Dual 2-to-4 Line Decoder/Demultiplexer

CJ74HC/HCT139 Logic

1 Introduction

The CJ74HC/HCT139 decodes two binary weighted address inputs (nA0, nA1) to four mutually exclusive outputs (/nY0 to /nY3). Each decoder features an enable input (/nE). When /nE is HIGH all outputs are forced HIGH. The enable input can be used as the data input for a 1-to-4 demultiplexer application. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of V_{CC}.

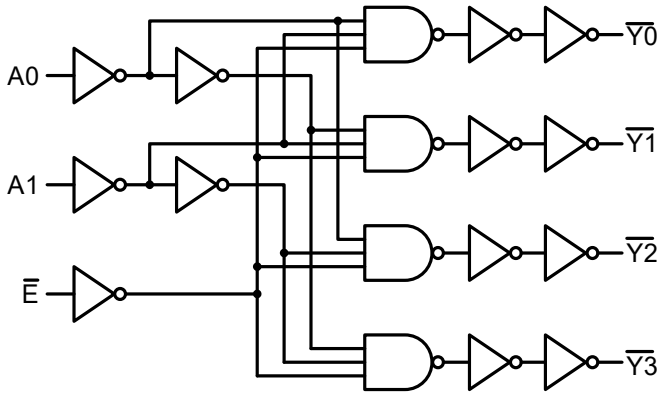
2 Available Packages

PART NUMBER	PACKAGE
CJ74HC139	SOP16
	TSSOP16
CJ74HCT139	SOP16
	TSSOP16

Note: For all available packages, please refer to the part Orderable Information.

3 Features

- Input levels:
  - For CJ74HC139: CMOS level
  - For CJ74HCT139: TTL level
- Demultiplexing capability
- 2 independent 2-to-4 decoders
- Multifunction capability
- Suitable for memory decoding, data routing or code conversion
- Active LOW mutually exclusive outputs
- Specified from -40°C to +125°C



Logic diagram

4 Orderable Information

DEVICE	PACKAGE	OP TEMP	ECO PLAN	MSL	PACKING OPTION	SORT
CJ74HC139AEN	SOP16	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 4000 Units / Reel	Active
CJ74HCT139AEN	SOP16	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 4000 Units / Reel	Active
CJ74HC139BEN	TSSOP16	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 5000 Units / Reel	Active
CJ74HCT139BEN	TSSOP16	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 5000 Units / Reel	Active

Note:

ECO PLAN: For the RoHS and Green certification standards of this product, please refer to the official report provided by JSCJ.

MSL: Moisture Sensitivity Level. Determined according to JEDEC industry standard classification.

SORT: Specifically defined as follows:
Active: Recommended for new products;
Customized: Products manufactured to meet the specific needs of customers;
Preview: The device has been released and has not been fully mass produced. The sample may or may not be available;
NoRD: It is not recommended to use the device for new design. The device is only produced for the needs of existing customers;
Obsolete: The device has been discontinued.

