AiP74HC/HCT237
3-to-8 Line Decoder/Demultiplexer with Address latches

Product Specification

Specification Revision History：

Version	Date	Description
2019-06-A1	2019-06	New
2021-12-A2	2021-12	Modify Ordering Information
2022-01-A3	2022-01	Modify ambient temperature to -40℃~+105℃ and add electrical characteristics of -40℃~+105℃

1、General Description

The AiP74HC/HCT237 is a 3-to-8 line decoder, demultiplexer with latches at the three address inputs (An). The AiP74HC/HCT237 essentially combines the 3-to-8 decoder function with a 3-bit storage latch. When the latch is enabled ($\overline{LE}$=LOW), the AiP74HC/HCT237 acts as a 3-to-8 active LOW decoder. When the latch enable ($\overline{LE}$) goes from LOW-to-HIGH, the last data present at the inputs before this transition, is stored in the latches. Further address changes are ignored as long as $\overline{LE}$ remains HIGH. The output enable input ($\overline{E}$1 and E2) controls the state of the outputs independent of the address inputs or latch operation. All outputs are HIGH unless $\overline{E}$1 is LOW and E2 is HIGH. The AiP74HC/HCT237 is ideally suited for implementing non-overlapping decoders in 3-state systems and strobes (stored address) applications in bus-oriented systems.

Features:

- Input levels:
  For AiP74HC237: CMOS level
  For AiP74HCT237: TTL level
- Combines 3-to-8 decoder with 3-bit latch
- Multiple input enable for easy expansion or independent controls
- Active HIGH mutually exclusive outputs
- Low-power dissipation
- Specified from -40℃ to +105℃
- Packaging information: DIP16/SOP16/TSSOP16

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74HC237DA16.TB	DIP16	74HC237	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
AiP74HCT237DA16.TB	DIP16	74HCT237	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
AiP74HC237SA16.TB	SOP16	74HC237	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74HCT237SA16.TB	SOP16	74HCT237	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74HC237TA16.TB	TSSOP16	74HC237	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
AiP74HCT237TA16.TB	TSSOP16	74HCT237	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74HC237SA16.TR	SOP16(1)	74HC237	2500 PCS/reel	5000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
AiP74HCT237SA16.TR	SOP16(1)	74HCT237	2500 PCS/reel	5000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
AiP74HC237SA16.TR	SOP16(2)	74HC237	2500 PCS/reel	2500 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
AiP74HCT237SA16.TR	SOP16(2)	74HCT237	2500 PCS/reel	2500 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
AiP74HC237TA16.TR	TSSOP16	74HC237	2500 PCS/reel	5000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing:0.65mm
AiP74HCT237TA16.TR	TSSOP16	74HCT237	2500 PCS/reel	5000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing:0.65mm

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.

