

# HD74AC126/HD74ACT126

Quad Buffer/Line Driver with 3-State Output

REJ03D0247-0300 Rev.3.00 Nov.12.2004

### Description

The HD74AC126/HD74ACT126 is an quad buffer and line driver designed to be employed as a memory address driver, clock driver and bus oriented transmitter/receiver which provides improved PC board density.

### Features

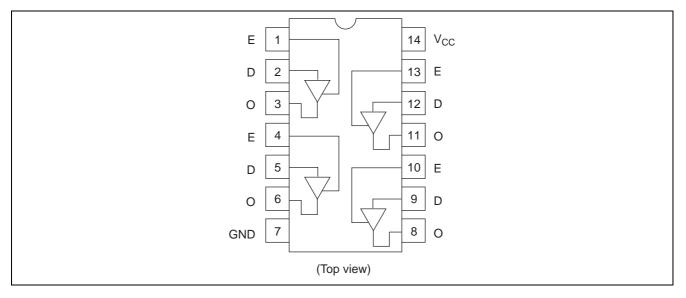
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Outputs Source/Sink 24 mA
- HD74ACT126 has TTL-Compatible Inputs
- Ordering Information: Ex. HD74AC126

Part Name	Package Type	Package Code	Package Abbreviation	Taping Abbreviation (Quantity)
HD74AC126FPEL	SOP-14 pin (JEITA)	FP-14DAV	FP	EL (2,000 pcs/reel)
HD74AC126RPEL	SOP-14 pin (JEDEC)	FP-14DNV	RP	EL (2,500 pcs/reel)

Notes: 1. Please consult the sales office for the above package availability.

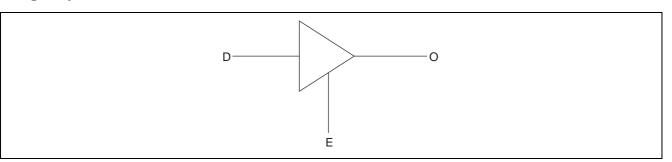
2. The packages with lead-free pins are distinguished from the conventional products by adding V at the end of the package code.

## **Pin Arrangement**





# Logic Symbol



### **Pin Names**

- D Data Inputs
- E 3-State Output Enable Inputs (Active High)
- O Outputs

# **Truth Table**

Inputs		
E	D	Output
н	L	L
н	Н	Н
L	Х	Z

- H : High Voltage Level
- L : Low Voltage Level
- X : Immaterial
- Z : High Impedance

# **Absolute Maximum Ratings**

Item	Symbol	Ratings	Unit	Condition
Supply voltage	Vcc	–0.5 to 7	V	
DC input diode current	I <sub>IK</sub>	-20	mA	$V_1 = -0.5V$
		20	mA	$V_1 = Vcc+0.5V$
DC input voltage	VI	-0.5 to Vcc+0.5	V	
DC output diode current	I <sub>OK</sub>	-50	mA	$V_0 = -0.5V$
		50	mA	$V_0 = Vcc+0.5V$
DC output voltage	Vo	-0.5 to Vcc+0.5	V	
DC output source or sink current	lo	±50	mA	
DC V <sub>CC</sub> or ground current per output pin	I <sub>CC</sub> , I <sub>GND</sub>	±50	mA	
Storage temperature	Tstg	-65 to +150	°C	

# **Recommended Operating Conditions: HD74AC126**

ltem	Symbol	Ratings	Unit	Condition
Supply voltage	V <sub>CC</sub>	2 to 6	V	
Input and Output voltage	V <sub>I</sub> , V <sub>O</sub>	0 to V <sub>CC</sub>	V	
Operating temperature	Та	-40 to +85	°C	
Input rise and fall time	tr, tf	8	ns/V	$V_{CC} = 3.0V$
(except Schmitt inputs)				$V_{CC} = 4.5 V$
$V_{IN}$ 30% to 70% $V_{CC}$				V <sub>CC</sub> = 5.5 V



