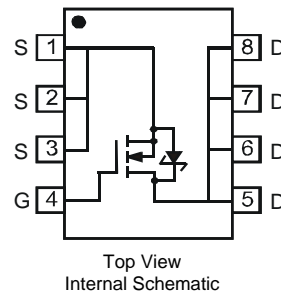


Features

- DIOFET utilizes a unique patented process to monolithically integrate a MOSFET and a Schottky in a single die to deliver:
 - Low $R_{DS(ON)}$ - minimizes conduction losses
 - Low V_{SD} - reducing the losses due to body diode conduction
 - Low Q_{rr} - lower Q_{rr} of the integrated Schottky reduces body diode switching losses
 - Low gate capacitance (Q_g/Q_{gs}) ratio – reduces risk of shoot-through or cross conduction currents at high frequencies
 - Avalanche rugged – I_{AR} and E_{AR} rated
- **Lead Free, RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.072 grams (approximate)



Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | | | Symbol | Value | Unit |
|--|--------------|--------------------------|-----------|----------|------|
| Drain-Source Voltage | | | V_{DSS} | 30 | V |
| Gate-Source Voltage | | | V_{GSS} | ± 20 | V |
| Continuous Drain Current (Note 3) $V_{GS} = 10\text{V}$ | Steady State | $T_A = 25^\circ\text{C}$ | I_D | 11 | A |
| | | $T_A = 85^\circ\text{C}$ | | 6.6 | |
| Pulsed Drain Current (Note 4) | | | I_{DM} | 80 | A |
| Avalanche Current (Notes 4 & 5) | | | I_{AR} | 17 | A |
| Repetitive Avalanche Energy (Notes 4 & 5) $L = 0.3\text{mH}$ | | | E_{AR} | 43 | mJ |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 3) | P_D | 1.55 | W |
| Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3) | $R_{\theta JA}$ | 81.3 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 3. Device mounted on 1in * 1in FR-4 PCB with 2oz. Copper. The value in any given application depends on the user's specific board design.
 4. Repetitive rating, pulse width limited by junction temperature.
 5. I_{AR} and E_{AR} rating are based on low frequency and duty cycles to keep $T_J = 25^\circ\text{C}$

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|---------------------|-----|------|------|------|--|
| OFF CHARACTERISTICS (Note 6) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 30 | - | - | V | V _{GS} = 0V, I _D = 250μA |
| Zero Gate Voltage Drain Current | I _{DSS} | - | - | 0.1 | mA | V _{DS} = 30V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | - | - | ±100 | nA | V _{GS} = ±20V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 6) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 1.0 | 1.5 | 2.5 | V | V _{DS} = V _{GS} , I _D = 250μA |
| Static Drain-Source On-Resistance | R _{DS(on)} | - | 8.5 | 11.9 | mΩ | V _{GS} = 10V, I _D = 11A |
| | | - | 9.5 | 14.9 | | V _{GS} = 4.5V, I _D = 8.8A |
| Forward Transfer Admittance | Y _{fs} | - | 18 | - | S | V _{DS} = 5V, I _D = 10A |
| Diode Forward Voltage | V _{SD} | - | 0.45 | 0.55 | V | V _{GS} = 0V, I _S = 1A |
| DYNAMIC CHARACTERISTICS (Note 7) | | | | | | |
| Input Capacitance | C _{iss} | - | 1276 | - | pF | V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | - | 160 | - | pF | |
| Reverse Transfer Capacitance | C _{rss} | - | 136 | - | pF | |
| Gate Resistance | R _g | 0.3 | 1.48 | 2.7 | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1MHz |
| Total Gate Charge (V _{GS} = 4.5V) | Q _g | - | 14.3 | - | nC | V _{DS} = 15V, V _{GS} = 4.5V, I _D = 8.8A |
| Total Gate Charge (V _{GS} = 10V) | Q _g | - | 30.6 | - | nC | |
| Gate-Source Charge | Q _{gs} | - | 3.4 | - | nC | V _{DS} = 15V, V _{GS} = 10V, I _D = 8.8A |
| Gate-Drain Charge | Q _{gd} | - | 4.3 | - | nC | |
| Turn-On Delay Time | t _{D(on)} | - | 15.8 | - | ns | V _{GS} = 4.5V, V _{DS} = 15V, R _G = 1.8Ω, I _D = 8.8A |
| Turn-On Rise Time | t _r | - | 27.8 | - | ns | |
| Turn-Off Delay Time | t _{D(off)} | - | 29.7 | - | ns | |
| Turn-Off Fall Time | t _f | - | 13.6 | - | ns | |

Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

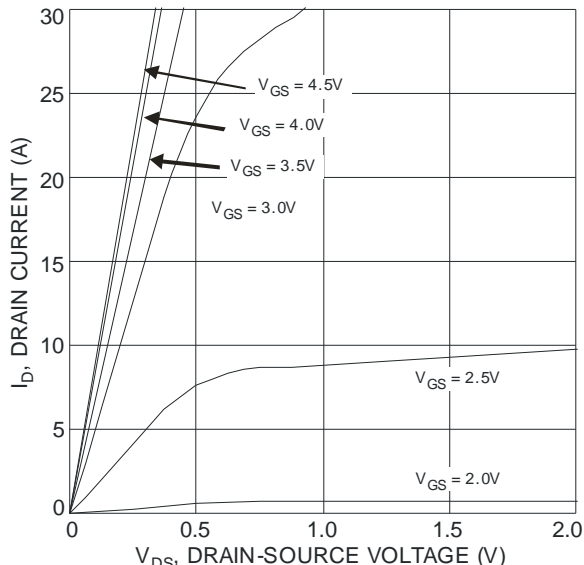


Fig. 1 Typical Output Characteristics

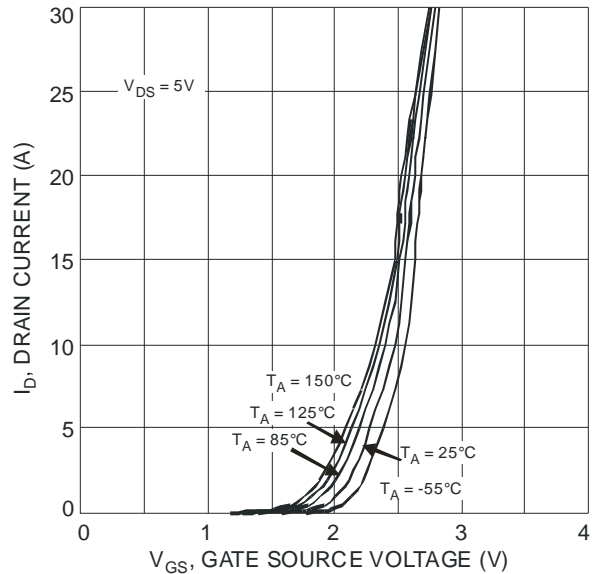


Fig. 2 Typical Transfer Characteristics

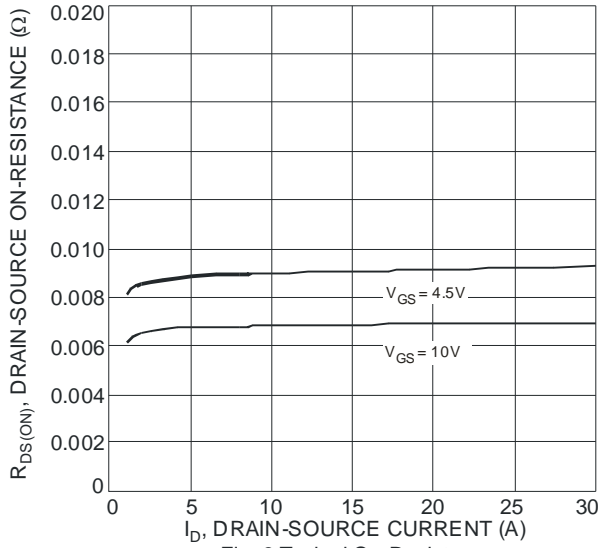


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

