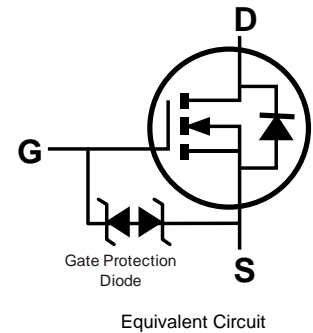
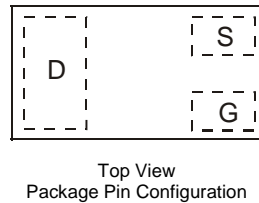
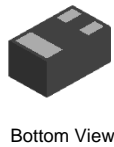


Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- Ultra-Low Package Profile, 0.4mm Maximum Package Height
- ESD Protected up to 1.5kV
- **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: X2-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — NiPdAu over Copper Leadframe; Solderable per MIL-STD-202, Method 208 ^(e4)
- Weight: 0.001 grams (Approximate)



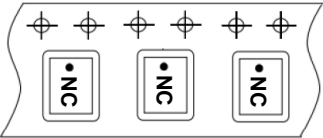
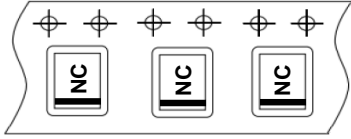

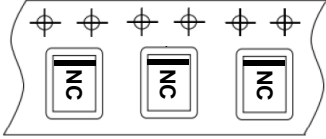

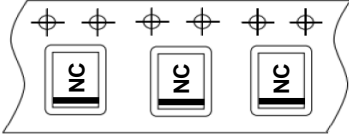


Ordering Information (Note 4)

| Part Number | Marking | Reel Size (inches) | Tape Width (mm) | Tape Pitch (mm) | Quantity per Reel |
|----------------|---------|--------------------|-----------------|-----------------|-------------------|
| DMN2400UFB4-7 | NC | 7 | 8 | 4 | 3,000 |
| DMN2400UFB4-7R | NC | 7 | 8 | 4 | 3,000 |
| DMN2400UFB4-7B | NC | 7 | 8 | 2 | 10,000 |

- 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 <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/products/packages.html>.

Marking Information

| | |
|-----------------------|--|
| <p>DMN2400UFB4-7</p> | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Top View Dot Denotes Drain Side</p> </div> <div style="text-align: center;"> <p>From date code 1527 (YYWW), this changes to:</p>  <p>Top View Bar Denotes Gate and Source Side</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;">   </div> |
| <p>DMN2400UFB4-7R</p> | <div style="text-align: center;">  <p>Top View Bar Denotes Gate and Source Side</p> </div> <div style="text-align: center; margin-top: 20px;">  </div> <div style="text-align: right; margin-top: 20px;"> <p>NC = Part Marking Code</p> </div> |
| <p>DMN2400UFB4-7B</p> | <div style="text-align: center;">  <p>Top View Bar Denotes Gate and Source Side</p> </div> <div style="text-align: center; margin-top: 20px;">  </div> <div style="text-align: right; margin-top: 20px;"> <p>NC = Part Marking Code</p> </div> |

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|------------------|-------|------|
| Drain-Source Voltage | V _{DSS} | 20 | V |
| Gate-Source Voltage | V _{GSS} | ±12 | V |
| Continuous Drain Current (Note 5) V _{GS} = 4.5V | I _D | 0.75 | A |
| Steady State T _A = +25°C T _A = +85°C | | 0.55 | |
| Pulsed Drain Current (Notes 5 & 6) | I _{DM} | 3 | A |

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

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 5) | P _D | 0.47 | mW |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 258 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

- Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout, single sided.
6. Device mounted on minimum recommended pad layout test board, 10µs pulse duty cycle = 1%.

