

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(ON)}$                 | $I_D$<br>$T_A = +25^\circ\text{C}$ |
|---------------|------------------------------|------------------------------------|
| 300V          | 14Ω @ $V_{GS} = 10\text{V}$  | 0.21A                              |
|               | 20Ω @ $V_{GS} = 4.5\text{V}$ | 0.17A                              |

## Description

This new generation MOSFET has been designed to minimize the on-state resistance ( $R_{DS(ON)}$ ) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

## Applications

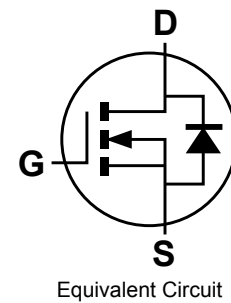
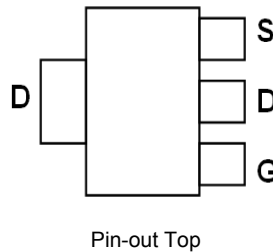
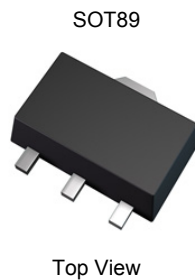
- Power management functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc

## Features

- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully 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 Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Finish annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208③
- Weight: 0.052 grams (approximate)

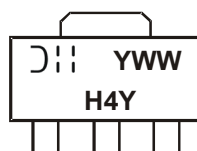


## Ordering Information (Note 4)

| Part Number    | Compliance | Case  | Quantity per reel |
|----------------|------------|-------|-------------------|
| DMN30H14DLY-13 | Standard   | SOT89 | 2,500             |

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  - 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.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_grade\\_definitions/](http://www.diodes.com/quality/product_grade_definitions/).

## Marking Information



□|| = Manufacturer's Marking  
 H4Y = Marking Code  
 YWW = Date Code Marking  
 Y= Year (ex: 4 = 2014)  
 WW = Week (01 - 53)

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

| Characteristic  |              |  | Symbol           | Value        | Units |
|---|--------------|--|------------------|--------------|-------|
| Drain-Source Voltage                                    |              |  | V <sub>DSS</sub> | 300          | V     |
| Gate-Source Voltage                                     |              |  | V <sub>GSS</sub> | ±20          | V     |
| Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V | Steady State | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | I <sub>D</sub>   | 0.21<br>0.16 | A     |
| Pulsed Drain Current (10μs pulse, duty cycle ≤1%)       |              |  | I <sub>DM</sub>  | 1            | A     |
| Maximum Body Diode Continuous Current (Note 6)          |              |  | I <sub>S</sub>   | 2            | A     |