2、Block Diagram And Pin Description

2.1、Block Diagram

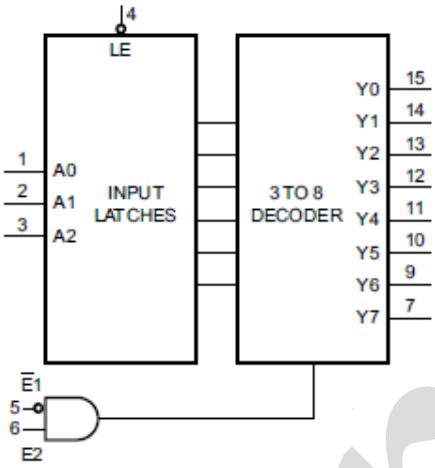


Figure 1. Logic symbol

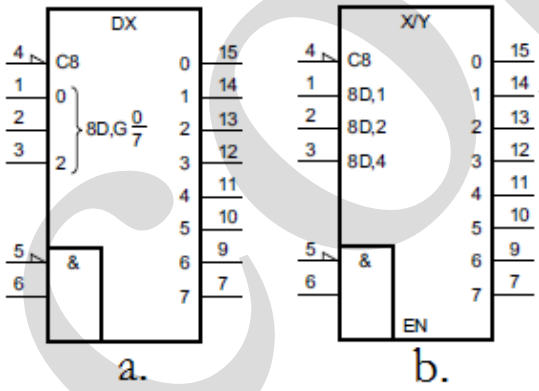


Figure 2. IEC logic symbol

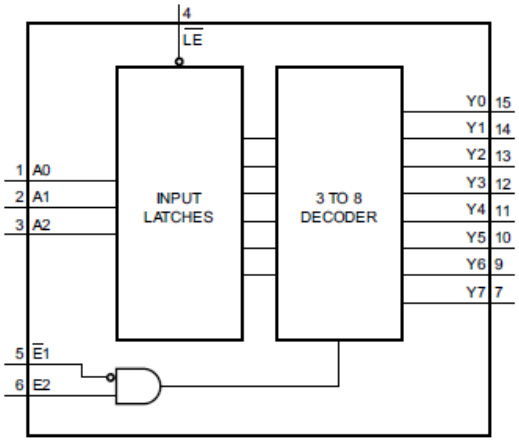


Figure 3. Functional diagram

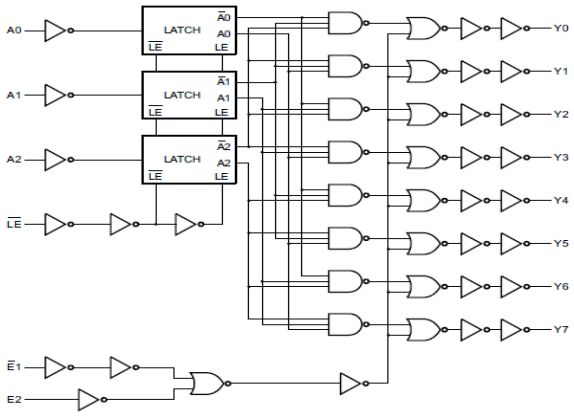
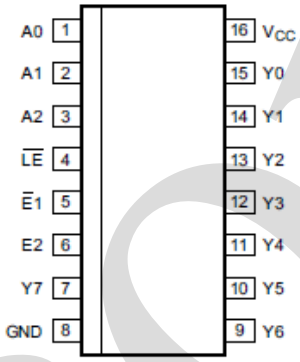


Figure 4. Logic diagram

2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	A0	data input
2	A1	data input
3	A2	data input
4	$\overline{LE}$	latch enable input (active LOW)
5	$\overline{E1}$	data enable input (active LOW)
6	E2	data enable input (active HIGH)
7	Y7	output
8	GND	ground (0V)
9	Y6	output
10	Y5	output
11	Y4	output
12	Y3	output
13	Y2	output
14	Y1	output
15	Y0	output
16	V_{CC}	supply voltage

2.4、Function Table

Input						Output							
$\overline{LE}$	$\overline{E1}$	E2	A0	A1	A2	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
H	L	H	X	X	X	stable							
X	H	X	X	X	X	L	L	L	L	L	L	L	L
X	X	L	X	X	X	L	L	L	L	L	L	L	L
L	L	H	L	L	L	H	L	L	L	L	L	L	L
L	L	H	H	L	L	L	H	L	L	L	L	L	L
L	L	H	L	H	L	L	L	H	L	L	L	L	L
L	L	H	H	H	L	L	L	L	H	L	L	L	L
L	L	H	L	L	H	L	L	L	L	H	L	L	L
L	L	H	H	L	H	L	L	L	L	L	H	L	L
L	L	H	L	H	H	L	L	L	L	L	L	H	L
L	L	H	H	H	H	L	L	L	L	L	L	L	H

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care.

3、Electrical Parameter

3.1、Absolute Maximum Ratings

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

Parameter	Symbol	Conditions		Min.	Max.	Unit
supply voltage	V_{CC}	-		-0.5	+7.0	V
input clamping current	I_{IK}	V_I < -0.5V or V_I > V_{CC}+0.5V		-	±20	mA
output clamping current	I_{OK}	V_O < -0.5V or V_O > V_{CC}+0.5V		-	±20	mA
output current	I_O	V_O= -0.5V to V_{CC}+0.5V		-	±25	mA
supply current	I_{CC}	-		-	+50	mA
ground current	I_{GND}	-		-50	-	mA
storage temperature	T_{stg}	-		-65	+150	℃
total power dissipation	P_{tot}	-		-	500	mW
Soldering temperature	T_L	10s	DIP	245		℃
			SOP	250		℃

Note:

[1] For DIP16 packages: above 70℃ the value of P_{tot} derates linearly with 12mW/K.

[2] For SOP16 packages: above 70℃ the value of P_{tot} derates linearly with 8mW/K.

[3] For (T)SSOP16 packages: above 60℃ the value of P_{tot} derates linearly with 5.5mW/K.

