

## Product Summary

| BV <sub>DSS</sub> | R <sub>DS(ON)</sub> Max        | Package | I <sub>D</sub><br>T <sub>A</sub> = +25°C |
|-------------------|--------------------------------|---------|------------------------------------------|
| -30V              | 25mΩ @ V <sub>GS</sub> = -10V  | SO-8    | -6.0A                                    |
|                   | 38mΩ @ V <sub>GS</sub> = -4.5V |         | -4.7A                                    |

## Description

This new generation MOSFET has been designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high efficiency power management applications.

## Applications

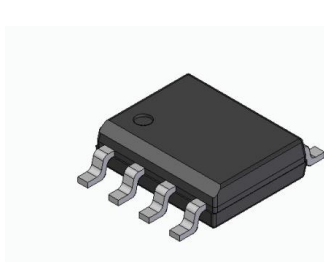
- DC-DC Converters
- Power Management Functions
- Load Switch

## Features

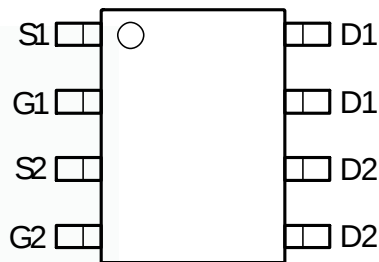
- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

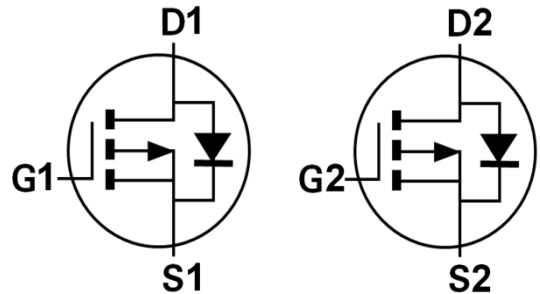
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.074 grams (Approximate)



Top View



Top View  
Pin Configuration



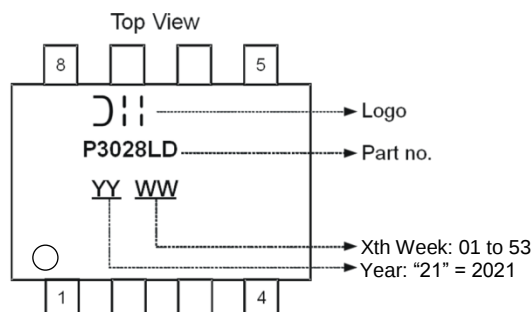
Equivalent Circuit

## Ordering Information (Note 4)

| Part Number   | Case | Packaging         |
|---------------|------|-------------------|
| DMP3028LSD-13 | SO-8 | 2,500/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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



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

| Characteristic                                          |              |                                                  | Symbol           | Value        | Unit |
|---------------------------------------------------------|--------------|--------------------------------------------------|------------------|--------------|------|
| Drain-Source Voltage                                    |              |                                                  | V <sub>DSS</sub> | -30          | V    |
| Gate-Source Voltage                                     |              |                                                  | V <sub>GSS</sub> | ±20          | V    |
| Continuous Drain Current (Note 5) V <sub>GS</sub> = 10V | Steady State | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | I <sub>D</sub>   | -6<br>-4.7   | A    |
|                                                         | t < 10s      | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | I <sub>D</sub>   | -7.4<br>-5.8 | A    |
| Maximum Body Diode Forward Current (Note 6)             |              |                                                  | I <sub>S</sub>   | -2.5         | A    |
| Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)      |              |                                                  | I <sub>DM</sub>  | -30          | A    |

**Thermal Characteristics**

| Characteristic                                   |                        | Symbol                            | Value       | Unit |
|--------------------------------------------------|------------------------|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 5)                 | T <sub>A</sub> = +25°C | P <sub>D</sub>                    | 1.3         | W    |
|                                                  | T <sub>A</sub> = +70°C |                                   | 0.8         |      |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State           | R <sub>θJA</sub>                  | 102         | °C/W |
|                                                  | t < 10s                |                                   | 61          |      |
| Total Power Dissipation (Note 6)                 | T <sub>A</sub> = +25°C | P <sub>D</sub>                    | 1.7         | W    |
|                                                  | T <sub>A</sub> = +70°C |                                   | 1.1         |      |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady State           | R <sub>θJA</sub>                  | 75          | °C/W |
|                                                  | t < 10s                |                                   | 50          |      |
| Thermal Resistance, Junction to Case (Note 6)    |                        | R <sub>θJC</sub>                  | 14.5        | °C   |
| Operating and Storage Temperature Range          |                        | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 |      |

