1.Description

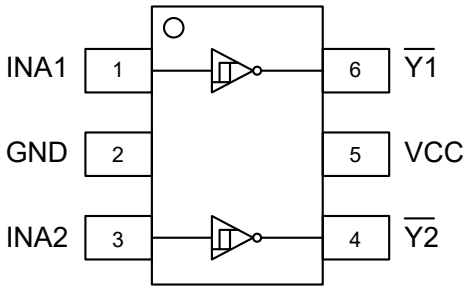
The UMW SN74LVC2G14 is a high performance dual inverter with Schm itt−Trigge r inputs operating from a 1.65 to 5.5 V supply. Pin configuration and function are the same as the UMW SN74LVC2G04, but the inputs have hysteresis and, with its Schmitt trigger function, the UMW SN74LVC2G14 can be used as a line receiver which will receive slow input signals.

The UMW SN74LVC2G14 is capable of transforming slowly changing input signals into sharply defined, jitter−freeoutput signals. In addition, it has a greater noise margin than conventional inverters.

2.Features

- Designed for 1.65V to 5.5V V_{CC} Operation
- Over Voltage Tolerant Inputs and Outputs
- LVTTL Compatible − Interface Capability with 5V TTL Logic with V_{CC}=3V
- LVCMOS Compatible
- 24 mA Balanced Output Sink and Source Capability
- Near Zero Static Supply Current Substantially Reduces System Power Requirements
- Current Drive Capability is 24 mA at the Outputs
- Chip Complexity: FET=72
- These Devices are Pb−Free and are RoHS Compliant

3.Pinning information



SOT23-6/SC70-6

Figure1. Top View

4.Pin Function

Pin	Function
1	INA1
2	GND
3	INA2
4	$\overline{Y2}$
5	VCC
6	$\overline{Y1}$

5.Block Diagram

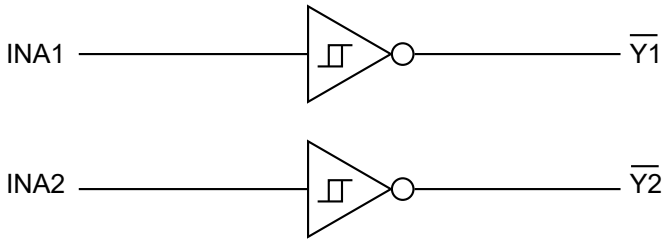


Figure2. Logic Symbol

Function Table

Input	Output
A	**Y**
L	H
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 (Note 1)		V_O	−0.5 to V_{CC} + 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
Junction Temperature Under Bias		T_J	150	°C
Thermal Resistance		θ_{JA}	333	°C/W
Power Dissipation in Still Air at 85°C		P_D	200	mW
Moisture Sensitivity		MSL	Level 1	
Flammability Rating Oxygen Index:28 to 34		F_R	UL94V−0@0.12in	
ESD Classification Human	Body Model (Note 2)	ESD	2000	V
	Machine Model (Note3)		200	V
	Charged Device Model (Note 4)		N/A	V
Latchup Performance Above V_{CC} and Below GND at 125°C (Note 5)		$I_{Latchup}$	±100	mA

Stresses exceeding those listed in the Maximum Ratings 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.

1. IO absolute maximum rating must be observed.
2. Tested to EIA/JESD22—A114—A, rated to EIA/JESD22—A114—B.
3. Tested to EIA/JESD22—A115—A, rated to EIA/JESD22—A115—A.
4. Tested to JESD22—C101—A.
5. Tested to EIA/JESD78.

7.Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
DC Supply Voltage Operating	V_{CC}	1.65	5.5	V
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

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended.

8.DC Electrical Characteristics

Parameter	Condition	Symbol	V_{CC}(V)	T_A=25°C			−40°C≤T_A≤125°C		Units
				Min	Typ	Max	Min	Max	
Positive-going Input Threshold Voltage		V_{T+}	1.65	0.7		1.4	0.7	1.4	V
			2.3	1		1.7	1	1.7	
			3	1.3		2.2	1.3	2.2	
			4.5	1.9		3.1	1.9	3.1	
			5.5	2.2		3.7	2.2	3.7	
Negative-going Input Threshold Voltage		V_{T-}	1.65	0.3		0.7	0.3	0.7	V
			2.3	0.4		1	0.4	1	
			3	0.6		1.3	0.6	1.3	
			4.5	1.1		2	1.1	2	
			5.5	1.4		2.5	1.4	2.5	
Hysteresis (VT_+ - VT_-)		ΔV_T	1.65	0.3		0.8	0.3	0.8	V
			2.3	0.4		0.9	0.4	0.9	
			3	0.4		1.1	0.4	1.1	
			4.5	0.6		1.3	0.6	1.3	
			5.5	0.7		1.4	0.7	1.4	
High−Level Output Voltage V_{IN}=V_{IL}	I_{OH}=−100μA	V_{OH}	1.65 to 5.5	V_{CC}-0.1	V_{CC}		V_{CC}-0.1		V
	I_{OH}=−3mA		1.65	1.29	1.52		1.29		
	I_{OH}=−8mA		2.3	1.9	2.1		1.9		
	I_{OH}=−12mA		2.7	2.2	2.4		2.2		
	I_{OH}=−16mA		3	2.4	2.7		2.4		
	I_{OH}=−24mA		3	2.3	2.5		2.3		
	I_{OH}=−32mA		4.5	3.8	4		3.8		

Parameter	Condition	Symbol	V_{CC}(V)	T_A=25°C			-40°C≤T_A≤125°C		Units
				Min	Typ	Max	Min	Max	
Low−Level Output Voltage V_{IN}=V_{IH}	I_{OH}=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	
Quiescent Supply Current	V_{IN}=5.5V or GND	I_{CC}	5.5			1		10	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted.

Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

9.AC Electrical Characteristics

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=1MΩ, C_L=15pF	t_{PLH}, t_{PHL}	1.65	2	5.3	11.4	2	12	ns
			1.8	2	4.4	9.5	2	10	
			2.5±0.2	0.2	3.5	6.5	0.8	4.1	
			3.3±0.3	0.8	2.1	4.5	0.5	3.7	
	R_L=500Ω, C_L=50pF		3.3±0.3	1.2	2.9	5.5	1.5	5.2	
	R_L=1MΩ, C_L=15pF		5.0±0.5	0.5	1.8	3.9	0.5	4.1	
	R_L=500Ω, C_L=50pF		5.0±0.5	0.8	2.4	4.3	0.8	4.5	

10.Capacitance Characteristics

Parameter	Symbol	Condition	Typ	Units
Input Capacitance	C_{IN}	V_{CC}=5.5V, V_I= 0V or V_{CC}	>2.5	pF
Power Dissipation Capacitance (6)	C_{PD}	10MHz,V_{CC}=3.3V, V_I=0V or V_{CC}	4	pF
		10MHz,V_{CC}=5.5V, V_I=0V or V_{CC}	4	pF

Notes 6:

C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation: $I_{CC(OPR)}=C_{PD}*V_{CC}*fin+I_{CC}*C_{PD}$ is used to determine the no−load dynamic power consumption; $P_D=C_{PD}*V_{CC}^2*fin+I_{CC}*V_{CC}$*Fig.

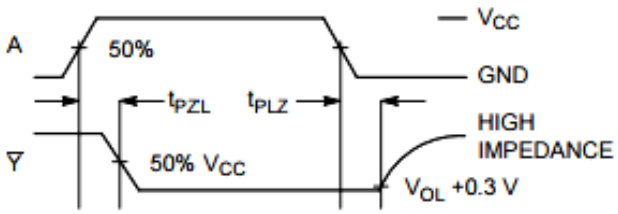


Figure 3. switching Waveforms

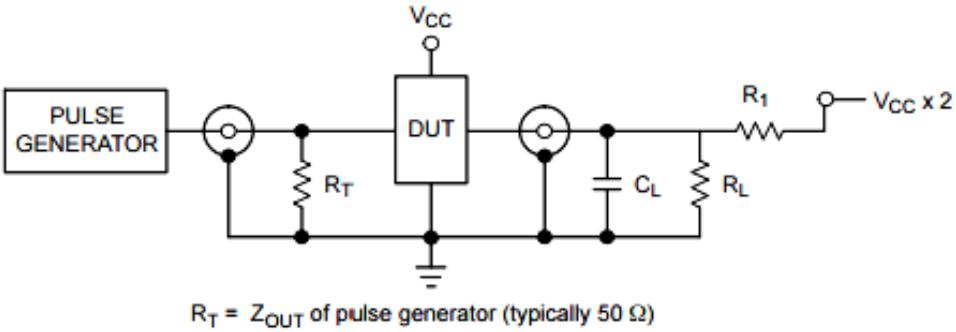
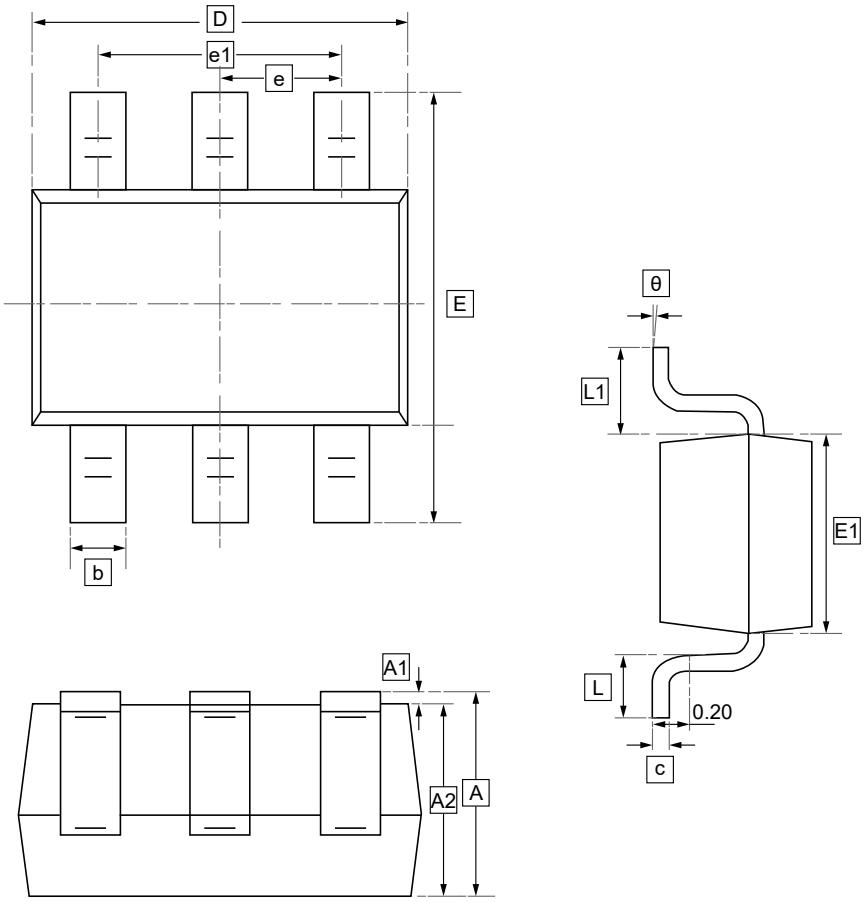