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AiP74HC237						
supply voltage	V_{CC}	-	2.0	5.0	6.0	V
input voltage	V_I	-	0	-	V_{CC}	V
output voltage	V_O	-	0	-	V_{CC}	V
input transition rise and fall rate	Δt/ΔV	V_{CC}=2.0V	-	-	625	ns/V
		V_{CC}=4.5V	-	1.67	139	ns/V
		V_{CC}=6.0V	-	-	83	ns/V
ambient temperature	T_{amb}	-	-40	-	+105	℃
AiP74HCT237						
supply voltage	V_{CC}	-	4.5	5.0	5.5	V
input voltage	V_I	-	0	-	V_{CC}	V
output voltage	V_O	-	0	-	V_{CC}	V
input transition rise and fall rate	Δt/ΔV	V_{CC}=4.5V	-	1.67	139	ns/V
ambient temperature	T_{amb}	-	-40	-	+105	℃

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC237							
HIGH-level input voltage	V_{IH}	V_{CC}=2.0V		1.5	1.2	-	V
		V_{CC}=4.5V		3.15	2.4	-	V
		V_{CC}=6.0V		4.2	3.2	-	V
LOW-level input voltage	V_{IL}	V_{CC}=2.0V		-	0.8	0.5	V
		V_{CC}=4.5V		-	2.1	1.35	V
		V_{CC}=6.0V		-	2.8	1.8	V
HIGH-level output voltage	V_{OH}	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
LOW-level output voltage	V_{OL}	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
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=6.0V		-	-	±0.1	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	8.0	uA
input capacitance	C_I	-		-	3.5	-	pF
AiP74HCT237							

HIGH-level input voltage	V_{IH}	V_{CC}=4.5V to 5.5V		2.0	1.6	-	V
LOW-level input voltage	V_{IL}	V_{CC}=4.5V to 5.5V		-	1.2	0.8	V
HIGH-level output voltage	V_{OH}	V_I = V_{IH} or V_{IL}; V_{CC}=4.5V	I_O=-20uA	4.4	4.5	-	V
			I_O=-4.0mA	3.98	4.32	-	V
LOW-level output voltage	V_{OL}	V_I = V_{IH} or V_{IL}; V_{CC}=4.5V	I_O=20uA	-	0	0.1	V
			I_O=4.0mA	-	0.16	0.26	V
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±0.1	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	8.0	uA
additional supply current	ΔI_{CC}	V_I=V_{CC}-2.1V; other inputs at V_{CC} or GND; I_O=0A; V_{CC}=4.5V to 5.5V		-	100	360	uA
input capacitance	C_I	-		-	3.5	-	pF

3.3.2、DC Characteristics 2

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC237							
HIGH-level input voltage	V_{IH}	V_{CC}=2.0V		1.5	-	-	V
		V_{CC}=4.5V		3.15	-	-	V
		V_{CC}=6.0V		4.2	-	-	V
LOW-level input voltage	V_{IL}	V_{CC}=2.0V		-	-	0.5	V
		V_{CC}=4.5V		-	-	1.35	V
		V_{CC}=6.0V		-	-	1.8	V
HIGH-level output voltage	V_{OH}	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
LOW-level output voltage	V_{OL}	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
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=6.0V		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	80	uA
AiP74HCT237							
HIGH-level input voltage	V_{IH}	V_{CC}=4.5V to 5.5V		2.0	-	-	V
LOW-level input voltage	V_{IL}	V_{CC}=4.5V to 5.5V		-	-	0.8	V
HIGH-level output voltage	V_{OH}	V_I = V_{IH} or V_{IL}; V_{CC}=4.5V	I_O=-20uA	4.4	-	-	V
			I_O=-4.0mA	3.84	-	-	V

LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ or V_{IL}; V_{CC}=4.5V	I_O=20uA	-	-	0.1	V
			I_O=4.0mA	-	-	0.33	V
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	80	uA
additional supply current	ΔI_{CC}	V_I=V_{CC}-2.1V; other inputs at V_{CC} or GND; I_O=0A; V_{CC}=4.5V to 5.5V		-	-	450	uA

3.3.3、DC Characteristics 3

(T_{amb}=-40℃ to +105℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC237							
HIGH-level input voltage	V_{IH}	V_{CC}=2.0V		1.5	-	-	V
		V_{CC}=4.5V		3.15	-	-	V
		V_{CC}=6.0V		4.2	-	-	V
LOW-level input voltage	V_{IL}	V_{CC}=2.0V		-	-	0.5	V
		V_{CC}=4.5V		-	-	1.35	V
		V_{CC}=6.0V		-	-	1.8	V
HIGH-level output voltage	V_{OH}	$V_I = V_{IH}$ 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
LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ 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
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=6.0V		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	160	uA
AiP74HCT237							
HIGH-level input voltage	V_{IH}	V_{CC}=4.5V to 5.5V		2.0	-	-	V
LOW-level input voltage	V_{IL}	V_{CC}=4.5V to 5.5V		-	-	0.8	V
HIGH-level output voltage	V_{OH}	$V_I = V_{IH}$ or V_{IL}; V_{CC}=4.5V	I_O=-20uA	4.4	-	-	V
			I_O=-4.0mA	3.7	-	-	V
LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ or V_{IL}; V_{CC}=4.5V	I_O=20uA	-	-	0.1	V
			I_O=4.0mA	-	-	0.4	V
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	160	uA
additional supply current	ΔI_{CC}	V_I=V_{CC}-2.1V; other inputs at V_{CC} or GND; I_O=0A; V_{CC}=4.5V to 5.5V		-	-	490	uA

