



THE DATASHEET OF AOC2411



General Description

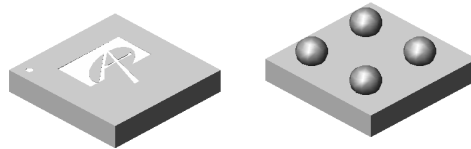
The AOC2411 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V while retaining a 12V $V_{GS(MAX)}$ rating.

Product Summary

| | |
|---|--------|
| V _{ds} | -30V |
| I _D (at V _{GS} =-4.5V) | -3.4A |
| R _{DS(ON)} (at V _{GS} =-4.5V) | < 45mΩ |
| R _{DS(ON)} (at V _{GS} =-2.5V) | < 60mΩ |

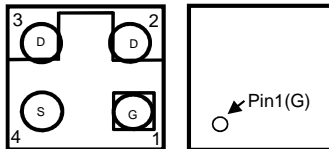


WLCSP 1.6x1.6_4

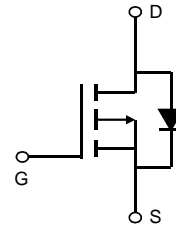


Bottom View

Top View



Equivalent Circuit



Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

| Parameter | Symbol | Maximum | Units |
|---|-----------------------------------|------------|-------|
| Drain-Source Voltage | V _{DS} | -30 | V |
| Gate-Source Voltage | V _{GS} | ±12 | V |
| Source Current (DC) ^{Note1} | I _D | -3.4 | A |
| Source Current (Pulse) ^{Note2} | | | |
| Power Dissipation ^{Note1} | P _D | 0.8 | W |
| Junction and Storage Temperature Range | T _J , T _{STG} | -55 to 150 | °C |

Thermal Characteristics

| Parameter | Symbol | Typ | Max | Units |
|--|------------------|--------------|-----|-------|
| Maximum Junction-to-Ambient ^{Note1} | R _{θJA} | 75 | 90 | °C/W |
| Maximum Junction-to-Ambient ^{Note1} | | Steady-State | 130 | 155 |
| Maximum Junction-to-Foot(Drain) | R _{θJF} | 16 | 20 | °C/W |

Note 1. Mounted on minimum pad PCB

Note 2. PW <300 μs pulses, duty cycle 0.5% max

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

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|--|---------------------------------------|---|------|----------|----------|-------|
| STATIC PARAMETERS | | | | | | |
| BV _{DSS} | Source-Source Breakdown Voltage | I _D =-250μA, V _{GS} =0V | -30 | | | V |
| I _{DSS} | Zero Gate Voltage Source Current | V _{DS} =-30V, V _{GS} =0V T _J =55°C | | | -1 -5 | μA |
| I _{GSS} | Gate leakage current | V _{DS} =0V, V _{GS} =±12V | | | ±100 | nA |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =-250μA | -0.6 | -1 | -1.4 | V |
| R _{DS(ON)} | Static Source to Source On-Resistance | V _{GS} =-4.5V, I _D =-1A T _J =125°C | | 37 52 | 45 63 | mΩ |
| g _{FS} | Forward Transconductance | V _{DS} =-5V, I _D =-1A | | 7.5 | | S |
| V _{FSD} | Diode Forward Voltage | I _D =-1A, V _{GS} =0V, | | -0.7 | -1 | V |
| DYNAMIC PARAMETERS ^{Note1} | | | | | | |
| C _{iss} | Input Capacitance | V _{GS} =0V, V _{DS} =-15V, f=1MHz, | | 1253 | 1630 | pF |
| C _{oss} | Output Capacitance | | | 167 | 220 | pF |
| C _{rss} | Reverse Transfer Capacitance | | | 105 | 150 | pF |
| R _g | Gate resistance | V _{GS} =0V, V _{DS} =0V, f=1MHz | | 16.7 | 34 | Ω |
| SWITCHING PARAMETERS ^{Note1} | | | | | | |
| Q _g | Total Gate Charge | V _{GS} =-4.5V, V _{DS} =-10V, I _D =-1A | | 12.5 | 20 | nC |
| Q _{gs} | Gate Source Charge | | | 2 | | nC |
| Q _{gd} | Gate Drain Charge | | | 3.2 | | nC |
| t _{D(on)} | Turn-On DelayTime | V _{GS} =-4.5V, V _{DS} =-10V, R _L =10Ω, I _D =1A, R _{GEN} =6Ω | | 14 | 25 | ns |
| t _r | Turn-On Rise Time | | | 12 | 20 | |
| t _{D(off)} | Turn-Off DelayTime | | | 150 | 225 | |
| t _f | Turn-Off Fall Time | | | 72 | 110 | |
| t _{rr} | Body Diode Reverse Recovery Time | I _F =-1A, di/dt=100A/μs | | 14.5 | 30 | ns |

