92D 10527 D T-52-31

HD74HC442 ● Quad. Tridirectional Bus Transceiver (with noninverted 3-state outputs)
HD74HC443 ● Quad. Tridirectional Bus Transceiver (with inverted 3-state outputs)
HD74HC444 ● Quad. Tridirectional Bus Transceiver (with noninverted/inverted 3-state outputs)

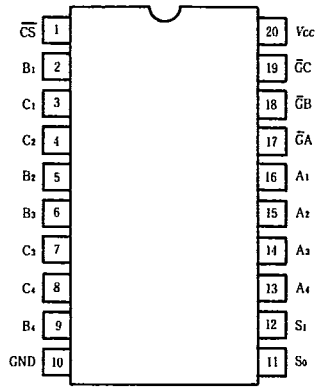
These bus transceivers are designed for asynchronous three-way communication between four-line data buses. They give the designer a choice of selecting inverting, noninverting, or a combination of inverting and noninverting data paths with 3-state outputs.

The S_0 and S_1 inputs select the bus from which data are to be transferred. The $\overline{G}$ inputs enable the bus or buses to which data are to be transferred. The port for any bus selected for input and any other bus not enabled for output will be at high impedance.

■ FEATURES

- High Speed Operation
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: V_{CC}=2~6V
- Low Input Current: 1μA max.
- Low Quiescent Supply Current: I_{CC} (static)=4μA max. (Ta=25°C)

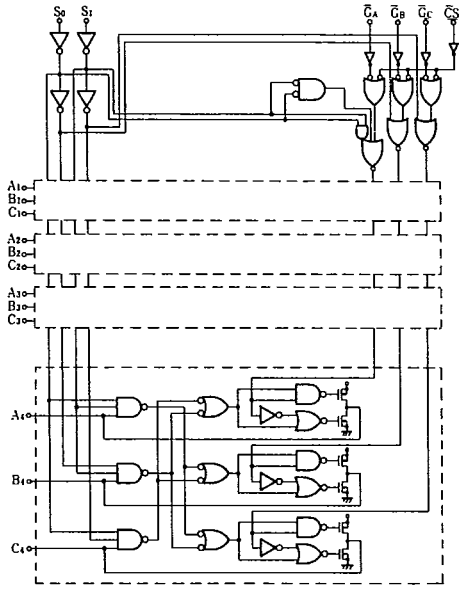
■ PIN ARRANGEMENT



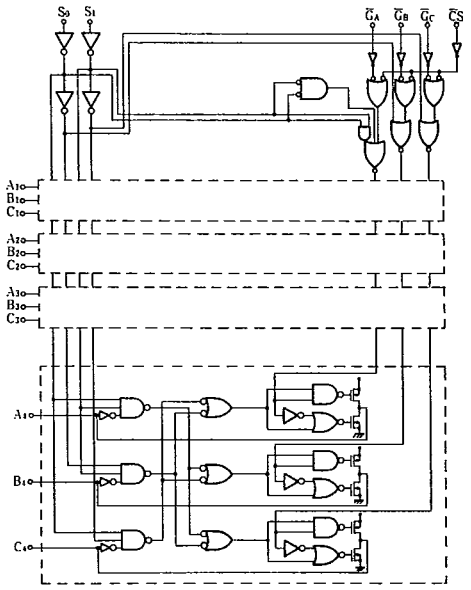
(Top View)

■ LOGIC DIAGRAM

● HD74HC442



● HD74HC443



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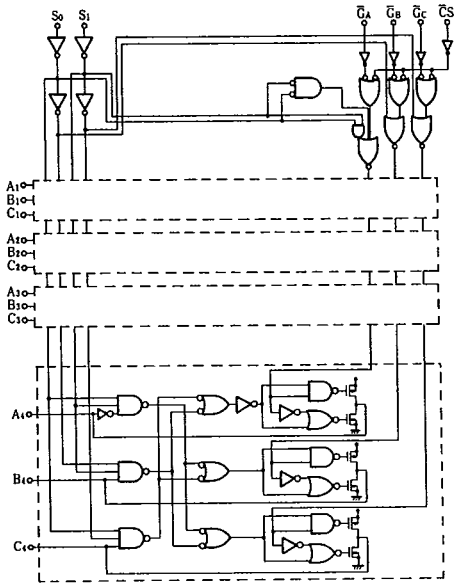
92D 10528 DT-52-31

■ LOGIC DIAGRAM

● HD74HC444



■ FUNCTION TABLE

Inputs						Transfers Between Buses		
$\overline{CS}$	S_1	S_0	GA	GB	GC	HD74HC442	HD74HC443	HD74HC444
H	X	X	X	X	X	None	None	None
X	H	H	X	X	X	None	None	None
X	X	X	H	H	H	None	None	None
X	L	L	X	H	H	None	None	None
X	L	H	H	X	H	None	None	None
X	H	L	H	H	X	None	None	None
L	L	L	X	L	L	A→B, A→C	$\overline{A}$→B, $\overline{A}$→C	$\overline{A}$→B, $\overline{A}$→C
L	L	H	L	X	L	B→C, B→A	$\overline{B}$→C, $\overline{B}$→A	B→C, $\overline{B}$→A
L	H	L	L	L	X	C→A, C→B	$\overline{C}$→A, $\overline{C}$→B	$\overline{C}$→A, C→B
L	L	L	X	L	H	A→B	$\overline{A}$→B	$\overline{A}$→B
L	L	H	H	X	L	B→C	$\overline{B}$→C	B→C
L	H	L	L	H	X	C→A	$\overline{C}$→A	$\overline{C}$→A
L	L	L	X	H	L	A→C	$\overline{A}$→C	$\overline{A}$→C
L	L	H	L	X	H	B→A	$\overline{B}$→A	$\overline{B}$→A
L	H	L	H	L	X	C→B	$\overline{C}$→B	C→B

