

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic               | Symbol           | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage       | V <sub>CB0</sub> | -40   | V    |
| Collector-Emitter Voltage    | V <sub>CEO</sub> | -32   | V    |
| Emitter-Base Voltage         | V <sub>EBO</sub> | -5    | V    |
| Continuous Collector Current | I <sub>C</sub>   | -1    | A    |
| Peak Pulse Current           | I <sub>CM</sub>  | -2    | A    |

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

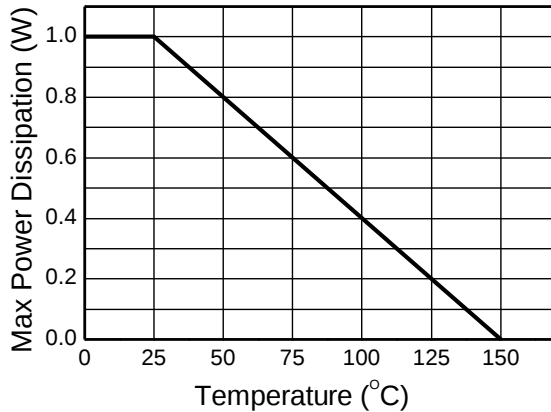
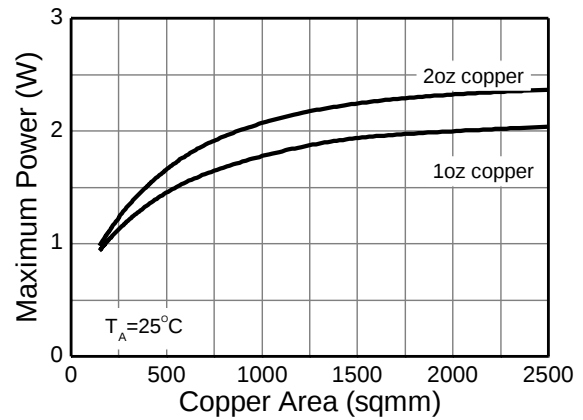
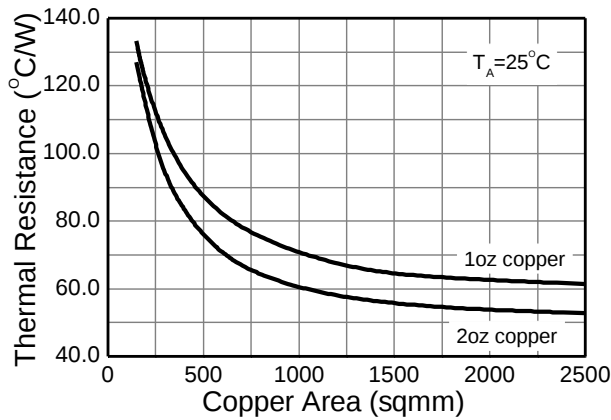
| Characteristic                              | Symbol                            | Value       | Unit |
|---------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation                           | P <sub>D</sub>                    | 1           | W    |
|                                             |                                   | 1.5         |      |
|                                             |                                   | 2           |      |
| Thermal Resistance, Junction to Ambient Air | R <sub>θJA</sub>                  | 125         | °C/W |
|                                             |                                   | 83          |      |
|                                             |                                   | 60          |      |
| Thermal Resistance, Junction to Case        | R <sub>θJC</sub>                  | 18          | °C/W |
| Thermal Resistance, Junction to Lead        | R <sub>θJL</sub>                  | 22          | °C/W |
| Operating and Storage Temperature Range     | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

**ESD Ratings** (Note 9)

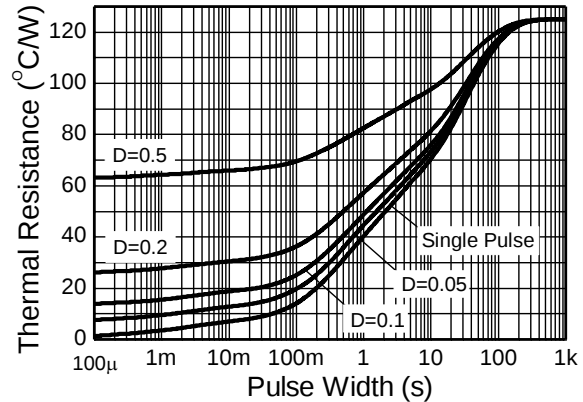
| Characteristic                             | Symbol  | Value | Unit | JEDEC Class |
|--------------------------------------------|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V    | 3A          |
| Electrostatic Discharge - Machine Model 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

- Notes:
- For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  - Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
  - Same as note (5), except the device is mounted on 50mm x 50mm 1oz copper.
  - Thermal resistance from junction to solder-point (on the exposed collector pad).
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

