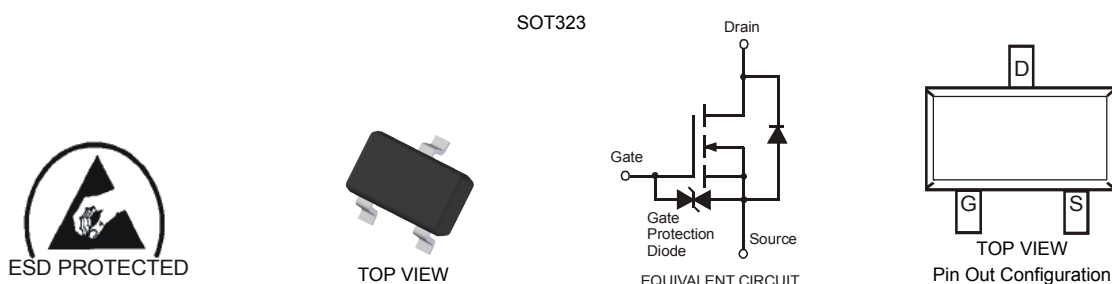


## Features

- Low On-Resistance:  $R_{DS(ON)}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected Gate**
- **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: SOT323
- 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 **Ⓔ3**
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)

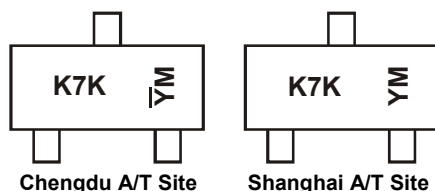


## Ordering Information (Note 4)

| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| DMN601WK-7  | SOT323 | 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](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



K7K = Product Type Marking Code  
 YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)  
 Y̅M = Date Code Marking for CAT (Chengdu Assembly/ Test site)  
 Y or Y̅ = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|------|------|------|------|
| Code | Z    | A    | B    | C    | D    | E    | F    |

| 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<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                | Symbol           | Value      | Units |
|-------------------------------|------------------|------------|-------|
| Drain-Source Voltage          | V <sub>DSS</sub> | 60         | V     |
| Gate-Source Voltage           | V <sub>GSS</sub> | ±20        | V     |
| Drain Current (Note 5)        | I <sub>D</sub>   | 300<br>800 | mA    |
| Continuous<br>Pulsed (Note 6) |                  |            |       |

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

| Characteristic                          | Symbol                            | Value       | Units |
|-----------------------------------------|-----------------------------------|-------------|-------|
| Total Power Dissipation (Note 5)        | P <sub>D</sub>                    | 200         | mW    |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                  | 625         | °C/W  |
| Operating and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C    |

**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>   | 60  | —   | —   | V    | V <sub>GS</sub> = 0V, I <sub>D</sub> = 10μA             |
| Zero Gate Voltage Drain Current         | I <sub>DSS</sub>    | —   | —   | 1.0 | μA   | V <sub>DS</sub> = 60V, V <sub>GS</sub> = 0V             |
| Gate-Source Leakage                     | I <sub>GSS</sub>    | —   | —   | ±10 | μA   | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V            |
| <b>ON CHARACTERISTICS (Note 7)</b>      |                     |     |     |     |      |                                                         |
| Gate Threshold Voltage                  | V <sub>GS(th)</sub> | 1.0 | 1.6 | 2.5 | V    | V <sub>DS</sub> = 10V, I <sub>D</sub> = 1mA             |
| Static Drain-Source On-Resistance       | R <sub>DS(on)</sub> | —   | —   | 2.0 | Ω    | V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A            |
|                                         |                     | —   | —   | 3.0 |      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.2A           |
| Forward Transfer Admittance             | Y <sub>fs</sub>     | 80  | —   | —   | ms   | V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.2A            |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b> |                     |     |     |     |      |                                                         |
| Input Capacitance                       | C <sub>iss</sub>    | —   | —   | 50  | pF   | V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1.0MHz |
| Output Capacitance                      | C <sub>OSS</sub>    | —   | —   | 25  | pF   |                                                         |
| Reverse Transfer Capacitance            | C <sub>rss</sub>    | —   | —   | 5.0 | pF   |                                                         |

- Notes:
5. Device mounted on FR-4 PCB.
  6. Pulse width ≤10μs, Duty Cycle ≤1%.
  7. Short duration pulse test used to minimize self-heating effect.
  8. Guaranteed by design. Not subject to production testing.

