



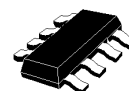
74V2G132

DUAL 2-INPUT SHMITT TRIGGER NAND GATE

- HIGH SPEED: $t_{PD} = 3.0\text{ns}$ (TYP.) at $V_{CC} = 5\text{V}$
- LOW POWER DISSIPATION:
 $I_{CC} = 1\mu\text{A}$ (MAX.) at $T_A = 25^\circ\text{C}$
- TYPICAL HYSTERESIS:
 $V_H = 800\text{mV}$ at $V_{CC} = 4.5\text{V}$
 $V_H = 500\text{mV}$ at $V_{CC} = 3.0\text{V}$
- POWER DOWN PROTECTION ON INPUTS AND OUTPUTS
- SYMMETRICAL OUTPUT IMPEDANCE:
 $|I_{OH}| = I_{OL} = 8\text{mA}$ (MIN) at $V_{CC} = 4.5\text{V}$
 $|I_{OH}| = I_{OL} = 4\text{mA}$ (MIN) at $V_{CC} = 3.0\text{V}$
- BALANCED PROPAGATION DELAYS:
 $t_{PLH} \approx t_{PHL}$
- OPERATING VOLTAGE RANGE:
 $V_{CC}(\text{OPR}) = 2\text{V}$ to 5.5V
- IMPROVED LATCH-UP IMMUNITY

DESCRIPTION

The 74V2G132 is an advanced high-speed CMOS SINGLE 2-INPUT NAND GATE fabricated with sub-micron silicon gate and double-layer metal wiring C²MOS technology.



SOT23-8L

ORDER CODES

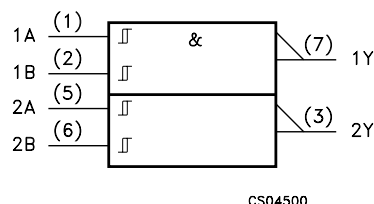
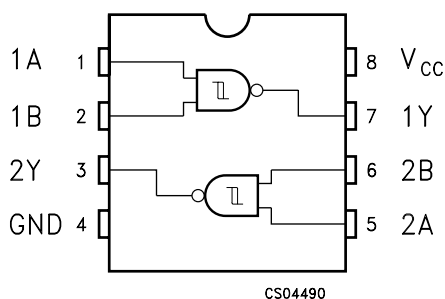
PACKAGE	T & R
SOT23-8L	74V2G132STR

Pin configuration and function are the same as those of the 74V2G00 but the 74V2G132 has hysteresis.

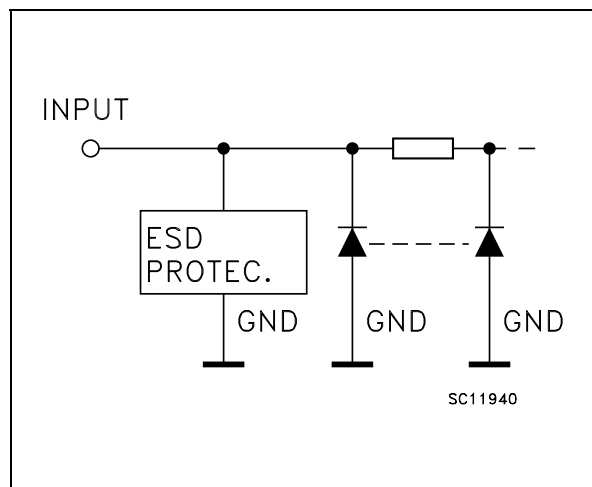
The internal circuit is composed of 3 stages including buffer output, which provide high noise immunity and stable output.

Power down protection is provided on all inputs and 0 to 7V can be accepted on inputs with no regard to the supply voltage. This device can be used to interface 5V to 3V.

