



DESCRIPTION

The AM4812 is the N-Channel logic enhancement mode power field effect transistor which is produced using high cell density. Advanced trench technology to provide excellent $R_{DS(ON)}$.

This high density process is especially tailored to minimize on-state resistance.

The AM4812 is particularly suited for low voltage application, and low in-line power loss are needed in a very small outline surface mount package.

The AM4812 is available in SOP8 Package.

FEATURES

- 30V / 7.8A, $R_{DS(ON)} = 16m\Omega$ (typ.)@ $V_{GS} = 10V$
- 30V / 5.8A, $R_{DS(ON)} = 22m\Omega$ (typ.)@ $V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- Available in SOP8 Package

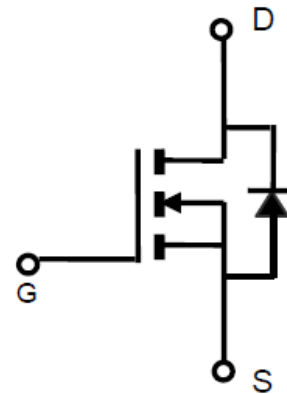
APPLICATION

- High Frequency Point-of-Load Synchronous
- New working DC-DC Power System
- Load Switch

ORDERING INFORMATION

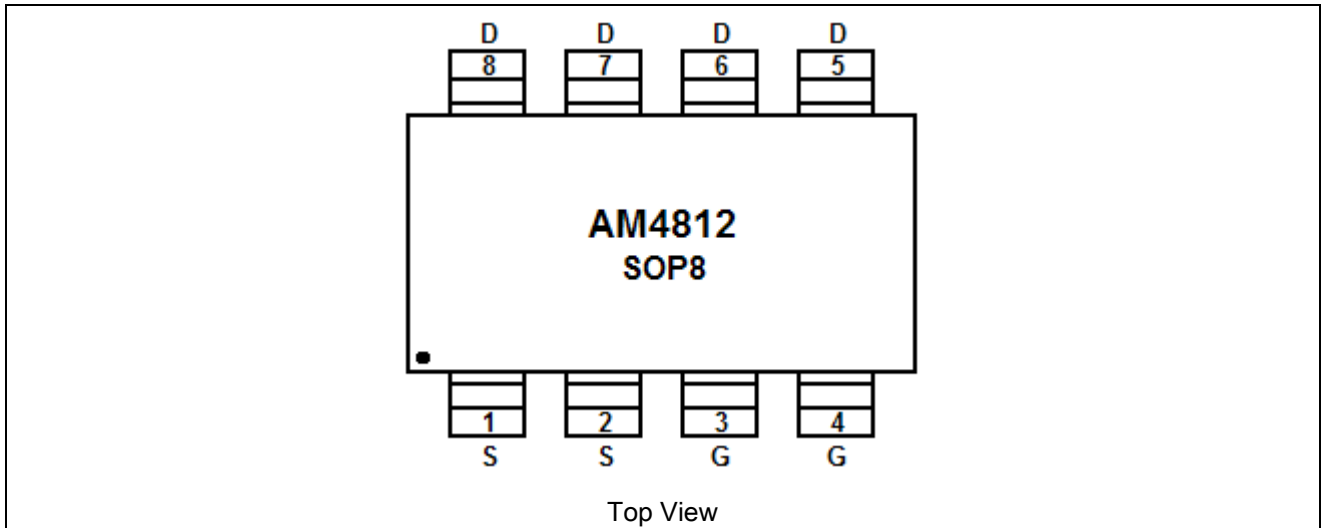
| Package Type | Part Number | |
|---|------------------------------------|------------|
| SOP8 | M8 | AM4812M8R |
| | | AM4812M8VR |
| Note | R: Tape & Reel V: Green Package | |
| AiT provides all Pb free products Suffix " V " means Green Package | | |

N CHANNEL MOSFET





PIN DESCRIPTION



| Pin # | Symbol | Function |
|-------|--------|----------|
| 1 | S | Source |
| 2 | S | Source |
| 3 | S | Source |
| 4 | G | Gate |
| 5 | D | Drain |
| 6 | D | Drain |
| 7 | D | Drain |
| 8 | D | Drain |



