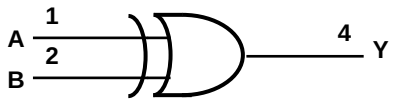
NEW PRODUCT

Pin Descriptions

Pin Name	Pin No	Description
A	1	Data Input
B	2	Data Input
GND	3	Ground
Y	4	Data Output
V_{CC}	5	Supply Voltage

Logic Diagram



Function Table

Inputs		Output
A	B	Y
H	H	L
L	H	H
H	L	H
L	L	L

NEW PRODUCT

Absolute Maximum Ratings (Note 2)

Symbol	Description	Rating	Unit
ESD HBM	Human Body Model ESD Protection	2	KV
ESD CDM	Charged Device Model ESD Protection	1	KV
ESD MM	Machine Model ESD Protection	200	V
V_{CC}	Supply Voltage Range	-0.5 to 6.5	V
V_I	Input Voltage Range	-0.5 to 6.5	V
V_O	Voltage applied to output in high or low state	-0.5 to V_{CC} +0.5	V
I_{IK}	Input Clamp Current V_I<0	-20	mA
I_{OK}	Output Clamp Current (V_O < 0 or V_O > V_{CC})	±20	mA
I_O	Continuous output current (V_O = 0 to V_{CC})	±25	mA
I_{CC}	Continuous current through V_{CC}	50	mA
I_{GND}	Continuous current through GND	-50	mA
T_J	Operating Junction Temperature	-40 to 150	°C
T_{STG}	Storage Temperature	-65 to 150	°C

Notes: 2. Stresses beyond the absolute maximum may result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.

Recommended Operating Conditions (Note 3)

Symbol	Parameter		Min	Max	Unit
V_{CC}	Operating Voltage		4.5	5.5	V
V_{IH}	High-level Input Voltage		2.0		V
V_{IL}	Low-level input voltage			0.8	V
V_I	Input Voltage		0	5.5	V
V_O	Output Voltage		0	V_{CC}	V
I_{OH}	High-level output current			-8	mA
I_{OL}	Low-level output current			8	mA
Δt/ΔV	Input transition rise or fall rate			20	ns/V
T_A	Operating free-air temperature		-40	125	ºC

Notes: 3. Unused inputs should be held at V_{CC} or Ground.

NEW PRODUCT

Electrical Characteristics

Symbol	Parameter	Test Conditions	V_{CC}	25°C			-40°C to 85°C		-40°C to 125°C		Unit
				Min	Typ.	Max	Min	Max	Min	Max	
V_{OH}	High Level Output Voltage	I_{OH} = -50µA	4.5V	4.4	4.5		4.4		4.4		V
		I_{OH} = -8mA	4.5V	3.94			3.8		3.70		
V_{OL}	Low Level Output Voltage	I_{OL} = 50µA	4.5V		0	0.1		0.1		0.1	V
		I_{OL} = 8mA	4.5V			0.36		0.44		0.55	
I_I	Input Current	V_I = 5.5V or GND	0 to 5.5V			± 0.1		± 1		± 2	µA
I_{CC}	Supply Current	V_I = 5.5V or GND I_O=0	5.5V			1		10		40	µA
C_i	Input Capacitance	V_I = V_{CC} – or GND	5.5V		2.0	10		10		10	pF
ΔI_{CC}	Additional Supply Current	One input at 3.4 V Other inputs at V_{CC} or GND	5.5V			1.35		1.5			mA
θ_{JA}	Thermal Resistance Junction-to-Ambient	SOT25	(Note 4)		204						°C/W
		SOT353			371						
θ_{JC}	Thermal Resistance Junction-to-Case	SOT25	(Note 4)		52						°C/W
		SOT353			143						

Note: 4. Test conditions for SOT25, and SOT353: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Switching Characteristics

V_{CC} = 5V ± 0.5V (see Figure 1)

Parameter	From (Input)	TO (OUTPUT)		25°C			-40°C to 85°C		-40°C to 125°C		Unit
				Min	Typ.	Max	Min	Max	Min	Max	
t_{pd}	A or B	Y	C_L=15pF	0.6	3.5	6.9	0.6	8.0	0.6	9.0	ns
			C_L=50pF	0.6	5.0	7.9	0.6	9.0	0.6	10.5	ns

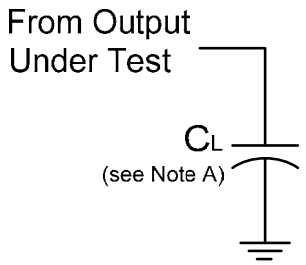
Operating Characteristics

T_A = 25 °C

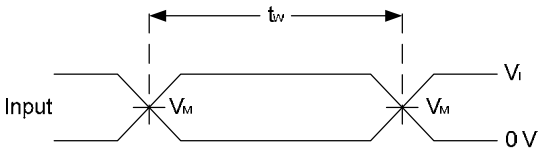
Parameter		Test Conditions	V_{CC} = 5V	Unit
			Typ.	
C_{pd}	Power dissipation capacitance	f = 1 MHz No Load	15	pF

NEW PRODUCT

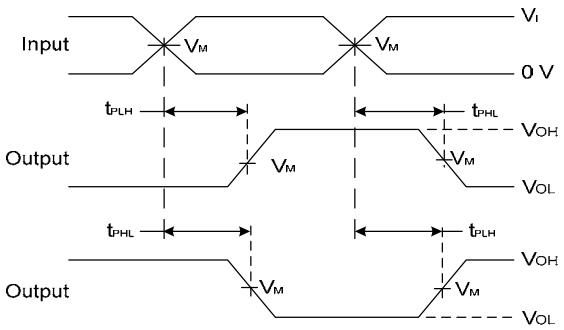
Parameter Measurement Information



V_{CC}	Inputs		V_M	C_L
	V_I	t_r/t_f		
5V±0.5V	3V	≤3ns	1.5V	15pF
5V±0.5V	3V	≤3ns	1.5V	50pF



