

General Description

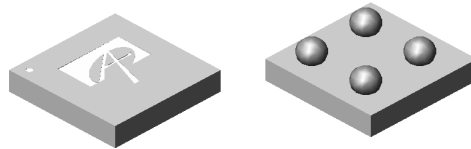
The AOC2411 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V while retaining a 12V $V_{GS(MAX)}$ rating.

Product Summary

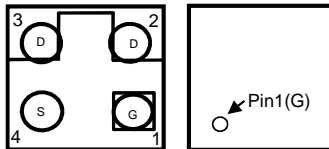
V_{DS}	-30V
I_D (at $V_{GS}=-4.5V$)	-3.4A
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	< 45m Ω
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$)	< 60m Ω



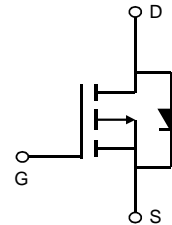
WLCSP 1.6x1.6_4



Bottom View Top View



Equivalent Circuit



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

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^{Note1}	$R_{\theta JA}$	75	90	$^\circ C/W$
$t \leq 5s$		130	155	$^\circ C/W$
Maximum Junction-to-Ambient ^{Note1}	$R_{\theta JF}$	16	20	$^\circ C/W$
Steady-State		16	20	$^\circ C/W$

