
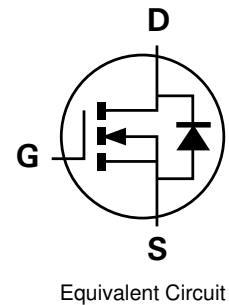
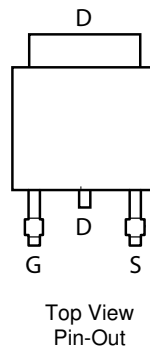


## Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **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: TO252 (DPAK)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.33 grams (approximate)

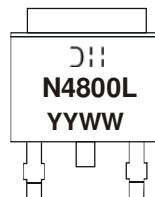


## Ordering Information (Note 4)

| Part Number   | Case  | Packaging          |
|---------------|-------|--------------------|
| DMG4800LK3-13 | TO252 | 2500 / Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See <http://www.diodes.com> 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 <http://www.diodes.com>.

## Marking Information



D:11 = Manufacturer's Marking  
 N4800L = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Year (ex: 09 = 2009)  
 WW = Week (01 - 53)

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

| Characteristic                    |              |                           | Symbol    | Value    | Unit |
|-----------------------------------|--------------|---------------------------|-----------|----------|------|
| Drain-Source Voltage              |              |                           | $V_{DSS}$ | 30       | V    |
| Gate-Source Voltage               |              |                           | $V_{GSS}$ | $\pm 25$ | V    |
| Continuous Drain Current (Note 5) | Steady State | $T_A = +25^\circ\text{C}$ | $I_D$     | 10.0     | A    |
|                                   |              | $T_A = +85^\circ\text{C}$ |           | 6.5      |      |
| Pulsed Drain Current (Note 6)     |              |                           | $I_{DM}$  | 48       | A    |

**Thermal Characteristics**

| Characteristic  | Symbol          | Value       | Unit                      |
|---|-----------------|-------------|---------------------------|
| Power Dissipation (Note 5)  | $P_D$           | 1.71        | W                         |
| Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$ | $R_{\theta JA}$ | 72.9        | $^\circ\text{C}/\text{W}$ |
| Operating and Storage Temperature Range                             | $T_J, T_{STG}$  | -55 to +150 | $^\circ\text{C}$          |

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

| Characteristic  | Symbol       | Min | Typ   | Max       | Unit          | Test Condition   |
|---|--------------|-----|-------|-----------|---------------|--|
| <b>OFF CHARACTERISTICS (Note 7)</b>                       |              |     |       |           |               |  |
| Drain-Source Breakdown Voltage                            | $BV_{DSS}$   | 30  | -     | -         | V             | $V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$   |
| Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$ | $I_{DSS}$    | -   | -     | 1.0       | $\mu\text{A}$ | $V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$  |
| Gate-Source Leakage                                       | $I_{GSS}$    | -   | -     | $\pm 100$ | nA            | $V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$  |
| <b>ON CHARACTERISTICS (Note 7)</b>                        |              |     |       |           |               |  |
| Gate Threshold Voltage                                    | $V_{GS(th)}$ | 0.8 | -     | 1.6       | V             | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$  |
| Static Drain-Source On-Resistance                         | $R_{DS(on)}$ | -   | 12    | 17        | m $\Omega$    | $V_{GS} = 10\text{V}, I_D = 9\text{A}$   |
|   |              |     | 16    | 24        |               | $V_{GS} = 4.5\text{V}, I_D = 7\text{A}$  |
| Forward Transfer Admittance                               | $ Y_{fs} $   | -   | 10    | -         | S             | $V_{DS} = 10\text{V}, I_D = 9\text{A}$   |
| Diode Forward Voltage                                     | $V_{SD}$     | -   | 0.7   | 1.0       | V             | $V_{GS} = 0\text{V}, I_S = 1\text{A}$  |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>                   |              |     |       |           |               |  |
| Input Capacitance   | $C_{iss}$    | -   | 798   | -         | pF            | $V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$                               |
| Output Capacitance  | $C_{oss}$    | -   | 128   | -         | pF            |  |
| Reverse Transfer Capacitance                              | $C_{rss}$    | -   | 122   | -         | pF            |  |
| Gate Resistance   | $R_g$        | -   | 1.37  | -         | $\Omega$      | $V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$                                  |
| Total Gate Charge   | $Q_g$        | -   | 8.7   | -         | nC            | $V_{GS} = 5\text{V}, V_{DS} = 15\text{V}, I_D = 9\text{A}$                                 |
| Gate-Source Charge  | $Q_{gs}$     | -   | 1.7   | -         | nC            |  |
| Gate-Drain Charge   | $Q_{gd}$     | -   | 2.4   | -         | nC            |  |
| Turn-On Delay Time  | $t_{D(on)}$  | -   | 5.03  | -         | ns            | $V_{DD} = 15\text{V}, V_{GS} = 10\text{V}, R_L = 15\Omega, R_G = 6\Omega, I_D = 1\text{A}$ |
| Turn-On Rise Time   | $t_r$        | -   | 4.50  | -         | ns            |  |
| Turn-Off Delay Time                                       | $t_{D(off)}$ | -   | 26.33 | -         | ns            |  |
| Turn-Off Fall Time  | $t_f$        | -   | 8.55  | -         | ns            |  |

- Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
  6. Repetitive rating, pulse width limited by junction temperature.
  7. Short duration pulse test used to minimize self-heating effect.
  8. Guaranteed by design. Not subject to production testing.

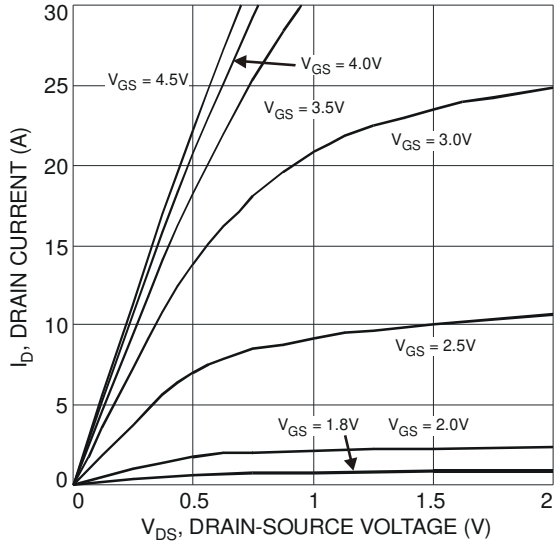


Fig. 1 Typical Output Characteristics

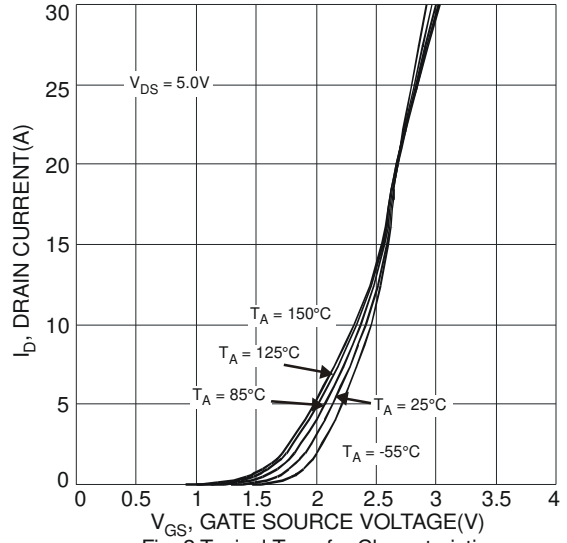


Fig. 2 Typical Transfer Characteristics

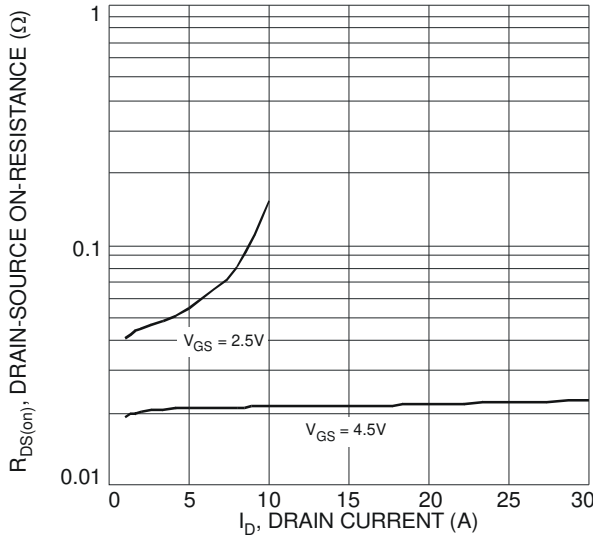


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

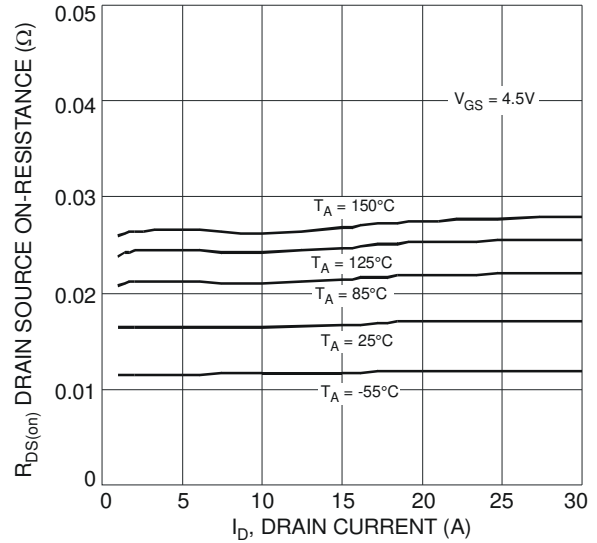


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