3.3.4、AC Characteristics 1

(T_{amb}=25℃, GND=0V; t_r=t_f=6ns; C_L=50pF, unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC237							
propagation delay	t_{pd}	An to Yn; see Figure 6	V_{CC}=2.0V	-	52	160	ns
			V_{CC}=4.5V	-	19	32	ns
			V_{CC}=5.0V; C_L=15pF	-	16	-	ns
			V_{CC}=6.0V	-	15	27	ns
		$\overline{LE}$ to Yn; see Figure 6	V_{CC}=2.0V	-	61	190	ns
			V_{CC}=4.5V	-	22	38	ns
			V_{CC}=5.0V; C_L=15pF	-	19	-	ns
			V_{CC}=6.0V	-	18	32	ns
		$\overline{E}$1 to Yn; see Figure 7	V_{CC}=2.0V	-	47	145	ns
			V_{CC}=4.5V	-	17	29	ns
			V_{CC}=5.0V; C_L=15pF	-	14	-	ns
			V_{CC}=6.0V	-	14	25	ns
		E2 to Yn; see Figure 6	V_{CC}=2.0V	-	47	145	ns
			V_{CC}=4.5V	-	17	29	ns
			V_{CC}=5.0V; C_L=15pF	-	14	-	ns
			V_{CC}=6.0V	-	14	25	ns
transition time	t_t	Yn; see Figure 6, 7	V_{CC}=2.0V	-	19	75	ns
			V_{CC}=4.5V	-	7	15	ns
			V_{CC}=6.0V	-	6	13	ns
pulse width	t_W	$\overline{LE}$ HIGH; see Figure 8	V_{CC}=2.0V	50	11	-	ns
			V_{CC}=4.5V	10	4	-	ns
			V_{CC}=6.0V	9	3	-	ns
set-up time	t_{su}	An to $\overline{LE}$; see Figure 8	V_{CC}=2.0V	50	6	-	ns
			V_{CC}=4.5V	10	2	-	ns
			V_{CC}=6.0V	9	2	-	ns
hold time	t_h	An to $\overline{LE}$; see Figure 8	V_{CC}=2.0V	30	3	-	ns
			V_{CC}=4.5V	6	1	-	ns
			V_{CC}=6.0V	5	1	-	ns
power dissipation capacitance	C_{PD}	C_L=50pF; f=1MHz; V_I=GND to V_{CC}		-	60	-	pF
AiP74HCT237							
propagation delay	t_{pd}	An to Yn; see Figure 6	V_{CC}=4.5V	-	22	38	ns
			V_{CC}=5.0V; C_L=15pF	-	19	-	ns
		$\overline{LE}$ to Yn; see Figure 6	V_{CC}=4.5V	-	25	42	ns
			V_{CC}=5.0V; C_L=15pF	-	21	-	ns
		$\overline{E}$1 to Yn; see Figure 7	V_{CC}=4.5V	-	20	35	ns
			V_{CC}=5.0V; C_L=15pF	-	17	-	ns
		E2 to Yn; see Figure 6	V_{CC}=4.5V	-	20	35	ns
			V_{CC}=5.0V; C_L=15pF	-	17	-	ns
transition time	t_t	Yn; V_{CC}=4.5V; see Figure 6, 7		-	7	15	ns

pulse width	t_W	$\overline{LE}$ HIGH; V_{CC}=4.5V; see Figure 8	10	5	-	ns
set-up time	t_{su}	An to $\overline{LE}$; V_{CC}=4.5V; see Figure 8	10	2	-	ns
hold time	t_h	An to $\overline{LE}$; V_{CC}=4.5V; see Figure 8	5	0	-	ns
power dissipation capacitance	C_{PD}	C_L=50pF; f=1MHz; V_I=GND to V_{CC}-1.5V	-	63	-	pF

Note:

[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).

$P_D=C_{PD}\times V_{CC}^2\times f_i\times N+\sum(C_L\times V_{CC}^2\times f_o)$ 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;

$\sum(C_L\times V_{CC}^2\times f_o)$=sum of outputs.

