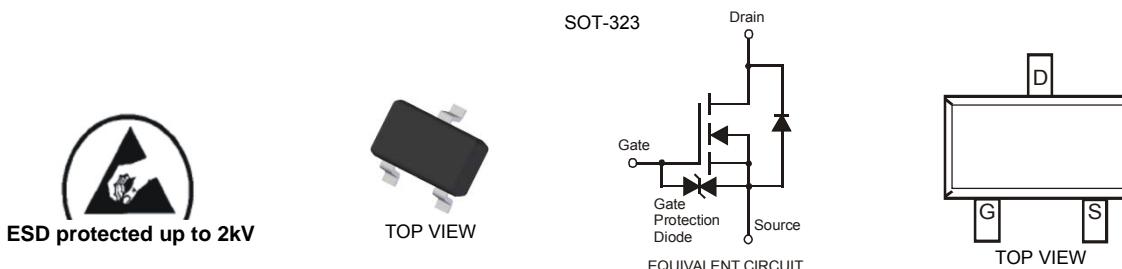


Features

- Low On-Resistance: $R_{DS(ON)}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected up to 2kV
- **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: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish – Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)



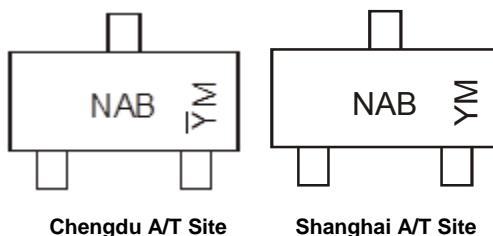
Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-------------|---------|------------------|
| DMN2004WK-7 | SOT-323 | 3000/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/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



NAB = Product Type Marking Code
 YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)
 YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)
 Y or YM = Year (ex: A = 2013)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | | | | | |
|-------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| Code | W | X | Y | Z | A | B | C | | | | | |
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

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

| Characteristic | | Symbol | Value | Units |
|-------------------------------|--------------|-----------|------------|-------|
| Drain-Source Voltage | | V_{DSS} | 20 | V |
| Gate-Source Voltage | | V_{GSS} | ± 8 | V |
| Drain Current (Note 5) | Steady State | I_D | 540 390 | mA |
| Pulsed Drain Current (Note 6) | | I_{DM} | 1.5 | A |