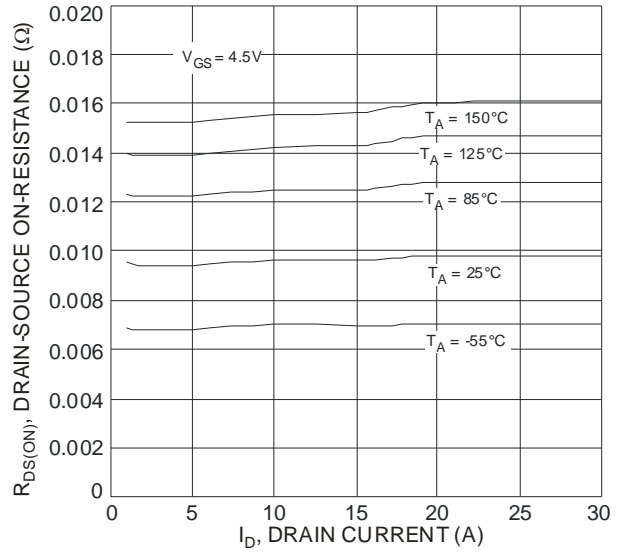


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

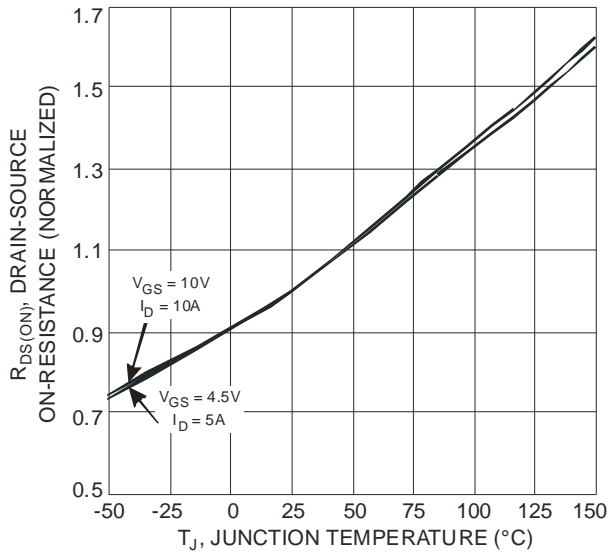


Fig. 5 On-Resistance Variation with Temperature

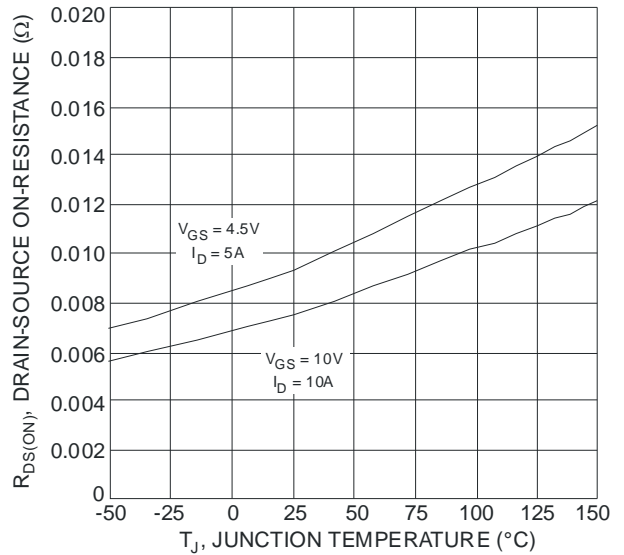


Fig. 6 On-Resistance Variation with Temperature

