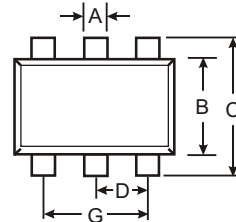


### Features

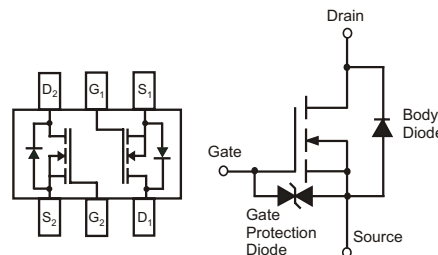
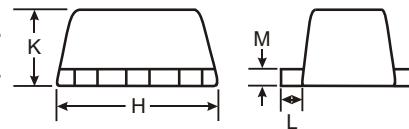
- Dual N-Channel MOSFET
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **ESD Protected Up To 2kV**
- **"Green" Device (Note 4)**



| SOT-563              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.15 | 0.30 | 0.25 |
| B                    | 1.10 | 1.25 | 1.20 |
| C                    | 1.55 | 1.70 | 1.60 |
| D                    | 0.50 |      |      |
| G                    | 0.90 | 1.10 | 1.00 |
| H                    | 1.50 | 1.70 | 1.60 |
| K                    | 0.56 | 0.60 | 0.60 |
| L                    | 0.10 | 0.30 | 0.20 |
| M                    | 0.10 | 0.18 | 0.11 |
| All Dimensions in mm |      |      |      |

### Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking: See Page 2
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approximate)