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|---------------------|-----|------|-----------|------|---|
| OFF CHARACTERISTICS (Note 7) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 20 | — | — | V | V _{GS} = 0V, I _D = 250µA |
| Zero Gate Voltage Drain Current T _J = +25°C | I _{DSS} | — | — | 100 50 | nA | V _{DS} = 20V, V _{GS} = 0V V _{DS} = 5V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | ±100 | nA | V _{GS} = ±3V, V _{DS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | ±1.0 | µA | V _{GS} = ±4.5V, V _{DS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | ±50 | µA | V _{GS} = ±10V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | V _{GS(TH)} | 0.5 | — | 0.9 | V | V _{DS} = V _{GS} , I _D = 250µA |
| Static Drain-Source On-Resistance | R _{DS(ON)} | — | — | 0.55 | Ω | V _{GS} = 4.5V, I _D = 600mA |
| | | — | — | 0.75 | | V _{GS} = 2.5V, I _D = 500mA |
| | | — | — | 0.9 | | V _{GS} = 1.8V, I _D = 350mA |
| Forward Transfer Admittance | Y _{fs} | — | 1.0 | — | S | V _{DS} = 10V, I _D = 400mA |
| Diode Forward Voltage | V _{SD} | — | 0.7 | 1.2 | V | V _{GS} = 0V, I _S = 150mA |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C _{iSS} | — | 36.0 | — | pF | V _{DS} = 16V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 5.7 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 4.2 | — | pF | |
| Total Gate Charge | Q _g | — | 0.5 | — | nC | V _{GS} = 4.5V, V _{DS} = 10V, I _D = 250mA |
| Gate-Source Charge | Q _{gs} | — | 0.07 | — | nC | |
| Gate-Drain Charge | Q _{gd} | — | 0.1 | — | nC | |
| Turn-On Delay Time | t _{D(ON)} | — | 4.11 | — | ns | V _{DD} = 10V, V _{GS} = 4.5V, R _L = 47Ω, R _g = 10Ω, I _D = 200mA |
| Turn-On Rise Time | t _R | — | 3.82 | — | ns | |
| Turn-Off Delay Time | t _{D(OFF)} | — | 14.8 | — | ns | |
| Turn-Off Fall Time | t _F | — | 9.6 | — | ns | |

- Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

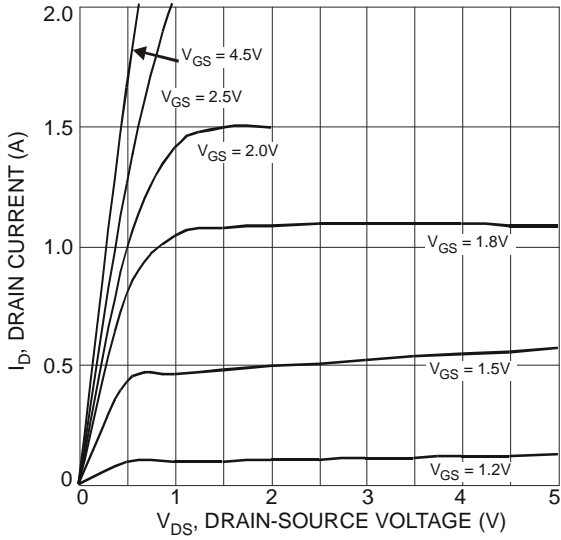


Fig. 1 Typical Output Characteristics

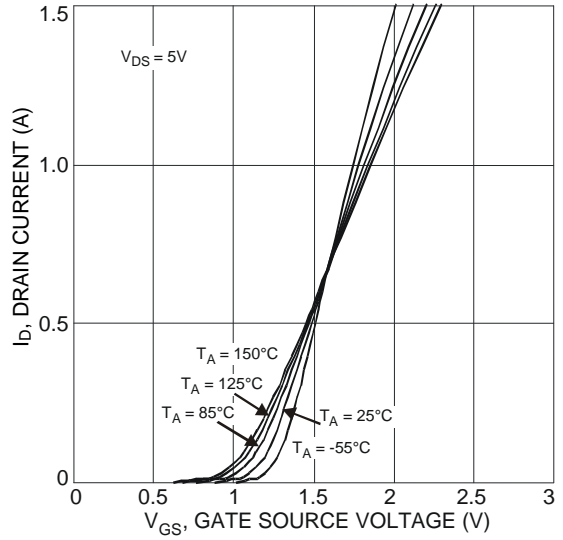


Fig. 2 Typical Transfer Characteristics

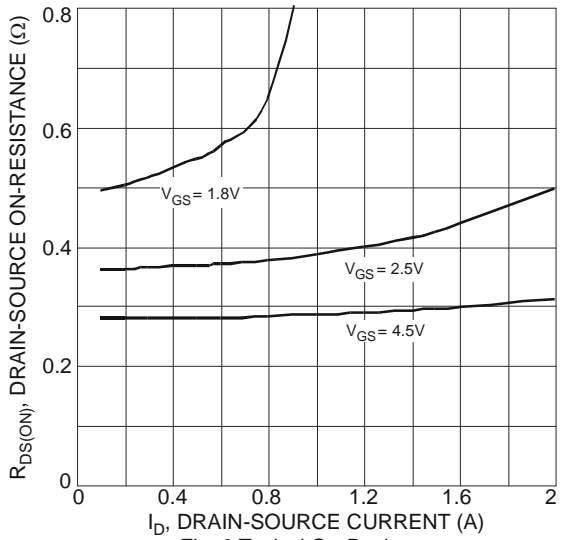


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

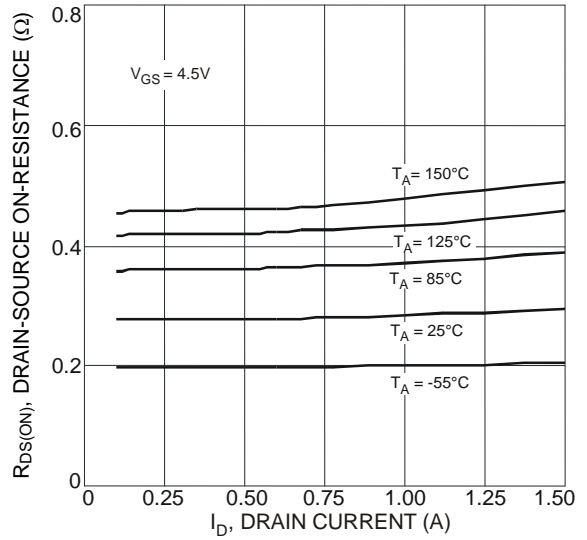


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

