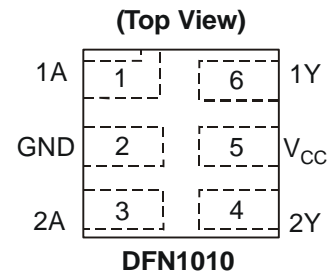
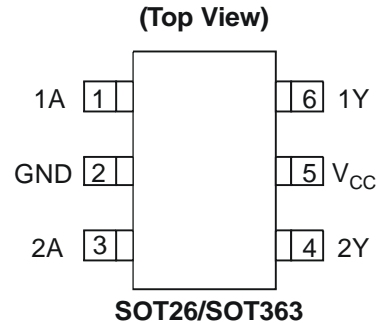


**Description**

The 74LVC2G06 is a dual inverter gate with open drain outputs. The device is designed for operation with a power supply range of 1.65V to 5.5V. The input is tolerant to 5.5V allowing this device to be used in a mixed voltage environment. The device is fully specified for partial power down applications using I<sub>OFF</sub>. The I<sub>OFF</sub> circuitry disables the output preventing damaging current backflow when the device is powered down. The open-drain output can be connected to other open drain outputs to implement active-low wired-OR or active-high wired-AND functions. The maximum sink current is 32 mA.

**Pin Assignments**



**Features**

- Wide Supply Voltage Range from 1.65V to 5.5V
- -24mA Output Drive at 3.0V
- CMOS low power consumption
- IOFF Supports Partial-Power-Down Mode Operation
- Inputs accept up to 5.5V
- ESD Protection Tested per JESD 22
  - Exceeds 200-V Machine Model (A115-A)
  - Exceeds 2000-V Human Body Model (A114-A)
  - Exceeds 1000-V Charged Device Model (C101)
- Latch-Up Exceeds 100mA per JESD 78, Class II
- Range of Package Options
- SOT26, SOT363, and DFN1010 Available in “Green” Molding Compound (no Br, Sb)
- Lead Free Finish/ RoHS Compliant (Note 1)

**Applications**

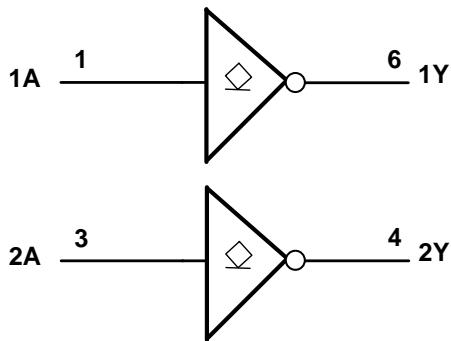
- Voltage Level Shifting
- General Purpose Logic
- Power Down Signal Isolation
- Wide array of products such as:
  - PCs, networking, notebooks, netbooks, PDAs
  - Computer peripherals, hard drives, CD/DVD ROM
  - TV, DVD, DVR, set top box
  - Cell Phones, Personal Navigation / GPS
  - MP3 players ,Cameras, Video Recorders

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at [http://www.diodes.com/products/lead\\_free.html](http://www.diodes.com/products/lead_free.html).

**Pin Descriptions**

Pin Name	Pin NO.	Description
1A	1	Data Input
GND	2	Ground
2A	3	Data Input
2Y	4	Data Output Open Drain
V <sub>CC</sub>	5	Supply Voltage
1Y	6	Data Output Open Drain

