



DESCRIPTION

The AL2G07 is dual buffer and driver is designed for 1.65V to 5.5V VCC operation.

The AL2G07 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 I_{off}. The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

It operates over an ambient temperature range of -40°C to +125°C.

The AL2G07 is available in SOT-26 and SC70-6 Packages.

ORDERING INFORMATION

Package Type	Part Number	
SOT-26 SPQ: 3,000pcs/Reel	E6	AL2G07E6R
		AL2G07E6VR
SC70-6 SPQ:3,000pcs/Reel	C6	AL2G07C6R
		AL2G07C6VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

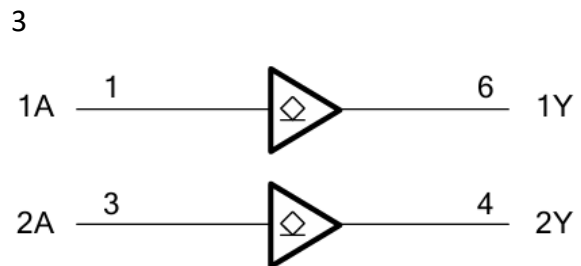
FEATURES

- Operating Voltage Range:1.65V to 5.5V
- Dual Open-Drain Buffer Configuration
- Low Power Consumption:1μA (Max)
- Operating Temperature Range:
-40°C to +125°C
- Inputs and Open-Drain Outputs
- Accept Voltage to 5.5V
- High Output Drive: ±24mA at VCC=3.0V
- Extended Temperature: -40°C to +125°C

APPLICATION

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

SIMPLIFIED SCHEMATIC



**PIN DESCRIPTION**

AL2G07
SOT-26

SOT-26, E6
Top View

AL2G07
SC70-26

SC70-6, C6
Top View

PIN#		Symbol	I/O	Function
SOT-26	SC70-6			
1	1	1A	I	Input 1
2	2	GND	P	Ground
3	3	2A	I	Input 2
4	4	2Y	O	Open-drain output 2
5	5	V _{CC}	P	Power pin
6	6	1Y	O	Open-drain output 1

I=input, O=output, I/O=input and output, P=power

FUNCTION TABLE

INPUTS	OUTPUT
A	Y
L	L
H	Z

H=High Voltage Level

L=Low Voltage Level

Z=High-impedance OFF-state



ABSOLUTE MAXIMUM RATINGS

over operating free-air temperature range (unless otherwise noted)

V _{CC} , Supply Voltage Range		-0.5V ~ + 6.5V
V _I , Input Voltage Range ⁽¹⁾		-0.5V ~ + 6.5V
V _O ⁽¹⁾ , Voltage Range Applied to any Output in the High-Impedance or Power-Off State		-0.5V ~ + 6.5V
V _O , Voltage range applied to any output in the high or low state ⁽¹⁾ ⁽²⁾		-0.5V ~ + V _{CC} +0.5V
I _{IK} , Input Clamp Current	V _I <0	-50mA
I _{OK} , Output Clamp Current	V _O <0	-50mA
I _O , Continuous Output Current		±50mA
I _O , Continuous Current through V _{CC} or GND		±100mA
R _{θJA} , Junction-to-Ambient Thermal Resistance	SOT-26	273.8°C/W
	SC70-6	214.7°C/W
T _J , Junction Temperature ⁽⁴⁾		-65°C ~ +150°C
T _{STG} , Storage Temperature		-65°C ~ +150°C

Stresses above 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 in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.

(2) The value of V_{CC} is provided in the Recommended Operating Conditions table.