5 Pin Configuration and Marking Information

5.1 Pin Configuration

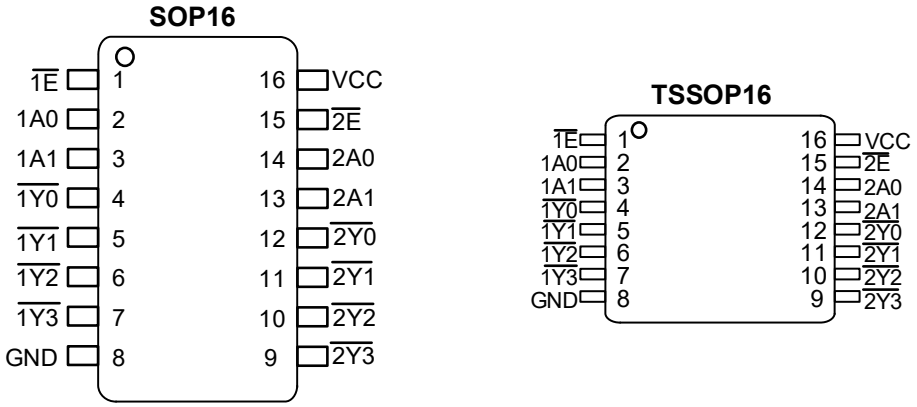


Figure 5-1 Pin configuration

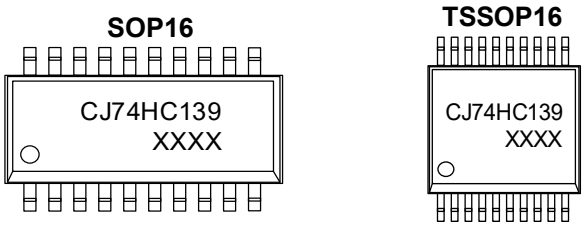
5.2 Pin Function

PIN		I/O(1)	DESCRIPTION
No.	NAME		
1	$\overline{1E}$	I	Enable input (active LOW)
2	1A0	I	Address input
3	1A1	I	Address input
4	$\overline{1Y0}$	O	Output (active LOW)
5	$\overline{1Y1}$	O	Output (active LOW)
6	$\overline{1Y2}$	O	Output (active LOW)
7	$\overline{1Y3}$	O	Output (active LOW)
8	GND	G	Ground (0V)
9	$\overline{2Y3}$	O	Output (active LOW)
10	$\overline{2Y2}$	O	Output (active LOW)
11	$\overline{2Y1}$	O	Output (active LOW)
12	$\overline{2Y0}$	O	Output (active LOW)
13	2A1	I	Address input
14	2A0	I	Address input
15	$\overline{2E}$	I	Enable input (active LOW)
16	VCC	P	Supply voltage

(1) I-Input, O-Output, P-Power, G-Ground

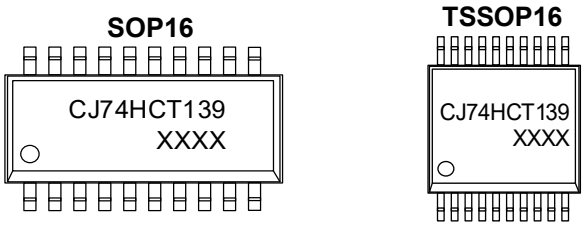
5.3 Marking Information

5.3.1 CJ74HC139



XXXX: Code, indicates weekly record information.

5.3.2 CJ74HCT139



XXXX: Code, indicates weekly record information.

6 Specifications

6.1 Absolute Maximum Ratings

Voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	MAX.	UNIT
V_{CC}	Supply voltage	-		-0.5	+7	V
I_{IK}	Input clamping current	V_I < -0.5V or V_I > V_{CC}+0.5V		-	±20	mA
I_{OK}	Output clamping current	V_O < -0.5V or V_O > V_{CC}+0.5V		-	±20	mA
I_O	Output current	V_O= -0.5V to V_{CC}+0.5V		-	±25	mA
I_{CC}	Supply current	-		-	50	mA
I_{GND}	Ground current	-		-50	-	mA
T_{stg}	Storage temperature	-		-65	+150	°C
P_{tot}	Total power dissipation	-		-	500	mW
T_L	Soldering temperature	10s	SOP/TSSOP	-	260	°C

Note: Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to GND. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

6.2 Recommended Operating Conditions

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CJ74HC139						
V_{CC}	Supply voltage	-	2.0	5.0	6.0	V
V_I	Input voltage	-	0	-	V_{CC}	V
V_O	Output voltage	-	0	-	V_{CC}	V
Δt/ΔV	Input transition rise and fall rate	V_{CC}=2.0V	-	-	625	ns/V
		V_{CC}=4.5V	-	1.67	139	ns/V
		V_{CC}=6.0V	-	-	83	ns/V
T_{amb}	Ambient temperature	-	-40	-	+125	°C
CJ74HCT139						
V_{CC}	Supply voltage	-	4.5	5.0	5.5	V
V_I	Input voltage	-	0	-	V_{CC}	V
V_O	Output voltage	-	0	-	V_{CC}	V
Δt/ΔV	Input transition rise and fall rate	V_{CC}=4.5V	-	1.67	139	ns/V
T_{amb}	Ambient temperature	-	-40	-	+125	°C

6.3 ESD Ratings

SYMBOL	ESD RATINGS		VALUE	UNIT
$V_{ESD-HBM}$	Electrostatic discharge	Human body model (HBM)(1)	±4000	V

