



AOS
SEMICONDUCTOR

产品规格说明书

Product Data Sheet

AOS2G14XX

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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

AOS2G14XX

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Logic Gates

Description

The AOS2G14XX is a high performance dual buffer with open drain outputs operating from a 1.65 to 5.5V supply. The internal circuit is composed of multiple stages, including an open drain output. The open drain output provides the capability to set the output switching level to a user selectable value with an external resistor and power supply.

The logic high output values is set by the external power supply and can be less than, equal or greater than the VCC power supply, provide the voltage supply is less than 5.5V.

Features

- Extremely High Speed: tPD 2.3ns(typical) at VCC=5V
- Designed for 1.65V to 5.5V VCC Operation, COMS compatible
- Over Voltage Tolerant Inputs
- LVTTTL Compatible-Interface Capability with 5V TTL Logic with VCC =3V
- LVCMOS Compatible
- Near Zero Static Supply Current Substantially Reduces System Power Requirements
- Chip Complexity: FET=72; Equivalence Gate=18
- These Devices are Pb-Free and are RoHS Compliant

Pin Configuration

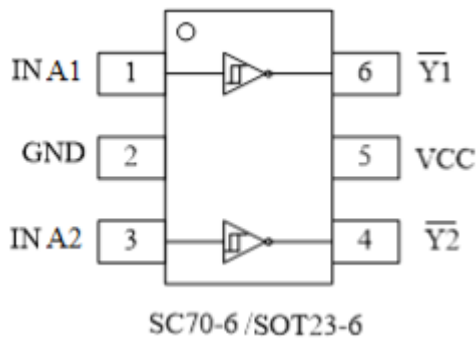


Figure1.Pinouts(Top View)

Pin Function

PIN	ASIGNMENT
1	INA1
2	GND
3	INA2
4	$\overline{Y2}$
5	VCC
6	$\overline{Y1}$

Block Diagram

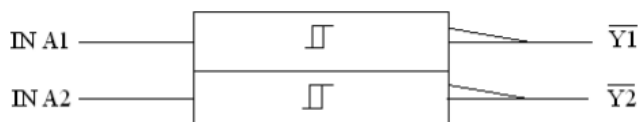


Figure 2.Logic symbol

Function Description Function Table

A Input	Y Output
L	H
H	L



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■ Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage	-0.5 to 7.0	V
V_I	DC Input Voltage	$-0.5 \leq V_I \leq +7.0$	
V_O	DC Output Voltage Output in Higher or Low State (Note1)	-0.5 to $V_{CC}+0.5$	
I_{IK}	DC Input Diode Current $V_I < GND$	-50	mA
I_{OK}	DC Output Diode Current, $V_O < GND, V_O > V_{CC}$	± 50	
I_O	DC Output Sink Current	± 50	
I_{CC}	DC Supply Current per Supply Pin	± 100	
I_{GND}	DC Ground Current per Supply Pin	± 100	°C
T_{STG}	Storage Temperature Range	-65 to 150	
T_L	Lead Temperature, 1 mm from Case for 10 Seconds	260	
T_J	Junction Temperature Under Bias	150	°C/W
θ_{JA}	Thermal Resistance	333	
P_D	Power Dissipation in Still Air at 85°C	200	mW
MSL	Moisture Sensitivity	Level 1	
F_R	Flammability Rating Oxygen Index: 28 to 34	UL94V-0@0.12in	
ESD	ESD Classification Human Body Model (Note2) Machine Model (Note3) Charged Device Model (Note4)	2000 200 N/A	V
$L_{Latchup}$	Latchup Performance Above VCC and Below GND at 125°C (Note5)	± 100	mA

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. IO absolute maximum rating must be observed.
2. Tested to EIA/JESD22-A114-A, rated to EIA/JESD22-A114-B.
3. Tested to EIA/JESD22-A115-A, rated to EIA/JESD22-A115-A.
4. Tested to JESD22-C101-A.
5. Tested to EIA/JESD78.

