

NEW PRODUCT

Product Summary

| | | |
|---------------|------------------------------|---|
| $V_{(BR)DSS}$ | $R_{DS(ON) \text{ max}}$ | $I_D \text{ max}$ $T_A = 25^\circ\text{C}$ |
| 30V | 20mΩ @ $V_{GS} = 10\text{V}$ | 10A |

Description and Applications

This MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- General Purpose Interfacing Switch
- Power Management Functions
- DC-DC Converters
- Analog Switch

Features and Benefits

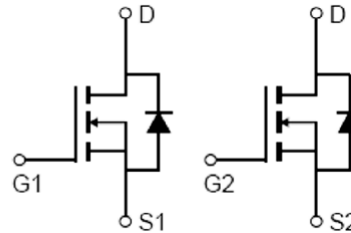
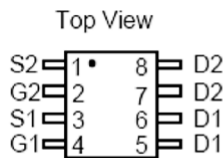
- N-Channel MOSFET
- Low On-Resistance
- Low Input Capacitance
- Low Input/Output leakage
- Low Gate Resistance
- Fast Switching Speed
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 standards for High Reliability**

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 Indicator: See diagram
- Terminals: Finish — NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.072 grams (approximate)



Top View

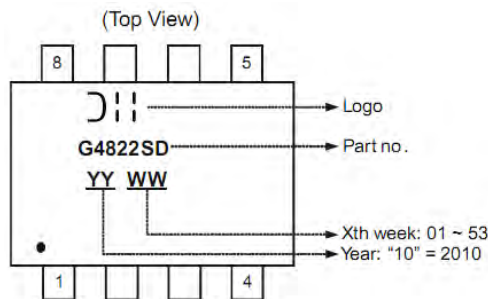


Ordering Information (Note 3)

| Part Number | Case | Packaging |
|---------------|------|------------------|
| DMG4822SSD-13 | SO-8 | 2500/Tape & Reel |

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



Maximum Ratings @T_A = 25°C unless otherwise specified

| Characteristic | | | Symbol | Value | Units |
|---|--------------|-----------------------|------------------|-------|-------|
| Drain-Source Voltage | | | V _{DSS} | 30 | V |
| Gate-Source Voltage | | | V _{GSS} | ±25 | V |
| Continuous Drain Current (Note 4) V _{GS} = 10V | Steady State | T _A = 25°C | I _D | 10 | A |
| | | T _A = 85°C | | 6.6 | |
| Pulsed Drain Current (Note 5) | | | I _{DM} | 60 | A |
| Avalanche Current (Note 6) (Note 7) | | | I _{AR} | 1.68 | A |
| Repetitive Avalanche Energy L= 0.3mH (Note 6) (Note 7) | | | E _{AR} | 12.8 | mJ |

Thermal Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Units |
|--|-----------------------------------|-------------|-------|
| Total Power Dissipation (Note 4) | P _D | 1.42 | W |
| Thermal Resistance, Junction to Ambient (Note 4) | R _{θJA} | 88.4 | °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 8) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 30 | - | - | V | V _{GS} = 0V, I _D = 250μA |
| Zero Gate Voltage Drain Current | I _{DSS} | - | - | 1 | μA | V _{DS} = 30V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | - | - | ±100 | nA | V _{GS} = ±25V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 8) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 1.0 | - | 3.0 | V | V _{DS} = V _{GS} , I _D = 250μA |
| Static Drain-Source On-Resistance | R _{DS(on)} | - | 13.4 | 20.0 | mΩ | V _{GS} = 10V, I _D = 8.5A |
| | | - | 19.5 | 31.0 | | V _{GS} = 4.5V, I _D = 6A |
| Forward Transfer Admittance | Y _{fs} | - | 20 | - | mS | V _{DS} = 5V, I _D = 8.5A |
| Diode Forward Voltage (Note 8) | V _{SD} | - | 0.4 | 1.0 | V | V _{GS} = 0V, I _S = 1A |
| DYNAMIC CHARACTERISTICS (Note 9) | | | | | | |
| Input Capacitance | C _{iss} | - | 478.9 | - | pF | V _{DS} = 16V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | - | 96.7 | - | pF | |
| Reverse Transfer Capacitance | C _{rss} | - | 61.4 | - | pF | |
| Gate resistance | R _g | | 1.1 | | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz |
| Total Gate Charge (V _{GS} = 4.5V) | Q _g | | 5.0 | | nC | V _{GS} = 10V, V _{DS} = 15V, I _D = 8.5A |
| Total Gate Charge (V _{GS} = 10V) | Q _g | - | 10.5 | - | nC | |
| Gate-Source Charge | Q _{gs} | - | 1.8 | - | nC | |
| Gate-Drain Charge | Q _{gd} | - | 1.6 | - | nC | |
| Turn-On Delay Time | t _{D(on)} | - | 2.9 | - | ns | V _{DS} = 15V, V _{GS} = 10V, R _L = 1.8Ω, R _G = 3Ω, |
| Turn-On Rise Time | t _r | - | 7.9 | - | ns | |
| Turn-Off Delay Time | t _{D(off)} | - | 14.6 | - | ns | |
| Turn-Off Fall Time | t _f | - | 3.1 | - | ns | |

