QUAD 3-STATE NONINVERTING BUFFERS

KK74VHC126

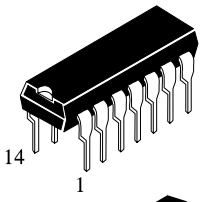
KK74VHC126 is high-speed logic IC made by CMOS technology and designed for use in high-performance calculating systems with a wide supply voltage range.

As for operation speed, KK74VHC126 can be compared with equivalent bipolar ICs based on Schottky TTL and two times surpasses ICs of KK74HC series.

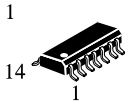
KK74VHC126 tolerates operation under conditions when voltage on input is exceeded up to 7V without affecting characteristics and IC reliability. This possibility allows to use KK74VHC126 in radio-electronic devices for interfacing with supply voltages 5V and 3V, eliminate IC failure under supply voltage source emergency outage.

Use of output edge shaping block in the microcircuit allows to reduce noise amplitude of noises when switching outputs into the same state simultaneously.

Input and output levels of KK74VHC126 are compatible with CMOS levels



N SUFFIX
PLASTIC



D SUFFIX
SOIC

ORDERING INFORMATION

KK74VHC126N Plastic

KK74VHC126D SOIC

T_A = -40° to 85° C for all packages

Features :

- Supply voltage range 2.0 to 5.5 V.
- Output current 8 mA.
- Low consumption current: 0.2 mkA (typical value) at Ta = 25 °C.
- Latchup current not less than 300 mA at Ta = 85 °C.
- Tolerable value of static potential not less than 2000 V as per human body model (HBM) and not less than 200 V as per machine model (MM).
- Ambient operation temperature minus 40 to plus 85 °C.
- Balanced signal propagation delay.
- Ensures voltage exceeding mode on input
- Low noise level at the simultaneous switching of outputs in the same state: V_{OLP} = 0.8 V (max).
- For pins and functions, compatible with KK74HC126.

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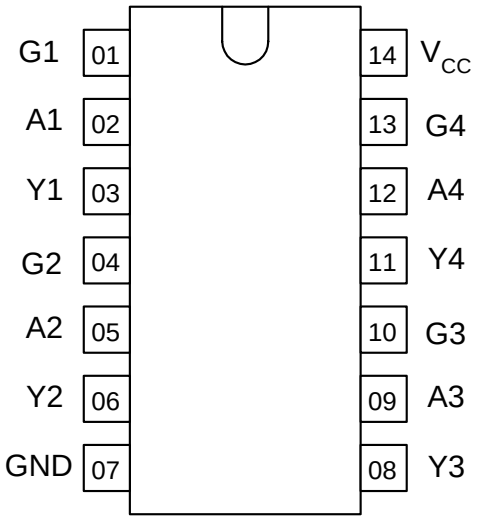
KK74VHC126 truth table

Input		Output
G	A	Y
L	X	Z
H	L	L
H	H	H

Note – H - high voltage level;
L – low voltage level;
X - any voltage level (low or high);
Z - output in the third

Pinout



Pins description in KK74VHC126

Pin No.	Symbol	Description
01	G1	Input ENABLE OUTPUT
02	A1	Input
03	Y1	Output
04	G2	Input ENABLE OUTPUT
05	A2	Input
06	Y2	Output
07	GND	Common output
08	Y3	Output
09	A3	Input
10	G3	Input ENABLE OUTPUT
11	Y4	Output
12	A4	Input
13	G4	Input ENABLE OUTPUT
14	VCC	Supply output from voltage source

Absolute maximum conditions*

Parameter, unit	Symbol	Value	
		min	max
Supply voltage, V	V_{CC}	-0.5	7.0
Input voltage, V	Vin	-0.5	7.0
Output voltage, V	Vout	-0.5	Vcc+0.5V
Input diode current, mA	Iik	–	-20
Current of common output and supply output, mA	Icc	–	± 50
Output current, mA	Iout	–	± 25
Output diode current, mA	Iok	–	± 20
Dissipated power, mW	Pd	–	180

*Under absolute maximum conditions operation of microcircuit is not guaranteed. Operation is guaranteed under maximum conditions