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

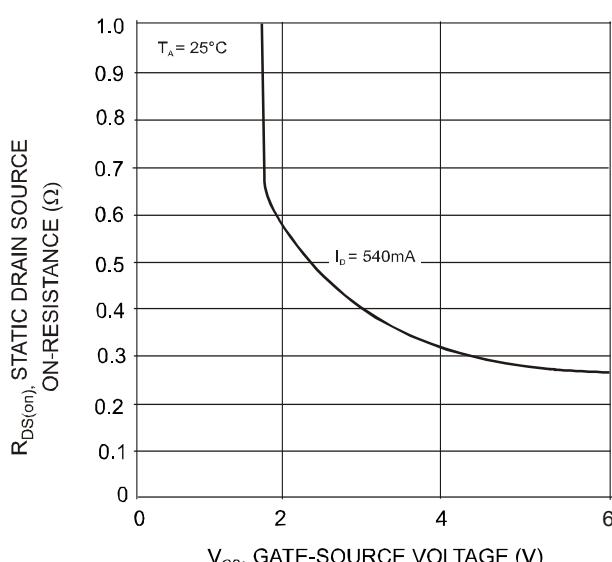
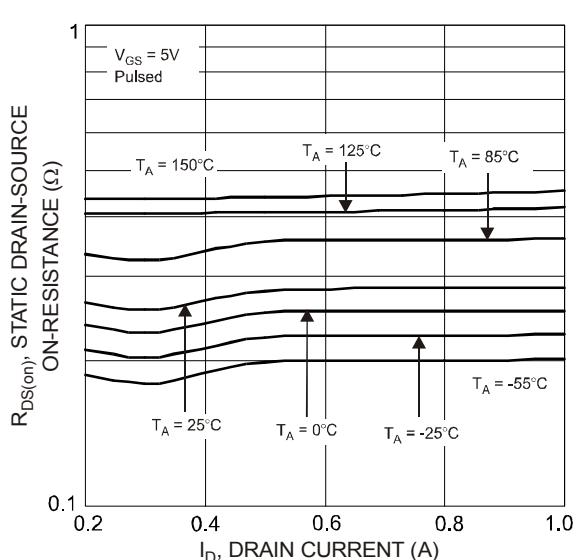
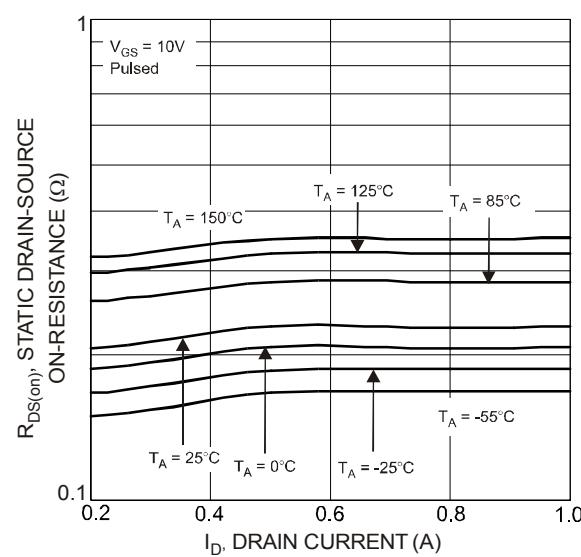
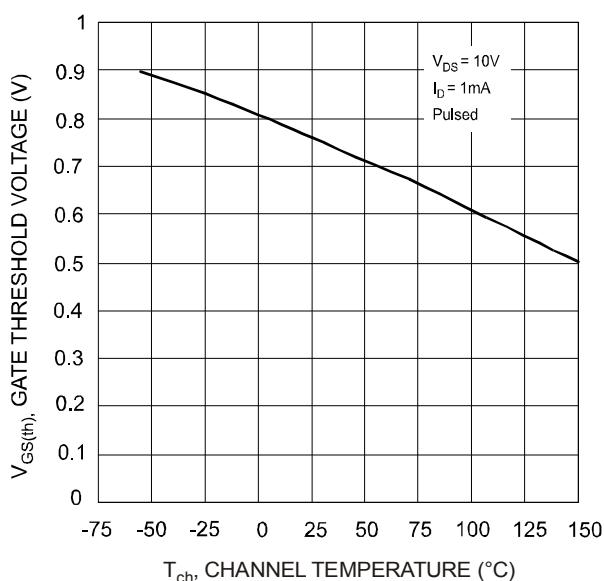
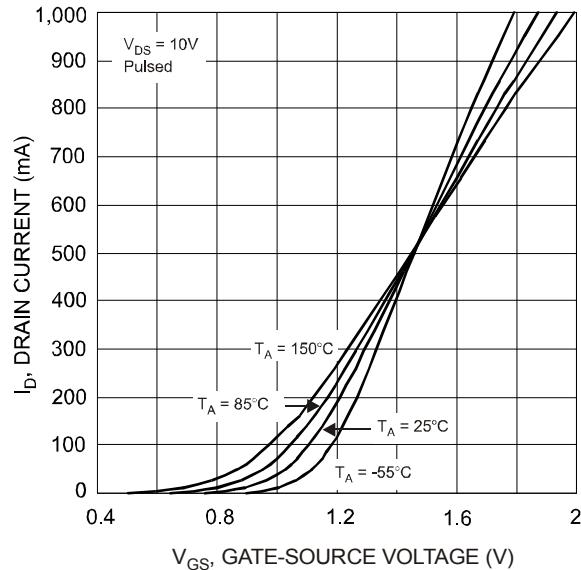
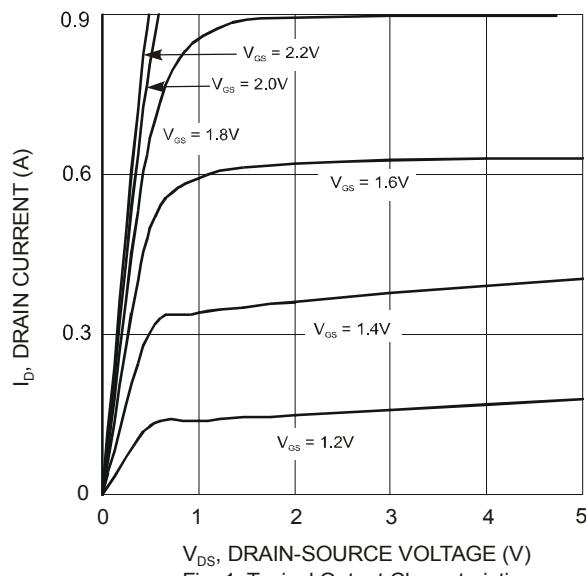
| Characteristic | Symbol | Value | Units |
|---|-----------------|-------------|-------|
| Total Power Dissipation (Note 5) | P_D | 200 | mW |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 625 | °C/W |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | °C |