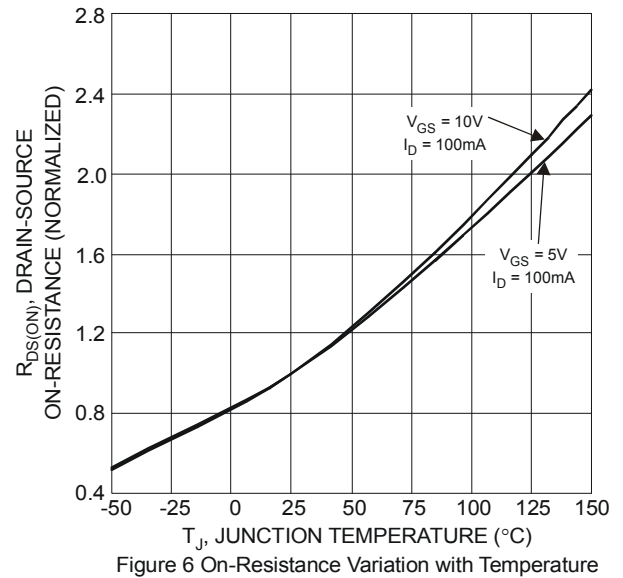
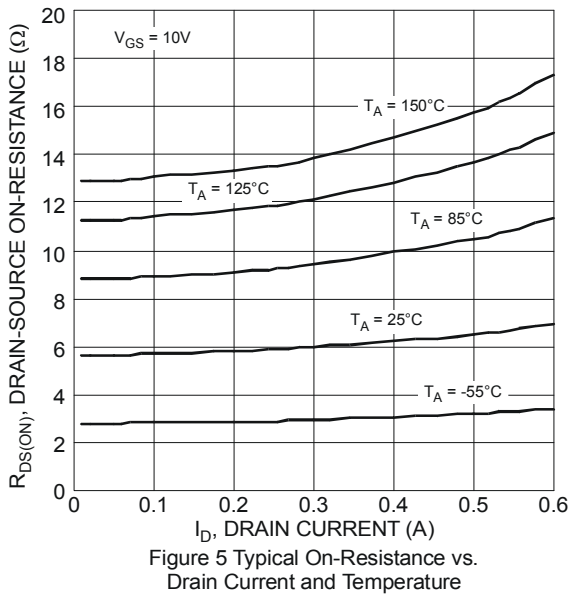
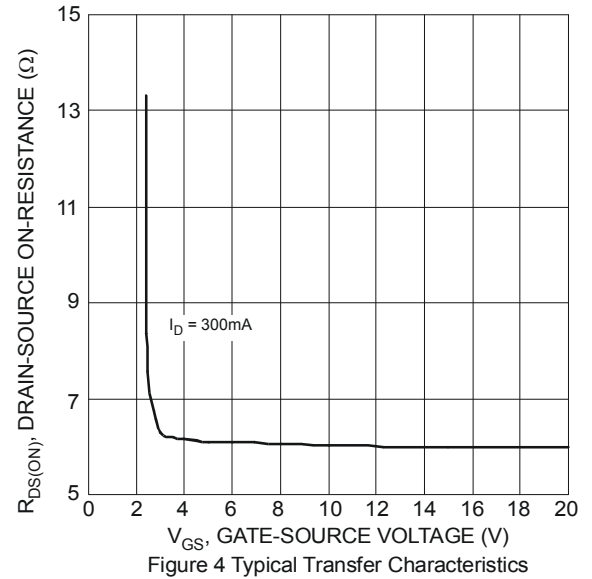
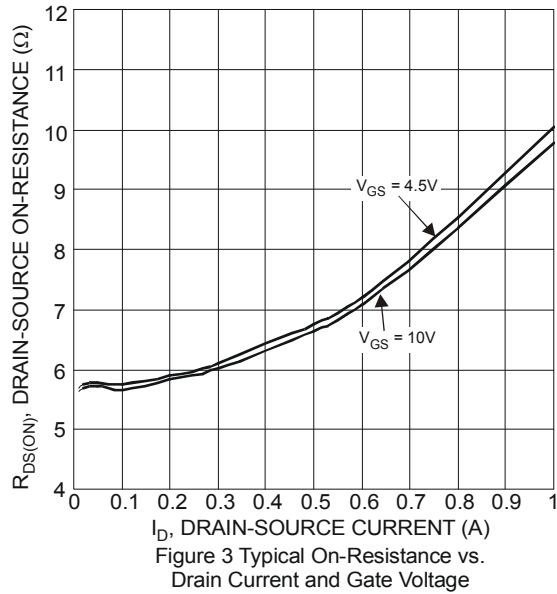
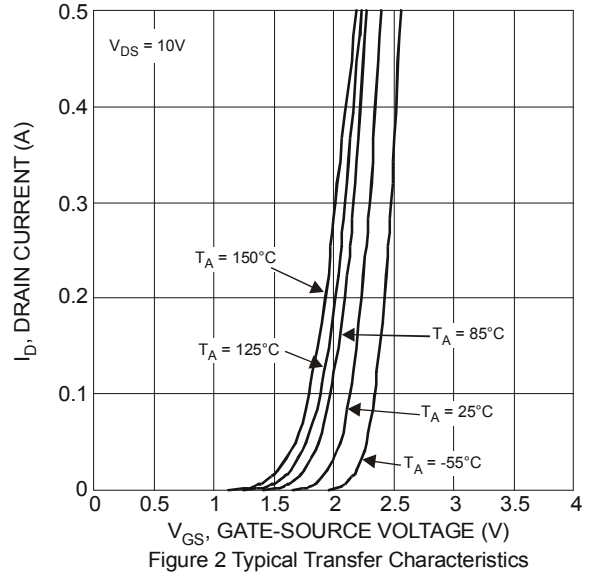
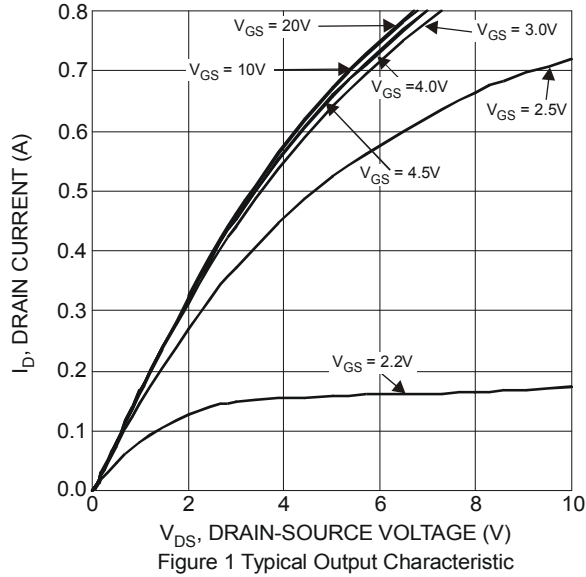
**Thermal Characteristics**