- Notes:
- Device mounted on FR-4 PCB, with minimum recommended pad layout.
 - Device mounted on minimum recommended pad layout test board, 10μs pulse duty cycle = 1%
 - Repetitive rating, pulse width limited by junction temperature.
 - I_{AR} and E_{AR} rating are based on low frequency and duty cycles to keep T_J=25°C
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

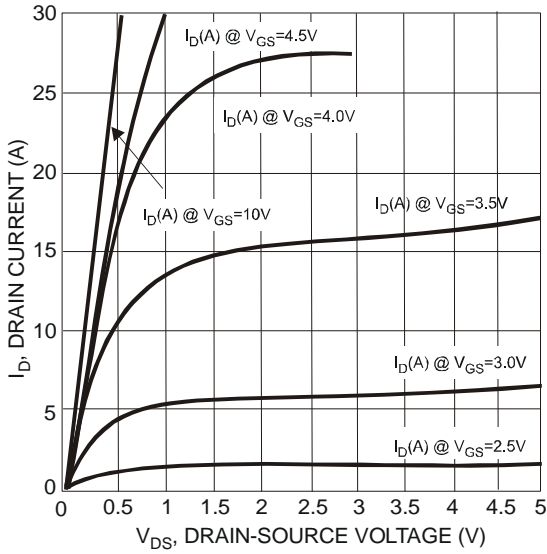


Fig.1 Typical Output Characteristic

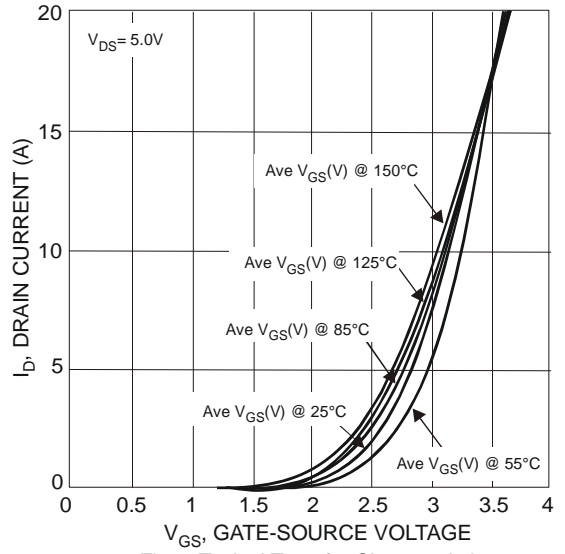


Fig.2 Typical Transfer Characteristics

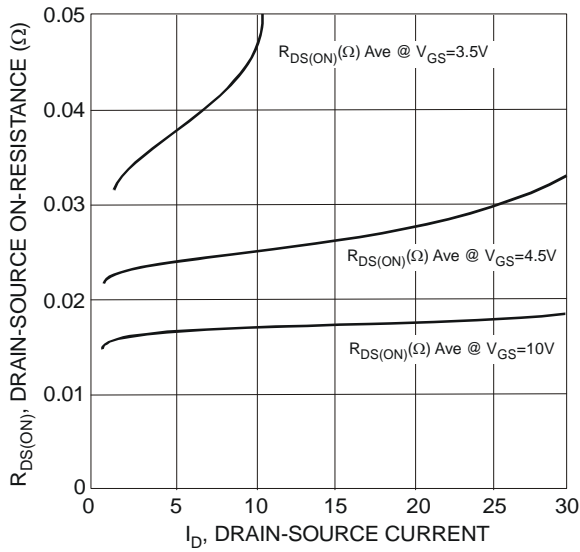


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

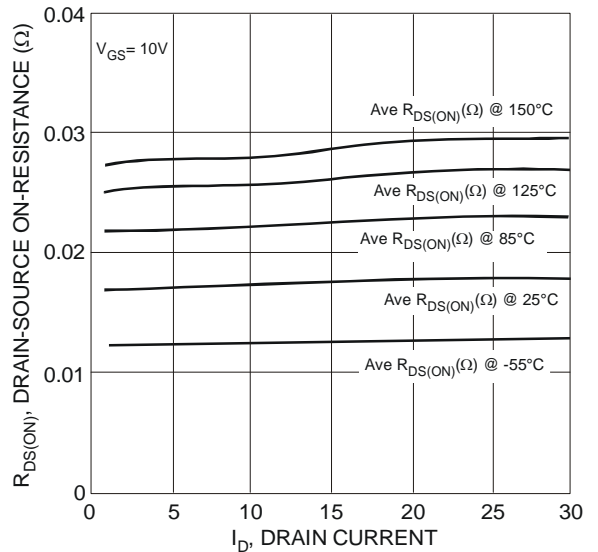


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

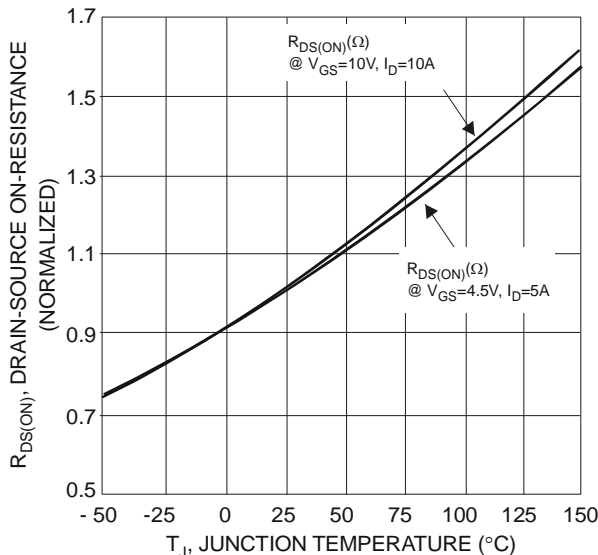


