

1.Description

The SN74AUP2G14 is a high performance dual inverter with Schmitt-Trigger inputs operating from a 0.8V to 3.6V supply. This device is fabricated with advanced CMOS technology to achieve ultra-high speed with high output drive.

2.Features

- Designed for 0.8V to 3.6V V_{CC} Operation
- Low static power consumption; $I_{CC}=0.7\mu A$ (maximum)
- 4mA Balanced Output Sink and Source Capability
- Near Zero Static Supply Current Substantially Reduces System Power Requirements
- These Devices are Pb-Free and are RoHS Compliant

3.Pinning information

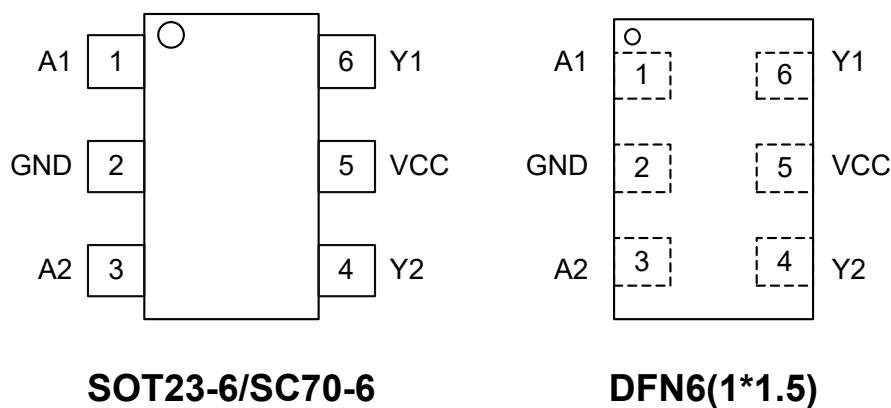


Figure1. Top View



4.Pin Function

Pin No.		Function
SC70-6/SOT23-6	DFN6	
1	1	A1
2	2	GND
3	3	A2
4	4	Y2
5	5	VCC
6	6	Y1



5.Block Diagram

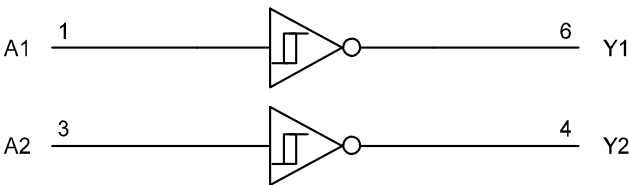


Figure2.

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 4.6	V
DC Input Voltage		V_I	$-0.5 \leq V_I \leq 4.6$	V
DC Output Voltage Output in Higher or Low State ⁽¹⁾		V_O	-0.5 to 4.6	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	± 20	mA
DC Supply Current per Supply Pin		I_{CC}	± 50	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
Power Dissipation in Still Air at 85°C		P_D	200	mW
ESD Classification	Human Body Model ⁽²⁾	V_{ESD}	± 4000	V
	Machine Model ⁽³⁾		± 200	V
	Charged Device Model ⁽⁴⁾		± 1000	V
Latchup Current Above V_{CC} and GND at 125°C ⁽⁵⁾		I_{LU}	± 100	mA

7. Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
DC Supply Voltage Operating	V_{CC}	0.8	3.6	V
DC input Voltage	V_{IN}	0	3.6	V
DC Output Voltage (High or Low State)	V_{OUT}	0	3.6	V
Operating Temperature Range	T_A	-40	85	°C

Notes:

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied.



8. Electrical Characteristics

DC Electrical Characteristics

Parameter	Condition	Symbol	$V_{CC}(V)$	$T_A=25^{\circ}C$			$-40^{\circ}C \leq T_A \leq 85^{\circ}C$		Units
				Min	Typ	Max	Min	Max	
Forward input threshold voltage		V_{T+}	0.8	0.3		0.6	0.3	0.6	V
			1.1	0.53		0.9	0.53	0.9	
			1.4	0.74		1.11	0.74	1.11	
			1.65	0.91		1.29	0.91	1.29	
			2.3	1.37		1.77	1.37	1.77	
			3	1.88		2.29	1.88	2.29	
Negative input threshold voltage		V_{T-}	0.8	0.1		0.6	0.1	0.6	V
			1.1	0.26		0.65	0.26	0.65	
			1.4	0.39		0.75	0.39	0.75	
			1.65	0.47		0.84	0.47	0.84	
			2.3	0.69		1.04	0.69	1.04	
			3	0.88		1.24	0.88	1.24	
High-Level Output Voltage	$I_{OH}=-20\mu A$	V_{OH}	0.8 to 3.6	$V_{CC}-0.1$			$V_{CC}-0.1$		V
	$I_{OH}=-1.1mA$		1.1	0.82	1.02		0.77		
	$I_{OH}=-1.7\mu A$		1.4	1.11	1.32		1.03		
	$I_{OH}=-1.9mA$		1.65	1.32	1.58		1.30		
	$I_{OH}=-2.3mA$		2.3	2.05	2.24		1.97		
	$I_{OH}=-3.1mA$			1.9	2.22		1.85		
	$I_{OH}=-2.7mA$		3	2.72	2.95		2.67		
	$I_{OH}=-4.0mA$			2.6	2.92		2.55		