**ELECTRICAL CHARACTERISTICS**T_A=+25°C, unless otherwise noted.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Supply Voltage	V _{CC}	Operating	1.65	-	5.50	V
		Data retention only	1.50	-	5.50	
High-Level Input Voltage, Data Inputs ⁽²⁾	V _{IH}	V _{CC} = 1.65 V ~1.95 V	0.65xV _{CC}	-	-	V
		V _{CC} = 2.3V ~2.7 V	1.70	-	-	
		V _{CC} = 3 V ~3.6 V	2.20	-	-	
		V _{CC} = 4.5 V ~5.5 V	0.70xV _{CC}	-	-	
Low-Level Input Voltage, Data Inputs ⁽²⁾	V _{IL}	V _{CC} = 1.65 V ~1.95 V	-	-	0.15xV _{CC}	V
		V _{CC} = 2.3V ~2.7 V	-	-	0.30	
		V _{CC} = 3 V ~3.6 V	-	-	0.40	
		V _{CC} = 4.5 V ~5.5 V	-	-	0.15xV _{CC}	
Input Voltage	V _I	-	0	-	5.50	V
Output Voltage	V _O	-	0	-	5.50	V
Input transition rise or fall	tr, tf	V _{CC} =1.8V± 0.15V, 2.5V ± 0.2V	-	-	20	
		V _{CC} =3.3V± 0.3V	-	-	10	
		V _{CC} =5V± 0.5V	-	-	5	
Operating Temperature	T _A	-	-40	-	+125	°C

(1) All unused or driven (floating) data inputs (I/Os) of the device must be held at logic HIGH or LOW (preferably V_{CCI} or GND) to ensure proper device operation and minimize power.

(2) For V_{CCI} values not specified in the data sheet, V_{IH} min = V_{CCI} × 0.7 V, V_{IL} max = V_{CCI} × 0.3 V.

(3) For V_{CCA} values not specified in the data sheet, V_{IH} min = V_{CCA} × 0.7 V, V_{IL} max = V_{CCA} × 0.3 V.



AC CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Propagation Delay	tpd	VCC=1.8V±0.15V CL=30pF, RL=1kΩ	-	6.40	-	ns
		VCC=2.5V±0.2V CL=30pF, RL=500Ω	-	4.50	-	
		VCC=3.3V±0.3V CL=50pF, RL=500Ω	-	4.20	-	
		VCC=5V±0.5V CL=50pF, RL=500Ω	-	3.70	-	
Input Capacitance	Ci	VCC=3.3V, VI=VCC or GND	-	4	-	pF
Power Dissipation Capacitance	Cpd	VCC=1.8V, f=10MHz	-C	-3	-	pF
		VCC = 2.5V, f=10MHz	-	-3	-	
		VCC = 3.3V, f=10MHz	-	-4	-	
		VCC = 5V, f=10MHz	-	-6	-	

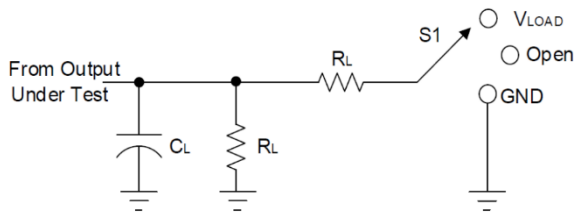
All unused inputs of the device must be held at VCC or GND to ensure proper device operation