Note 1: Guaranteed by design

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

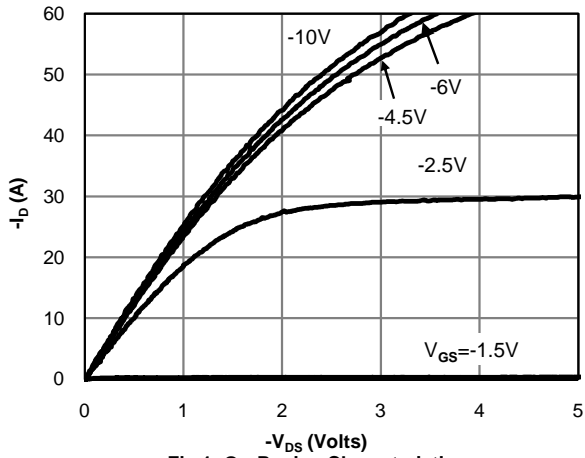


Fig 1: On-Region Characteristics

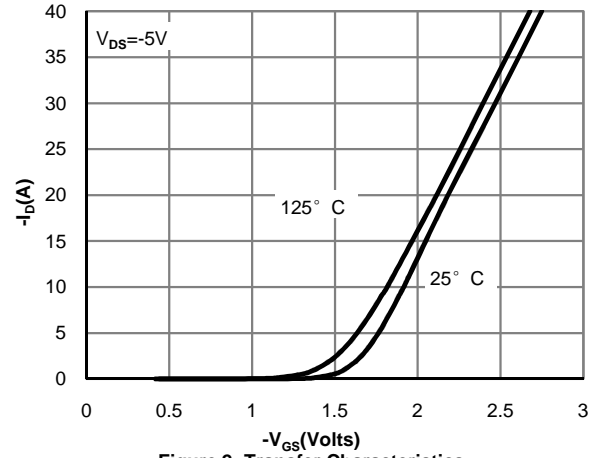


Figure 2: Transfer Characteristics

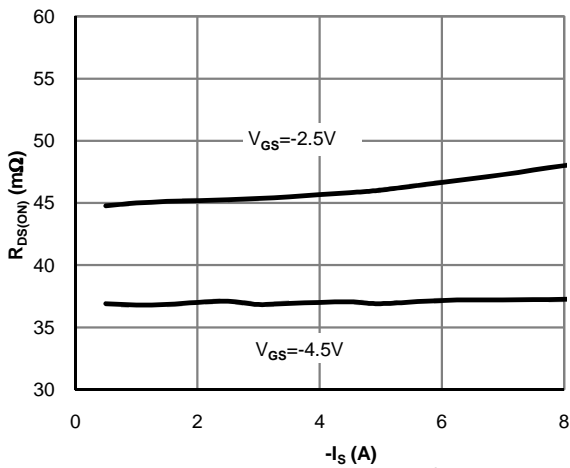


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

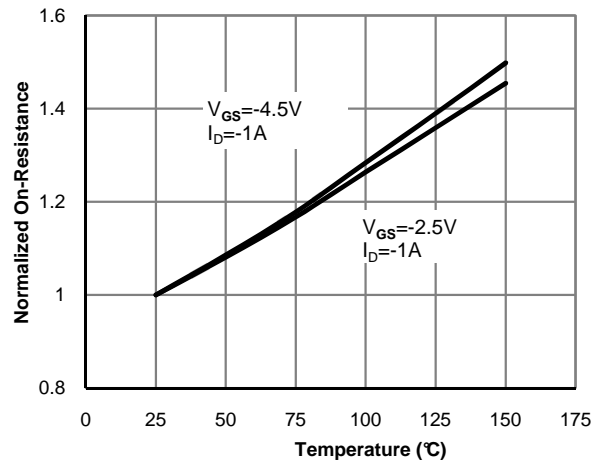