3.3.5、AC Characteristics 2

(T_{amb}=-40℃ to +85℃, GND=0V; $t_r=t_f$=6ns; C_L=50pF, unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC237							
propagation delay	t_{pd}	An to Yn; see Figure 6	V_{CC}=2.0V	-	-	200	ns
			V_{CC}=4.5V	-	-	40	ns
			V_{CC}=6.0V	-	-	34	ns
		$\overline{LE}$ to Yn; see Figure 6	V_{CC}=2.0V	-	-	240	ns
			V_{CC}=4.5V	-	-	48	ns
			V_{CC}=6.0V	-	-	41	ns
		$\overline{E1}$ to Yn; see Figure 7	V_{CC}=2.0V	-	-	180	ns
			V_{CC}=4.5V	-	-	36	ns
			V_{CC}=6.0V	-	-	31	ns
		E2 to Yn; see Figure 6	V_{CC}=2.0V	-	-	180	ns
			V_{CC}=4.5V	-	-	36	ns
			V_{CC}=6.0V	-	-	31	ns
transition time	t_t	Yn; see Figure 6, 7	V_{CC}=2.0V	-	-	95	ns
			V_{CC}=4.5V	-	-	19	ns
			V_{CC}=6.0V	-	-	16	ns
pulse width	t_W	$\overline{LE}$ HIGH; see Figure 8	V_{CC}=2.0V	65	-	-	ns
			V_{CC}=4.5V	13	-	-	ns
			V_{CC}=6.0V	11	-	-	ns
set-up time	t_{su}	An to $\overline{LE}$; see Figure 8	V_{CC}=2.0V	65	-	-	ns
			V_{CC}=4.5V	13	-	-	ns
			V_{CC}=6.0V	11	-	-	ns
hold time	t_h	An to $\overline{LE}$; see Figure 8	V_{CC}=2.0V	40	-	-	ns
			V_{CC}=4.5V	8	-	-	ns

			V_{CC}=6.0V	7	-	-	ns
AiP74HCT237							
propagation delay	t_{pd}	An to Yn; see Figure 6	V_{CC}=4.5V	-	-	48	ns
		$\overline{LE}$ to Yn; see Figure 6	V_{CC}=4.5V	-	-	53	ns
		$\overline{E}$1 to Yn; see Figure 7	V_{CC}=4.5V	-	-	44	ns
		E2 to Yn; see Figure 6	V_{CC}=4.5V	-	-	41	ns
transition time	t_t	Yn; V_{CC}=4.5V; see Figure 6, 7		-	-	19	ns
pulse width	t_W	$\overline{LE}$ HIGH; V_{CC}=4.5V; see Figure 8		13	-	-	ns
set-up time	t_{su}	An to $\overline{LE}$; V_{CC}=4.5V; see Figure 8		13	-	-	ns
hold time	t_h	An to $\overline{LE}$; V_{CC}=4.5V; see Figure 8		5	-	-	ns

Note:

[1] t_{pd} is the same as t_{PLH} and t_{PHL}.

[2] t_t is the same as t_{THL} and t_{TLH}.

3.3.6、AC Characteristics 3

(T_{amb}=-40℃ to +105℃, GND=0V; t_r=t_f=6ns; C_L=50pF, unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC237							
propagation delay	t_{pd}	An to Yn; see Figure 6	V_{CC}=2.0V	-	-	240	ns
			V_{CC}=4.5V	-	-	48	ns
			V_{CC}=6.0V	-	-	41	ns
		$\overline{LE}$ to Yn; see Figure 6	V_{CC}=2.0V	-	-	285	ns
			V_{CC}=4.5V	-	-	57	ns
			V_{CC}=6.0V	-	-	48	ns
		$\overline{E}$1 to Yn; see Figure 7	V_{CC}=2.0V	-	-	220	ns
			V_{CC}=4.5V	-	-	44	ns
			V_{CC}=6.0V	-	-	38	ns
		E2 to Yn; see Figure 6	V_{CC}=2.0V	-	-	220	ns
			V_{CC}=4.5V	-	-	44	ns
			V_{CC}=6.0V	-	-	38	ns
transition time	t_t	Yn; see Figure 6, 7	V_{CC}=2.0V	-	-	110	ns
			V_{CC}=4.5V	-	-	22	ns
			V_{CC}=6.0V	-	-	19	ns
pulse width	t_W	$\overline{LE}$ HIGH; see Figure 8	V_{CC}=2.0V	75	-	-	ns
			V_{CC}=4.5V	15	-	-	ns
			V_{CC}=6.0V	13	-	-	ns
set-up time	t_{su}	An to $\overline{LE}$; see Figure 8	V_{CC}=2.0V	75	-	-	ns
			V_{CC}=4.5V	15	-	-	ns
			V_{CC}=6.0V	13	-	-	ns
hold time	t_h	An to $\overline{LE}$; see Figure 8	V_{CC}=2.0V	45	-	-	ns
			V_{CC}=4.5V	9	-	-	ns

