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DXTN26070CY

70V NPN POWER SWITCHING TRANSISTOR IN SOT89

Features

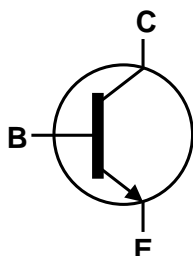
- $BV_{CEO} > 70V$
- $I_C = 2A$ High Continuous Collector Current
- I_{CM} Up to 4A Peak Pulse Current
- 2W Power Dissipation
- Low Saturation Voltage $< 300\text{ mV @ } 1A$
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

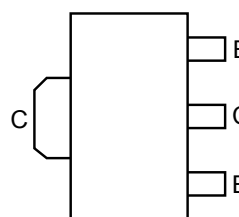
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Lead.
Solderable per MIL-STD-202, Method 208 **e3**
- Weight: 0.052 grams (Approximate)



Top View



Device Symbol



Top View
Pin-Out

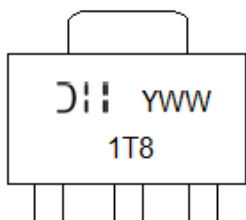
Ordering Information (Note 4)

| Product | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|----------------|------------|---------|--------------------|-----------------|-------------------|
| DXTN26070CY-13 | Standard | 1T8 | 13 | 12 | 2,500 |

- 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/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 $< 900\text{ppm}$ bromine, $< 900\text{ppm}$ chlorine ($< 1500\text{ppm}$ total Br + Cl) and $< 1000\text{ppm}$ antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information

SOT89



1T8 = Product Type Marking Code
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 5 = 2015)
 WW = Week Code 01 - 52



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

| Characteristic | Symbol | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CBO} | 150 | V |
| Collector-Emitter Voltage | V_{CEO} | 70 | V |
| Emitter-Base Voltage | V_{EBO} | 7 | V |
| Continuous Collector Current | I_C | 2 | A |
| Peak Pulse Current (Note 5) | I_{CM} | 4 | A |

Note 5. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

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

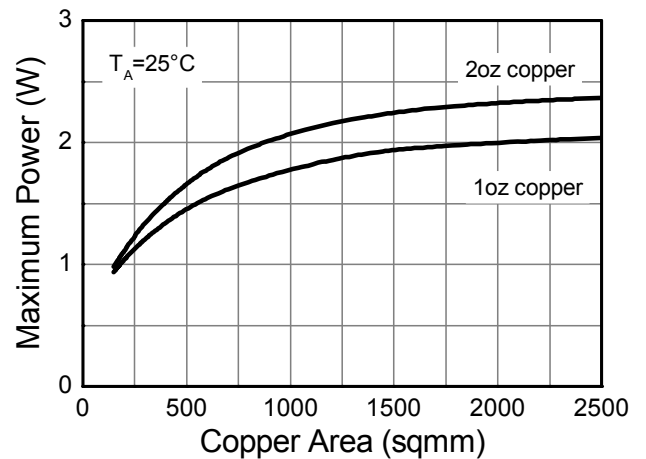
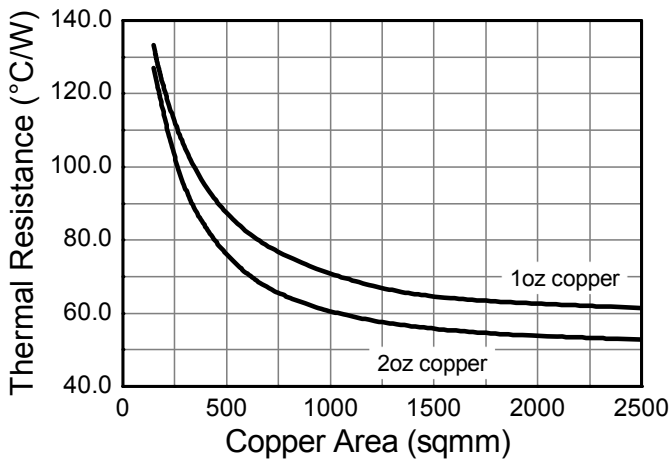
| Characteristic | Symbol | Value | Unit |
|---|----------------|-------------|--------------------|
| Power Dissipation | (Note 6) | 0.7 | W |
| | (Note 7) | 1.0 | |
| | (Note 8) | 1.5 | |
| | (Note 9) | 2.0 | |
| Thermal Resistance, Junction to Ambient Air | (Note 6) | 178 | $^\circ\text{C/W}$ |
| | (Note 7) | 125 | |
| | (Note 8) | 83 | |
| | (Note 9) | 60 | |
| Thermal Resistance, Junction to Lead | (Note 10) | 22 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