ABSOLUTE MAXIMUM RATINGS

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

| | | |
|--|--------------------------|---|
| V_{DSS} , Drain-Source Voltage | | 30V |
| V_{GSS} , Gate-Source Voltage | | $\pm 20\text{V}$ |
| I_D , Continuous Drain Current, $V_{GS} = 10\text{V}$ ^{NOTE1} | $T_A = 25^\circ\text{C}$ | 10A |
| I_{DM} , Pulsed Drain Current ^{NOTE2} | | 20A |
| P_D , Power Dissipation | $T_A = 25^\circ\text{C}$ | 3.2W |
| | $T_A = 70^\circ\text{C}$ | 2W |
| T_J , Operation Junction Temperature | | $-55^\circ\text{C} / 150^\circ\text{C}$ |
| T_{STG} , Storage Temperature Range | | $-55^\circ\text{C} / 150^\circ\text{C}$ |

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE1: The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz.

Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

NOTE2: The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

THERMAL INFORMATION

| Parameter | Symbol | Typ | Unit |
|--|-----------------|-----|--------------------|
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}$ | 85 | $^\circ\text{C/W}$ |
| Thermal Resistance-Junction to Case | $R_{\theta JC}$ | 48 | $^\circ\text{C/W}$ |



ELECTRICAL CHARACTERISTICS

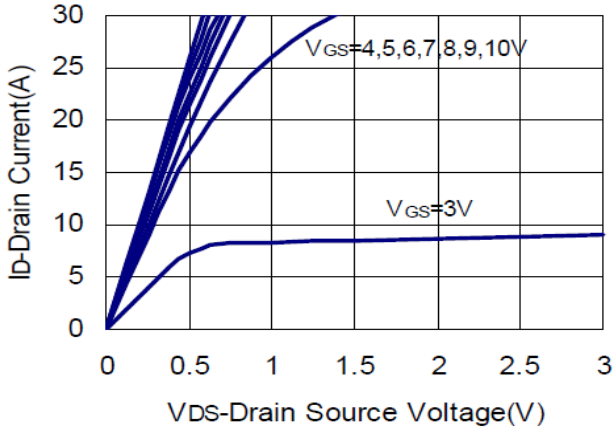
T_A = 25°C unless otherwise specified

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---------------------------------|----------------------|--|-----|------|------|------|
| Static Parameters | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 250μA | 30 | - | - | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.0 | - | 2.5 | V |
| Gate Leakage Current | I _{GSS} | V _{DS} = 0V, V _{GS} = ±20V | - | - | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 24V, V _{GS} = 0V | - | - | 1 | μA |
| | | V _{DS} = 24V, V _{GS} = 0V T _J = 55°C | - | - | 5 | |
| On-State Drain Current | I _{D(ON)} | V _{DS} ≥ 5V, V _{GS} = 10V | 25 | - | - | A |
| Drain-source On-Resistance | R _{DS(ON)} | V _{GS} = 10V, I _D = 7.8A | - | 16 | 20 | mΩ |
| | | V _{GS} = 4.5V, I _D = 5.8A | - | 22 | 28 | |
| Source-Drain Diode | | | | | | |
| Diode Forward Voltage | V _{SD} | I _S = 2A, V _{GS} = 0V | - | 0.8 | 1.2 | V |
| Dynamic Parameters | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 15V | - | 7.2 | - | nC |
| Gate-Source Charge | Q _{GS} | V _{GS} = 10V | - | 1.6 | - | |
| Gate-Drain Charge | Q _{GD} | I _D = 7.8A | - | 2 | - | |
| Input Capacitance | C _{iss} | V _{DS} = 15V V _{GS} = 0V f = 1MHz | - | 570 | - | pF |
| Output Capacitance | C _{oss} | | - | 80 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 64 | - | |
| Turn-On Time | t _{d(on)} | V _{DD} = 15V | - | 4.2 | - | nS |
| | t _r | V _{GS} = 10V | - | 10.2 | - | |
| Turn-Off Time | t _{d(off)} | I _D = 5A | - | 16 | - | |
| | t _f | R _G = 3.3Ω | - | 6.2 | - | |

