

**Features**

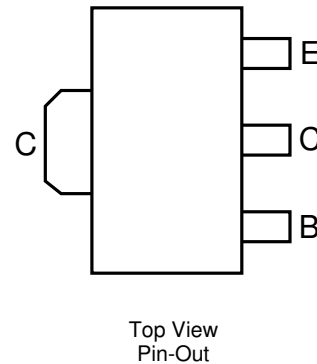
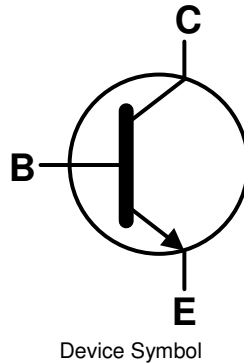
- $BV_{CEO} > 50V$
- $I_C = 3.0A$  Continuous Current
- Complementary PNP Type Available (DPLS350Y)
- Ideally Suited for Automated Assembly Processes
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound  
UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 Ⓔ③
- Weight: 0.052 grams (Approximate)

**Applications**

- Ideal for Medium Power Switching or Amplification Applications

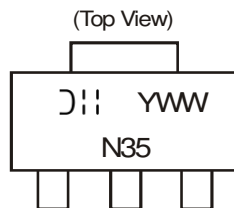


**Ordering Information** (Note 4)

| Device      | Package | Shipping         |
|-------------|---------|------------------|
| DNLS350Y-13 | SOT89   | 2500/Tape & Reel |

- Notes::
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

**Marking Information**



= Manufacturer's Marking  
 N35 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 7 = 2017)  
 WW = Week Code (01 to 52)

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

| Characteristic               | Symbol           | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage       | V <sub>CBO</sub> | 50    | V    |
| Collector-Emitter Voltage    | V <sub>CEO</sub> | 50    | V    |
| Emitter-Base Voltage         | V <sub>EBO</sub> | 5     | V    |
| Peak Pulse Collector Current | I <sub>CM</sub>  | 5     | A    |
| Continuous Collector Current | I <sub>C</sub>   | 3     | A    |
| Base Current                 | I <sub>B</sub>   | 0.5   | A    |

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

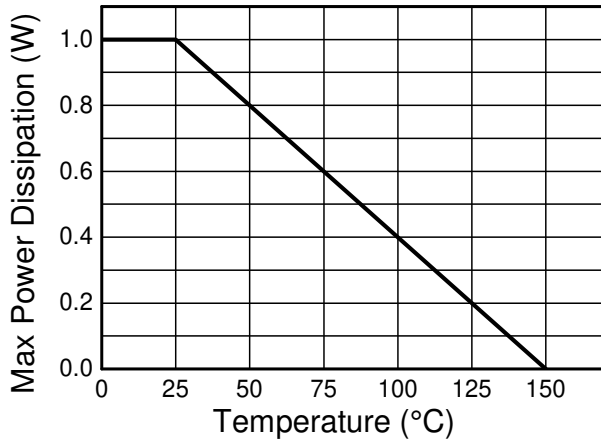
| Characteristic                              | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation                           | P <sub>D</sub>                    | (Note 5)    | 1    |
|   |                                   | (Note 6)    | 1.6  |
|   |                                   | (Note 7)    | 2.0  |
| Thermal Resistance, Junction to Ambient Air | R <sub>θJA</sub>                  | (Note 5)    | 125  |
|   |                                   | (Note 6)    | 78   |
|   |                                   | (Note 7)    | 62.5 |
| Thermal Resistance, Junction to Lead        | R <sub>θJL</sub>                  | 5.7         | °C/W |
| Operating and Storage Temperature Range     | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