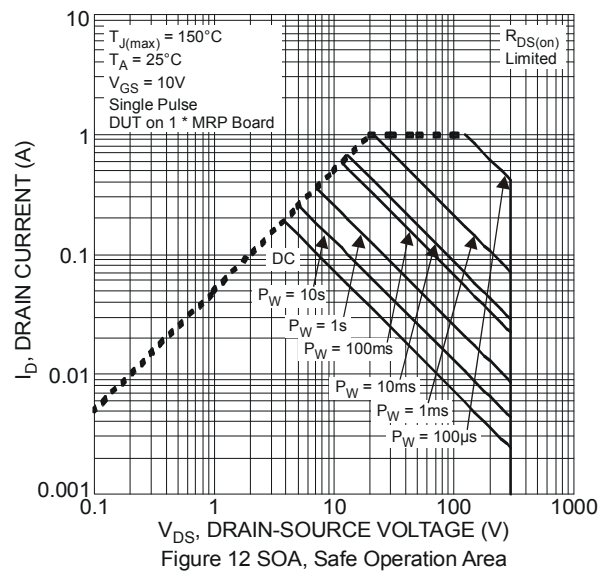
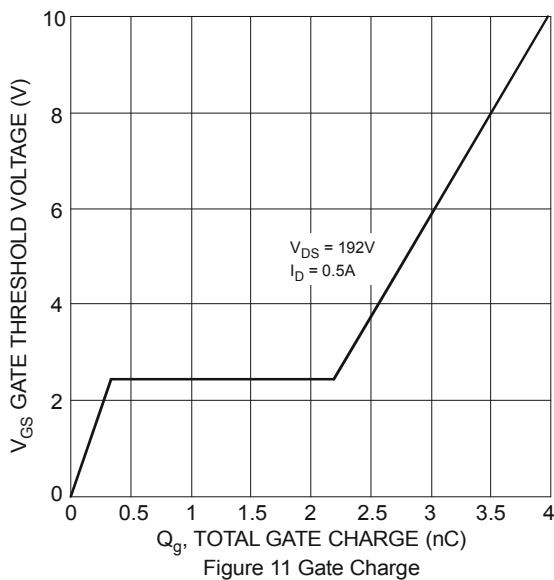
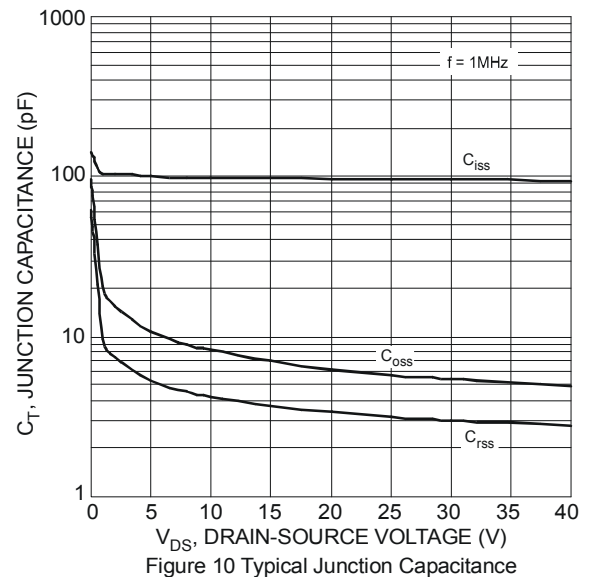
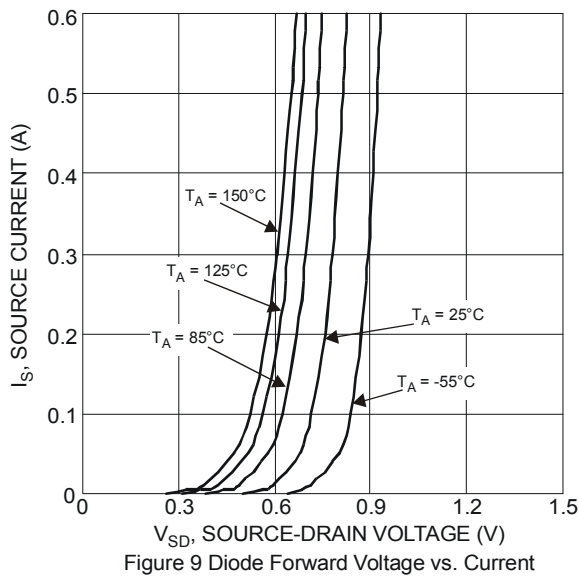
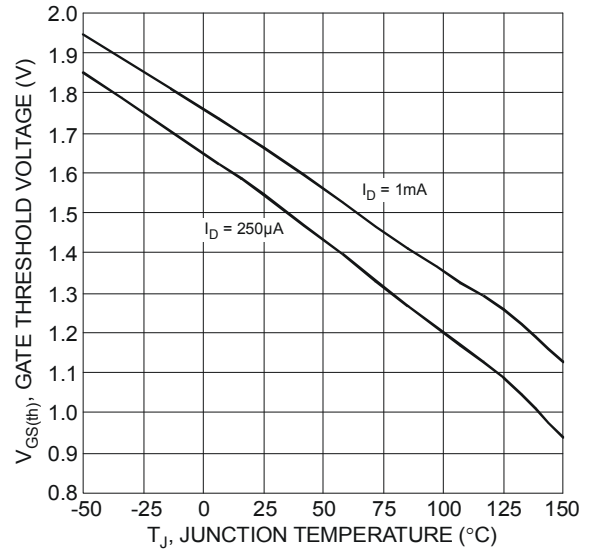
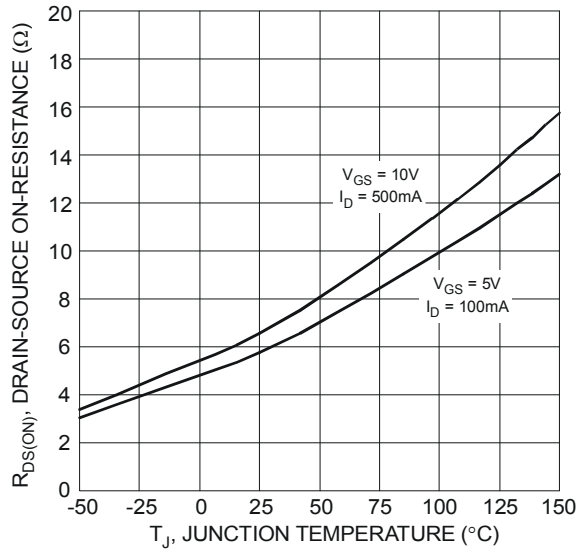
| Characteristic                          |          | Symbol                            | Value       | Units |
|---|----------|-----------------------------------|-------------|-------|
| Total Power Dissipation                 | (Note 5) | P <sub>D</sub>                    | 0.9         | W     |
|   | (Note 6) |                                   | 2.2         |       |
| Thermal Resistance, Junction to Ambient | (Note 5) | R <sub>θJA</sub>                  | 132         | °C/W  |
|   | (Note 6) |                                   | 55          |       |
| Thermal Resistance, Junction to Case    | (Note 6) | R <sub>θJC</sub>                  | 9.6         |       |
| Operating and Storage Temperature Range |          | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C    |