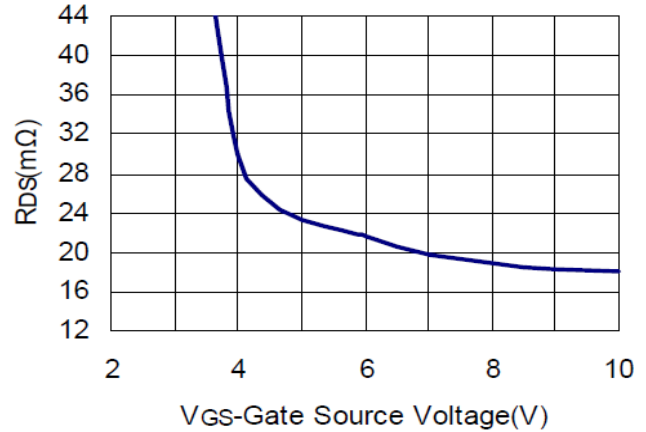


TYPICAL CHARACTERISTICS

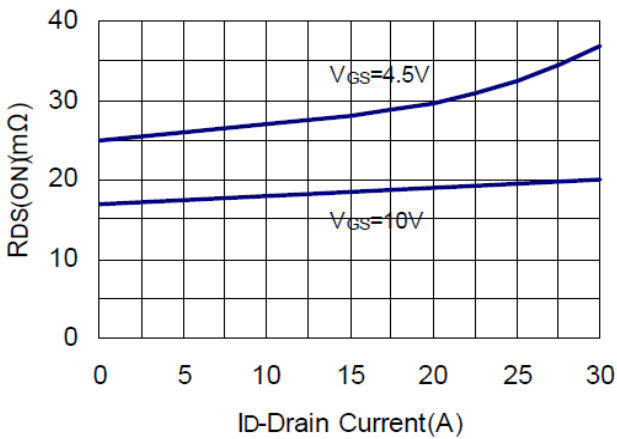
1. Output Characteristics



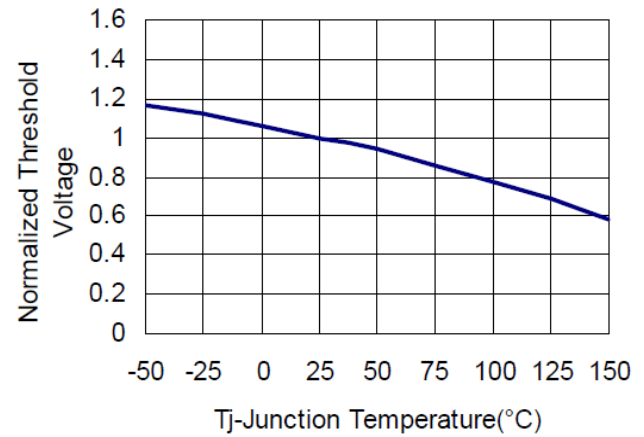
2. Drain-Source On Resistance



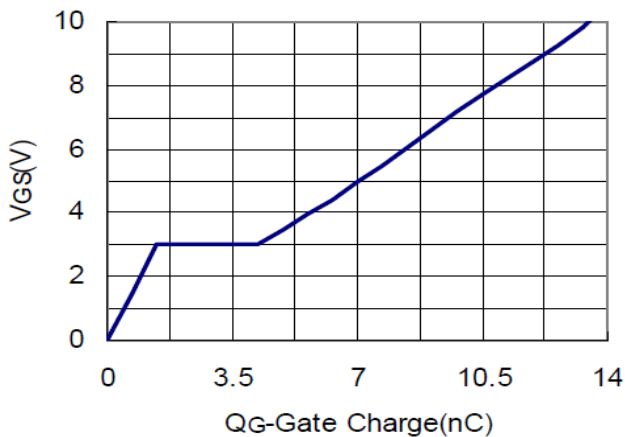
3. Drain Source On Resistance



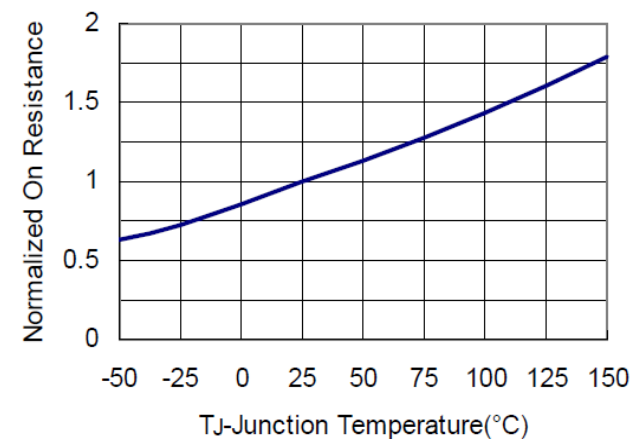
4. Gate Threshold Voltage



5. Gate Charge

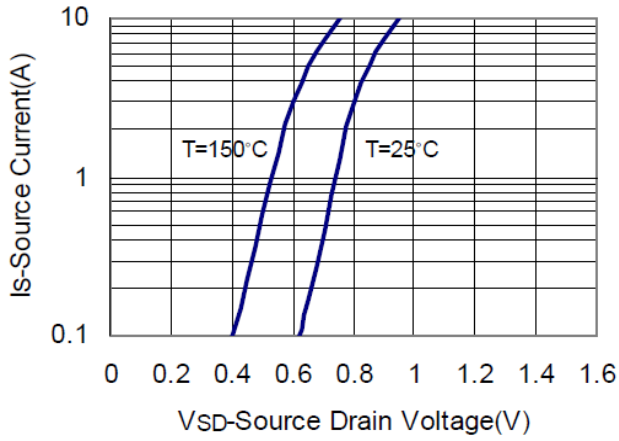