EQUIVALENT CIRCUIT PER ELEMENT



ESD protected up to 2kV

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

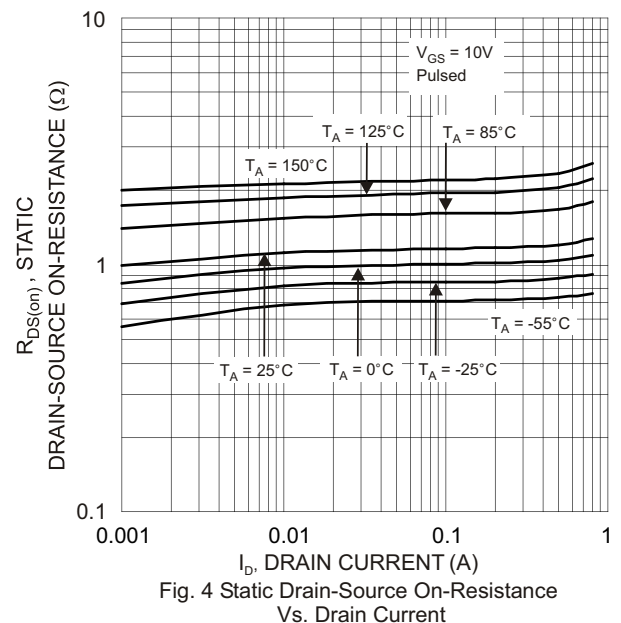
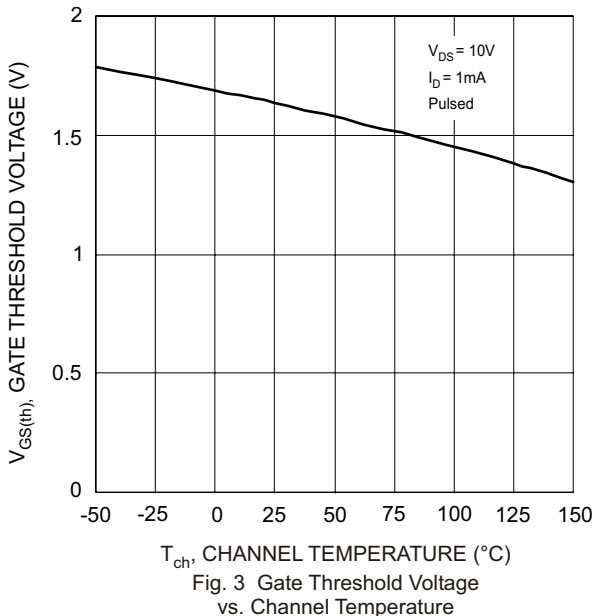
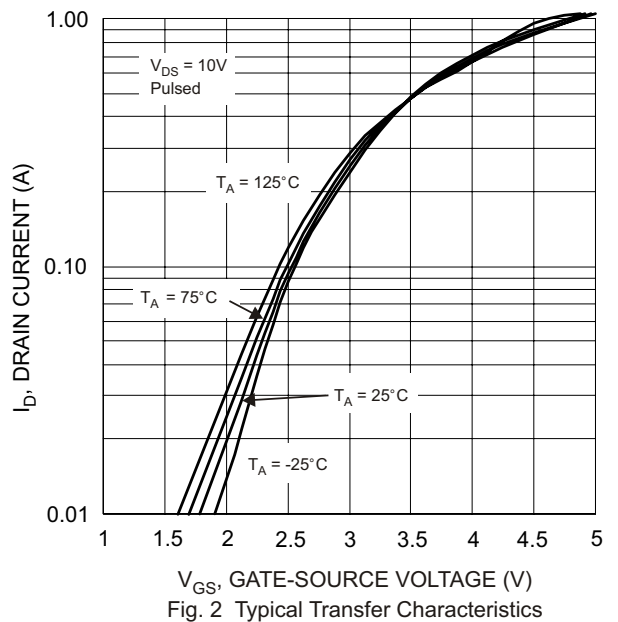
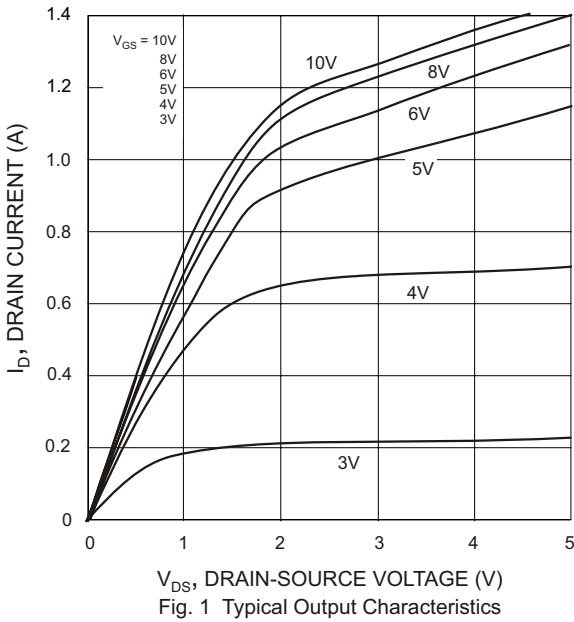
| Characteristic                          | Symbol                            | Value       | Units |
|---|-----------------------------------|-------------|-------|
| Drain-Source Voltage                    | V <sub>DSS</sub>                  | 60          | V     |
| Gate-Source Voltage                     | V <sub>GSS</sub>                  | ±20         | V     |
| Drain Current (Note 1)                  | I <sub>D</sub>                    | 305         | mA    |
| Continuous Pulsed (Note 3)              |                                   | 800         |       |
| Total Power Dissipation (Note 1)        | P <sub>d</sub>                    | 250         | mW    |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                  | 500         | °C/W  |
| Operating and Storage Temperature Range | T <sub>j</sub> , T <sub>STG</sub> | -65 to +150 | °C    |

- Note:
1. Device mounted on FR-4 PCB.
  2. No purposefully added lead.
  3. Pulse width ≤10μs, Duty Cycle ≤1%.
  4. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                      | Symbol       | Min | Typ | Max       | Unit     | Test Condition                              |
|-------------------------------------|--------------|-----|-----|-----------|----------|---|
| <b>OFF CHARACTERISTICS (Note 5)</b> |              |     |     |           |          |   |