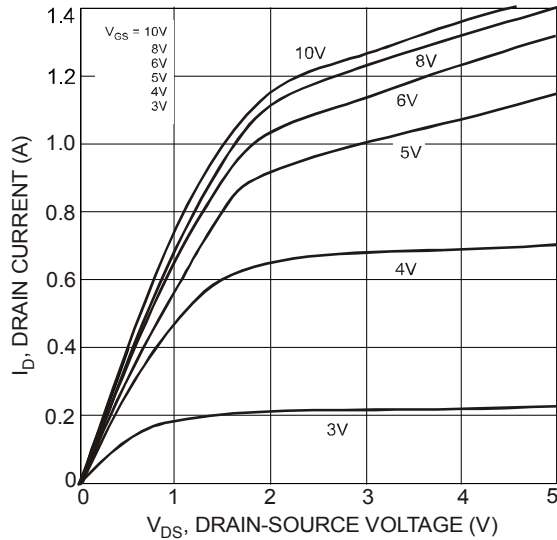


Fig. 1 Typical Output Characteristics

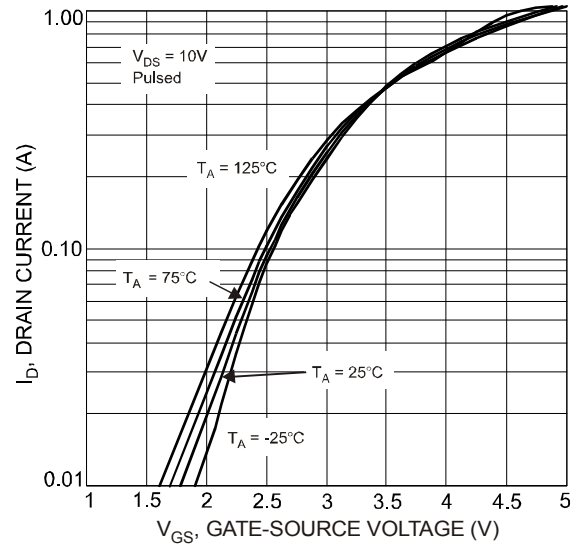


Fig. 2 Typical Transfer Characteristics

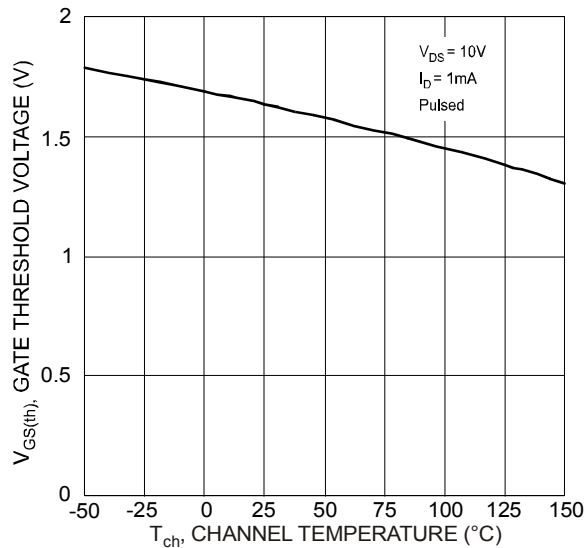


Fig. 3 Gate Threshold Voltage vs. Channel Temperature

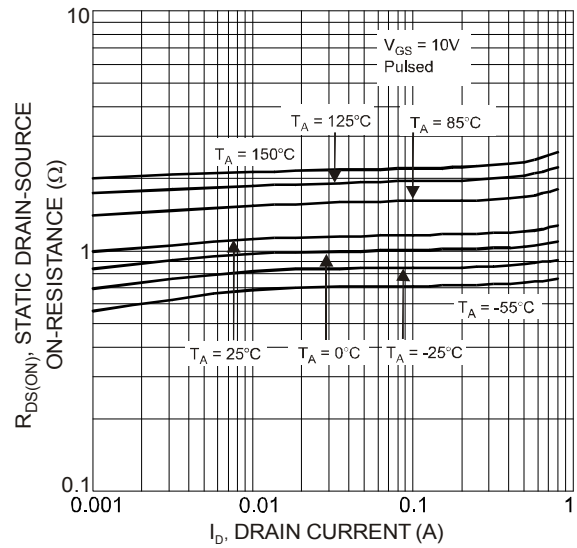


Fig. 4 Static Drain-Source On-Resistance vs. Drain Current

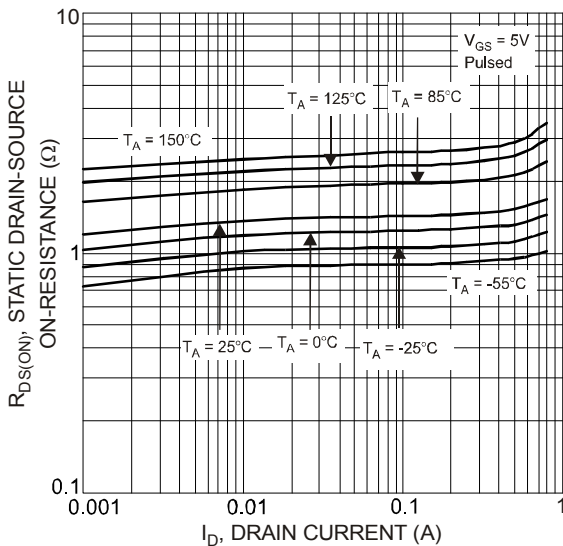


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

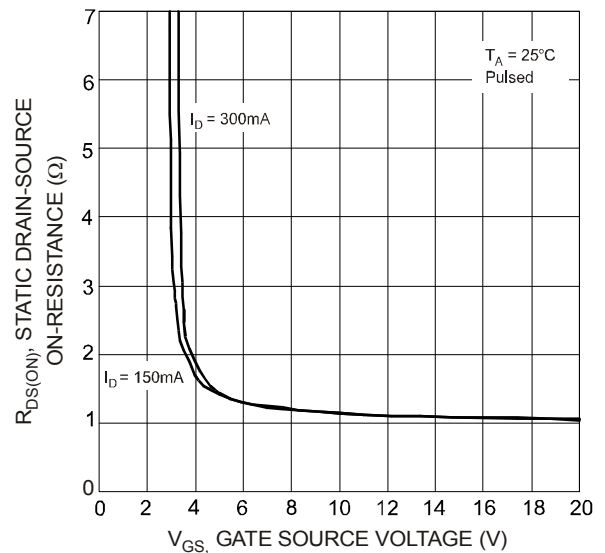


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

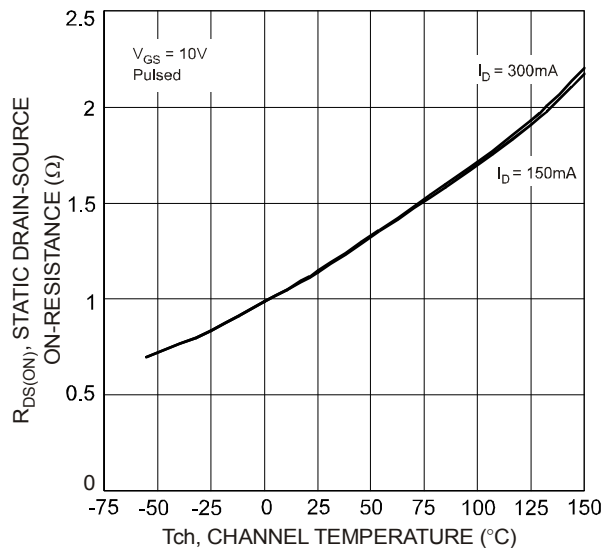


Fig. 7 Static Drain-Source On-State Resistance vs. Channel Temperature

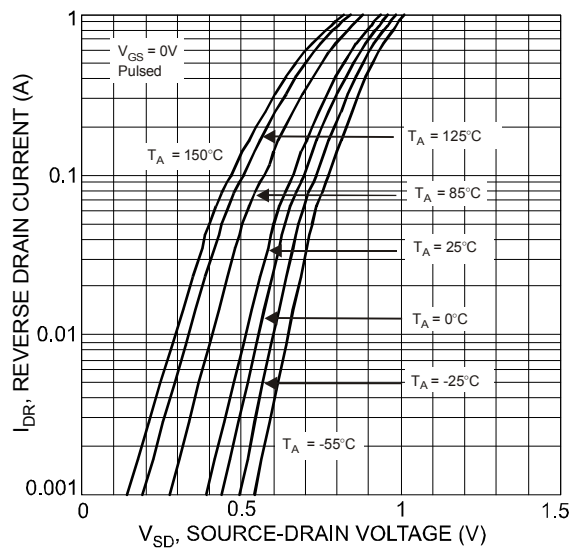


