ALPHA & OMEGA SEMICONDUCTOR

# AON2810

## 30V Dual N-Channel AlphaMOS

### General Description

- Latest Trench Power AlphaMOS (αMOS LV) technology
- Very Low $R_{DS(ON)}$ at 2.5V $V_{GS}$
- Low Gate Charge
- ESD protection
- RoHS and Halogen-Free Compliant

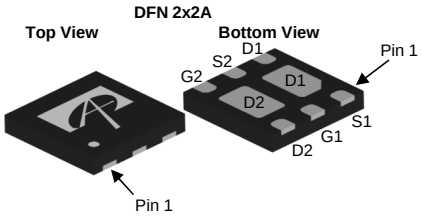
### Application

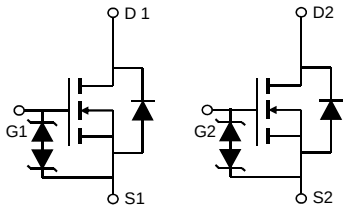
- DC/DC Converters

### Product Summary

| | |
|---|---|
| $V_{DS}$ | 30V |
| $I_D$ (at $V_{GS}$=10V) | 2A |
| $R_{DS(ON)}$ (at $V_{GS}$=10V) | < 44 mΩ |
| $R_{DS(ON)}$ (at $V_{GS}$=4.5V) | < 52 mΩ |
| $R_{DS(ON)}$ (at $V_{GS}$=2.5V) | < 74 mΩ |
| **Typical ESD protection** | **HBM Class 3A** |

Green Product




**Absolute Maximum Ratings $T_A$=25°C unless otherwise noted**

| Parameter | | Symbol | Maximum | Units |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±12 | V |
| Continuous Drain Current [G] | $T_A$=25°C | $I_D$ | 2 | A |
| | $T_A$=70°C | | 1.6 | |
| Pulsed Drain Current [C] | | $I_{DM}$ | 8 | |
| $V_{DS}$ Spike | 100ns | $V_{SPIKE}$ | 36 | V |
| Power Dissipation [B] | $T_A$=25°C | $P_D$ | 2.5 | W |
| | $T_A$=70°C | | 1.6 | |
| Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 to 150 | °C |

**Thermal Characteristics**

| Parameter | | Symbol | Typ | Max | Units |
|---|---|---|---|---|---|
| Maximum Junction-to-Ambient [A] | t ≤ 10s | $R_{\theta JA}$ | 40 | 50 | °C/W |
| Maximum Junction-to-Ambient [A D] | Steady-State | | 65 | 80 | °C/W |