			V_{CC}=6.0V	8	-	-	ns
AiP74HCT237							
propagation delay	t_{pd}	An to Yn; see Figure 6	V_{CC}=4.5V	-	-	57	ns
		$\overline{LE}$ to Yn; see Figure 6	V_{CC}=4.5V	-	-	63	ns
		$\overline{E}$1 to Yn; see Figure 7	V_{CC}=4.5V	-	-	53	ns
		E2 to Yn; see Figure 6	V_{CC}=4.5V	-	-	50	ns
transition time	t_t	Yn; V_{CC}=4.5V; see Figure 6, 7		-	-	22	ns
pulse width	t_W	$\overline{LE}$ HIGH; V_{CC}=4.5V; see Figure 8		15	-	-	ns
set-up time	t_{su}	An to $\overline{LE}$; V_{CC}=4.5V; see Figure 8		15	-	-	ns
hold time	t_h	An to $\overline{LE}$; V_{CC}=4.5V; see Figure 8		5	-	-	ns

Note:

[1] t_{pd} is the same as t_{PLH} and t_{PHL}.

[2] t_t is the same as t_{THL} and t_{TLH}.

4、Testing Circuit

4.1、AC Testing Circuit

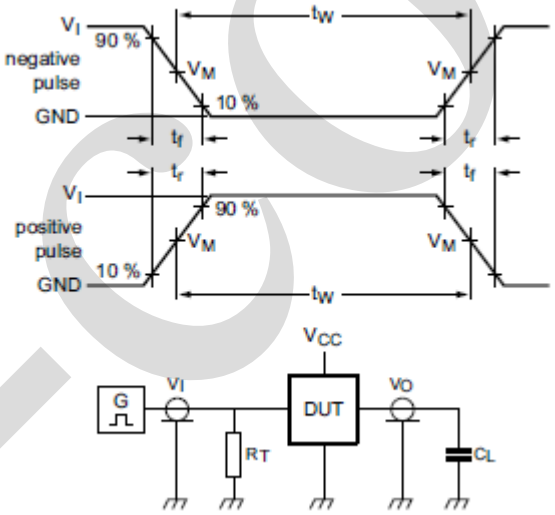


Figure 5. Test circuit for measuring switching times

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.

4.2、AC Testing Waveforms

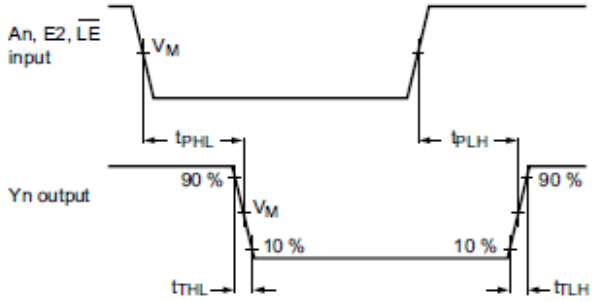


Figure 6. Propagation delay input (An) and enable inputs (E2, $\overline{LE}$) to output (Yn) and output transition time

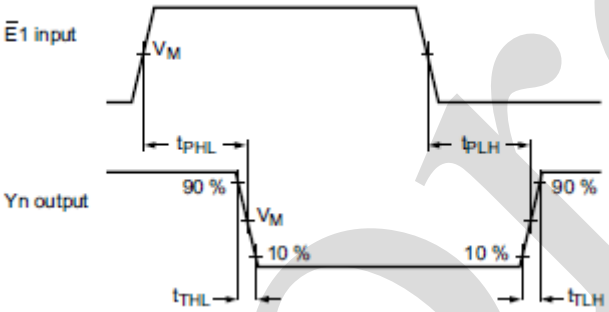


Figure 7. Propagation enable inputs ($\overline{E}$1) to output (Yn) and output transition time

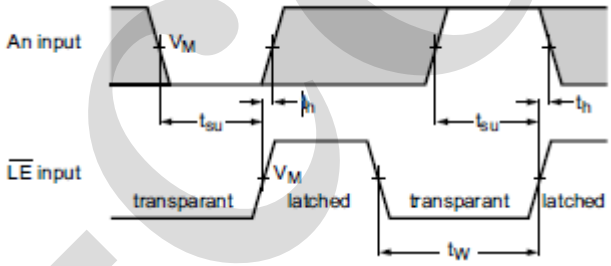


Figure 8. The data input (An) to latch enable input ($\overline{LE}$) set-up times, latch enable input ($\overline{LE}$) to data input (An) hold times and latch enable input ($\overline{LE}$) pulse width