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

6.4 Electrical Characteristics

6.4.1 DC Characteristics 1

T_{amb}=25°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC139							
V_{IH}	HIGH-level input voltage	V_{CC}=2.0V		1.5	-	-	V
		V_{CC}=4.5V		3.15	-	-	V
		V_{CC}=6.0V		4.2	-	-	V
V_{IL}	LOW-level input voltage	V_{CC}=2.0V		-	-	0.5	V
		V_{CC}=4.5V		-	-	1.35	V
		V_{CC}=6.0V		-	-	1.8	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}	I_O=-20uA; V_{CC}=2.0V	1.9	2.0	-	V
			I_O=-20uA; V_{CC}=4.5V	4.4	4.5	-	V
			I_O=-20uA; V_{CC}=6.0V	5.9	6.0	-	V
			I_O=-4.0mA; V_{CC}=4.5V	3.98	4.32	-	V
			I_O=-5.2mA; V_{CC}=6.0V	5.48	5.81	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=2.0V	-	0	0.1	V
			I_O=20uA; V_{CC}=4.5V	-	0	0.1	V
			I_O=20uA; V_{CC}=6.0V	-	0	0.1	V
			I_O=4.0mA; V_{CC}=4.5V	-	0.15	0.26	V
			I_O=5.2mA; V_{CC}=6.0V	-	0.16	0.26	V
I_I	Input leakage current	V_I=V_{CC} or GND; V_{CC}=6.0V		-	-	±1.0	uA
I_{OZ}	OFF-state utput current	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND; V_{CC}=6.0V		-	-	±1.0	uA
I_{CC}	Supply current	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	8.0	uA
C_I	Input capacitance	-		-	3.5	-	pF
CJ74HCT139							
V_{IH}	HIGH-level input voltage	V_{CC}=4.5V to 5.5V		2.0	-	-	V
V_{IL}	LOW-level input voltage	V_{CC}=4.5V to 5.5V		-	-	0.8	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}	I_O=-20uA; V_{CC}=4.5V	4.4	4.5	-	V
			I_O=-4.0mA; V_{CC}=4.5V	3.98	4.32	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=4.5V	-	0	0.1	V
			I_O=4.0mA; V_{CC}=4.5V	-	0.15	0.26	V
I_I	Input leakage current	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
I_{OZ}	OFF-state output current	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
I_{CC}	Supply current	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	8.0	uA
ΔI_{CC}	Additional supply current	V_I=V_{CC}-2.1V; Other inputs at V_{CC} or GND; I_O=0A; V_{CC}=4.5V to 5.5V	Per input pin; 1An inputs	-	-	252	uA
			Per input pin; 2An inputs	-	-	252	uA
			Per input pin; $n\bar{E}$ inputs	-	-	486	uA

C_I	Input capacitance	-	-	3.5	-	pF

6.4.2 DC Characteristics 2

T_{amb}=-40°C to +85°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC139							
V_{IH}	HIGH-level input voltage	V_{CC}=2.0V		1.5	-	-	V
		V_{CC}=4.5V		3.15	-	-	V
		V_{CC}=6.0V		4.2	-	-	V
V_{IL}	LOW-level input voltage	V_{CC}=2.0V		-	-	0.5	V
		V_{CC}=4.5V		-	-	1.35	V
		V_{CC}=6.0V		-	-	1.8	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}	I_O=-20uA; V_{CC}=2.0V	1.9	-	-	V
			I_O=-20uA; V_{CC}=4.5V	4.4	-	-	V
			I_O=-20uA; V_{CC}=6.0V	5.9	-	-	V
			I_O=-4.0mA; V_{CC}=4.5V	3.84	-	-	V
			I_O=-5.2mA; V_{CC}=6.0V	5.34	-	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=2.0V	-	-	0.1	V
			I_O=20uA; V_{CC}=4.5V	-	-	0.1	V
			I_O=20uA; V_{CC}=6.0V	-	-	0.1	V
			I_O=4.0mA; V_{CC}=4.5V	-	-	0.33	V
			I_O=5.2mA; V_{CC}=6.0V	-	-	0.33	V
I_I	Input leakage current	V_I=V_{CC} or GND; V_{CC}=6.0V		-	-	±1.0	uA
I_{OZ}	OFF-state utput current	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND; V_{CC}=6.0V		-	-	±5.0	uA
I_{CC}	Supply current	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	80	uA
CJ74HCT139							
V_{IH}	HIGH-level input voltage	V_{CC}=4.5V to 5.5V		2.0	-	-	V
V_{IL}	LOW-level input voltage	V_{CC}=4.5V to 5.5V		-	-	0.8	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}	I_O=-20uA; V_{CC}=4.5V	4.4	-	-	V
			I_O=-4.0mA; V_{CC}=4.5V	3.84	-	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=4.5V	-	-	0.1	V
			I_O=4.0mA; V_{CC}=4.5V	-	-	0.33	V
I_I	Input leakage current	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
I_{OZ}	OFF-state output current	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND; V_{CC}=5.5V		-	-	±5.0	uA
I_{CC}	Supply current	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	80	uA
ΔI_{CC}	Additional supply current	V_I=V_{CC}-2.1V; Other inputs at V_{CC} or GND; I_O=0A; V_{CC}=4.5V to 5.5V	Per input pin; 1An inputs	-	-	315	uA
			Per input pin; 2An inputs	-	-	315	uA
			Per input pin; $n\overline{E}$ inputs	-	-	607.5	uA