ESD Ratings (Note 11)

| 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:
- 6. For a device mounted with the exposed collector pad on minimum recommended pad layout (MRP) 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.
 - 7. Same as Note 5, except the device is mounted with the exposed collector pad on 15mm x 15mm 1oz copper.
 - 8. Same as Note 5, except the device is mounted with the exposed collector pad on 25mm x 25mm 1oz copper.
 - 9. Same as Note 5, except the device is mounted with the exposed collector pad on 50mm x 50mm 1oz copper.
 - 10. Thermal resistance from junction to solder-point (on the exposed collector pad).
 - 11. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

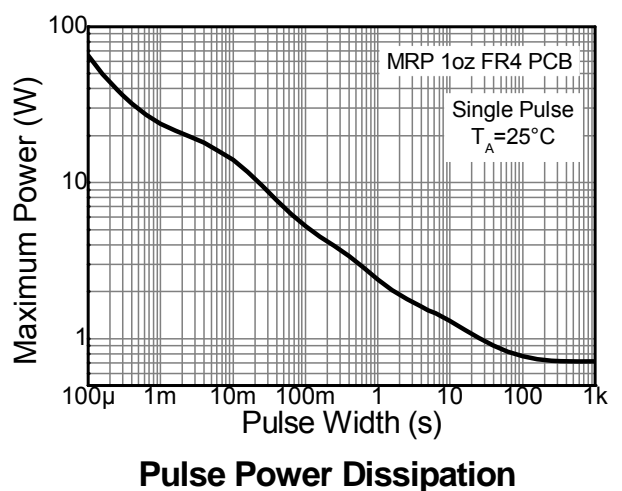
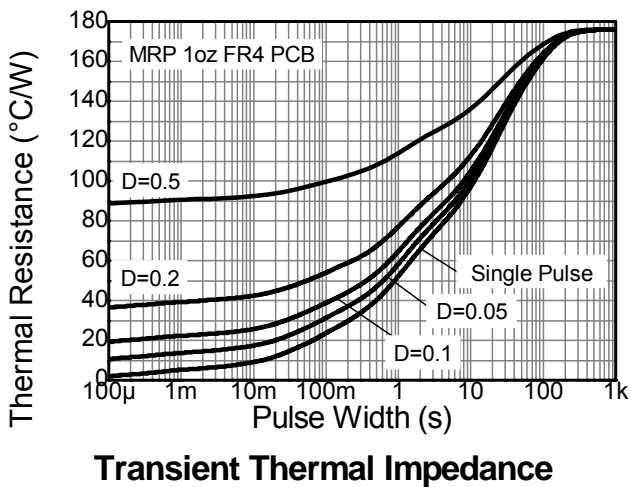
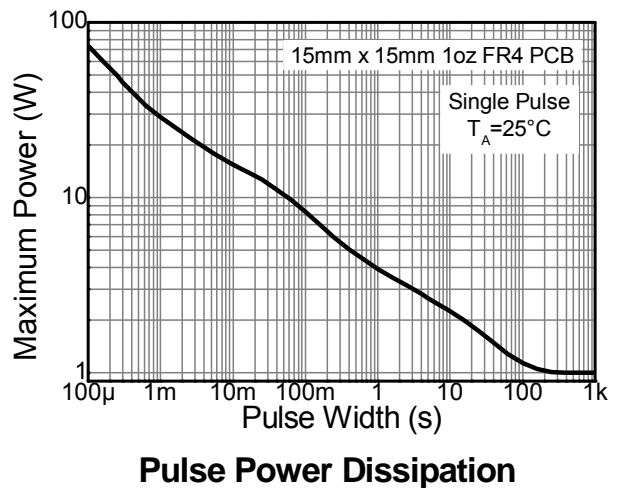
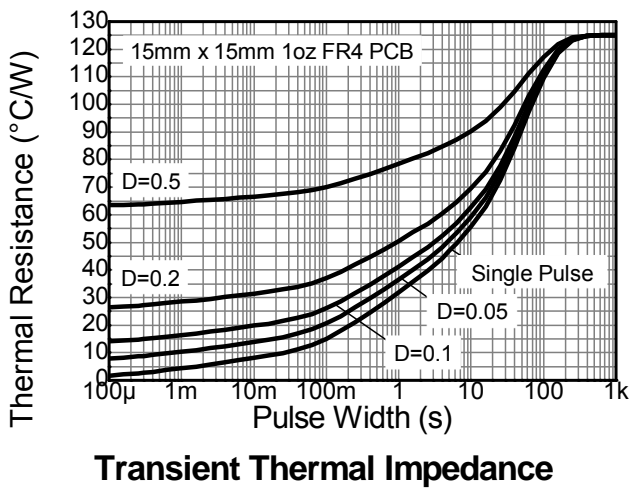
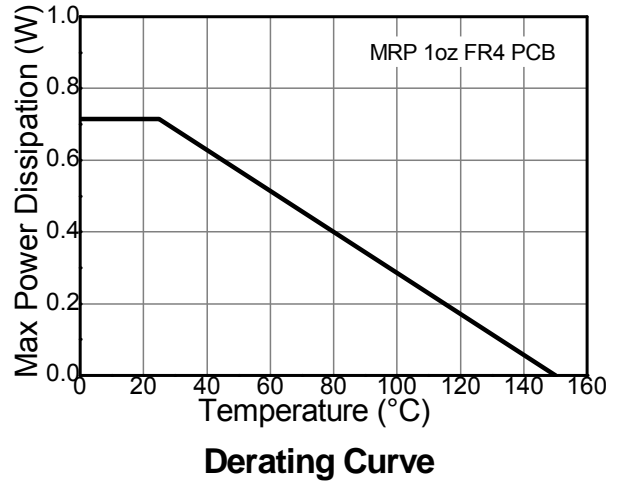
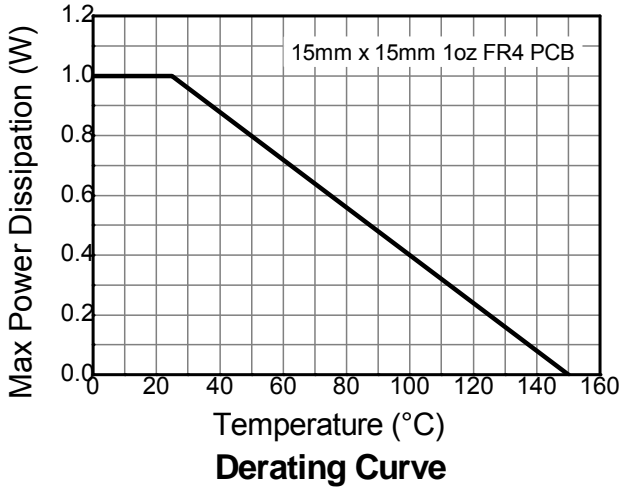
Thermal Characteristics and Derating Information





