



AOS
SEMICONDUCTOR

产品规格说明书

Product Data Sheet

AOS6G17Xx

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电源管理IC



通信接口芯片



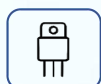
二三极管



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



AOS6G17 6-channel Schmitt-Trigger buffers

DESCRIPTIONS

The AOS6G17 6-channel Schmitt-trigger inverter is designed for 1.65V to 5.5V V_{CC} operation. The AOS6G17 device contains six inverters and performs the Boolean function $Y = \bar{A}$. The device functions as six independent inverters with Schmitttrigger inputs, so the device has different input threshold levels for positive-going (V_{T+}) and negative going (V_{T-}) signals to provide hysteresis (ΔV_T) which makes the device tolerant to slow or noisy input signals. This 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 AOS6G17 is available in Green SOIC-14(SOP14) and TSSOP-14 packages. It operates over an ambient temperature range of -40°C to $+125^{\circ}\text{C}$.

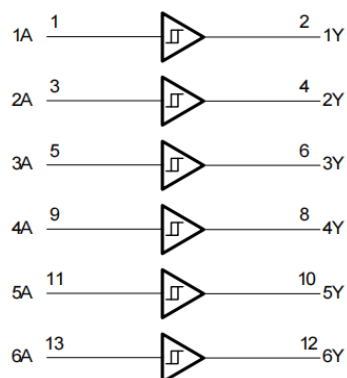
FEATURES

- ★ Operating Voltage Range: 1.65V to 5.5V
- ★ Low Power Consumption: $1\mu\text{A}$ (Max)
- ★ Operating Temperature Range: -40°C to 125°C
- ★ Inputs and Open-Drain Outputs Accept Voltage to 5.5V
- ★ High Output Drive: $\pm 24\text{mA}$ at $V_{CC}=3.0\text{V}$
- ★ I_{off} Supports Partial-Power-Down Mode Operation
- ★ Micro SIZE PACKAGES: SOIC-14(SOP14)、TSSOP-14

APPLICATIONS

- ★ AC Receiver
- ★ Home Theaters
- ★ Blu-ray Players and Home Theaters
- ★ Desktops or Notebook PCs
- ★ Digital Video Cameras(DVC)
- ★ Mobile Phones
- ★ Personal Navigation Device(GPS)
- ★ Portable Media Player

