



AOS
SEMICONDUCTOR

产品规格说明书

Product Data Sheet

AOS1G07Xx

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电源管理IC



通信接口芯片



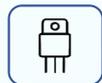
二三极管



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



AOS1G07 Single Buffer/Driver with Open-Drain Output

DESCRIPTIONS

The AOS1G07 Single buffer and driver is designed for 1.65V to 5.5V Vcc operation. The AOS1G07 device is open drain and can be connected to other open-drain outputs to implement active-low wired-OR or active-high wired-AND functions. The device is fully specified for partial-power-down applications using Ioff. The Ioff circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down. The AOS1G07 is available in Green SOT23-5 and SC70-5 packages. It operates over an ambient temperature range of -40°C to +125°C.

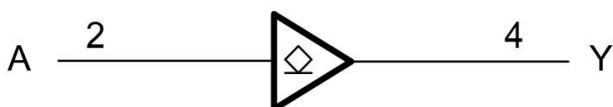
FEATURES

- Operating Voltage Range: 1.65V to 5.5V
- Low Power Consumption: 1µA (Max)
- Operating Temperature Range: -40°C to +125°C
- Input and Open-Drain Output accept Voltage to 5.5V
- High Output Drive: ± 24mA at Vcc=3.0V
- Micro SIZE PACKAGES: SOT23-5, SC70-5

APPLICATIONS

- 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)
AOS1G07	SOT23-5(5)	2.92mm × 1.60mm
	(SC70-5)(5)	2.10mm × 1.25mm

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

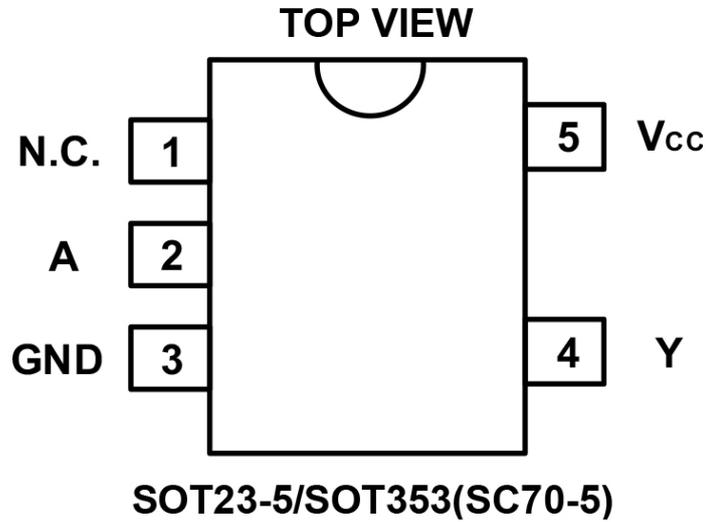
FUNCTION TABLE

INPUTS	OUTPUT
A	Y
L	L
H	Z

H=High Voltage Level
 L=Low Voltage Level
 Z=High-impedance OFF-state



PIN CONFIGURATIONS



PIN DESCRIPTION

PIN	NAME	I/O TYPE	FUNCTION
SOT23-5/SOT353(SC70-5)			
1	N. C.	-	Not connected
2	A	I	Input
3	GND	P	Ground
4	Y	O	Output
5	V _{cc}	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	Output voltage range ⁽²⁾	-0.5	6.5	
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	mA
	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.



ESD Ratings

The following ESD information is provided for handling of ESD-sensitive devices in an ESD protected area only.

			VALUE	UNIT
V _(ESD)	Electrostatic discharge	Human-body model (HBM)	± 7500	V
		Charged-device model (CDM)	± 1500	
		Machine model (MM)	± 200	

Thermal Information:

THERMAL METRIC		AOS1G07		UNIT
		5PINS		
		SOT23-5	SOT353/(SC70-5)	
R _{JA}	Junction-to-ambient thermal resistance	273.8	214.7	/W
R _{JC(top)}	Junction-to-case(top) thermal resistance	126.8	127.1	
R _{JB}	Junction-to-board thermal resistance	85.9	60.0	
J _T	Junction-to-top characterization parameter	10.9	33.4	
J _B	Junction-to-board characterization parameter	84.9	59.8	
R _{JC(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
AOS1G07	AOS1G07XF5	-40°C~+125°C	SOT23-5	1G07	Tape and Reel , 3000
	AOS1G07XC5	-40°C~+125°C	SC70-5(SOT353)	1G07	Tape and Reel , 3000

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.



