

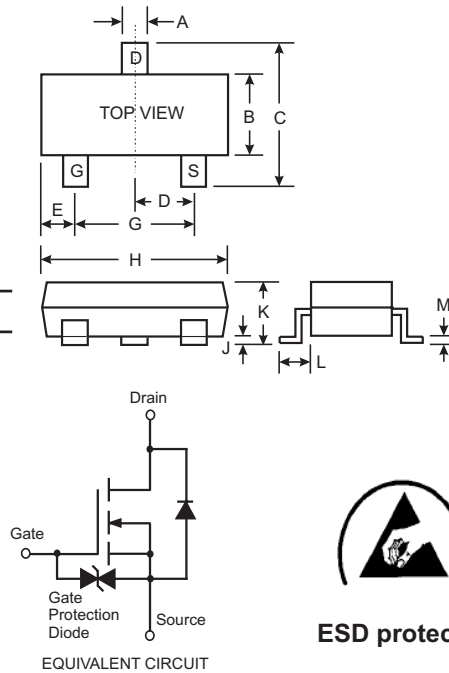
N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Extremely Low On-Resistance:
170mΩ @ V_{GS} = 4.5V
- High Drain Current: 1.1A
- Ideal for Notebook Computer, Portable Phone, PCMCIA Cards, and Battery Powered Circuits
- Lead Free By Design/RoHS Compliant (Note 2)**
- Qualified to AEC-Q101 Standards for High Reliability**
- ESD Protected Gate**
- "Green" Device (Note 3)**

Mechanical Data

- Case: SC-59
- Case Material - Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: See Last Page
- Ordering & Date Code Information: See Last Page
- Weight: 0.008 grams (approximate)



| SC-59 | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.30 | 0.50 |
| B | 1.40 | 1.80 |
| C | 2.50 | 3.00 |
| D | 0.85 | 1.05 |
| E | 0.30 | 0.70 |
| G | 1.70 | 2.10 |
| H | 2.70 | 3.10 |
| J | — | 0.10 |
| K | 1.00 | 1.40 |
| L | 0.55 | 0.70 |
| M | 0.10 | 0.35 |
| All Dimensions in mm | | |

Maximum Ratings @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | DMN100 | Units |
|---|-----------------------------------|-------------|-------|
| Drain-Source Voltage | V _{DSS} | 30 | V |
| Gate-Source Voltage | V _{GSS} | ±20 | V |
| Drain Current | I _D | 1.1 4.0 | A |
| Total Power Dissipation | P _d | 500 | mW |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 250 | K/W |
| Operating and Storage Temperature Range | T _j , T _{STG} | -55 to +150 | °C |

- Notes:
- Pulse width ≤ 300μs, duty cycle ≤ 2%.
 - No purposefully added lead.
 - Diodes Inc.'s "Green" Policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