Functional Block Diagram

Device Information⁽¹⁾

PART NUMBER	PACKAGE	BODY SIZE (NOM)
AOS6G17	SOIC-14(SOP14)	8.65mm × 3.90mm
	TSSOP-14	5.00mm × 4.40mm

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

FUNCTION TABLE

INPUTS	OUTPUT
A	Y
H	H
L	L

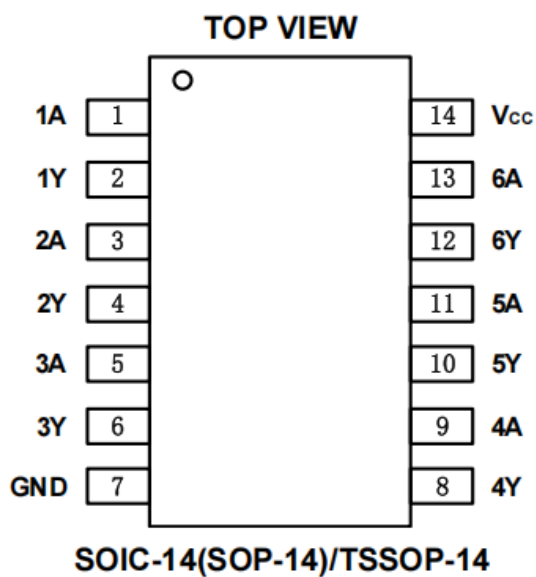
$$Y = \bar{A}$$

L=Low Voltage Level

Z=High-impedance OFF-state



PIN CONFIGURATIONS



PIN DESCRIPTION

NAME	PIN	I/O	DESCRIPTION
	SOIC-14(SOP14)/TSSOP-14		
1A	1	I	Input 1
1Y	2	O	Output 1
2A	3	I	Input 2
2Y	4	O	Output 2
3A	5	I	Input 3
3Y	6	O	Output 3
GND	7	P	Ground
4Y	8	O	Output 4
4A	9	I	Input 4
5Y	10	O	Output 5
5A	11	I	Input 5
6Y	12	O	Output 6
6A	13	I	Input 6
V _{cc}	14	P	Power pin

**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			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		AOS6G17		UNIT
		14PINS		
		SOIC-14(SOP14)	TSSOP-14	
R _{θJA}	Junction-to-ambient thermal resistance	122.2	141.2	°C /W
R _{θJC(top)}	Junction-to-case(top) thermal resistance	80.9	78.8	
R _{θJB}	Junction-to-board thermal resistance	80.6	85.8	
ψ _{JT}	Junction-to-top characterization parameter	40.4	27.7	
ψ _{JB}	Junction-to-board characterization parameter	80.3	85.5	
R _{θJC(bot)}	Junction-to-case(bottom) thermal resistance	N/A	N/A	

PACKAGE/ORDERING INFORMATION

PRODUCT	ORDERING NUMBER	TEMPERATURE RANGE	PACKAGE LEAD	PACKAGE MARKING ⁽¹⁾	PACKAGE OPTION
AOS6G17	AOS6G17XP	-40 $^{\circ}\text{C}$ ~+125 $^{\circ}\text{C}$	SOIC-14(SOP14)	AOS6G17	Tape and Reel, 4000
	AOS6G17XQ	-40 $^{\circ}\text{C}$ ~+125 $^{\circ}\text{C}$	TSSOP-14	AOS6G17	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	TEST CONDITIONS	MIN	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65	5.5	V
		Data retention only	1.5		
Input Voltage	V_I		0	5.5	
Output Voltage	V_O		0	V_{CC}	
Operating Temperature	T_A		-40	+125	$^{\circ}\text{C}$



DC Characteristics

PARAMETER		CONDITIONS	V _{CC}	TEMP	MIN	TYP	MAX	UNIT
V _{T+}	Positive going input threshold voltage		1.65V	Full	0.75		1.05	V
			2.3V		1.25		1.55	
			3V		1.5		2.1	
			4.5V		2.3		3.0	
			5.5V		2.8		3.4	
V _{T-}	Negative going input threshold voltage		1.65V		0.3		0.6	
			2.3V		0.35		0.65	
			3V		0.45		0.75	
			4.5V		0.7		1.0	
			5.5V		0.85		1.15	
Δ V _T	Hysteresis (V _{T+} -V _{T-})		1.65V		0.35		0.6	
			2.3V		0.6		1.2	
			3V		1.05		1.65	
			4.5V		1.6		2.0	
			5.5V		1.95		2.25	
V _{OH}		I _{OH} =-100 μ A	1.65V to 5.5V		V _{CC} -0.1			
		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				0.1	
		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 input	V _I =5.5V or GND	0V to 5.5V	+25°C		± 0.1	± 1	μ A
				Full			± 5	
I _{off}		V _I or V _O =5.5V	0	+25°C		± 0.1	± 1	
				Full			± 10	
I _{CC}		V _I =5.5V or GND, I _O =0	1.65V to 5.5V	+25°C		0.1	1	
				Full			10	
Δ I _{CC}		One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND	3V to 5.5V	Full			500	



