



General Description

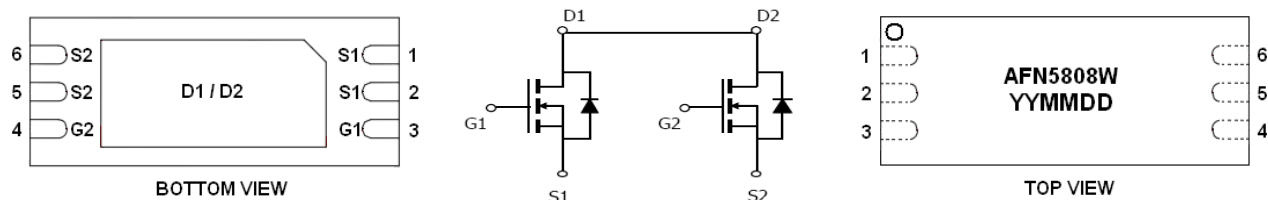
AFN5808W, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

- 20V/6.2A, $R_{DS(ON)}=32m\Omega@V_{GS}=4.5V$
- 20V/4.6A, $R_{DS(ON)}=38m\Omega@V_{GS}=2.5V$
- 20V/3.8A, $R_{DS(ON)}=50m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN2X5-6L package design

Pin Description (DFN2X5-6L)



Application

- Load Switch
- Portable Equipment
- Battery Powered System

Pin Define

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1 | S1 | Source1 |
| 2 | S1 | Source1 |
| 3 | G1 | Gate1 |
| 4 | G2 | Gate2 |
| 5 | S2 | Source2 |
| 6 | S2 | Source2 |

Ordering Information

| Part Ordering No. | Part Marking | Package | Unit | Quantity |
|-------------------|--------------------|-----------|-------------|----------|
| AFN5808WFN256RG | AFN5808W YYMMDD | DFN2X5-6L | Tape & Reel | 2500 EA |

- ※ YY year code
- ※ MM month code
- ※ DD date code
- ※ AFN5808WFN256RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

($T_A=25^\circ\text{C}$ Unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------------------|--------------------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | V |
| Continuous Drain Current($T_J=150^\circ\text{C}$) | I_D | $T_A=25^\circ\text{C}$ | 6.2 |
| | | $T_A=70^\circ\text{C}$ | 3.8 |
| Pulsed Drain Current | I_{DM} | 40 | A |
| Continuous Source Current(Diode Conduction) | I_S | 1.6 | A |
| Power Dissipation | P_D | $T_A=25^\circ\text{C}$ | 1.6 |
| | | $T_A=70^\circ\text{C}$ | 1.0 |
| Operating Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55/150 | $^\circ\text{C}$ |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}$ | 120 | $^\circ\text{C/W}$ |

