AiP74HC/HCT48753
Triple 2-channel Analog Multiplexer/Demultiplexer

Product Specification

Specification Revision History：

Version	Date	Description
2025-03-A0	2025-03	New
2025-04-A1	2025-04	Modify the parameters

Contents

1、General Description

The AiP74HC/HCT48753 is a triple single-pole double-throw analog switch (3×SPDT) suitable for use in analog or digital 2:1 multiplexer/demultiplexer applications. Each switch features a digital select input (Sn), two independent inputs/outputs (nY0 and nY1) and a common input/output (nZ). A digital enable input ($\overline{E}$) is common to all switches. When $\overline{E}$ is HIGH, the switches are turned off.

Features:

- Wide supply voltage range
  AiP74HC48753: from 3V to 9V
  AiP74HCT48753: from 4.5V to 5.5V
- Low ON resistance:
  – 80Ω (typical) at V_{CC}=4.5V
  – 70Ω (typical) at V_{CC}=6.0V
  – 60Ω (typical) at V_{CC}=9.0V
- Typical “break before make” built-in
- Specified from -40℃ to +125℃
- Packaging information: SOP16/SSOP16/TSSOP16/QFN16

Applications:

- Analog multiplexing and demultiplexing
- Digital multiplexing and demultiplexing
- Signal gating

Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74HC48753SA16.TR	SOP16	74HC48753	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74HCT48753SA16.TR	SOP16	74HCT48753	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74HC48753VB16.TR	SSOP16	74HC48753	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing: 0.635mm
AiP74HCT48753VB16.TR	SSOP16	74HCT48753	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing: 0.635mm
AiP74HC48753TA16.TR	TSSOP16	74HC48753	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
AiP74HCT48753TA16.TR	TSSOP16	74HCT48753	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
AiP74HC48753QA16.TR	QFN16	74HC48753	6000 PCS/reel	12000 PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.5mm
AiP74HCT48753QA16.TR	QFN16	HCT48753	6000 PCS/reel	12000 PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.5mm

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

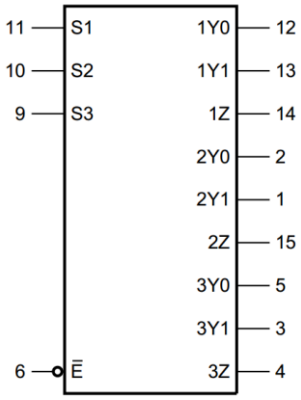


Figure 1. Logic symbol

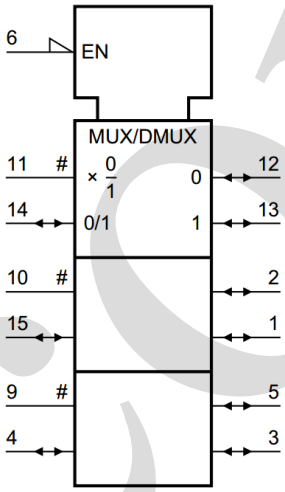


Figure 2. IEC logic symbol

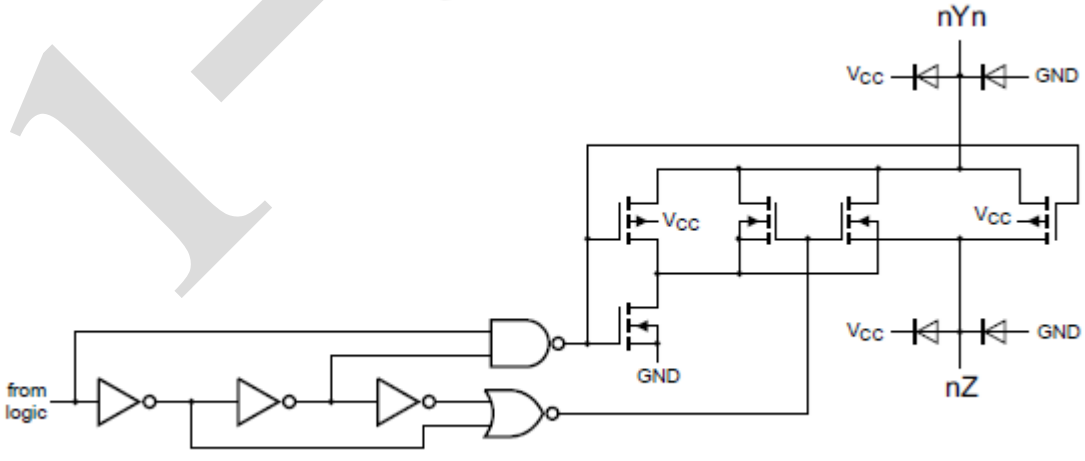


Figure 3. Schematic diagram (one switch)

