



AOS
SEMICONDUCTOR

产品规格说明书

Product Data Sheet

AOS2G08xx

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电源管理IC



通信接口芯片



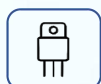
二三极管



LDO稳压器



逻辑器件



MOSFETs



运算放大器



显示驱动



MCU单片机



光电器件



AOS2G08 Dual 2-Input Positive-NAND Gate

DESCRIPTIONS

The AOS2G08 dual 2-input positive-AND gate is designed for 1.65V to 5.5V V_{CC} operation. The AOS2G08 device performs the Boolean function $Y=A \cdot B$ or $Y=\overline{A+B}$ in positive logic. The device is fully specified for partial-power-down applications using I_{off} . The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

The AOS2G08 is available in Green MSOP-8 packages. It operates over an ambient temperature range of -40°C to $+125^{\circ}\text{C}$.

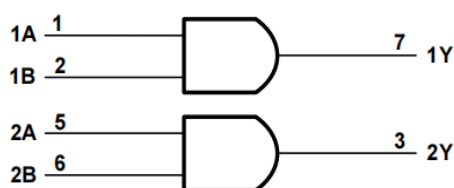
FEATURES

- ★ Operating Voltage Range: 1.65V to 5.5V
- ★ Low Power Consumption: $1\mu\text{A}$ (Max)
- ★ Operating Temperature Range: -40°C to $+125^{\circ}\text{C}$
- ★ Inputs Accept Voltage to 5.5V
- ★ High Output Drive: $\pm 24\text{mA}$ at $V_{CC}=3.0\text{V}$
- ★ PACKAGE: MSOP-8

APPLICATIONS

- ★ Active Noise Elimination
- ★ Bar Code Scanner
- ★ Blood Pressure Monitor
- ★ CPAP Machine
- ★ Fingerprint identification
- ★ IP Phone: Wired and Wireless
- ★ Network attached storage (NAS)
- ★ Private Branch Exchange (PBX)

LOGIC SYMBOL

Device Information⁽¹⁾

PART NUMBER	PACKAGE	BODY SIZE (NOM)
AOS2G08	MSOP-8	3.00mm × 3.00mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

FUNCTION TABLE

INPUTS		OUTPUT
A	B	Y
H	H	H
L	H	L
H	L	L
L	L	L

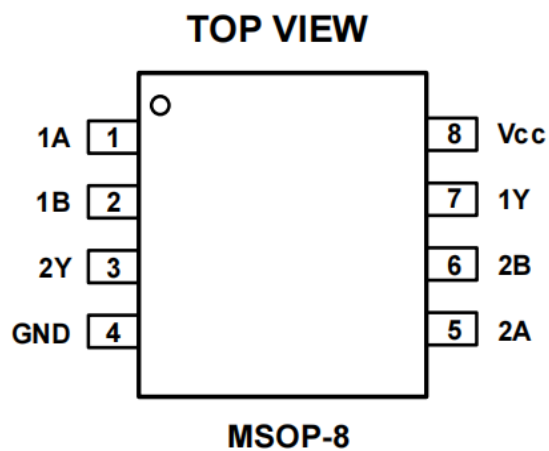
$$Y=A \cdot B$$

H=High Voltage Level

L=Low Voltage Level



PIN CONFIGURATIONS



PIN DESCRIPTION

PIN	NAME	I/O TYPE	FUNCTION
MSOP-8			
1	1A	I	Channel 1 logic input
2	1B	I	Channel 1 logic input
3	2Y	O	Logic level output
4	GND	-	Ground
5	2A	I	Channel 2 logic input
6	2B	I	Channel 2 logic input
7	1Y	O	Logic level output
8	Vcc	-	Power Supply



Specifications

Absolute Maximum Ratings⁽¹⁾

Over operating free-air temperature range (unless otherwise noted) ⁽¹⁾⁽²⁾

			MIN	MAX	UNIT
V _{CC}	Supply voltage range		-0.5	6.5	V
V _I	Input voltage range ⁽²⁾		-0.5	6.5	
V _O	Voltage range applied to any output in the high-impedance or power-off state ⁽²⁾		-0.5	6.5	
V _O	Voltage range applied to any output in the high or low state ⁽²⁾⁽³⁾		-0.5	V _{CC} ± 0.5	
I _{IK}	Input clamp current	V _I < 0		-50	mA
I _{OK}	Output clamp current	V _O < 0		-50	
I _O	Continuous output current			± 50	
	Continuous current through V _{CC} or GND			± 100	
T _J	Junction temperature		-65	150	°C
T _{stg}	Storage temperature		-65	150	

- (1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
- (2) The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.
- (3) The value of V_{CC} is provided in the *Recommended Operating Conditions table*.