DC CHARACTERISTICS

Parameter		Conditions	Min	Typ.	Max	Unit	
V _{OH}		I _{OH} = -100 μA, V _{CC} =1.65~5.5V	-40°C ~ +125°C	V _{CC} -0.1	-	-	V
		I _{OH} = -4mA, V _{CC} =1.65V		1.20	-	-	
		I _{OH} = -8mA, V _{CC} =2.3V		1.90	-	-	
		I _{OH} = -16mA, V _{CC} =3V		2.30	-	-	
		I _{OH} = -24mA, V _{CC} =3V		2.40	-	-	
		I _{OH} = -32mA, V _{CC} =4.5V		3.80	-	-	
V _{OL}		I _{OH} = 100 μA, V _{CC} =1.65~5.5V	-40°C ~ +125°C	-	-	0.10	V
		I _{OH} = 4mA, V _{CC} =1.65V		-	-	0.45	
		I _{OH} = 8mA, V _{CC} =2.3V		-	-	0.30	
		I _{OH} = 16mA, V _{CC} =3V		-	-	0.40	
		I _{OH} = 24mA, V _{CC} =3V		-	-	0.55	
		I _{OH} = 32mA, V _{CC} =4.5V		-	-	0.55	
I _i	A or B inputs	V _I = 5.5V or GND, V _{CC} =1.65V~5.5V	+25°C	-	±0.1	±1	μA
		-40°C ~ +125°C	-	-	±5		
I _{off}		V _I or V _O = 0 to 5.5V, V _{CC} =0V	+25°C	-	±0.1	±1	μA
			-40°C ~ +125°C	-	-	±10	
I _{CC}		V _I =5.5V or GND, I _O =0 V _{CC} =1.65V~5.5V	+25°C	-	0.10	1	μA
			-40°C ~ +125°C	-	-	10	
ΔI _{CC}		One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND V _{CC} =3V~5.5V	-40°C ~ +125°C	-	-	500	μA

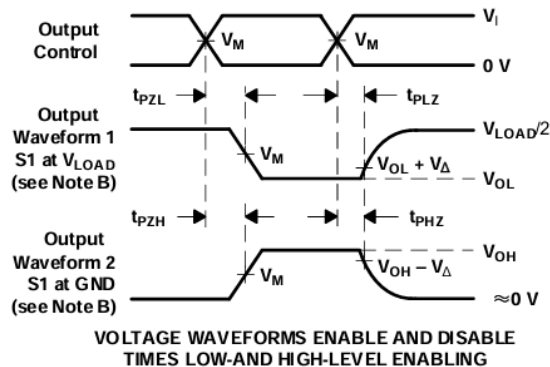
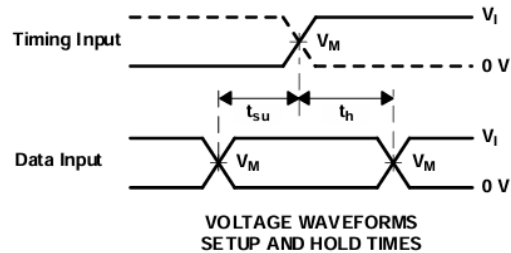
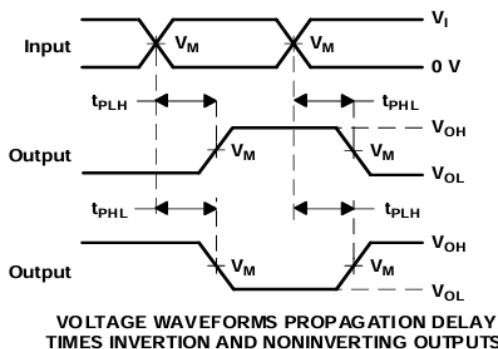
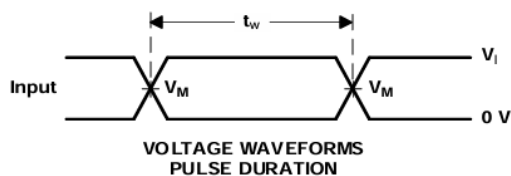


PARAMETER MEASUREMENT INFORMATION



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

VCC	INPUTS		VM	VLOAD	CL		RL		VA
	VI	tr/tf							
1.8V±0.15V	VCC	≤2ns	VCC/2	2 x VCC	15pF	30pF	1MΩ	1kΩ	0.15V
2.5V±0.2V	VCC	≤2ns	VCC/2	2 x VCC	15pF	30pF	1MΩ	500Ω	0.15V
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	15pF	50pF	1MΩ	500Ω	0.3V
5V±0.5V	VCC	≤2.5ns	VCC/2	2 x VCC	15pF	50pF	1MΩ	500Ω	0.3V

