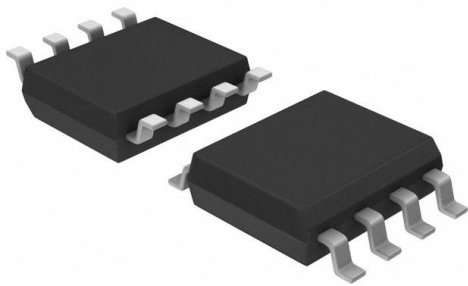


AOSD21311C Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	AOSD21311C-DG
Manufacturer	Alpha & Omega Semiconductor Inc.
Manufacturer Product Number	AOSD21311C
Description	MOSFET 2P-CH 30V 5A 8SOIC
Detailed Description	Mosfet Array 30V 5A (Ta) 1.7W Surface Mount 8-SO IC



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:

AOSD21311C

Series:

-

Technology:

MOSFET (Metal Oxide)

FET Feature:

-

Current - Continuous Drain (Id) @ 25°C:

5A (Ta)

Vgs(th) (Max) @ Id:

2.2V @ 250µA

Input Capacitance (Ciss) (Max) @ Vds:

720pF @ 15V

Operating Temperature:

-55°C ~ 150°C (TJ)

Package / Case:

8-SOIC (0.154", 3.90mm Width)

Base Product Number:

AOSD213

Manufacturer:

Alpha & Omega Semiconductor Inc.

Product Status:

Active

Configuration:

2 P-Channel (Dual)

Drain to Source Voltage (Vdss):

30V

Rds On (Max) @ Id, Vgs:

42mOhm @ 5A, 10V

Gate Charge (Qg) (Max) @ Vgs:

23nC @ 10V

Power - Max:

1.7W

Mounting Type:

Surface Mount

Supplier Device Package:

8-SOIC

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



AOSD21311C

30V Dual P-Channel MOSFET

General Description

- Latest Advanced Trench Technology
- Low $R_{DS(ON)}$
- High Current Capability
- RoHS and Halogen-Free Compliant

Applications

- Notebook AC-in Load Switch
- Battery Protection Charge/Discharge

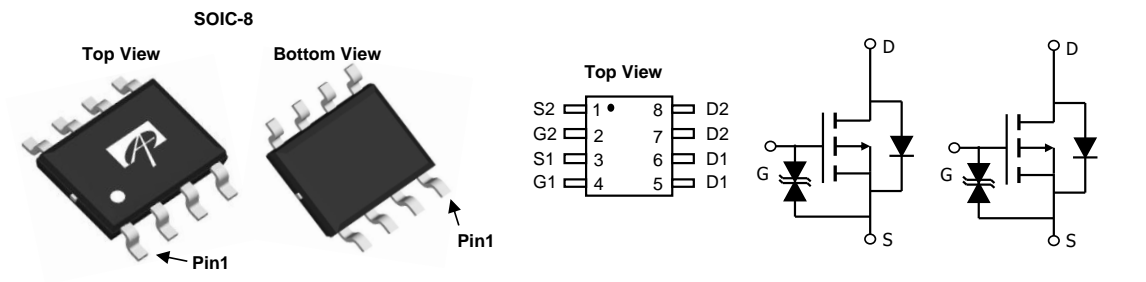
Product Summary

V_{DS}	-30V
I_D (at $V_{GS}=-10V$)	-5A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	< 42m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	< 64m Ω

Typical ESD protection

HBM Class 1C

- 100% UIS Tested
- 100% Rg Tested



Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOSD21311C	SO-8	Tape & Reel	3000