■ 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
Output Current	I_{OUT}	±35	mA
DC Current Drain per V_{CC}, 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		T_a=25°C min	typ	max	T_a=−40∼+85°C min	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

HD74HC442, HD74HC443, HD74HC444

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

Item	Symbol	V_{CC}(V)	Test Conditions	Ta=25°C min.	typ.	max.	Ta=−40~+85°C min.	max.	Unit
Propagation Delay Time	t_{PLH} t_{PHL}	2.0		—	—	200	—	250	ns
		4.5		—	—	40	—	50	
		6.0		—	—	34	—	43	
Output Enable Time	t_{ZH} t_{ZL}	2.0		—	—	150	—	190	ns
		4.5		—	—	30	—	38	
		6.0		—	—	26	—	33	
Output Disable Time	t_{HZ} t_{LZ}	2.0		—	—	150	—	190	ns
		4.5		—	—	30	—	38	
		6.0		—	—	26	—	33	
Output Rise/Fall Time	t_{TLH} t_{THL}	2.0		—	—	60	—	75	ns
		4.5		—	—	12	—	15	
		6.0		—	—	10	—	13	
Input Capacitance	C_{in}	—		—	5	10	—	10	pF

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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

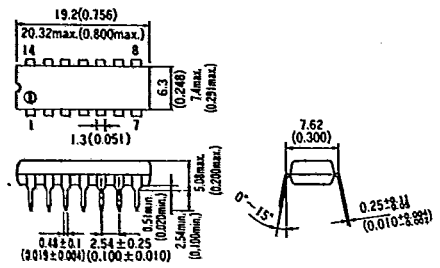
HD74HC XXXX P

- 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]

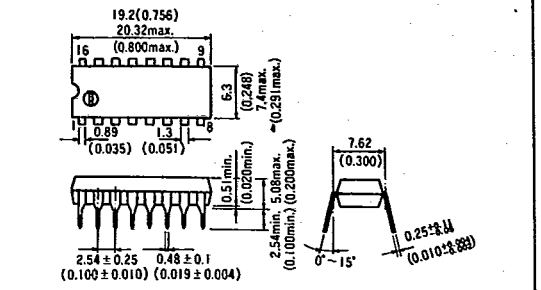
●14-pin type

DP-14



●16-pin type

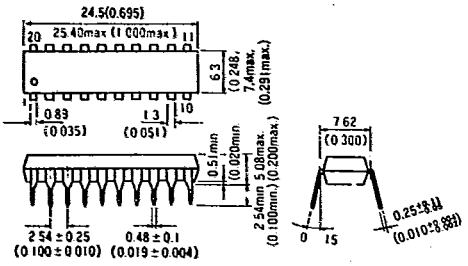
DP-16



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.

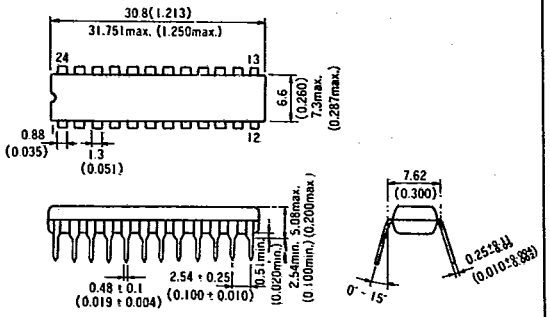
●20-pin type

DP-20N



●24-pin type

DP-24N



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

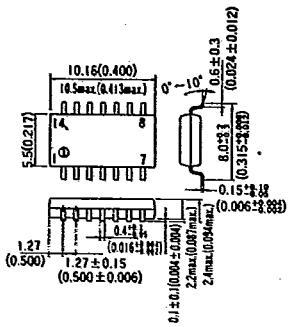
0571 F-06

PACKAGE INFORMATION

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

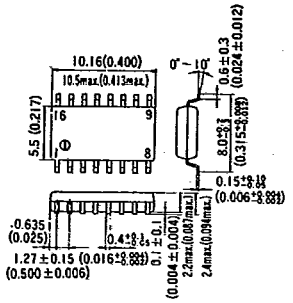
●14—pin type

FP—14D



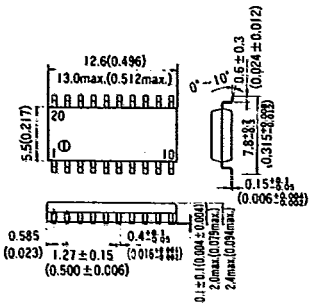
●16—pin type

FP—16D



●20—pin type

FP—20DN



Note) Preliminary

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