4.3、Measurement Points

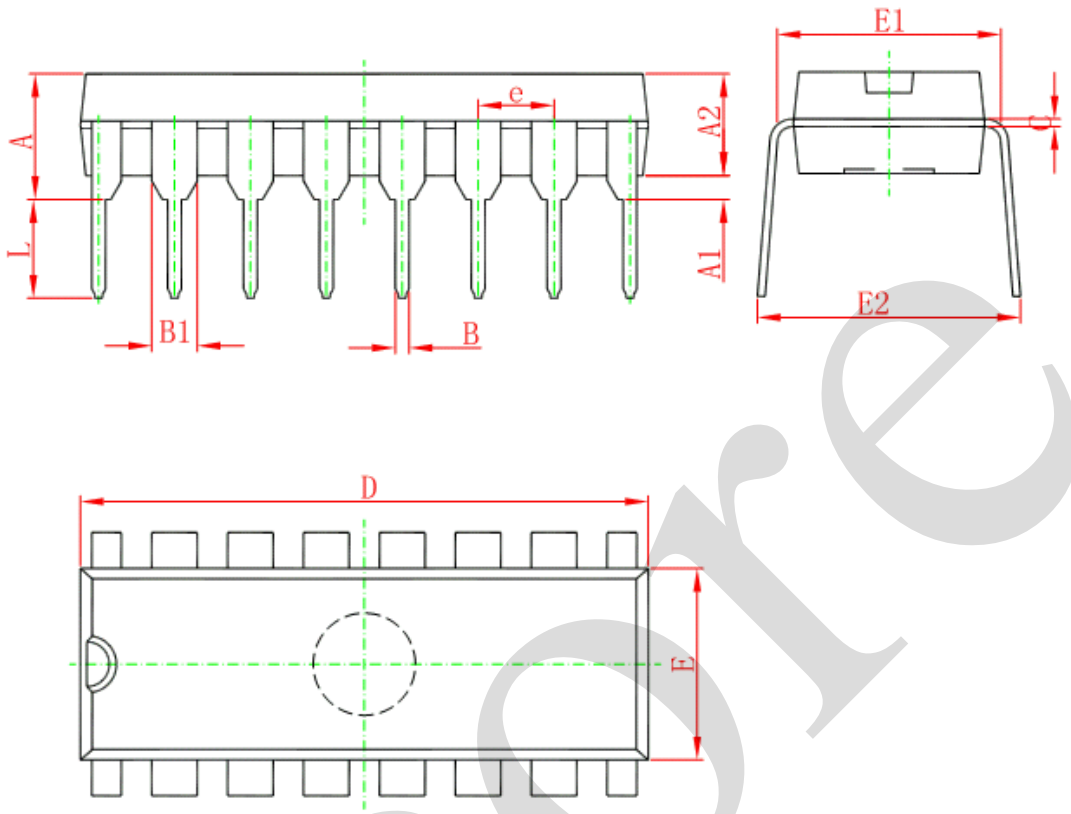
Type	Input	Output
	V_M	V_M
AiP74HC237	$0.5\times V_{CC}$	$0.5\times V_{CC}$
AiP74HCT237	1.3V	1.3V

4.4、Test Data

Type	Input		Load	Test
	V_I	t_r , t_f	C_L	
AiP74HC237	V_{CC}	6ns	15pF, 50pF	t_{PLH}, t_{PHL}
AiP74HCT237	3V	6ns	15pF, 50pF	t_{PLH}, t_{PHL}