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Thermal Characteristics and Derating Information (continued)

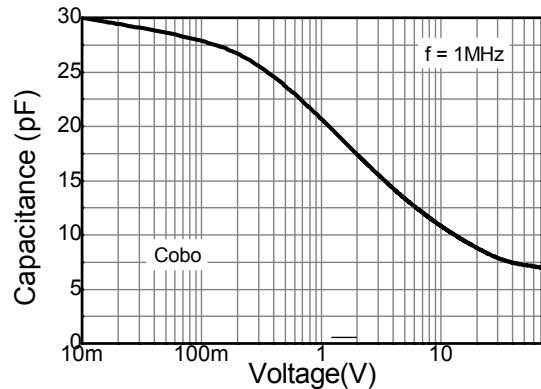
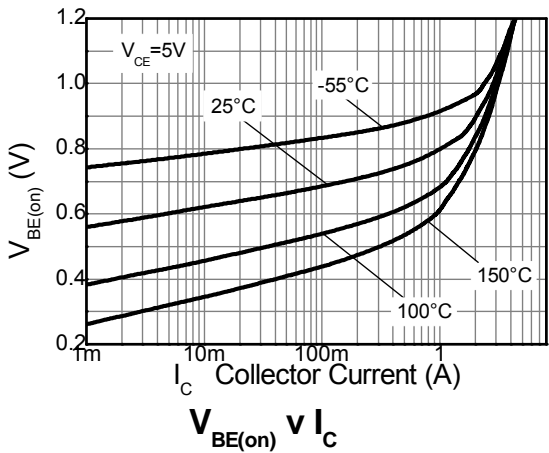
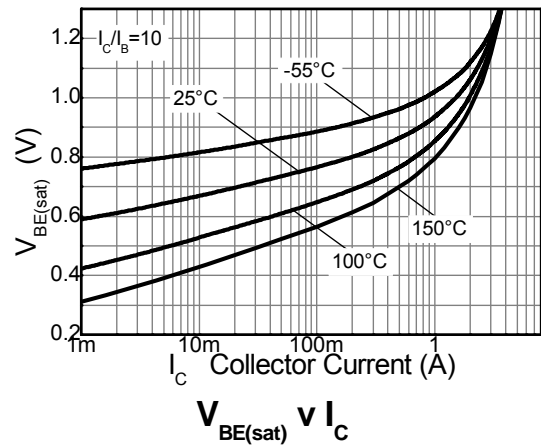
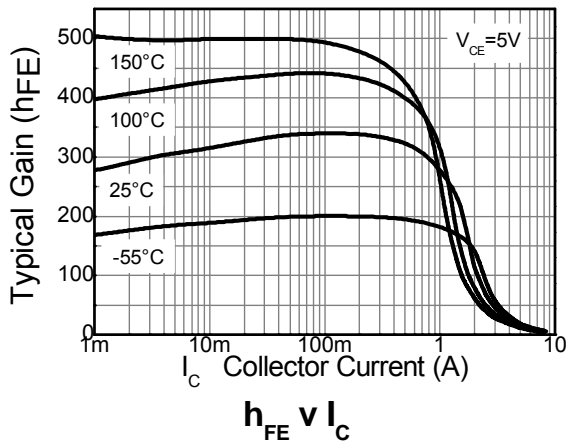
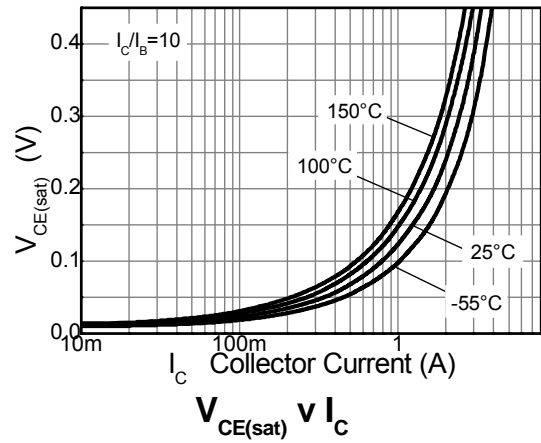
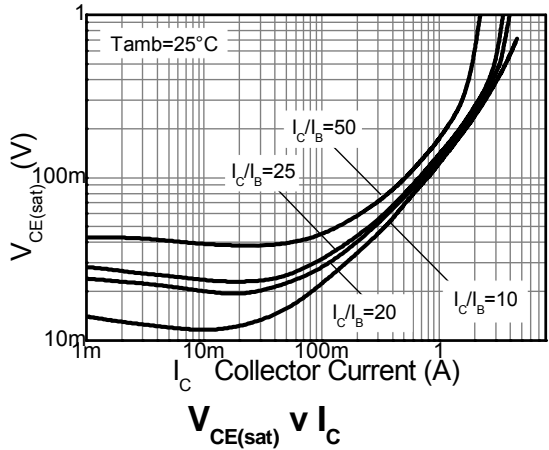