PIN CONNECTION AND IEC LOGIC SYMBOLS



INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

PIN No	SYMBOL	NAME QND FUNCTION
1, 5	1A, 2A	Data Input
2, 6	1B, 2B	Data Input
7, 3	1Y, 2Y	Data Output
4	GND	Ground (0V)
8	V _{CC}	Positive Supply Voltage

TRUTH TABLE

A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	-0.5 to +7.0	V
V _I	DC Input Voltage	-0.5 to +7.0	V
V _O	DC Output Voltage (see note 1)	-0.5 to +7.0	V
V _O	DC Output Voltage (see note 2)	-0.5 to V _{CC} + 0.5	V
I _{IK}	DC Input Diode Current	- 20	mA
I _{OK}	DC Output Diode Current	- 20	mA
I _O	DC Output Current	± 25	mA
I _{CC} or I _{GND}	DC V _{CC} or Ground Current	± 50	mA
T _{stg}	Storage Temperature	-65 to +150	°C
T _L	Lead Temperature (10 sec)	260	°C

Absolute Maximum Rating are those value beyond which damage to the device may occur. Functional operation under these condition is not implied

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	2 to 5.5	V
V _I	Input Voltage	0 to 5.5	V
V _O	Output Voltage	0 to 5.5	V
V _O	Output Voltage	0 to V _{CC}	V
T _{op}	Operating Temperature	-55 to 125	°C

DC SPECIFICATION

Symbol	Parameter	Test Condition		Value							Unit
		V _{CC} (V)		T _A = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
V _P	High Level Input Voltage	3.0				2.20		2.20		2.20	V
		4.5				3.15		3.15		3.15	
		5.5				3.85		3.85		3.85	
V _N	Low Level Input Voltage	3.0		0.90			0.90		0.90		V
		4.5		1.35			1.35		1.35		
		5.5		1.65			1.65		1.65		
V _H	Hysteresis Voltage	3.0		0.30	0.5	1.20	0.30	1.20	0.30	1.20	V
		4.5		0.40	0.8	1.40	0.40	1.40	0.40	1.40	
		5.5		0.50	1.0	1.60	0.50	1.60	0.50	1.60	
V _{OH}	High Level Output Voltage	2.0	I _O =-50 μA	1.9	2.0		1.9		1.9		V
		3.0	I _O =-50 μA	2.9	3.0		2.9		2.9		
		4.5	I _O =-50 μA	4.4	4.5		4.4		4.4		
		3.0	I _O =-4 mA	2.58			2.48		2.4		
		4.5	I _O =-8 mA	3.94			3.8		3.7		
V _{OL}	Low Level Output Voltage	2.0	I _O =50 μA		0.0	0.1		0.1		0.1	V
		3.0	I _O =50 μA		0.0	0.1		0.1		0.1	
		4.5	I _O =50 μA		0.0	0.1		0.1		0.1	
		3.0	I _O =4 mA			0.36		0.44		0.55	
		4.5	I _O =8 mA			0.36		0.44		0.55	
I _I	Input Leakage Current	0 to 5.5	V _I = 5.5V or GND			± 0.1		± 1		± 1	μA
I _{CC}	Quiescent Supply Current	5.5	V _I = V _{CC} or GND			1		10		20	μA
I _{OPD}	Power down Output Leakage Current	0	V _O = 5.5			0.5		5		10	μA

AC ELECTRICAL CHARACTERISTICS (Input t_r = t_f = 3ns)

Symbol	Parameter	Test Condition			Value						Unit	
		V _{CC} (V)	C _L (pF)		T _A = 25°C			-40 to 85°C		-55 to 125°C		
					Min.	Typ.	Max.	Min.	Max.	Min.		Max.
t _{PLH} t _{PHL}	Propagation Delay Time	3.3 ^(*)	15			5.5	7.9	1.0	9.5	1.0	9.5	ns
		3.3 ^(*)	50			8.0	11.4	1.0	13.0	1.0	13.0	
		5.0 ^(**)	15			3.7	5.5	1.0	6.5	1.0	6.5	
		5.0 ^(**)	50			5.2	7.5	1.0	8.5	1.0	8.5	