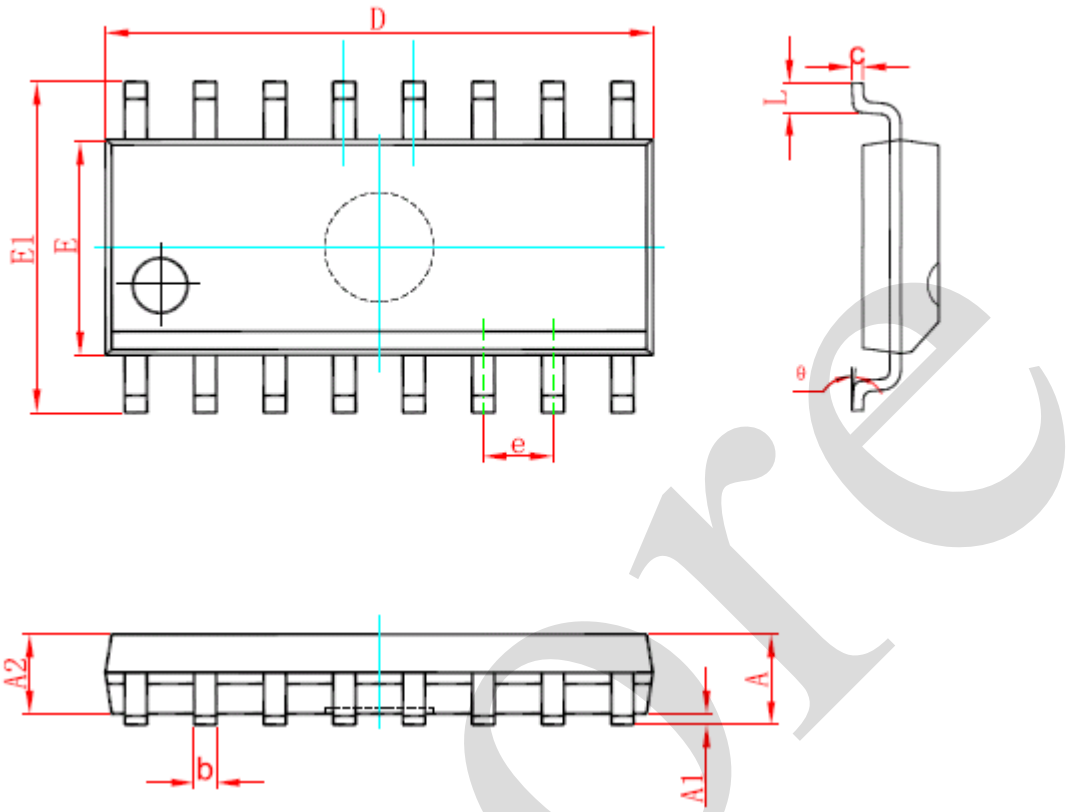
5、Package Information

5.1、DIP16



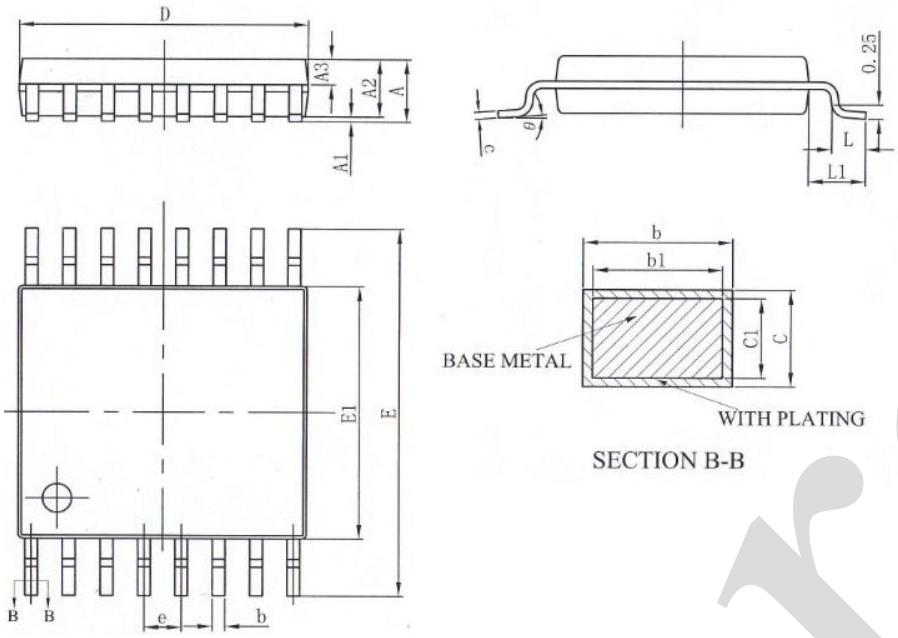
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524 (BSC)		0.060 (BSC)	
C	0.204	0.360	0.008	0.014
D	18.800	19.200	0.740	0.756
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540 (BSC)		0.100 (BSC)	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354

5.2、SOP16



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	9.800	10.200	0.386	0.402
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

5.3、TSSOP16



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.39	0.44	0.49
b	0.20	—	0.28
b1	0.19	0.22	0.25
c	0.13	—	0.17
c1	0.12	0.13	0.14
D	4.90	5.00	5.10
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65BSC		
L	0.45	0.60	0.75
L1	1.00BSC		
θ	0	—	8°

6、Statements And Notes

6.1、The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements									
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers	Dibutyl phthalate	Butylbenzyl phthalate	Di-2-ethylhexyl phthalate	Diisobutyl phthalate
Lead frame	○	○	○	○	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
The lead	○	○	○	○	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○	○	○	○	○
explanation	○：Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×：Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

6.2、Notion

Recommended carefully reading this information before the use of this product；

The information in this document are subject to change without notice；

This information is using to the reference only, the company is not responsible for any loss；

The company is not responsible for the any infringement of the third party patents or other rights of the responsibility.