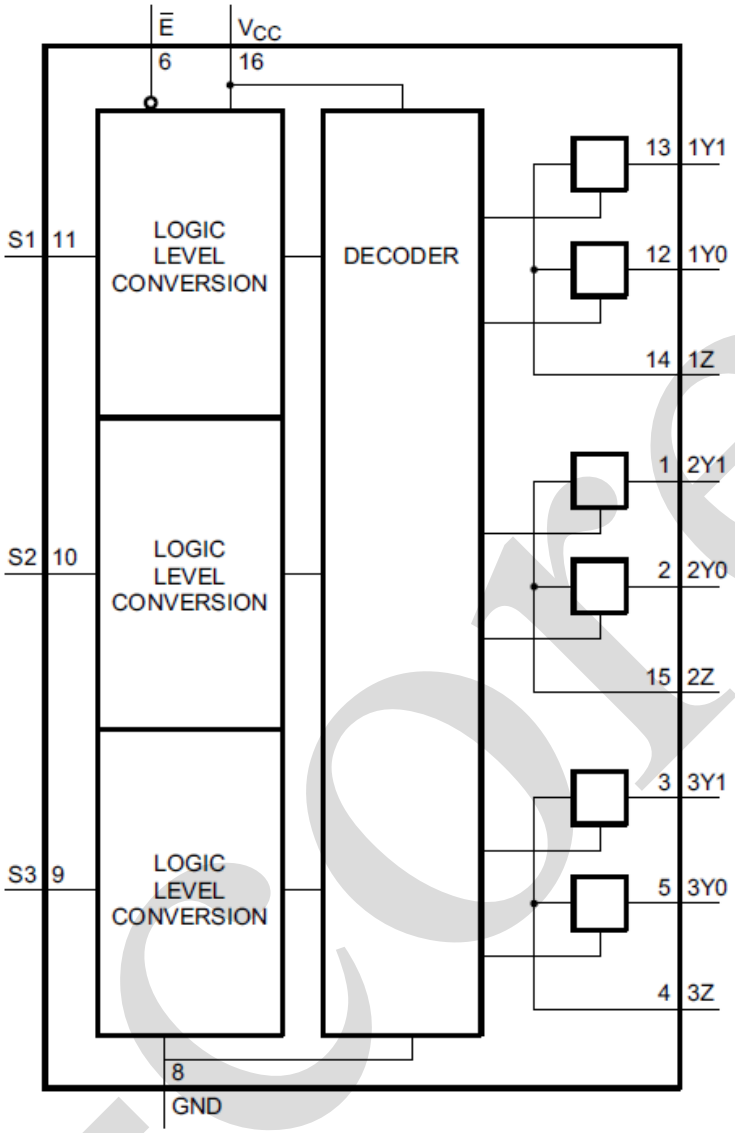
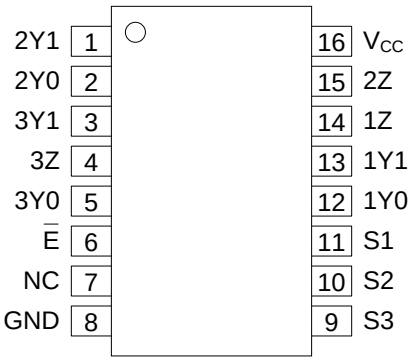
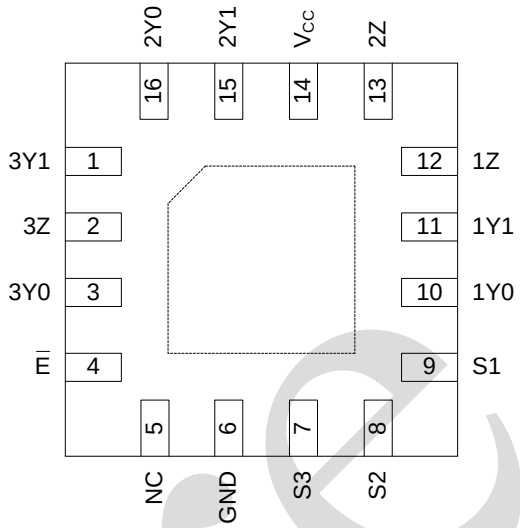


Figure 4. Functional diagram

2.2、Pin Configurations



SOP16/SSOP16/TSSOP16



QFN16

2.3、Pin Description

Pin No.		Pin Name	Description
SOP16/SSOP16/TSSOP16	QFN16		
1	15	2Y1	independent input or output
2	16	2Y0	independent input or output
3	1	3Y1	independent input or output
4	2	3Z	common output or input
5	3	3Y0	independent input or output
6	4	$\overline{E}$	enable input (active LOW)
7	5	NC	not connect
8	6	GND	ground supply voltage
9	7	S3	select input
10	8	S2	select input
11	9	S1	select input
12	10	1Y0	independent input or output
13	11	1Y1	independent input or output
14	12	1Z	common output or input
15	13	2Z	common output or input
16	14	V_{CC}	supply voltage