Maximum conditions

Parameter, unit	Symbol	Value	
		min	max
Supply voltage, V	V_{CC}	2.0	5.5
Input voltage,V	Vin	0	V_{CC}
Output voltage, V	Vout	0	V_{CC}
Output current, mA	Iout	–	± 8.0
Input rise and fall time, ns/V at Vcc = (3.3 ± 0.3) V at Vcc = (5.0 ± 0.5) V	t_{LH}, t_{HL}	 0 0	 100 20

DC electrical characteristics

Symbol	Parameter	Test conditions	V_{CC}, V	Value				Unit
				25 °C		–40 to 85 °C		
				min	max	min	max	
V_{IH}	High input voltage	–	2.0	1.5	–	1.5	–	V
			3.0-5.5	0.7Vcc	–	0.7Vcc	–	
V_{IL}	Low input voltage	–	2.0	–	0.5	–	0.5	
			3.0-5.5	–	0.3Vcc	–	0.3Vcc	
V_{OH}	High output voltage	V_I = V_{IH} or V_{IL} I_O = -50 mkA	2.0	1.92	–	1.9	–	
			3.0	2.92	–	2.9	–	
			4.5	4.42	–	4.4	–	
			5.5	5.52	–	5.4	–	
		V_I = V_{IH} or V_{IL}; I_O = -4 mA	3.0	2.58	–	2.48	–	
		V_I = V_{IH} or V_{IL}; I_O = -8 mA	4.5	3.94	–	3.80	–	
V_{OL}	Low output voltage	V_I = V_{IH} orV_{IL} I_O = 50 mkA	2.0	–	0.09	–	0.1	
			3.0	–	0.09	–	0.1	
			4.5	–	0.09	–	0.1	
			5.5	–	0.09	–	0.1	
		V_I = V_{IH} or V_{IL} I_O = 4 mA	3.0	–	0.36	–	0.44	
		V_I = V_{IH} or V_{IL} I_O = 8 mA	4.5	–	0.36	–	0.44	
I_{OZ}	Output current in "off" state	V_I = V_{IH} or V_{IL} V_O = V_{CC} or 0V	5.5	-	±0.25	-	±2.5	mkA
I_I	Input current	V_I = 5.5V or 0V	0 – 5.5	-	±0.1	-	±1.0	
I_{CC}	Consumption current	V_I =V_{CC} or 0V	5.5	-	4.0	-	40.0	

AC electrical characteristics ($t_{LH} = t_{HL} = 3.0$ ns)

Symbol	Parameter	Test conditions	V_{CC}, V	C_L, pF	Value				Unit
					25 °C		–40 to 85 °C		
					min	max	min	max	
t_{PHL}, t_{PLH}	Propagation delay time when switching "on", "off"	Figure 1	3.3 ± 0.3	15	-	8.0	-	9.5	ns
				50		11.5		13.0	
			5.0 ± 0.5	15		5.5		6.5	
				50		7.5		8.5	
t_{PHZ} , t_{PLZ}	Propagation delay time under transition from high , low level into "off" state	Figure 2	3.3 ± 0.3	50	–	13.2	–	15.0	
			5.0 ± 0.5	50	–	8.8	–	10.0	
t_{PZH} , t_{PZL}	Propagation delay time under transition from «off» state into high, low level	Figure 2	3.3 ± 0.3	15	–	8.0	–	9.5	
				50	–	11.5	–	13.0	
			5.0 ± 0.5	15	–	5.1	–	6.0	
				50	–	7.1	–	8.0	
t_{OSLH}, t_{OSHL}	Propagation delays difference between outputs	–	3.3 ± 0.3	50	–	1.5	–	1.5	
			5.5 ± 0.5	50	–	1.0	–	1.0	

Capacitance characteristics

Symbol	Parameter	Test conditions	V_{CC}, V	Value		Unit
				25 °C		
				min	max	
C_I	Input capacity	-	5.0		10	pF
C_O	Output capacity	-	5.0		12	pF
C_{PD}	Dynamic capacity	V_I = 0 V or V_{CC}	5.0		30	pF

