HD74HC373 ● Octal D-type Transparent Latches (with 3-state outputs)
HD74HC533 ● Octal D-type Transparent Latches (with inverted 3-state outputs)

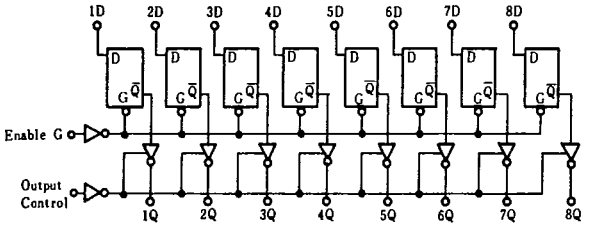
When the latch enable input is high, the Q outputs of HD74HC373 will follow the D inputs and the Q outputs of HD74HC533 will follow the inversion of the D inputs. When the latch enable goes low, data at the D inputs will be retained at the outputs until latch enable returns high again. When a high logic level is applied to the output control input, all outputs go to a high impedance state, regardless of what signals are present at the other inputs and the state of the storage elements.

■ FEATURES

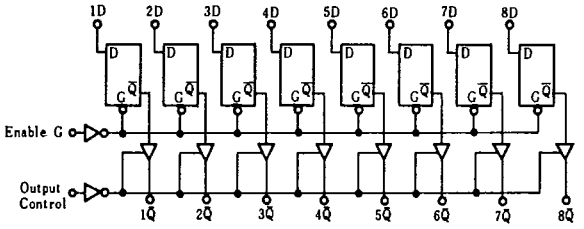
- High Speed Operation: t_{pd} (D to Q)=16ns typ. (C_L=50pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: Vcc=2~6V
- Low Input Current: 1μA max.
- Low Quiescent Supply Current: Icc (static)=4μA max. (Ta=25°C)

■ BLOCK DIAGRAM

● HD74HC373

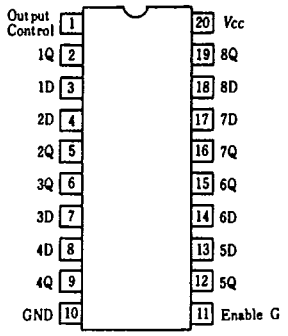


● HD74HC533



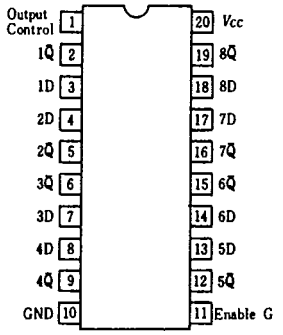
■ PIN ARRANGEMENT

● HD74HC373



(Top View)

● HD74HC533



(Top View)

■ FUNCTION TABLE

Output Control	Enable G	D	HD74HC373 Q	HD74HC533 $\overline{Q}$
L	H	H	H	L
L	H	L	L	H
L	L	X	No Change	No Change
H	X	X	Z	Z

Notes) X: irrelevant
Z: Off (high-impedance) state of a 3-state output.

■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Supply Voltage Range	V_{CC}	−0.5~+7.0	V
Input Voltage	V_{IN}	−0.5~V_{CC}+0.5	V
Output Voltage	V_{OUT}	−0.5~V_{CC}+0.5	V
DC Current Drain per pin	I_{OUT}	±35	mA
DC Current Drain per Vcc, GND	I_{CC}, I_{GND}	±75	mA
DC Input Diode Current	I_{IK}	±20	mA
DC Output Diode Current	I_{OK}	±20	mA
Power Dissipation per Package	P_T	500	mW
Storage Temperature	T_{stg}	−65~+150	°C