2.4、Function Table

Input		Channel ON
$\overline{E}$	Sn	
L	L	nY0 to nZ
L	H	nY1 to nZ
H	X	switches off

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	+11.0	V
input clamping current	I_{IK}	V_I <-0.5V or V_I >V_{CC}+0.5V	-	±20	mA
switch clamping current	I_{SK}	V_{SW} <-0.5V or V_{SW} >V_{CC}+0.5V	-	±20	mA
switch current	I_{SW}	-0.5V<V_{SW} <V_{CC}+0.5V	-	±25	mA
supply current	I_{CC}	-	-	50	mA
ground current	I_{GND}	-	-	-50	mA
storage temperature	T_{stg}	-	-65	+150	℃
Soldering temperature	T_L	10s	260		℃

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AiP74HC48753						
supply voltage	V_{CC}	V_{CC}-GND	3.0	5.0	9.0	V
input voltage	V_I	-	0	-	VCC	V
switch voltage	V_{SW}	-	0	-	VCC	V
ambient temperature	T_{amb}	in free air	-40	-	+125	℃
input transition rise and fall rate	Δt/ΔV	V_{CC}=4.5V	-	1.67	139	ns/V
		V_{CC}=6.0V	-	-	83	ns/V
		V_{CC}=9.0V	-	-	31	ns/V
AiP74HCT48753						
supply voltage	V_{CC}	V_{CC}-GND	4.5	5.0	5.5	V
input voltage	V_I	-	0	-	VCC	V
switch voltage	V_{SW}	-	0	-	VCC	V
ambient temperature	T_{amb}	in free air	-40	-	+125	℃
input transition rise and fall rate	Δt/ΔV	V_{CC}=4.5V	-	1.67	139	ns/V
		V_{CC}=6.0V	-	-	-	ns/V
		V_{CC}=9.0V	-	-	-	ns/V

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
ON resistance (peak)	$R_{ON(peak)}$	V_{is}=0V to V_{CC}; I_{SW}=1000uA	V_{CC}=4.5V	-	100	180	Ω
			V_{CC}=6.0V	-	90	160	Ω
			V_{CC}=9.0V	-	70	130	Ω
ON resistance (rail)	$R_{ON(rail)}$	V_{is}=0V; I_{SW}=1000uA	V_{CC}=4.5V	-	80	140	Ω
			V_{CC}=6.0V	-	70	120	Ω
			V_{CC}=9.0V	-	60	105	Ω
		V_{is}=V_{CC}; I_{SW}=1000uA	V_{CC}=4.5V	-	90	160	Ω
			V_{CC}=6.0V	-	80	140	Ω
			V_{CC}=9.0V	-	65	120	Ω
ON resistance mismatch between channels	ΔR_{ON}	V_{is}=0V to V_{CC}	V_{CC}=4.5V	-	9	-	Ω
			V_{CC}=6.0V	-	8	-	Ω
			V_{CC}=9.0V	-	6	-	Ω
AiP74HC48753							
HIGH-level input voltage	V_{IH}	V_{CC}=4.5V		3.15	2.4	-	V
		V_{CC}=6.0V		4.2	3.2	-	V
		V_{CC}=9.0V		6.3	4.7	-	V
LOW-level input voltage	V_{IL}	V_{CC}=4.5V		-	2.1	1.35	V
		V_{CC}=6.0V		-	2.8	1.8	V
		V_{CC}=9.0V		-	4.3	2.7	V
input leakage current	I_I	V_I=V_{CC} or GND	V_{CC}=6.0V	-	-	±1.0	uA
			V_{CC}=9.0V	-	-	±1.0	uA
OFF-state leakage current	$I_{S(OFF)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; |V_{SW}|=V_{CC}; see Figure 7	per channel	-	-	±1.0	uA
			all channels	-	-	±1.0	uA
ON-state leakage current	$I_{S(ON)}$	V_I=V_{IH} or V_{IL}; |V_{SW}|=V_{CC};V_{CC}=9.0V; see Figure 8		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; V_{is}=GND or V_{CC}; V_{os}=V_{CC} or GND	V_{CC}=6.0V	-	-	8.0	uA
			V_{CC}=9.0V	-	-	16.0	uA
input capacitance	C_I	-		-	3.5	-	pF
switch capacitance	C_{SW}	independent pins nYn		-	5	-	pF
		common pins nZ		-	8	-	pF
AiP74HCT48753							
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
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA

OFF-state leakage current	$I_{S(OFF)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; $\|V_{SW}\|$=V_{CC}; see Figure 7	per channel	-	-	±1.0	uA
			all channels	-	-	±1.0	uA
ON-state leakage current	$I_{S(ON)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; $\|V_{SW}\|$=V_{CC}; see Figure 8		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; V_{is}=GND or V_{CC}; V_{os}=V_{CC} or GND	V_{CC}=5.5V	-	-	8.0	uA
			V_{CC}=9.0V	-	-	16.0	uA
additional supply current	ΔI_{CC}	per input; V_I=V_{CC}-2.1V; other inputs at V_{CC} or GND; V_{CC}=4.5V to 5.5V		-	50	180	uA
input capacitance	C_I	-		-	3.5	-	pF
switch capacitance	C_{SW}	independent pins nYn		-	5	-	pF
		common pins nZ		-	8	-	pF

Note:

[1] V_I=V_{IH} or V_{IL}; for test circuit see Figure 5.

[2] V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

[3] V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

3.3.2、DC Characteristics 2

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
ON resistance (peak)	$R_{ON(peak)}$	V_{is}=0V to V_{CC}; I_{SW}=1000uA	V_{CC}=4.5V	-	-	225	Ω
			V_{CC}=6.0V	-	-	200	Ω
			V_{CC}=9.0V	-	-	165	Ω
ON resistance (rail)	$R_{ON(rail)}$	V_{is}=0V; I_{SW}=1000uA	V_{CC}=4.5V	-	-	175	Ω
			V_{CC}=6.0V	-	-	150	Ω
			V_{CC}=9.0V	-	-	130	Ω
		V_{is}=V_{CC}; I_{SW}=1000uA	V_{CC}=4.5V	-	-	200	Ω
			V_{CC}=6.0V	-	-	175	Ω
			V_{CC}=9.0V	-	-	150	Ω
AiP74HC48753							
HIGH-level input voltage	V_{IH}	V_{CC}=4.5V		3.15	-	-	V
		V_{CC}=6.0V		4.2	-	-	V
		V_{CC}=9.0V		6.3	-	-	V
LOW-level input voltage	V_{IL}	V_{CC}=4.5V		-	-	1.35	V
		V_{CC}=6.0V		-	-	1.8	V
		V_{CC}=9.0V		-	-	2.7	V
input leakage current	I_I	V_I=V_{CC} or GND	V_{CC}=6.0V	-	-	±1.0	uA
			V_{CC}=9.0V	-	-	±2.0	uA

OFF-state leakage current	$I_{S(OFF)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; $\|V_{SW}\|$=V_{CC}; see Figure 7	per channel	-	-	±1.0	uA
			all channels	-	-	±1.0	uA
ON-state leakage current	$I_{S(ON)}$	V_I=V_{IH} or V_{IL}; $\|V_{SW}\|$=V_{CC}; V_{CC}=9.0V; see Figure 8		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; V_{is}=GND or V_{CC}; V_{os}=V_{CC} or GND	V_{CC}=6.0V	-	-	80.0	uA
			V_{CC}=9.0V	-	-	160.0	uA
AiP74HCT48753							
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
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
OFF-state leakage current	$I_{S(OFF)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; $\|V_{SW}\|$=V_{CC}; see Figure 7	per channel	-	-	±1.0	uA
			all channels	-	-	±1.0	uA
ON-state leakage current	$I_{S(ON)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; $\|V_{SW}\|$=V_{CC}; see Figure 8		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; V_{is}=GND or V_{CC}; V_{os}=V_{CC} or GND	V_{CC}=5.5V	-	-	80.0	uA
			V_{CC}=9.0V	-	-	160	uA
additional supply current	ΔI_{CC}	per input; V_I=V_{CC}-2.1V; other inputs at V_{CC} or GND; V_{CC}=4.5V to 5.5V		-	-	225	uA

Note:

[1] V_I= V_{IH} or V_{IL}; for test circuit see Figure 5.