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

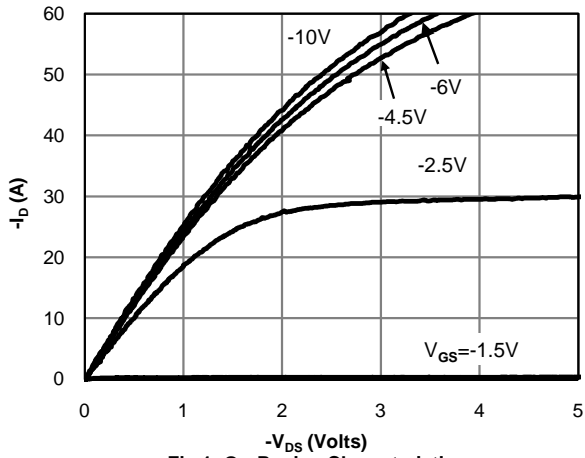


Fig 1: On-Region Characteristics

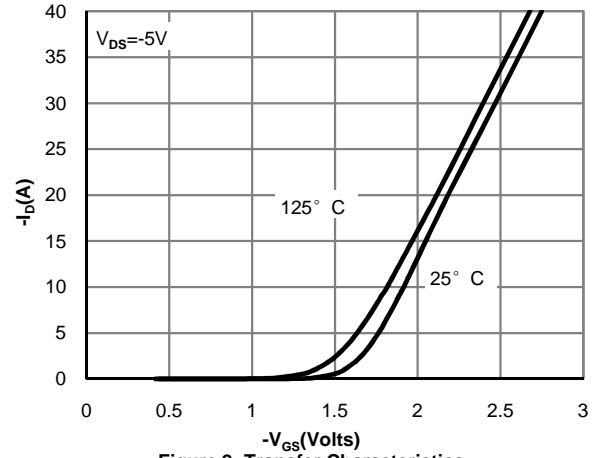


Figure 2: Transfer Characteristics

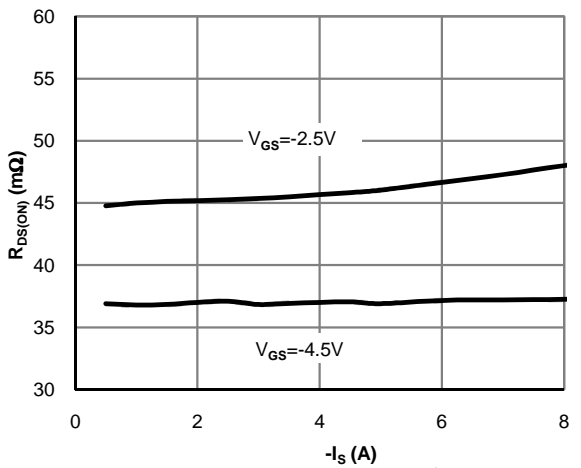


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

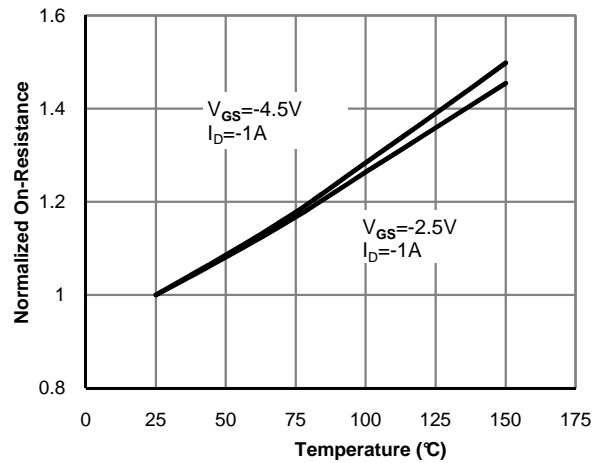


Figure 4: On-Resistance vs. Junction Temperature

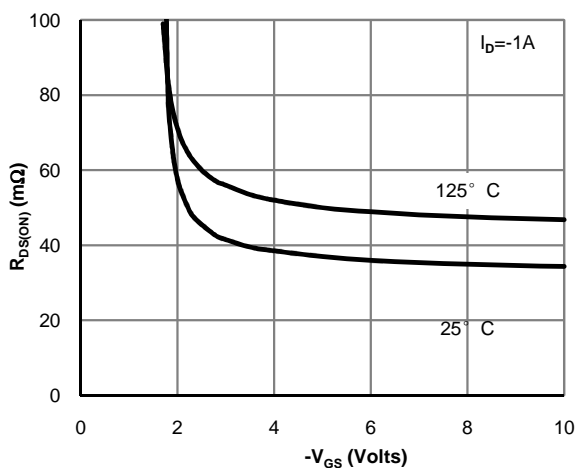


Figure 5: On-Resistance vs. Gate-Source Voltage

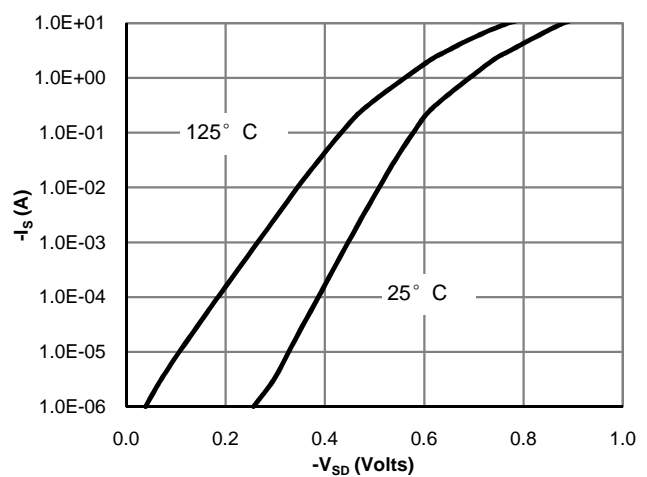


