1.Description

The UMW 74LVC1G06 is a high performance single inverter with open drain outputs operating from a 1.65V to 5.5V supply. The Output stage is open drain with Over Voltage Tolerance. This allows the UMW 74LVC1G06 to be used to interface 5.0V circuits to circuits of any voltage between 0 and +7.0V.

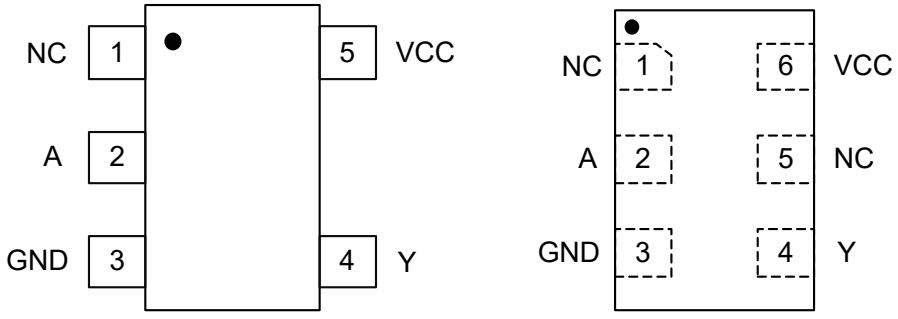
2.1Features

- Extremely High Speed: t_{PD}=2.5ns (typical) at V_{CC}= 5.0V
- Designed for 1.65V to 5.5V V_{CC} Operation, CMOS Compatible
- Over Voltage Tolerant Inputs V_{IN} may be Between 0 and 7.0V for V_{CC} Between 0.5 and 5.5V

2.2Features

- 24mA Output Sink Capability, Pull-up may be between 0 and 7.0V
- Near Zero Static Supply Current Substantially Reduces System Power Requirements
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant in Configuration
- Tiny SC70-5, SOT23-5 and DFN6 Packages
- MSL1 (DFN6) , MSL3(SC70-5,SOT23-5)

3.Pinning information



SOT23-5/SC70-5 **DFN6(1*1.5)**

Figure1. Top View

4.Pin Function

SC70-5/ SOT23-5

Pin No.	Pin Name	Function
1	NC	No connect
2	A	Input
3	GND	Ground
4	Y	Output
5	VCC	Supply Voltage

DFN6

Pin No.	Pin Name	Function
1	NC	No connect
2	A	Input
3	GND	Ground
4	Y	Output
5	NC	No connect
6	VCC	Supply Voltage

5.Block Diagram

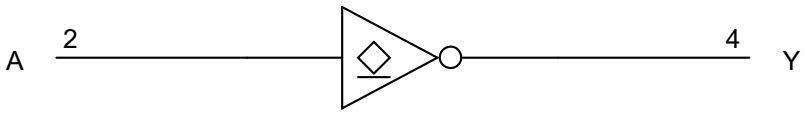


Figure2. Logic Symbol

Function Table

Input	Output
A	**Y**
L	Z
H	L

6.Absolute Maximum Ratings

Parameter		Symbol	Value	Units
DC Supply Voltage		V_{CC}	−0.5 to 7	V
DC Input Voltage		V_I	$-0.5 \le V_I \le 7$	V
DC Output Voltage Output in Higher or Low State		V_O	−0.5 to 0.5	V
DC Input Diode Current V_I<GND		I_{IK}	-50	mA
DC Output Diode Current V_O<GND, V_O>V_{CC}		I_{OK}	±50	mA
DC Output Sink Current		I_O	±50	mA
DC Supply Current per Supply Pin		I_{CC}	±100	mA
Storage Temperature Range		T_{STG}	-65 to 150	°C
Lead Temperature, 1 mm from Case for 10 Seconds		T_L	260	°C
Max Junction Temperature		T_J	150	°C
ESD Classification	Human Body Model	V_{ESD}	±4000	V
	Charged Device Model		±1000	V
Max Latch up Current Above V_{CC} and GND at 125°C		I_{LU}	±100	mA

Stresses exceeding those listed in this table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Note1. IO absolute maximum rating must be observed.