[2] V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

[3] V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

3.3.3、DC Characteristics 3

(T_{amb} =-40℃ to 125℃, voltages are reference to GND (ground=0V), unless otherwise specified, unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
ON resistance (peak)	$R_{ON(peak)}$	V_{is}=0V to V_{CC}; I_{SW}=1000uA	V_{CC}=4.5V	-	-	270	Ω
			V_{CC}=6.0V	-	-	240	Ω
			V_{CC}=9.0V	-	-	195	Ω
ON resistance (rail)	$R_{ON(rail)}$	V_{is}=0V; I_{SW}=1000uA	V_{CC}=4.5V	-	-	210	Ω
			V_{CC}=6.0V	-	-	180	Ω
			V_{CC}=9.0V	-	-	160	Ω
		V_{is}=V_{CC}; I_{SW}=1000uA	V_{CC}=4.5V	-	-	240	Ω
			V_{CC}=6.0V	-	-	210	Ω
			V_{CC}=9.0V	-	-	180	Ω
AiP74HC48753							
HIGH-level input voltage	V_{IH}	V_{CC}=4.5V		3.15	-	-	V
		V_{CC}=6.0V		4.2	-	-	V
		V_{CC}=9.0V		6.3	-	-	V
LOW-level input voltage	V_{IL}	V_{CC}=4.5V		-	-	1.35	V
		V_{CC}=6.0V		-	-	1.8	V
		V_{CC}=9.0V		-	-	2.7	V
input leakage current	I_I	V_I=V_{CC} or GND	V_{CC}=6.0V	-	-	±1.0	uA
			V_{CC}=9.0V	-	-	±2.0	uA
OFF-state leakage current	$I_{S(OFF)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; |V_{SW}|=V_{CC}; see Figure 7	per channel	-	-	±1.0	uA
			all channels	-	-	±1.0	uA
ON-state leakage current	$I_{S(ON)}$	V_I=V_{IH} or V_{IL}; |V_{SW}|=V_{CC}; V_{CC}=9.0V; see Figure 8		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; V_{is}=GND or V_{CC}; V_{os}=V_{CC} or GND	V_{CC}=6.0V	-	-	160.0	uA
			V_{CC}=9.0V	-	-	320.0	uA
AiP74HCT48753							
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
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
OFF-state leakage current	$I_{S(OFF)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; |V_{SW}|=V_{CC}; see Figure 7	per channel	-	-	±1.0	uA
			all channels	-	-	±1.0	uA

ON-state leakage current	$I_{S(ON)}$	V_{CC}=9.0V; V_I=V_{IH} or V_{IL}; $\|V_{SW}\|$=V_{CC}; see Figure 8		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; V_{is}=GND or V_{CC}; V_{os}=V_{CC} or GND	V_{CC}=5.5V	-	-	160.0	uA
			V_{CC}=9.0V	-	-	320	uA
additional supply current	ΔI_{CC}	per input; V_I=V_{CC}-2.1V; other inputs at V_{CC} or GND; V_{CC}=4.5V to 5.5V		-	-	245	uA

Note:

[1] V_I= V_{IH} or V_{IL}; for test circuit see Figure 5.

[2] V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

[3] V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

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
AiP74HC48753							
propagation delay	t_{pd}	V_{is} to V_{os}; R_L=∞Ω; see Figure 9[1]	V_{CC}=4.5V	-	5	12	ns
			V_{CC}=6.0V	-	4	10	ns
			V_{CC}=9.0V	-	4	8	ns
turn-on time	t_{on}	$\overline{E}$ to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	20	44	ns
			V_{CC}=5.0V; C_L=15pF	-	17	-	ns
			V_{CC}=6.0V	-	16	37	ns
			V_{CC}=9.0V	-	15	31	ns
		Sn to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	25	44	ns
			V_{CC}=5.0V; C_L=15pF	-	21	-	ns
			V_{CC}=6.0V	-	20	37	ns
			V_{CC}=9.0V	-	15	31	ns
turn-off time	t_{off}	$\overline{E}$ to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	21	42	ns
			V_{CC}=5.0V; C_L=15pF	-	18	-	ns
			V_{CC}=6.0V	-	17	36	ns
			V_{CC}=9.0V	-	15	29	ns
		Sn to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	20	42	ns
			V_{CC}=5.0V; C_L=15pF	-	17	-	ns
			V_{CC}=6.0V	-	16	36	ns
			V_{CC}=9.0V	-	15	29	ns
power dissipation capacitance	C_{PD}	per switch; V_I=GND to V_{CC}[4]		-	36	-	pF
AiP74HCT48753							
propagation	t_{pd}	V_{is} to V_{os};	V_{CC}=4.5V	-	5	12	ns

delay		R_L=∞Ω; see Figure 9[1]	V_{CC}=9.0V	-	4	8	ns
turn-on time	t_{on}	$\overline{E}$ to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	27	48	ns
			V_{CC}=5.0V; C_L=15pF	-	23	-	ns
			V_{CC}=9.0V	-	16	34	ns
		Sn to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	25	48	ns
			V_{CC}=5.0V; C_L=15pF	-	21	-	ns
			V_{CC}=9.0V	-	16	34	ns
turn-off time	t_{off}	$\overline{E}$ to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	24	44	ns
			V_{CC}=5.0V; C_L=15pF	-	20	-	ns
			V_{CC}=9.0V	-	15	31	ns
		Sn to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	22	44	ns
			V_{CC}=5.0V; C_L=15pF	-	19	-	ns
			V_{CC}=9.0V	-	15	31	ns

Note:

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

[2] t_{on} is the same as t_{PZH} and t_{PZL}.

