

AO4485

P-Channel Enhancement Mode Field Effect Transistor

General Description

The AO4485/L uses advanced trench technology to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use as a DC-DC converter application.

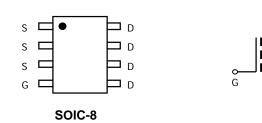
AO4485 and AO4485L are electrically identical. -RoHS Compliant

-AO4485L is Halogen Free

Maximum Junction-to-Lead ^C

Features

(V _{GS} = -10V)
$(V_{GS} = -10V)$
$(V_{GS} = -4.5V)$



Absolute Maximum	Ratings T _J =	=25°C unless o	therwise no	ted			
Parameter			Symbol	10 Sec	Steady State	Units	
Drain-Source Voltage			V _{DS}	-40		V	
Gate-Source Voltage			V _{GS}	±20		V	
Continuous Drain	Drain T _A =25°C			-12	-10		
Current ^A	T _A =70°C		I _D	-9	-8	۸	
Pulsed Drain Current ^B			I _{DM}	-120		A	
Avalanche Current G			I _{AR}	-28			
Repetitive avalanche energy L=0.3mH ^G		E _{AR}	118		mJ		
Power Dissipation ^A	T _A =25°C		D	3.1	1.7	W	
	T _A =70°C		P _D	2.0	1.1	vv	
Junction and Storage Temperature Range			T _J , T _{STG}	-55 to 150		°C	
	_						
Thermal Characteris	tics				. <u></u>		
Parameter			Symbol	Тур	Max	Units	
Maximum Junction-to	-Ambient ^A	t ≤ 10s	R _{0JA}	31	40	°C/W	
Maximum Junction-to	-Ambient ^A	Steady State	ινθΊΑ	59	75	°C/W	
	-						

 $\mathsf{R}_{\theta \mathsf{JL}}$

Steady State

16

24

°C/W

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

Symbol	Parameter	Conditions	Min	Тур	Мах	Units
STATIC F	PARAMETERS					
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D = -250 \mu A, V_{GS} = 0 V$	-40			V
I _{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -40V, V_{GS} = 0V$			-1	μA
		$T_J = 55^{\circ}$	С		-5	μА
I _{GSS}	Gate-Body leakage current	$V_{DS} = 0V, V_{GS} = \pm 20V$			±100	nA
V _{GS(th)}	Gate Threshold Voltage	$V_{DS} = V_{GS} I_{D} = -250 \mu A$	-1.7	-1.9	-2.5	V
I _{D(ON)}	On state drain current	$V_{GS} = -10V, V_{DS} = -5V$	-120			Α
R _{DS(ON)}	Static Drain-Source On-Resistance	$V_{GS} = -10V, I_D = -10A$		12.5	15	
		T _J =125°	С	19	23	mΩ
		$V_{GS} = -4.5V, I_{D} = -8A$		16	20	
g _{FS}	Forward Transconductance	$V_{DS} = -5V, I_{D} = -10A$		25		S
V _{SD}	Diode Forward Voltage	$I_{S} = -1A, V_{GS} = 0V$		-0.7	-1	V
I _S	Maximum Body-Diode Continuous Curr	rent			-3	Α
DYNAMIC	PARAMETERS					
C _{iss}	Input Capacitance			2500	3000	pF
C _{oss}	Output Capacitance	V_{GS} =0V, V_{DS} =-20V, f=1MHz		260		pF
C _{rss}	Reverse Transfer Capacitance			180		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	2.5	4	6	Ω
SWITCHI	NG PARAMETERS	-				-
Q _g (10V)	Total Gate Charge			42	55	nC
Q _g (4.5V)	Total Gate Charge	V _{GS} =-10V, V _{DS} =-20V, I _D =-10A		18.6		nC
Q _{gs}	Gate Source Charge	$v_{GS} = 10^{\circ}, v_{DS} = 20^{\circ}, I_{D} = 10^{\circ}$		7		nC
Q _{gd}	Gate Drain Charge	7		8.6		nC
t _{D(on)}	Turn-On DelayTime			9.4		ns
t _r	Turn-On Rise Time	V _{GS} =-10V, V _{DS} =-20V,		20		ns
t _{D(off)}	Turn-Off DelayTime	$R_L = 2\Omega, R_{GEN} = 3\Omega$		55		ns
t _f	Turn-Off Fall Time]		30		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-10A, dI/dt=100A/μs		38	49	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-10A, dI/dt=100A/μs		47		nC

A: The value of R $_{0.JA}$ 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: Repetitive rating, pulse width limited by junction temperature.

C. The R $_{\rm 0JA}$ is the sum of the thermal impedence from junction to lead R $_{\rm 0JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6 are obtained using t \leqslant 300 μs 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 $T_A=25$ °C. The SOA curve provides a single pulse rating.

F. The current rating is based on the t \leqslant 10s thermal resistance rating.

G. E_{AR} and I_{AR} ratings are based on low frequency and duty cycles to keep T_j =25C.

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