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AOC2411

30V P-Channel MOSFET

General Description

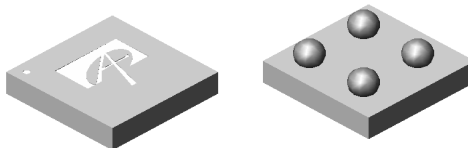
The AOC2411 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V while retaining a 12V $V_{GS(MAX)}$ rating.

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

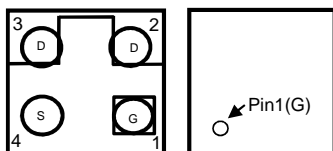


WLCSP 1.6x1.6_4

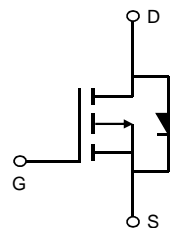


Bottom View

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
$T_A=25^\circ\text{C}$			
Source Current (Pulse) ^{Note2}	I _{SM}	-52	
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	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^{Note1}	R _{θJA}	75	90	°C/W
t ≤ 5s				
Maximum Junction-to-Ambient ^{Note1}	R _{θJA}	130	155	°C/W
Steady-State				
Maximum Junction-to-Foot(Drain)	R _{θJF}	16	20	°C/W
Steady-State				

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
		V _{GS} =-2.5V, I _D =-1A		45	60	
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