[3] t_{off} is the same as t_{PHZ} and t_{PLZ}.

[4] For test circuit see Figure 11.

[5] V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

[6] V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

3.3.5、AC Characteristics 2

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC48753							
propagation delay	t_{pd}	V_{is} to V_{os}; R_L=∞Ω; see Figure 9[1]	V_{CC}=4.5V	-	-	15	ns
			V_{CC}=5.0V; C_L=15pF	-	-	13	ns
			V_{CC}=9.0V	-	-	10	ns
turn-on time	t_{on}	$\overline{E}$ to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	55	ns
			V_{CC}=5.0V; C_L=15pF	-	-	47	ns
			V_{CC}=9.0V	-	-	39	ns
		Sn to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	55	ns
			V_{CC}=5.0V; C_L=15pF	-	-	47	ns
			V_{CC}=9.0V	-	-	39	ns
turn-off time	t_{off}	$\overline{E}$ to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	53	ns
			V_{CC}=5.0V; C_L=15pF	-	-	45	ns
			V_{CC}=9.0V	-	-	36	ns
		Sn to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	53	ns
			V_{CC}=5.0V; C_L=15pF	-	-	45	ns
			V_{CC}=9.0V	-	-	36	ns
AiP74HCT48753							
propagation delay	t_{pd}	V_{is} to V_{os}; R_L=∞Ω; see Figure 9[1]	V_{CC}=4.5V	-	-	15	ns
			V_{CC}=9.0V	-	-	10	ns
turn-on time	t_{on}	$\overline{E}$ to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	60	ns
			V_{CC}=9.0V	-	-	43	ns
		Sn to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	60	ns
			V_{CC}=9.0V	-	-	43	ns
turn-off time	t_{off}	$\overline{E}$ to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	55	ns
			V_{CC}=9.0V	-	-	39	ns
		Sn to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	55	ns
			V_{CC}=9.0V	-	-	39	ns

Note:

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

[2] t_{on} is the same as t_{PZH} and t_{PZL}.

[3] t_{off} is the same as t_{PHZ} and t_{PLZ}.

[4] For test circuit see Figure 11.

[5] V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

[6] V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

3.3.6、AC Characteristics 3

(T_{amb}=-40℃ to +125℃; GND=0V; t_r=t_f=6ns; C_L=50 pF; unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC48753							
propagation delay	t_{pd}	V_{is} to V_{os}; R_L=∞Ω; see Figure 9[1]	V_{CC}=4.5V	-	-	18	ns
			V_{CC}=6.0V	-	-	15	ns
			V_{CC}=9.0V	-	-	12	ns
turn-on time	t_{on}	$\overline{E}$ to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	66	ns
			V_{CC}=6.0V	-	-	56	ns
			V_{CC}=9.0V	-	-	47	ns
		Sn to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	66	ns
			V_{CC}=6.0V	-	-	56	ns
			V_{CC}=9.0V	-	-	47	ns
turn-off time	t_{off}	$\overline{E}$ to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	63	ns
			V_{CC}=6.0V	-	-	54	ns
			V_{CC}=9.0V	-	-	44	ns
		Sn to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	63	ns
			V_{CC}=6.0V	-	-	54	ns
			V_{CC}=9.0V	-	-	44	ns
AiP74HCT48753							
propagation delay	t_{pd}	V_{is} to V_{os}; R_L=∞Ω; see Figure 9[1]	V_{CC}=4.5V	-	-	18	ns
			V_{CC}=9.0V	-	-	12	ns
turn-on time	t_{on}	$\overline{E}$ to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	72	ns
			V_{CC}=9.0V	-	-	51	ns
		Sn to V_{os}; R_L=∞Ω; see Figure 10[2]	V_{CC}=4.5V	-	-	72	ns
			V_{CC}=9.0V	-	-	51	ns
turn-off time	t_{off}	$\overline{E}$ to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	66	ns
			V_{CC}=9.0V	-	-	47	ns
		Sn to V_{os}; R_L=1kΩ; see Figure 10[3]	V_{CC}=4.5V	-	-	66	ns
			V_{CC}=9.0V	-	-	47	ns

Note:

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

[2] t_{on} is the same as t_{PZH} and t_{PZL}.

[3] t_{off} is the same as t_{PHZ} and t_{PLZ}.

[4] For test circuit see Figure 11.