### ESD Ratings (Note 9)

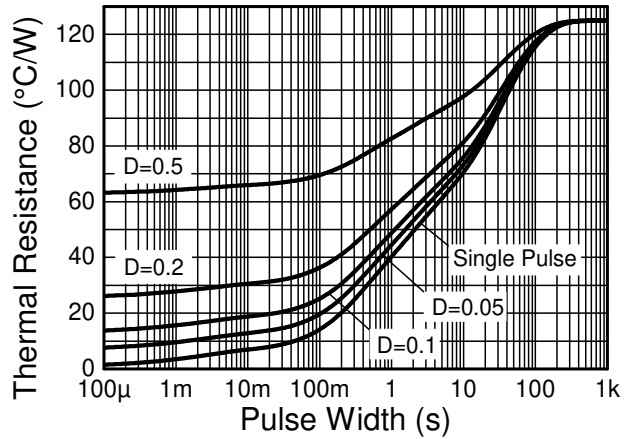
| Characteristic                             | Symbol  | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V    | 3A          |
| Electrostatic Discharge - Machine Model    | ESD MM  | 400   | V    | C           |

- Notes:
5. For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  6. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
  7. Same as note (5), except the device is mounted on 50mm x 50mm 1oz copper.
  8. Thermal resistance from junction to solder-point (on the exposed collector pad).
  9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

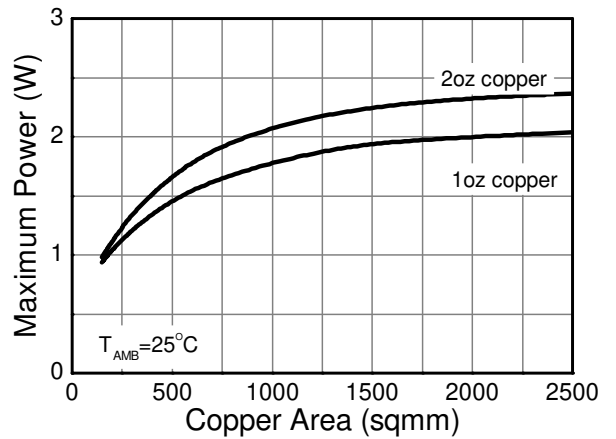
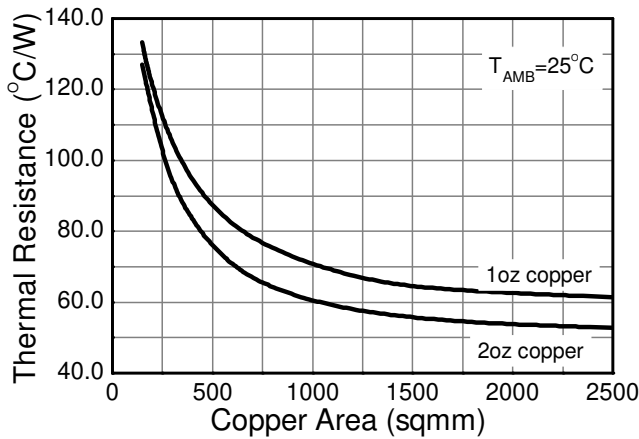
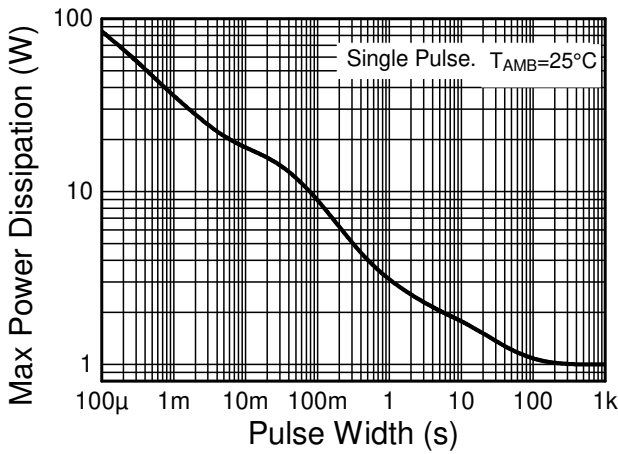
**Thermal Characteristics and Derating Information**