Figure 4: On-Resistance vs. Junction Temperature

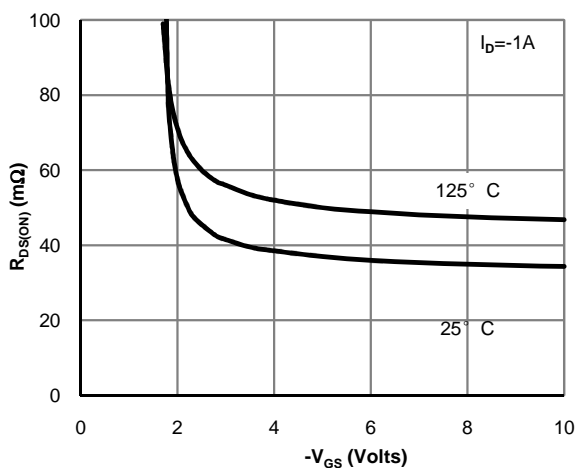


Figure 5: On-Resistance vs. Gate-Source Voltage

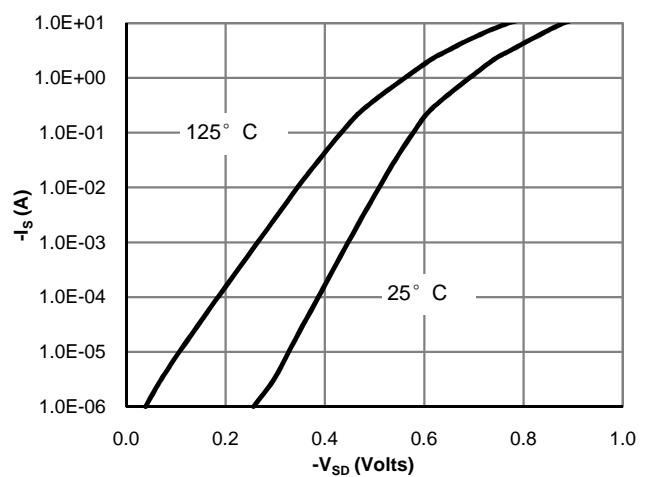


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

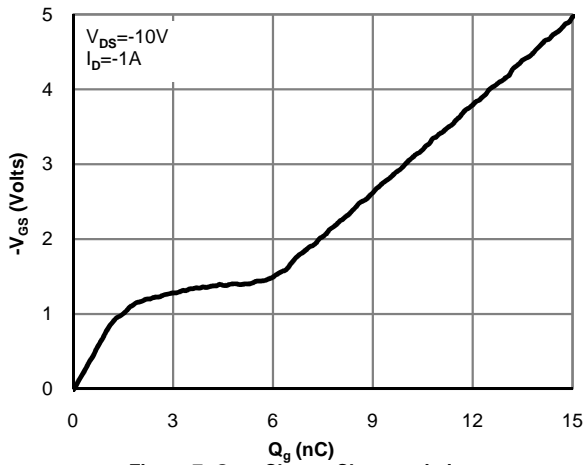


Figure 7: Gate-Charge Characteristics

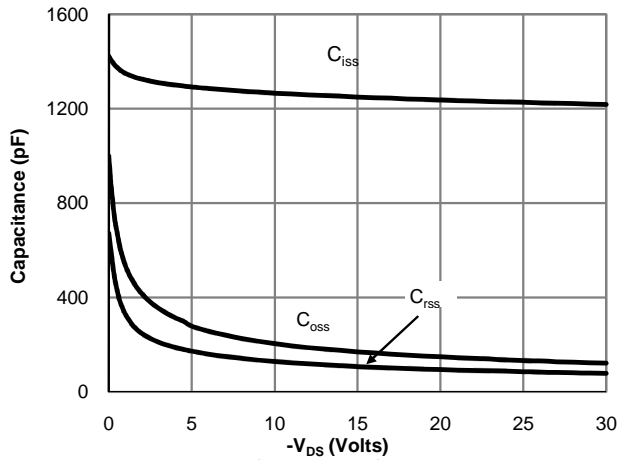