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		
High-level input voltage	V _{IH}	V _{CC} =1.65V to 1.95V	0.65×V _{CC}		
		V _{CC} =2.3V to 2.7V	1.7		
		V _{CC} =3V to 3.6V	2.2		
		V _{CC} =4.5V to 5.5V	0.7×V _{CC}		
Low-level input voltage	V _{IL}	V _{CC} =1.65V to 1.95V		0.15×V _{CC}	
		V _{CC} =2.3V to 2.7V		0.3	
		V _{CC} =3V to 3.6V		0.4	
		V _{CC} =4.5V to 5.5V		0.15×V _{CC}	
Input voltage	V _I		0	5.5	
Output voltage	V _O		0	5.5	
Input transition rise or fall	t _r , t _f	V _{CC} =1.8V±0.15V, 2.5V±0.2V		20	ns/V
		V _{CC} =3.3V±0.3V		10	
		V _{CC} =5V±0.5V		5	
Operating temperature	T _A		-40	+125	°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 _{OL}		I _{OH} =100μA	1.65V to 5.5V	Full I			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	μA
				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	1	
				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	



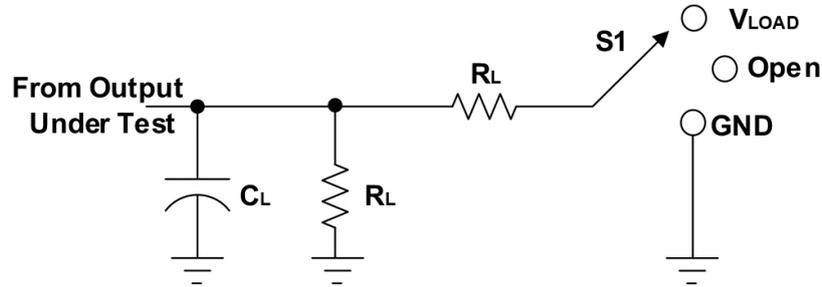
AC Characteristics

PARAMETER	SYMBOL	TEST CONDITIONS		TEMP	MIN ⁽²⁾	TYP ⁽³⁾	MAX ⁽²⁾	UNIT
Propagation Delay	t _{pd}	V _{CC} =1.8V ± 0.15V	C _L =30pF, R _L =1k	Full		6.4		ns
		V _{CC} =2.5V ± 0.2V	C _L =30pF, R _L =500			4.5		
		V _{CC} =3.3V ± 0.3V	C _L =50pF, R _L =500			4.2		
		V _{CC} =5V ± 0.5V	C _L =50pF, R _L =500			3.7		
Input Capacitance	C _i	V _{CC} =3.3V	V _I =V _{CC} or GND	+25°C		4		pF
Power dissipation capacitance	C _{pd}	V _{CC} =1.8V	f=10MHz			3		
		V _{CC} =2.5V				3		
		V _{CC} =3.3V				4		
		V _{CC} =5V				6		