Parameter	Condition	Symbol	$V_{CC}(V)$	$T_A=25^{\circ}C$			$-40^{\circ}C \leq T_A \leq 85^{\circ}C$		Units
				Min	Typ	Max	Min	Max	
Low-Level Output Voltage	$I_{OL}=20\mu A$	V_{OL}	0.8 to 3.6			0.1		0.1	V
	$I_{OL}=1.1mA$		1.1		0.11	0.33		0.33	
	$I_{OL}=1.7mA$		1.4		0.12	0.31		0.37	
	$I_{OL}=1.9mA$		1.65		0.11	0.31		0.35	
	$I_{OL}=2.3mA$		2.3		0.14	0.31		0.33	
	$I_{OL}=3.1mA$				0.19	0.44		0.45	
	$I_{OL}=2.7mA$		3		0.11	0.31		0.33	
	$I_{OL}=4.0mA$				0.16	0.44		0.45	
Input Leakage Current	$V_{IN}=V_{CC}$ or GND	I_{IN}	0 to 3.6			0.1		0.2	μA
Power Off Leakage Current	$V_{IN}=3.6V$ or $V_{OUT}=3.6V$	I_{OFF}	0			0.2		0.5	μA
Quiescent Supply Current	$V_{IN}=3.6V$ or GND	I_{CC}	3.6			0.2		0.7	μA



9.AC Electrical Characteristics

$t_r = t_f = 2.5\text{ns}$

Parameter	Condition	Symbol	V _{CC} (V)	T _A =25°C			-40°C≤T _A ≤85°C		Units
				Min	Typ	Max	Min	Max	
Propagation Delay (Figure3 And 4)	C _L =5pF ⁽⁶⁾	t _{PHL} t _{PLH}	0.8		18				ns
			1.2	2.6	7.3	12.8	2.1	15.6	
			1.5	1.4	5.2	8.7	0.9	10.3	
			1.8	1	4.2	6.6	0.5	8.2	
			2.5	1	3	4.4	0.5	5.5	
			3.3	1	2.4	3.5	0.5	4.3	
	C _L =10pF ⁽⁶⁾		0.8		18.4				ns
			1.2	4.6	7.9	13.4	1.3	16.7	
			1.5	4	6	9.6	2.2	11.8	
			1.8	3.6	5	7.9	2.4	9.5	
			2.5	3.2	4	5.5	2.3	6.8	
			3.3	2.9	4.6	4.6	2.1	5.6	
	C _L =15pF ⁽⁶⁾		0.8		24				ns
			1.2	3.6	9.9	16.3	3.1	19.9	
			1.5	2.3	7.2	11.1	1.8	13.2	
			1.8	1.6	5.8	8.7	1.1	10.6	
			2.5	1	4.3	5.9	0.5	7.3	
			3.3	1	3.4	4.8	0.5	5.9	
	C _L =30pF ⁽⁶⁾	0.8		32.8				ns	
		1.2	4.9	13.1	20.9	4.4	25.5		
		1.5	3.4	9.5	14.2	2.9	16.9		
		1.8	2.5	7.7	11	2	13.5		
		2.5	1.8	5.7	7.6	1.3	9.4		
		3.3	1.5	4.7	6.2	1	7.5		

Notes: (6) C_L includes probe and jig capacitance.



10.Capacitance Characteristics

Parameter	Symbol	Condition		Typ	Units
Input Capacitance	C _{IN}	V _{CC} =3.6V, V _I = 0 V or V _{CC}		2	pF
output capacitance	C _O	V _{CC} = 0V, V _{OUT} =GND		3	pF
Power Dissipation Capacitance ⁽⁷⁾	C _{PD}	1MHz, V _I =0 V to V _{CC}	V _{CC} =0.8V	4	pF
			V _{CC} =1.2V	4	
			V _{CC} =1.5V	4	
			V _{CC} =1.8V	4	
			V _{CC} =2.5V	4.1	
			V _{CC} =3.3V	4.3	

Notes:

(7) 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: $I_{CC(OPR)}=C_{PD} \times V_{CC} \times f_{in} + I_{CC} \times C_{PD}$ is used to determine the no-load dynamic power consumption; $P_D=C_{PD} \times V_{CC}^2 \times f_{in} + I_{CC} \times V_{CC} \times Fig.$