ESD Ratings

			VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human-Body Model (HBM)	± 8000	V
		Machine Model (MM)	± 500	

Thermal Information:

THERMAL METRIC		AOS2G08	UNIT
		8PINS	
		MSOP-8	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	165	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC(top)}$	Junction-to-case(top) thermal resistance	53	
$R_{\theta JB}$	Junction-to-board thermal resistance	87	
ψ_{JT}	Junction-to-top characterization parameter	4.9	
ψ_{JB}	Junction-to-board characterization parameter	85	
$R_{\theta JC(bot)}$	Junction-to-case(bottom) thermal resistance	N/A	

PACKAGE/ORDERING INFORMATION

PRODUCT	ORDERING NUMBER	TEMPERATURE RANGE	PACKAGE LEAD	PACKAGE MARKING ⁽¹⁾	PACKAGE OPTION
AOS2G08	AOS2G08XM	-40 $^{\circ}\text{C}$ ~+125 $^{\circ}\text{C}$	MSOP-8	AOS2G08	Tape and Reel, 4000

NOTE:

- (1) There may be additional marking, which relates to the lot trace code information(data code and vendor code), the logo or the environmental category on the device.

**ELECTRICAL CHARACTERISTICS**

over recommended operating free-air temperature range(TYP values are at $T_A=+25^{\circ}\text{C}$, unless otherwise noted.) ⁽¹⁾

Recommended Operating Conditions

PARAMETER	SYMBOL	V_{CC}	MIN	MAX	UNIT
Supply voltage	V_{CC}	Operating	1.65	5.5	V
		Data retention only	1.5	5.5	
High-level input voltage	V_{IH}	$V_{CC}=1.65\text{V to }1.95\text{V}$	$0.65 \times V_{CC}$		
		$V_{CC}=2.3\text{V to }2.7\text{V}$	1.7		
		$V_{CC}=3\text{V to }3.6\text{V}$	2.2		
		$V_{CC}=4.5\text{V to }5.5\text{V}$	$0.7 \times V_{CC}$		
Low-level input voltage	V_{IL}	$V_{CC}=1.65\text{V to }1.95\text{V}$		$0.15 \times V_{CC}$	
		$V_{CC}=2.3\text{V to }2.7\text{V}$		0.3	
		$V_{CC}=3\text{V to }3.6\text{V}$		0.4	
		$V_{CC}=4.5\text{V to }5.5\text{V}$		$0.15 \times V_{CC}$	
Input voltage	V_I		0	5.5	
Output voltage	V_O		0	V_{CC}	
Input transition rise or fall	t_t, t_f	$V_{CC}=1.8\text{V} \pm 0.15\text{V}, 2.5\text{V} \pm 0.2\text{V}$		20	ns/V
		$V_{CC}=3.3\text{V} \pm 0.3\text{V}$		10	
		$V_{CC}=5\text{V} \pm 0.5\text{V}$		5	
Operating temperature	T_A		-40	+125	$^{\circ}\text{C}$

(1)All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.



DC Characteristics

PARAMETER		CONDITIONS	V _{CC}	TEMP	MIN	TYP	MAX	UNIT
V _{OH}		I _{OH} =-100 μ A	1.65V to 5.5V	Full I	V _{CC} -0.1			V
		I _{OH} =-4mA	1.65V		1.2			
		I _{OH} =-8mA	2.3V		1.9			
		I _{OH} =-16mA	3V		2.4			
		I _{OH} =-24mA			2.3			
		I _{OH} =-32mA	4.5V		3.8			
V _{OL}		I _{OH} =100 μ A	1.65V to 5.5V	Full I			0.1	V
		I _{OH} =4mA	1.65V				0.45	
		I _{OH} =8mA	2.3V				0.3	
		I _{OH} =16mA	3V				0.4	
		I _{OH} =24mA					0.55	
		I _{OH} =32mA	4.5V				0.55	
I _I	A or B inputs	V _I =5.5V or GND	0V to 5.5V	+25°C		± 0.1	± 1	μ A
				Full I			± 5	
I _{off}		V _I or V _O =5.5V	0	+25°C		± 0.1	± 1	
				Full I			± 10	
I _{CC}		V _I =5.5V or GND, I _O =0	1.65V to 5.5V	+25°C		0.1	2	
				Full I			10	
Δ I _{CC}		One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND	3V to 5.5V	Full I			500	