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}	± 20	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	-5
		$T_A=70^\circ\text{C}$	-3.9
Pulsed Drain Current ^C	I_{DM}	-20	A
Avalanche Current ^C	I_{AS}	13	A
Avalanche energy $L=0.1\text{mH}$ ^C	E_{AS}	8	mJ
Power Dissipation ^B	P_D	$T_A=25^\circ\text{C}$	1.7
		$T_A=70^\circ\text{C}$	1.1
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 ^A	$R_{\theta JA}$	52	70	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^{A,D}		80	100	$^\circ\text{C/W}$
Maximum Junction-to-Lead	$R_{\theta JL}$	35	45	$^\circ\text{C/W}$

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 T _J =55°C			-1 -5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±20V			±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1.2	-1.7	-2.2	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-5A T _J =125°C		35 50	42 60	mΩ
		V _{GS} =-4.5V, I _D =-4.1A		51	64	
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-5A		14		S
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.8	-1	V
I _S	Maximum Body-Diode Continuous Current				-2	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, f=1MHz		720		pF
C _{oss}	Output Capacitance			80		pF
C _{riss}	Reverse Transfer Capacitance			70		pF
R _g	Gate resistance	f=1MHz		15	25	Ω
SWITCHING PARAMETERS						
Q _{g(10V)}	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-5A		12.5	23	nC
Q _{g(4.5V)}	Total Gate Charge			6	12	nC
Q _{gs}	Gate Source Charge			1.6		nC
Q _{gd}	Gate Drain Charge			3		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =-10V, V _{DS} =-15V, R _L =3Ω, R _{GEN} =3Ω		8.5		ns
t _r	Turn-On Rise Time			5		ns
t _{D(off)}	Turn-Off DelayTime			39		ns
t _f	Turn-Off Fall Time			14.5		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-5A, di/dt=500A/μs		10		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-5A, di/dt=500A/μs		13		nC

A. The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on T_{J(MAX)}=150°C, using ≤ 10s junction-to-ambient thermal resistance.

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_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead 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-ambient thermal impedance which is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T_{J(MAX)}=150°C. The SOA curve provides a single pulse rating.

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

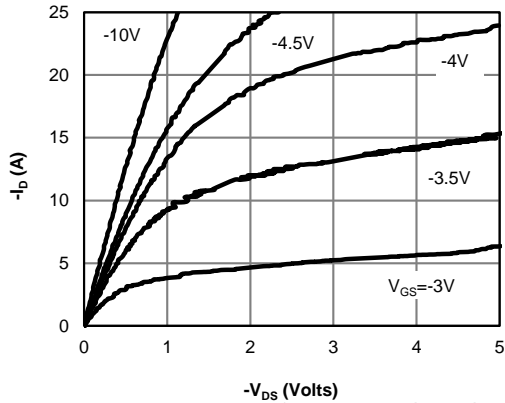


Figure 1: On-Region Characteristics (Note E)

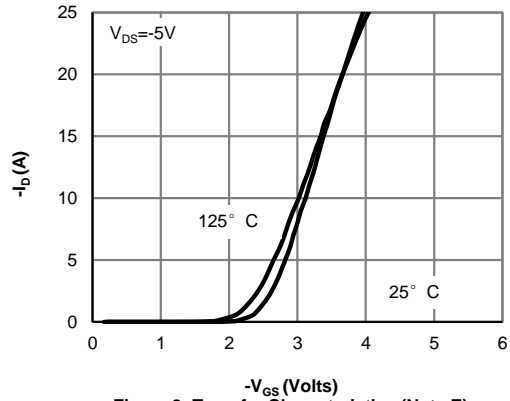


Figure 2: Transfer Characteristics (Note E)