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

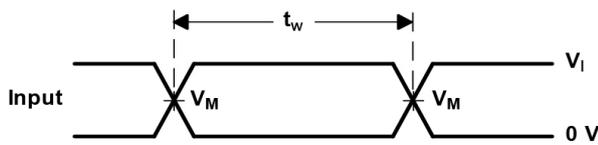


Parameter Measurement Information Open-Drain

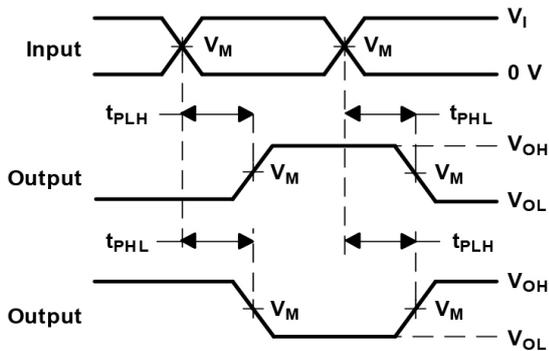


TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

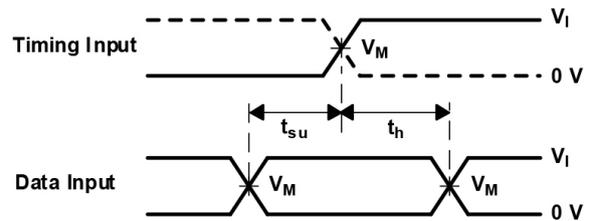
V_{cc}	INPUTS		V_M	V_{LOAD}	C_L		R_L		V
	V_i	t_r/t_f							
$1.8V \pm 0.15V$	V_{cc}	$\leq 2ns$	$V_{cc}/2$	$2 \times V_{cc}$	15pF	30pF	1M	1k	0.15V
$2.5V \pm 0.2V$	V_{cc}	$\leq 2ns$	$V_{cc}/2$	$2 \times V_{cc}$	15pF	30pF	1M	500	0.15V
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	6V	15pF	50pF	1M	500	0.3V
$5V \pm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



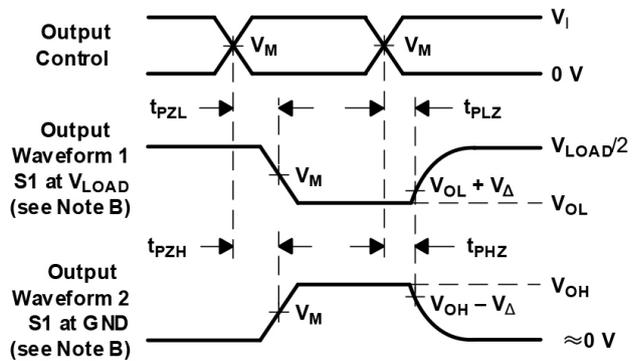
VOLTAGE WAVEFORMS
PULSE DURATION



VOLTAGE WAVEFORMS PROPAGATION DELAY
TIMES INVERTING AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



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

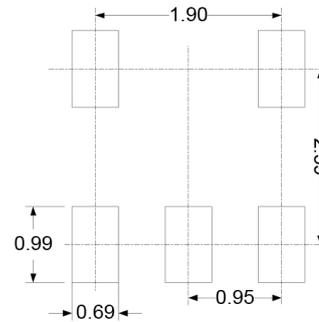
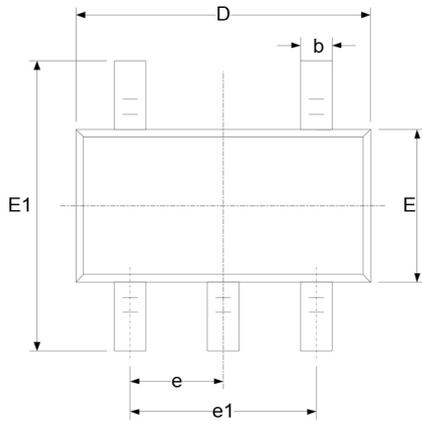


- NOTES:
- A. CL includes probe and jig capacitance.
 - B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control.
Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output 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.