6.4.3 DC Characteristics 3

T_{amb}=-40°C to +125°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC139							
V_{IH}	HIGH-level input voltage	V_{CC}=2.0V		1.5	-	-	V
		V_{CC}=4.5V		3.15	-	-	V
		V_{CC}=6.0V		4.2	-	-	V
V_{IL}	LOW-level input voltage	V_{CC}=2.0V		-	-	0.5	V
		V_{CC}=4.5V		-	-	1.35	V
		V_{CC}=6.0V		-	-	1.8	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}	I_O=-20uA; V_{CC}=2.0V	1.9	-	-	V
			I_O=-20uA; V_{CC}=4.5V	4.4	-	-	V
			I_O=-20uA; V_{CC}=6.0V	5.9	-	-	V
			I_O=-4.0mA; V_{CC}=4.5V	3.7	-	-	V
			I_O=-5.2mA; V_{CC}=6.0V	5.2	-	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=2.0V	-	-	0.1	V
			I_O=20uA; V_{CC}=4.5V	-	-	0.1	V
			I_O=20uA; V_{CC}=6.0V	-	-	0.1	V
			I_O=4.0mA; V_{CC}=4.5V	-	-	0.4	V
			I_O=5.2mA; V_{CC}=6.0V	-	-	0.4	V
I_I	Input leakage current	V_I=V_{CC} or GND; V_{CC}=6.0V		-	-	±1.0	uA
I_{OZ}	OFF-state utput current	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND; V_{CC}=6.0V		-	-	±10	uA
I_{CC}	Supply current	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	160	uA
CJ74HCT139							
V_{IH}	HIGH-level input voltage	V_{CC}=4.5V to 5.5V		2.0	-	-	V
V_{IL}	LOW-level input voltage	V_{CC}=4.5V to 5.5V		-	-	0.8	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}	I_O=-20uA; V_{CC}=4.5V	4.4	-	-	V
			I_O=-4.0mA; V_{CC}=4.5V	3.7	-	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=4.5V	-	-	0.1	V
			I_O=4.0mA; V_{CC}=4.5V	-	-	0.4	V
I_I	Input leakage current	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
I_{OZ}	OFF-state output current	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND; V_{CC}=5.5V		-	-	±10	uA
I_{CC}	Supply current	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	160	uA
ΔI_{CC}	Additional supply current	V_I=V_{CC}-2.1V; Other inputs at V_{CC} or GND; I_O=0A; V_{CC}=4.5V to 5.5V	Per input pin; 1An inputs	-	-	343	uA
			Per input pin; 2An inputs	-	-	343	uA
			Per input pin; $n\overline{E}$ inputs	-	-	661.5	uA

6.4.4 AC Characteristics 1

T_{amb}=25°C, GND =0V, C_L=50pF, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC139							
t_{pd}	Propagation delay	nAn to $\overline{nYn}$; See Figure 7-6(1)	V_{CC}=2.0V	-	39	145	ns
			V_{CC}=4.5V	-	14	29	ns
			V_{CC}=5.0V; C_L=15pF	-	11	-	ns
			V_{CC}=6.0V	-	11	25	ns
		$\overline{nE}$ to $\overline{nYn}$; See Figure 7-7(2)	V_{CC}=2.0V	-	33	135	ns
			V_{CC}=4.5V	-	12	27	ns
			V_{CC}=5.0V; C_L=15pF	-	10	-	ns
			V_{CC}=6.0V	-	10	23	ns
t_t	Transition time	$n\overline{Y}n$; See Figure 7-6 and Figure 7-7(2)	V_{CC}=2.0V	-	19	75	ns
			V_{CC}=4.5V	-	7	15	ns
			V_{CC}=6.0V	-	6	13	ns
C_{PD}	Power dissipation capacitance	C_L=50pF; f=1MHz; V_I=GND to V_{CC}(3)		-	42	-	pF
CJ74HCT139							
t_{pd}	Propagation delay	nAn to $\overline{nYn}$; See Figure 7-6(1)	V_{CC}=4.5V	-	16	34	ns
			V_{CC}=5.0V; C_L=15pF	-	13	-	ns
		$\overline{nE}$ to $\overline{nYn}$; See Figure 7-7(1)	V_{CC}=4.5V	-	16	34	ns
			V_{CC}=5.0V; C_L=15pF	-	13	-	ns
t_t	Transition time	$\overline{nYn}$; V_{CC}=4.5V; See Figure 7-6 and Figure 7-7(2)		-	7	15	ns
C_{PD}	Power dissipation capacitance	C_L=50pF; f=1MHz; V_I=GND to V_{CC}–1.5V (3)		-	44	-	pF

(1) t_{pd} is the same as t_{PLH} and t_{PHL}.