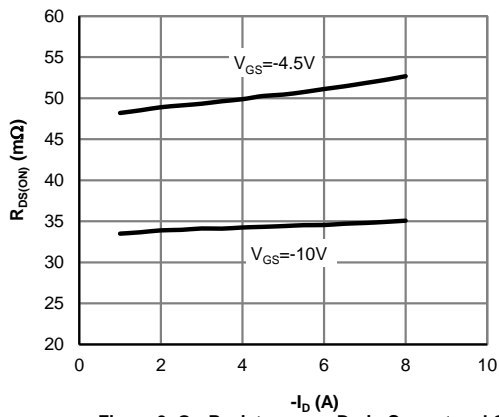


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

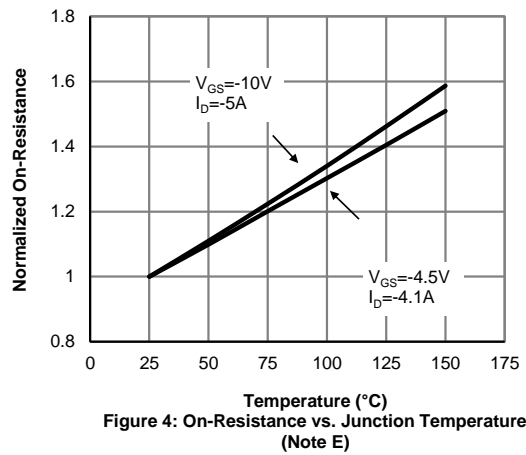


Figure 4: On-Resistance vs. Junction Temperature (Note E)

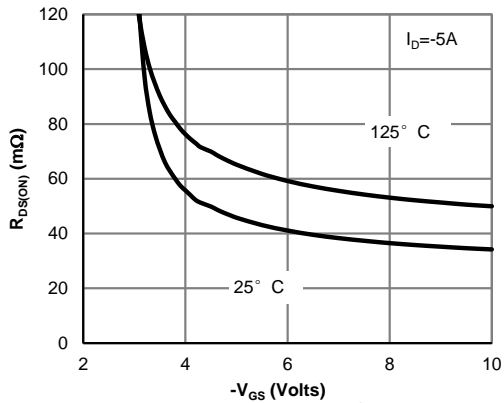


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

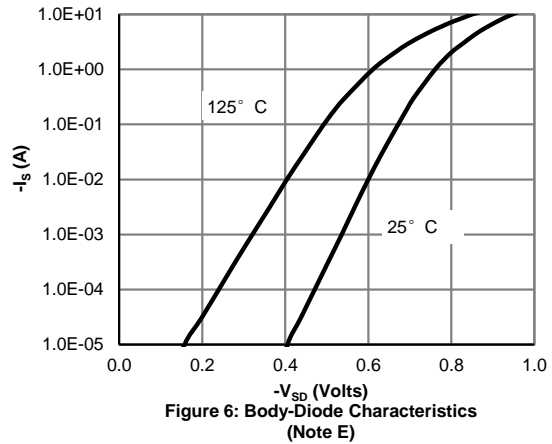


Figure 6: Body-Diode Characteristics (Note E)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