Electrical Characteristics

@ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---------------------|-----|-----|----------------|------|--|
| OFF CHARACTERISTICS (Note 1) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 30 | — | — | V | V _{GS} = 0V, I _D = 250μA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | 1.0 10 | μA | @ T _j = 25°C @ T _j = 125°C V _{DS} = 24V, V _{GS} = 0V |
| Gate-Body Leakage | I _{GSS} | — | — | ± 100 | nA | V _{GS} = ± 12V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 1) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 1.0 | — | 3.0 | V | V _{DS} = 10V, I _D = 1.0mA |
| Static Drain-Source On-Resistance | R _{DS(ON)} | — | — | 0.170 0.240 | Ω | V _{GS} = 4.5V, I _D = 0.5A V _{GS} = 10V, I _D = 1.0A |
| Forward Transconductance | g _{FS} | 1.3 | 2.4 | — | S | V _{DS} = 10V, I _D = 0.5A |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Input Capacitance | C _{iSS} | — | 150 | — | pF | V _{DS} = 10V, V _{GS} = 0V f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 90 | — | pF | |
| Reverse Transfer Capacitance | C _{rSS} | — | 30 | — | pF | |
| Total Gate Charge | Q _g | — | 5.5 | — | nC | V _{DS} = 24V, I _D = 1.0A, V _{GS} = 10V |
| Gate-to-Source Charge | Q _{gs} | — | 0.8 | — | nC | |
| Gate-to-Drain Charge | Q _{gd} | — | 1.3 | — | nC | |
| SWITCHING CHARACTERISTICS | | | | | | |
| Turn-On Delay Time | t _{D(ON)} | — | 10 | — | ns | V _{DD} = 10V, I _D = 0.5A, V _{GS} = 5.0V, R _{GEN} = 50Ω |
| Turn-Off Delay Time | t _{D(OFF)} | — | 25 | — | ns | |
| Turn-On Rise Time | t _r | — | 15 | — | ns | |
| Turn-Off Fall Time | t _f | — | 45 | — | ns | |
| SOURCE- DRAIN RATINGS (BODY DIODE) | | | | | | |
| Continuous Source Current | I _S | — | — | 0.54 | A | — |
| Pulse Source Current | I _{SM} | — | — | 4.0 | A | — |
| Forward Voltage | V _{SD} | — | — | 1.2 | V | I _F = 1.0A, V _{GS} = 0V |
| Reverse Recovery Time | t _{rr} | — | 35 | — | ns | I _F = 1.0A, di/dt = 50A/μs |

Notes: 1. Pulse width ≤ 300μs, duty cycle ≤ 2%.

