

74HC373 Octal Transparent D-Type Latches with 3-State Outputs

1. General Description

1.1 Description

The 74HC373 consists of eight D-type transparent latches with 3-state outputs. This 8-BIT D-Type latches is controlled by a latch enable input (LE) and output enable input ($\overline{OE}$). While the LE input is held at a high level, the Q outputs will follow the data input. When the LE is taken low, the Q outputs will be latched at the logic level of D input data.

1.2 Features

- 3-State Outputs

- Wide operating voltage range $V_{CC}=2V$ to $6V$
- Wide operating temperature range of $-40^{\circ}C$ to $85^{\circ}C$
- Low Input Current: $1\mu A$ max

1.3 Device Information

PART NUMBER	PACKAGE
74HC373	DIP
	SOP
	TSSOP

2. Connection Diagrams and Pin Description

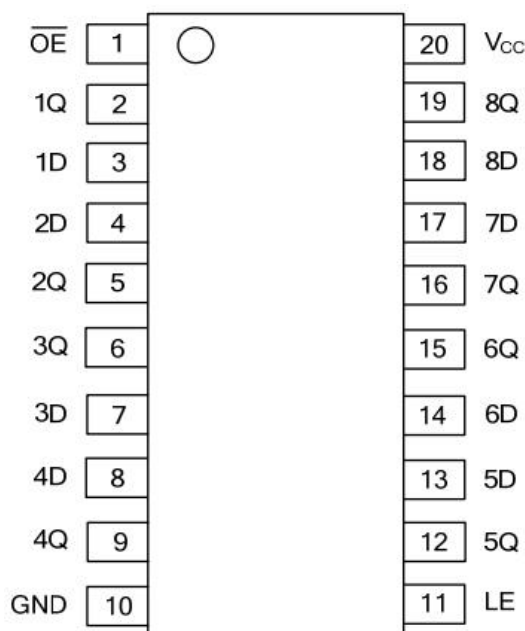


Figure 2.1 Top View

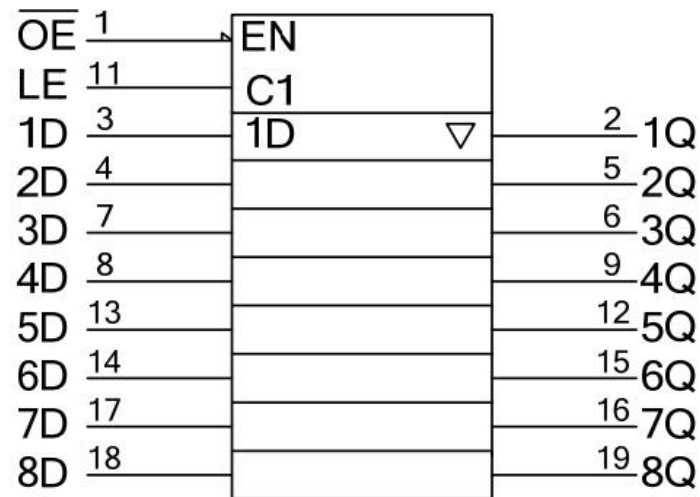


Figure 2.2 Functional Diagram

PIN No.	NAME	I/O	FUNCTION
1	$\overline{OE}$	I	3-State Output Enable Input (active LOW)
2	1Q	O	3-State Latch Output
3	1D	I	Data Input
4	2D	I	Data Input
5	2Q	O	3-State Latch Output
6	3Q	O	3-State Latch Output
7	3D	I	Data Input
8	4D	I	Data Input
9	4Q	O	3-State Latch Output
10	GND		Ground
11	LE	I	Latch Enable Input (active HIGH)
12	5Q	O	3-State Latch Output
13	5D	I	Data Input
14	6D	I	Data Input
15	6Q	O	3-State Latch Output
16	7Q	O	3-State Latch Output
17	7D	I	Data Input
18	8D	I	Data Input
19	8Q	O	3-State Latch Output
20	VCC		Supply Voltage