(*) Voltage range is 3.3V ± 0.3V

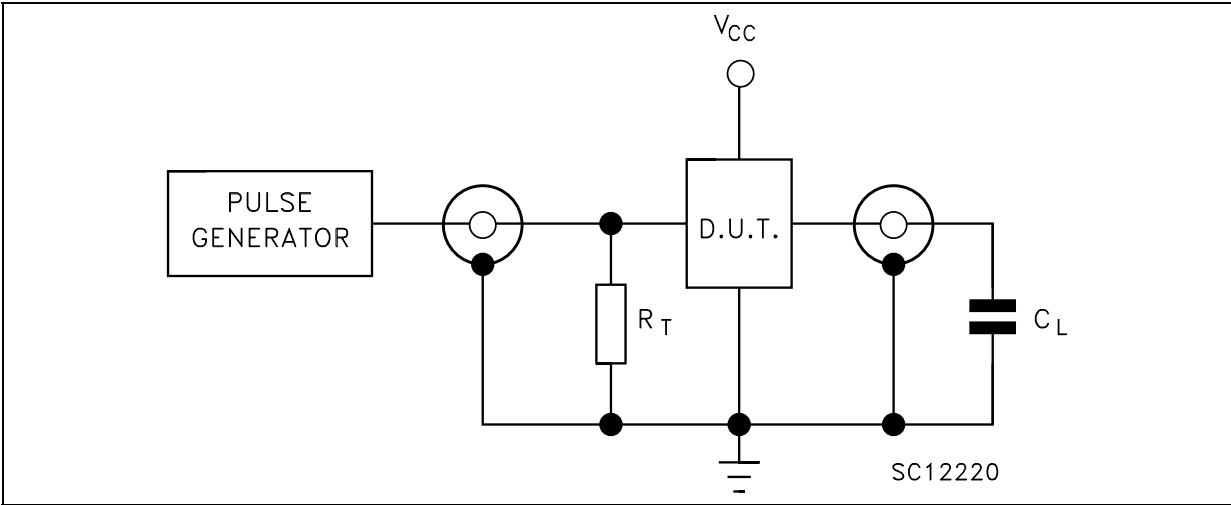
(**) Voltage range is 5.0V ± 0.5V

CAPACITANCE CHARACTERISTICS

Symbol	Parameter	Test Condition	Value								Unit
			T _A = 25°C			-40 to 85°C		-55 to 125°C			
			Min.	Typ.	Max.	Min.	Max.	Min.	Max.		
C _{IN}	Input Capacitance			4	10		10		10	pF	
C _{PD}	Power Dissipation Capacitance (note 1)			19						pF	

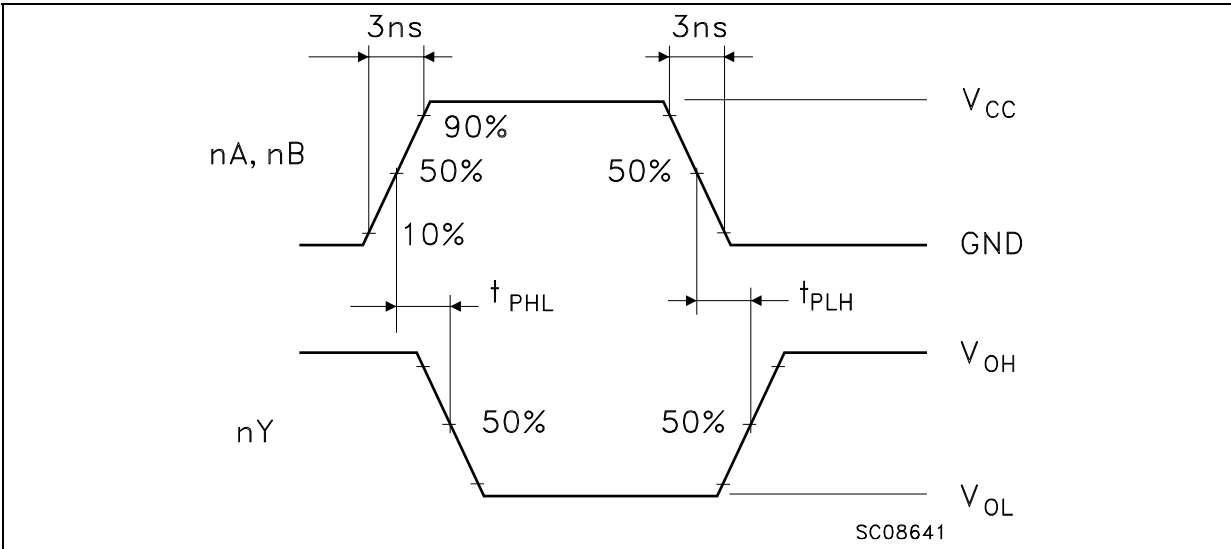
1) C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average current can be obtained by the following equation. $I_{CC(opr)} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}$

