

General Description

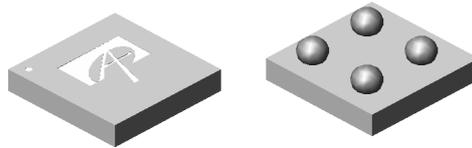
The AOC2411 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V while retaining a 12V $V_{GS(MAX)}$ rating.

Product Summary

V_{DS}	-30V
I_D (at $V_{GS}=-4.5V$)	-3.4A
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	< 45m Ω
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$)	< 60m Ω

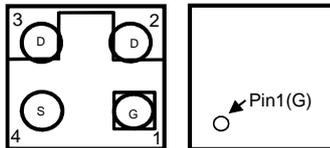


WLCSP 1.6x1.6_4

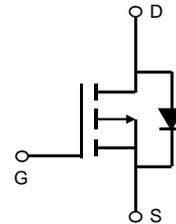


Bottom View

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
$T_A=25^\circ\text{C}$			
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^{Note1}	$R_{\theta JA}$	75	90	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^{Note1}		Steady-State	130	155
Maximum Junction-to-Foot(Drain)	$R_{\theta JF}$	16	20	$^\circ\text{C/W}$

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

THIS PRODUCT HAS BEEN DESIGNED AND QUALIFIED FOR THE CONSUMER MARKET. APPLICATIONS OR USES AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED. AOS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS. AOS RESERVES THE RIGHT TO IMPROVE PRODUCT DESIGN, FUNCTIONS AND RELIABILITY WITHOUT NOTICE