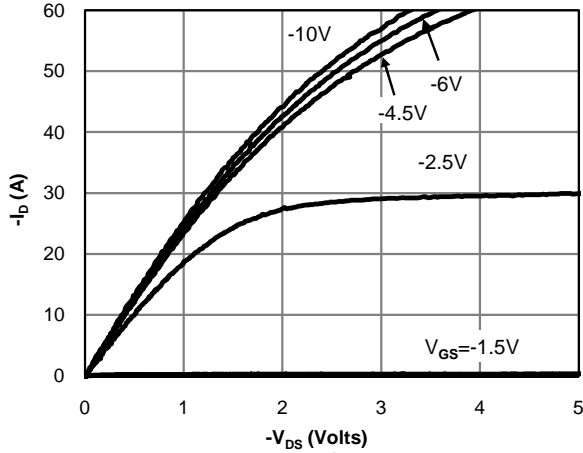


Fig 1: On-Region Characteristics

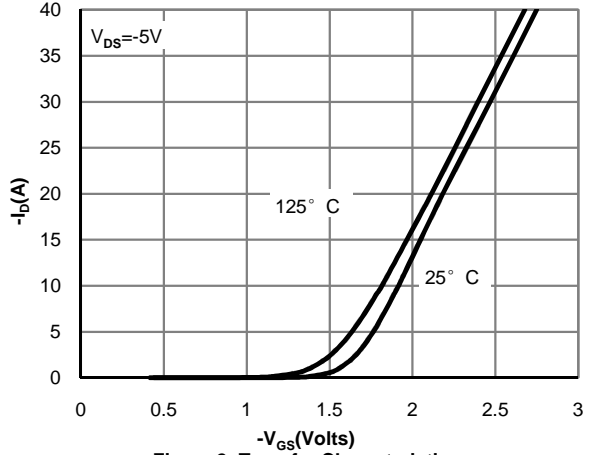


Figure 2: Transfer Characteristics

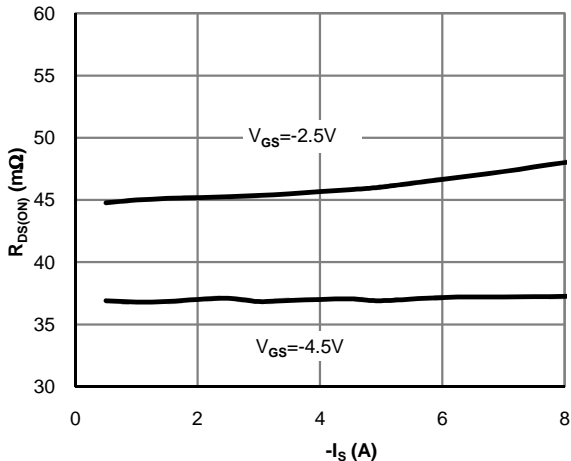


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

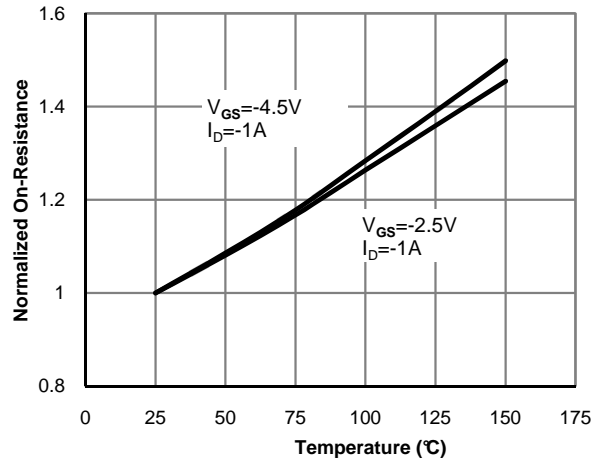


Figure 4: On-Resistance vs. Junction Temperature

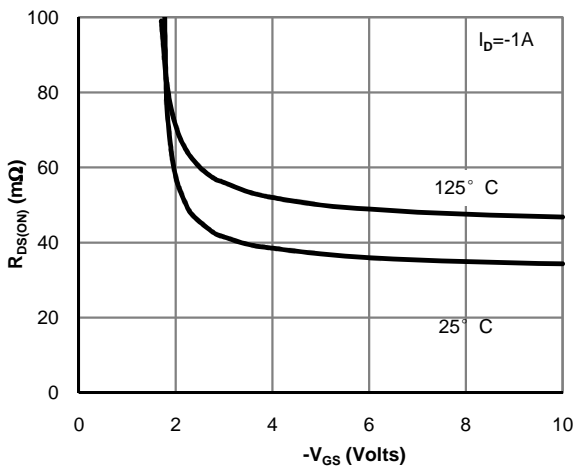


Figure 5: On-Resistance vs. Gate-Source Voltage

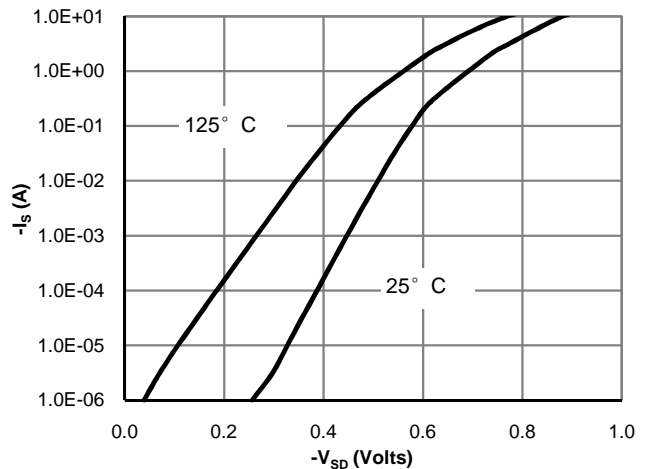