Notes: 5. Device mounted on FR-4 PCB.
6. Pulse width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$.

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---------------------|-----|-------------------|---------------------|---------------|---|
| OFF CHARACTERISTICS (Note 7) | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | 20 | — | — | V | $V_{GS} = 0\text{V}$, $I_D = 10\mu\text{A}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | — | — | 1 | μA | $V_{DS} = 16\text{V}$, $V_{GS} = 0\text{V}$ |
| Gate-Source Leakage | I_{GSS} | — | — | ± 1 | μA | $V_{GS} = \pm 4.5\text{V}$, $V_{DS} = 0\text{V}$ |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | $V_{GS(\text{th})}$ | 0.5 | — | 1.0 | V | $V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$ |
| Static Drain-Source On-Resistance | $R_{DS(\text{ON})}$ | — | 0.4 0.5 0.7 | 0.55 0.70 0.9 | Ω | $V_{GS} = 4.5\text{V}$, $I_D = 540\text{mA}$ $V_{GS} = 2.5\text{V}$, $I_D = 500\text{mA}$ $V_{GS} = 1.8\text{V}$, $I_D = 350\text{mA}$ |
| Forward Transfer Admittance | $ Y_{fs} $ | 200 | — | — | ms | $V_{DS} = 10\text{V}$, $I_D = 0.2\text{A}$ |
| Diode Forward Voltage (Note 7) | V_{SD} | 0.5 | — | 1.4 | V | $V_{GS} = 0\text{V}$, $I_S = 115\text{mA}$ |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C_{iss} | — | — | 150 | pF | $V_{DS} = 16\text{V}$, $V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$ |
| Output Capacitance | C_{oss} | — | — | 25 | pF | |
| Reverse Transfer Capacitance | C_{rss} | — | — | 20 | pF | |