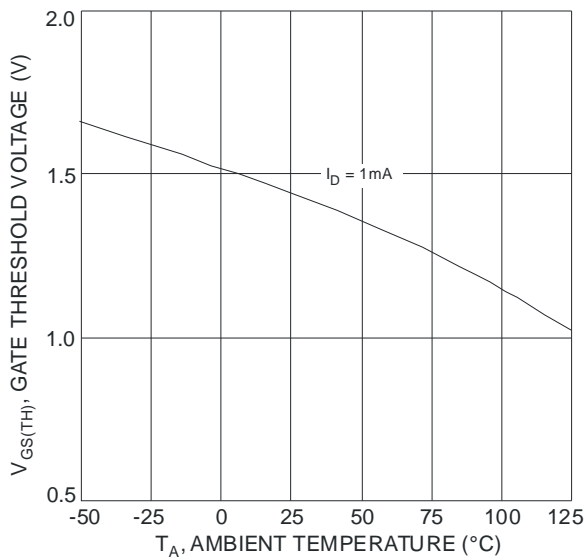


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

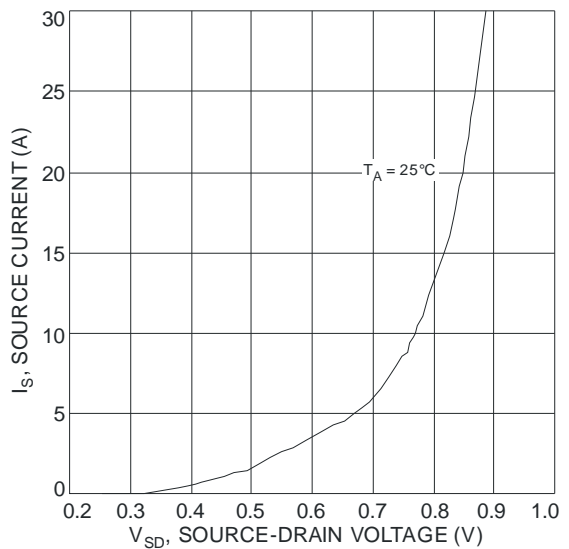
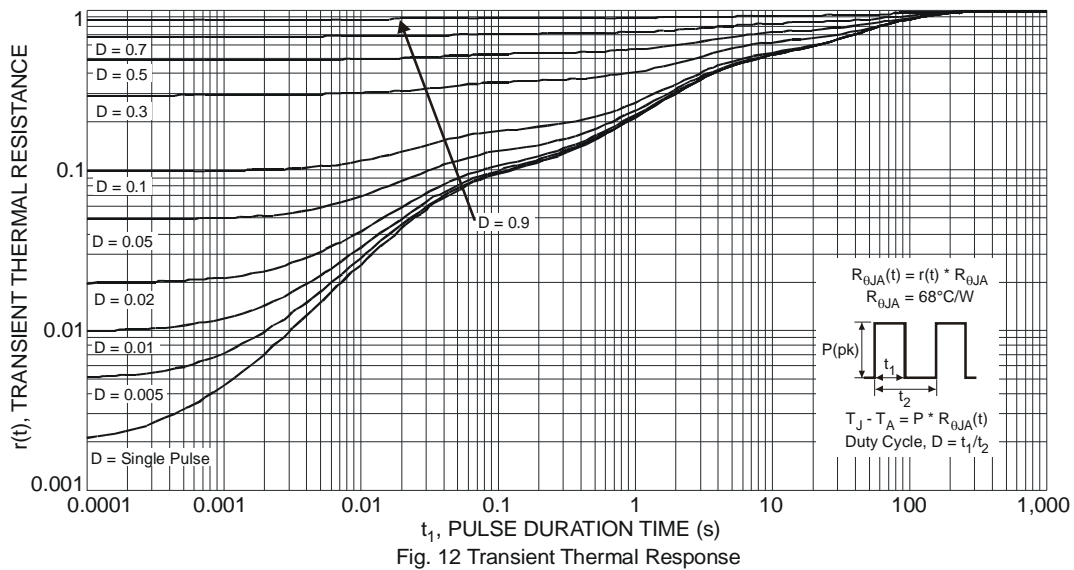
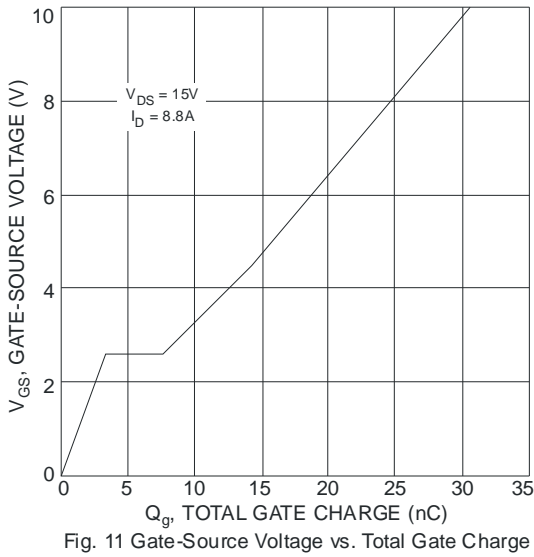
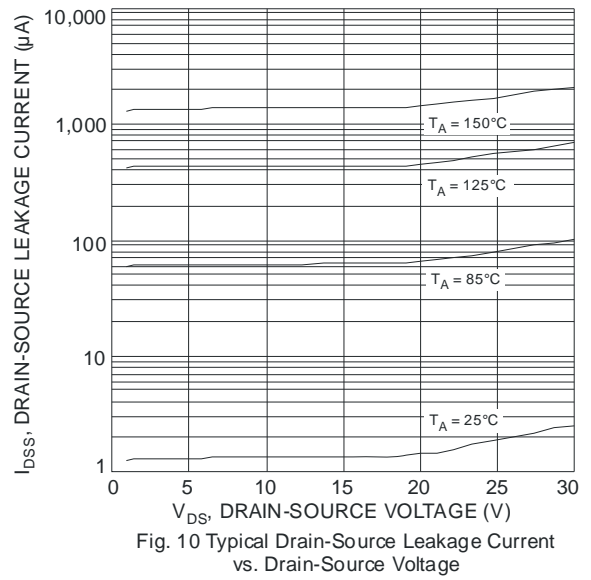
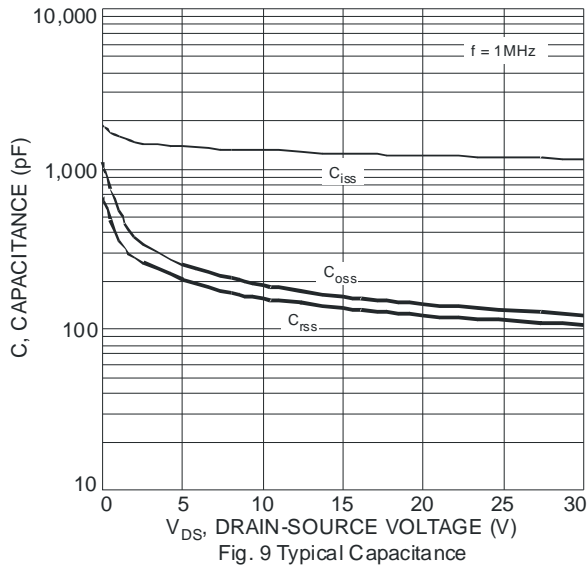