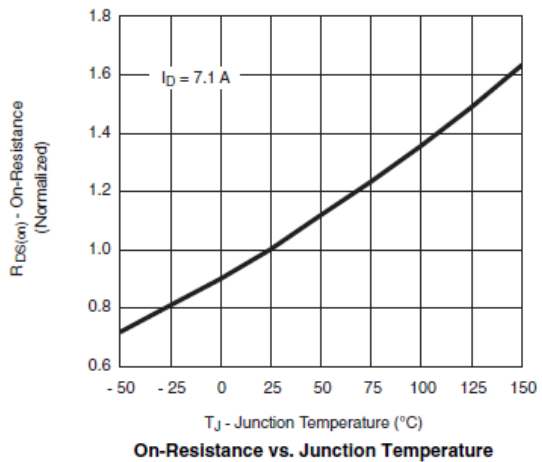
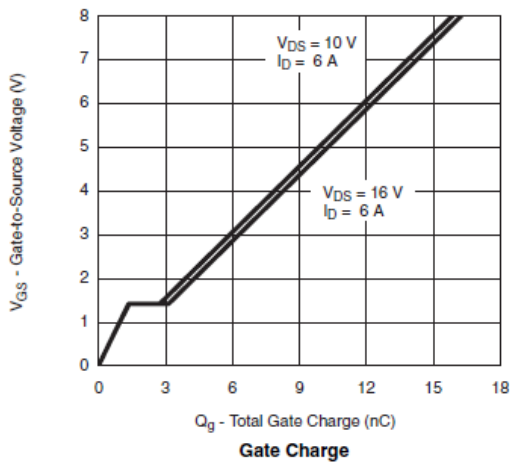
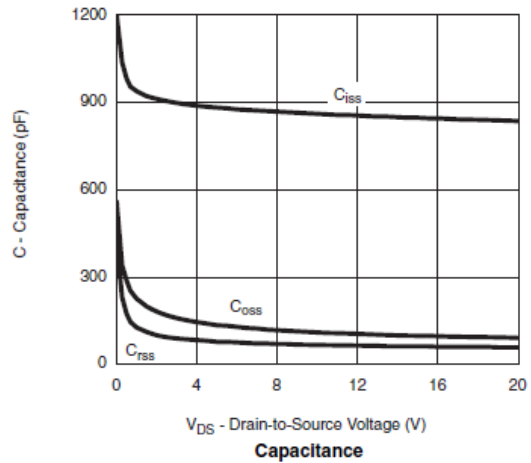
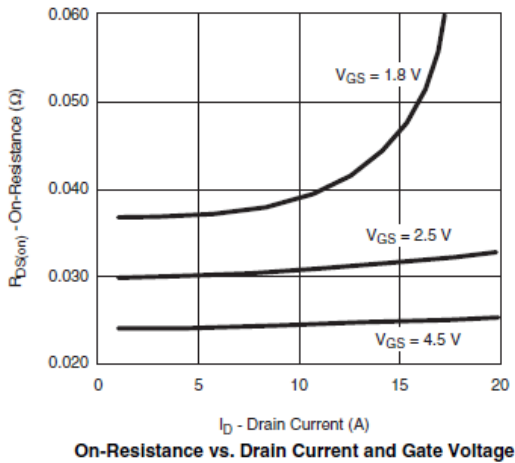
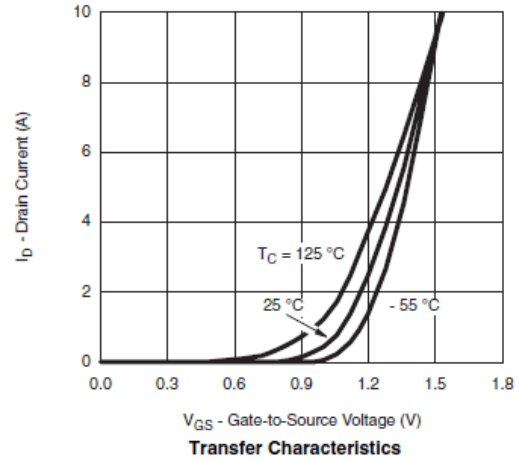
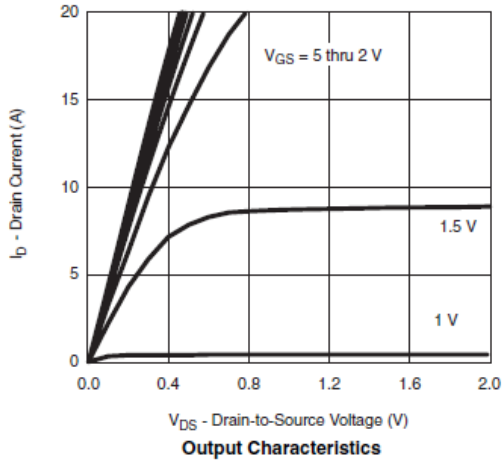
Electrical Characteristics

($T_A=25^\circ\text{C}$ Unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|--------------|--|------|------|-----------|---------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DS}$ | $V_{GS}=0V, I_D=250\mu\text{A}$ | 20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$ | 0.3 | | 0.8 | |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 12V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=16V, V_{GS}=0V$ | | | 1 | μA |
| | | $V_{DS}=16V, V_{GS}=0V$ $T_J=85^\circ\text{C}$ | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} \geq 5V, V_{GS}=4.5V$ | 6 | | | A |
| | | $V_{DS} \geq 5V, V_{GS}=2.5V$ | 4 | | | |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=6.2A$ | | 26 | 32 | m Ω |
| | | $V_{GS}=2.5V, I_D=4.6A$ | | 31 | 38 | |
| | | $V_{GS}=1.8V, I_D=3.8A$ | | 43 | 50 | |
| Forward Transconductance | g_{FS} | $V_{DS}=5V, I_D=3.6A$ | | 10 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=1.6A, V_{GS}=0V$ | | 0.85 | 1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=10V, V_{GS}=4.5V$ $I_D=6.2A$ | | 6.2 | 10 | nC |
| Gate-Source Charge | Q_{gs} | | | 1.0 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.6 | | |
| Input Capacitance | C_{iss} | $V_{DS}=10V, V_{GS}=0V$ $f=1\text{MHz}$ | | 480 | | pF |
| Output Capacitance | C_{oss} | | | 160 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 100 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}=10V, R_L=1.9\Omega$ $I_D=5.4A, V_{GEN}=4.5V$ $R_G=1\Omega$ | | 10 | 16 | ns |
| | t_r | | | 12 | 25 | |
| Turn-Off Time | $t_{d(off)}$ | | | 25 | 40 | |
| | t_f | | | 12 | 20 | |