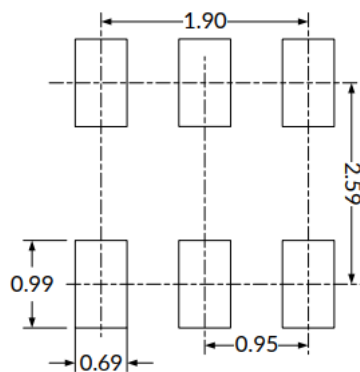
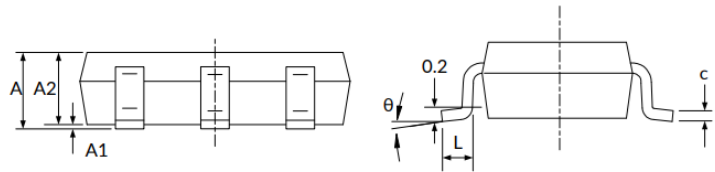
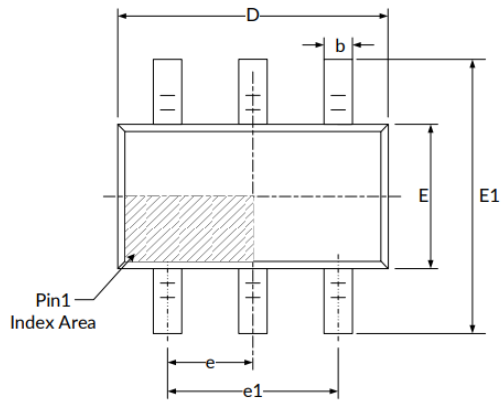


- (A) C_L includes probe and jig capacitance.
- (B) Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
- (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_{LPZ} 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.



PACKAGE INFORMATION

Dimension in SOT-26 (Unit: mm)

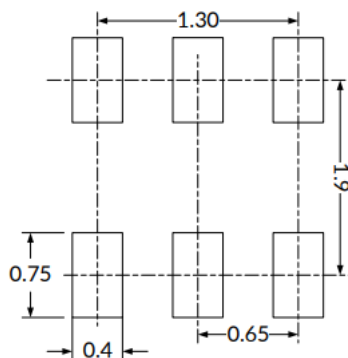
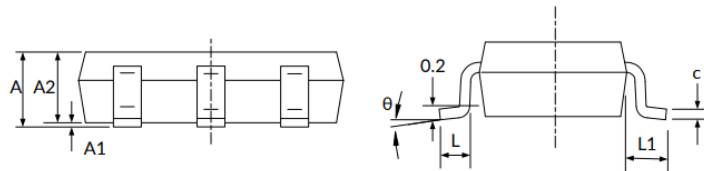
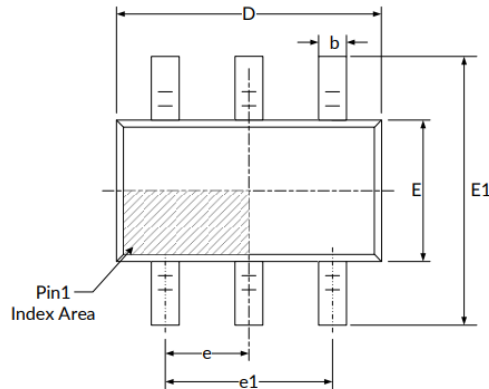


Recommended Land Pattern (Unit: mm)

Symbol	Millimeters	
	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
e	0.950 BSC	
e1	1.800	2.000
E	1.500	1.700
E1	2.650	2.950
L	0.300	0.600
θ	0°	8°



Dimension in SC70-6(Unit: mm)



Recommended Land Pattern (Unit: mm)

Symbol	Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 BSC	
e1	1.300 BSC	
L	0.260	0.460
H	0.525 TYP	
θ	0°	8°



IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or severe property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.