## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 80 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 60 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 7 | V |
| Continuous Collector Current | $I_C$ | 2 | A |
| Peak Pulse Current | $I_{CM}$ | 6 | A |

## Thermal Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

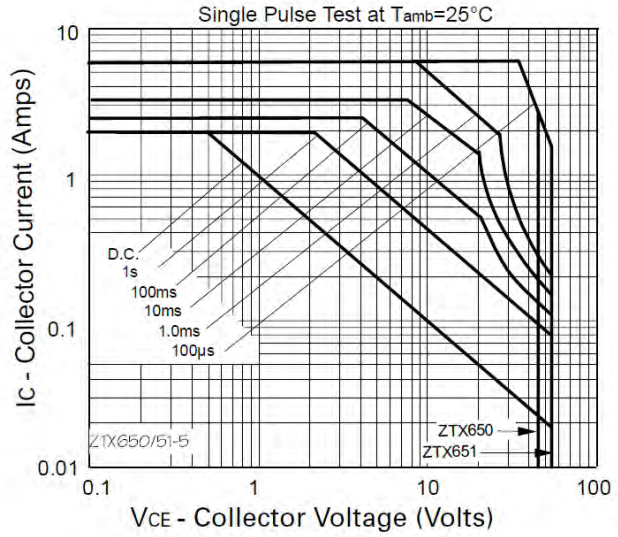
| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation (Note 6) | $P_D$ | 1.5 | W |
| Power Dissipation (Note 7) | $P_D$ | 1 | W |
| Thermal Resistance Junction to Ambient (Note 6) | $R_{\theta JA}$ | 116 | °C/W |
| Thermal Resistance Junction to Ambient (Note 7) | $R_{\theta JA}$ | 175 | °C/W |
| Thermal Resistance Junction to Lead (Note 8) | $R_{\theta JL}$ | 70 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +200 | °C |

## ESD Ratings (Note 9)

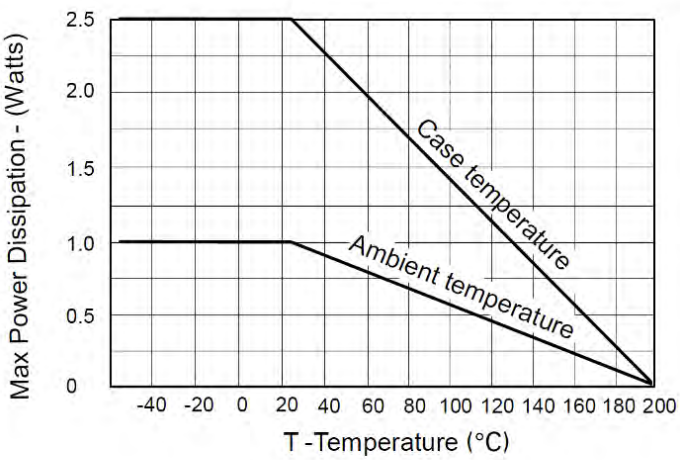
| Characteristic | Symbol | Value | Unit | JEDEC Class |
|---|---|---|---|---|
| Electrostatic Discharge - Human Body Model | ESD HBM | ≥ 4,000 | V | 3A |
| Electrostatic Discharge - Machine Model | ESD MM | ≥ 400 | V | C |

Notes:
6. For a through-hole device mounted at the seating plane (2.5mm lead length) with the collector lead on 25mm x 25mm 1oz copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
7. Same as note (5), except the device is mounted on minimum recommended pad layout with 12mm lead length from the bottom of package to the board.
8. Thermal resistance from junction to solder-point at the seating plane (2.5mm from the bottom of package along the collector lead).
9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

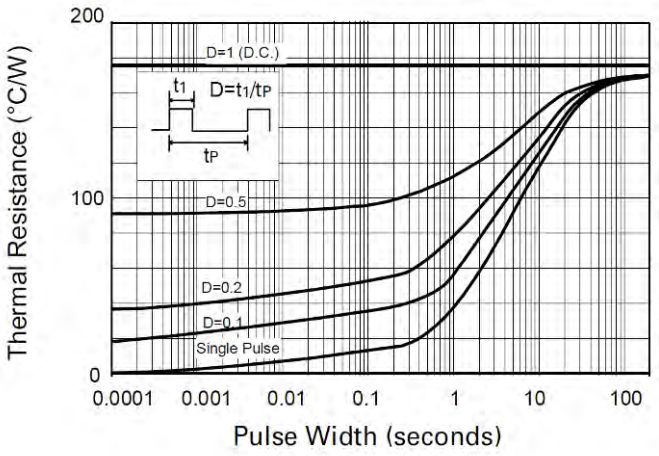
## Thermal Characteristics and Derating Information