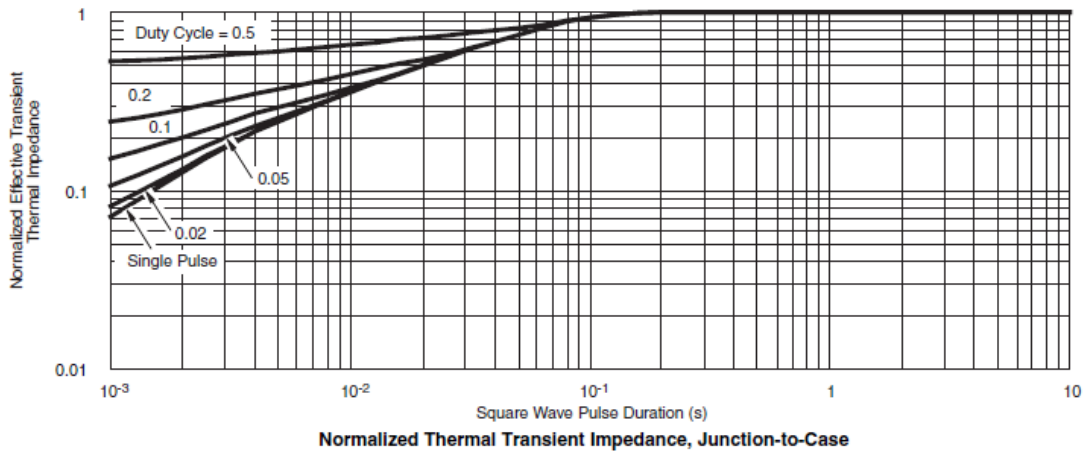
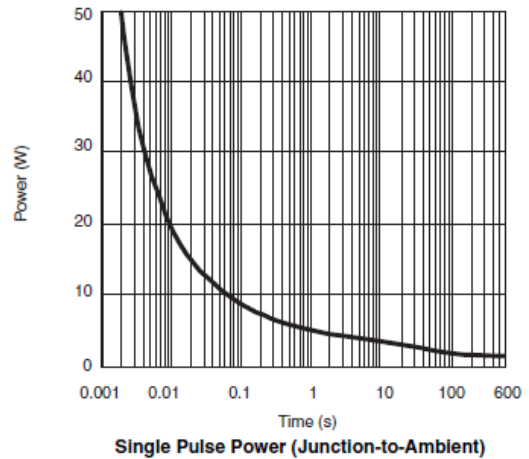
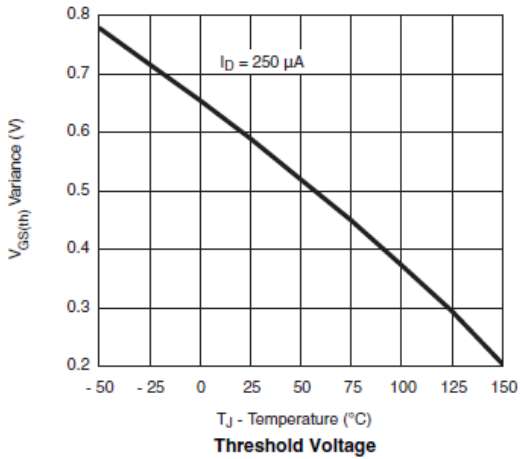
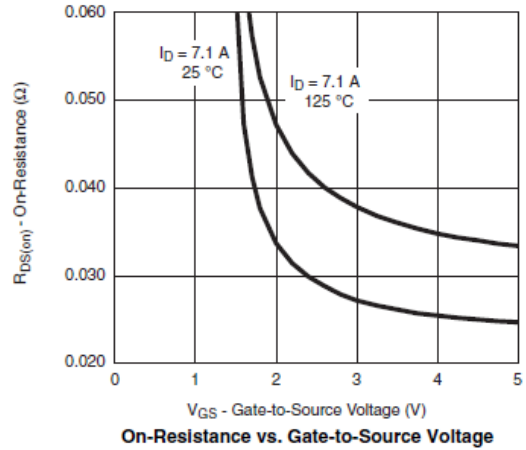
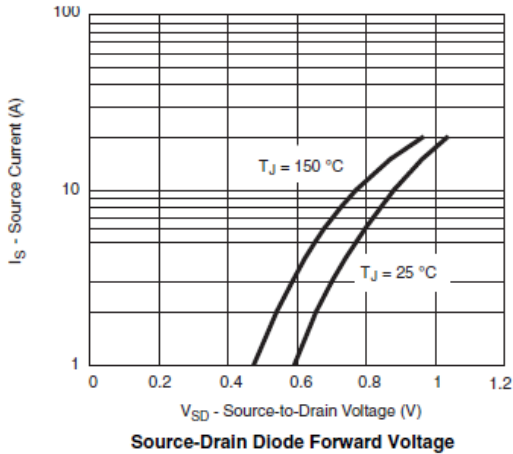