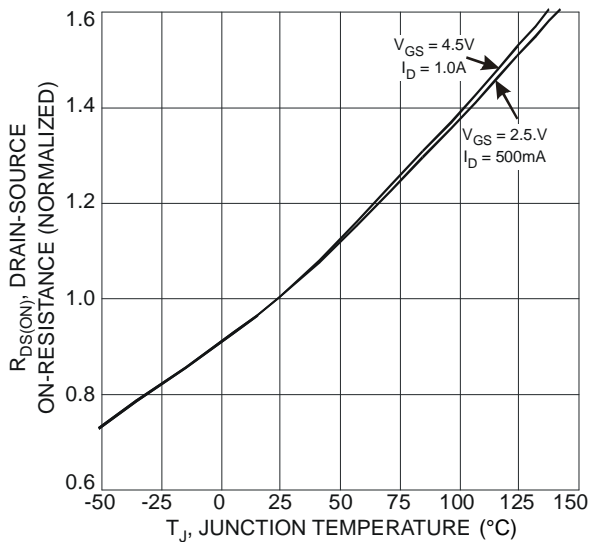


Fig. 5 On-Resistance Variation with Temperature

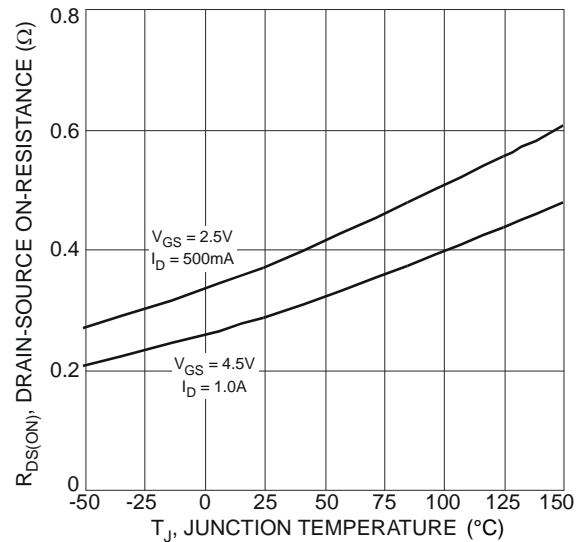


Fig. 6 On-Resistance Variation with Temperature

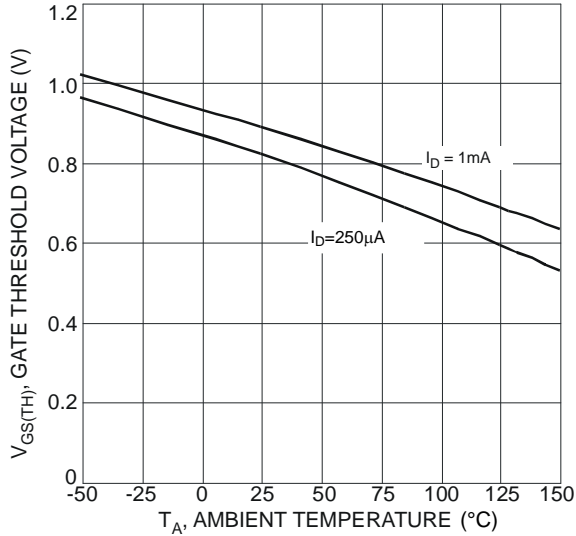


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

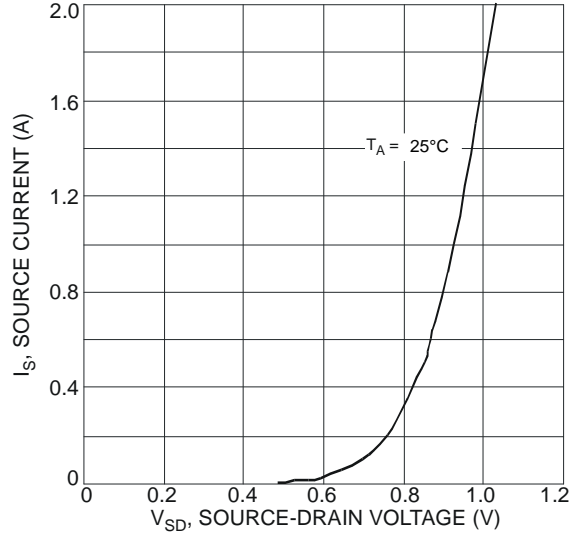


Fig. 8 Diode Forward Voltage vs. Current

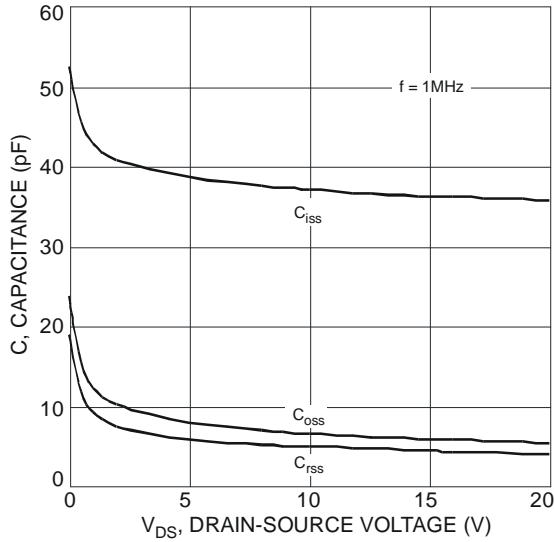