**Safe Operating Area**




**Derating curve**



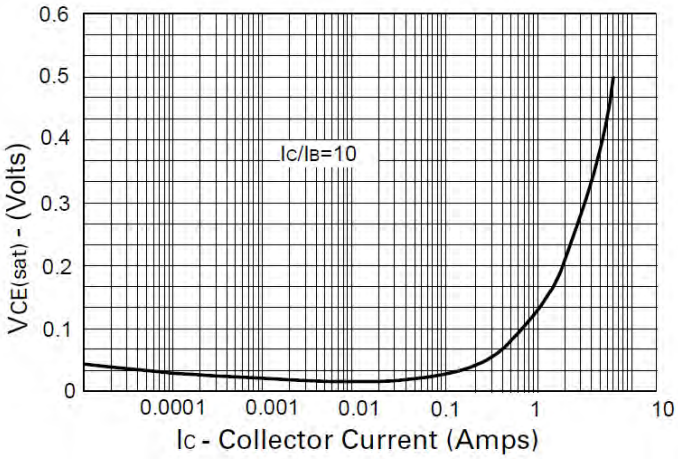

**Maximum transient thermal impedance**

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

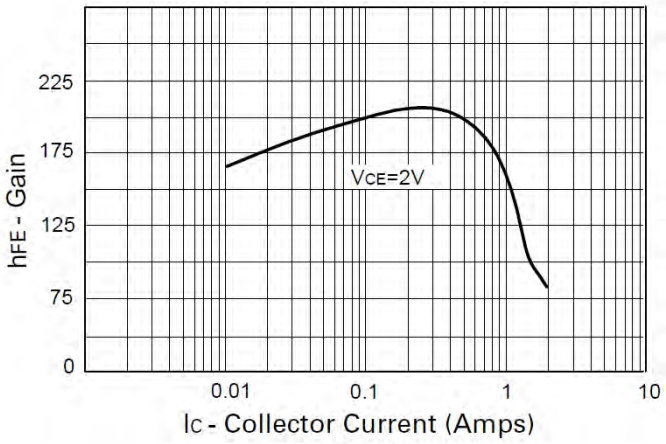
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $BV_{CBO}$ | 80 | — | — | V | $I_C$ = 100µA |
| Collector-Emitter Breakdown Voltage (Note 10) | $BV_{CEO}$ | 60 | — | — | V | $I_C$ = 10mA |
| Emitter-Base Breakdown Voltage | $BV_{EBO}$ | 7 | — | — | V | $I_E$ = 100µA |
| Collector Cut-off Current | $I_{CBO}$ | — | — | 0.1<br>10 | µA<br>µA | $V_{CB}$ = 60V<br>$V_{CB}$ = 60V,$T_{amb}$ = 100°C |
| Emitter Cut-off Current | $I_{EBO}$ | — | — | 0.1 | µA | $V_{EB}$ = 6V |
| Collector-Emitter Saturation Voltage (Note 10) | $V_{CE(sat)}$ | — | 120<br>230 | 300<br>500 | mV | $I_C$ = 1A, $I_B$ = 100mA<br>$I_C$ =2A, $I_B$ = 200mA |
| Base-Emitter Saturation Voltage (Note 10) | $V_{BE(sat)}$ | — | 0.9 | 1.25 | V | $I_C$ =1A, $I_B$ = 100mA |
| Base-Emitter Turn-On Voltage (Note 10) | $V_{BE(on)}$ | — | 0.8 | 1 | V | $I_C$ = 1A, $V_{CE}$ = 2V |
| DC Current Gain (Note 10) | $h_{FE}$ | 70<br>100<br>80<br>40 | 200<br>200<br>170<br>80 | —<br>300<br>—<br>— | — | $I_C$ = 50mA, $V_{CE}$ = 2V<br>$I_C$ = 500mA, $V_{CE}$ = 2V<br>$I_C$ = 1A, $V_{CE}$ = 2V<br>$I_C$ = 2A, $V_{CE}$ = 2V |
| Current Gain-Bandwidth Product (Note 10) | $f_T$ | 140 | 175 | — | MHz | $V_{CE}$ = 5V, $I_C$ = 100mA<br>f = 100MHz |
| Output Capacitance (Note 10) | $C_{obo}$ | — | — | 30 | pF | $V_{CB}$ = 10V. f = 1MHz |
| Turn-On Times | $t_{on}$ | — | 45 | — | ns | $I_C$ = 500mA, $I_{B1}$ = $I_{B2}$ = 50mA, |
| Turn-Off Times | $t_{off}$ | — | 800 | — | ns | $V_{CC}$ = 10V |