Noise characteristics (C_L = 50 pF)

Symbol	Parameter	V_{CC}, V	Value		Unit
			min	max	
V_{OLP}	Positive noise of low output voltage	5.0	-	0.8	V
V_{OLV}	Negative noise of low output voltage	5.0	-0.8	-	
V_{IHD}	Input dynamic high voltage	5.0	3.5	-	
V_{ILD}	Input dynamic low voltage	5.0	-	1.5	

- Time diagram of input and output pulses

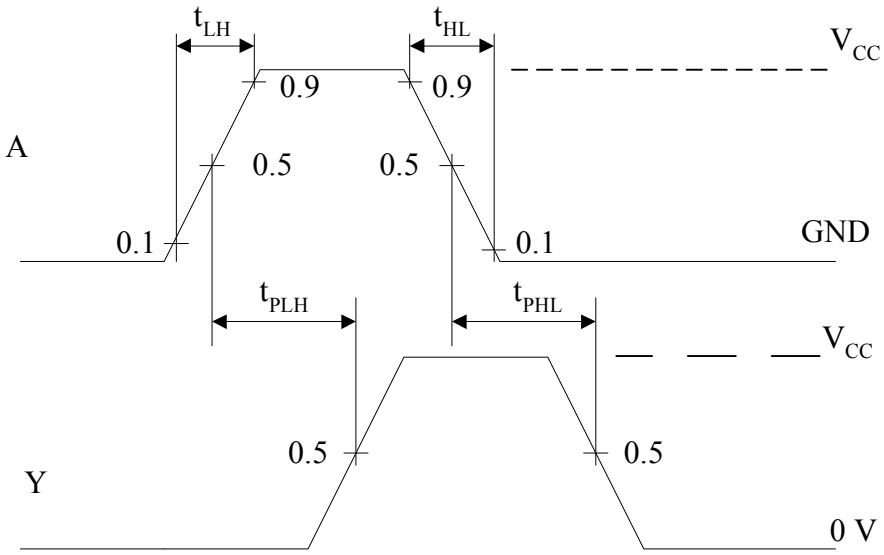


Fig. 1

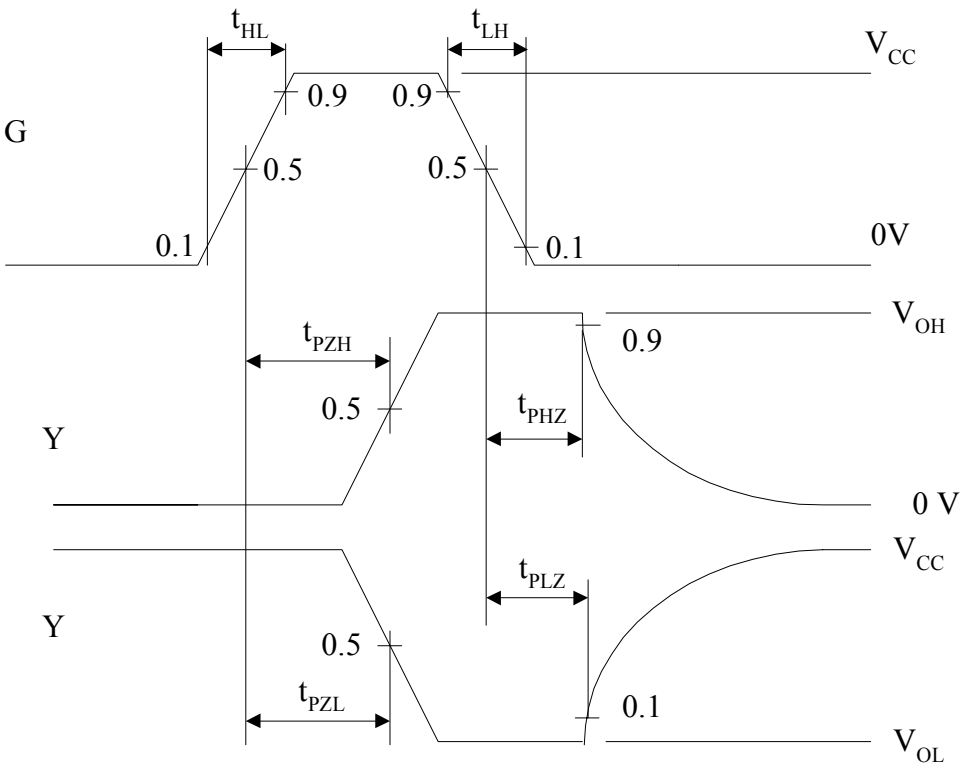
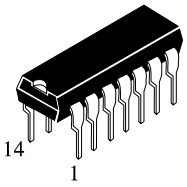
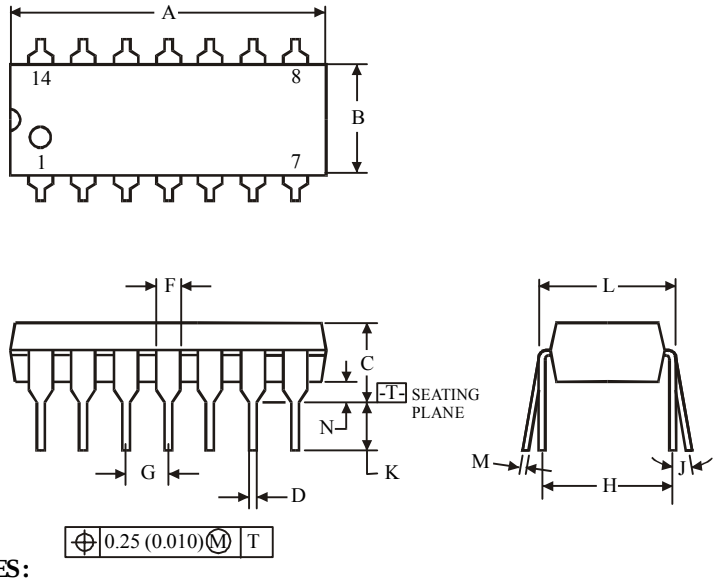


Fig.2

N SUFFIX PLASTIC DIP
(MS - 001AA)