**Electrical Characteristics ($T_J$=25°C unless otherwise noted)**

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **STATIC PARAMETERS** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $I_D$=250µA, $V_{GS}$=0V | 30 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=30V, $V_{GS}$=0V | | | 1 | µA |
| | | $T_J$=55°C | | | 5 | |
| $I_{GSS}$ | Gate-Body leakage current | $V_{DS}$=0V, $V_{GS}$=±10V | | | ±10 | µA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=250µA | 0.6 | 1 | 1.4 | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}$=10V, $I_D$=2A | | 36 | 44 | mΩ |
| | | $T_J$=125°C | | 50 | 61 | |
| | | $V_{GS}$=4.5V, $I_D$=1A | | 41 | 52 | |
| | | $V_{GS}$=2.5V, $I_D$=1A | | 56 | 74 | |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=5V, $I_D$=2A | | 9.5 | | S |
| $V_{SD}$ | Diode Forward Voltage | $I_S$=1A,$V_{GS}$=0V | | 0.75 | 1 | V |
| $I_S$ | Maximum Body-Diode Continuous Current[G] | | | | 2 | A |
| **DYNAMIC PARAMETERS** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$=0V, $V_{DS}$=15V, f=1MHz | | 235 | | pF |
| $C_{oss}$ | Output Capacitance | | | 75 | | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 15 | | pF |
| $R_g$ | Gate resistance | f=1MHz | 4 | 8 | 12 | Ω |
| **SWITCHING PARAMETERS** | | | | | | |
| $Q_g$(10V) | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=15V, $I_D$=2A | | 4.5 | 10 | nC |
| $Q_g$(4.5V) | Total Gate Charge | | | 2.2 | 6 | nC |
| $Q_{gs}$ | Gate Source Charge | | | 0.3 | | nC |
| $Q_{gd}$ | Gate Drain Charge | | | 0.7 | | nC |
| $t_{D(on)}$ | Turn-On DelayTime | $V_{GS}$=10V, $V_{DS}$=15V, $R_L$=7.5Ω, $R_{GEN}$=3Ω | | 3 | | ns |
| $t_r$ | Turn-On Rise Time | | | 3 | | ns |
| $t_{D(off)}$ | Turn-Off DelayTime | | | 24 | | ns |
| $t_f$ | Turn-Off Fall Time | | | 6 | | ns |
| $t_{rr}$ | Body Diode Reverse Recovery Time | $I_F$=2A, dI/dt=100A/µs | | 7.2 | | ns |
| $Q_{rr}$ | Body Diode Reverse Recovery Charge | $I_F$=2A, dI/dt=100A/µs | | 1.3 | | nC |

A. 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° C.
B. The Power dissipation $P_D$ is based on $R_{\theta JA}$ t ≤ 10s value and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150° C. Ratings are based on low frequency and duty cycles to keep initial $T_J$ =25° C.
D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.
E. The static characteristics in Figures 1 to 6 are obtained using <300µs pulses, duty cycle 0.5% max.
F. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)}$=150° C. The SOA curve provides a single pulse rating.
G. The maximum current rating is package limited.
H. These tests are performed with the device mounted on 1 in$^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A$=25° C.