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

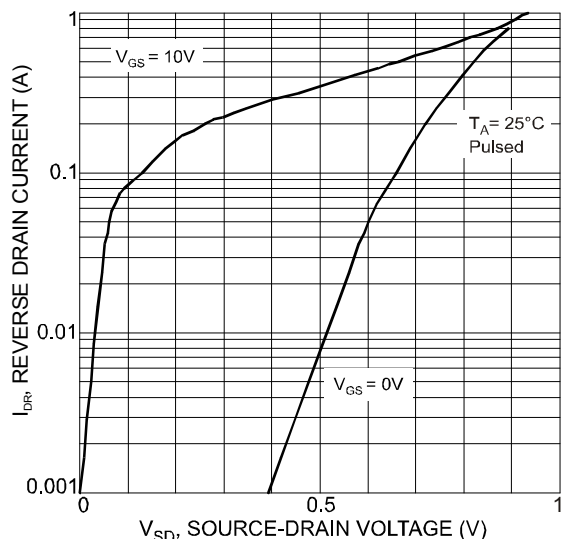


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

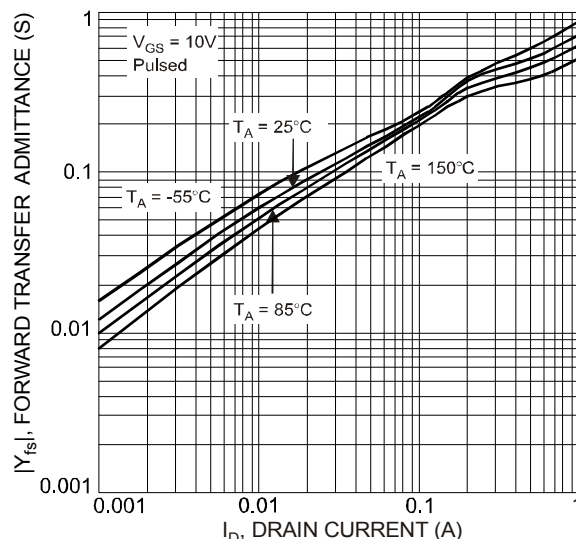
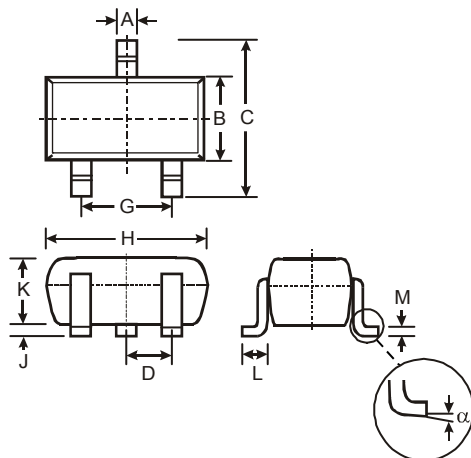


Fig. 10 Forward Transfer Admittance vs. Drain Current

## Package Outline Dimensions

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

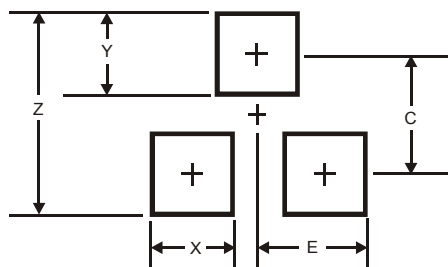


| SOT323   |              |              |      |
|----------|--------------|--------------|------|
| Dim      | Min          | Max          | Typ  |
| A        | 0.25         | 0.40         | 0.30 |
| B        | 1.15         | 1.35         | 1.30 |
| C        | 2.00         | 2.20         | 2.10 |
| D        | -            | -            | 0.65 |
| G        | 1.20         | 1.40         | 1.30 |
| H        | 1.80         | 2.20         | 2.15 |
| J        | 0.0          | 0.10         | 0.05 |
| K        | 0.90         | 1.00         | 1.00 |
| L        | 0.25         | 0.40         | 0.30 |
| M        | 0.10         | 0.18         | 0.11 |
| $\alpha$ | 0 $^{\circ}$ | 8 $^{\circ}$ | -    |

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          | 2.8           |
| X          | 0.7           |
| Y          | 0.9           |
| C          | 1.9           |
| E          | 1.0           |

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