11.AC Test Circuit

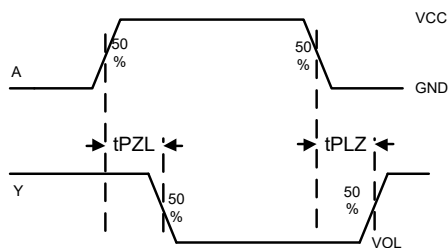


Figure 3. Switching Waveforms

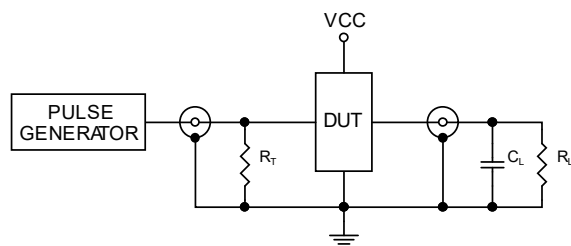
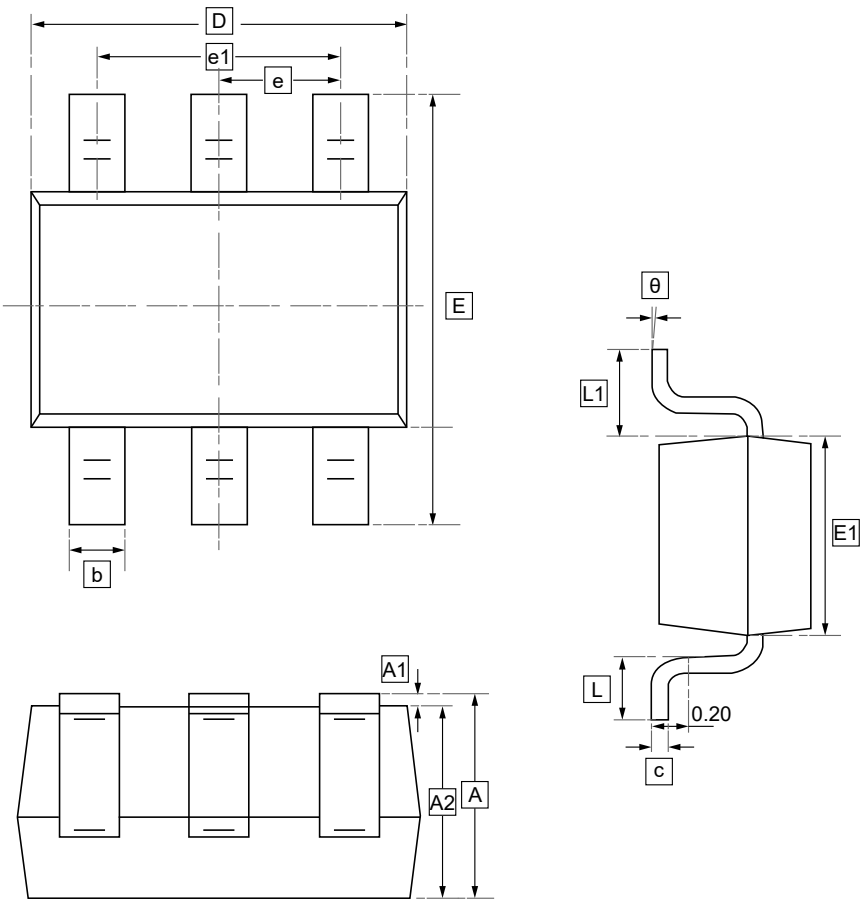