Figure 4. Test Circuit

11.1 SC70-6 Package Outline Dimensions

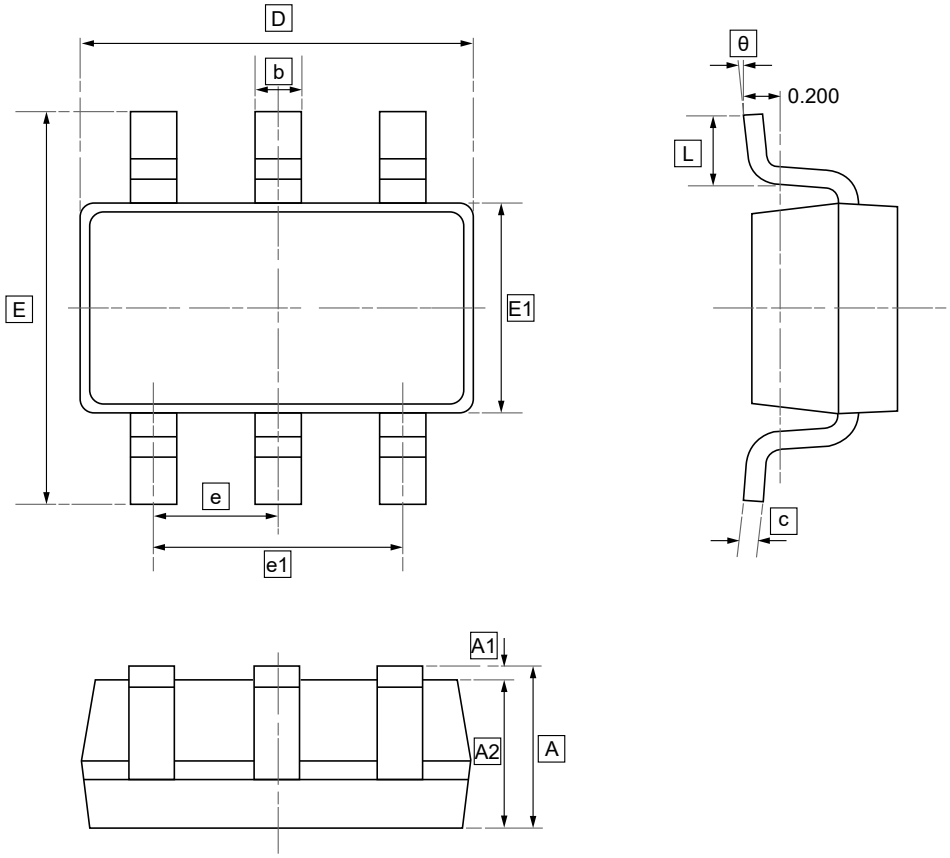


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	e1	L	L1
Min	0.90	0.00	0.90	0.15	0.08	2.05	2.15	1.15	0.65	1.2	0.26	0.525
Max	1.10	0.10	1.00	0.35	0.15	2.25	2.45	1.35	TYP.	1.4	0.46	REF.

Symbol	θ
Min	0°
Max	8°

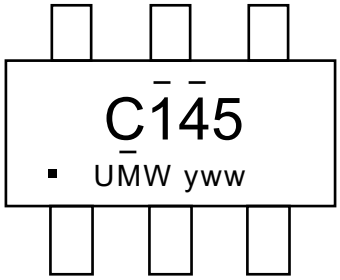
11.2 SOT23-6 Package Outline Dimensions



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°

12.Ordering Information



yww: Batch Code

Order Code	Marking	Package	Base QTY	Delivery Mode
UMW SN74LVC2G14DBVR	C145	SOT23-6	3000	Tape and reel
UMW SN74LVC2G14DCKR	CF5	SC70-6	3000	Tape and reel

13.Disclaimer

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