7.Thermal Characteristics

Ratings	Package	Symbol	Value	Units
Thermal Characteristics, Thermal Resistance, Junction-to-Air	SC70-5	$R_{\theta JA}$	300	°C/W
	SOT23-5		250	
	DFN6(1.0x1.5)		440	
Power Dissipation in Still Air at 85°C	SC70-5	P_D	215	mW
	SOT23-5		260	
	DFN6(1.0x1.5)		150	

8.Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
DC Supply Voltage	V_{CC}	1.65	5.5	V
Operating Date Retention		1.5	5.5	V
DC Input Voltage	V_{IN}	0	5.5	V
DC Output Voltage(High or Low State)	V_{OUT}	0	5.5	V
Operating Temperature Range	T_A	-40	125	°C

8.DC Electrical Characteristics

(R_{PULL}=1KΩ,Connect V_{OUT} to V_{CC})

Parameter	Condition	Symbol	V_{CC}(V)	T_A=25°C			-40°C≤T_A≤125°C		Units
				Min	Typ	Max	Min	Max	
High−Level Input Voltage		V_{IH}	1.65 to1.95	0.75V_{CC}			0.75V_{CC}		V
			2.3 to 5.5	0.7V_{CC}			0.7V_{CC}		
Low−Level Input Voltage		V_{IL}	1.65 to1.95			0.25V_{CC}		0.25V_{CC}	
			2.3 to 5.5			0.29V_{CC}		0.29V_{CC}	
Low−Level Output Voltage V_{IN}=V_{IH}	I_{OL}=100μA	V_{OL}	1.65 to 5.5		0.0	0.1		0.1	V
	I_{OL}=3mA		1.65		0.08	0.24		0.24	
	I_{OL}=8mA		2.3		0.2	0.3		0.3	
	I_{OL}=12mA		2.7		0.22	0.4		0.4	
	I_{OL}=16mA		3		0.28	0.4		0.4	
	I_{OL}=24mA		3		0.38	0.55		0.55	
	I_{OL}=32mA		4.5		0.42	0.55		0.55	
Input Leakage Current	V_{IN}=5.5V or GND	I_{IN}	0 to 5.5		±0.1			±1	μA
Power Off Leakage Current	V_{IN}=5.5V or V_{OUT}=5.5V	I_{OFF}	0			1		10	μA
Quiescent Supply Current	V_{IN}=5.5V or GND	I_{CC}	5.5			10		10	μA

9.AC Electrical Characteristics

tr = tf = 5ns;

Parameter	Condition	Symbol	V_{CC}(V)	T_A=25°C			-40°C≤T_A≤125°C		Units
				Min	Typ	Max	Min	Max	
Propagation Delay (Figure 3 and 4)	R_L=1KΩ, C_L=15pF	t_{PHL}	1.65	3	9.5	12	3	16	ns
			1.8	3	8	11	3	15	
	R_L=1KΩ, C_L=15pF		2.5±0.2	1	5	7.5	1	11	
	R_L=1KΩ, C_L=15pF		3.3±0.3	1	3.5	6.5	1	9	
	R_L=500Ω, C_L=50pF			1.5	4.5	7.5	1.5	10	
	R_L=1KΩ, C_L=15pF		5.0±0.5	0.5	2.5	5	0.5	7.5	
	R_L=500Ω, C_L=50pF			0.8	3.2	6	0.8	8.5	

10.Capacitance Characteristics

Parameter	Symbol	Condition	Typ	Units
Input Capacitance	C_{IN}	V_{CC}=5.5V, V_I= 0V or V_{CC}	2.8	pF
Power Dissipation Capacitance (2)	C_{PD}	10MHz,V_{CC}=3.3V, V_I=0V or V_{CC}	2.5	pF
		10MHz,V_{CC}=5.5V, V_I=0V or V_{CC}	3	pF

Notes2:

C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.