ltem	Sym-         Vcc         Ta = 25°C         Ta = -40 to +85°C			Unit	Cond	ition				
			min.	typ.	max.	min.	max.			
Input Voltage	VIH	3.0	2.1	1.5	_	2.1	—	V	$V_{OUT} = 0.1 \text{ V or }$	/ <sub>CC</sub> –0.1 V
		4.5	3.15	2.25	—	3.15	—			
		5.5	3.85	2.75	_	3.85	—			
	VIL	3.0	—	1.50	0.9	_	0.9		$V_{OUT} = 0.1 \text{ V or }$	/ <sub>CC</sub> –0.1 V
		4.5	—	2.25	1.35	—	1.35			
		5.5	—	2.75	1.65	—	1.65			
Output voltage	V <sub>OH</sub>	3.0	2.9	2.99	—	2.9	—	V	$V_{IN} = V_{IL} \text{ or } V_{IH}$	
		4.5	4.4	4.49	—	4.4	—		I <sub>OUT</sub> = -50 μA	
		5.5	5.4	5.49	—	5.4	—			
		3.0	2.58	—	—	2.48	—		$V_{IN} = V_{IL} \text{ or } V_{IH}$	$I_{OH} = -12 \text{ mA}$
		4.5	3.94	—	—	3.80	—			$I_{OH} = -24 \text{ mA}$
		5.5	4.94	—	—	4.80	—			$I_{OH} = -24 \text{ mA}$
	V <sub>OL</sub>	3.0	—	0.002	0.1	—	0.1		$V_{IN} = V_{IL} \text{ or } V_{IH}$	
		4.5	—	0.001	0.1	—	0.1		I <sub>OUT</sub> = 50 μA	
		5.5	—	0.001	0.1	—	0.1			
		3.0	—	—	0.32	—	0.37		$V_{IN} = V_{IL} \text{ or } V_{IH}$	I <sub>OL</sub> = 12 mA
		4.5	—	—	0.32	—	0.37			I <sub>OL</sub> = 24 mA
		5.5	—	—	0.32	—	0.37			I <sub>OL</sub> = 24 mA
Input leakage current	I <sub>IN</sub>	5.5	—	—	±0.1	—	±1.0	μA	$V_{IN} = V_{CC}$ or GNE	)
3 State current	I <sub>OZ</sub>	5.5	_	—	±0.5	—	±5.0	μA	$V_{IN(OE)} = V_{IL}, V_{IH}$ $V_{IN} = V_{CC} \text{ or } GNE$ $V_{OUT} = V_{CC} \text{ or } GNE$	
Dynamic output	I <sub>OLD</sub>	5.5	—	—	—	86	—	mA	V <sub>OLD</sub> = 1.1 V	
current*	I <sub>OHD</sub>	5.5	—	—	—	-75	—	mA	V <sub>OHD</sub> = 3.85 V	
Quiescent supply current	I <sub>CC</sub>	5.5	—	—	8.0	—	80	μA	$V_{IN} = V_{CC}$ or grou	ind

# DC Characteristics: HD74AC126

\*Maximum test duration 2.0 ms, one output loaded at a time.

# Recommended Operating Conditions: HD74ACT126

Item	Symbol	Ratings	Unit	Condition
Supply voltage	V <sub>cc</sub>	2 to 6	V	
Input and output voltage	V <sub>I</sub> , V <sub>O</sub>	0 to V <sub>CC</sub>	V	
Operating temperature	Та	-40 to +85	°C	
Input rise and fall time (except Schmitt inputs) V <sub>IN</sub> 0.8 to 2.0 V	tr, tf	8	ns/V	$V_{CC} = 4.5V$ $V_{CC} = 5.5V$

ltem	Sym- bol	V <sub>cc</sub> (V)	1	Га = 25°(	0		–40 to 5°C	Unit	Condi	ition
			min.	typ.	max.	min.	max.			
Input voltage	VIH	4.5	2.0	1.5	—	2.0	—	V	$V_{OUT} = 0.1 \text{ V or V}$	/ <sub>cc</sub> –0.1 V
		5.5	2.0	1.5	—	2.0	—			
	VIL	4.5	—	1.5	0.8	—	0.8		$V_{OUT} = 0.1 \text{ V or } V$	/ <sub>CC</sub> –0.1 V
		5.5	—	1.5	0.8	—	0.8			
Output voltage	V <sub>OH</sub>	4.5	4.4	4.49	—	4.4	—	V	$V_{IN} = V_{IL} \text{ or } V_{IH}$	
		5.5	5.4	5.49	_	5.4	—		I <sub>OUT</sub> = -50 μA	
		4.5	3.94	_	_	3.80	—		$V_{IN} = V_{IL}$	I <sub>OH</sub> = -24 mA
		5.5	4.94	_	_	4.80	—			I <sub>OH</sub> = -24 mA
	V <sub>OL</sub>	4.5	—	0.001	0.1	_	0.1		$V_{IN} = V_{IL} \text{ or } V_{IH}$	
		5.5	—	0.001	0.1	_	0.1		Ι <sub>ΟUT</sub> = 50 μΑ	
		4.5	—	_	0.32	_	0.37		$V_{IN} = V_{IL}$	I <sub>OL</sub> = 24 mA
		5.5	—	_	0.32	_	0.37			I <sub>OL</sub> = 24 mA
Input current	I <sub>IN</sub>	5.5	—	_	±0.1	_	±1.0	μΑ	$V_{IN} = V_{CC}$ or GNE	)
3 State current	I <sub>OZ</sub>	5.5	—	—	±0.5	_	±5.0	μΑ	$V_{\text{IN}} = V_{\text{IL}},  V_{\text{IH}}$	
									$V_{OUT} = V_{CC} \text{ or } GN$	1D
I <sub>CC</sub> /input current	I <sub>CCT</sub>	5.5	—	0.6	—	—	1.5	mA	$V_{IN} = V_{CC}$ -2.1 V	
Dynamic output	I <sub>OLD</sub>	5.5	_	—	—	86	—	mA	$V_{OLD} = 1.1 V$	
current*	I <sub>OHD</sub>	5.5	—	—	—	-75	—	mA	$V_{OHD} = 3.85 V$	
Quiescent supply current	I <sub>CC</sub>	5.5	—	—	8.0	—	80	μA	$V_{IN} = V_{CC}$ or grou	nd

### DC Characteristics: HD74ACT126

\*Maximum test duration 2.0 ms, one output loaded at a time.