**Derating Curve**



**Transient Thermal Impedance**

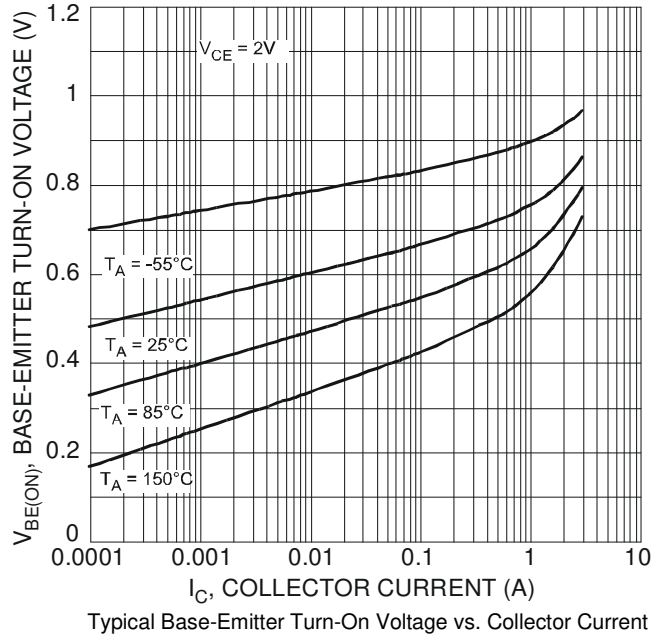
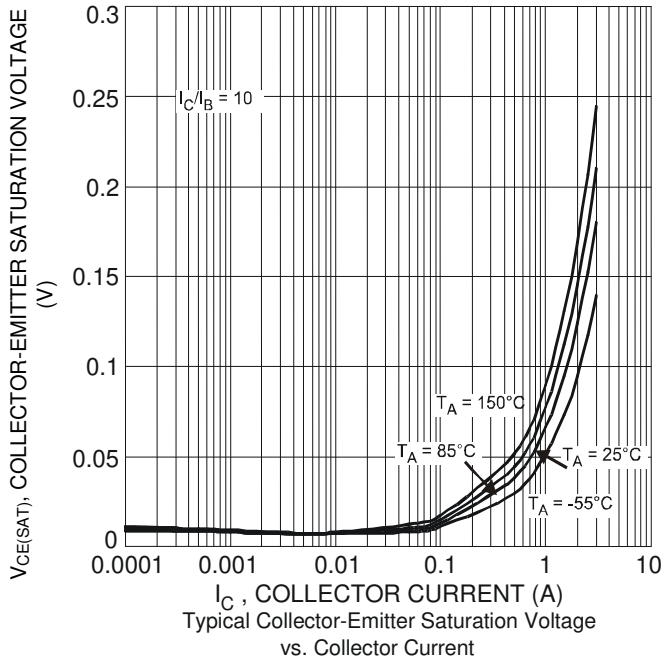
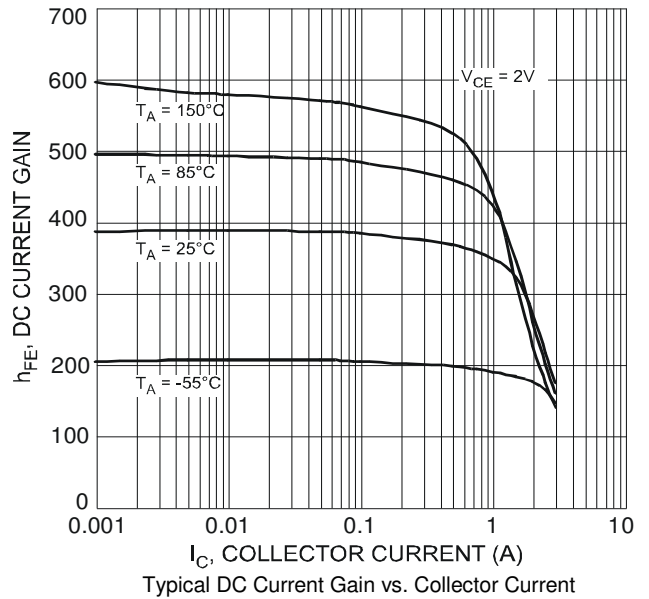
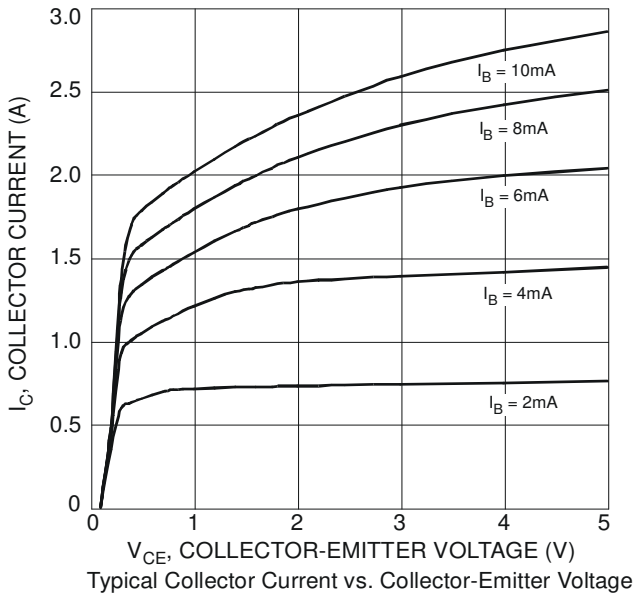