| Drain-Source Breakdown Voltage      | $BV_{DSS}$   | 60  | —   | —         | V        | $V_{GS} = 0V, I_D = 10\mu A$                |
| Zero Gate Voltage Drain Current     | $I_{DSS}$    | —   | —   | 250       | nA       | $V_{DS} = 50V, V_{GS} = 0V$                 |
| Gate-Source Leakage                 | $I_{GSS}$    | —   | —   | $\pm 200$ | nA       | $V_{GS} = \pm 10V, V_{DS} = 0V$             |
|                                     |              | —   | —   | $\pm 50$  |          | $V_{GS} = \pm 5V, V_{DS} = 0V$              |
| <b>ON CHARACTERISTICS (Note 5)</b>  |              |     |     |           |          |   |
| Gate Threshold Voltage              | $V_{GS(th)}$ | 1.0 | 1.6 | 2.5       | V        | $V_{DS} = V_{GS}, I_D = 250\mu A$           |
| Static Drain-Source On-Resistance   | $R_{DS(on)}$ | —   | —   | 2.0       | $\Omega$ | $V_{GS} = 10V, I_D = 0.5A$                  |
|                                     |              | —   | —   | 3.0       |          | $V_{GS} = 4.5V, I_D = 200mA$                |
| Forward Transfer Admittance         | $ Y_{fs} $   | —   | 284 | —         | ms       | $V_{DS} = 10V, I_D = 0.2A$                  |
| Diode Forward Voltage (Note 5)      | $V_{SD}$     | 0.5 | —   | 1.4       | V        | $V_{GS} = 0V, I_S = 115mA$                  |
| <b>DYNAMIC CHARACTERISTICS</b>      |              |     |     |           |          |   |
| Input Capacitance                   | $C_{iss}$    | —   | —   | 50        | pF       | $V_{DS} = 25V, V_{GS} = 0V$<br>$f = 1.0MHz$ |
| Output Capacitance                  | $C_{oss}$    | —   | —   | 25        | pF       |   |
| Reverse Transfer Capacitance        | $C_{rss}$    | —   | —   | 5.0       | pF       |   |