(2) t_t is the same as t_{THL} and t_{TLH}.

(3) C_{PD} is used to determine the dynamic power dissipation (P_D in uW).

$P_D=(C_{PD}xV_{CC}^2xf_ixN)+\sum(C_LxV_{CC}^2xf_o)$ where:

f_i=input frequency in MHz;

f_o=output frequency in MHz;

C_L=output load capacitance in pF;

V_{CC}=supply voltage in V;

N=number of inputs switching;

$\sum(C_LxV_{CC}^2xf_o)$=sum of outputs.

6.4.5 AC Characteristics 2

T_{amb}=-40°C to +85°C, GND =0V, C_L=50pF, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC139							
t_{pd}	Propagation delay	nAn to $\overline{nYn}$; See Figure 7-6(1)	V_{CC}=2.0V	-	-	180	ns
			V_{CC}=4.5V	-	-	36	ns

			V_{CC}=6.0V	-	-	31	ns
		$\overline{nE}$ to $\overline{nYn}$; See Figure 7-7(1)	V_{CC}=2.0V	-	-	170	ns
			V_{CC}=4.5V	-	-	34	ns
			V_{CC}=6.0V	-	-	29	ns
t_t	Transition time	$\overline{nYn}$; See Figure 7-6 and Figure 7-7(2)	V_{CC}=2.0V	-	-	95	ns
			V_{CC}=4.5V	-	-	19	ns
			V_{CC}=6.0V	-	-	16	ns
CJ74HCT139							
t_{pd}	Propagation delay	nAn to $\overline{nYn}$; See Figure 7-6(1)	V_{CC}=4.5V	-	-	43	ns
		$\overline{nE}$ to $\overline{nYn}$; See Figure 7-7(1)	V_{CC}=4.5V	-	-	43	ns
t_t	Transition time	$\overline{nYn}$; V_{CC}=4.5V; See Figure 7-6 and Figure 7-7(2)		-	-	19	ns

(1) t_{pd} is the same as t_{PLH} and t_{PHL}.

(2) t_t is the same as t_{THL} and t_{TLH}.

6.4.6 AC Characteristics 3

T_{amb}=-40°C to +125°C, GND =0V, C_L=50pF, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC139							
t_{pd}	Propagation delay	nAn to $\overline{nYn}$; See Figure 7-6(1)	V_{CC}=2.0V	-	-	220	ns
			V_{CC}=4.5V	-	-	44	ns
			V_{CC}=6.0V	-	-	38	ns
		$\overline{nE}$ to $\overline{nYn}$; See Figure 7-7(1)	V_{CC}=2.0V	-	-	205	ns
			V_{CC}=4.5V	-	-	41	ns
			V_{CC}=6.0V	-	-	35	ns
t_t	Transition time	$\overline{nYn}$; See Figure 7-6 and Figure 7-7(2)	V_{CC}=2.0V	-	-	110	ns
			V_{CC}=4.5V	-	-	22	ns
			V_{CC}=6.0V	-	-	19	ns
CJ74HCT139							
t_{pd}	Propagation delay	nAn to $\overline{nYn}$; See Figure 7-6(1)	V_{CC}=4.5V	-	-	51	ns
		$\overline{nE}$ to $\overline{nYn}$; See Figure 7-7(1)	V_{CC}=4.5V	-	-	51	ns
t_t	Transition time	$\overline{nYn}$; V_{CC}=4.5V; See Figure 7-6 and Figure 7-7(2)		-	-	22	ns

(1) t_{pd} is the same as t_{PLH} and t_{PHL}.

(2) t_t is the same as t_{THL} and t_{TLH}.

7 Detailed Description

7.1 Overview

The CJ74HC/HCT139 decodes two binary weighted address inputs (nA0, nA1) to four mutually exclusive outputs (/nY0 to /nY3). Each decoder features an enable input (/nE). When /nE is HIGH all outputs are forced HIGH. The enable input can be used as the data input for a 1-to-4 demultiplexer application. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of V_{CC}.