■ DC CHARACTERISTICS

Item	Symbol	V_{CC}(V)	Test Conditions		Ta=25°C min	Ta=25°C typ	Ta=25°C max	Ta=−40~+85°C min	Ta=−40~+85°C max	Unit
Input Voltage	V_{IH}	2.0			1.5	—	—	1.5	—	V
		4.5			3.15	—	—	3.15	—	
		6.0			4.2	—	—	4.2	—	
	V_{IL}	2.0			—	—	0.5	—	0.5	V
		4.5			—	—	1.35	—	1.35	
		6.0			—	—	1.8	—	1.8	
Output Voltage	V_{OH}	2.0	V_{in}=V_{IH} or V_{IL}	I_{OH}=−20μA	1.9	2.0	—	1.9	—	V
		4.5			4.4	4.5	—	4.4	—	
		6.0			5.9	6.0	—	5.9	—	
		4.5		I_{OH}=−6mA	4.18	—	—	4.13	—	
		6.0		I_{OH}=−7.8mA	5.68	—	—	5.63	—	
	V_{OL}	2.0	V_{in}=V_{IH} or V_{IL}	I_{OL}=20μA	—	0.0	0.1	—	0.1	V
		4.5			—	0.0	0.1	—	0.1	
		6.0			—	0.0	0.1	—	0.1	
		4.5		I_{OL}=6mA	—	—	0.26	—	0.33	
		6.0		I_{OL}=7.8mA	—	—	0.26	—	0.33	
Off-state Output Current	I_{OZ}	6.0	V_{in}=V_{IH} or V_{IL}, V_{out}=V_{CC} or GND		—	—	±0.5	—	±5.0	μA
Input Current	I_{in}	6.0	V_{in}=V_{CC} or GND		—	—	±0.1	—	±1.0	μA
Quiescent Supply Current	I_{CC}	6.0	V_{in}=V_{CC} or GND, I_{out}=0μA		—	—	4.0	—	40	μA

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■ AC CHARACTERISTICS (C_L=50pF, Input t_r=t_f=6ns)

Item	Symbol	V_{CC}(V)	Test Conditions	Ta=25℃ min	Ta=25℃ typ	Ta=25℃ max	Ta=−40~+85℃ min	Ta=−40~+85℃ max	Unit
Propagation Delay Time	t_{PLH} t_{PHL}	2.0	G to Q	—	—	150	—	190	ns
		4.5		—	18	30	—	38	
		6.0		—	—	26	—	33	
	t_{PLH} t_{PHL}	2.0	D to Q	—	—	125	—	155	ns
		4.5		—	16	25	—	31	
		6.0		—	—	21	—	26	
Output Enable Time	t_{ZL}	2.0		—	—	150	—	190	ns
		4.5		—	12	30	—	38	
		6.0		—	—	26	—	33	
	t_{ZH}	2.0		—	—	150	—	190	ns
		4.5		—	15	30	—	38	
		6.0		—	—	26	—	33	
Output Disable Time	t_{LZ}	2.0		—	—	150	—	190	ns
		4.5		—	13	30	—	38	
		6.0		—	—	26	—	33	
	t_{HZ}	2.0		—	—	150	—	190	ns
		4.5		—	16	30	—	38	
		6.0		—	—	26	—	33	
Setup Time	t_{su}	2.0		100	—	—	125	—	ns
		4.5		20	1	—	25	—	
		6.0		17	—	—	21	—	
Hold Time	t_h	2.0		50	—	—	65	—	ns
		4.5		10	1	—	13	—	
		6.0		9	—	—	11	—	
Pulse Width	t_w	2.0		80	—	—	100	—	ns
		4.5		16	6	—	20	—	
		6.0		14	—	—	17	—	
Output Rise/Fall Time	t_{TLH} t_{THL}	2.0		—	—	60	—	75	ns
		4.5		—	4	12	—	15	
		6.0		—	—	10	—	13	
Input Capacitance	C_{in}	—		—	5	10	—	10	pF

PACKAGE INFORMATION

T-90-20

In the HD74HC series of HS-CMOS logic, either of plastic DIP and small outline packages can be selected.
For your ordering, please refer to the following package code.

