

Features

- Low On-Resistance
- Ideal for Notebook Computer, Portable Phone, PCMCIA Cards, and Battery Power 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: SC59
- 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 Information: See Page 3
- Ordering & Date Code Information: See Page 3
- Weight: 0.014 grams (approximate)

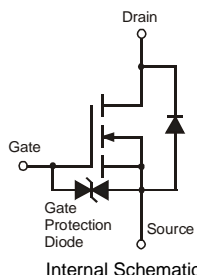


ESD protected

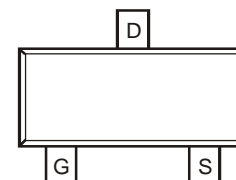


TOP VIEW

SC-59



Internal Schematic



TOP VIEW

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 |
| Drain Current | I _D | 1.2 4.0 | A |
| | | Continuous Pulsed | |

Thermal Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Total Power Dissipation | P _d | 500 | mW |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 250 | °C/W |
| Operating and Storage Temperature Range | T _j , T _{STG} | -55 to +150 | °C |

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} | 20 | — | — | V | V _{GS} = 0V, I _D = 250μA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | 10 | μA | @ T _j = 25°C V _{DS} = 24V, V _{GS} = 0V |
| Gate-Body Leakage | I _{GSS} | — | — | ±10 | μA | V _{GS} = ±12V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 1) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 0.7 | — | 1.40 | V | V _{DS} = 10V, I _D = 1.0mA |
| Static Drain-Source On-Resistance | R _{DS(ON)} | — | — | 0.100 0.160 | Ω | V _{GS} = 4.5V, I _D = 0.5A V _{GS} = 2.5V, I _D = 0.5A |
| Forward Transfer Admittance | Y _{fs} | — | 3.3 | — | S | V _{DS} = 10V, I _D = 0.5A |
| Diode Forward Voltage | V _{SD} | — | 0.8 | 1.1 | V | V _{GS} = 0V, I _S = 1.0A |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Input Capacitance | C _{iss} | — | 180 | — | pF | V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 120 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 45 | — | pF | |
| 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)} | — | 50 | — | ns | |
| Turn-On Rise Time | t _r | — | 15 | — | ns | |
| Turn-Off Fall Time | t _f | — | 45 | — | ns | |

