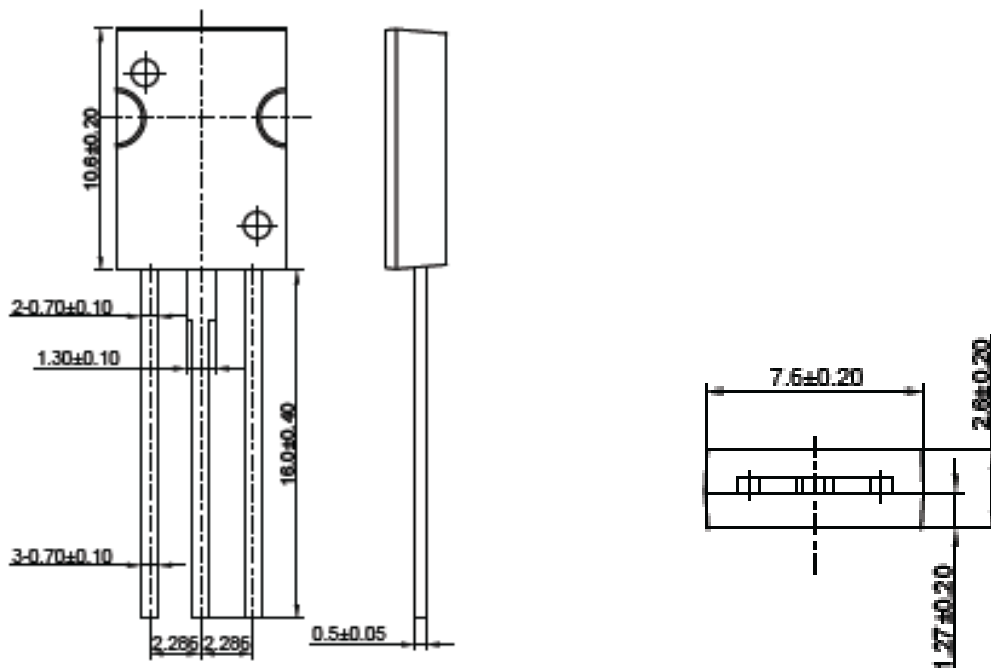
### Ordering Information

| Type NO   | Marking | Package Code |
|-----------|---------|--------------|
| WTBV57DNR | BV57DNR | SOT-82       |

### Marking and Pin Define

|             |         |                    |                                                                                        |
|-------------|---------|--------------------|----------------------------------------------------------------------------------------|
| First Line  | WTC     | Company Name       |                                                                                        |
| Second Line | BV57DNR | Product Code       |                                                                                        |
| Third Line  | CC0TM   | 1st (Year Code)    | A-2010 B-2011 C-2012 ...                                                               |
|             |         | 2nd (Month Code)   | A-Jan, B-Feb, C-Mar, D-Apr, E-May, F-Jun, G-Jul, H-Aug, I-Sep, J-Oct, K-Nov, L-Dec     |
|             |         | 3rd (Lot Code)     | 0~9, A~Z                                                                               |
|             |         | 4th (Product Code) | M - MOS, T - Transistor, L - Linear                                                    |
|             |         | 5th (Package Code) | I - TO251, D - TO252, L - TO92, M - TO126, X - TO220, F - TO220F, Y - SOT89, N - SOT82 |
|             |         | 6th (Spec Code)    | (Reserve)                                                                              |

### SOT-82 Package Dimension



### Ordering Information

| Type NO | Marking | Package Code |
|---------|---------|--------------|
| WTI57D  | 57DI    | TO-251       |

### Marking and Pin Define

|             |       |                    |                                                                                        |
|-------------|-------|--------------------|----------------------------------------------------------------------------------------|
| First Line  | WTC   | Company Name       |                                                                                        |
| Second Line | 57DI  | Product Code       |                                                                                        |
| Third Line  | CC0TI | 1st (Year Code)    | A-2010 B-2011 C-2012 ...                                                               |
|             |       | 2nd (Month Code)   | A-Jan, B-Feb, C-Mar, D-Apr, E-May, F-Jun, G-Jul, H-Aug, I-Sep, J-Oct, K-Nov, L-Dec     |
|             |       | 3rd (Lot Code)     | 0~9 , A~Z                                                                              |
|             |       | 4th (Product Code) | M - MOS , T - Transistor, L - Linear                                                   |
|             |       | 5th (Package Code) | I - TO251, D - TO252 , L - TO92, M - TO126, X - TO220, F - TO220F, Y - SOT89, S - SOP8 |
|             |       | 6th (Spec Code)    | (Reserve)                                                                              |

### TO-251 Package Dimension

