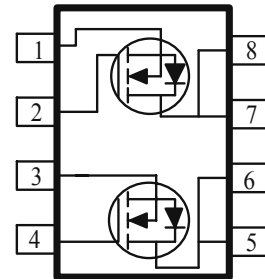


Dual N-Channel 30-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

- Low $r_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Miniature SO-8 Surface Mount Package Saves Board Space
- High power and current handling capability
- Low side high current DC-DC Converter applications

| PRODUCT SUMMARY | | |
|-----------------|----------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ m(Ω) | I_D (A) |
| 30 | 34 @ $V_{GS} = 10V$ | 6.9 |
| | 41 @ $V_{GS} = 4.5V$ | 6.0 |



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED) | | | |
|---|----------------|------------------|------------|
| Parameter | Symbol | Limit | Units |
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Continuous Drain Current ^a | I_D | $T_A=25^\circ C$ | ± 6.9 |
| | | $T_A=70^\circ C$ | ± 5.6 |
| Pulsed Drain Current ^b | I_{DM} | ± 40 | A |
| Continuous Source Current (Diode Conduction) ^a | I_S | 1.7 | A |
| Power Dissipation ^a | P_D | $T_A=25^\circ C$ | 2.1 |
| | | $T_A=70^\circ C$ | 1.3 |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | $^\circ C$ |

| THERMAL RESISTANCE RATINGS | | | |
|--|-----------------|-----------------|-------|
| Parameter | Symbol | Maximum | Units |
| Maximum Junction-to-Ambient ^a | $R_{\theta JA}$ | t \leq 10 sec | 62.5 |
| | | Steady-State | 110 |

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

| SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED) | | | | | | |
|---|---------------------|--|--------|------|------|------|
| Parameter | Symbol | Test Conditions | Limits | | | Unit |
| | | | Min | Typ | Max | |
| Static | | | | | | |
| Gate-Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 uA | 1 | | | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ± 20 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 24 V, V _{GS} = 0 V | | | 1 | uA |
| | | V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55°C | | | 10 | |
| On-State Drain Current ^A | I _{D(on)} | V _{DS} = 5 V, V _{GS} = 10 V | 20 | | | A |
| Drain-Source On-Resistance ^A | r _{DS(on)} | V _{GS} = 10 V, I _D = 6.9 A | | | 34 | mΩ |
| | | V _{GS} = 4.5 V, I _D = 6.0 A | | | 41 | |
| Forward Transconductance ^A | g _{fs} | V _{DS} = 15 V, I _D = 6.9 A | | 25 | | S |
| Diode Forward Voltage | V _{SD} | I _S = 1.7 A, V _{GS} = 0 V | | 0.77 | | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 6.9 A | | 4.0 | | nC |
| Gate-Source Charge | Q _{gs} | | | 1.1 | | |
| Gate-Drain Charge | Q _{gd} | | | 1.4 | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 15 V, R _L = 15 Ω , I _D = 1 A, V _{GEN} = 10 V | | 12 | | nS |
| Rise Time | t _r | | | 10 | | |
| Turn-Off Delay Time | t _{d(off)} | | | 60 | | |
| Fall-Time | t _f | | | 15 | | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = 1.7 A, Di/Dt = 100 A/uS | | 50 | | |

Notes

- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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Typical Electrical Characteristics (N-Channel)