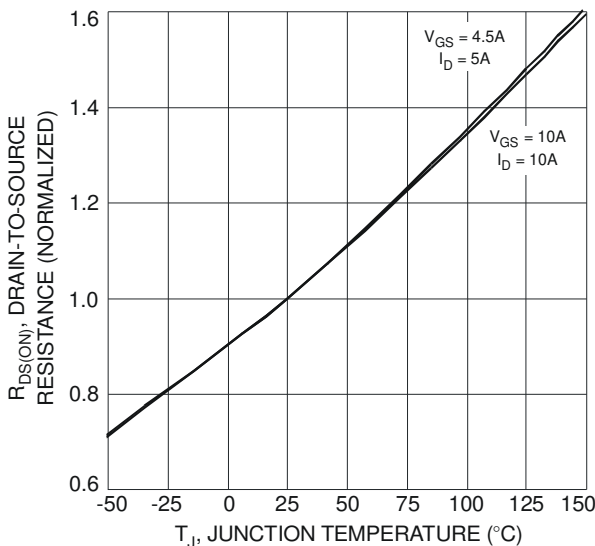


Fig. 5 On-Resistance Variation with Temperature

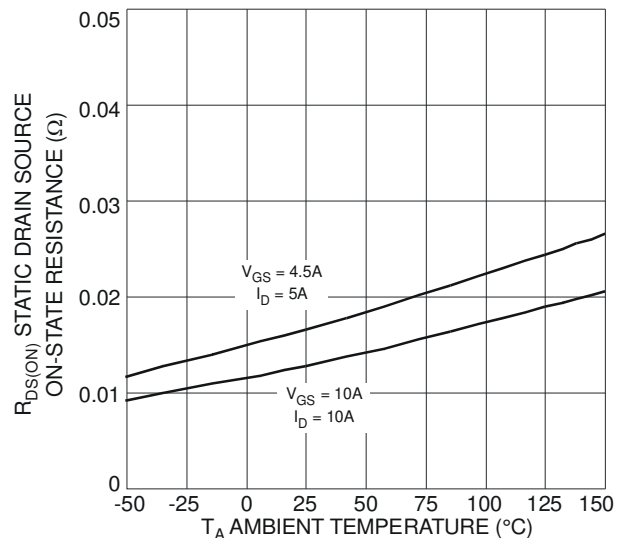


Fig. 6 Typical Static Drain-Source On-State Resistance vs. Ambient Temperature

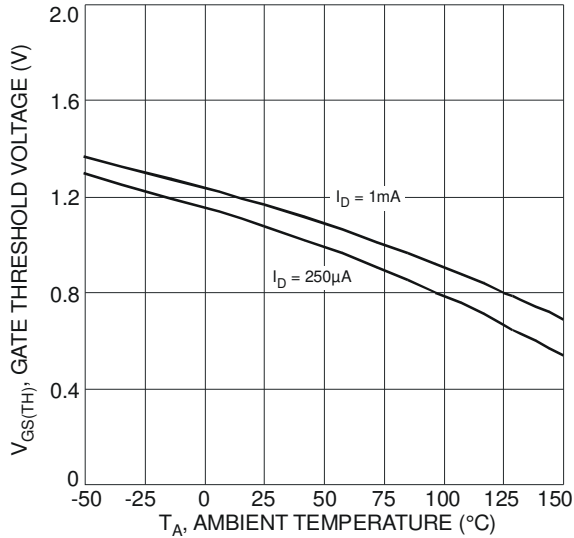


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

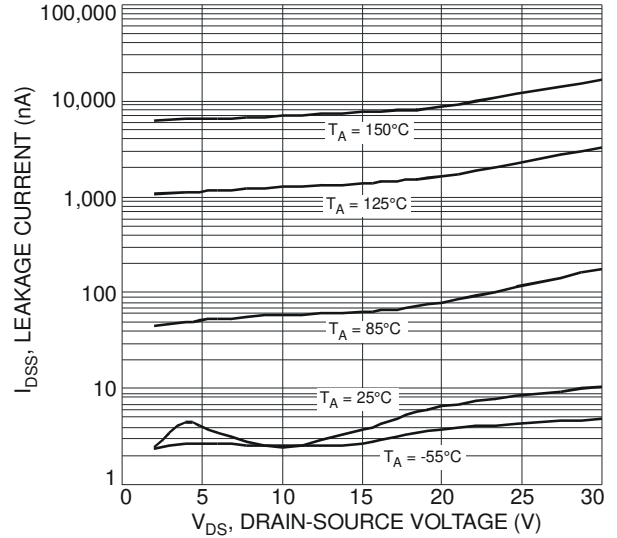


Fig. 8 Typical Drain-Source Leakage Current vs. Voltage

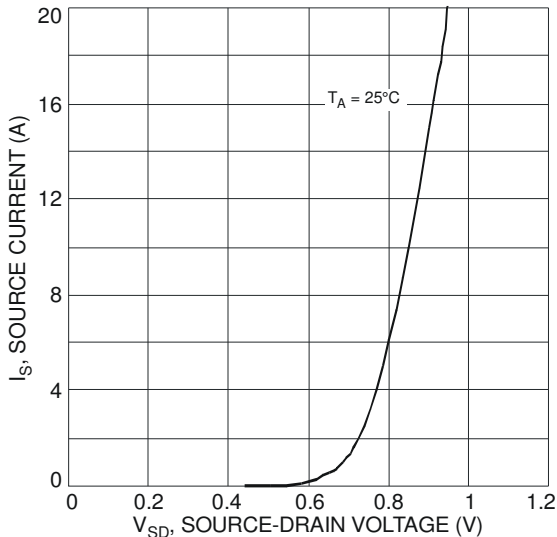


Fig. 9 Diode Forward Voltage vs. Current

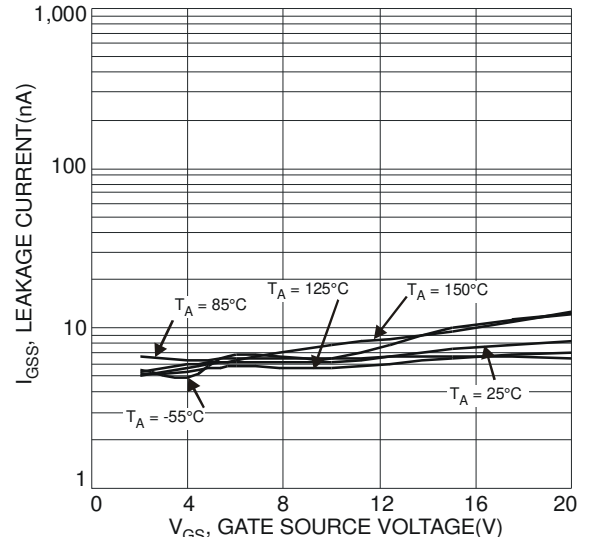