11.Waveform and Test Circuit

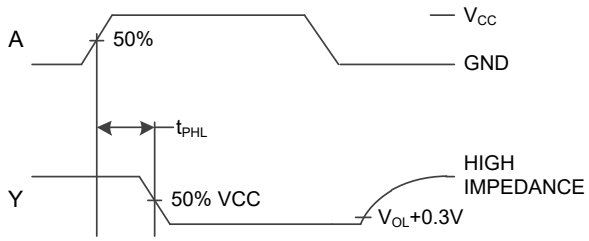


Figure3. Switching Waveforms

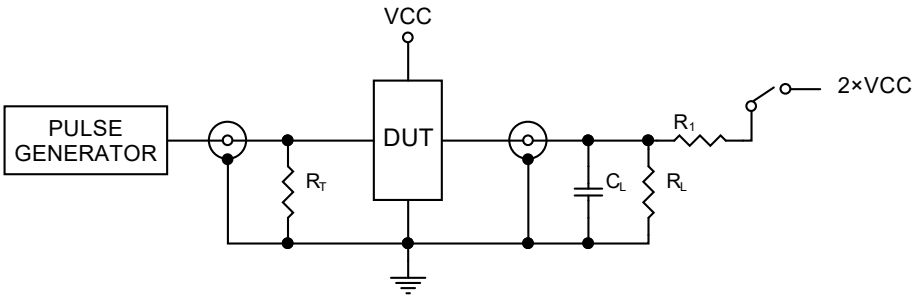
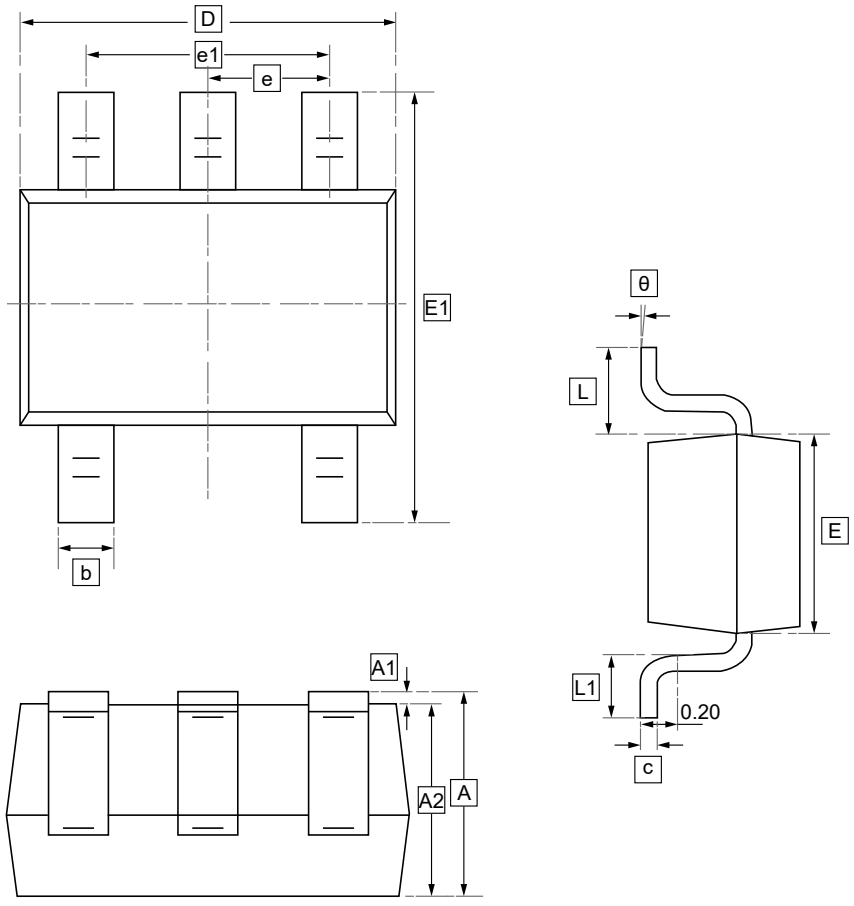


Figure4. Test Circuit

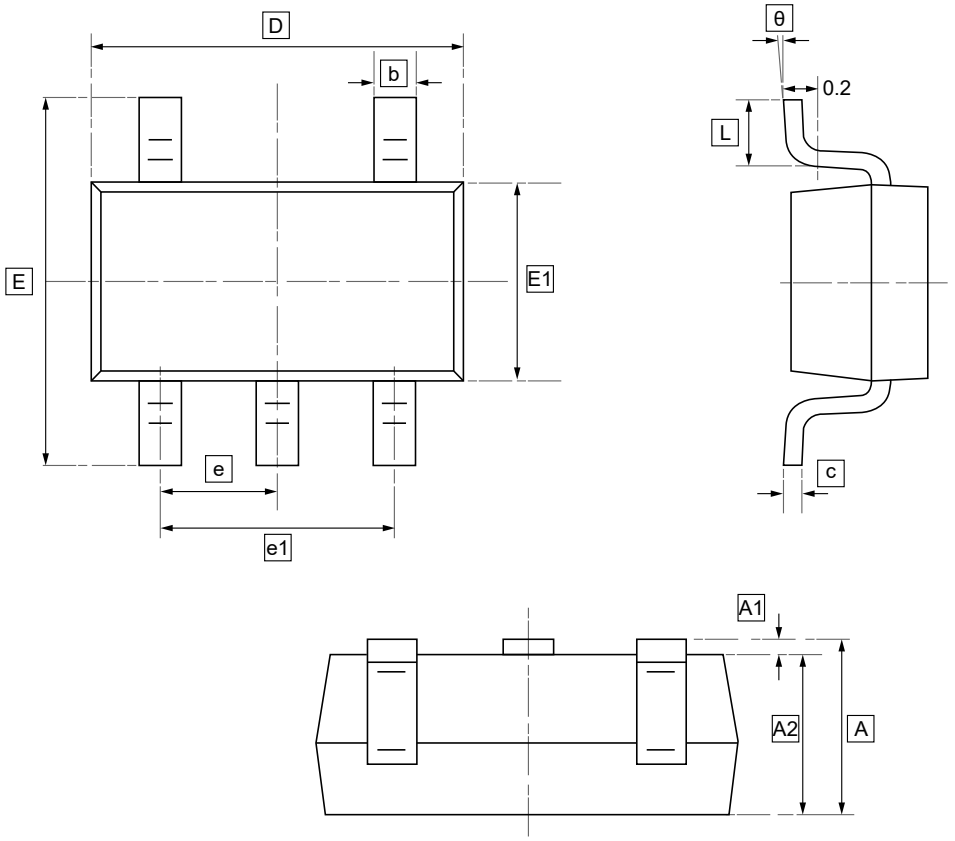
13.1 SC70-5 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	e1	L	θ
Min	0.90	0.00	0.90	0.15	0.08	1.80	1.15	2.15	0.65	1.20	0.26	7°
Max	1.10	0.10	1.00	0.35	0.15	2.25	1.35	2.45	TYP	1.40	0.46	REF.