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

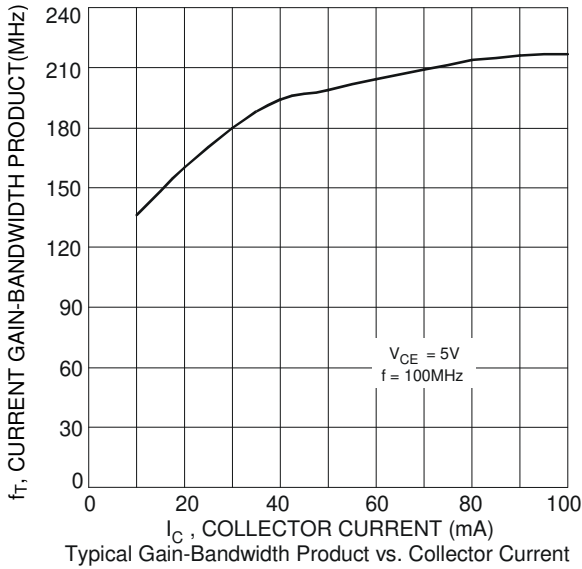
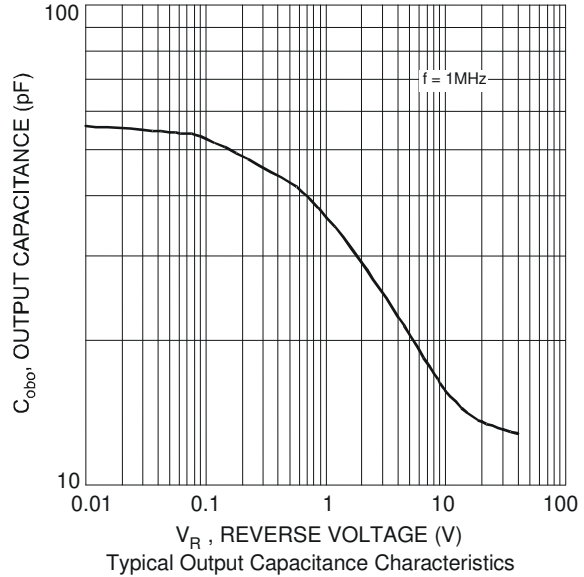
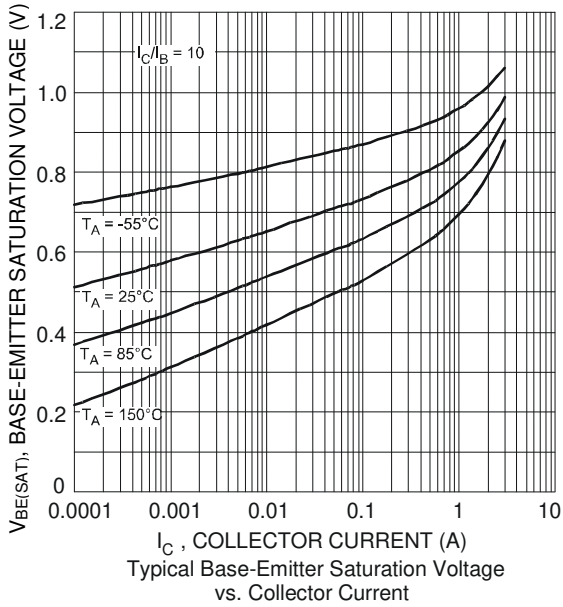
| Characteristic                       | Symbol               | Min | Typ | Max | Unit | Test Condition   |
|--------------------------------------|----------------------|-----|-----|-----|------|--|
| <b>OFF CHARACTERISTICS (Note 10)</b> |                      |     |     |     |      |  |
| Collector-Base Cutoff Current        | I <sub>CBO</sub>     | —   | —   | 100 | nA   | V <sub>CB</sub> = 50V, I <sub>E</sub> = 0                          |
|                                      |                      | —   | —   | 50  | μA   | V <sub>CB</sub> = 50V, I <sub>E</sub> = 0, T <sub>A</sub> = +150°C |
| Emitter-Base Cutoff Current          | I <sub>EBO</sub>     | —   | —   | 100 | nA   | V <sub>EB</sub> = 5V, I <sub>C</sub> = 0                           |
| Collector-Emitter Cutoff Current     | I <sub>CES</sub>     | —   | —   | 100 | nA   | V <sub>CE</sub> = 50V, V <sub>BE</sub> = 0                         |
| Collector-Base Breakdown Voltage     | BV <sub>CBO</sub>    | 50  | —   | —   | V    | I <sub>C</sub> = 100μA   |
| Collector-Emitter Breakdown Voltage  | BV <sub>CEO</sub>    | 50  | —   | —   | V    | I <sub>C</sub> = 10mA  |
| Emitter-Base Breakdown Voltage       | BV <sub>EBO</sub>    | 5   | —   | —   | V    | I <sub>E</sub> = 100μA   |
| <b>ON CHARACTERISTICS (Note 10)</b>  |                      |     |     |     |      |  |
| DC Current Gain                      | h <sub>FE</sub>      | 300 | —   | —   | —    | V <sub>CE</sub> = 2V, I <sub>C</sub> = 0.1A                        |
|                                      |                      | 300 | —   | —   |      | V <sub>CE</sub> = 2V, I <sub>C</sub> = 0.5A                        |
|                                      |                      | 300 | —   | 700 |      | V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A                          |