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

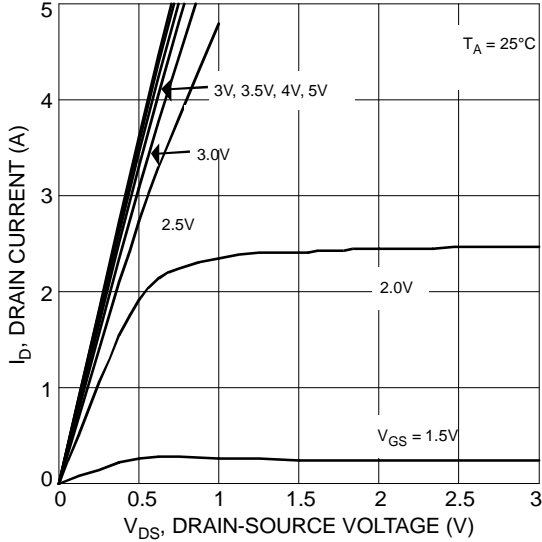


Fig. 1 Typical Output Characteristics

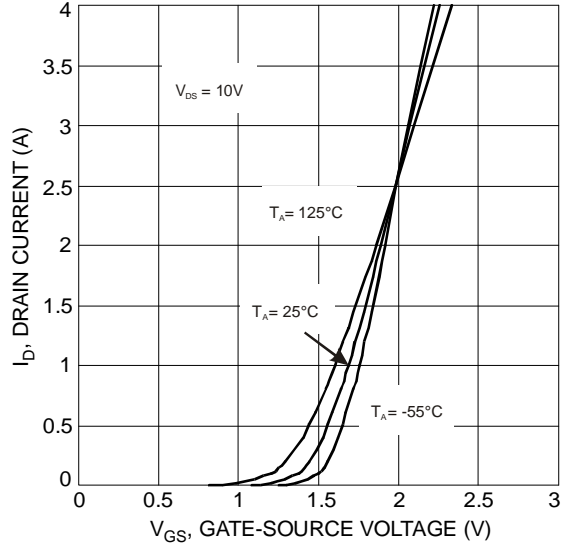


Fig. 2 Typical Transfer Characteristics

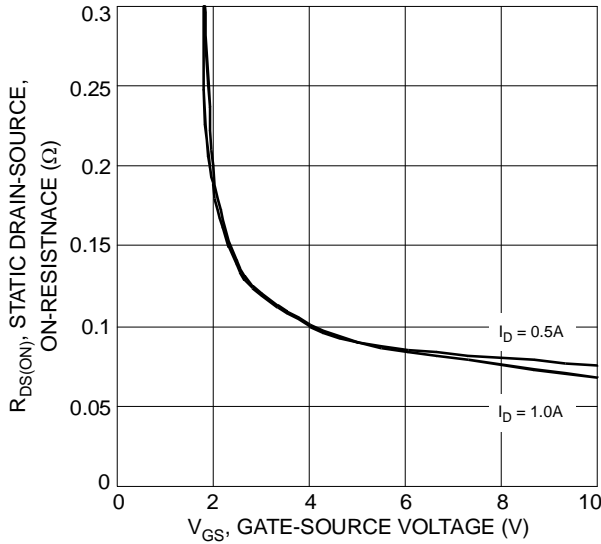


Fig. 3 On-Resistance vs. Gate Voltage

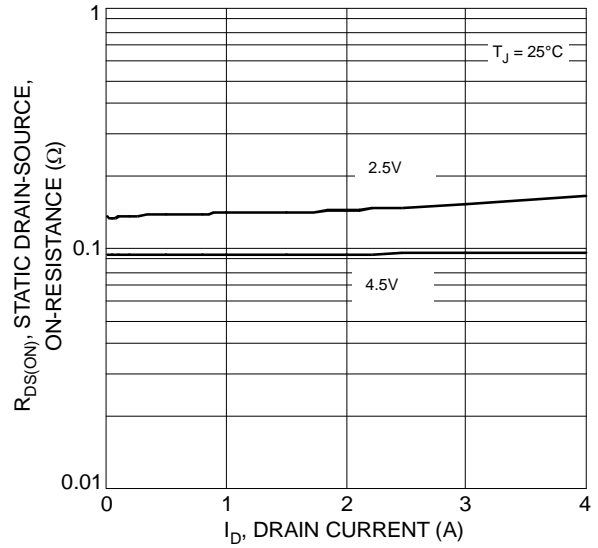


Fig. 4 On-Resistance vs. Drain Current

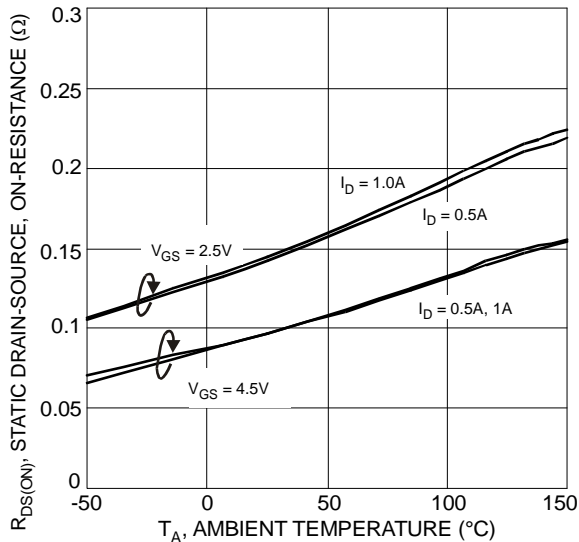


Fig. 5 On-Resistance Variation with Temperature

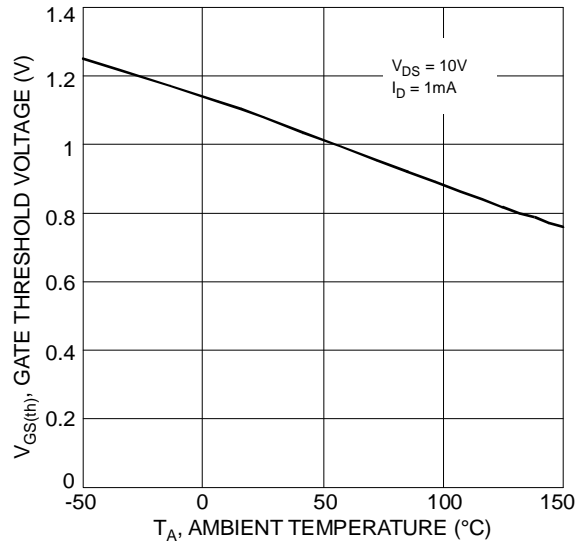


Fig. 6 Gate Threshold Voltage vs. Temperature

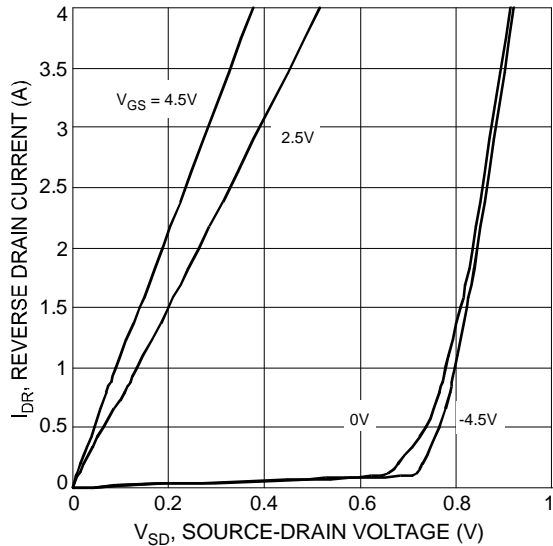


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

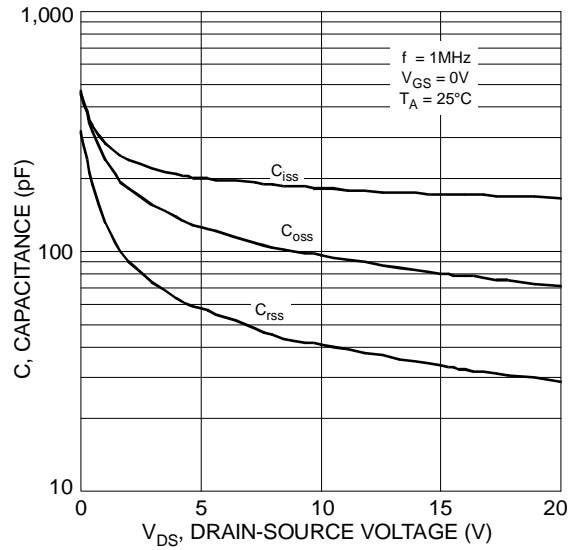


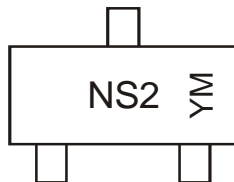
Fig. 8 Typical Total Capacitance

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-------------|------|------------------|
| DMN2114SN-7 | SC59 | 3000/Tape & Reel |