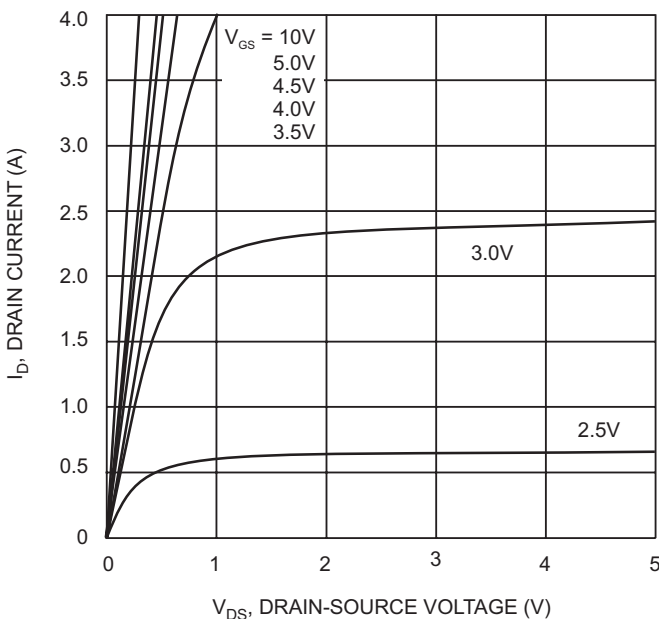


Fig. 1 On-Region Characteristics

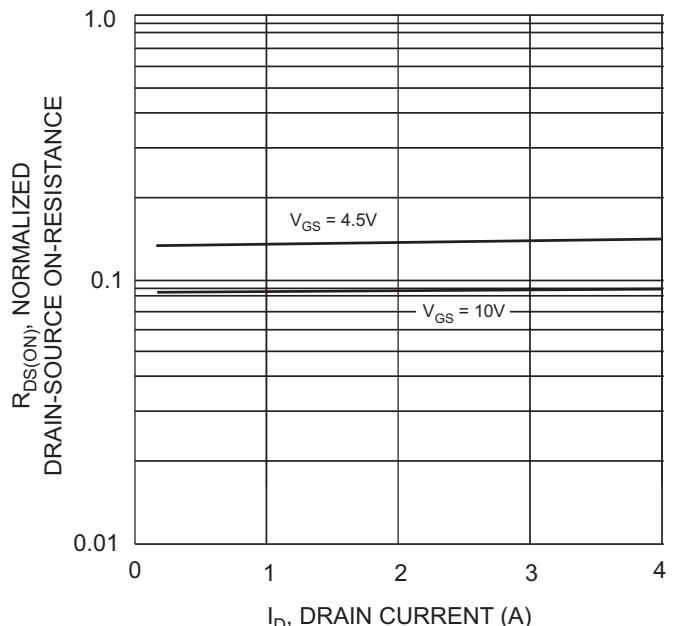
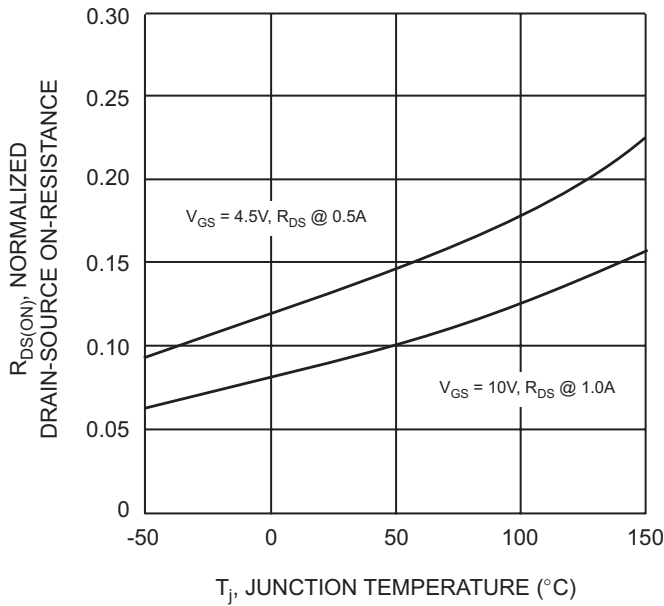
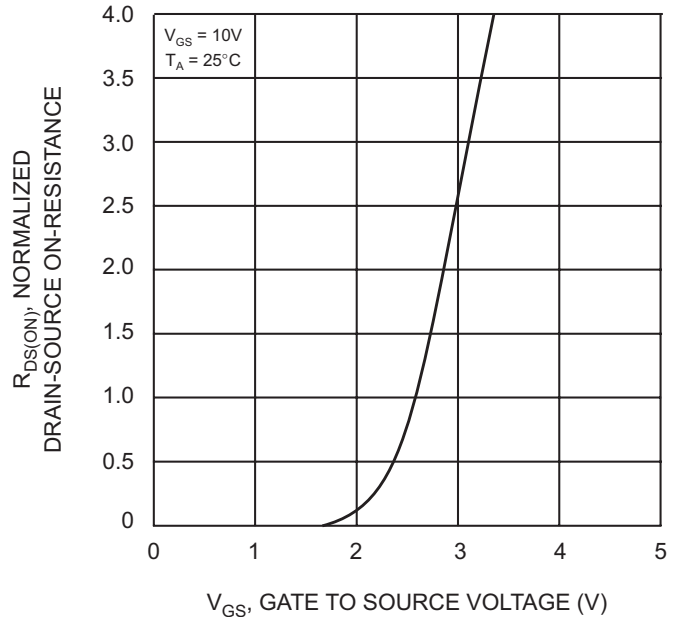


Fig. 2 On-Resistance vs Drain Current



T_J, JUNCTION TEMPERATURE (°C)
Fig. 3 On-Resistance vs Junction Temperature



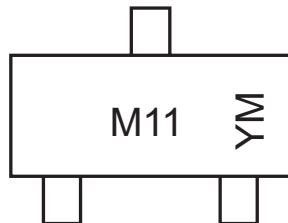
V_{GS}, GATE TO SOURCE VOLTAGE (V)
Fig. 4 On-Resistance vs Gate-Source Voltage

Ordering Information (Note 4)

| Device | Packaging | Shipping |
|------------|-----------|------------------|
| DMN100-7-F | SC-59 | 3000/Tape & Reel |

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



M11 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: T = 2006
 M = Month ex: 9 = September

Date Code Key

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

| 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 |

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