Voltage Waveform Pulse Duration

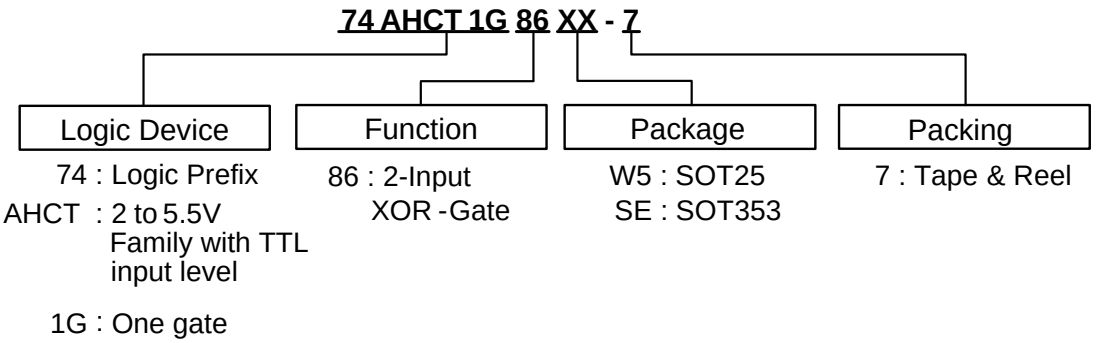


Voltage Waveform Propagation Delay Times
Inverting and Non Inverting Outputs

Notes: A. Includes test lead and test apparatus capacitance.
B. All pulses are supplied at pulse repetition rate ≤ 1 MHz.
C. Inputs are measured separately one transition per measurement.
D. t_{PLH} and t_{PHL} are the same as t_{pd}.

NEW PRODUCT

Ordering Information

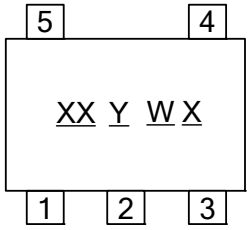


Device	Package Code	Packaging (Note 5)	7" Tape and Reel	
			Quantity	Part Number Suffix
74AHCT1G86W5-7	W5	SOT25	3000/Tape & Reel	-7
74AHCT1G86SE-7	SE	SOT353	3000/Tape & Reel	-7

Notes: 5. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

Marking Information

(Top View)



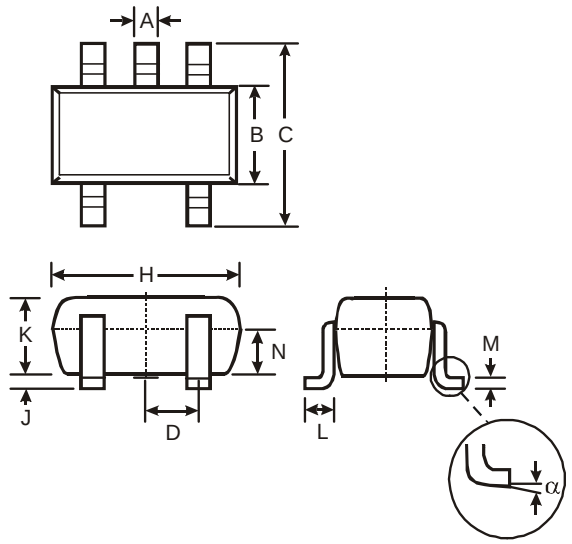
XX : Identification code
Y : Year 0~9
W : Week : A~Z : 1~26 week; a~z : 27~52 week; z represents 52 and 53 week
X : A~Z : Internal code

Part Number	Package	Identification Code
74AHCT1G86W5	SOT25	ZX
74AHCT1G86SE	SOT353	ZX

NEW PRODUCT

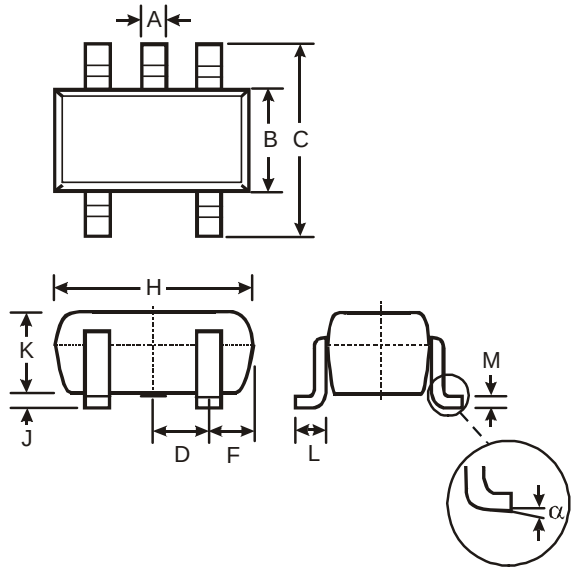
Package Outline Dimensions (All Dimensions in mm)

(1) Package Type: SOT25



SOT25			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
N	0.70	0.80	0.75
α	0°	8°	—
All Dimensions in mm			

(2) Package Type: SOT353



SOT353		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Typ	
F	0.40	0.45
H	1.80	2.20
J	0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.22
α	0°	8°
All Dimensions in mm		

NEW PRODUCT

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or

2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

www.diodes.com