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

Marking Information



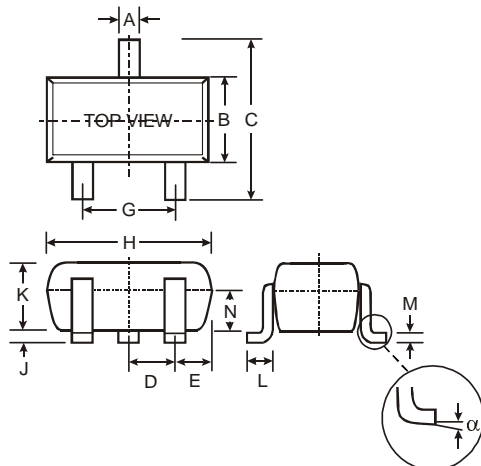
NS2 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: T = 2006
 M = Month ex: 9 = September

Date Code Key

| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|
| Code | T | U | V | W | X | Y | Z |

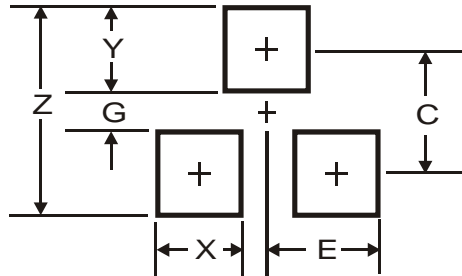
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

Package Outline Dimensions



| SC59 | | |
|----------------------|-------|------|
| Dim | Min | Max |
| A | 0.35 | 0.50 |
| B | 1.50 | 1.70 |
| C | 2.70 | 3.00 |
| D | 0.95 | |
| E | — | |
| G | 1.90 | |
| H | 2.90 | 3.10 |
| J | 0.013 | 0.10 |
| K | 1.00 | 1.30 |
| L | 0.35 | 0.55 |
| M | 0.10 | 0.20 |
| N | 0.70 | 0.80 |
| α | 0° | 8° |
| All Dimensions in mm | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 4.0 |
| G | 1.2 |
| X | 0.9 |
| Y | 1.4 |
| C | 2.6 |
| E | 0.95 |

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