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

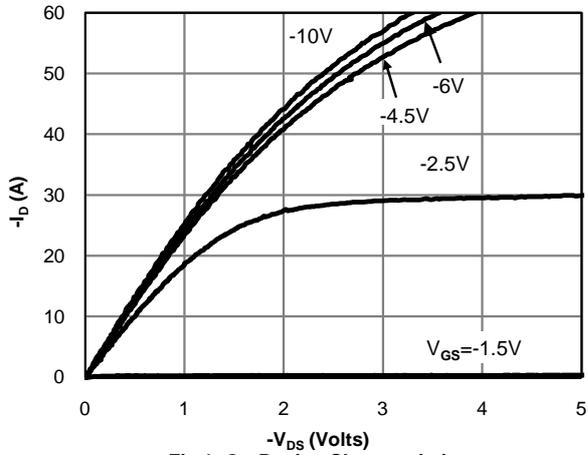


Fig 1: On-Region Characteristics

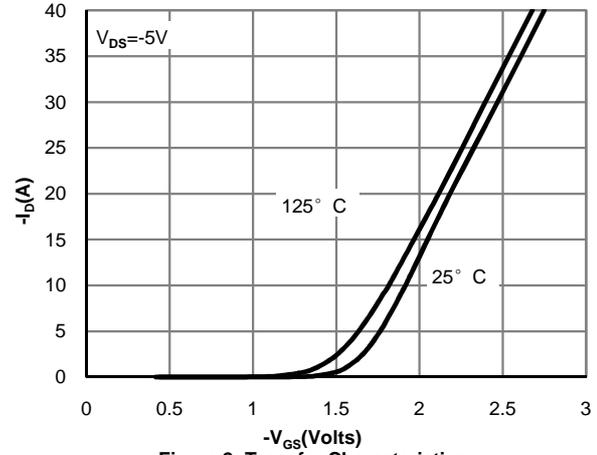


Figure 2: Transfer Characteristics

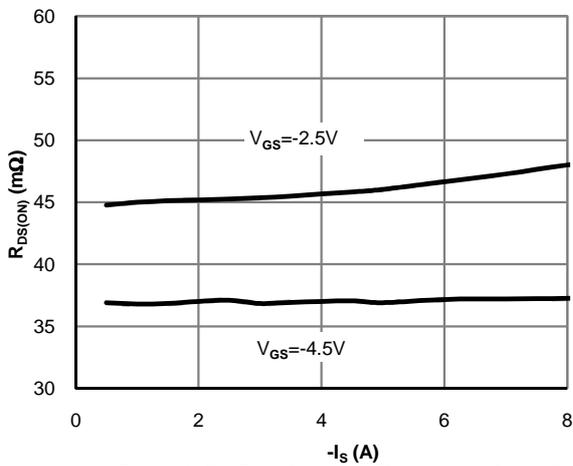


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

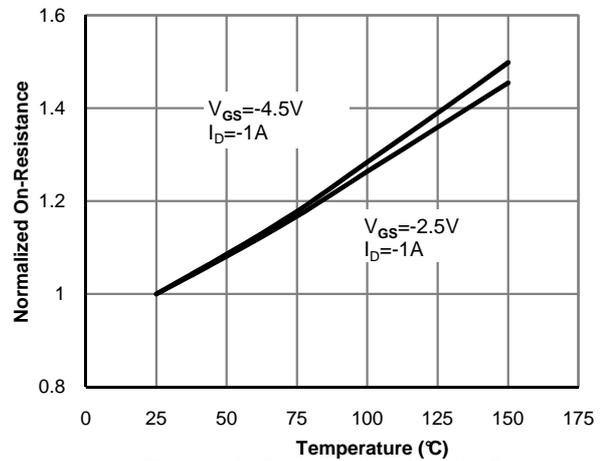


Figure 4: On-Resistance vs. Junction Temperature

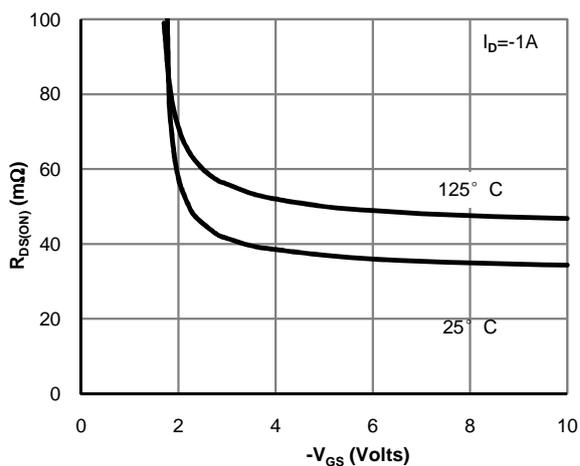


Figure 5: On-Resistance vs. Gate-Source Voltage

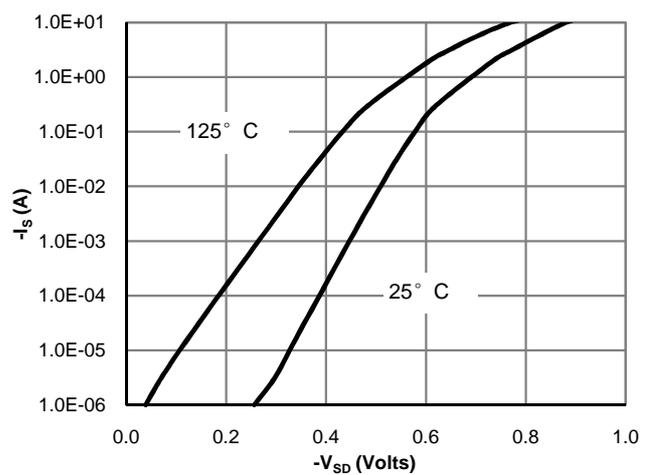