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

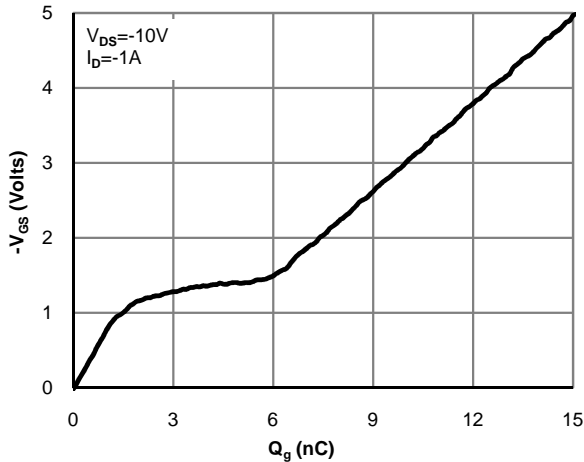


Figure 7: Gate-Charge Characteristics

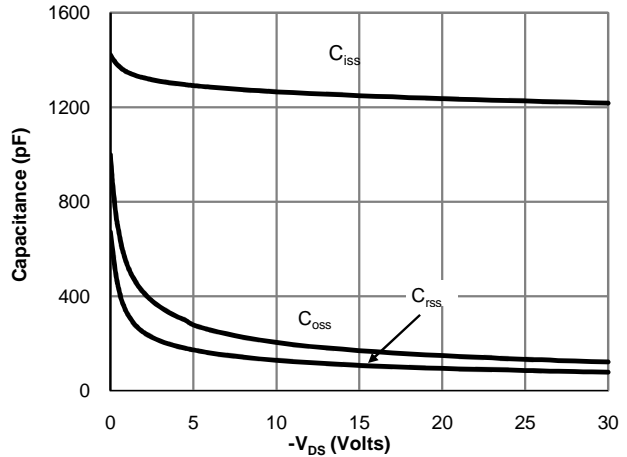


Figure 8: Capacitance Characteristics

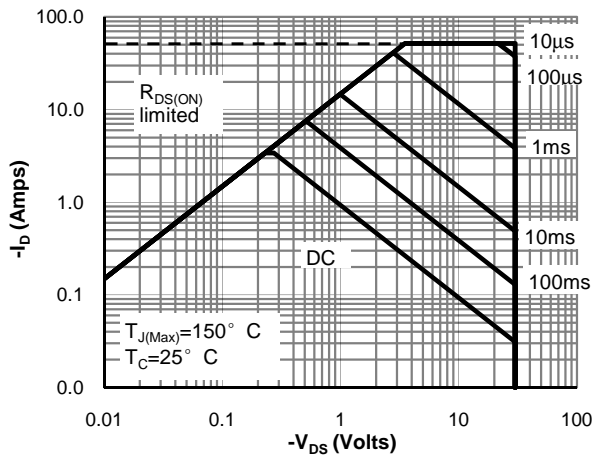


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

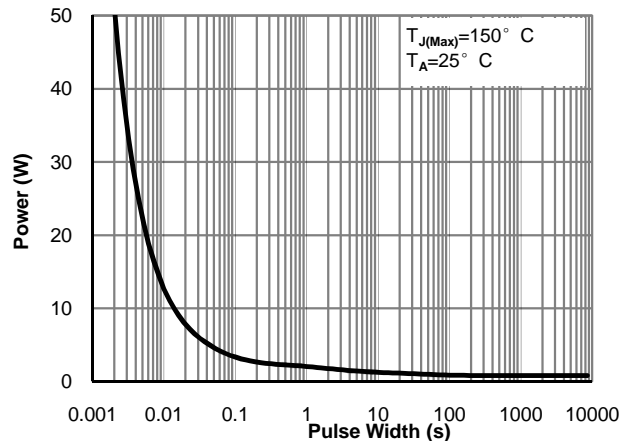


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

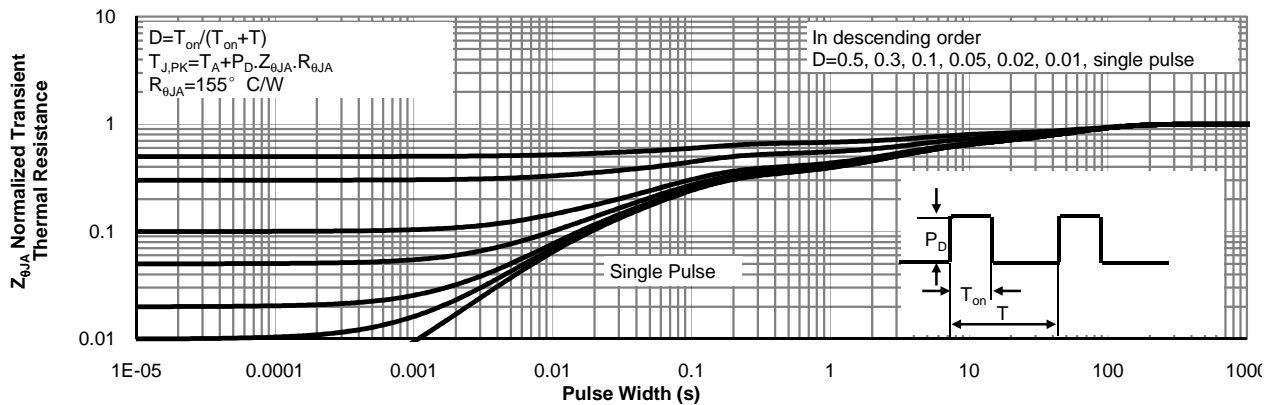


Figure 11: Normalized Maximum Transient Thermal Impedance