Figure 4. Test Circuit



12.1SC70-6 Package Outline Dimensions



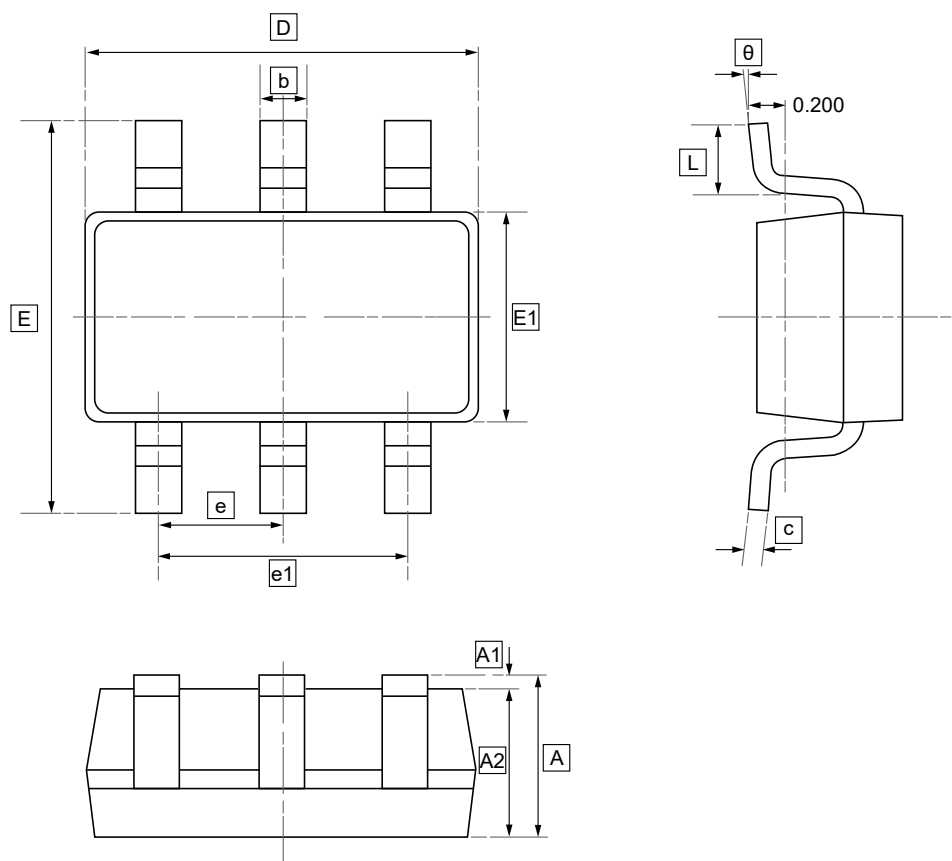
DIMENSIONS (mm are the original dimensions)

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°



12.2SOT23-6 Package Outline Dimensions

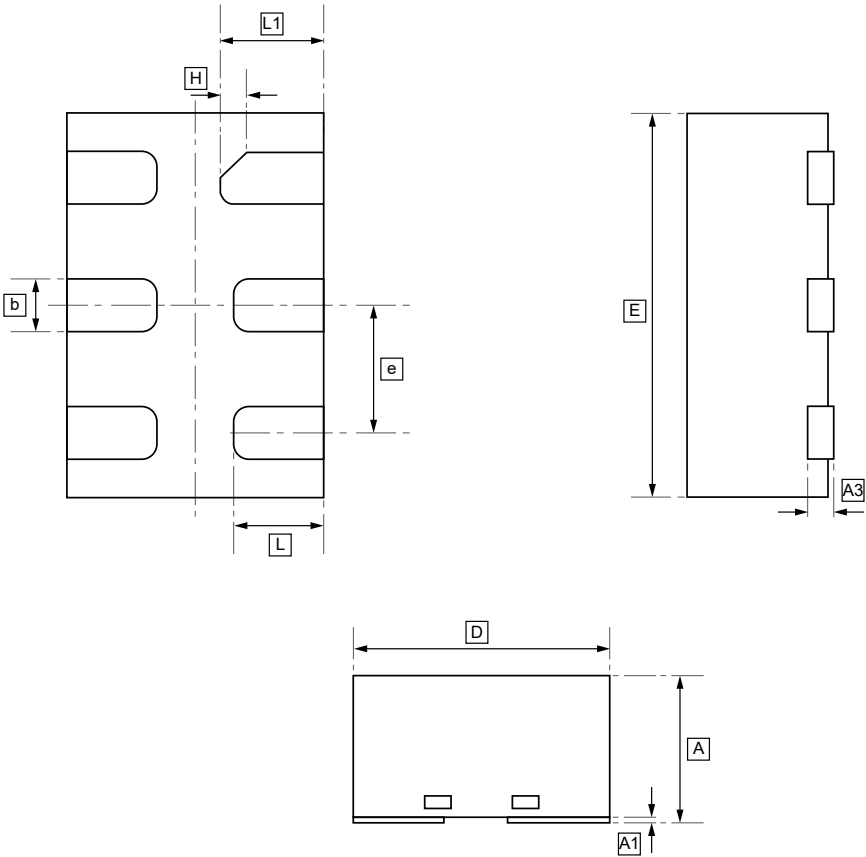


DIMENSIONS (mm are the original dimensions)

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°



12.3DFN6(1*1.5) Package Outline Dimensions

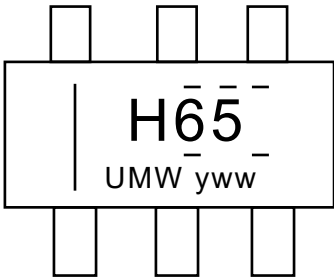


DIMENSIONS (mm are the original dimensions)

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



13.Ordering information



yww: Batch Code

Order Code	Marking	Package	Base QTY	Delivery Mode
UMW SN74AUP2G14DBVR	H65R	SOT23-6	3000	Tape and reel
UMW SN74AUP2G14DCKR	H6F	SC70-6	3000	Tape and reel
UMW SN74AUP2G14DRYR	H6	DFN6	5000	Tape and reel



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