7.2 Functional Block Diagram

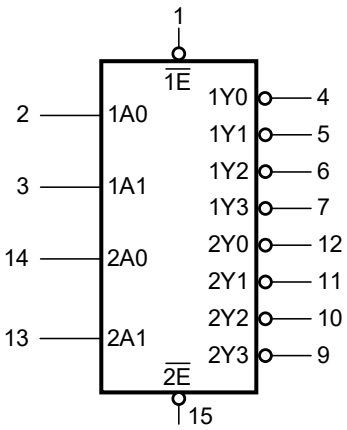


Figure 7-1 Logic symbol

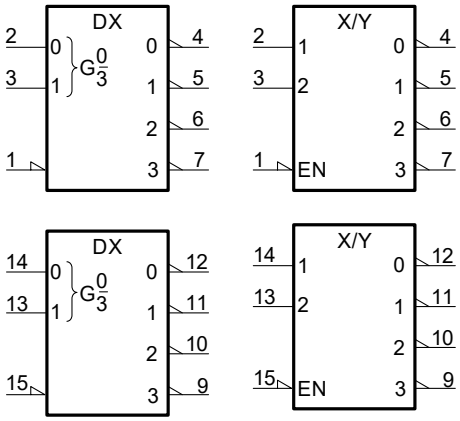


Figure 7-2 IEC logic symbol

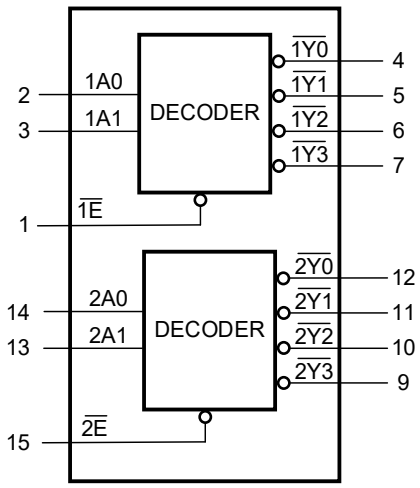


Figure 7-3 Functional diagram

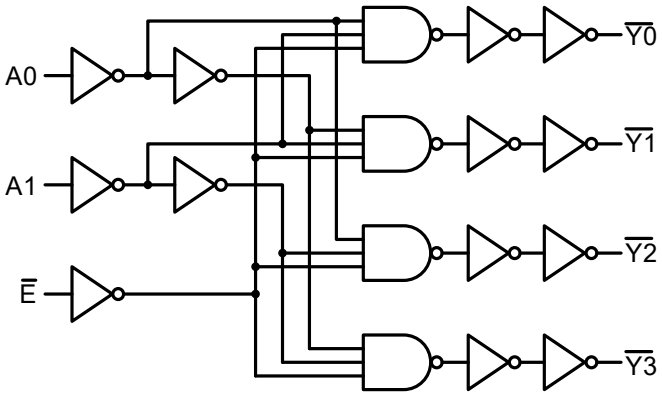


Figure 7-4 Logic diagram (one decoder/demultiplexer)

7.3 Function Table(1)

CONTROL	INPUT		OUTPUT			
$\overline{nE}$	nA1	nA0	$\overline{nY3}$	$\overline{nY2}$	$\overline{nY1}$	$\overline{nY0}$
H	X	X	H	H	H	H
L	L	L	H	H	H	L
L	L	H	H	H	L	H
L	H	L	H	L	H	H
L	H	H	L	H	H	H

(1) H=HIGH voltage level; L=LOW voltage level; X=don't care.

7.4 Testing Circuit

7.4.1 AC Testing Circuit

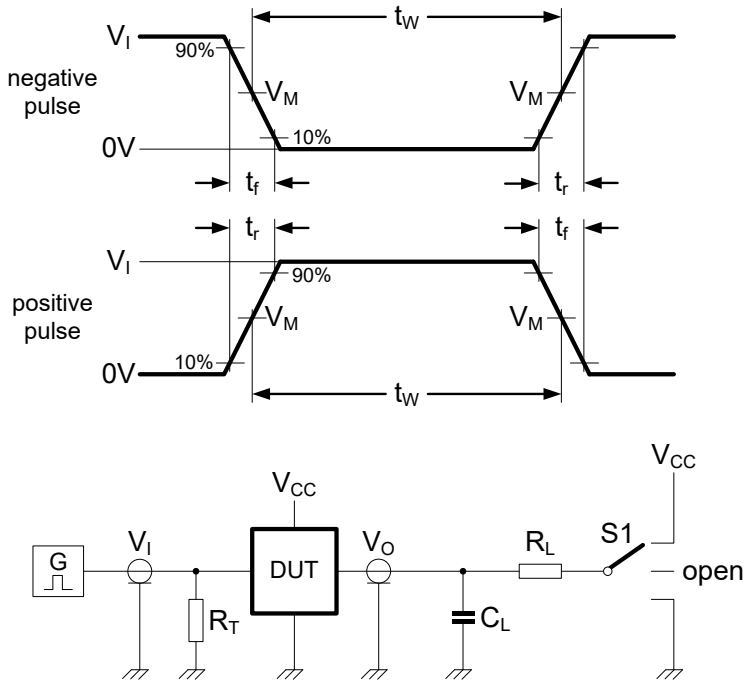


Figure 7-5 Test circuit for measuring switching times

Definitions for test circuit:

C_L=Load capacitance including jig and probe capacitance.