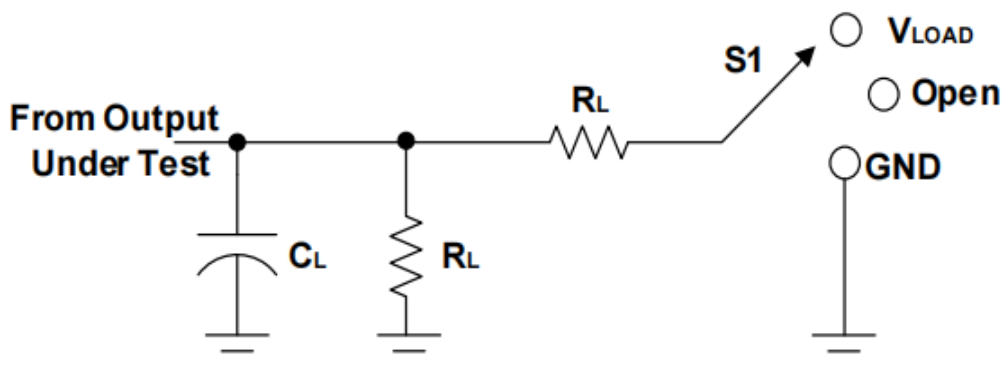
AC Characteristics

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay	t_{pd}	$V_{CC}=1.8V \pm 0.15V$	$C_L=30pF, R_L=1k\Omega$		11.2		ns
		$V_{CC}=2.5V \pm 0.2V$	$C_L=30pF, R_L=500\Omega$		6.5		
		$V_{CC}=3.3V \pm 0.3V$	$C_L=50pF, R_L=500\Omega$		5.4		
		$V_{CC}=5V \pm 0.5V$	$C_L=50pF, R_L=500\Omega$		4.3		
Input Capacitance	C_i	$V_{CC}=0V$			4		pF
Power dissipation capacitance	C_{pd}	$V_{CC}=3.3V$	$f=10MHz$		26		
		$V_{CC}=5V$			31		

(1) All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

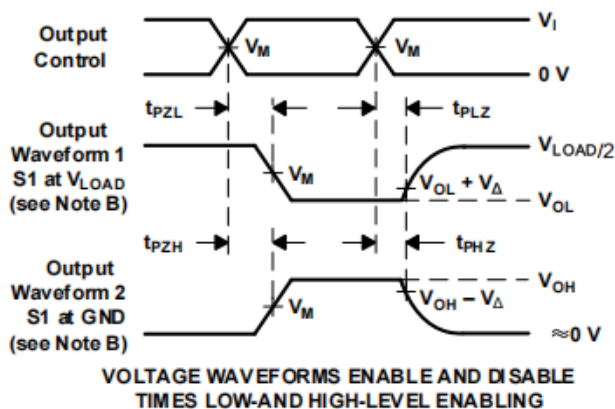
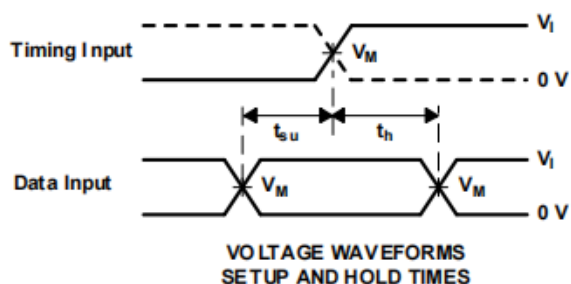
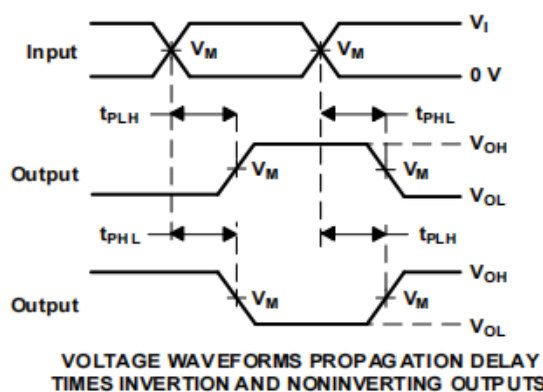
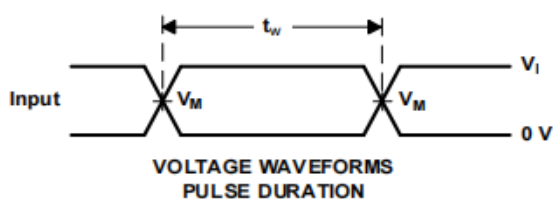


Parameter Measurement Information



TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

V_{CC}	INPUTS		V_M	V_{LOAD}	C_L		R_L		V_{Δ}
	V_I	t_r/t_f							
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	15pF	30pF	1M Ω	1k Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	15pF	30pF	1M Ω	500 Ω	0.15V
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	6V	15pF	50pF	1M Ω	500 Ω	0.3V
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	$2 \times V_{CC}$	15pF	50pF	1M Ω	500 Ω	0.3V



