HD74AC539

Dual 1-of-4 Decoder with 3-State Output

HITACHI

ADE-205-398 (Z)
1st. Edition
Sep. 2000

Description

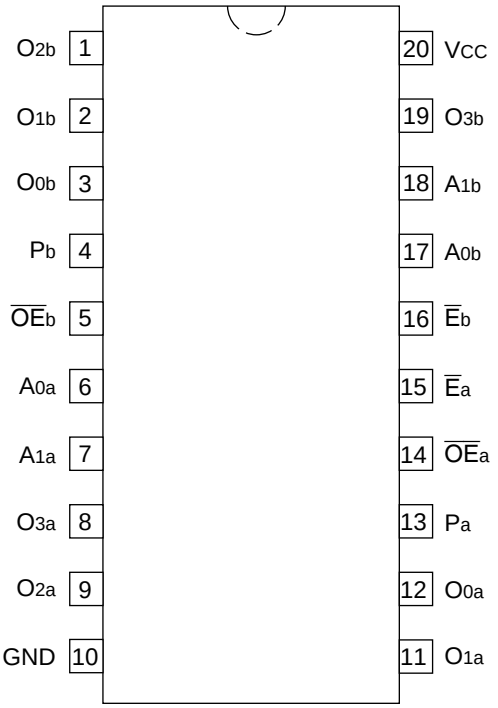
The HD74AC539 contains two inpedendent decoders. Each accepts two Address (A_0, A_1) input signals and decodes them to select one of four mutually exclusive outputs. A polarity control input (P) determines whether the outputs are active HIGH (P = L) or active LOW (P = H). An active LOW input Enable ($\overline{E}$) is available for data demultiplexing; data is routed to the selected output in non-inverted form in the active LOW mode or in inverted form in the active HIGH mode. A HIGH signal on the active LOW Output Enable ($\overline{OE}$) input forces the 3-state outputs to the high impedance state.

Feature

- Outputs Source/Sink 24 mA

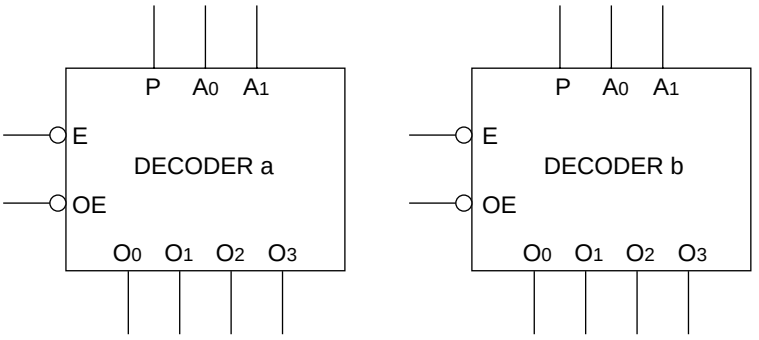
Hitachi semiconductor

Pin Arrangement



(Top view)