Fig. 10 Gate-Source Leakage Current vs. Voltage

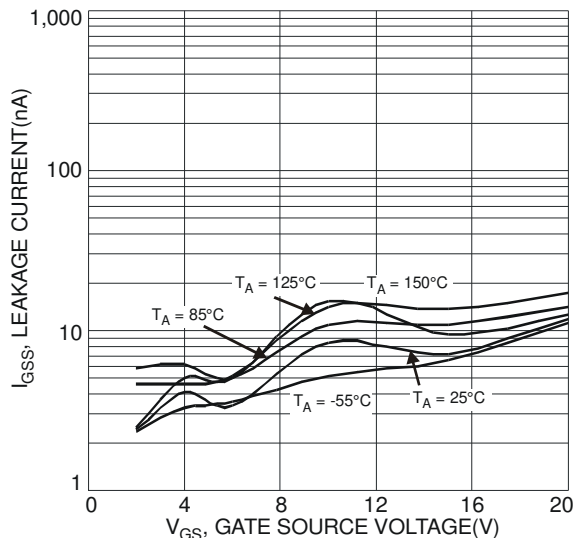


Fig. 11 Gate-Source Leakage Current vs. Voltage

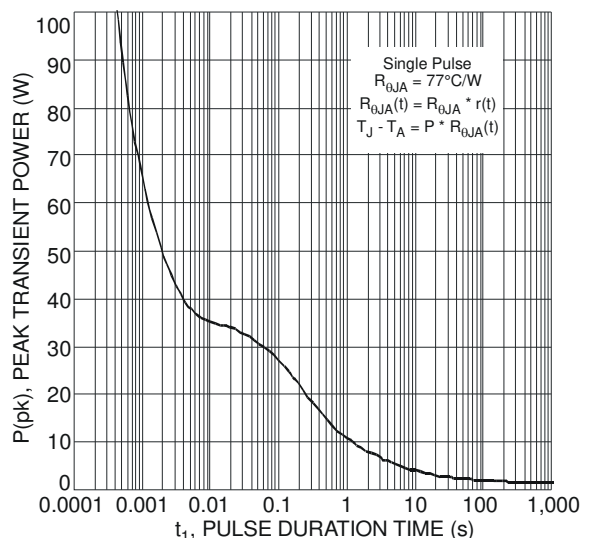


Fig. 12 Single Pulse Maximum Power Dissipation

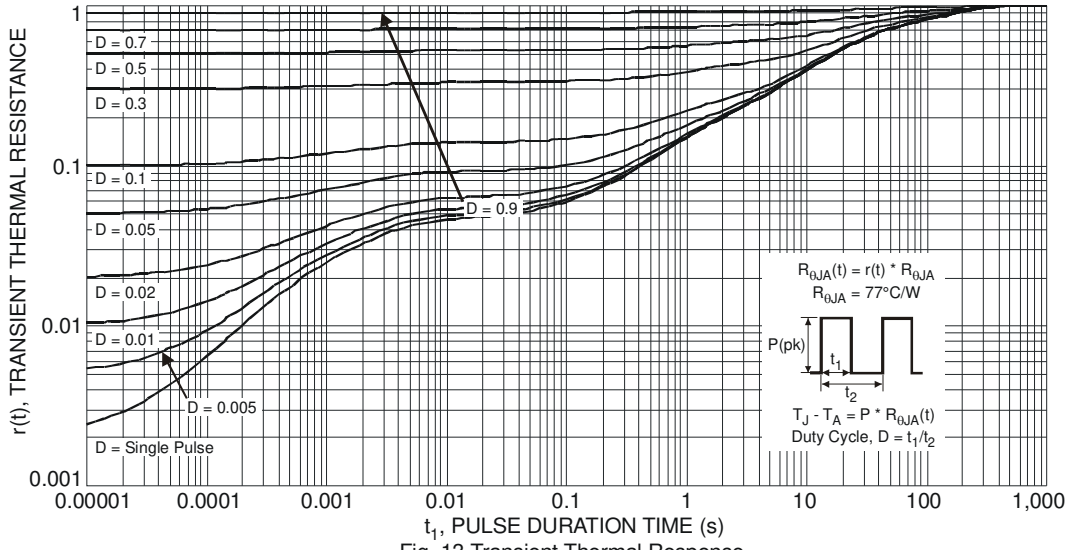
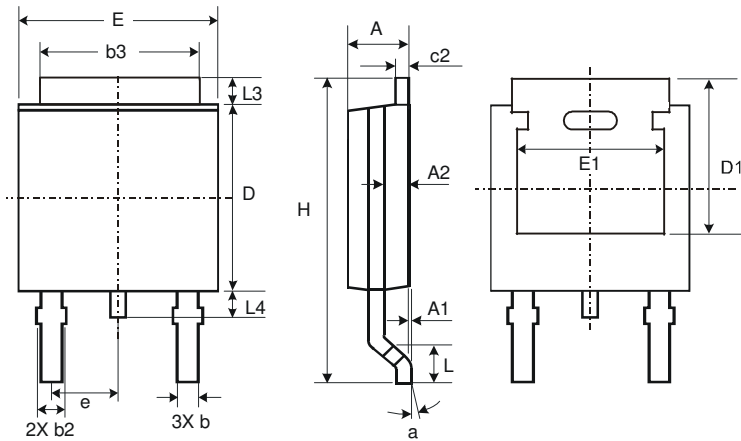


Fig. 13 Transient Thermal Response

**Package Outline Dimensions**

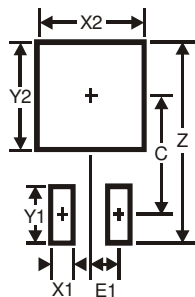
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| TO252                |      |       |       |
|----------------------|------|-------|-------|
| Dim                  | Min  | Max   | Typ   |
| A                    | 2.19 | 2.39  | 2.29  |
| A1                   | 0.00 | 0.13  | 0.08  |
| A2                   | 0.97 | 1.17  | 1.07  |
| b                    | 0.64 | 0.88  | 0.783 |
| b2                   | 0.76 | 1.14  | 0.95  |
| b3                   | 5.21 | 5.46  | 5.33  |
| c2                   | 0.45 | 0.58  | 0.531 |
| D                    | 6.00 | 6.20  | 6.10  |
| D1                   | 5.21 | -     | -     |
| e                    | -    | -     | 2.286 |
| E                    | 6.45 | 6.70  | 6.58  |
| E1                   | 4.32 | -     | -     |
| H                    | 9.40 | 10.41 | 9.91  |
| L                    | 1.40 | 1.78  | 1.59  |
| L3                   | 0.88 | 1.27  | 1.08  |
| L4                   | 0.64 | 1.02  | 0.83  |
| a                    | 0°   | 10°   | -     |
| 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) |
|------------|---------------|
| Z          | 11.6          |
| X1         | 1.5           |
| X2         | 7.0           |
| Y1         | 2.5           |
| Y2         | 7.0           |
| C          | 6.9           |
| E1         | 2.3           |

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