3. System Diagram

3.1 Logic Diagram

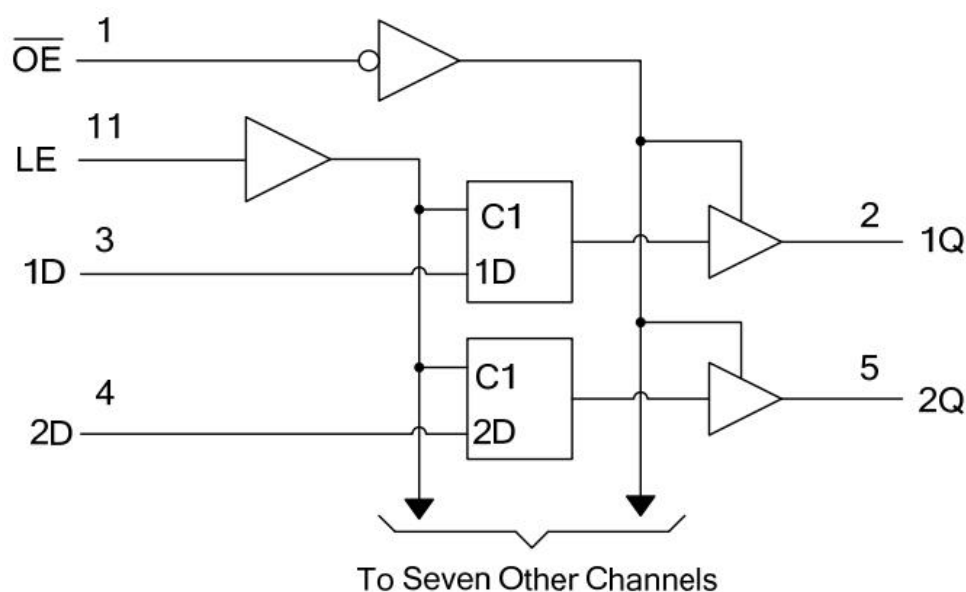


Figure 3.1: 74HC373 Logic Diagram

3.2 Truth Table

Input			Output
$\overline{OE}$	LE	D	Q
0	1	1	1
0	1	0	0
0	0	X	Q0
1	X	X	Z

X = Don't Care, Z=High Impedance, 1≡High State, 0≡Low State

4. Specifications

4.1 Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V_{CC}	Supply Voltage	-0.5	7	V
P_D	Power Dissipation		500	mW
T_J	Junction Temperature		125	°C
T_{OP}	Operating Temperature	-40	85	°C

Absolute maximum ratings are those values beyond which the device could be permanently damaged, These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions.



4.2 Recommended Operating Conditions

Symbol	Parameter	Test Condition	MIN	NOM	MAX	Unit
V _{CC}	Supply Voltage		2	5	6	V
V _{IH}	High Level Input Voltage	V _{CC} =2V	1.5			V
		V _{CC} =4.5V	3.15			V
		V _{CC} =6V	4.2			V
V _{IL}	Low Level Input Voltage	V _{CC} =2V			0.5	V
		V _{CC} =4.5V			1.35	V
		V _{CC} =6V			1.8	V
V _I	Input voltage		0		V _{CC}	V

4.3 Electrical Characteristics

4.3.1 DC Specifications

(T_a=25°C, voltages are referenced to GND (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V _{OH}	High Level Output Voltage	V _{CC} =2V, I _O =-20uA	1.9	--	--	V
		V _{CC} =4.5V, I _O =-20uA	4.4	--	--	V
		V _{CC} =6V, I _O =-20uA	5.9	--	--	V
		V _{CC} =4.5V, I _O =-6mA	4.0	--	--	V
		V _{CC} =6V, I _O =-7.8mA	5.5	--	--	V
V _{OL}	Low Level Output Voltage	V _{CC} =2V, I _O =20uA	--	--	0.1	V
		V _{CC} =4.5V, I _O =20uA	--	--	0.1	V
		V _{CC} =6V, I _O =20uA	--	--	0.1	V
		V _{CC} =4.5V, I _O =6mA	--	--	0.3	V
		V _{CC} =6V, I _O =7.8mA	--	--	0.3	V
I _I	Input Leakage Current	V _{CC} =6V, V _I =V _{CC} or GND	--	0	±1	uA
I _{OZ}	High Impedance Output Leakage Current	V _{CC} =6V, V _O =V _{CC} or GND	--	--	±2	uA
I _{CC}	Quiescent Supply Current	V _{CC} =6V, V _I =V _{CC} /GND	--	0	10	uA