■ Recommended Operating Conditions

Symbol	Parameter	MIN	MAX	UNIT
V_{CC}	DC Supply Voltage Operating Date Retention	1.65 1.5	5.5 5.5	V
V_{IN}	DC Input Voltage	0	5.5	
V_{OUT}	DC Output Voltage (High or Low State)	0	5.5	
T_A	Operating Temperature Range	-55	125	°C
t_r, t_f	Input Rise and Fall Time $V_{CC}=2.5V \pm 0.2V$ $V_{CC}=3.0V \pm 0.3V$ $V_{CC}=5.0V \pm 0.5V$	0 0 0	20 10 5	ns/V



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Function operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stress beyond the Recommended.

Electrical Characteristics

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	$V_{cc}(V)$	$T_A=25^{\circ}C$			$-40^{\circ}C \leq T_A \leq 85^{\circ}C$		Unit
				Min	Typ	Max	Min	Max	
V_{IH}	High-Level Input Voltage		1.65 to 1.95 2.3V to 5.5	$0.75V_{cc}$ $0.7V_{cc}$			$0.75V_{cc}$ $0.7V_{cc}$		V
V_{IL}	Low-Level Input Voltage		1.65 to 1.95 2.3V to 5.5			$0.25V_{cc}$ $0.3V_{cc}$		$0.25V_{cc}$ $0.3V_{cc}$	
V_{OH}	High-Level Output Voltage $V_{IN}=V_{IH}$	$I_{OH}=-100\mu A$	1.65 to 5.5	$V_{cc}-0.1$	V_{cc}		$V_{cc}-0.1$		
		$I_{OH}=-3mA$	1.65	1.29	1.52		1.29		
		$I_{OH}=-8mA$	2.3	1.9	2.1		1.9		
		$I_{OH}=-12mA$	2.7	2.2	2.4		2.2		
		$I_{OH}=-16mA$	3.0	2.4	2.7		2.4		
		$I_{OH}=-24mA$	3.0	2.3	2.5		2.3		
		$I_{OH}=-32mA$	4.5	3.8	4.0		3.8		
V_{OL}	Low-Level Output Voltage $V_{IN}=V_{IH}$	$I_{OL}=100\mu A$	1.65 to 5.5		0.0	0.1		0.1	μA
		$I_{OL}=3mA$	1.65		0.08	0.24		0.24	
		$I_{OL}=8mA$	2.3		0.20	0.3		0.3	
		$I_{OL}=12mA$	2.7		0.22	0.4		0.4	
		$I_{OL}=16mA$	3.0		0.28	0.4		0.4	
		$I_{OL}=24mA$	3.0		0.38	0.55		0.55	
		$I_{OL}=32mA$	4.5		0.42	0.55		0.55	
I_{IN}	Input Leakage Current	$V_{IN}=5.5V$ or GND	0 to 5.5		± 0.1			± 1.0	
I_{OFF}	Power Off Leakage Current	$V_{IN}=5.5V$ or $V_{OUT}=5.5V$	0			1		10	
I_{CC}	Quiscent Supply Current	$V_{IN}=5.5V$ or GND	5.5					10	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



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■ AC ELECTRICAL CHARACTERISTICS

$t_r=t_f=2.5\text{ns}$; $C_L=50\text{pF}$; $R_L=500\Omega$

Symbol	Parameter	Condition	$V_{cc}(V)$	$T_A=25$			$-40 \leq T_A \leq 85$		Unit
				Min	Typ	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation Delay (Figure 3 and 4)	$R_L=1M\Omega$ $C_L=15\text{pF}$	1.65	2.0	5.3	11.4	2.0	12.0	ns
			1.8	2.0	4.4	9.5	2.0	10.0	
		$R_L=1M\Omega$ $C_L=15\text{pF}$	2.5 ± 0.2	0.2	3.5	6.5	0.8	4.1	
		$R_L=1M\Omega$ $C_L=15\text{pF}$	3.3 ± 0.3	0.8	2.1	4.5	0.5	3.7	
				1.2	2.9	5.5	1.5	5.2	
		$R_L=1M\Omega$ $C_L=15\text{pF}$	5.0 ± 0.5	0.5	1.8	3.9	0.5	4.1	
		$R_L=500\Omega$ $C_L=50\text{pF}$		0.8	2.4	4.3	0.8	4.5	