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Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---------------|-------------------|-------------------|---------------|---------------|---|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV_{CBO} | 150 | - | - | V | $I_C = 100 \mu\text{A}$ |
| Collector-Emitter Breakdown Voltage (Note 12) | BV_{CEO} | 70 | - | - | V | $I_C = 1\text{mA}$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | 7 | 8.2 | - | V | $I_E = 100 \mu\text{A}$ |
| Collector-Base Cutoff Current | I_{CBO} | - | <1 | 50 | nA | $V_{CB} = 96\text{V}$ |
| | | - | - | 10 | μA | $V_{CB} = 96\text{V}, T_A = +100^\circ\text{C}$ |
| Emitter-Base Cutoff Current | I_{EBO} | - | <1 | 20 | nA | $V_{EB} = 5.6\text{V}$ |
| ON CHARACTERISTICS (Note 12) | | | | | | |
| Static Forward Current Transfer Ratio | h_{FE} | 120 150 200 | 260 290 300 | - - 500 | - - - | $I_C = 1\text{mA}, V_{CE} = 5\text{V}$ $I_C = 10\text{mA}, V_{CE} = 2\text{V}$ $I_C = 100\text{mA}, V_{CE} = 2\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | - | 150 | 300 | mV | $I_C = 1\text{A}, I_B = 100\text{mA}$ |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | - | 780 | - | mV | $I_C = 1\text{A}, V_{CE} = 5\text{V}$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | - | 950 | - | mV | $I_C = 1\text{A}, I_B = 50\text{mA}$ |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Output Capacitance | C_{obo} | - | 10 | - | pF | $V_{CB} = 10\text{V}, f = 1\text{MHz}$ |
| Transition Frequency | f_T | 150 | 220 | - | MHz | $V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$ |
| Turn-On Time | t_{on} | - | 63 | - | ns | $V_{CC} = 10\text{V}, I_C = 0.5\text{A}$ $I_{B2} = -I_{B1} = 25\text{mA}$ |
| Delay Time | t_d | - | 33 | - | | |
| Rise Time | t_r | - | 30 | - | | |
| Turn-Off Time | t_{off} | - | 420 | - | | |
| Storage Time | t_s | - | 380 | - | | |
| Fall Time | t_f | - | 40 | - | | |

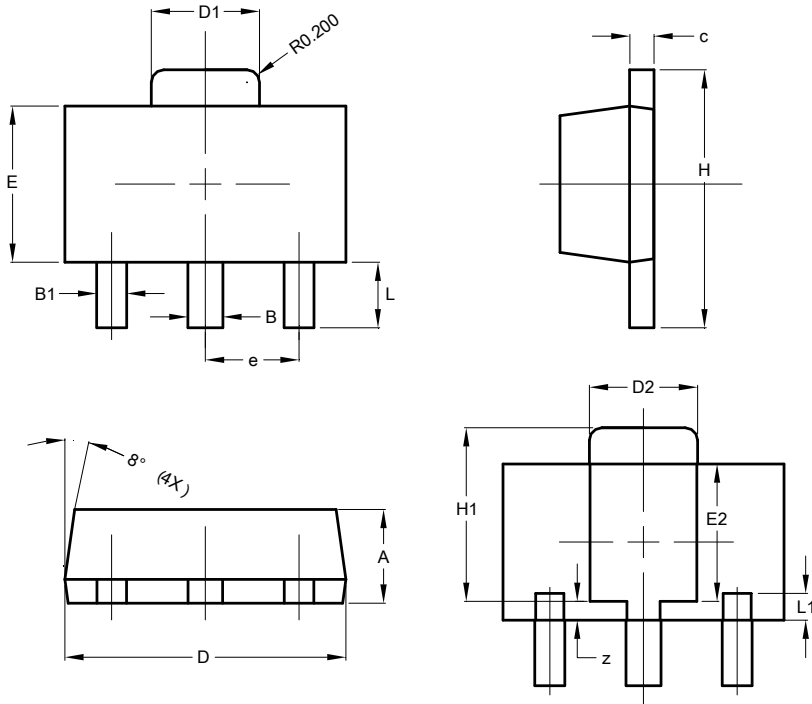
 Note: 12. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

Typical Characteristics (@T_A = +25°C, unless otherwise specified.)



Package Outline Dimensions

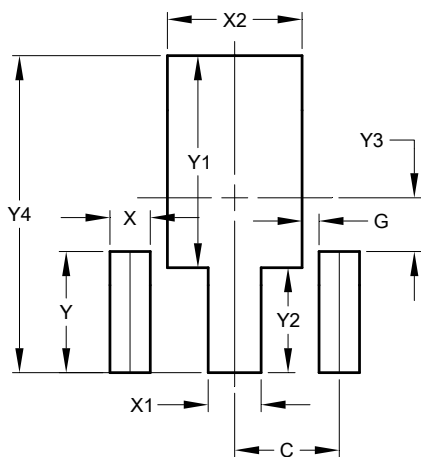
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| 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 | 0.427 REF | | |
| Z | 0.30 REF | | |
| 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) |
|------------|---------------|
| 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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