**Logic Diagram**



**Function Table**

Inputs	Output
A	Y
H	L
L	Z

### 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 <sub>CC</sub>	Supply Voltage Range	-0.5 to 6.5	V
V <sub>I</sub>	Input Voltage Range	-0.5 to 6.5	V
V <sub>O</sub>	Voltage applied to output in high impedance or I <sub>OFF</sub> state	-0.5 to 6.5	V
V <sub>O</sub>	Voltage applied to output in high or low state	-0.3 to V <sub>CC</sub> +0.5	V
I <sub>IK</sub>	Input Clamp Current V <sub>I</sub> <0	-50	mA
I <sub>OK</sub>	Output Clamp Current V <sub>O</sub> <0	-50	mA
I <sub>O</sub>	Continuous output current	-50	mA
	Continuous current through V <sub>DD</sub> or GND	±100	mA
T <sub>J</sub>	Operating Junction Temperature	-40 to 150	°C
T <sub>STG</sub>	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 <sub>CC</sub>	Operating Voltage	Operating	1.65	5.5	V
		Data retention only	1.5		V
V <sub>IH</sub>	High-level Input Voltage	V <sub>CC</sub> = 1.65V to 1.95V	0.65 X V <sub>CC</sub>		V
		V <sub>CC</sub> = 2.3V to 2.7V	1.7		
		V <sub>CC</sub> = 3V to 3.6V	2		
		V <sub>CC</sub> = 4.5V to 5.5V	0.7 X V <sub>CC</sub>		
V <sub>IL</sub>	Low-level input voltage	V <sub>CC</sub> = 1.65V to 1.95V		0.35 X V <sub>CC</sub>	V
		V <sub>CC</sub> = 2.3V to 2.7V		0.7	
		V <sub>CC</sub> = 3V to 3.6V		0.8	
		V <sub>CC</sub> = 4.5V to 5.5V		0.3 X V <sub>CC</sub>	
V <sub>I</sub>	Input Voltage	0	5.5	V	
V <sub>O</sub>	Output Voltage	0	V <sub>CC</sub>	V	
I <sub>OL</sub>	Low-level output current	V <sub>CC</sub> = 1.65V		4	mA
		V <sub>CC</sub> = 2.3V		8	
		V <sub>CC</sub> = 3V		16	
		V <sub>CC</sub> = 4.5V		32	
Δt/ΔV	Input transition rise or fall rate	V <sub>CC</sub> = 1.8V ± 0.15V, 2.5V ± 0.2V		20	ns/V
		V <sub>CC</sub> = 3.3V ± 0.3V		10	
		V <sub>CC</sub> = 5V ± 0.5V		10	
T <sub>A</sub>	Operating free-air temperature	-40	125	°C	

Notes: 3. Unused inputs should be held at V<sub>CC</sub> or Ground.

### Electrical Characteristics

Symbol	Parameter	Test Conditions	V <sub>CC</sub>	40°C to 85°C		-40°C to 125°C		Unit
				Min	Max	Min	Max	
V <sub>OL</sub>	Low Level Output Voltage	I <sub>OL</sub> = 100µA	1.65V to 5.5V		0.1		0.1	V
		I <sub>OL</sub> = 4mA	1.65V		0.45		0.70	
		I <sub>OL</sub> = 8mA	2.3V		0.3		0.45	
		I <sub>OL</sub> = 16mA	3V		0.4		0.60	
		I <sub>OL</sub> = 24mA			0.55		0.80	
		I <sub>OL</sub> = 32mA	4.5V		0.55		0.80	
I <sub>I</sub>	Input Current	V <sub>I</sub> = 5.5 V or GND	0 to 5.5V		± 5		± 20	µA
I <sub>OZ</sub>	Z State Leakage Current	V <sub>O</sub> = 0 to 5.5V	3.6V		± 10		± 10	µA
I <sub>OFF</sub>	Power Down Leakage Current	V <sub>I</sub> or V <sub>O</sub> = 5.5V	0		± 10		± 20	µA
I <sub>CC</sub>	Supply Current	V <sub>I</sub> = 5.5V of GND I <sub>O</sub> = 0	1.65V to 5.5V		10		40	µA
ΔI <sub>CC</sub>	Additional Supply Current	Input at V <sub>CC</sub> - 0.6V	3V to 5.5V		500		5000	µA

### Package Characteristics (All typical values are at V<sub>CC</sub> = 3.3V, T<sub>A</sub> = 25°C)

Symbol	Parameter	Test Conditions	V <sub>CC</sub>	Min	Typ.	Max	Unit
C <sub>I</sub>	Input Capacitance	V <sub>I</sub> = V <sub>CC</sub> - or GND	3.3		3.5		pF
θ <sub>JA</sub>	Thermal Resistance Junction-to-Case	SOT26	(Note 4)		204		°C/W
		SOT363		371			
		DFN1010		430			
θ <sub>JC</sub>	Thermal Resistance Junction-to-Case	SOT26	(Note 4)		52		°C/W
		SOT363		143			
		DFN1010		190			

Notes: 4. Test condition for SOT26, SOT363 and DFN1010: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

### Switching Characteristics

T<sub>A</sub> = -40°C to 85°C, C<sub>L</sub> = 30 or 50pF (see Figure 1)