**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>   | -30 | —    | —    | 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> = -30V, V <sub>GS</sub> = 0V                                                   |
| Gate-Source 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> | —   | 20   | 25   | mΩ   | V <sub>GS</sub> = -10V, I <sub>D</sub> = -7A                                                   |
|                                             |                     | —   | 29   | 38   |      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -5.5A                                                |
| Forward Transfer Admittance                 | Y <sub>fs</sub>     | —   | 11   | —    | S    | V <sub>DS</sub> = -5V, I <sub>D</sub> = -7A                                                    |
| Diode Forward Voltage                       | V <sub>SD</sub>     | —   | 0.7  | 1.2  | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = -2.1A                                                   |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>     |                     |     |      |      |      |                                                                                                |
| Input Capacitance                           | C <sub>iss</sub>    | —   | 1241 | —    | pF   | V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V<br>f = 1.0MHz                                     |
| Output Capacitance                          | C <sub>oss</sub>    | —   | 147  | —    |      |                                                                                                |
| Reverse Transfer Capacitance                | C <sub>rss</sub>    | —   | 110  | —    |      |                                                                                                |
| Gate Resistance                             | R <sub>G</sub>      | —   | 15   | —    | Ω    | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1.0MHz                                         |
| Total Gate Charge (V <sub>GS</sub> = -4.5V) | Q <sub>g</sub>      | —   | 11   | —    | nC   | V <sub>DS</sub> = -15V, I <sub>D</sub> = -7A                                                   |
| Total Gate Charge (V <sub>GS</sub> = -10V)  | Q <sub>g</sub>      | —   | 22   | —    |      |                                                                                                |
| Gate-Source Charge                          | Q <sub>gs</sub>     | —   | 3.5  | —    |      |                                                                                                |
| Gate-Drain Charge                           | Q <sub>gd</sub>     | —   | 4.7  | —    |      |                                                                                                |
| Turn-On Delay Time                          | t <sub>D(ON)</sub>  | —   | 9.7  | —    | ns   | V <sub>GS</sub> = -10V, V <sub>DD</sub> = -15V, R <sub>GEN</sub> = 6Ω,<br>I <sub>D</sub> = -7A |
| Turn-On Rise Time                           | t <sub>R</sub>      | —   | 17.1 | —    |      |                                                                                                |
| Turn-Off Delay Time                         | t <sub>D(OFF)</sub> | —   | 60.5 | —    |      |                                                                                                |
| Turn-Off Fall Time                          | t <sub>F</sub>      | —   | 40.4 | —    |      |                                                                                                |