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



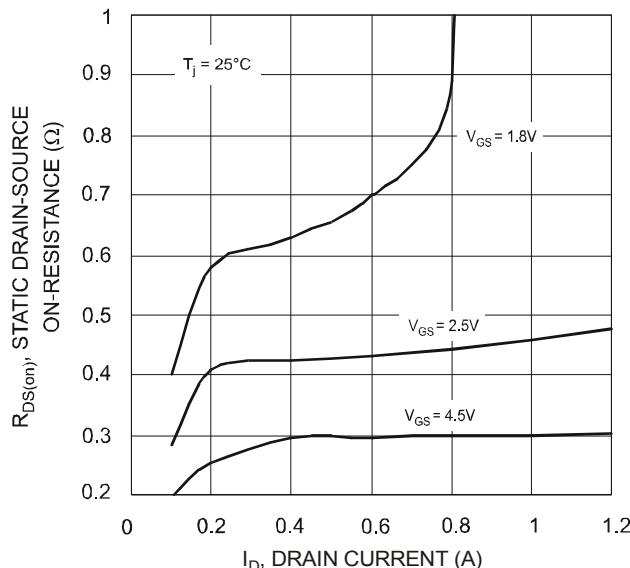


Fig. 7 On-Resistance vs. Drain Current and Gate Voltage

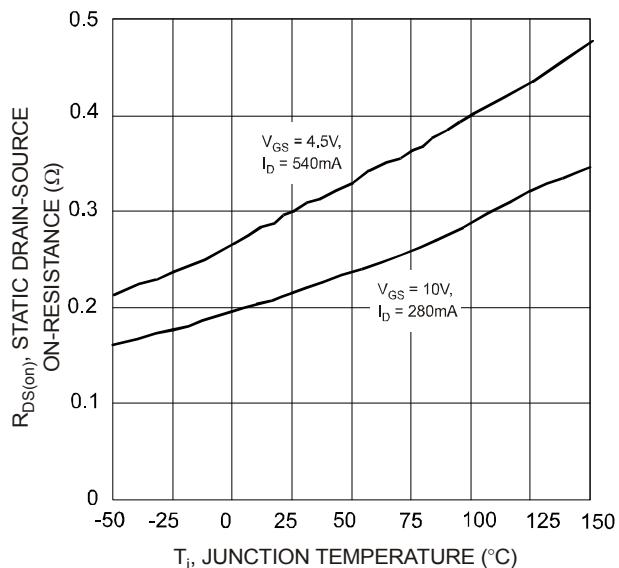


Fig. 8 Static Drain-Source, On-Resistance vs. Temperature

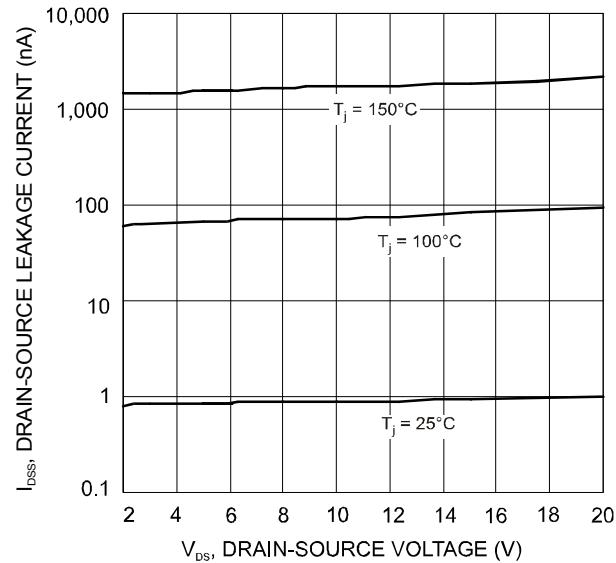


Fig. 9 Drain Source Leakage Current vs. Voltage

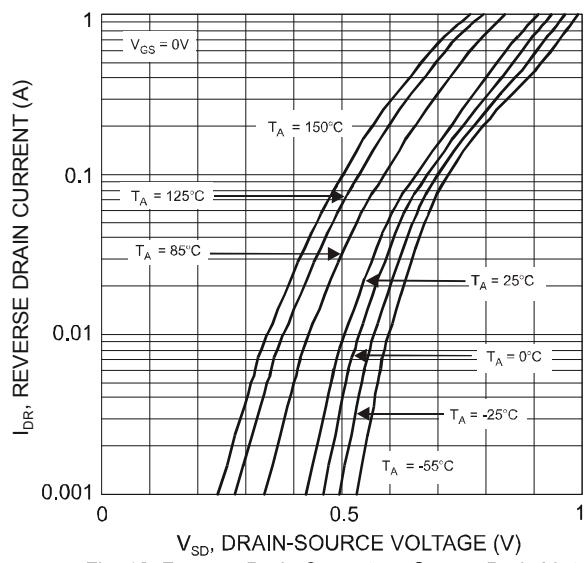


Fig. 10 Reverse Drain Current vs. Source-Drain Voltage