●Package code of HS-CMOS Logic

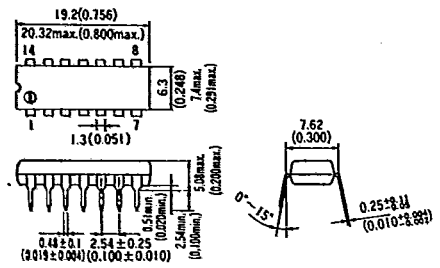
HD74HC XXXX P

- P : Package code (P : Plastic DIP, FP : Small outline package)
- XXXX : Individual device code
- HC : Series code of HS-CMOS logic
- HD74 : Initial code of Hitachi digital IC

■PLASTIC DIP PACKAGE [Unit: mm(inch), scale: 1/1]

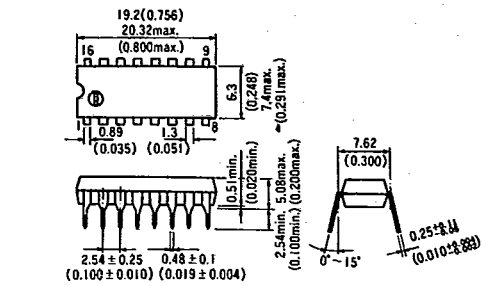
●14-pin type

DP-14



●16-pin type

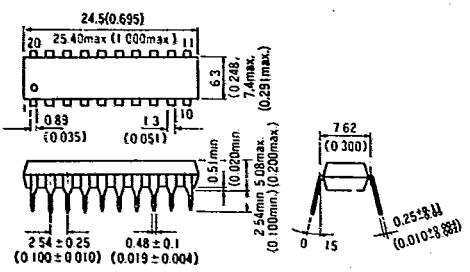
DP-16



Note) For the present, both packages of 0.89 and 1.3 can be used. Please refer to the Technical Marketing Dept. for further details.

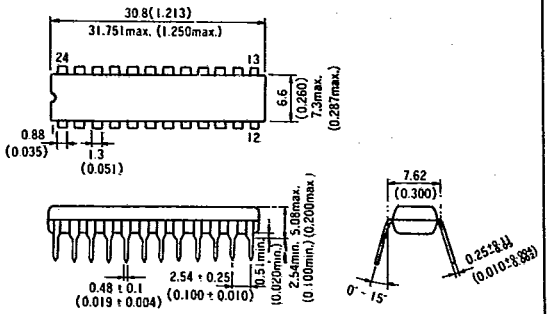
●20-pin type

DP-20N



●24-pin type

DP-24N



Note) Because this is under development, the dimentions may be changed partly.

0571 F-06

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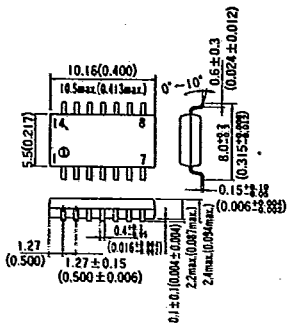
PACKAGE INFORMATION

■SMALL OUTLINE PACKAGE [Unit: mm(inch), scale: 1½]

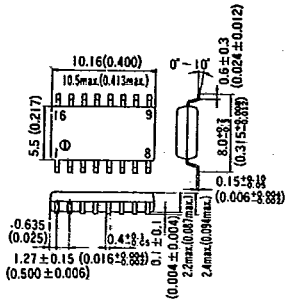
●14—pin type

FP—14D



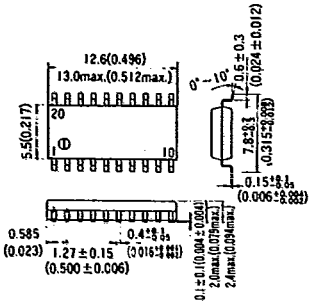
●16—pin type

FP—16D



●20—pin type

FP—20DN



Note) Preliminary

0572 F-07

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