R_T=Termination resistance should be equal to the output impedance Z_o of the pulse generator.

R_L=Load resistance.

S1=Test selection switch.

7.4.2 AC Testing Waveforms

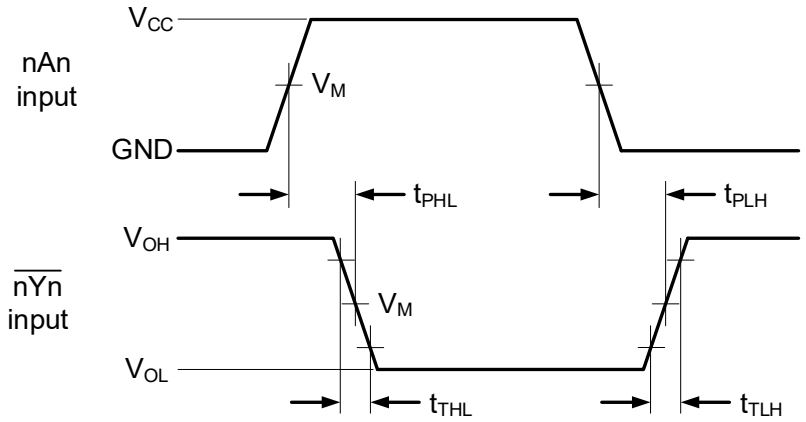


Figure 7-6 Propagation delay input (nAn) to output ($\overline{nYn}$) and transition time output ($\overline{nYn}$)

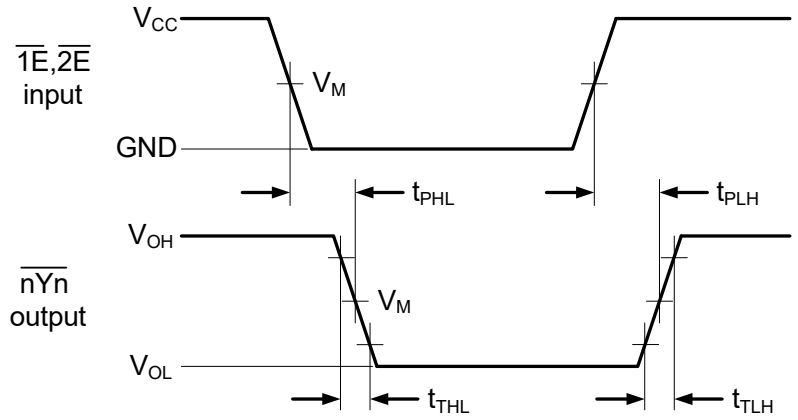


Figure 7-7 Propagation delay enable input ($\overline{nE}$) to output ($\overline{nYn}$) and transition time output ($\overline{nYn}$)