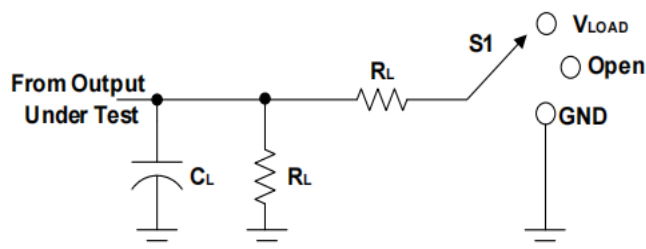
AC Characteristics

PARAMETER	SYMBOL	TEST CONDITIONS		TEMP	MIN	TYP	MAX	UNIT
Propagation Delay	t _{pd}	V _{CC} =1.8V ± 0.15V	C _L =30pF, R _L =500 Ω	FULL		21		ns
		V _{CC} =2.5V ± 0.2V	C _L =30pF, R _L =500 Ω			7.8		
		V _{CC} =3.3V ± 0.3V	C _L =50pF, R _L =500 Ω			5.7		
		V _{CC} =5V ± 0.5V	C _L =50pF, R _L =500 Ω			4.2		
Input Capacitance	C _i	V _{CC} =3.3V	V _{CC} =V _{CC} or GND	+25°C		4		pF
Power dissipation Capacitance	C _{pd}	V _{CC} =1.8V	f=10MHz			21		
		V _{CC} =2.5V				22		
		V _{CC} =3.3V				22		
		V _{CC} =5V				25		



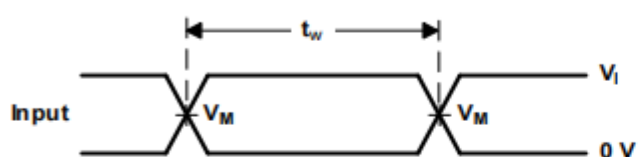
Parameter Measurement Information

Open-Drain

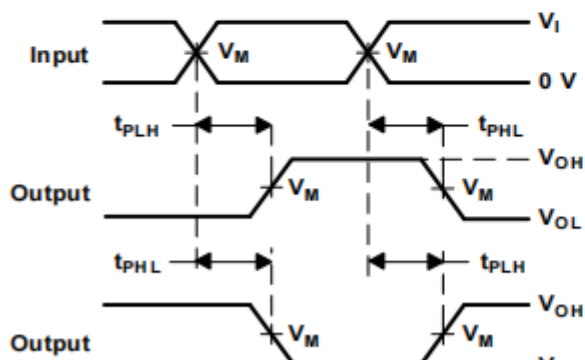


TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

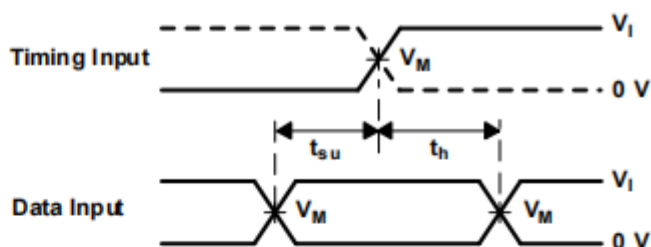
V_{CC}	INPUTS		V_M	V_{LOAD}	C_L	R_L	V_{Δ}
	V_I	t_r/t_f					
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	15pF	1M Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	15pF	1M Ω	0.15V
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	6V	15pF	1M Ω	0.3V
$5V \pm 0.5V$	V_{CC}	$\leq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



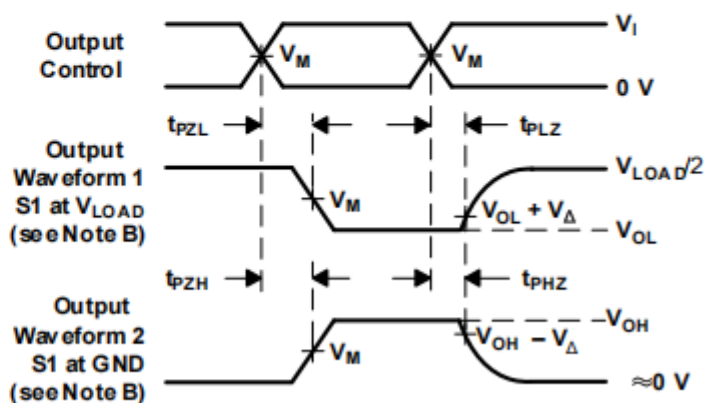
VOLTAGE WAVEFORMS
PULSE DURATION



VOLTAGE WAVEFORMS PROPAGATION DELAY
TIMES INVERTION AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS ENABLE AND DISABLE
TIMES LOW-AND HIGH-LEVEL ENABLING