# AC Characteristics: HD74AC126

			Ta = +25°C			Ta = -40°	C to +85°C	
			(	C∟ = 50 p	F	C <sub>L</sub> = 50 pF		
Item	Symbol	V <sub>cc</sub> (V)* <sup>1</sup>	Min	Тур	Max	Min	Max	Unit
Propagation Delay	t <sub>PLH</sub>	3.3	1.0	6.5	9.0	1.0	10.0	ns
		5.0	1.0	5.5	7.0	1.0	7.5	
Propagation Delay	t <sub>PHL</sub>	3.3	1.0	6.5	9.0	1.0	10.0	
		5.0	1.0	5.0	7.0	1.0	7.5	
Enable Time	t <sub>zH</sub>	3.3	1.0	6.5	12.5	1.0	13.0	
		5.0	1.0	5.5	9.0	1.0	9.5	
Enable Time	t <sub>ZL</sub>	3.3	1.0	7.0	12.0	1.0	13.0	
		5.0	1.0	5.5	9.0	1.0	9.5	
Disable Time	t <sub>HZ</sub>	3.3	1.0	8.0	12.0	1.0	12.5	
		5.0	1.0	6.5	10.0	1.0	10.5	
Disable Time	t <sub>LZ</sub>	3.3	1.0	7.0	12.5	1.0	13.5	
		5.0	1.0	6.0	10.0	1.0	10.5	]

 Note:
 1.
 Voltage Range 3.3 is 3.3 V ± 0.3 V

 Voltage Range 5.0 is 5.0 V ± 0.5 V



# AC Characteristics: HD74ACT126

			Ta = +25°C C <sub>L</sub> = 50 pF				C to +85°C 50 pF	
ltem	Symbol	V <sub>cc</sub> (V)* <sup>1</sup>	Min	Тур	Max	Min	Max	Unit
Propagation Delay	t <sub>PLH</sub>	5.0	1.0	6.5	9.0	1.0	10.0	ns
Propagation Delay	t <sub>PHL</sub>	5.0	1.0	7.0	9.0	1.0	10.0	-
Enable Time	t <sub>ZH</sub>	5.0	1.0	6.0	9.0	1.0	10.0	-
Enable Time	t <sub>ZL</sub>	5.0	1.0	7.0	10.0	1.0	11.0	-
Disable Time	t <sub>HZ</sub>	5.0	1.0	8.0	10.5	1.0	11.5	-
Disable Time	t <sub>LZ</sub>	5.0	1.0	7.0	10.5	1.0	11.5	

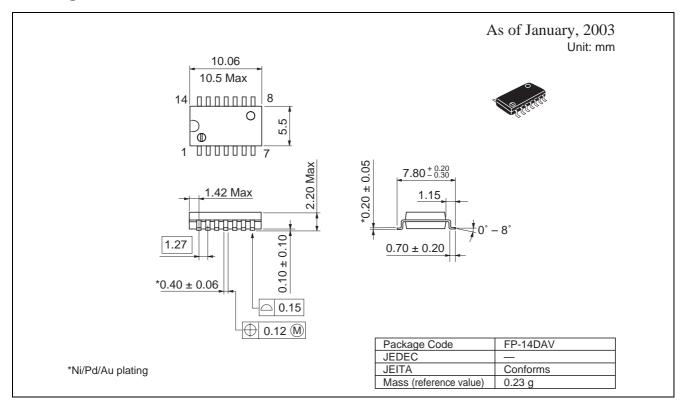
Note: 1. Voltage Range 5.0 is  $5.0 \text{ V} \pm 0.5 \text{ V}$ 

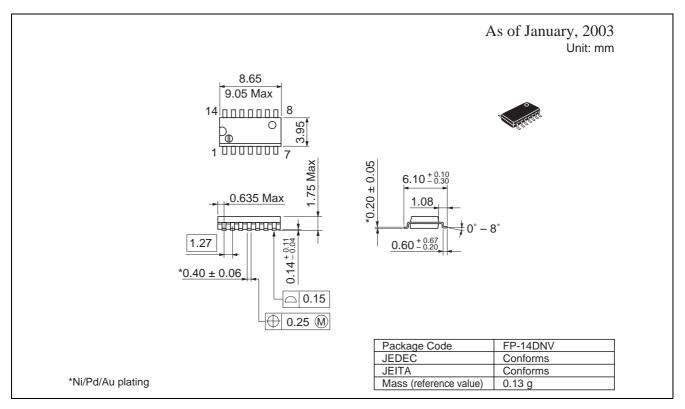
# Capacitance

Item	Symbol	Тур	Unit	Condition
Input capacitance	C <sub>IN</sub>	4.5	pF	$V_{CC} = 5.5 V$
Power dissipation capacitance	C <sub>PD</sub>	45.0	pF	$V_{CC} = 5.0 V$



## **Package Dimensions**







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