TEST CIRCUIT



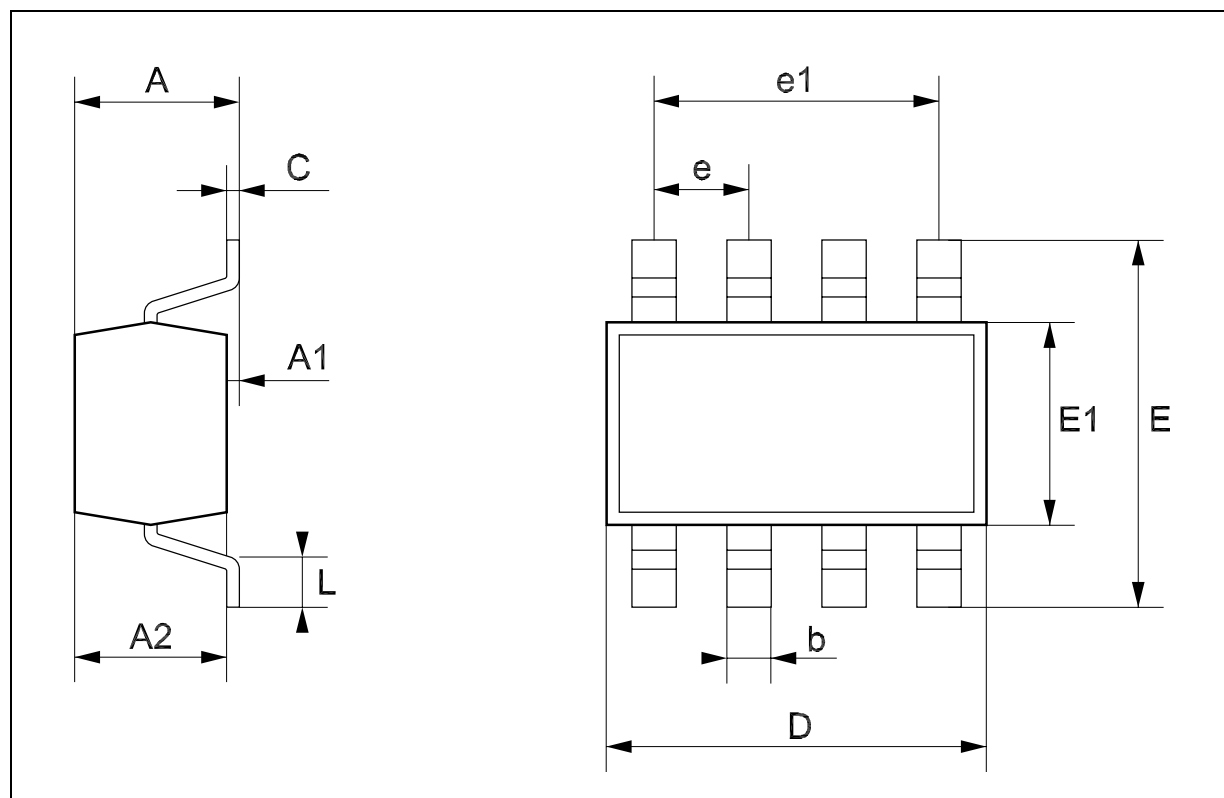
C_L = 50pF or equivalent (includes jig and probe capacitance)
R_T = R₁ = 500Ω or equivalent
R_T = Z_{OUT} of pulse generator (typically 50Ω)

WAVEFORM: PROPAGATION DELAY (f=1MHz; 50% duty cycle)