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

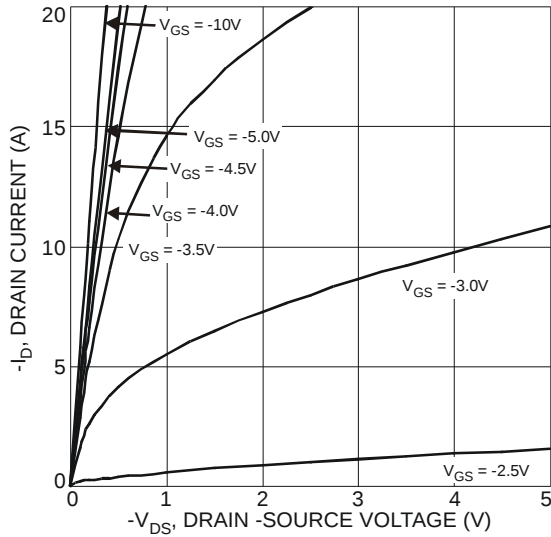


Figure 1 Typical Output Characteristics

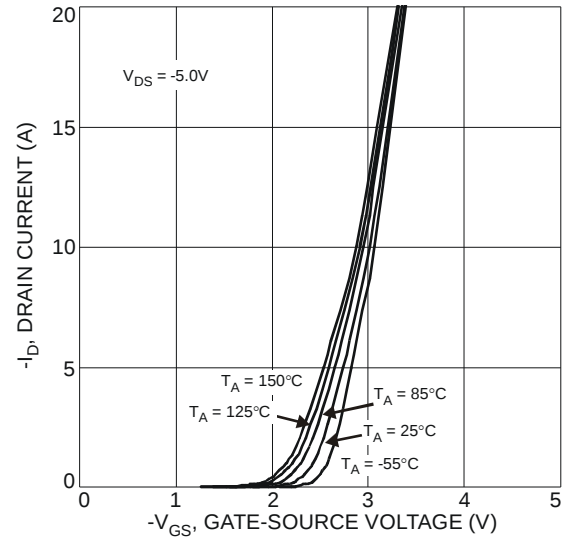


Figure 2 Typical Transfer Characteristics

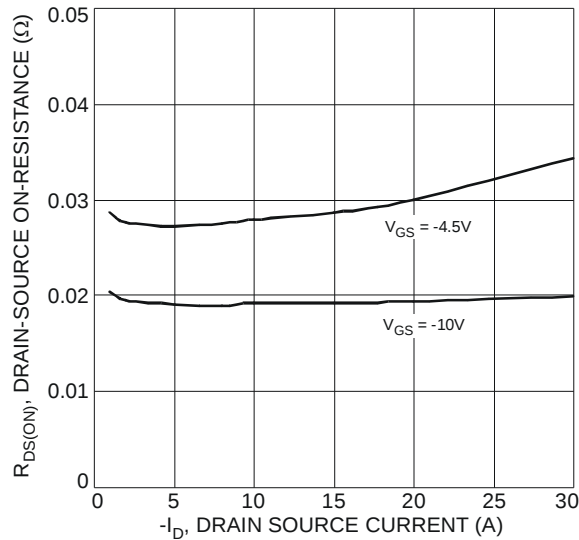


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

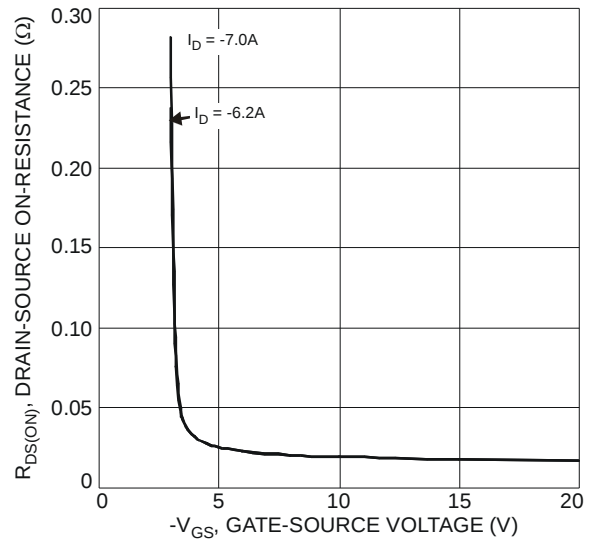


Figure 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

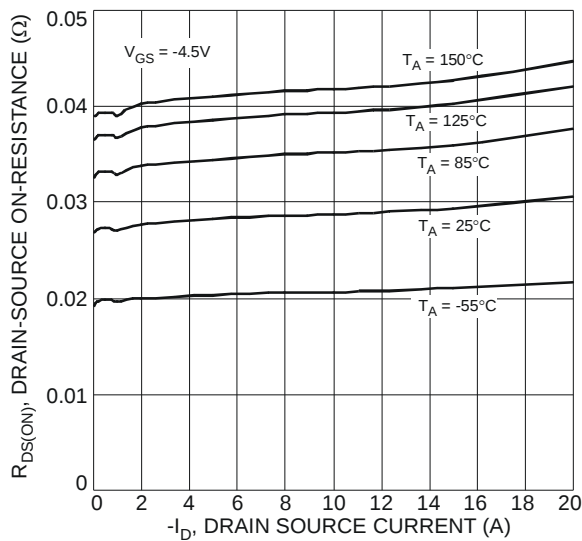


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

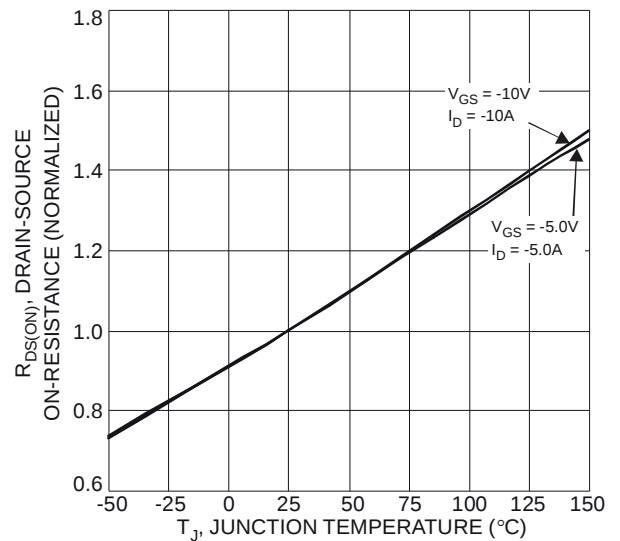


Figure 6 On-Resistance Variation with Temperature

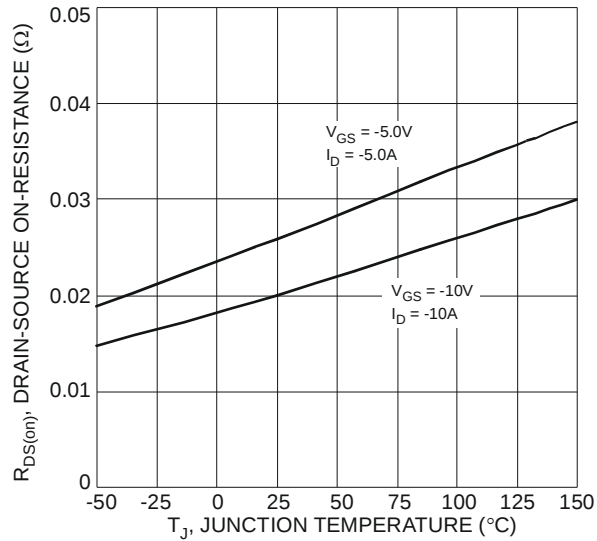


Figure 7 On-Resistance Variation with Temperature