Notes: 10. Measured under pulsed conditions. Pulse width ≤ 300 µs. Duty cycle ≤2%

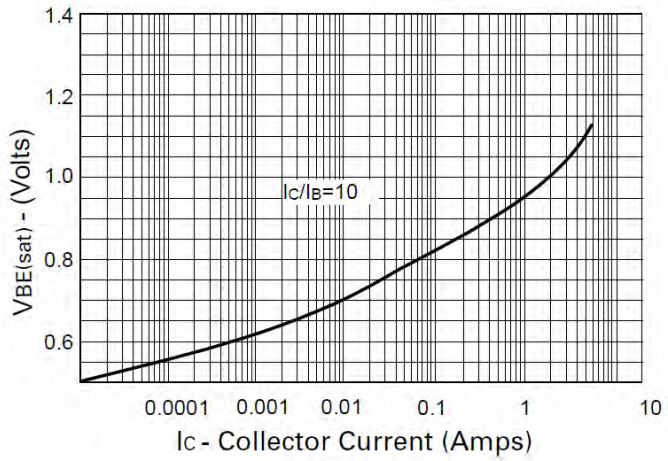
## Typical Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)



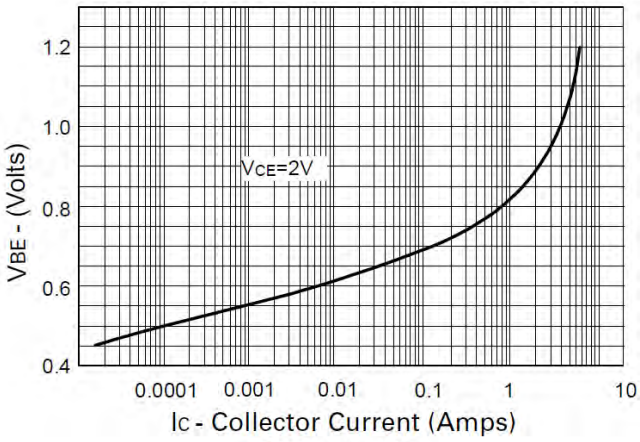

**VCE(sat) v IC**



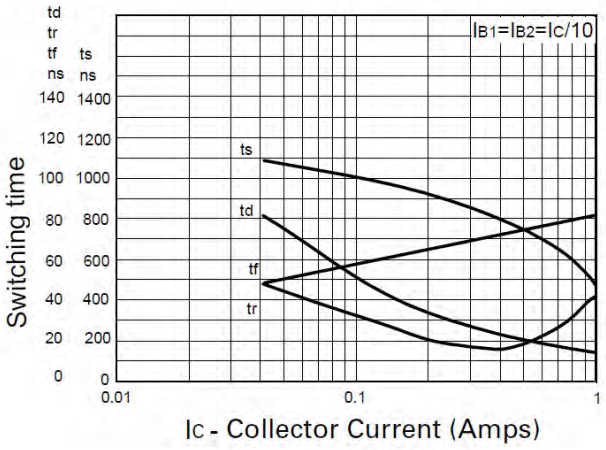

**hFE v IC**




**VBE(sat) v IC**



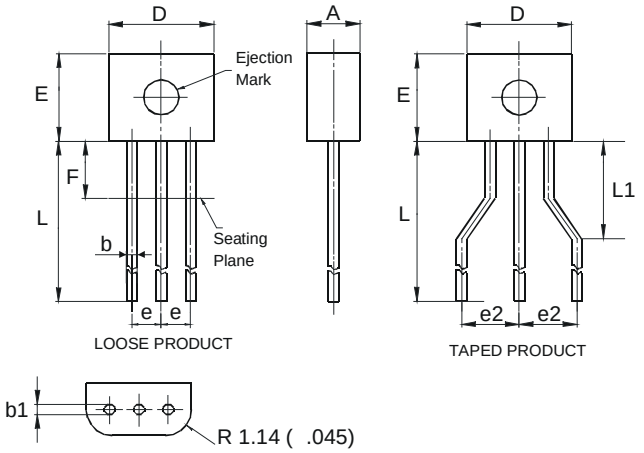

**VBE(on) v IC**




**Switching Speeds**

## Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.




| E-Line | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 2.16 | 2.41 | – |
| **b** | 0.41 | 0.495 | – |
| **b1** | 0.41 | 0.495 | – |
| **D** | 4.37 | 4.77 | – |
| **E** | 3.61 | 4.01 | – |
| **e** | – | – | 1.27 |
| **e2** | – | – | 2.54 |
| **F** | – | 2.50 | – |
| **L** | 13.00 | 13.97 | – |
| **L1** | 2.50 | 3.50 | – |
| **All Dimensions in mm** | | | |

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