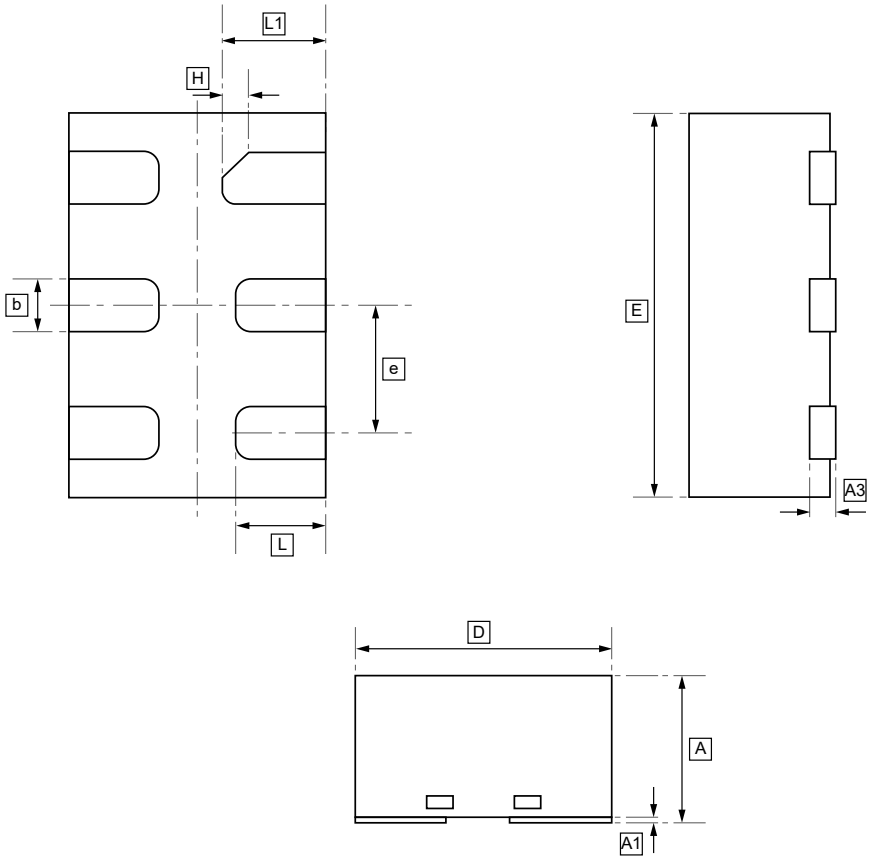
13.2 SOT-23-5 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

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

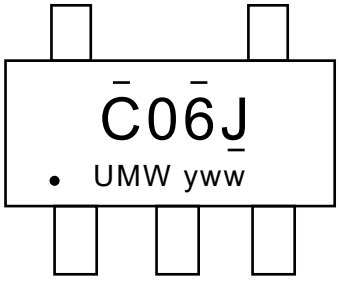
13.3 DFN6(1*1.5) Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A3	b	D	E	e	H	L	L1
Min	0.50	0	0.10	0.15	0.90	1.40	0.40	0.10	0.30	0.35
Max	0.60	0.05	REF	0.25	1.10	1.60	0.60	REF	0.40	0.45

14.Ordering Information



yww: Batch Code

Order Code	Marking	Package	Base QTY	Delivery Mode
UMW SN74LVC1G06DBVR	C06J	SOT23-5	3000	Tape and reel
UMW SN74LVC1G06DCKR	CT5	SC70-5	3000	Tape and reel
UMW SN74LVC1G06DRYR	CT	DFN6	5000	Tape and reel

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