Logic Symbol



Pin Names

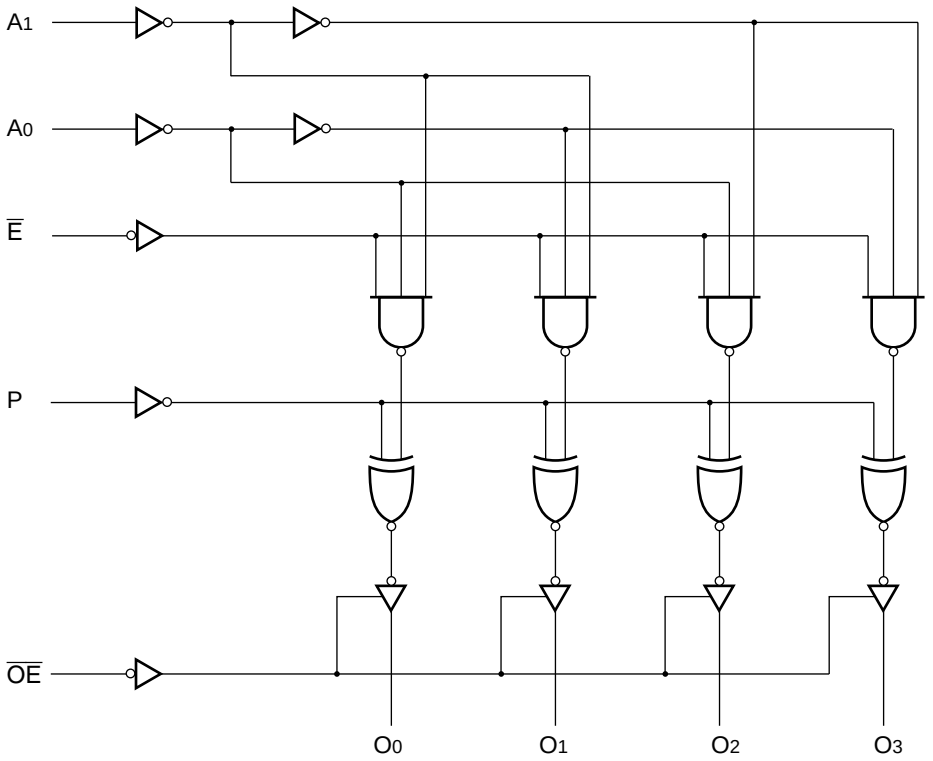
A_{0a} to A_{1a}	Side A Address Inputs
A_{0b} to A_{1b}	Side B Address Inputs
$\overline{E}_a - \overline{E}_b$	Enable Inputs (Active LOW)
$\overline{OE}_a$, $\overline{OE}_b$	Output Enable Inputs (Active LOW)
P_a, P_b	Polarity Control Inputs
O_{0a} to O_{3a}	Side A 3-State Outputs
O_{0b} to O_{3b}	Side B 3-State Outputs

Truth Table

	Inputs				**Outputs**			
Function	$\overline{\mathbf{OE}}$	$\overline{\mathbf{E}}$	$\mathbf{A_1}$	$\mathbf{A_0}$	$\mathbf{O_0}$	$\mathbf{O_1}$	$\mathbf{O_2}$	$\mathbf{O_3}$
High impedance	H	X	X	X	Z	Z	Z	Z
Disable	L	H	X	X	O_n = P			
Active HIGH output	L	L	L	L	H	L	L	L
(P = L)	L	L	L	H	L	H	L	L
	L	L	H	L	L	L	H	L
	L	L	H	H	L	L	L	H
Active LOW output	L	L	L	L	L	H	H	H
(P = H)	L	L	L	H	H	L	H	H
	L	L	H	L	H	H	L	H
	L	L	H	H	H	H	H	L

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

Logic Diagram (one half shown)



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

DC Characteristics (unless otherwise specified)

Item	Symbol	Max	Unit	Condition
Maximum quiescent supply current	I_{CC}	80	µA	V_{IN} = V_{CC} or ground, V_{CC} = 5.5 V, Ta = Worst case
Maximum quiescent supply current	I_{CC}	8.0	µA	V_{IN} = V_{CC} or ground, V_{CC} = 5.5 V, Ta = 25°C