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

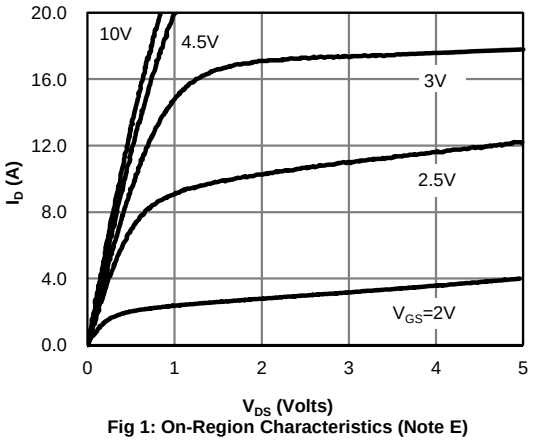



**Fig 1: On-Region Characteristics (Note E)**

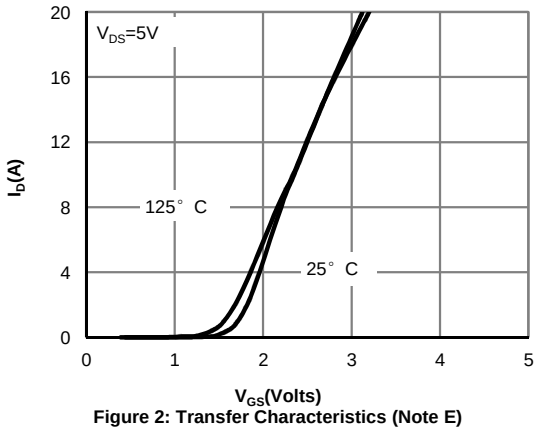



**Figure 2: Transfer Characteristics (Note E)**

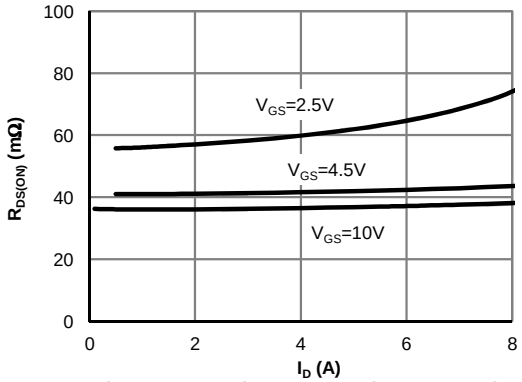



**Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)**

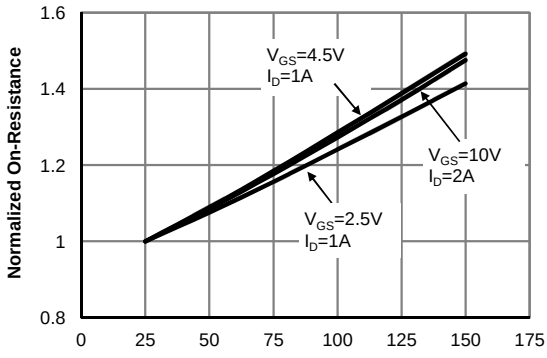



**Figure 4: On-Resistance vs. Junction Temperature (Note E)**

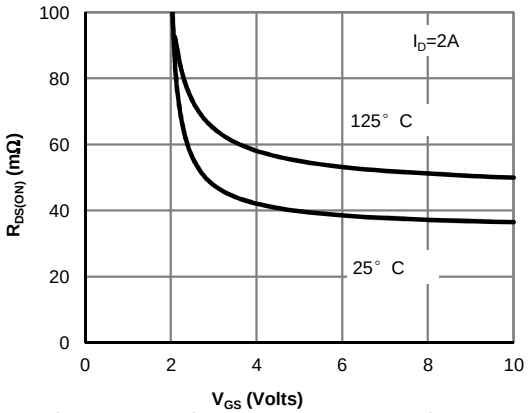



**Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)**

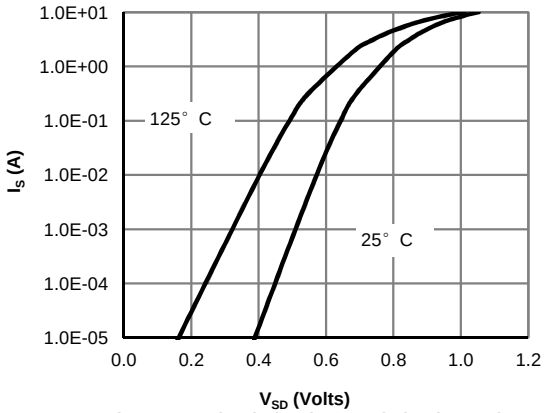