Parameter	From (Input)	TO (OUTPUT)	V <sub>CC</sub> = 1.8V ± 0.15V		V <sub>CC</sub> = 2.5V ± 0.2V		V <sub>CC</sub> = 3.3V ± 0.3V		V <sub>CC</sub> = 5V ± 0.5V		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
t <sub>pd</sub>	A	Y	0.5	6.5	0.5	3.9	0.5	3.4	0.5	2.9	ns

T<sub>A</sub> = -40°C to 125°C, C<sub>L</sub> = 30 or 50pF (see Figure 1)

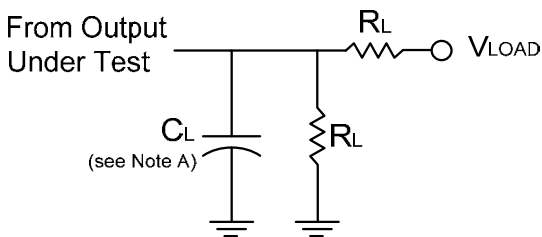
Parameter	From (Input)	TO (OUTPUT)	V <sub>CC</sub> = 1.8V ± 0.15V		V <sub>CC</sub> = 2.5V ± 0.2V		V <sub>CC</sub> = 3.3V ± 0.3V		V <sub>CC</sub> = 5V ± 0.5V		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
t <sub>pd</sub>	A	Y	0.5	8.2	0.5	4.9	0.5	4.3	0.5	3.7	ns

**Operating Characteristics**

T<sub>A</sub> = 25 °C

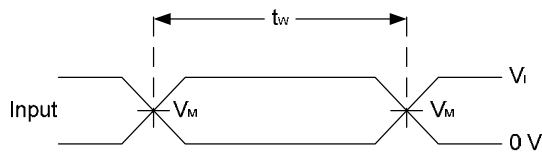
Parameter	Test Conditions	V <sub>CC</sub> = 1.8V	V <sub>CC</sub> = 2.5V	V <sub>CC</sub> = 3.3V	V <sub>CC</sub> = 5V	Unit	
		Typ.	Typ.	Typ.	Typ.		
C <sub>pd</sub>	Power dissipation capacitance	f = 10 MHz	3	3	4	6	pF

**Parameter Measurement Information**

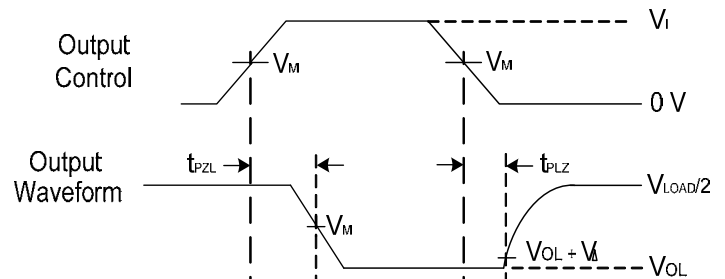


TEST	Condition
t <sub>PLZ</sub> (see Notes D and E)	V <sub>load</sub>
t <sub>PZL</sub> (see Notes D and F)	V <sub>load</sub>

V <sub>CC</sub>	Inputs		V <sub>M</sub>	V <sub>LOAD</sub>	C <sub>L</sub>	R <sub>L</sub>	V <sub>Δ</sub>
	V <sub>I</sub>	t <sub>r</sub> /t <sub>f</sub>					
1.8V±0.15V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	2 X V <sub>CC</sub>	30 pF	1 KΩ	0.15 V
2.5V±0.2V	V <sub>CC</sub>	≤2ns	V <sub>CC</sub> /2	2 X V <sub>CC</sub>	30 pF	500 Ω	0.15 V
3.3V±0.3V	3 V	≤2.5ns	1.5 V	6 V	50 pF	500 Ω	0.3 V
5V±0.5V	V <sub>CC</sub>	≤2.5ns	V <sub>CC</sub> /2	2 X V <sub>CC</sub>	50 pF	500 Ω	0.3 V