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

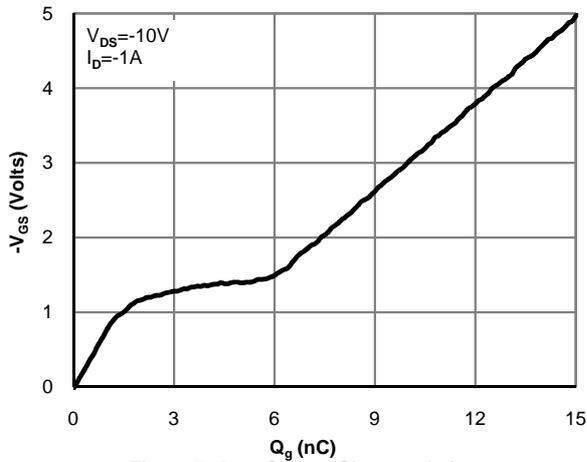


Figure 7: Gate-Charge Characteristics

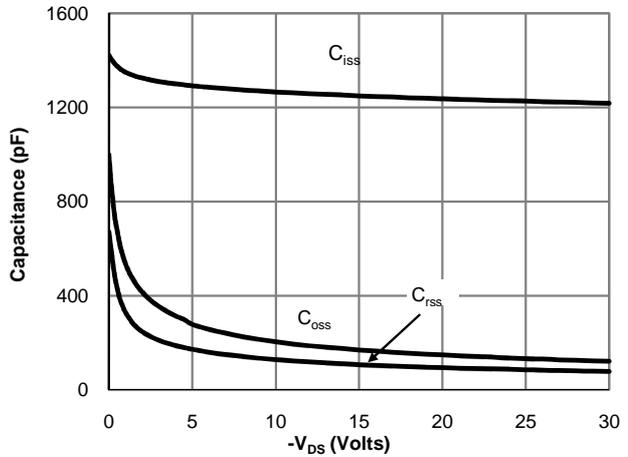


Figure 8: Capacitance Characteristics

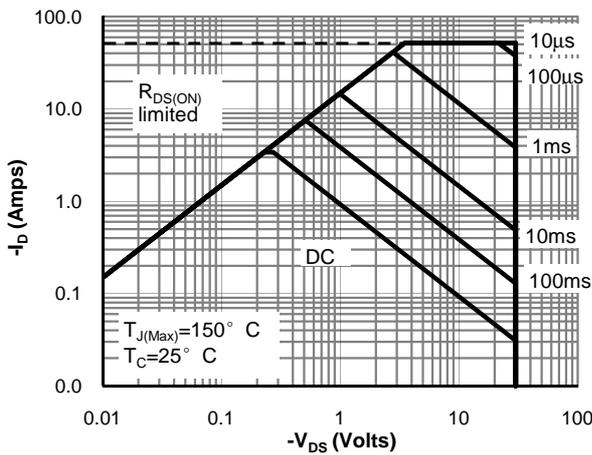


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

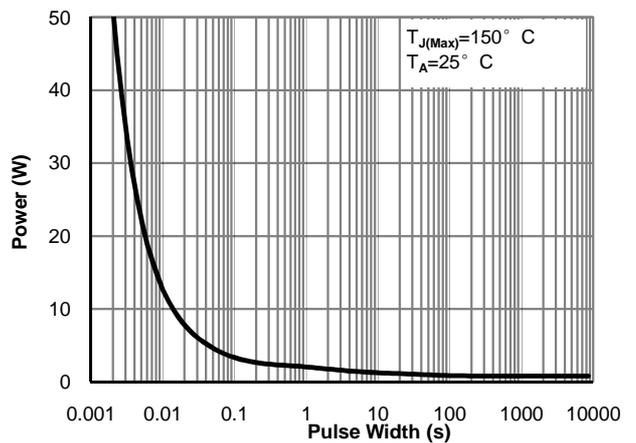


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

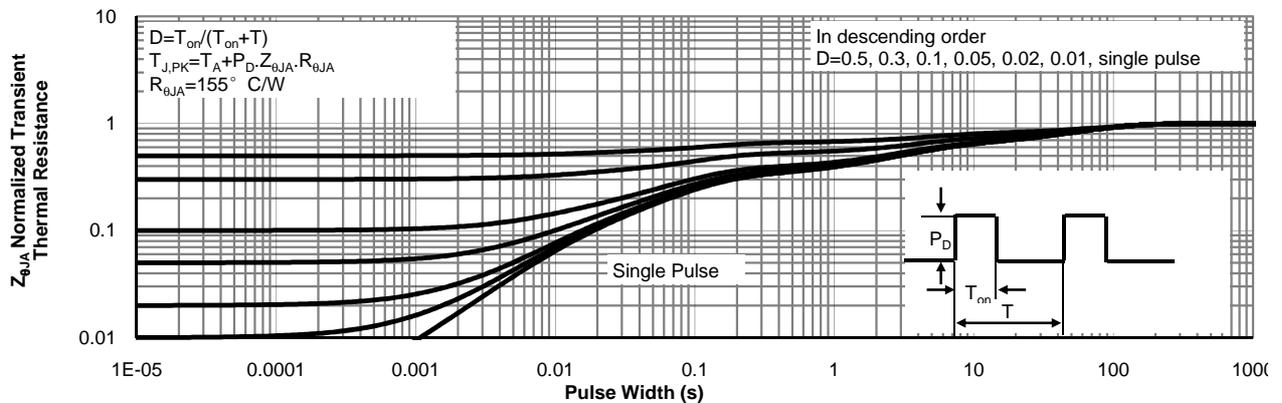


Figure 11: Normalized Maximum Transient Thermal Impedance