AC Characteristics: HD74AC539

			Ta = +25°C C_L = 50 pF			Ta = –40°C to +85°C C_L = 50 pF		
Item	**Symbol**	**V_{CC} (V)*[1]**	**Min**	**Typ**	**Max**	**Min**	**Max**	**Unit**
Propagation delay	t_{PLH}	3.3	1.0	—	15.0	1.0	18.0	ns
A_n to O_n		5.0	1.0	—	10.0	1.0	12.0	
Propagation delay	t_{PHL}	3.3	1.0	—	15.0	1.0	18.0	ns
A_n to O_n		5.0	1.0	—	10.0	1.0	12.0	
Propagation delay	t_{PLH}	3.3	1.0	—	14.5	1.0	16.5	ns
$\overline{E}$ to O_n		5.0	1.0	—	9.5	1.0	11.0	
Propagation delay	t_{PHL}	3.3	1.0	—	13.5	1.0	15.5	ns
$\overline{E}$ to O_n		5.0	1.0	—	9.0	1.0	11.5	
Propagation delay	t_{PLH}	3.3	1.0	—	16.0	1.0	19.0	ns
P to O_n		5.0	1.0	—	11.5	1.0	12.5	
Propagation delay	t_{PHL}	3.3	1.0	—	16.0	1.0	19.0	ns
P to O_n		5.0	1.0	—	11.5	1.0	12.5	
Propagation delay	t_{ZH}	3.3	1.0	—	10.0	1.0	11.5	ns
$\overline{OE}$ to O_n		5.0	1.0	—	8.0	1.0	9.0	
Propagation delay	t_{ZL}	3.3	1.0	—	9.5	1.0	11.0	ns
$\overline{OE}$ to O_n		5.0	1.0	—	7.5	1.0	8.5	
Propagation delay	t_{HZ}	3.3	1.0	—	11.5	1.0	13.0	ns
$\overline{OE}$ to O_n		5.0	1.0	—	9.5	1.0	10.5	
Propagation delay	t_{LZ}	3.3	1.0	—	10.5	1.0	12.0	ns
$\overline{OE}$ to O_n		5.0	1.0	—	8.5	1.0	9.5	

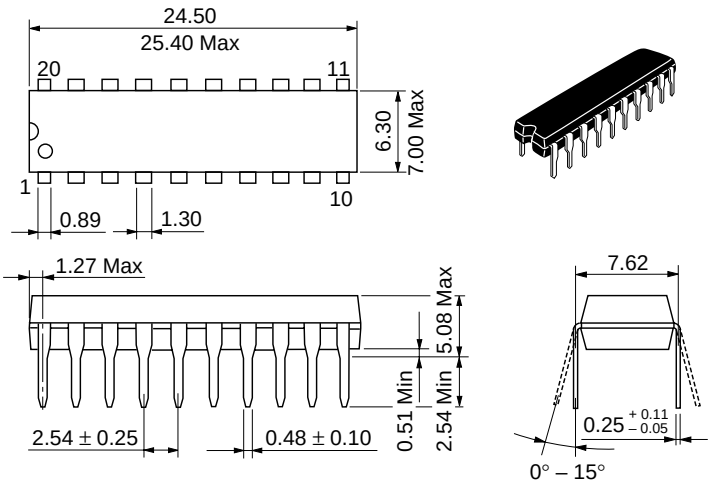
Note: 1. Voltage Range 3.3 is 3.3 V ± 0.3 V
Voltage Range 5.0 is 5.0 V ± 0.5 V

Capacitance

Item	**Symbol**	**Typ**	**Unit**	**Condition**
Input capacitance	C_{IN}	4.5	pF	V_{CC} = 5.5 V
Power dissipation capacitance	C_{PD}	60	pF	V_{CC} = 5.0 V