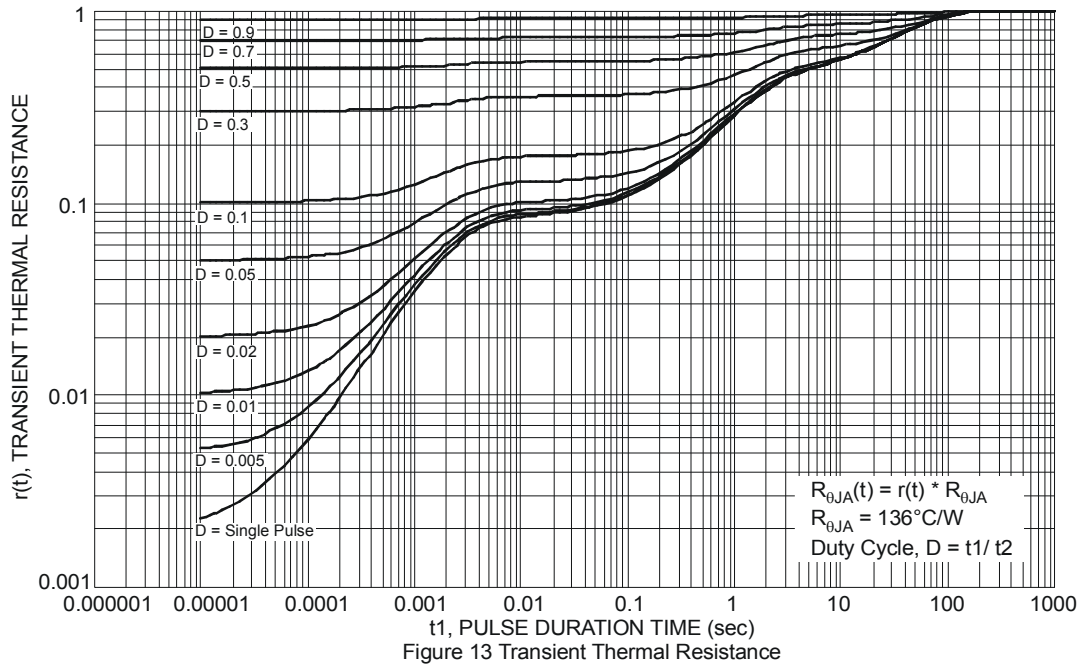
**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                          | Symbol              | Min | Typ | Max  | Unit | Test Condition  |
|---|---------------------|-----|-----|------|------|---|
| <b>OFF CHARACTERISTICS (Note 7)</b>     |                     |     |     |      |      |   |
| Drain-Source Breakdown Voltage          | BV <sub>DSS</sub>   | 300 | —   | —    | V    | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA  |
| Zero Gate Voltage Drain Current         | I <sub>DSS</sub>    | —   | —   | 1    | μA   | V <sub>DS</sub> = 240V, V <sub>GS</sub> = 0V  |
| Gate-Body Leakage                       | I <sub>GSS</sub>    | —   | —   | ±100 | nA   | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V  |
| <b>ON CHARACTERISTICS (Note 7)</b>      |                     |     |     |      |      |   |
| Gate Threshold Voltage                  | V <sub>GS(th)</sub> | 1   | —   | 3    | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                |
| Static Drain-Source On-Resistance       | R <sub>DS(ON)</sub> | —   | 6   | 14   | Ω    | V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.3A  |
|   |                     | —   | 6   | 20   |      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.2A   |
| Diode Forward Voltage                   | V <sub>SD</sub>     | —   | 0.7 | 1.2  | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = 0.3A   |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b> |                     |     |     |      |      |   |
| Input Capacitance                       | C <sub>iss</sub>    | —   | 96  | —    | pF   | V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz                                     |
| Output Capacitance                      | C <sub>oss</sub>    | —   | 5.8 | —    |      |   |
| Reverse Transfer Capacitance            | C <sub>rss</sub>    | —   | 3.2 | —    |      |   |
| Gate Resistance                         | R <sub>G</sub>      | —   | 12  | —    | Ω    | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1.0MHz                                    |
| Total Gate Charge                       | Q <sub>g</sub>      | —   | 4   | —    | nC   | V <sub>DS</sub> = 192V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A                      |
| Gate-Source Charge                      | Q <sub>gs</sub>     | —   | 0.3 | —    |      |   |
| Gate-Drain Charge                       | Q <sub>gd</sub>     | —   | 1.9 | —    |      |   |
| Turn-On Delay Time                      | t <sub>D(on)</sub>  | —   | 3.3 | —    | nS   | V <sub>DS</sub> = 60V, R <sub>L</sub> = 200Ω, V <sub>GS</sub> = 10V, R <sub>G</sub> = 25Ω |
| Turn-On Rise Time                       | t <sub>r</sub>      | —   | 8.6 | —    |      |   |
| Turn-Off Delay Time                     | t <sub>D(off)</sub> | —   | 22  | —    |      |   |
| Turn-Off Fall Time                      | t <sub>f</sub>      | —   | 12  | —    |      |   |
| Reverse Recovery Time                   | t <sub>rr</sub>     | —   | 43  | —    | nS   | V <sub>R</sub> = 100V, I <sub>F</sub> = 1.0A, di/dt = 100A/μs                             |
| Reverse Recovery Charge                 | Q <sub>rr</sub>     | —   | 47  | —    | nC   |   |