Fig. 5 On-Resistance Variation with Temperature

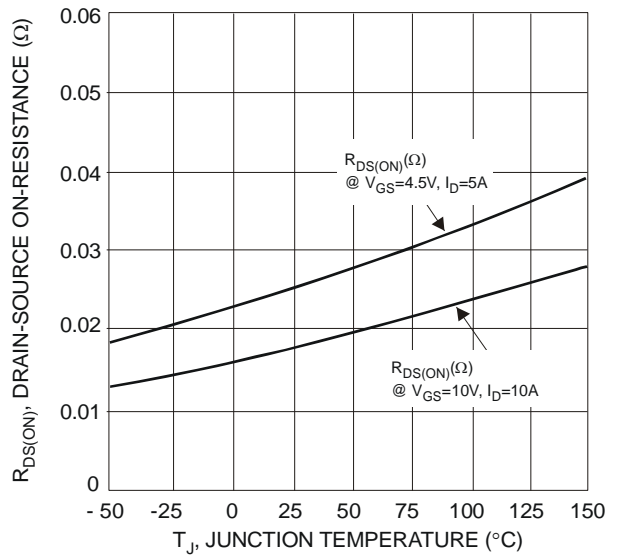


Fig. 6 On-Resistance Variation with Temperature

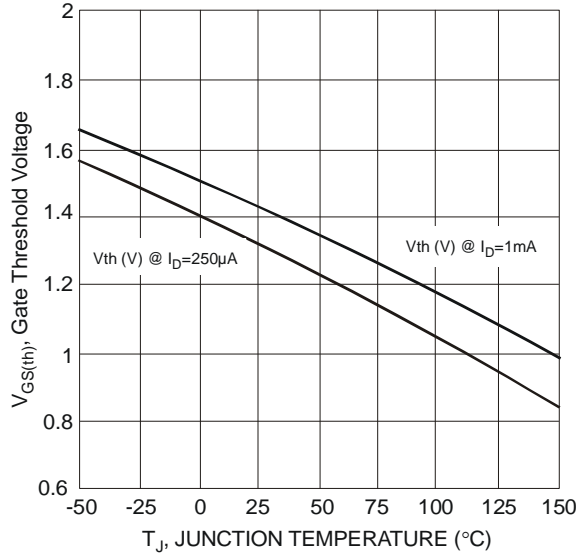


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

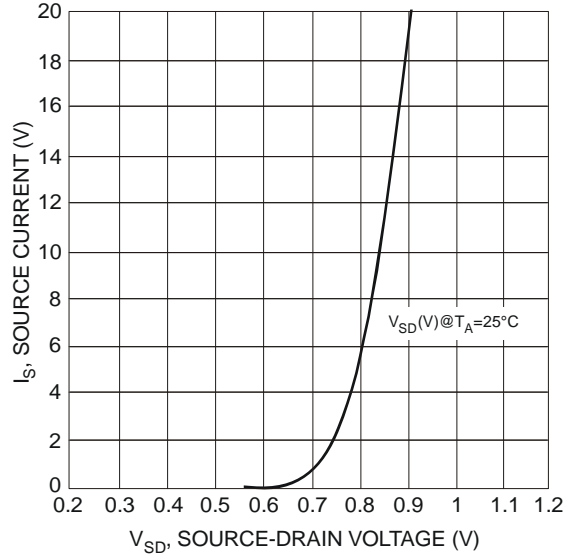


Fig.8 Diode Forward Voltage vs. Current

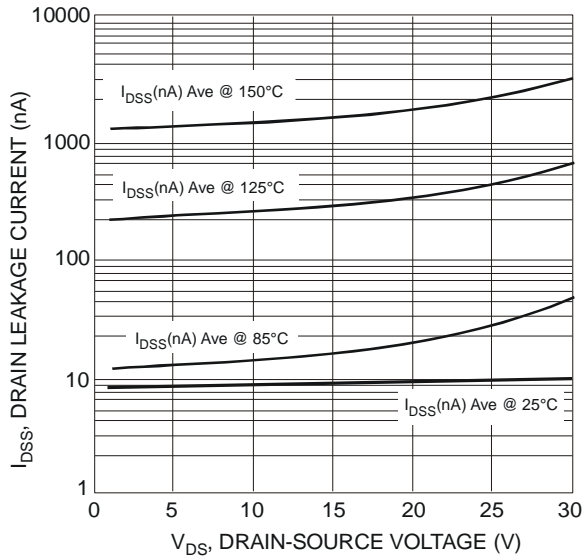


Fig. 9 Typical Drain-Source Leakage Current vs. Voltage