|                                      |                      | 200 | —   | —   |      | V <sub>CE</sub> = 2V, I <sub>C</sub> = 2A                          |
|                                      |                      | 100 | —   | —   |      | V <sub>CE</sub> = 2V, I <sub>C</sub> = 3A                          |
| Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub> | —   | 38  | 80  | mV   | I <sub>C</sub> = 0.5A, I <sub>B</sub> = 50mA                       |
|                                      |                      | —   | 70  | 160 |      | I <sub>C</sub> = 1A, I <sub>B</sub> = 50mA                         |
|                                      |                      | —   | 130 | 280 |      | I <sub>C</sub> = 2A, I <sub>B</sub> = 100mA                        |
|                                      |                      | —   | 124 | 260 |      | I <sub>C</sub> = 2A, I <sub>B</sub> = 200mA                        |
|                                      |                      | —   | 180 | 370 |      | I <sub>C</sub> = 3A, I <sub>B</sub> = 300mA                        |
| Equivalent On-Resistance             | R <sub>CE(SAT)</sub> | —   | 62  | 130 | mΩ   | I <sub>E</sub> = 2A, I <sub>B</sub> = 200mA                        |
| Base-Emitter Saturation Voltage      | V <sub>BE(SAT)</sub> | —   | —   | 1.1 | V    | I <sub>C</sub> = 2A, I <sub>B</sub> = 100mA                        |
|                                      |                      | —   | —   | 1.2 | V    | I <sub>C</sub> = 3A, I <sub>B</sub> = 300mA                        |
| Base-Emitter Turn-on Voltage         | V <sub>BE(ON)</sub>  | —   | —   | 1.1 | V    | V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A                          |
| <b>SMALL SIGNAL CHARACTERISTICS</b>  |                      |     |     |     |      |  |
| Transition Frequency                 | f <sub>T</sub>       | 100 | —   | —   | MHz  | V <sub>CE</sub> = 5V, I <sub>C</sub> = 100mA, f = 100MHz           |
| Output Capacitance                   | C <sub>obo</sub>     | —   | —   | 25  | pF   | V <sub>CB</sub> = 10V, f = 1MHz                                    |