**Voltage Waveform Pulse Duration**

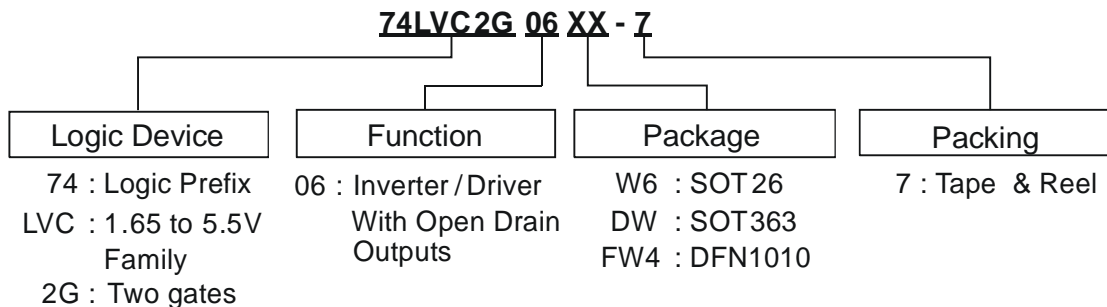


**Voltage Waveform Propagation Delay Times**

**Figure 1. Load Circuit and Voltage Waveforms**

- Notes:
- A. Includes test lead and test apparatus capacitance.
  - B. All pulses are supplied at pulse repetition rate ≤ 10 MHz
  - C. The inputs are measured one at a time with one transition per measurement.
  - D. For the open drain device t<sub>PLZ</sub> and t<sub>PZL</sub> are the same as t<sub>PD</sub>
  - E. t<sub>PZL</sub> is measured at V<sub>M</sub>.
  - F. t<sub>PLZ</sub> is measured at V<sub>OL</sub> + V<sub>Δ</sub>

**Ordering Information**

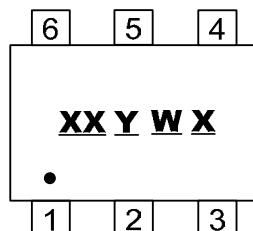


Device	Package Code	Packaging (Note 5)	7" Tape and Reel	
			Quantity	Part Number Suffix
74LVC2G06W6-7	W6	SOT26	3000/Tape & Reel	-7
74LVC2G06DW-7	DW	SOT363	3000/Tape & Reel	-7
74LVC2G06FW4-7	FW4	DFN1010	5000/Tape & Reel	-7

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>  
 6. The taping orientation is located on our website at <http://www.diodes.com/datasheets/ap02007.pdf>

**Marking Information**

**(1) SOT26, SOT363**



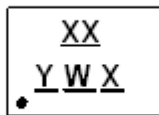
**XX** : Identification code  
**Y** : Year 0~9  
**W** : Week : A~Z : 1~26 week;  
 a~z : 27~52 week; z represents  
 52 and 53 week  
**X** : A~Z : Internal Code

Part Number	Package	Identification Code
74LVC2G06W6	SOT26	Z3
74LVC2G06DW	SOT363	Z3

**Marking Information (cont.)**

**(2) DFN1010**

**(Top View)**

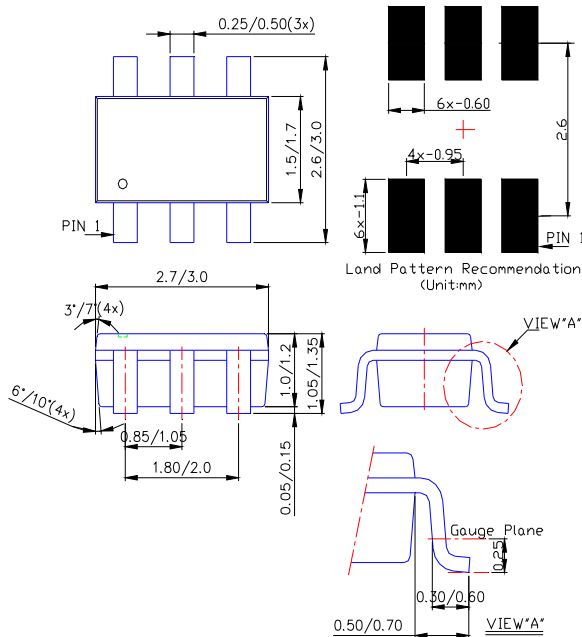


XX : Identification Code  
Y : Year : 0~9  
W : Week : A~Z : 1~26 week;  
           a~z : 27~52 week; z represents  
           52 and 53 week  
X : A~Z : Internal code

Part Number	Package	Identification Code
74LVC2G06FW4	DFN1010	Z3

**Package Outline Dimensions (All Dimensions in mm)**

**(1) Package Type: SOT26**







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