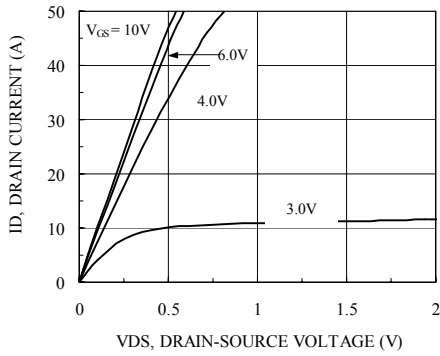


Figure 1. On-Region Characteristics

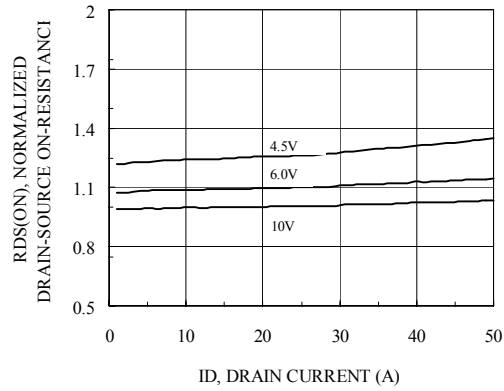


Figure 2. On-Resistance with Drain Current

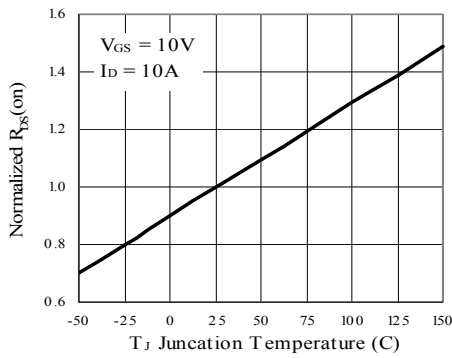


Figure 3. On-Resistance Variation with Temperature

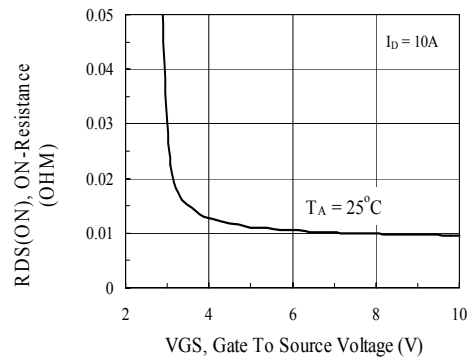


Figure 4. On-Resistance Variation with Gate to Source Voltage

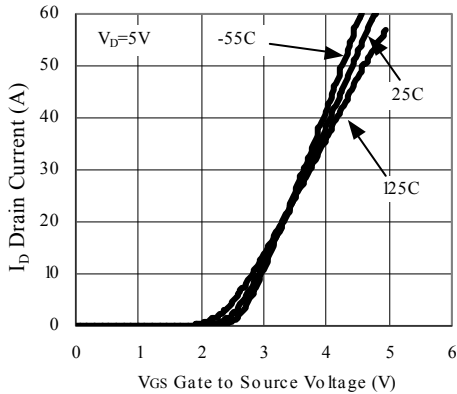


Figure 5. Transfer Characteristics

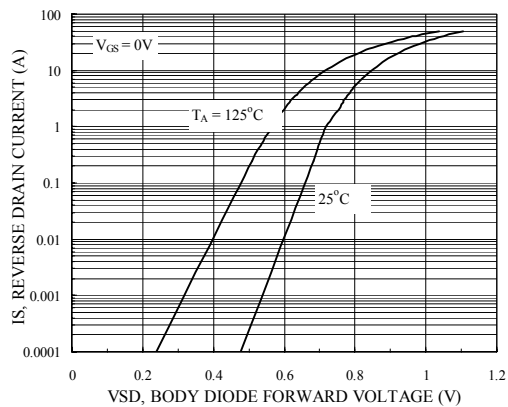


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Electrical Characteristics (N-Channel)