Typical Characteristics





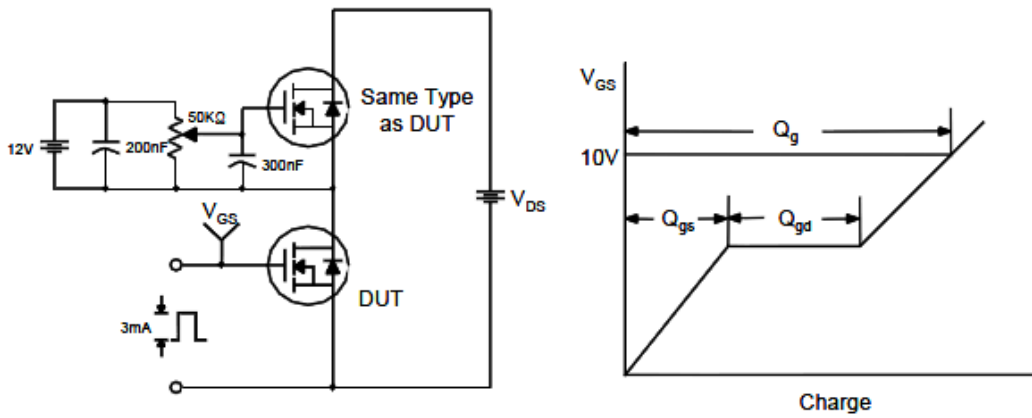
Typical Characteristics





Typical Characteristics

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

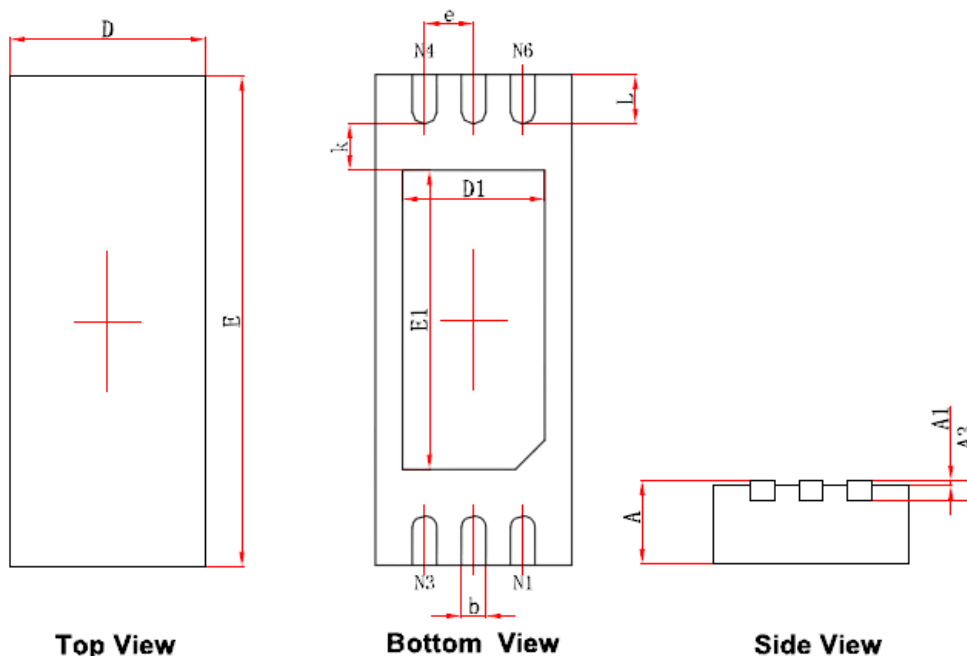


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (DFN2X5-6L)



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.800 | 0.028 | 0.031 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A3 | 0.203REF. | | 0.008REF. | |
| D | 1.924 | 2.076 | 0.076 | 0.082 |
| E | 4.924 | 5.076 | 0.194 | 0.200 |
| D1 | 1.350 | 1.550 | 0.053 | 0.061 |
| E1 | 2.950 | 3.150 | 0.116 | 0.124 |
| k | 0.200MIN. | | 0.008MIN. | |
| b | 0.200 | 0.300 | 0.008 | 0.012 |
| e | 0.500TYP. | | 0.020TYP. | |
| L | 0.424 | 0.576 | 0.017 | 0.023 |

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