Fig. 9 Typical Capacitance

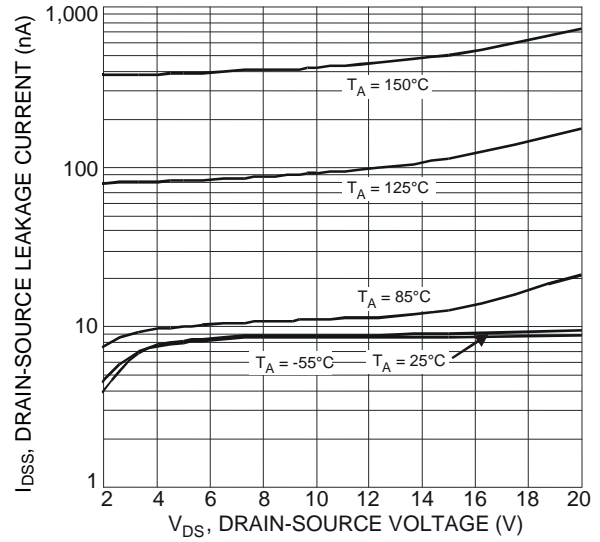


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

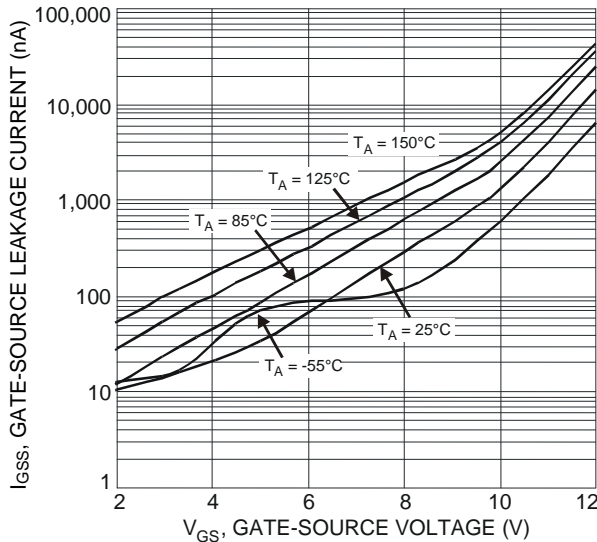


Fig. 11 Typical Gate-Source Leakage Current vs. Gate-Source Voltage

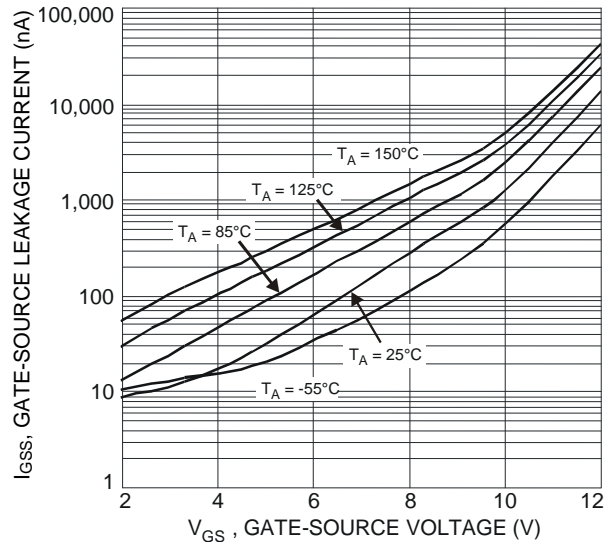


Fig. 12 Typical Gate-Source Leakage Current vs. Gate-Source Voltage

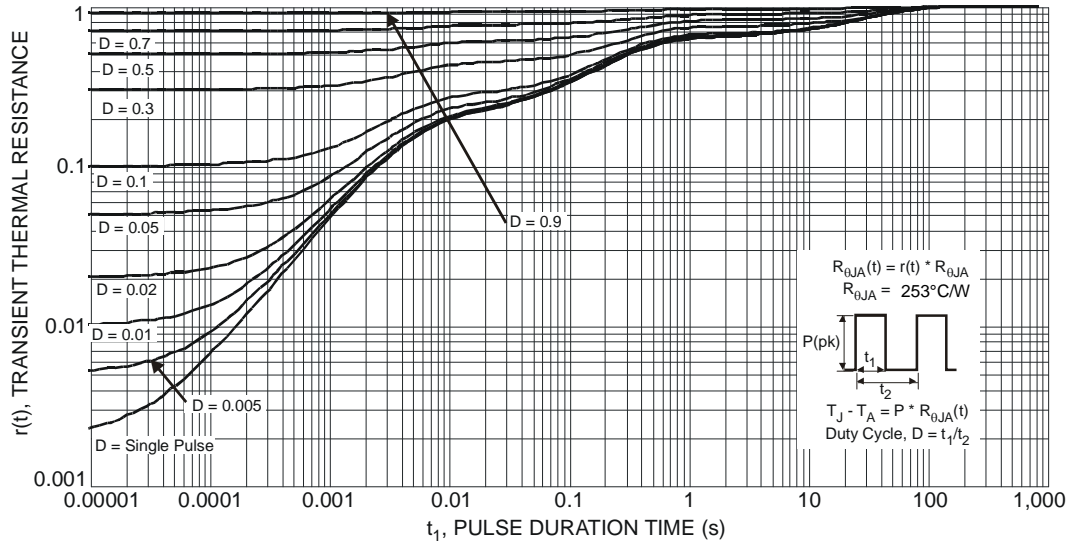
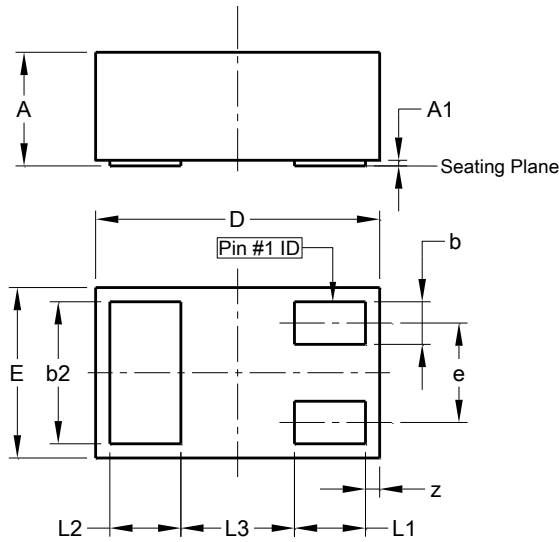