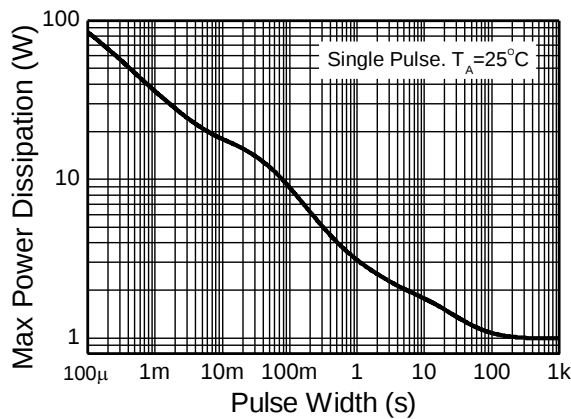
## Thermal Characteristics and Derating Information



**Derating Curve**



**Transient Thermal Impedance**



**Pulse Power Dissipation**

# Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                                  | Symbol               | Min | Typ  | Max  | Unit | Test Condition                                           |
|-------------------------------------------------|----------------------|-----|------|------|------|----------------------------------------------------------|
| Collector-Base Breakdown Voltage                | BV <sub>CBO</sub>    | -40 | —    | —    | V    | I <sub>C</sub> = -50μA                                   |
| Collector-Emitter Breakdown Voltage (Note 10)   | BV <sub>CEO</sub>    | -32 | —    | —    | V    | I <sub>C</sub> = -1mA                                    |
| Emitter-Base Breakdown Voltage                  | BV <sub>EBO</sub>    | -5  | —    | —    | V    | I <sub>E</sub> = -50μA                                   |
| Collector Cut-Off Current                       | I <sub>CBO</sub>     | —   | —    | -0.5 | μA   | V <sub>CB</sub> = -20V                                   |
| Emitter Cut-Off Current                         | I <sub>EBO</sub>     | —   | —    | -0.5 | μA   | V <sub>EB</sub> = -4V                                    |
| Static Forward Current Transfer Ratio (Note 10) | 2DB1132P             | 82  | —    | 180  | —    | I <sub>C</sub> = -100mA, V <sub>CE</sub> = -3V           |
|                                                 | 2DB1132Q             | 120 |      | 270  |      |                                                          |
|                                                 | 2DB1132R             | 180 |      | 390  |      |                                                          |
| Collector-Emitter Saturation Voltage (Note 10)  | V <sub>CE(sat)</sub> | —   | -125 | -500 | mV   | I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA          |
| Transition Frequency                            | f <sub>T</sub>       | —   | 190  | —    | MHz  | I <sub>E</sub> = -50mA, V <sub>CE</sub> = -5V, f = 30MHz |
| Output Capacitance                              | C <sub>obo</sub>     | —   | 12   | 30   | pF   | I <sub>E</sub> = 0A, V <sub>CB</sub> = -10V, f = 1MHz    |

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

# Typical Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

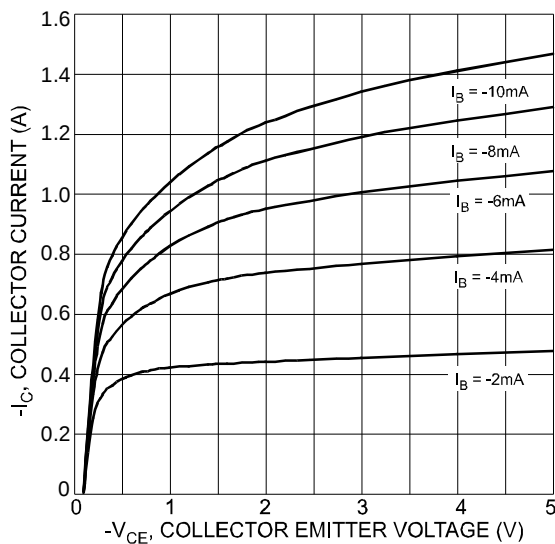


Fig. 1 Typical Collector Current vs. Collector-Emitter Voltage

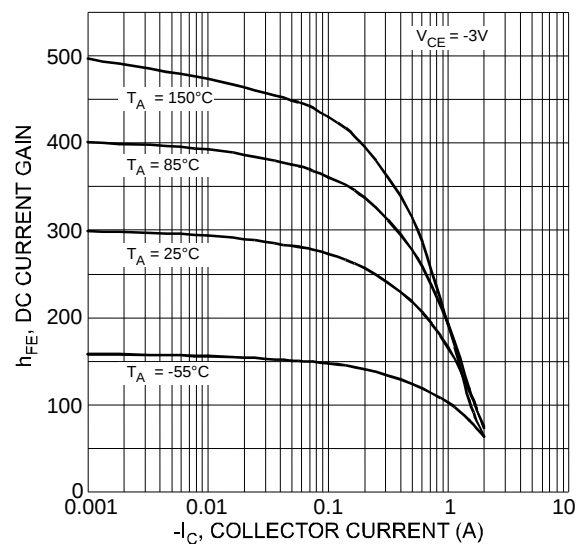


Fig. 2 Typical DC Current Gain vs. Collector Current (2DB1132R)