**Figure 6: Body-Diode Characteristics (Note E)**

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

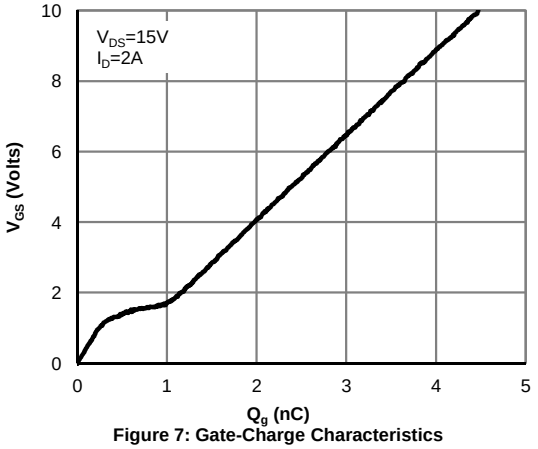



**Figure 7: Gate-Charge Characteristics**

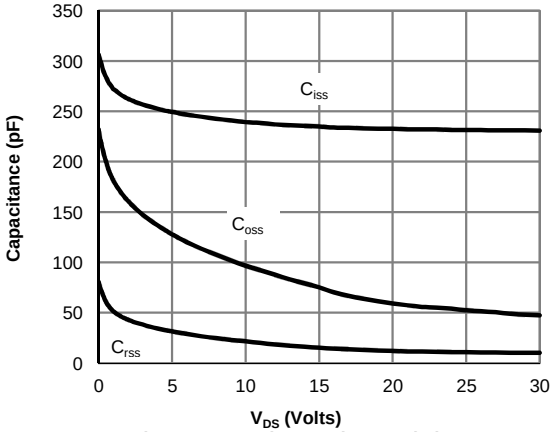



**Figure 8: Capacitance Characteristics**

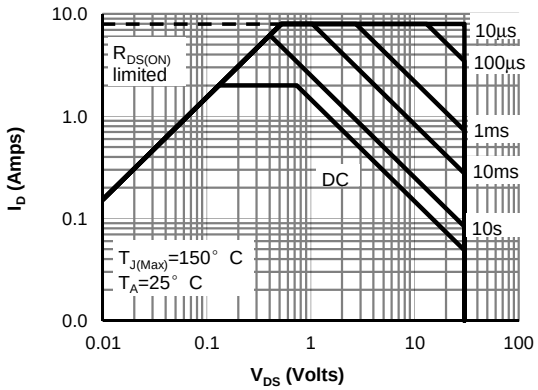



**Figure 9: Maximum Forward Biased Safe Operating Area (Note F)**

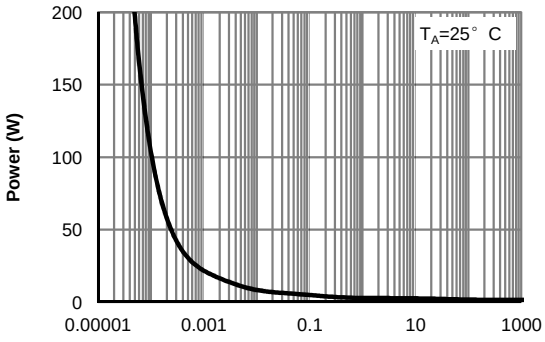



**Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)**

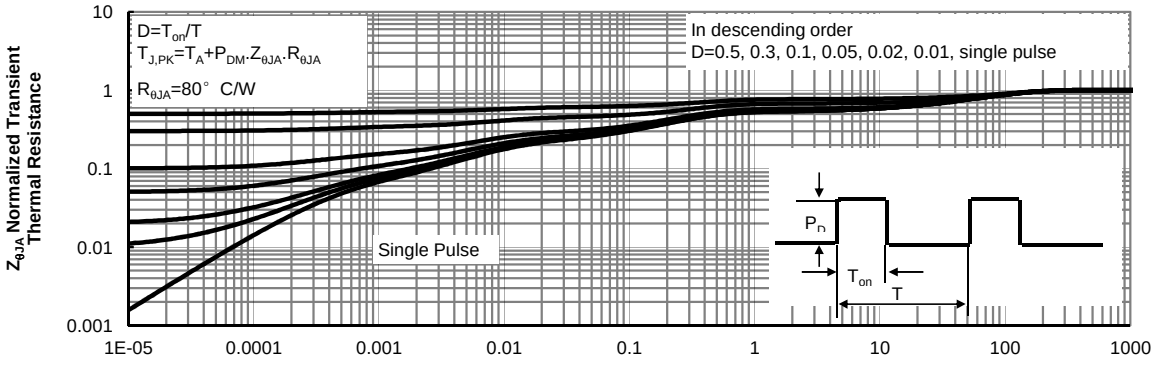
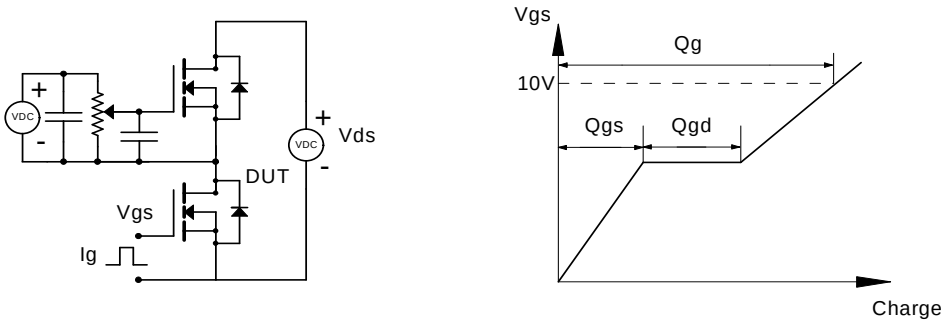
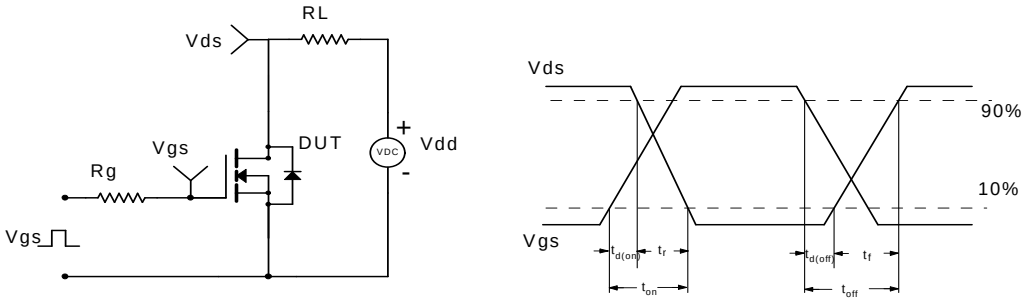



**Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)**

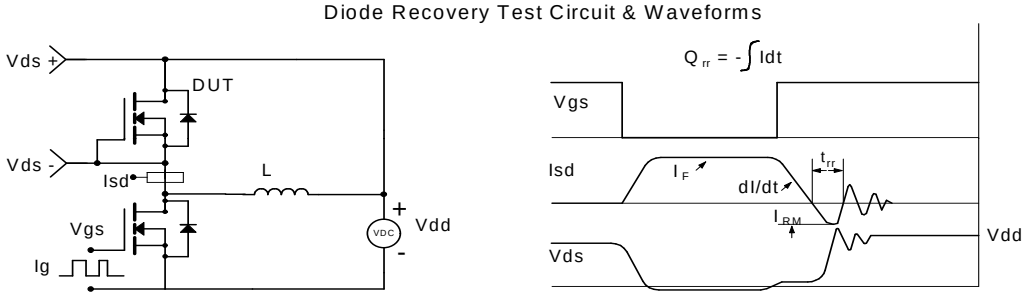
## Gate Charge Test Circuit & Waveform




## Resistive Switching Test Circuit & Waveforms




## Diode Recovery Test Circuit & Waveforms



# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** MOSFET ***category:***

***Click to view products by*** Alpha & Omega ***manufacturer:***

Other Similar products are found below :

614233C 648584F FDPF9N50NZ IRFD120 JANTX2N5237 2N7000 FCA20N60_F109 FDZ595PZ 2SK2545(Q,T) 405094E 423220D TPCC8103,L1Q(CM MIC4420CM-TR VN1206L 614234A 715780A NTNS3166NZT5G SSM6J414TU,LF(T 751625C IPP110N20N3GXK IPS70R2K0CEAKMA1 DMN3404LQ-7 NTE6400 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG ECH8691-TL-W FCAB21350L1 P85W28HP2F-7071 DMN1053UCP4-7 NTE221 NTE2384 NTE2903 NTE2941 NTE2945 NTE2946 NTE2960 NTE2969 NTE2976 NTE455 NTE6400A NTE2910 NTE2916 NTE2956 NTE2911 TK10A80W,S4X(S SSM6P69NU,LF DMP22D4UFO-7B DMN1006UCA6-7 DMN16M9UCA6-7