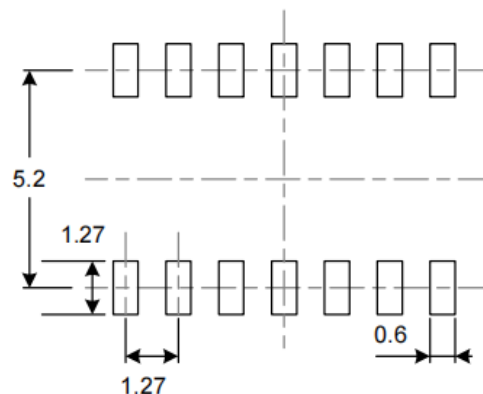
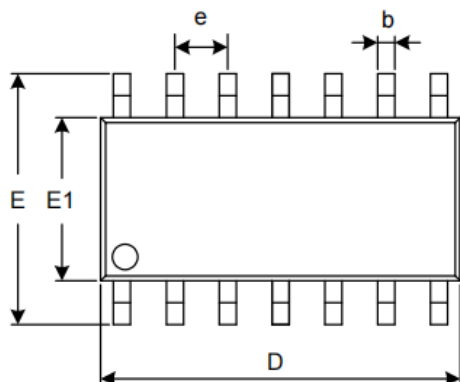


- NOTES:
- A. C_L includes probe and jig capacitance.
 - B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control.
Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
 - C. All input pulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_o = 50 \Omega$.
 - 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.

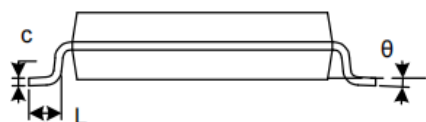
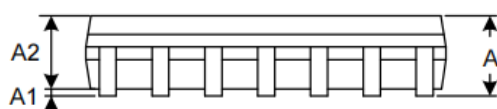
Figure 1. Load Circuit and Voltage Waveforms



PACKAGE OUTLINE DIMENSIONS
SOIC-14(SOP14)



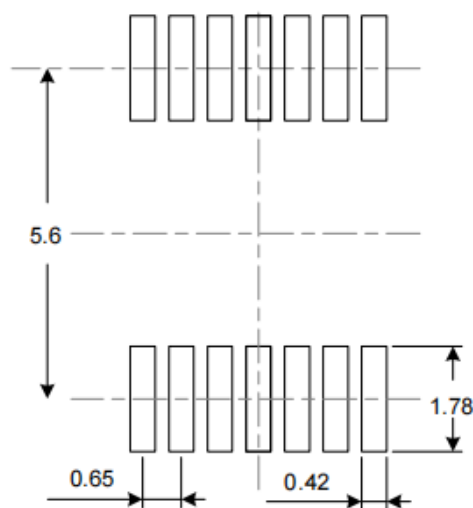
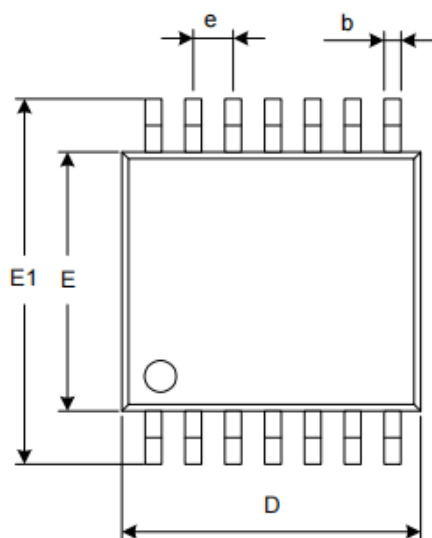
RECOMMENDED LAND PATTERN (Unit: mm)



