

SuperMOS –SOP8 30V BV_{DSS}, 10mΩ R_{DS(on)}, N-channel MOSFET

1. Description

The AO4406AL is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R_{DS(ON)} with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product AO4406AL is Pb-free.

2. Features

- 30V, R_{DS(ON)}=10mΩ(TYP.) @V_{GS}=10V
R_{DS(ON)}=17mΩ(TYP.) @V_{GS}=4.5V
- Use trench MOSFET technology
- High density cell design for low R_{DS(on)}
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
AO4406AL	SOP8	ES4460A/lot	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	13 inches

Table-1 Ordering information

5. Pin Configuration and Functions

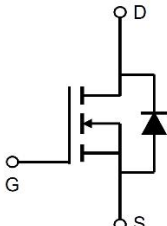
Pin	Function	Outline	Circuit Diagram
1/2/3	Source		
4	Gate		
5/6/7/8	Drain		

Table-2 Pin configuration

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		BV_{DSS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_A=25^{\circ}\text{C}$	I_D	20	A
	$T_A=100^{\circ}\text{C}$		12	
Maximum Power Dissipation	$T_A=25^{\circ}\text{C}$	P_D	2.3	W
Pulsed Drain Current ^a		I_{DM}	80	A
Operating Junction Temperature		T_J	-55 to 150	°C
Lead Temperature		T_L	260	°C
Storage Temperature Range		T_{stg}	-55 to 150	°C

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$		55	°C/W

Note:

a: Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

AO4406AL

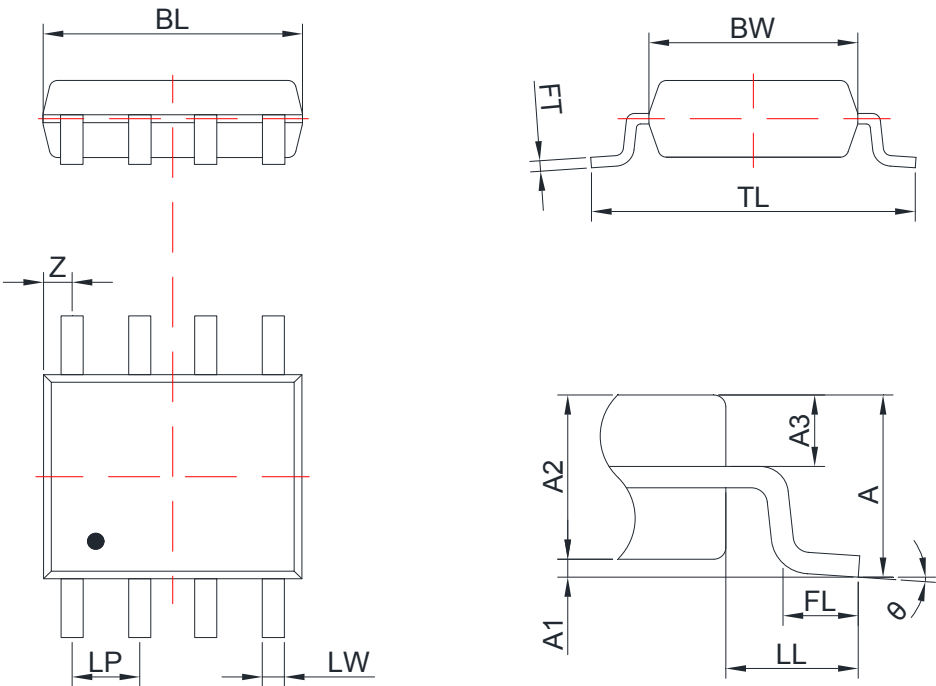
Rev-1.5

Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1.0	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.1	1.6	2.1	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A		10	13	mΩ
		V _{GS} =4.5V, I _D =10A		17	22.5	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =15V		805		pF
Output Capacitance	C _{OSS}			103		
Reverse Transfer Capacitance	C _{RSS}			82		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =0 to 10V, V _{DS} =15V, I _D =15A		16		nC
Gate-to-Source Charge	Q _{GS}			3.6		
Gate-to-Drain Charge	Q _{GD}			3.4		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =15V, I _D =15A, R _{GEN} =3Ω		6		ns
Rise Time	t _r			16		
Turn-Off Delay Time	t _{d(OFF)}			17		
Fall Time	t _f			5		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =10A			1.2	V

7. Dimension (SOP8)



COMMON DIMENSIONS: UNITS OF MEASURE=MILLIMETER

Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	1.75		FL	0.50	0.80
A1	0.05	0.15	LP	1.25	1.30
A2	1.40	1.50	LL	1.1 BSC	
A3	0.623 BSC		LW	0.38	0.43
BL	4.80	5.00	TL	5.90	6.10
BW	3.70	4.10	Z	0.54	
FT	0.20	0.21	θ	0°	8°

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