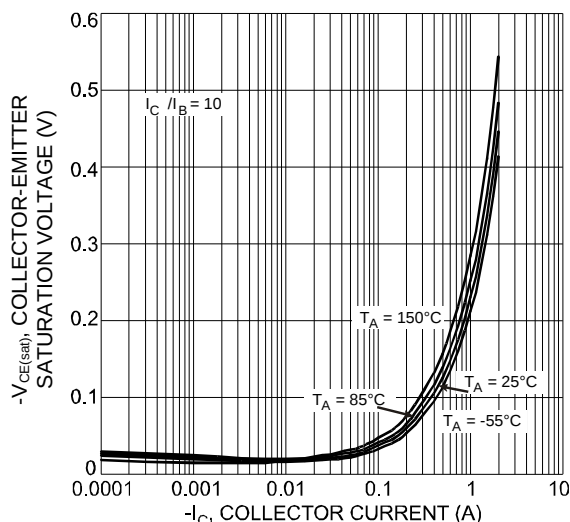


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

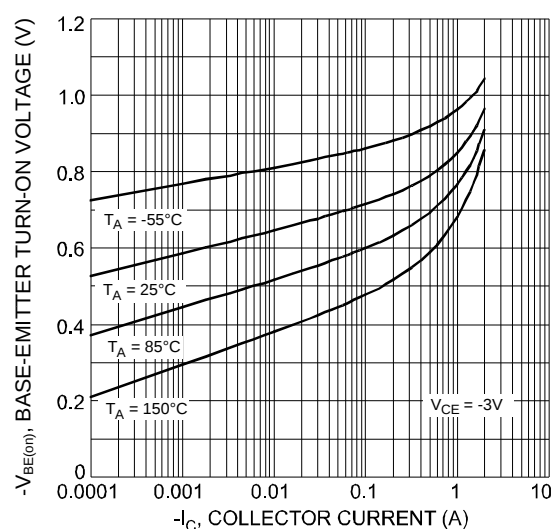
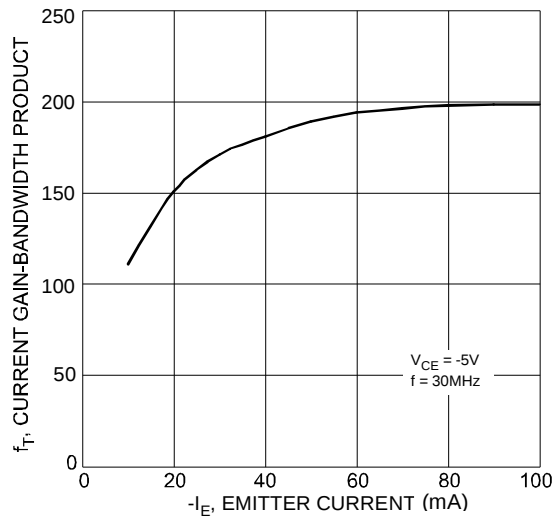
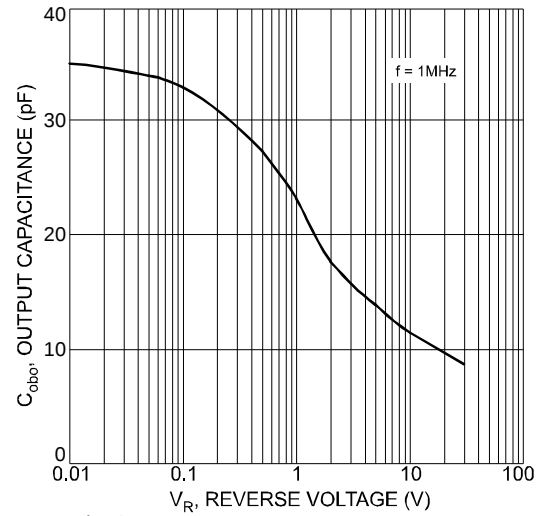
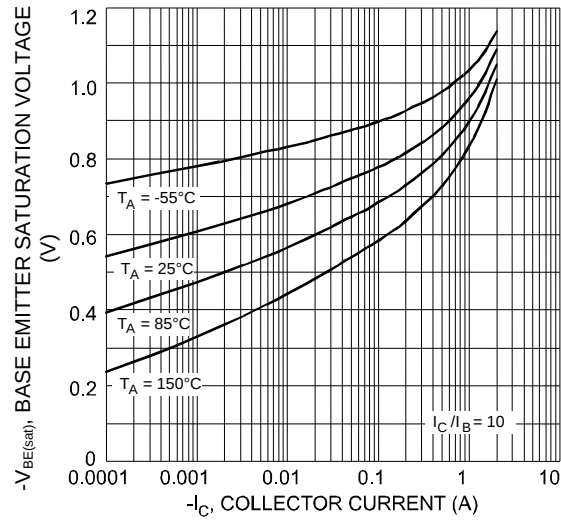