■ CAPACITIVE CHARACTERISTICS

Symbol	Parameter	Condition	Typical	Unit
C_{IN}	Input Capacitance	$V_{cc}=5.5V, V_I=0V$ or V_{cc}	>2.5	pF
C_{PD}	Power Dissipation Capacitance (Note6)	10MHz, $V_{cc}=3.3V, V_I=0V$ or V_{cc} 10MHz, $V_{cc}=5.5V, V_I=0V$ or V_{cc}	4 4	

6. C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation:

$$I_{CC(OPER)} = C_{PD} \cdot V_{CC} \cdot f_{in} + I_{CC} \cdot C_{PD}$$

$I_{CC(OPER)}$ is used to determine the no-load dynamic power consumption;

$$P_D = C_{PD} \cdot V_{CC}^2 \cdot f_{in} + I_{CC} \cdot V_{CC} \cdot \text{Fig.}$$

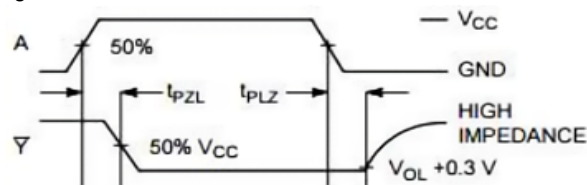


Figure 3. Switching Waveforms

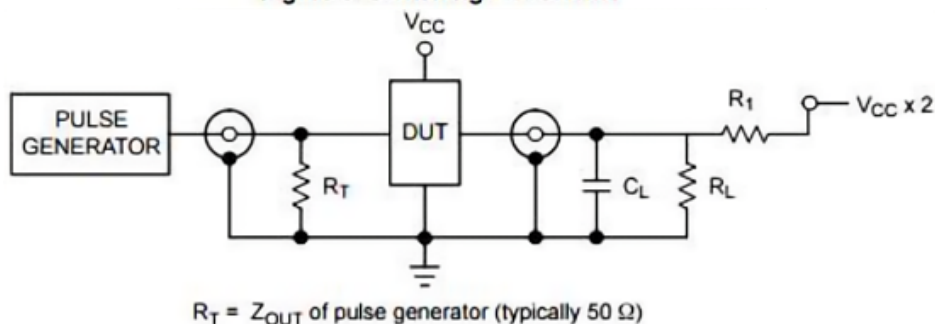


Figure 4. Test Circuit

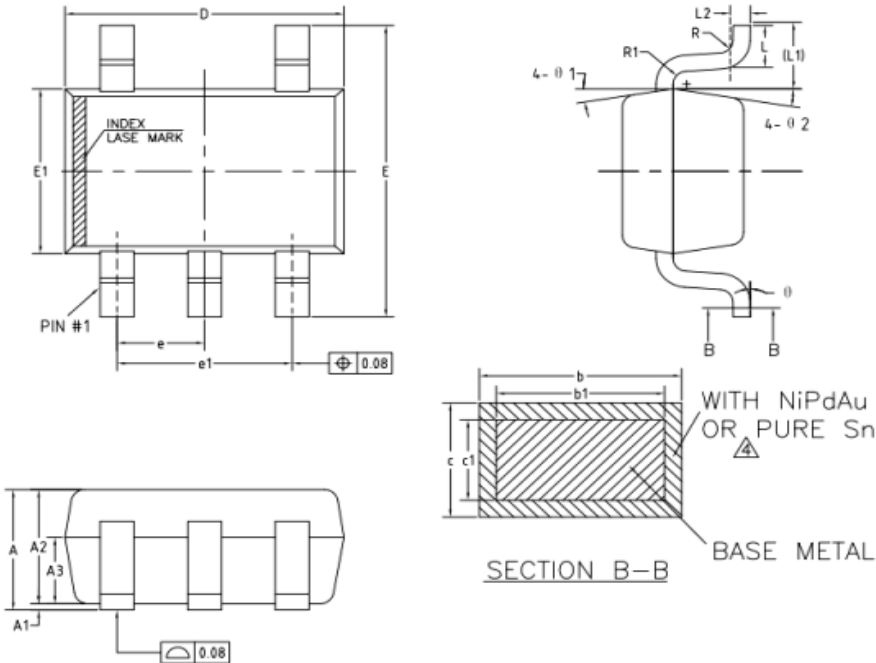


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Package Dimension

SC70-6



COMMON DIMENSIONS(UNITS OF MEASURE=MILLINETER)

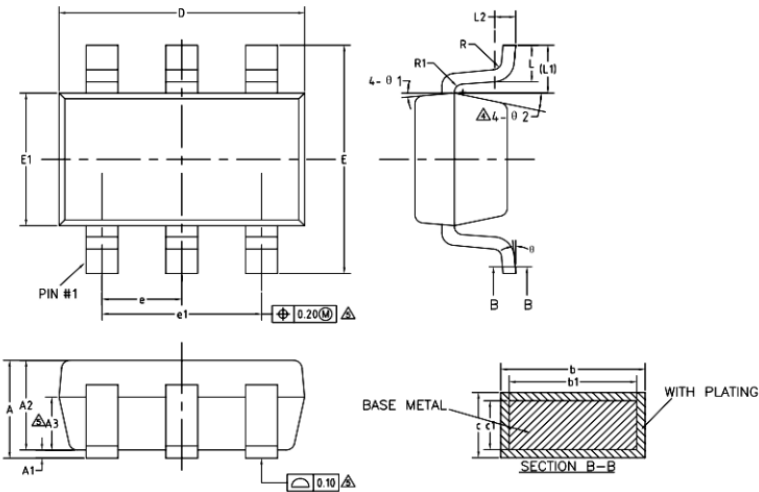
SYMBOL		MIN	NOM	MAX