Fig. 8 Diode Forward Voltage vs. Current

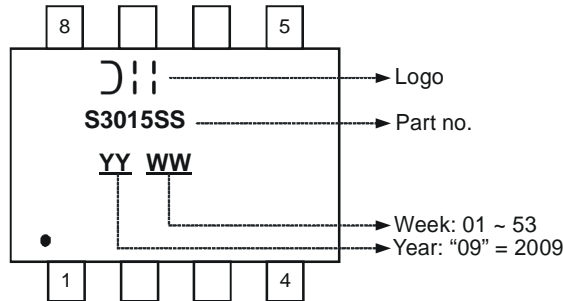


Ordering Information (Note 8)

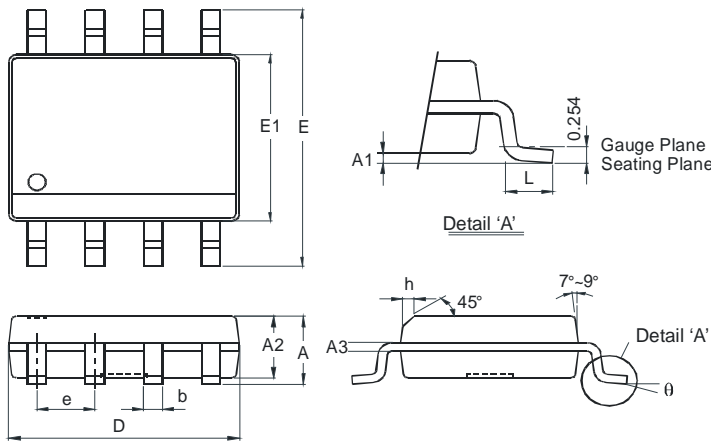
| Part Number | Case | Packaging |
|---------------|------|--------------------|
| DMS3015SSS-13 | SO-8 | 2500 / Tape & Reel |

Notes: 8. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

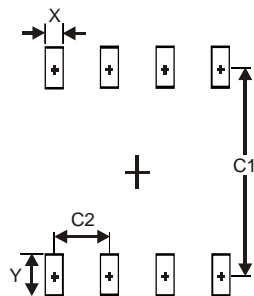


Package Outline Dimensions



| SO-8 | | |
|----------------------|----------|------|
| Dim | Min | Max |
| A | - | 1.75 |
| A1 | 0.10 | 0.20 |
| A2 | 1.30 | 1.50 |
| A3 | 0.15 | 0.25 |
| b | 0.3 | 0.5 |
| D | 4.85 | 4.95 |
| E | 5.90 | 6.10 |
| E1 | 3.85 | 3.95 |
| e | 1.27 Typ | |
| h | - | 0.35 |
| L | 0.62 | 0.82 |
| θ | 0° | 8° |
| All Dimensions in mm | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.60 |
| Y | 1.55 |
| C1 | 5.4 |
| C2 | 1.27 |

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