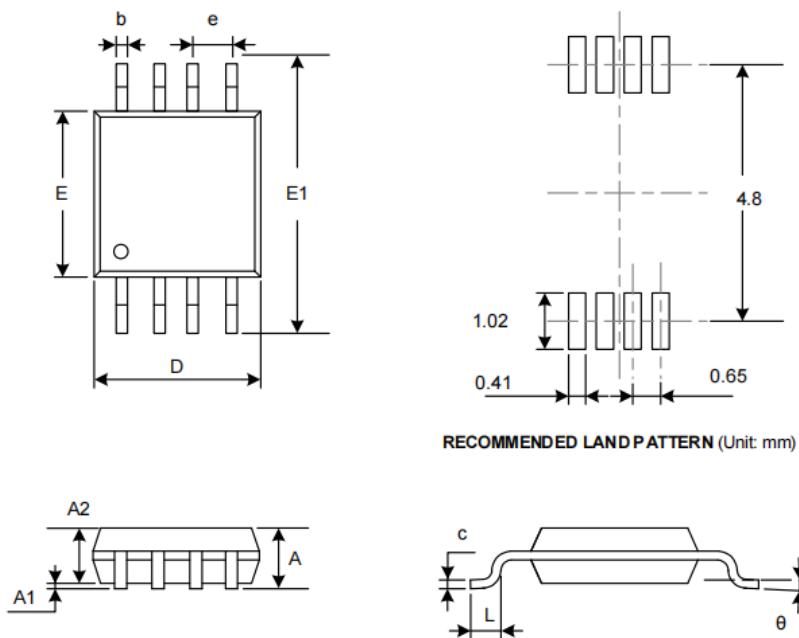


- NOTES:
- A. CL includes probe and jig capacitance.
 - B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control.
Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
 - C. All input pulses are supplied by generators having the following characteristics: $PRR \leq 10\text{MHz}$, $Z_0 = 50\Omega$.
 - D. The outputs are measured one at a time, with one transition per measurement.
 - E. t_{PLZ} and t_{PHZ} are the same as t_{dis} .
 - F. t_{PZL} and t_{PZH} are the same as t_{en} .
 - G. t_{PLH} and t_{PHL} are the same as t_{pd} .
 - H. All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms



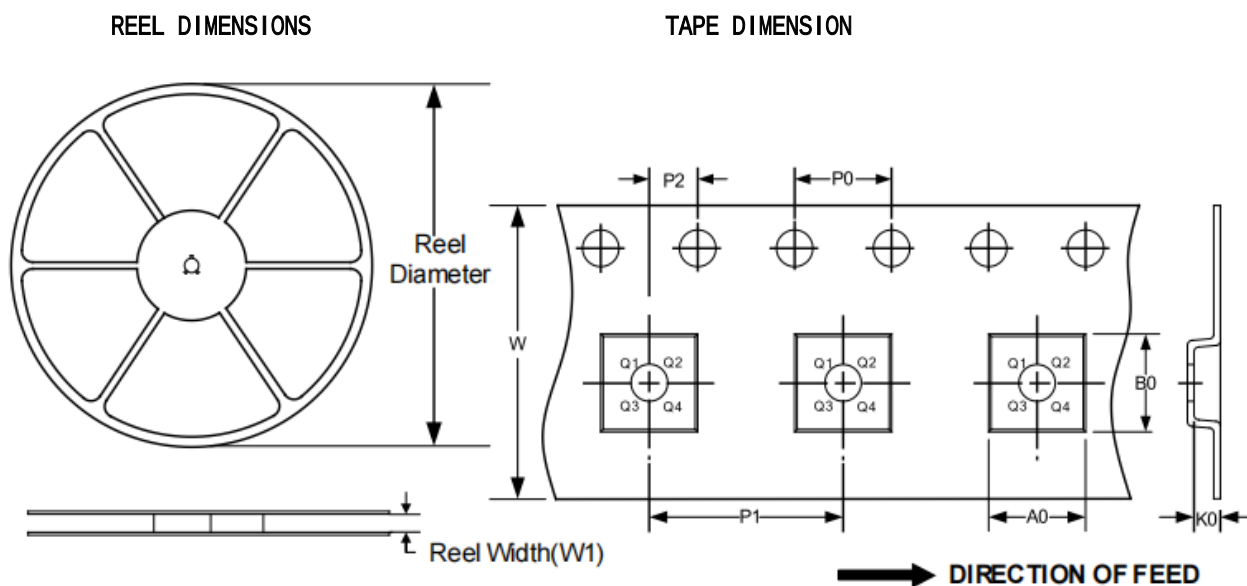
PACKAGE OUTLINE DIMENSIONS
MSOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
e	0.650 (BSC)		0.026 (BSC)	
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
L	0.400	0.800	0.016	0.031
θ	0 °	6 °	0 °	6 °



TAPE AND REEL INFORMATION



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width(mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
MSOP-8	13''	12.4	5.20	3.30	1.50	4.0	8.0	2.0	12.0	Q1

NOTE:

1. All dimensions are nominal.
2. Plastic or metal protrusions of 0.15mm maximum per side are not included.