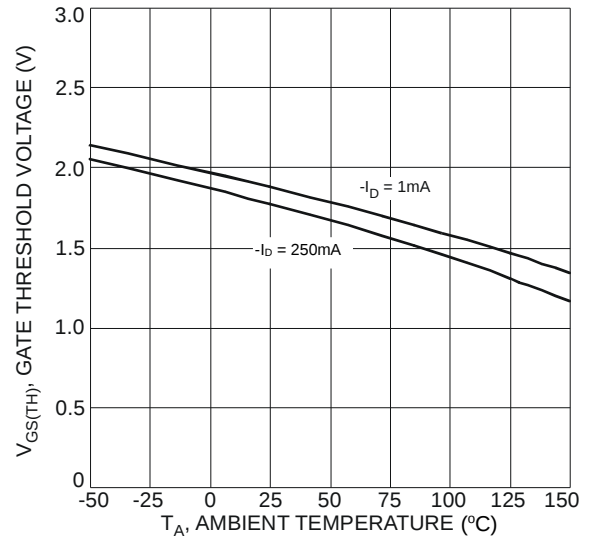


Figure 8 Gate Threshold Variation vs. Ambient Temperature

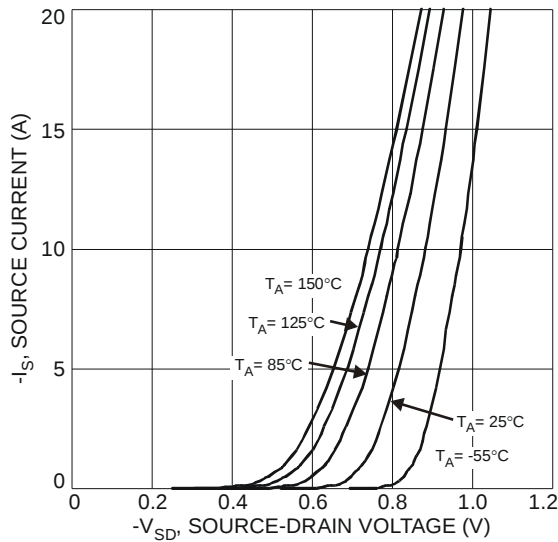
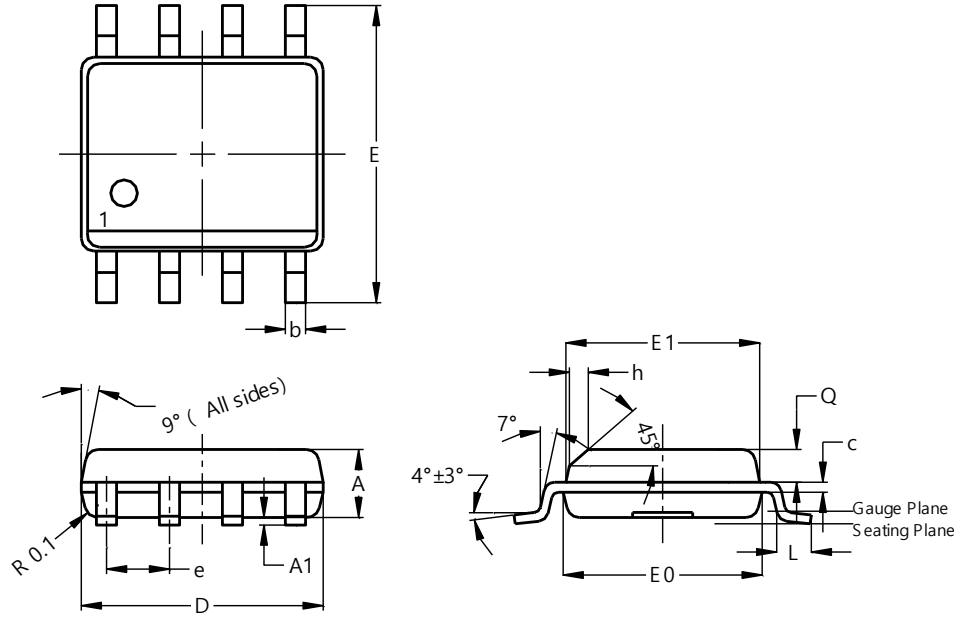


Figure 9 Diode Forward Voltage vs. Current

## Package Outline Dimensions

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

**SO-8**

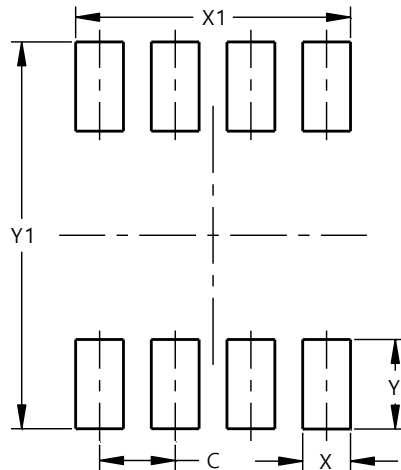


| SO-8                 |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 1.40 | 1.50 | 1.45 |
| A1                   | 0.10 | 0.20 | 0.15 |
| b                    | 0.30 | 0.50 | 0.40 |
| c                    | 0.15 | 0.25 | 0.20 |
| D                    | 4.85 | 4.95 | 4.90 |
| E                    | 5.90 | 6.10 | 6.00 |
| E1                   | 3.80 | 3.90 | 3.85 |
| E0                   | 3.85 | 3.95 | 3.90 |
| e                    | --   | --   | 1.27 |
| h                    | --   | --   | 0.35 |
| L                    | 0.62 | 0.82 | 0.72 |
| Q                    | 0.60 | 0.70 | 0.65 |
| All Dimensions in mm |      |      |      |

## Suggested Pad Layout

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

**SO-8**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 1.27          |
| X          | 0.802         |
| X1         | 4.612         |
| Y          | 1.505         |
| Y1         | 6.50          |

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