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

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



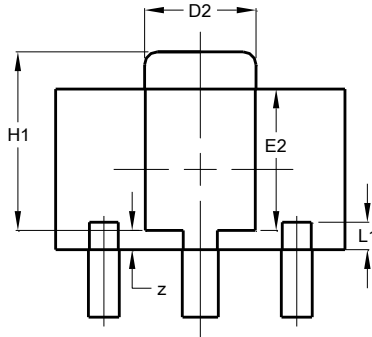
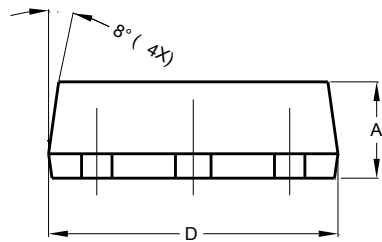
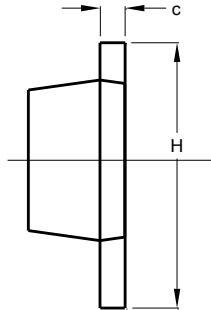
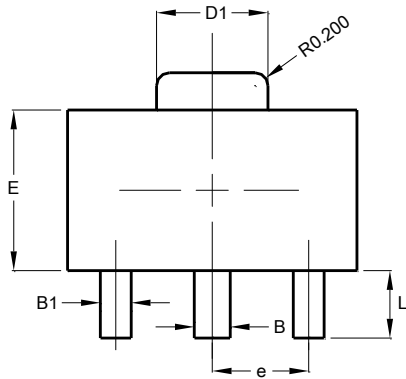
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.) (Cont.)



**Package Outline Dimensions**

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

**SOT89**

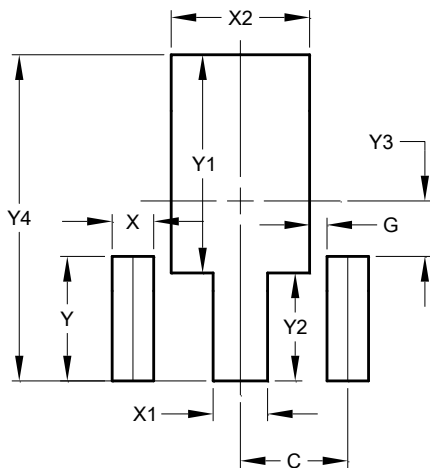


| SOT89                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 1.40  | 1.60  | 1.50  |
| B                    | 0.50  | 0.62  | 0.56  |
| B1                   | 0.42  | 0.54  | 0.48  |
| c                    | 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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