Figure 8: Capacitance Characteristics

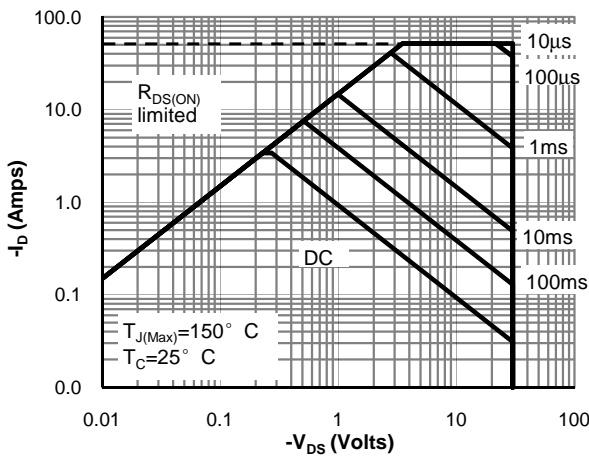


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

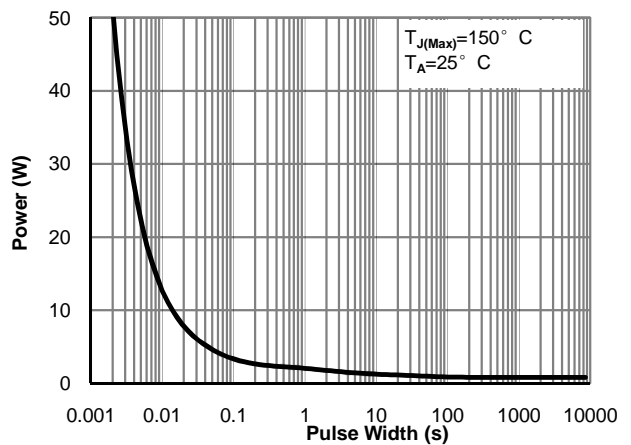


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

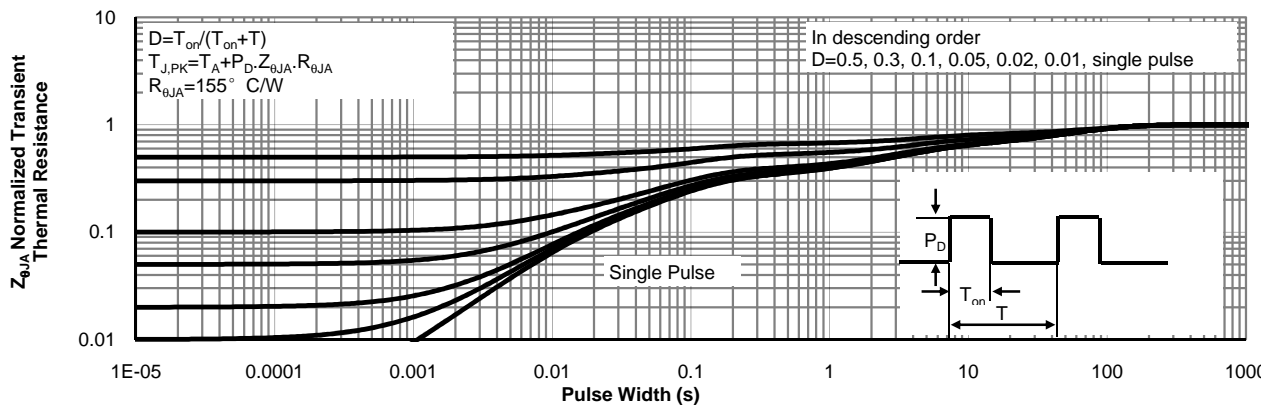


Figure 11: Normalized Maximum Transient Thermal Impedance

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