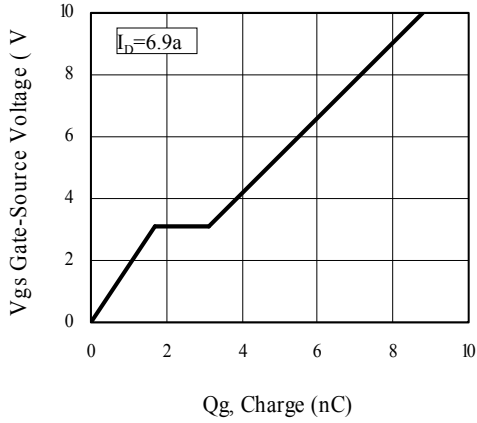


Figure 7. Gate Charge Characteristics

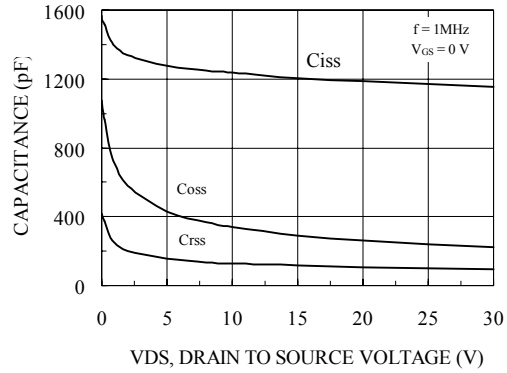


Figure 8. Capacitance Characteristics

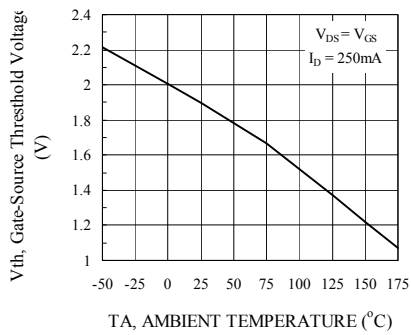


Figure 9. Threshold Vs Ambient Temperature

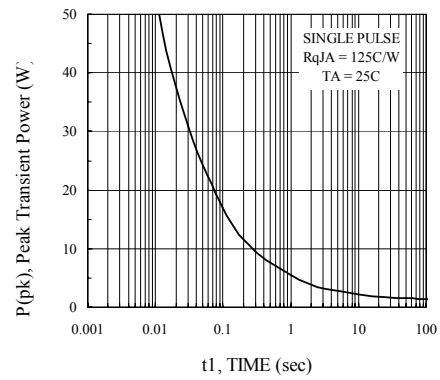


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

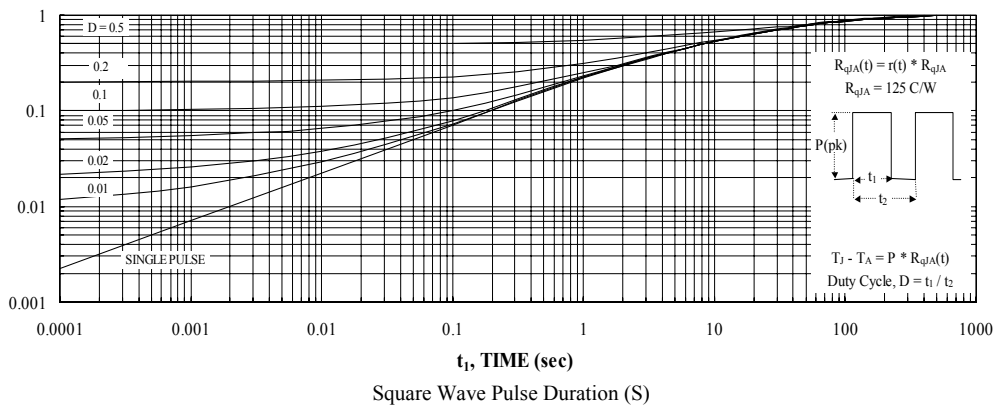
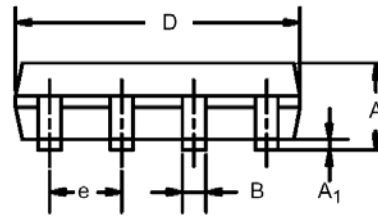
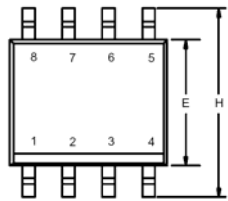


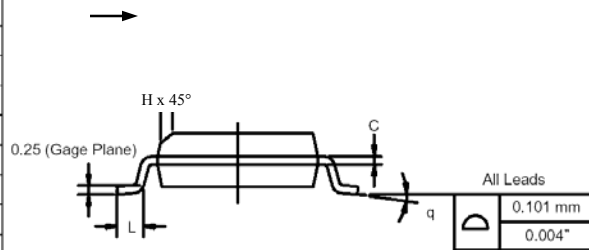
Figure 11. Transient Thermal Response Curve

Package Information

SO-8: 8LEAD



| Dim | MILLIMETERS | | INCHES | |
|----------------|-------------|------|-----------|-------|
| | Min | Max | Min | Max |
| A | 1.35 | 1.75 | 0.053 | 0.069 |
| A ₁ | 0.10 | 0.20 | 0.004 | 0.008 |
| B | 0.35 | 0.51 | 0.014 | 0.020 |
| C | 0.19 | 0.25 | 0.0075 | 0.010 |
| D | 4.80 | 5.00 | 0.189 | 0.196 |
| E | 3.80 | 4.00 | 0.150 | 0.157 |
| e | 1.27 BSC | | 0.050 BSC | |
| H | 5.80 | 6.20 | 0.228 | 0.244 |
| h | 0.25 | 0.50 | 0.010 | 0.020 |
| L | 0.50 | 0.93 | 0.020 | 0.037 |
| q | 0° | 8° | 0° | 8° |



Ordering information

- AM4920N-T1-XX
 - A: Analog Power
 - M: MOSFET
 - 4920: Part number
 - N: N-Channel
 - T1: Tape & reel
 - XX: Blank: Standard
PF: Leadfree