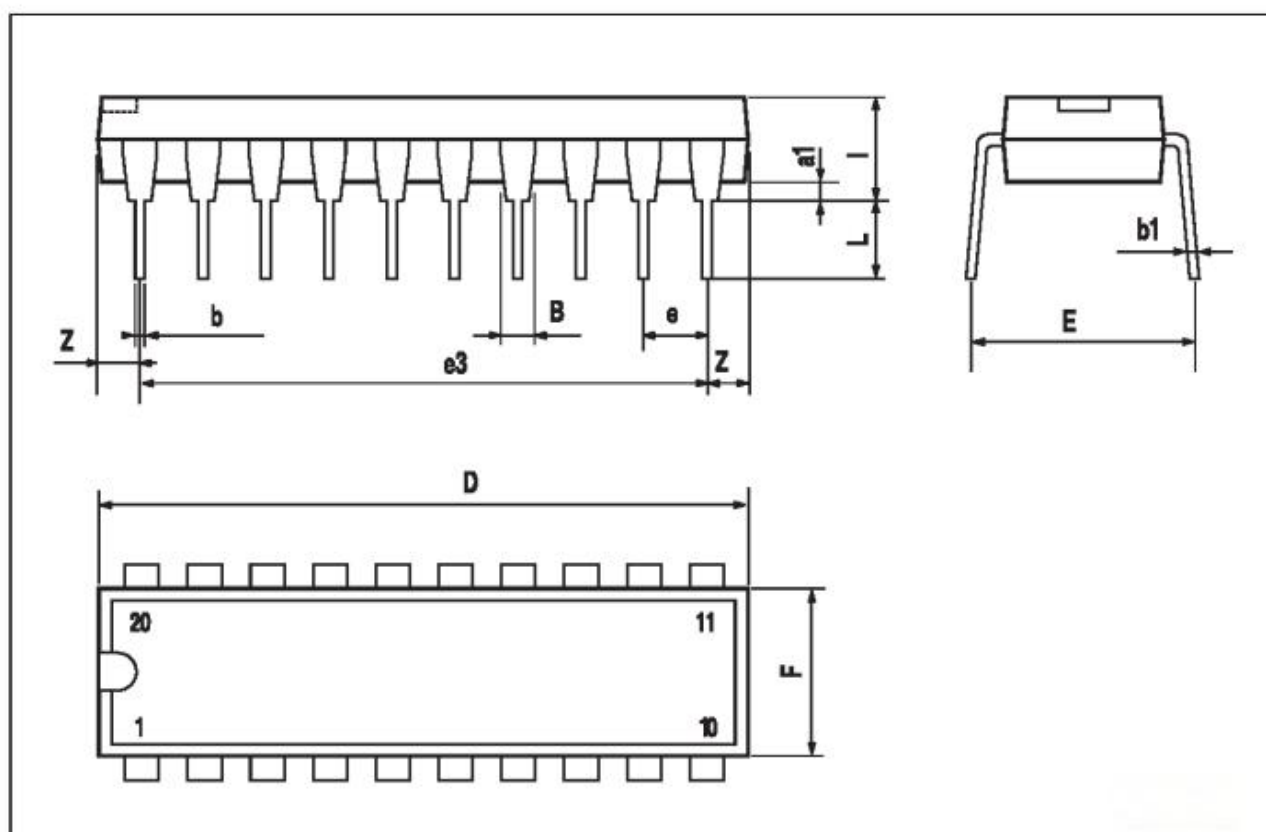
5. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74HC373ND20ATAH	DIP	20	Tube	18
74HC373NS20ARBQ	SOP	20	Tape & Reel	2000
74HC373TS20ARCQ	TSSOP	20	Tape & Reel	3000