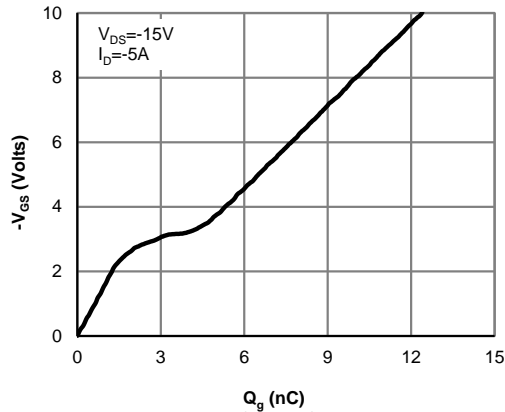


Figure 7: Gate-Charge Characteristics

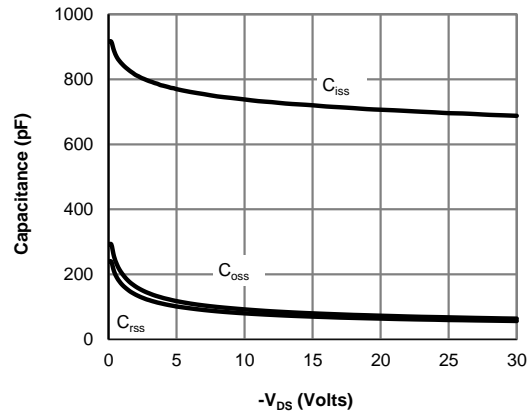


Figure 8: Capacitance Characteristics

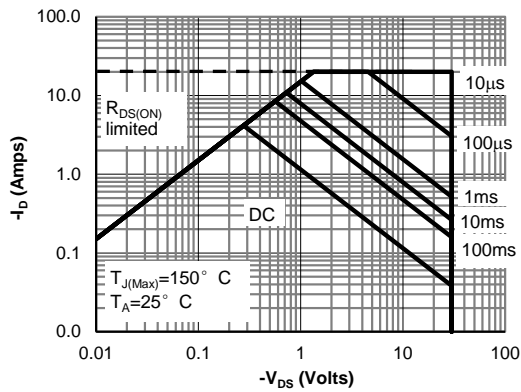


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

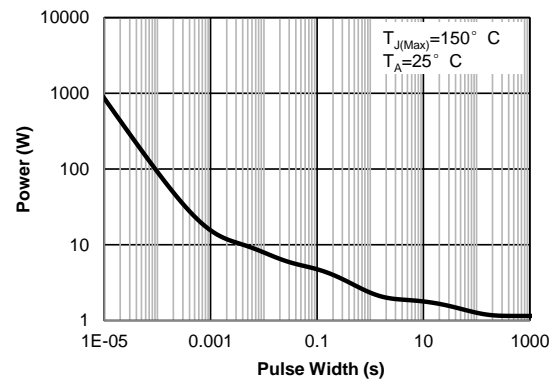


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

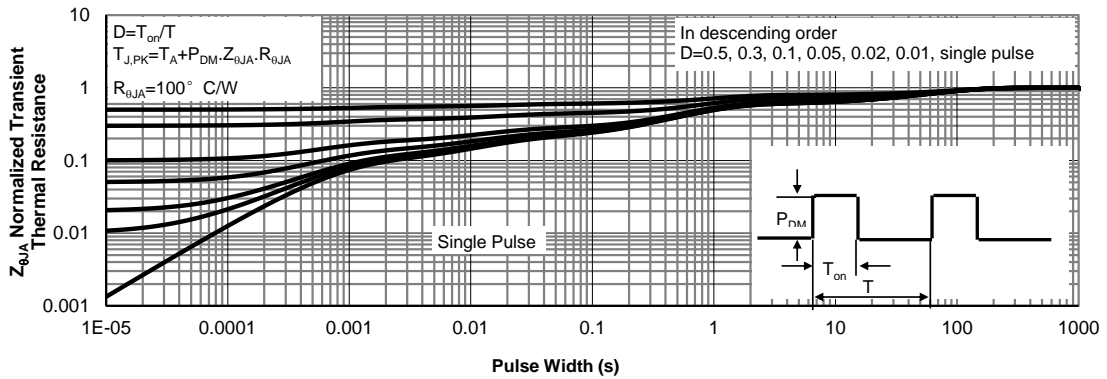
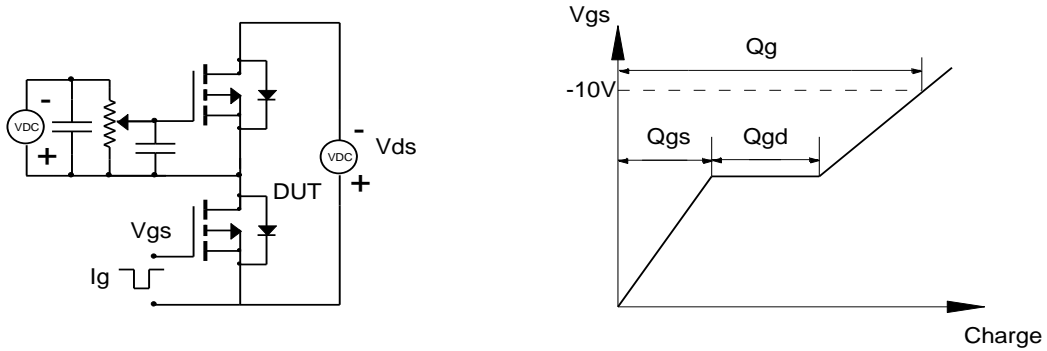
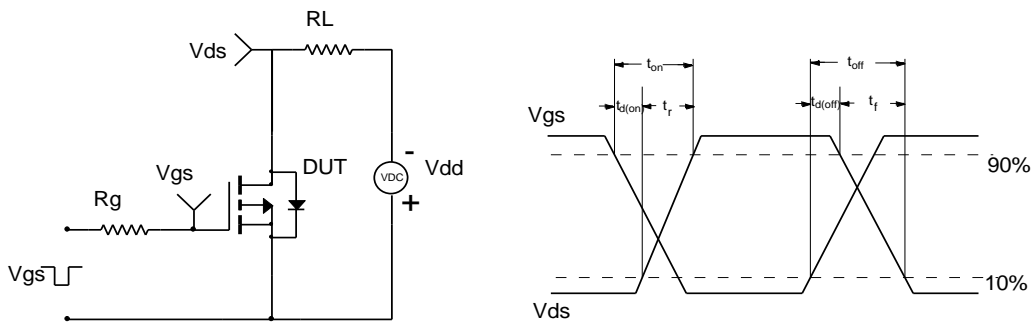


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

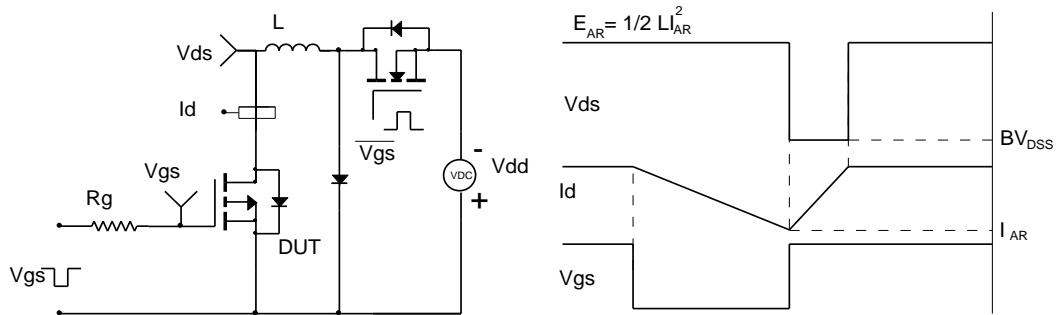
Gate Charge Test Circuit & Waveform



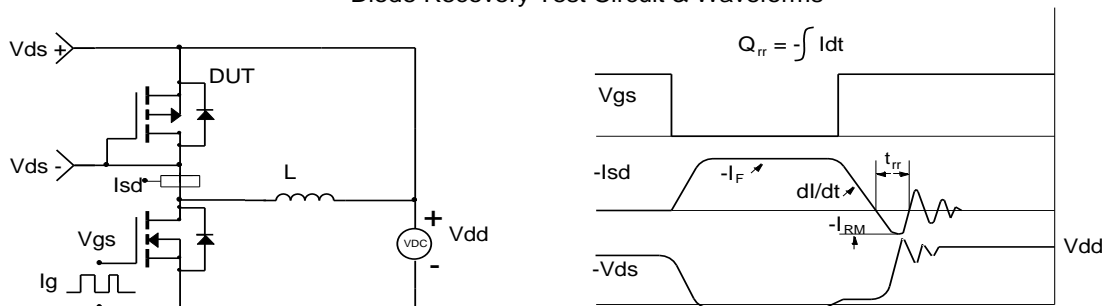
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



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