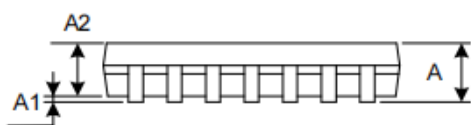
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.310	0.510	0.012	0.020
c	0.100	0.250	0.004	0.010
D	8.450	8.850	0.333	0.348
e	1.270(BSC)		0.050(BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0 °	8 °	0 °	8 °



TSSOP-14



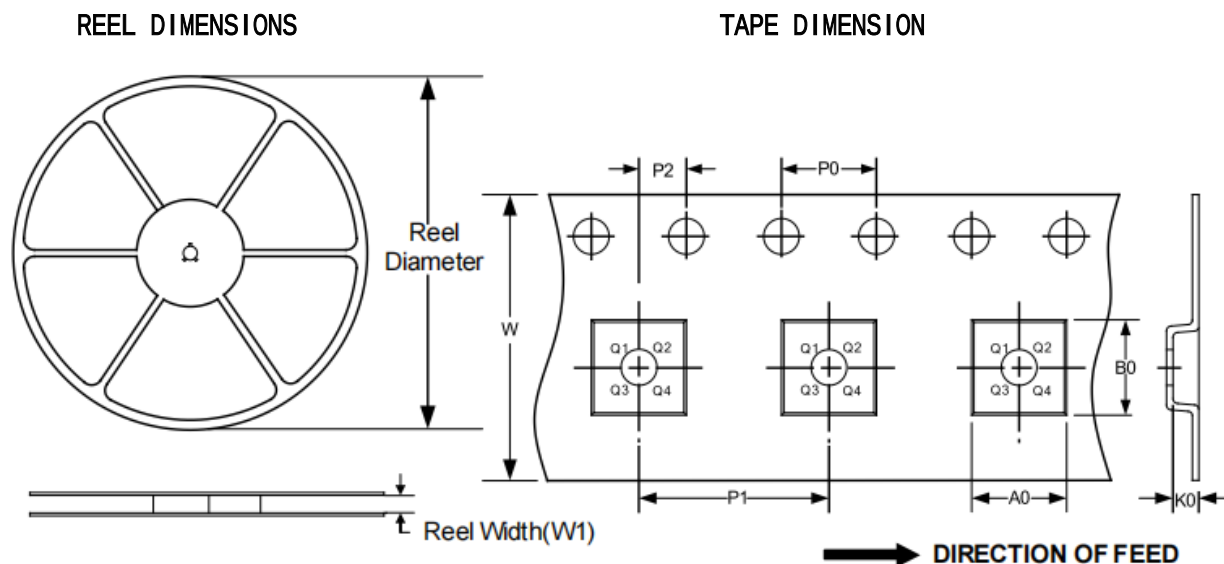
RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A		1.200		0.047
A1	0.050	0.150	0.002	0.006
A2	0.800	1.050	0.031	0.041
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
D	4.860	5.100	0.191	0.201
E	4.300	4.500	0.169	0.177
E1	6.250	6.550	0.246	0.258
e	0.650(BSC)		0.026(BSC)	
L	0.500	0.700	0.020	0.028
H	0.250(TYP)		0.010(TYP)	
θ	1 °	7 °	1 °	7 °



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
SOIC-14(SOP14)	13''	16.4	6.60	9.30	2.10	4.0	8.0	2.0	16.0	Q1
TSSOP-14	13''	12.4	6.95	5.60	1.20	4.0	8.0	2.0	12.0	Q1