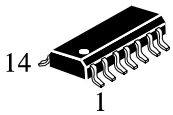


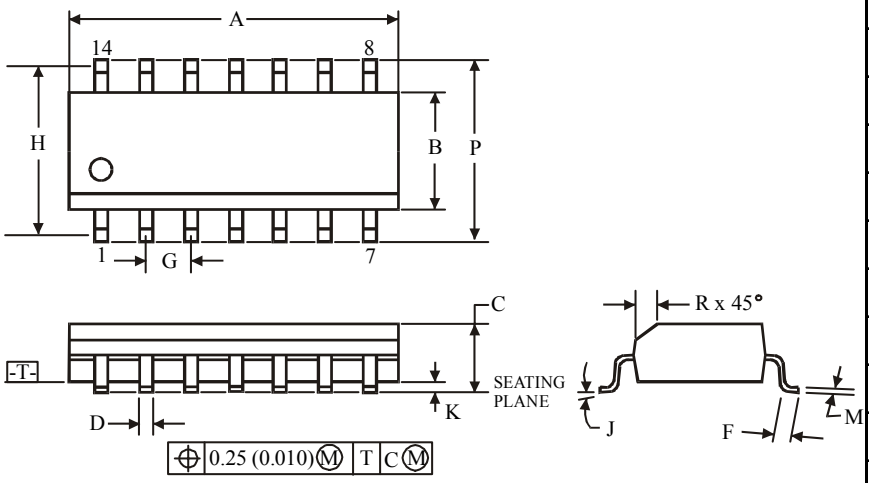
	Dimension, mm	
Symbol	MIN	MAX
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

NOTES:

1. Dimensions “A”, “B” do not include mold flash or protrusions.
   Maximum mold flash or protrusions 0.25 mm (0.010) per side.

D SUFFIX SOIC
(MS - 012AB)





	Dimension, mm	
Symbol	MIN	MAX
A	8.55	8.75
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.27	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5

NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side
   for A; for B – 0.25 mm (0.010) per side.