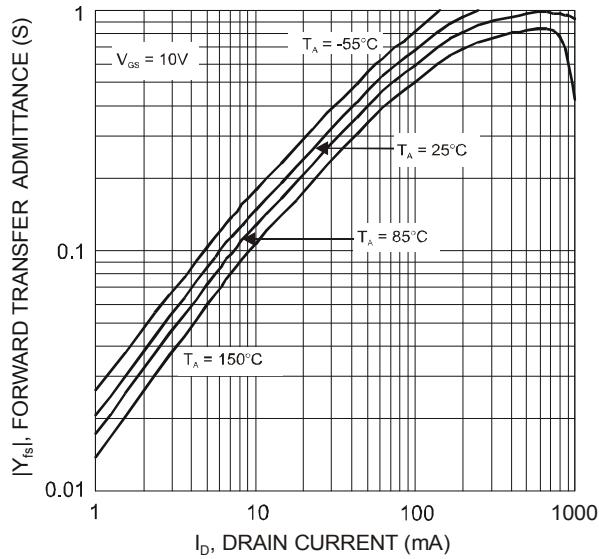


Fig. 11 Forward Transfer Admittance vs. Drain Current

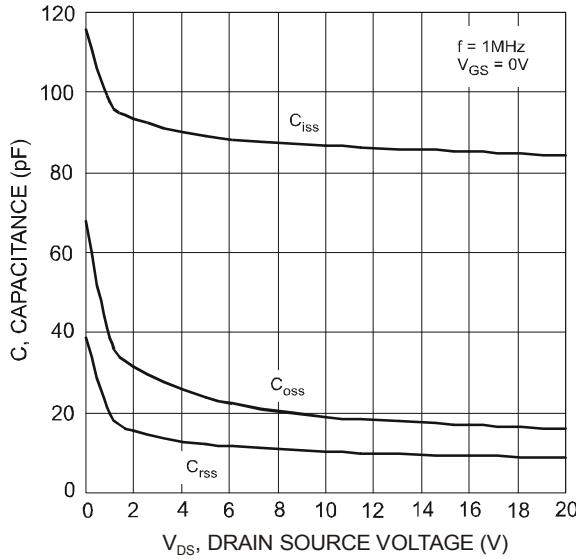
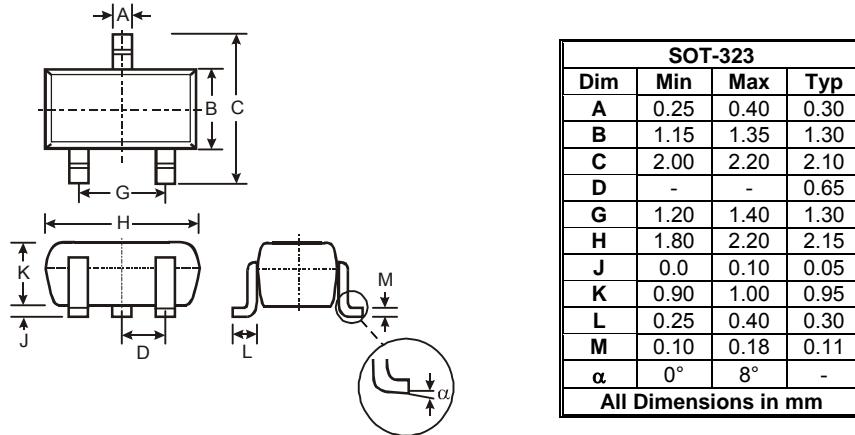


Fig. 12 Capacitance Variation

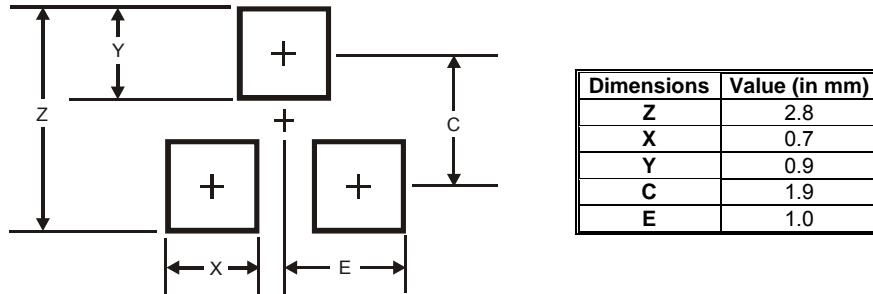
Package Outline Dimensions

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



Suggested Pad Layout

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



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