6. Drain Source On Resistance

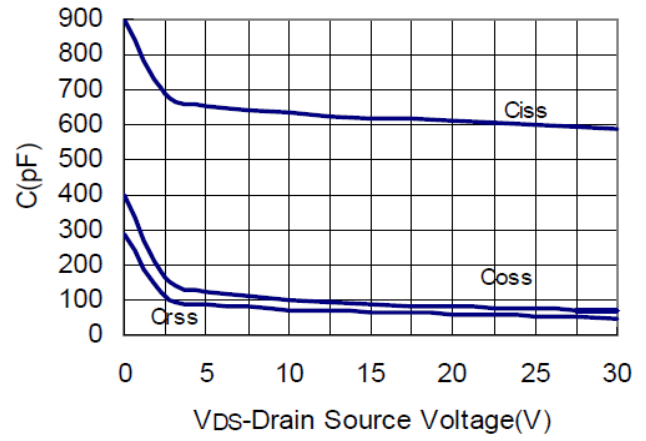




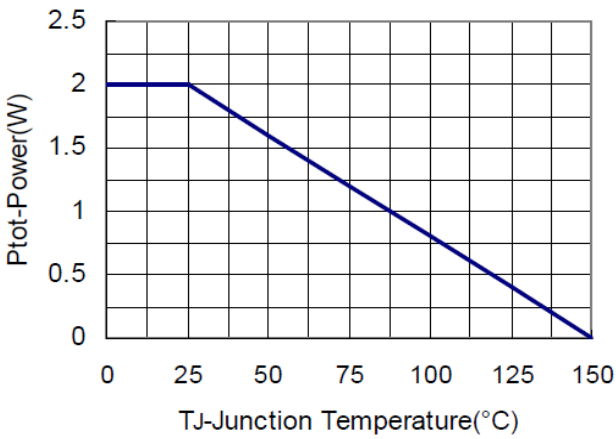
7. Source Drain Diode Forward



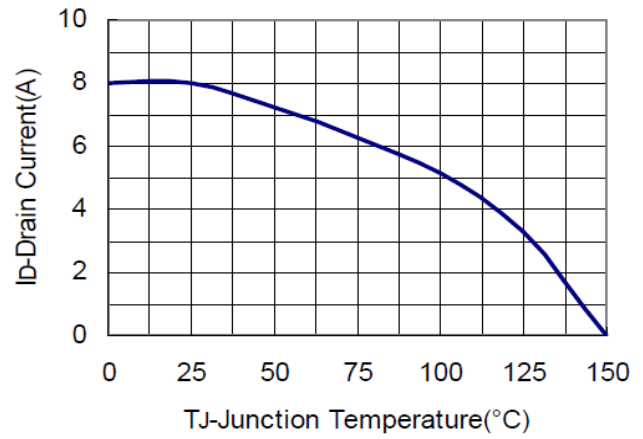
8. Capacitance



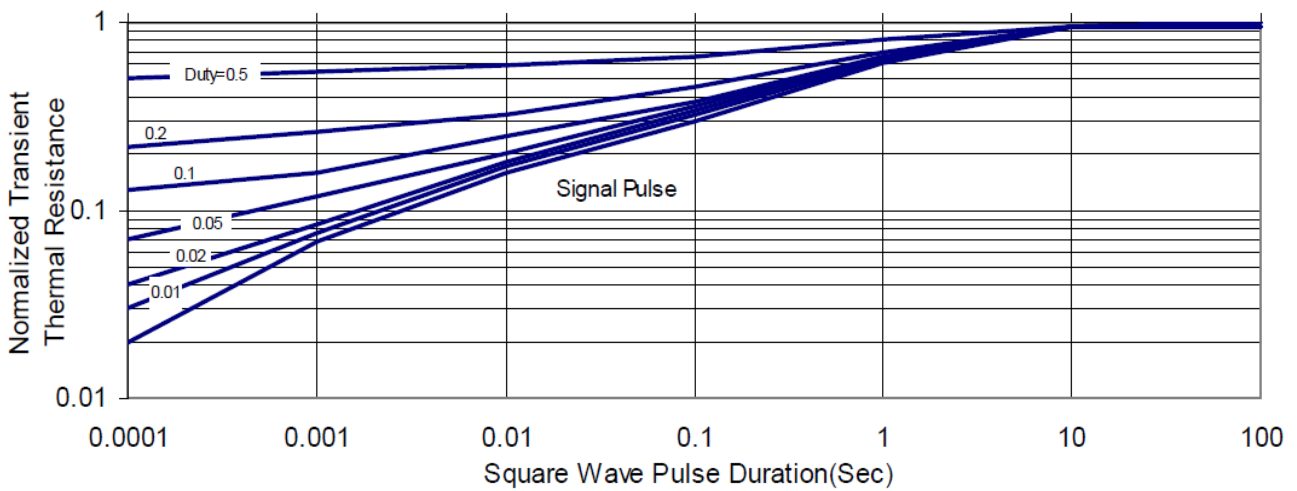
9. Power Dissipation



10. Drain Current



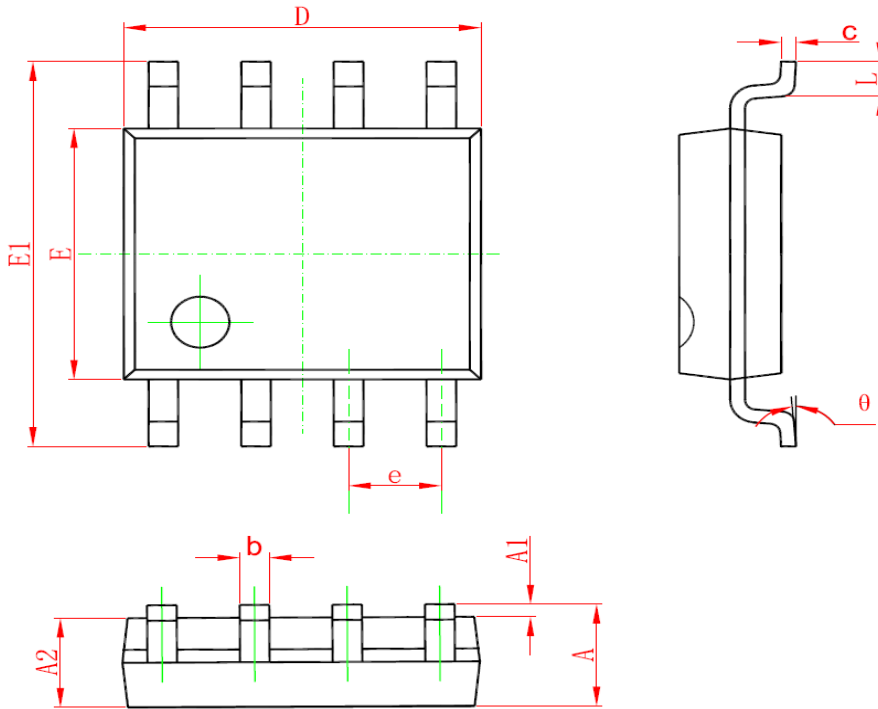
11. Thermal Transient Impedance





PACKAGE INFORMATION

Dimension in SOP8 Package (mm)



| Symbol | Min | Max |
|----------|------------|-------|
| A | 1.350 | 1.750 |
| A1 | 0.100 | 0.250 |
| A2 | 1.350 | 1.550 |
| b | 0.330 | 0.510 |
| c | 0.170 | 0.250 |
| D | 4.700 | 5.100 |
| E | 3.800 | 4.000 |
| E1 | 5.800 | 6.200 |
| e | 1.270(BSC) | |
| L | 0.400 | 1.270 |
| θ | 0° | 8° |



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