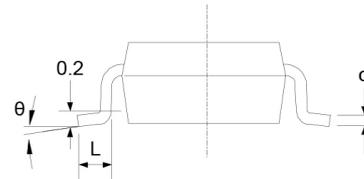
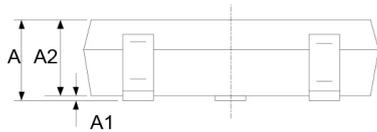
Figure 1. Load Circuit and Voltage Waveforms



PACKAGE OUTLINE DIMENSIONS
SOT23-5



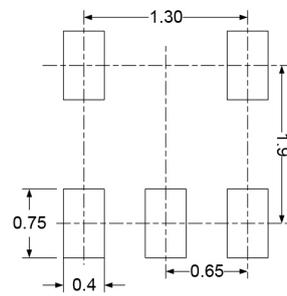
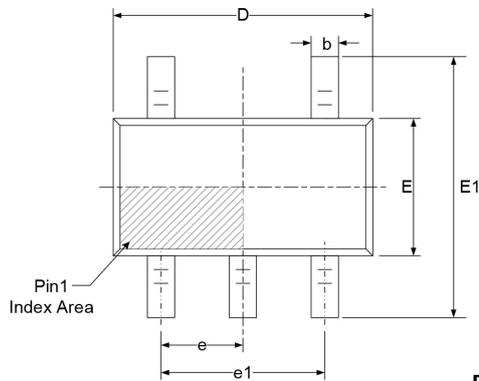
RECOMMENDED LAND PATTERN (Unit: mm)



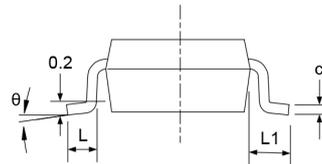
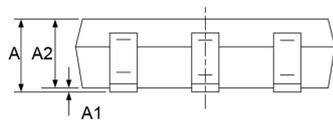
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
	0°	8°	0°	8°



SOT353(SC70-5)



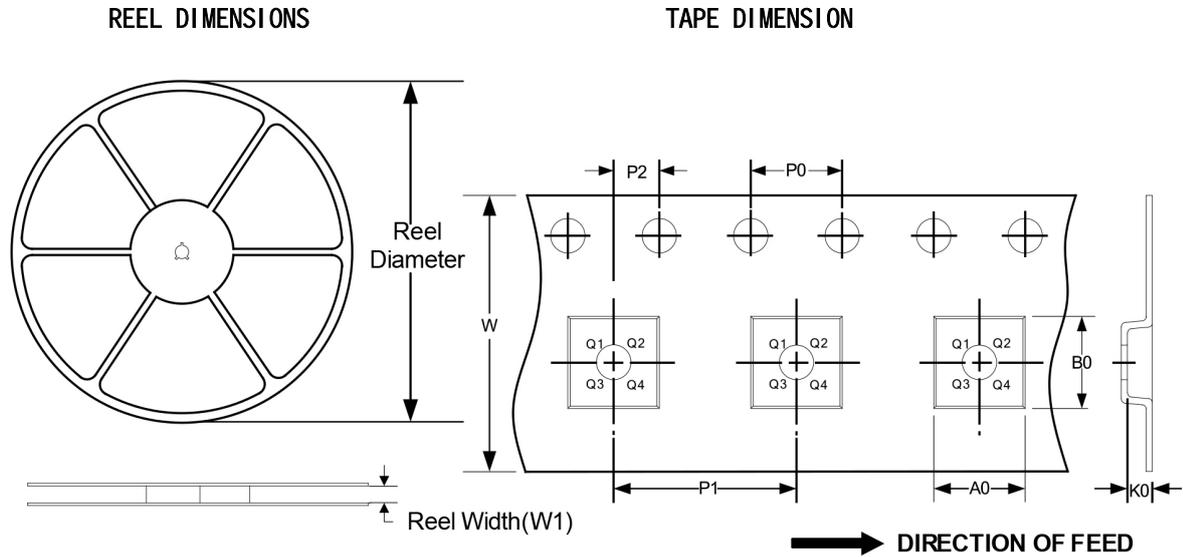
RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650(BSC)		0.26(BSC)	
e1	1.300(BSC)		0.051(BSC)	
L	0.260	0.460	0.010	0.018
L1	0.525		0.021	
	0°	8°	0°	8°



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
SOT353(SC70-5)	7''	9.5	2.25	2.55	1.20	4.0	4.0	2.0	8.0	Q3
SOT23-5	7''	9.5	3.20	3.20	1.40	4.0	4.0	2.0	8.0	Q3