



### AO4803A

# **Dual P-Channel Enhancement Mode Field Effect Transistor**

## **General Description**

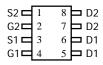
The AO4803A uses advanced trench technology to provide excellent  $R_{\rm DS(ON)}$  with low gate charge. This device is suitable for use as a load switch or in PWM applications. Standard Product AO4803A is Pb-free (meets ROHS & Sony 259 specifications)

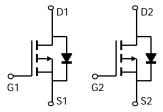
### **Features**

 $V_{DS} (V) = -30V$   $I_{D} = -5 \text{ A } (V_{GS} = -10V)$   $R_{DS(ON)} < 46m\Omega (V_{GS} = -10V)$   $R_{DS(ON)} < 74m\Omega (V_{GS} = -4.5V)$ 

UIS TESTED! Rg,Ciss,Coss,Crss Tested!

SOIC-8 Top View





Absolute Maximum Ratings T <sub>A</sub> =25°C unless otherwise noted								
Parameter		Symbol	Maximum	Units				
Drain-Source Voltage		$V_{DS}$	-30	V				
Gate-Source Voltage		$V_{GS}$	±20	V				
Continuous Drain	T <sub>A</sub> =25°C		-5					
Current AF	T <sub>A</sub> =70°C	I <sub>D</sub>	-4	A				
Pulsed Drain Current <sup>B</sup>		I <sub>DM</sub>	-30					
	T <sub>A</sub> =25°C	В	2	W				
Power Dissipation	T <sub>A</sub> =70°C	$-P_D$	1.3	VV				
Avalanche Current B		I <sub>AR</sub>	11	А				
Repetitive avalanche energy 0.3mH <sup>B</sup>		E <sub>AR</sub>	18	mJ				
Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C				

Thermal Characteristics							
Parameter	Symbol	Тур	Max	Units			
Maximum Junction-to-Ambient A	t ≤ 10s	$R_{\scriptscriptstyle{ hetaJA}}$	48	62.5	°C/W		
Maximum Junction-to-Ambient A	Steady-State	IN <sub>⊕</sub> JA	74	110	°C/W		
Maximum Junction-to-Lead <sup>C</sup> Steady-Sta		$R_{ heta JL}$	35	40	°C/W		

### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions		Min	Тур	Max	Units		
STATIC PARAMETERS									
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =-250μA, V <sub>GS</sub> =0V		-30			V		
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V				-1			
			T <sub>J</sub> =55°C			-5	μΑ		
$I_{GSS}$	Gate-Body leakage current	$V_{DS}$ =0V, $V_{GS}$ =±20V				±100	nA		
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS} I_{D}=-250\mu A$		-1.5	-2	-2.5	V		
$I_{D(ON)}$	On state drain current	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-5V		-30			Α		
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =5.0A			37	46	mΩ		
			T <sub>J</sub> =125°C		52	68			
		$V_{GS}$ =-4.5V, $I_{D}$ =-4A			60	74	mΩ		
<b>9</b> FS	Forward Transconductance	$V_{DS}$ =-5V, $I_{D}$ =-5A			11		S		
$V_{SD}$	Diode Forward Voltage	I <sub>S</sub> =-1A,V <sub>GS</sub> =0V			-0.77	-1	V		
I <sub>S</sub>	Maximum Body-Diode Continuous Current					-2	Α		
DYNAMIC	PARAMETERS								
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, f=1MHz			668	830	pF		
C <sub>oss</sub>	Output Capacitance				126		pF		
$C_{rss}$	Reverse Transfer Capacitance				92		pF		
$R_g$	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz			6	9	Ω		
SWITCHII	NG PARAMETERS								
Q <sub>g</sub> (10V)	Total Gate Charge (10V)	-V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-5A			12.7	16	nC		
Q <sub>g</sub> (4.5V)	Total Gate Charge (4.5V)				6.4		nC		
$Q_{gs}$	Gate Source Charge				2		nC		
$Q_{gd}$	Gate Drain Charge				4		nC		
$t_{D(on)}$	Turn-On DelayTime				7.7		ns		
t <sub>r</sub>	Turn-On Rise Time	$V_{GS}$ =-10V, $V_{DS}$ =-15V, $R_L$ =3 $\Omega$ , $R_{GEN}$ =3 $\Omega$			6.8		ns		
$t_{D(off)}$	Turn-Off DelayTime				20		ns		
t <sub>f</sub>	Turn-Off Fall Time				10		ns		
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =-5A, dI/dt=100A/μs	S		22	30	ns		
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =-5A, dI/dt=100A/μs			15		nC		

A: The value of R  $_{\theta JA}$  is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with

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 $T_A$ =25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C. The R  $_{\theta JA}$  is the sum of the thermal impedence from junction to lead R  $_{\theta JL}$  and lead to ambient.

D. The static characteristics in Figures 1 to 6 are obtained using <300  $\,\mu s$  pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T  $_{\rm A}$ =25°C. The SOA curve provides a single pulse rating.

F. The current rating is based on the  $t \le 10 s$  junction to ambient thermal resistance rating.

#### TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

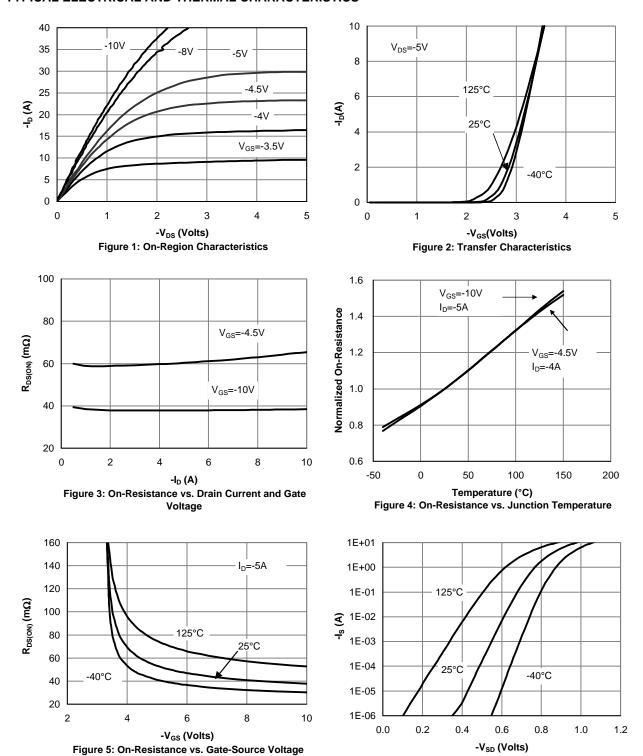
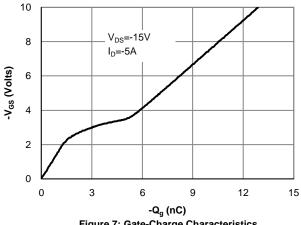
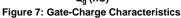


Figure 6: Body-Diode Characteristics

#### TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS





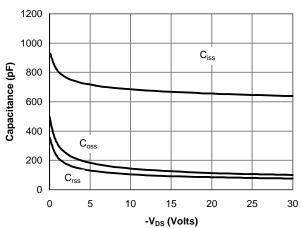


Figure 8: Capacitance Characteristics

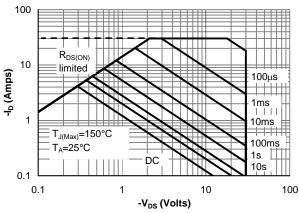


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

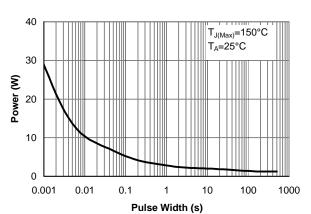


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

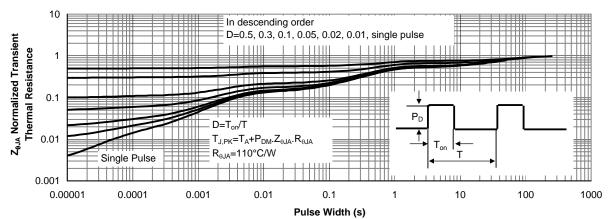


Figure 11: Normalized Maximum Transient Thermal Impedance(Note E)