7.4.3 Measurement Points

TYPE	INPUT	OUTPUT
	V_M	V_M
CJ74HC139	0.5xV_{CC}	0.5xV_{CC}
CJ74HCT139	1.3V	1.3V

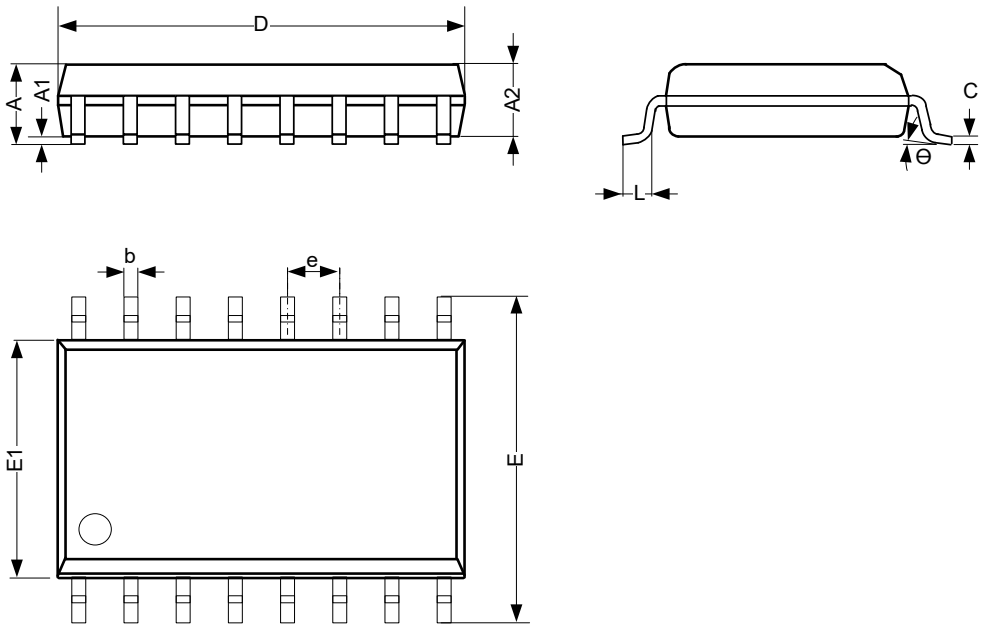
7.4.4 Test Data

TYPE	INPUT		LOAD		S1 POSITION		
	V_I	t_r , t_f	C_L	R_L	t_{PHL}, t_{PLH}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
CJ74HC139	V_{CC}	6ns	15pF, 50pF	1kΩ	Open	GND	V_{CC}
CJ74HCT139	3V	6ns	15pF, 50pF	1kΩ	Open	GND	V_{CC}

8 Mechanical Information

8.1 SOP16 Mechanical Information

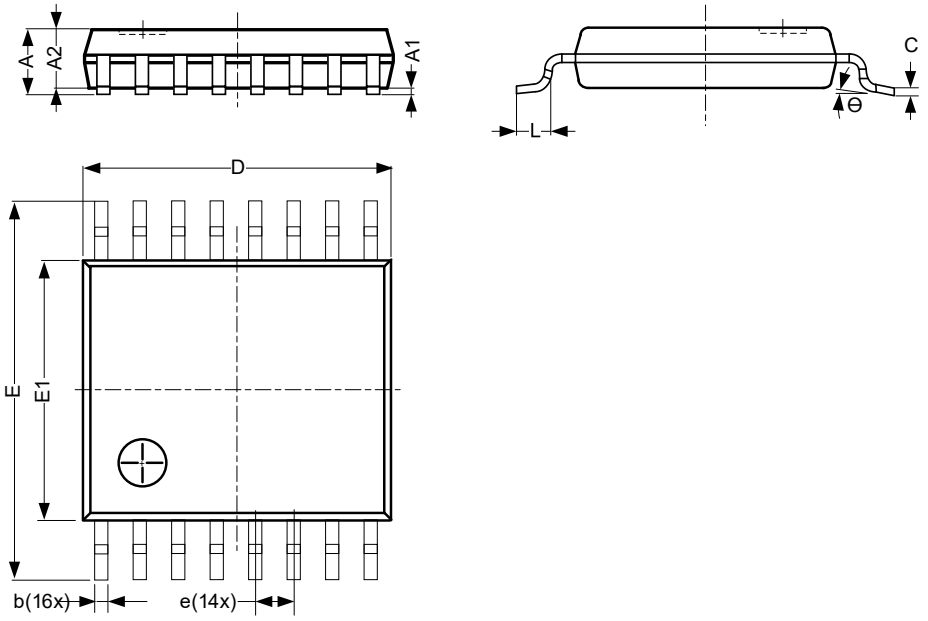
8.1.1 SOP16 Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	1.35	-	1.80
A1	0.10	-	0.25
A2	1.25	-	1.55
b	0.33	-	0.51
c	0.19	-	0.25
D	9.50	-	10.10
E	5.80	-	6.30
E1	3.70	-	4.10
e	1.27 BSC		
L	0.35	-	0.89
Θ	0°	-	8°
Unit: mm			

8.2 TSSOP16 Mechanical Information

8.2.1 TSSOP16 Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	-	-	1.20
A1	0.05	-	0.15
A2	0.80	-	1.05
b	0.19	-	0.30
c	0.09	-	0.20
D	4.90	-	5.10
E	6.20	-	6.60
E1	4.30	-	4.50
e	0.65 BSC		
L	0.45	-	0.75
θ	0°	-	8°
Unit: mm			

9 Notes and Revision History

9.1 Associated Product Family and Others

To view other products of the same type or IC products of other types, click the official website of JSCJ -- ***https:www.jscj-elec.com*** for more details.

9.2 Notes

Electrostatic Discharge Caution

This IC may be damaged by ESD. Relevant personnel shall comply with correct installation and use specifications to avoid ESD damage to the IC. If appropriate measures are not taken to prevent ESD damage, the hazards caused by ESD include but are not limited to degradation of integrated circuit performance or complete damage of integrated circuit. For some precision integrated circuits, a very small parameter change may cause the whole device to be inconsistent with its published specifications.

DISCLAIMER

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