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

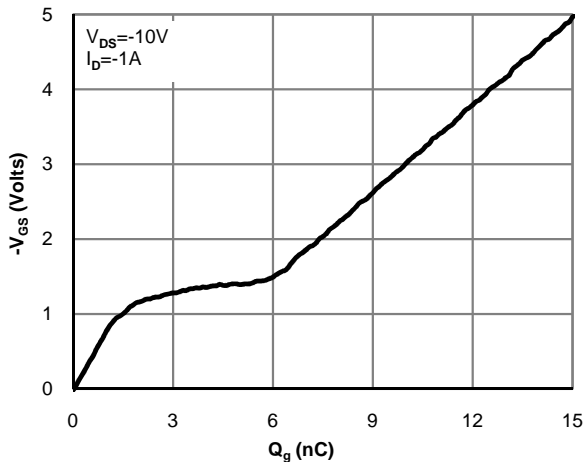


Figure 7: Gate-Charge Characteristics

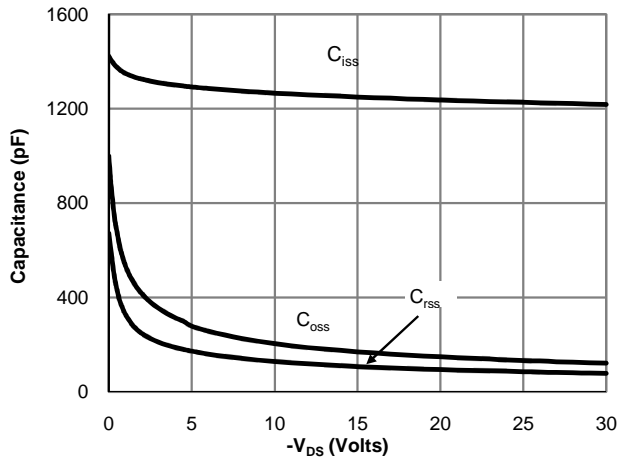


Figure 8: Capacitance Characteristics

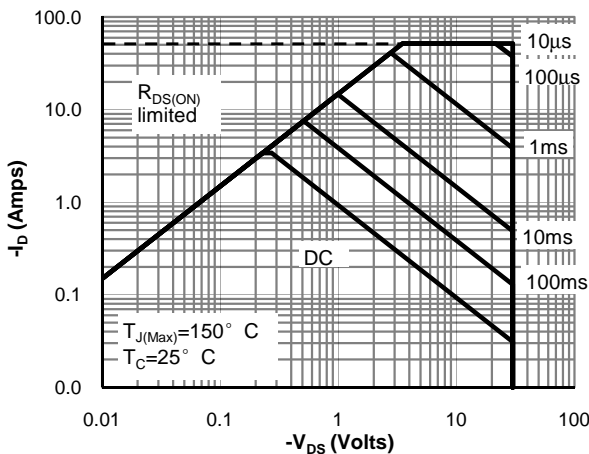


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

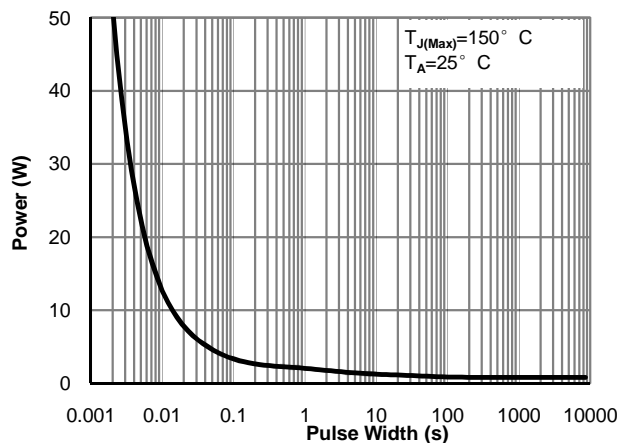


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

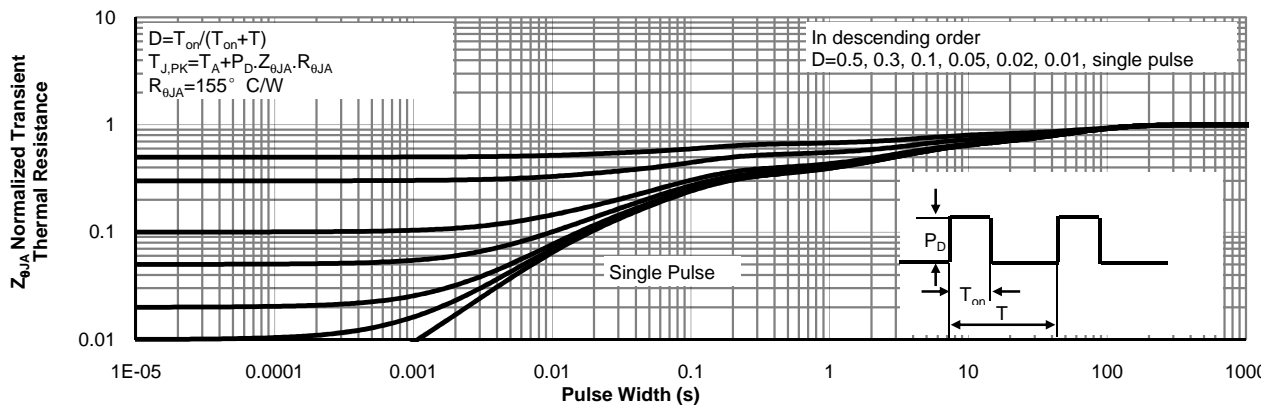


Figure 11: Normalized Maximum Transient Thermal Impedance