[5] V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

[6] V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

3.3.7、AC Characteristics 4

(T_{amb}=25℃; GND=0V; C_L=50pF; recommended conditions and typical values.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
sine-wave distortion	d_{sin}	f_i=1kHz; R_L=10kΩ; see Figure 12	V_{is}=4.0V (p-p); V_{CC}=4.5V	-	0.04	-	%
			V_{is}=8.0V (p-p); V_{CC}=9.0V	-	0.02	-	%
		fi=10kHz; RL=10kΩ; see Figure 12	V_{is}=4.0V (p-p); V_{CC}=4.5V	-	0.12	-	%
			V_{is}=8.0V (p-p); V_{CC}=9.0V	-	0.06	-	%
isolation (OFF-state)	α_{iso}	R_L=600Ω; fi=1MHz; see Figure 13	V_{CC}=4.5V[1]	-	-50	-	dB
			V_{CC}=9.0V[1]	-	-50	-	dB
crosstalk	Xtalk	between two switches/multiplexers; R_L=600Ω; f_i=1MHz; see Figure 14	V_{CC}=4.5V[1]	-	-60	-	dB
			V_{CC}=9.0V[1]	-	-60	-	dB
crosstalk voltage	V_{ct}	peak-to-peak value; between control and any switch; R_L=600Ω; f_i=1MHz; $\overline{E}$ or Sn square wave between V_{CC} and GND; t_r=t_f=6ns; see Figure 15	V_{CC}=4.5V	-	110	-	mV
			V_{CC}=9.0V	-	220	-	mV
-3dB frequency response	$f_{(-3dB)}$	R_L=50Ω; see Figure 16	V_{CC}=4.5V[2]	-	160	-	MHz
			V_{CC}=9.0V[2]	-	170	-	MHz

Note：

[1] Adjust input voltage V_{is} to 0 dBm level (0 dBm = 1 mW into 600 Ω).

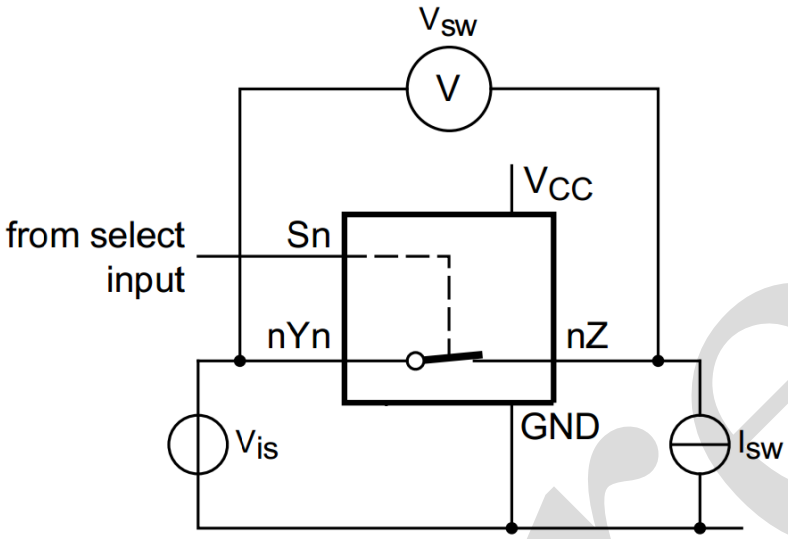
[2] Adjust input voltage V_{is} to 0 dBm level at V_{os} for 1 MHz (0 dBm = 1 mW into 50 Ω).