Fig. 13 Transient Thermal Response

Package Outline Dimensions

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

X2-DFN1006-3

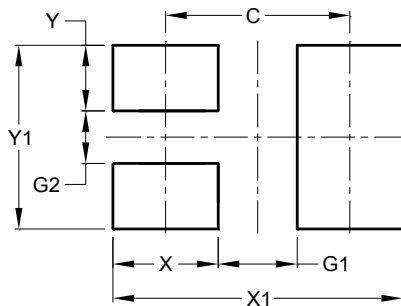


| X2-DFN1006-3 | | | |
|-----------------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | — | 0.40 | — |
| A1 | 0.00 | 0.05 | 0.03 |
| b | 0.10 | 0.20 | 0.15 |
| b2 | 0.45 | 0.55 | 0.50 |
| D | 0.95 | 1.05 | 1.00 |
| E | 0.55 | 0.65 | 0.60 |
| e | - | - | 0.35 |
| L1 | 0.20 | 0.30 | 0.25 |
| L2 | 0.20 | 0.30 | 0.25 |
| L3 | - | - | 0.40 |
| z | 0.02 | 0.08 | 0.05 |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

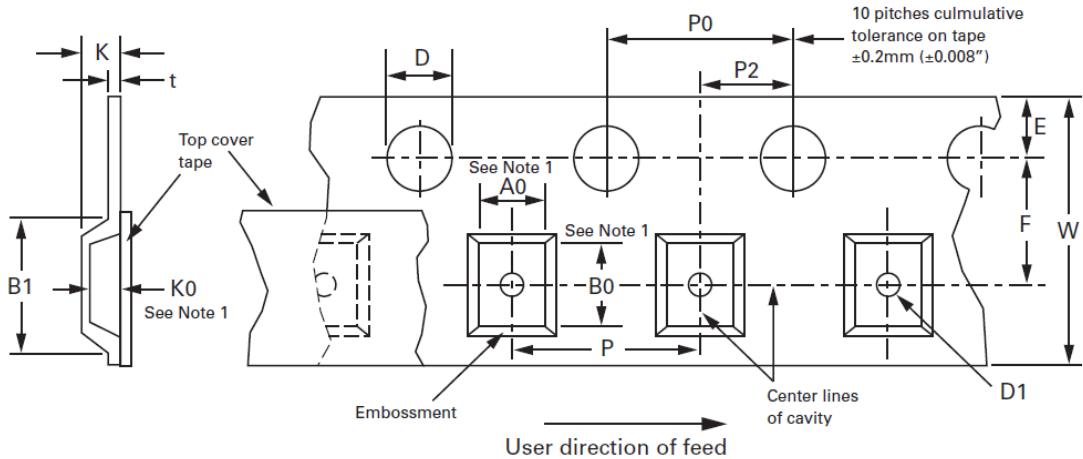
X2-DFN1006-3



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.70 |
| G1 | 0.30 |
| G2 | 0.20 |
| X | 0.40 |
| X1 | 1.10 |
| Y | 0.25 |
| Y1 | 0.70 |

Tape Information

EMBOSSED CARRIER TAPE SPECIFICATIONS



| 8, 12, 16, 24mm EMBOSSED TAPE DIMENSIONS IN mm | | | | | | |
|--|--------------------|-------------|----------------|------------------|--|---------------------|
| Tape Size | D | E | P _o | t _{max} | A _o B _o K _o | Constant Dimensions |
| 8mm | 1.50 +0.10 -0.0 | 1.75 ± 0.10 | 4.0 ± 0.10 | 0.400 | See Note 9 | |

| Tape Size | B1 max | D1 min | F | K max | P2 | R min | W | Package Type |
|-----------|--------|--------|------------|-------|------------|-------|------------|--|
| 8mm | 4.5 | 0.35 | 3.5 ± 0.05 | 2.4 | 2.0 ± 0.05 | 25 | 8.0 ± 0.30 | Refer to 8mm Device Tape Orientation Table |

| P | | | | | |
|-----------|---------------|-------------------------------|------------|-------------|-------------|
| Tape Size | 2.0 ± 0.05 | 4.0 ± 0.10 | 8.0 ± 0.10 | 12.0 ± 0.10 | 16.0 ± 0.10 |
| 8mm | DFN1006 (-7B) | DFN1006 (-7) DFN1006 (-7R) | — | — | — |

Note: 9. A_o B_o K_o are determined by component size.

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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