Notes: 5. Short duration test pulse used to minimize self-heating effect.



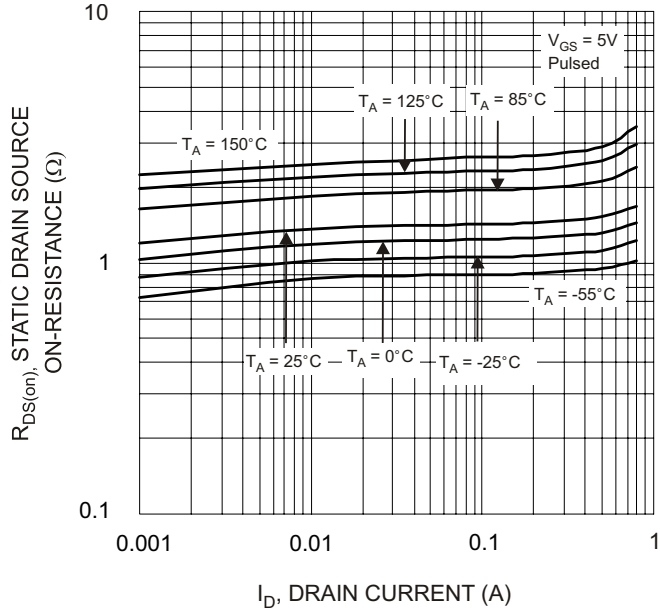


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

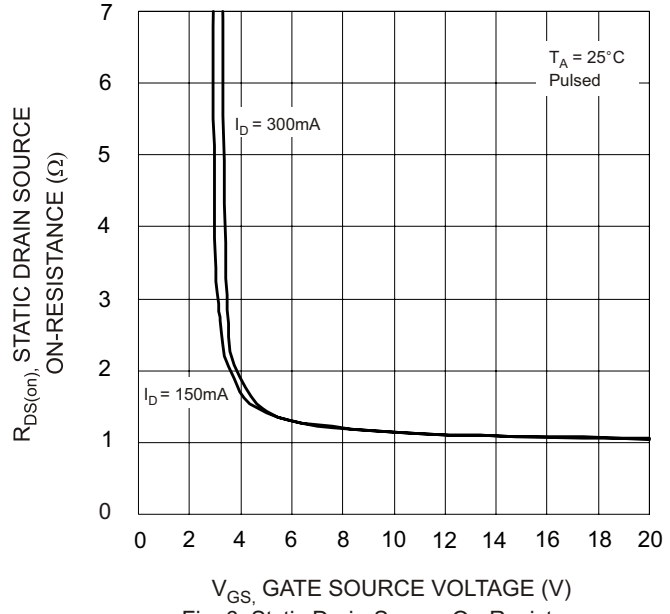


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

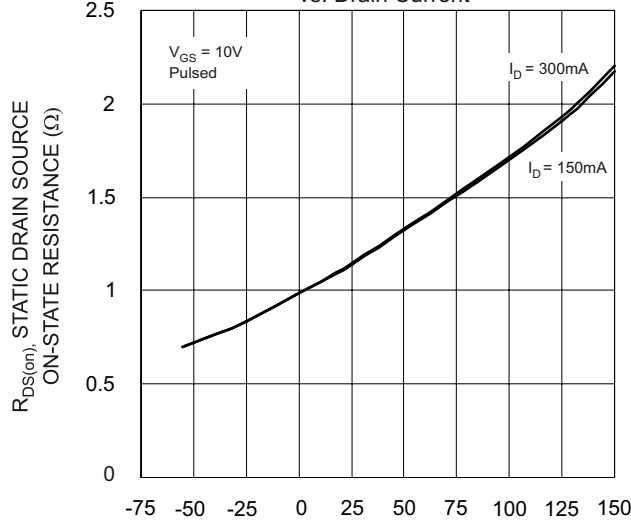


Fig. 7 Static Drain-Source On-State Resistance vs. Channel Temperature

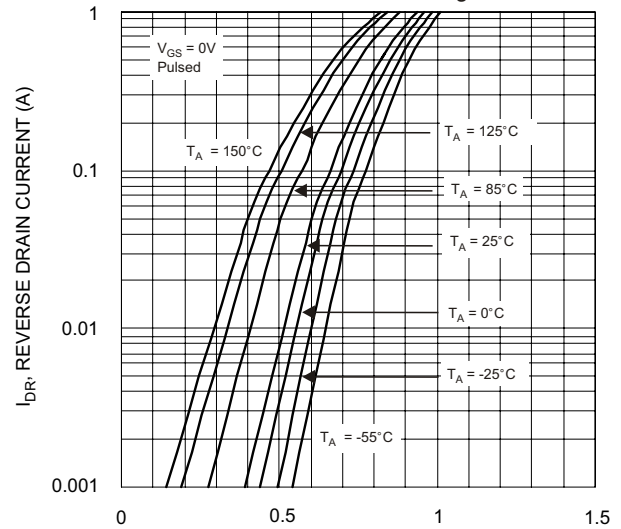


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

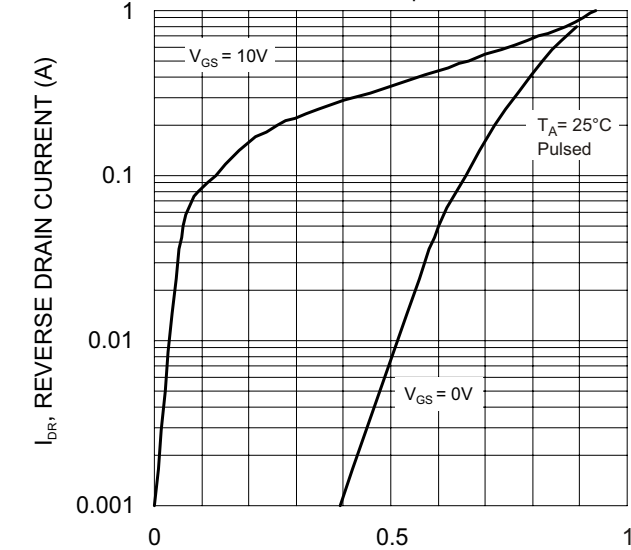


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

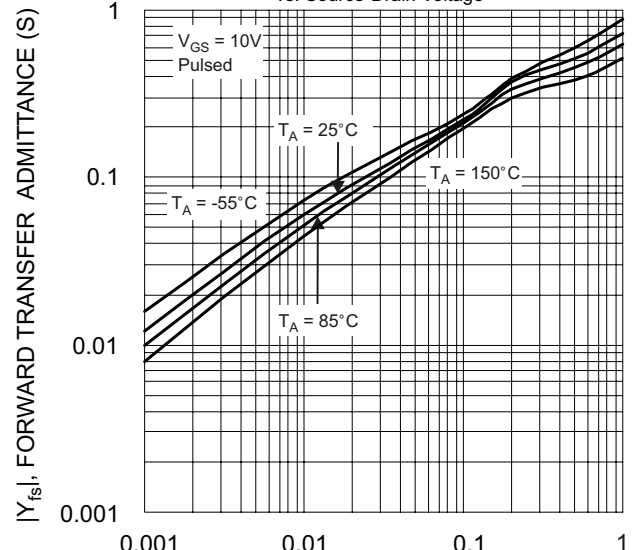


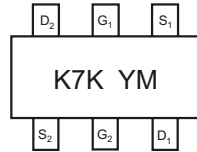
Fig. 10 Forward Transfer Admittance vs. Drain Current

**Ordering Information** (Note 6)

| Device     | Packaging | Shipping         |
|------------|-----------|------------------|
| DMN601VK-7 | SOT-563   | 3000/Tape & Reel |

Notes: 6. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



K7K = Marking Code  
 YM = Date Code Marking  
 Y = Year ex: S = 2005  
 M = Month ex: 9 = September

Date Code Key

| Year | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|
| Code | S    | T    | U    | V    | W    |

| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3     | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |