

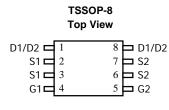
AO8810 Common-Drain Dual N-Channel Enhancement Mode Field Effect Transistor

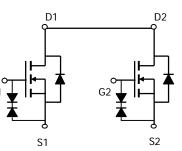
General Description

The AO8810 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 1.8V. This device is suitable for use as a load switch or in PWM applications. It is ESD protected. AO8810L is offered in a lead-free package. *Standard Product AO8810 is Pb-free (meets ROHS & Sony 259 specifications). AO8810L is a Green Product ordering option. AO8810 and AO8810L are electrically identical.*

Features

$$\begin{split} & \mathsf{V}_{\text{DS}} \; (\mathsf{V}) = 20\mathsf{V} \\ & \mathsf{I}_{\text{D}} = 7 \; \mathsf{A} \; (\mathsf{V}_{\text{GS}} = 4.5\mathsf{V}) \\ & \mathsf{R}_{\text{DS}(\text{ON})} < 20 \text{m}\Omega \; (\mathsf{V}_{\text{GS}} = 4.5\mathsf{V}) \\ & \mathsf{R}_{\text{DS}(\text{ON})} < 24 \text{m}\Omega \; (\mathsf{V}_{\text{GS}} = 2.5\mathsf{V}) \\ & \mathsf{R}_{\text{DS}(\text{ON})} < 32 \text{m}\Omega \; (\mathsf{V}_{\text{GS}} = 1.8\mathsf{V}) \\ & \text{ESD Rating: } 2000\mathsf{V} \; \text{HBM} \end{split}$$





Absolute Maximum Ratings T _A =25°C unless otherwise noted								
Parameter		Symbol	Maximum	Units				
Drain-Source Voltage		V _{DS}	20	V				
Gate-Source Voltage		V _{GS}	±8	V				
Continuous Drain	T _A =25°C		7					
Current ^A	T _A =70°C	I _D	5.7	А				
Pulsed Drain Current ^B		I _{DM}	30					
	T _A =25°C	D	1.5	W				
Power Dissipation ^A	T _A =70°C	- P _D	1	vv				
Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C				

Thermal Characteristics								
Parameter	Symbol	Тур	Max	Units				
Maximum Junction-to-Ambient ^A	t ≤ 10s	Р	64	83	°C/W			
Maximum Junction-to-Ambient ^A	Steady-State	R _{0JA}	89	120	°C/W			
Maximum Junction-to-Lead ^C	Steady-State	$R_{ ext{ heta}JL}$	53	70	°C/W			



Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Тур	Max	Units	
STATIC F	PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0V	20			V	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V			1	μA	
		T _J =55°C			5	μΑ	
I _{GSS} G	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±4.5V			±1	μA	
		V _{DS} =0V, V _{GS} =±8V			±10	μA	
V _{GS(th)}	Gate Threshold Voltage	$V_{DS}=V_{GS}$ $I_{D}=250\mu A$	0.4	0.6	1	V	
I _{D(ON)}	On state drain current	V _{GS} =4.5V, V _{DS} =5V				Α	
R _{DS(ON)} Static Drain-Source On-R		V _{GS} =4.5V, I _D =7A		16.5	20	mΩ	
	Static Drain Source On Resistance	T _J =125°C		23	28	1115.2	
	Static Drain-Source On-Resistance	V _{GS} =2.5V, I _D =5.5A		20	24	mΩ	
		V _{GS} =1.8V, I _D =5A		24	32	mΩ	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =7A		29		S	
V_{SD}	Diode Forward Voltage	I _S =1A,V _{GS} =0V		0.76	1	V	
I _S	Maximum Body-Diode Continuous Current				2.5	Α	
	C PARAMETERS						
C _{iss}	Input Capacitance			1160		pF	
C _{oss}	Output Capacitance	V _{GS} =0V, V _{DS} =10V, f=1MHz		187		pF	
C _{rss}	Reverse Transfer Capacitance			146		pF	
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.5		Ω	
SWITCHI	NG PARAMETERS						
Q _g	Total Gate Charge			16		nC	
Q _{gs}	Gate Source Charge	V_{GS} =4.5V, V_{DS} =10V, I_{D} =7A		0.8		nC	
Q_{gd}	Gate Drain Charge			3.8		nC	
t _{D(on)}	Turn-On DelayTime			6.2		ns	
t _r	Turn-On Rise Time	V_{GS} =5V, V_{DS} =10V, R_{L} =1.35 Ω ,		12.7		ns	
t _{D(off)}	Turn-Off DelayTime	R_{GEN} =3 Ω		51.7		ns	
t _f	Turn-Off Fall Time][16		ns	
t _{rr}	Body Diode Reverse Recovery Time	I _F =7A, dI/dt=100A/μs		17.7		ns	
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =7A, dI/dt=100A/μs		6.7		nC	

A: The value of R_{oJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^{\circ}$ C. The value in any given application depends on the user's specific board design. The current rating is based on the t≤ 10s thermal resistance rating.

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 6,12,14 are obtained using $80 \mu s$ pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}$ C. The SOA curve provides a single pulse rating.

Rev 3

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