- Notes:
5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
  6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate
  7. Short duration pulse test used to minimize self-heating effect
  8. Guaranteed by design. Not subject to production testing

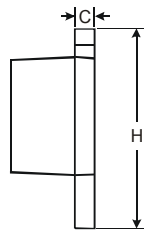
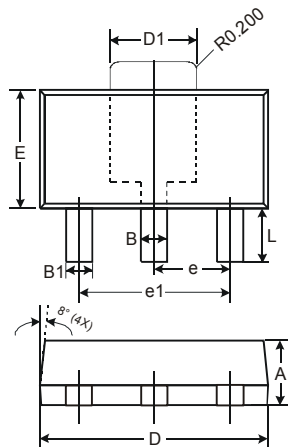






## Package Outline Dimensions

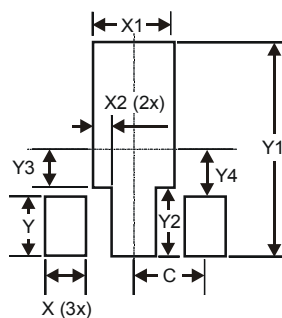
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SOT89                |          |      |
|----------------------|----------|------|
| Dim                  | Min      | Max  |
| A                    | 1.40     | 1.60 |
| B                    | 0.44     | 0.62 |
| B1                   | 0.35     | 0.54 |
| C                    | 0.35     | 0.43 |
| D                    | 4.40     | 4.60 |
| D1                   | 1.52     | 1.83 |
| E                    | 2.29     | 2.60 |
| e                    | 1.50 Typ |      |
| e1                   | 3.00 Typ |      |
| H                    | 3.94     | 4.25 |
| L                    | 0.89     | 1.20 |
| All Dimensions in mm |          |      |

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.900         |
| X1         | 1.733         |
| X2         | 0.416         |
| Y          | 1.300         |
| Y1         | 4.600         |
| Y2         | 1.475         |
| Y3         | 0.950         |
| Y4         | 1.125         |
| C          | 1.500         |

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