6. Package Information

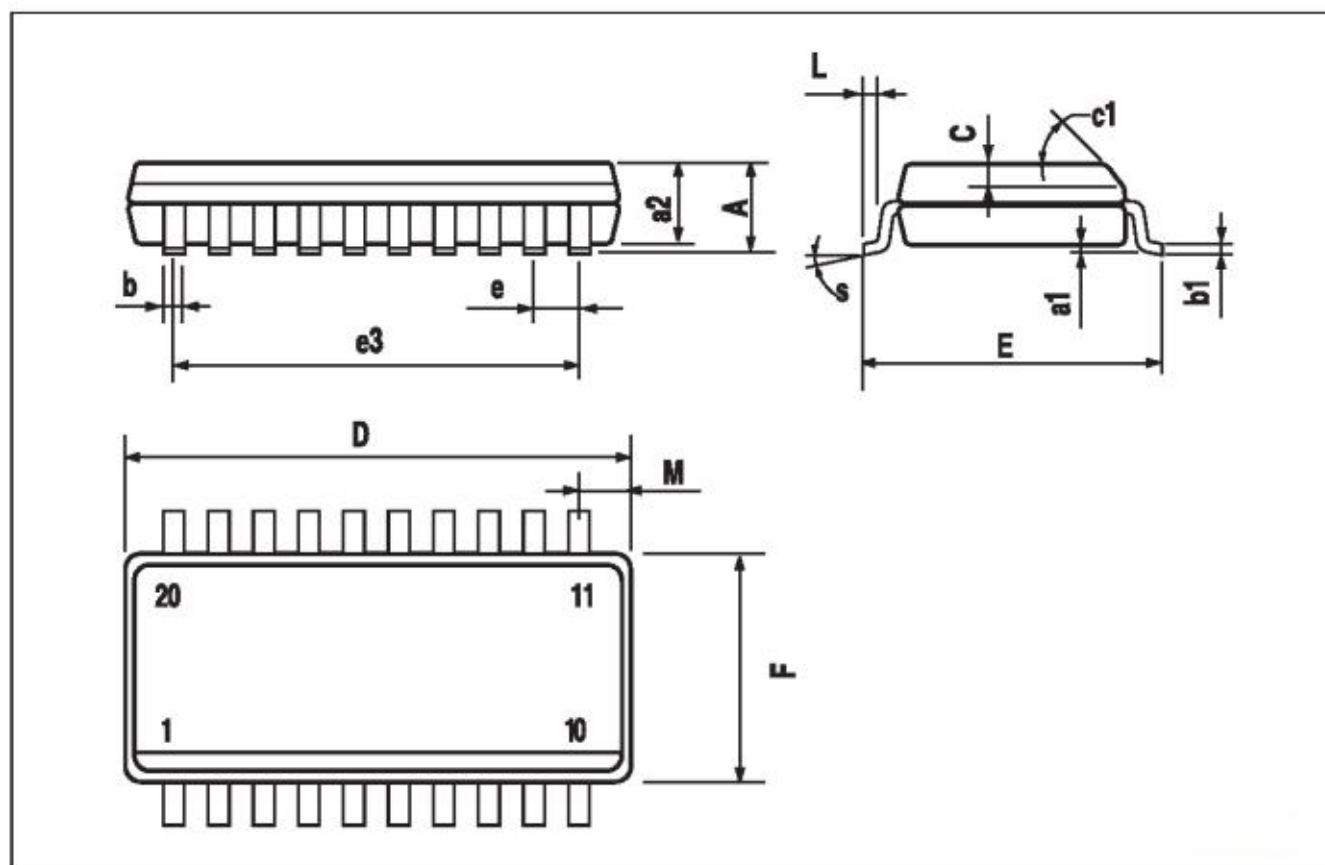
6.1 DIP20

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
a1	0.254			0.010		
B	1.39		1.65	0.055		0.065
b		0.45			0.018	
b1		0.25			0.010	
D			25.4			1.000
E		8.5			0.335	
e		2.54			0.100	
e3		22.86			0.900	
F			7.1			0.280
I			3.93			0.155
L		3.3			0.130	
Z			1.34			0.053



6.2 SOP20

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			2.65			0.104
a1	0.1		0.2	0.004		0.008
a2			2.45			0.096
b	0.35		0.49	0.014		0.019
b1	0.23		0.32	0.009		0.012
C		0.5			0.020	
c1	45° (typ.)					
D	12.60		13.00	0.496		0.512
E	10.00		10.65	0.393		0.419
e		1.27			0.050	
e3		11.43			0.450	
F	7.40		7.60	0.291		0.300
L	0.50		1.27	0.020		0.050
M			0.75			0.029
S	8° (max.)					



6.3 TSSOP20

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			1.2			0.047
A1	0.05		0.15	0.002	0.004	0.006
A2	0.8	1	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.012
c	0.09		0.20	0.004		0.0089
D	6.4	6.5	6.6	0.252	0.256	0.260
E	6.2	6.4	6.6	0.244	0.252	0.260
E1	4.3	4.4	4.48	0.169	0.173	0.176
e		0.65 BSC			0.0256 BSC	
K	0°		8°	0°		8°
L	0.45	0.60	0.75	0.018	0.024	0.030