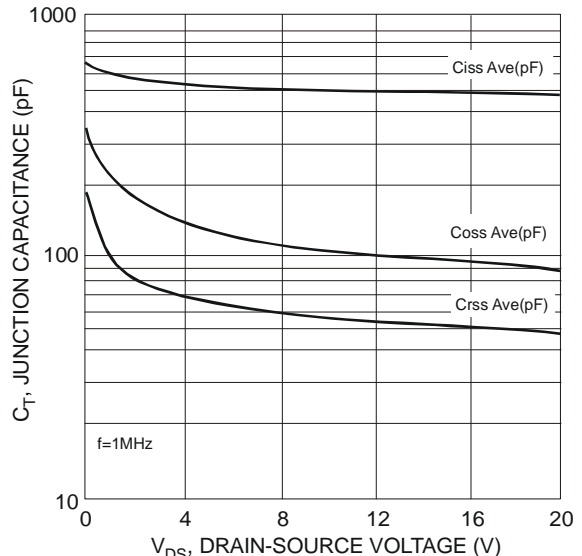


Fig. 10 Typical Junction Capacitance

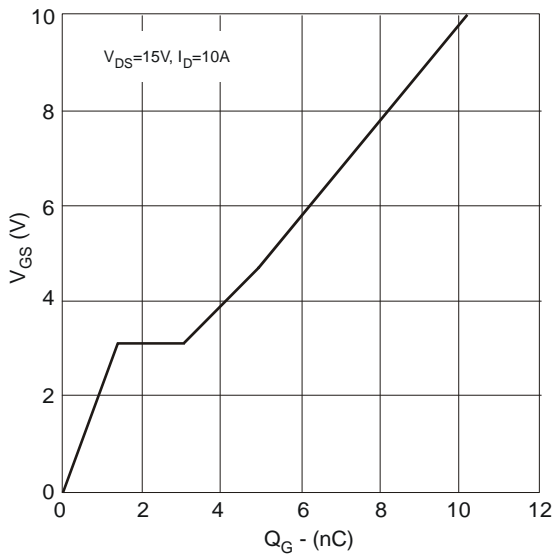
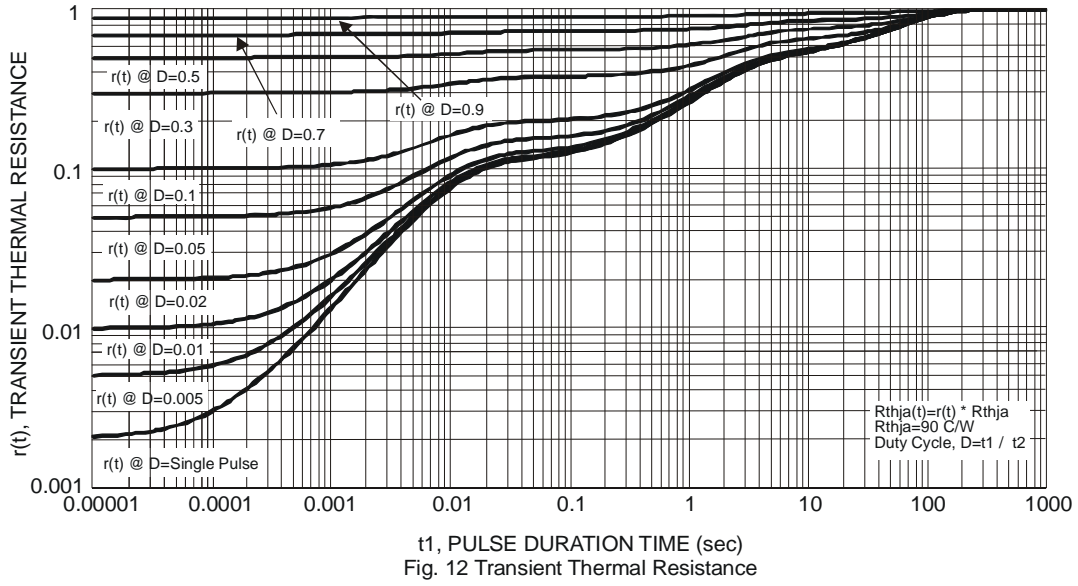
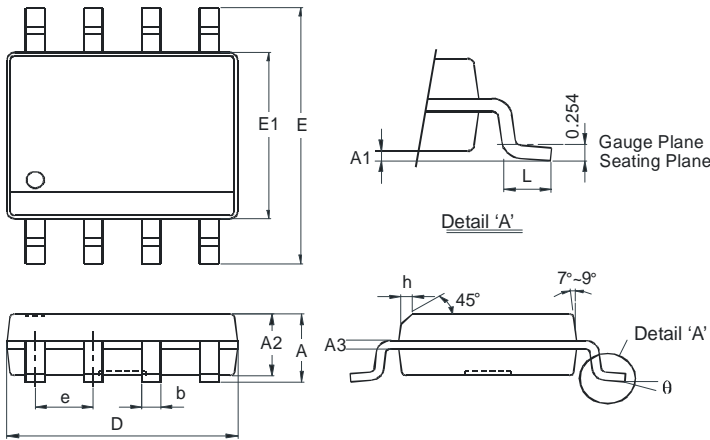


Fig. 11 Gate Charge



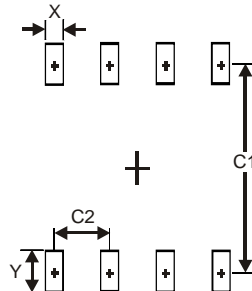
NEW PRODUCT

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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