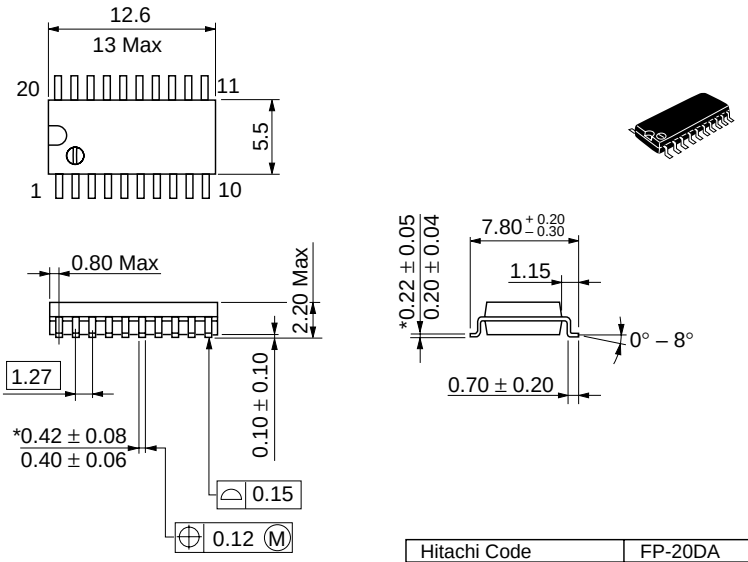
Package Dimensions

Unit: mm



Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Mass (reference value)	1.26 g

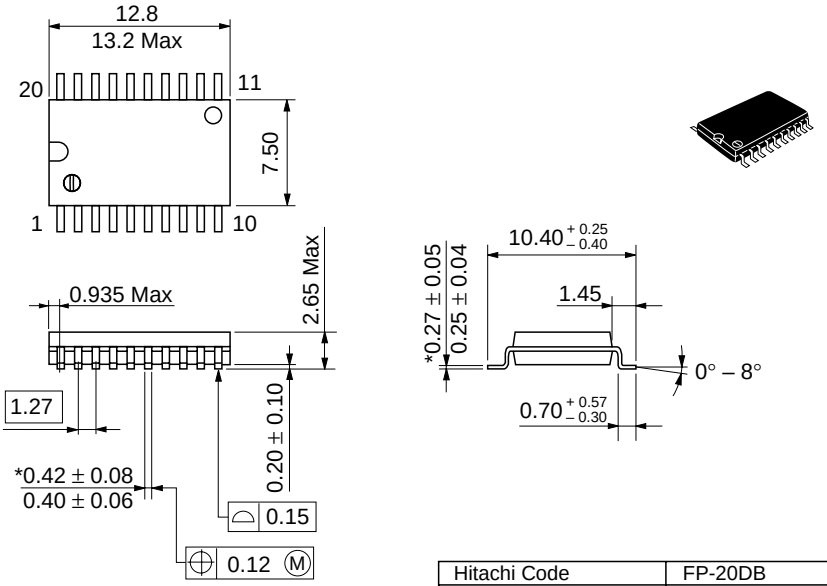
Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-20DA
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.31 g

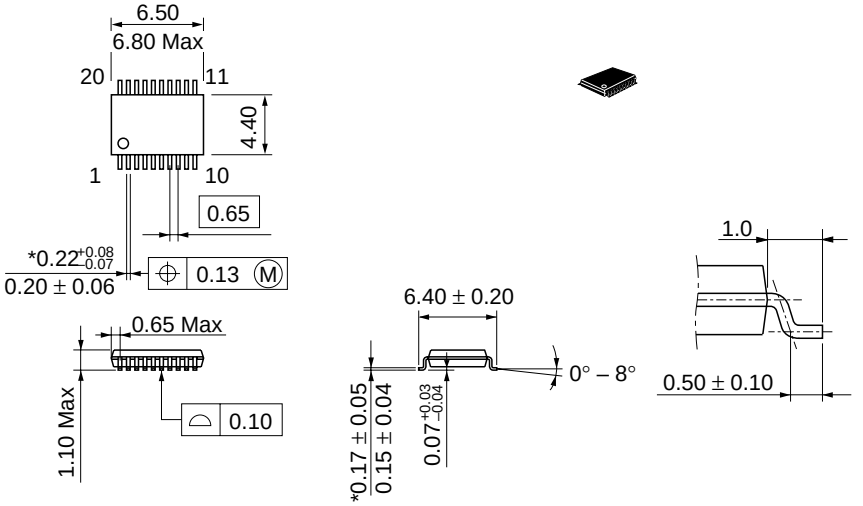
Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-20DB
JEDEC	Conforms
EIAJ	—
Mass (reference value)	0.52 g

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	TTP-20DA
JEDEC	—
EIAJ	—
Mass (reference value)	0.07 g

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