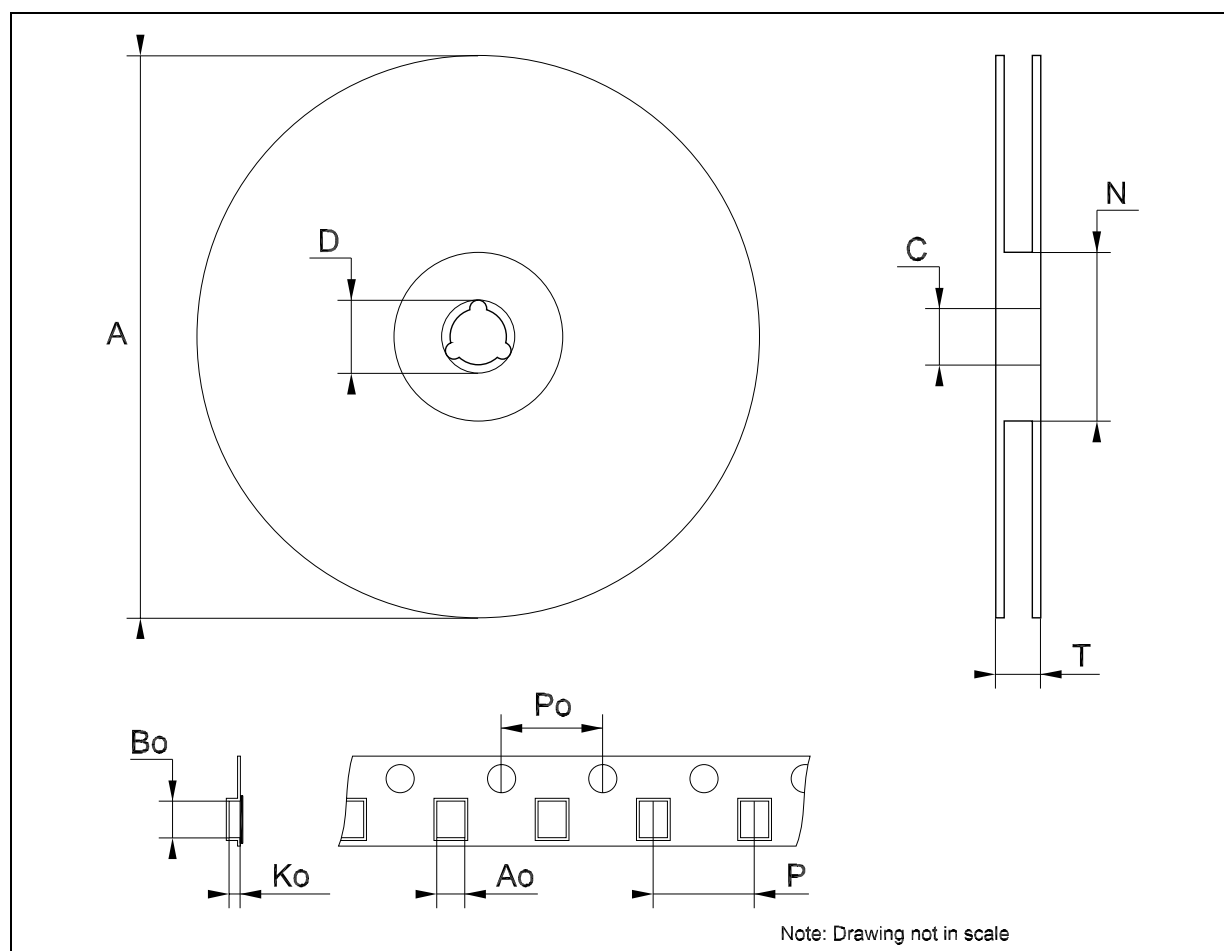
SOT23-8L MECHANICAL DATA

DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	0.90		1.45	35.4		57.1
A1	0.00		0.15	0.0		5.9
A2	0.90		1.30	35.4		51.2
b	0.22		0.38	8.6		14.9
C	0.09		0.20	3.5		7.8
D	2.80		3.00	110.2		118.1
E	2.60		3.00	102.3		118.1
E1	1.50		1.75	59.0		68.8
e	0	.65			25.6	
e1		1.95			76.7	
L	0.35		0.55	13.7		21.6



Tape & Reel SOT23-xL MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			180			7.086
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			14.4			0.567
Ao	3.13	3.23	3.33	0.123	0.127	0.131
Bo	3.07	3.17	3.27	0.120	0.124	0.128
Ko	1.27	1.37	1.47	0.050	0.054	0.058
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	3.9	4.0	4.1	0.153	0.157	0.161



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