A		0.85	-	1.05
A1		0	-	0.10
A2		0.80	0.90	1.00
A3		0.47	0.52	0.57
b	NiPdAu	0.22	-	0.29
	PURE Sn	0.23	-	0.33
b1		0.22	0.25	0.28
c	NiPdAu	0.115	-	0.15
	PURE Sn	0.12	-	0.18
c1		0.115	0.13	0.14
D		2.02	2.07	2.12
E		2.20	2.30	2.40
E1		1.25	1.30	1.35
e		0.60	0.65	0.70
e1		1.20	1.30	1.40
L		0.28	0.33	0.38
L1		0.50REF		
L2		0.15BSC		
R		0.10	-	-
R1		0.10	-	0.25
θ		0 °	-	8 °
θ 1		6 °	9 °	12 °
θ 2		6 °	9 °	12 °



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SOT23-6



COMMON DIMENSIONS(UNITS OF MEASURE=MILLINETER)

SYMBOL	MIN	NOM	MAX
A	-	-	1.25
A1	0	-	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.36	-	0.50
b1	0.36	0.38	0.45
c	0.14	-	0.20
c1	0.14	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.10	-	-
R1	0.10	-	0.20
θ	0°	-	8°
θ1	3°	5°	7°
θ2	6°	-	14°

Package information

Order code	Marking code	Package	Baseqty	Delivemymode
AOS2G14XH6	C145	SOT23-6	3000	Tape and reel
AOS2G14XC6	CF5	SC70-6	3000	Tape and reel