Fig. 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

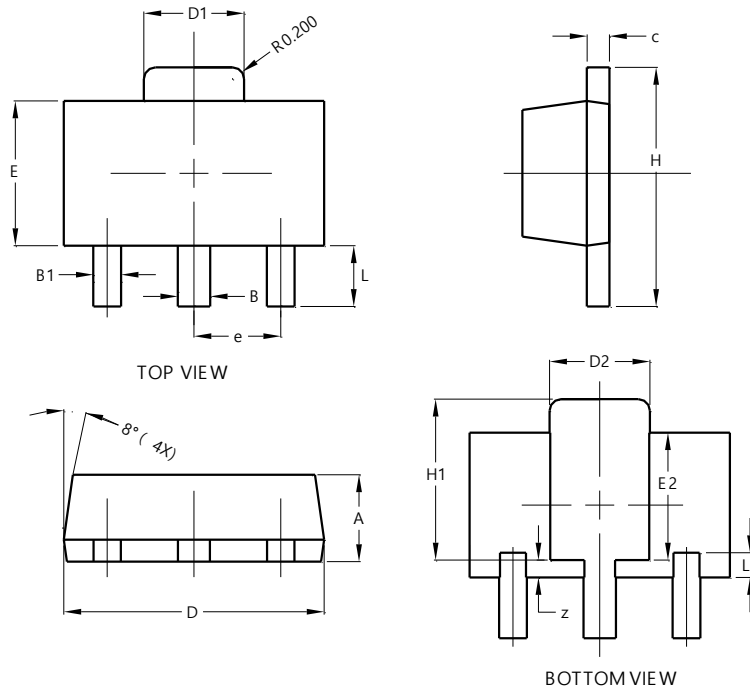
**Typical Electrical Characteristics** (continued) (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT89**

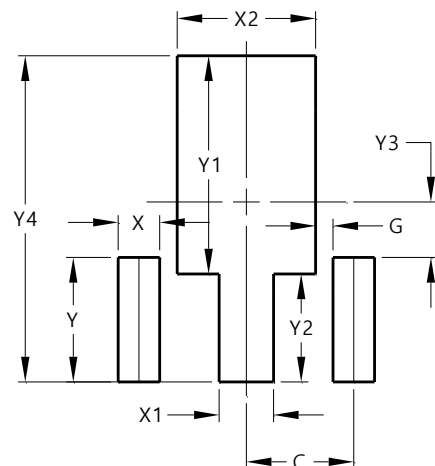


| SOT89                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 1.40  | 1.60  | 1.50  |
| B                    | 0.50  | 0.62  | 0.56  |
| B1                   | 0.42  | 0.54  | 0.48  |
| c                    | 0.35  | 0.43  | 0.38  |
| D                    | 4.40  | 4.60  | 4.50  |
| D1                   | 1.62  | 1.83  | 1.733 |
| D2                   | 1.61  | 1.81  | 1.71  |
| E                    | 2.40  | 2.60  | 2.50  |
| E2                   | 2.05  | 2.35  | 2.20  |
| e                    | -     | -     | 1.50  |
| H                    | 3.95  | 4.25  | 4.10  |
| H1                   | 2.63  | 2.93  | 2.78  |
| L                    | 0.90  | 1.20  | 1.05  |
| L1                   | 0.327 | 0.527 | 0.427 |
| z                    | 0.20  | 0.40  | 0.30  |
| All Dimensions in mm |       |       |       |

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT89**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 1.500         |
| G          | 0.244         |
| X          | 0.580         |
| X1         | 0.760         |
| X2         | 1.933         |
| Y          | 1.730         |
| Y1         | 3.030         |
| Y2         | 1.500         |
| Y3         | 0.770         |
| Y4         | 4.530         |

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