[3] V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

[4] V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

4、Testing Circuit

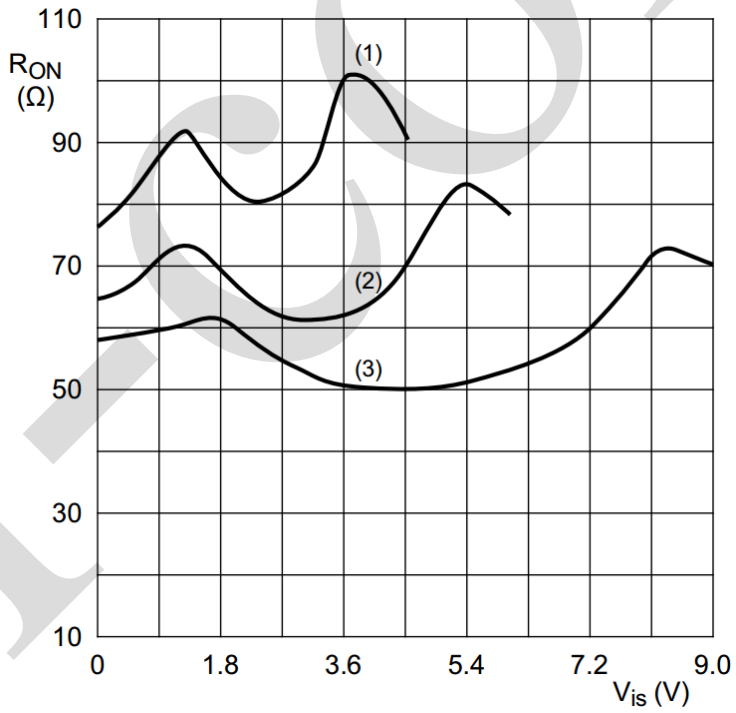
4.1、DC Testing Circuit 1



V_{is} = 0V to V_{CC}

$R_{ON} = V_{SW}/I_{SW}$

Figure 5. Test circuit for measuring R_{ON}



V_{is} = 0V to V_{CC}

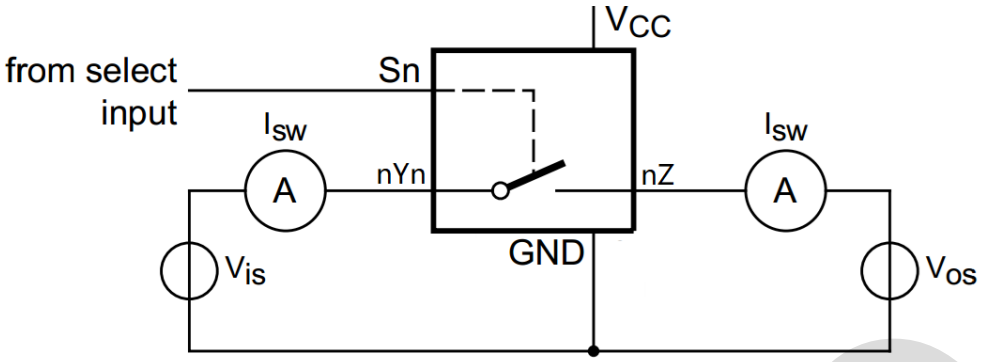
(1)V_{CC} = 4.5V

(2)V_{CC} = 6V

(3)V_{CC} = 9V

Figure 6. Typical R_{ON} as a function of input voltage V_{is}

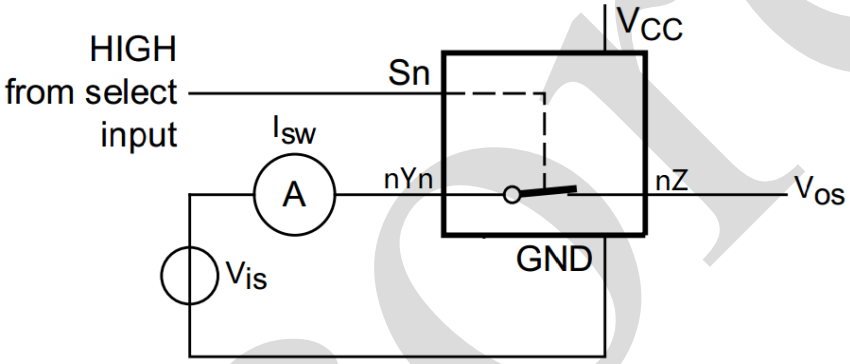
4.2、DC Testing Circuit 2



V_{is}= V_{CC} and V_{os}= 0V.

V_{is}= 0V and V_{os}= V_{CC}.

Figure 7. Test circuit for measuring OFF-state current



V_{is}= V_{CC} and V_{os}= open-circuit.

V_{is}= 0V and V_{os}= open-circuit.

Figure 8. Test circuit for measuring ON-state current

4.3、AC Testing Waveforms

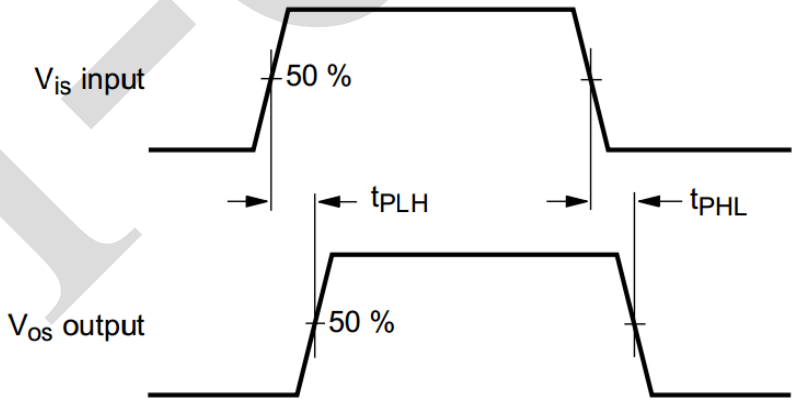
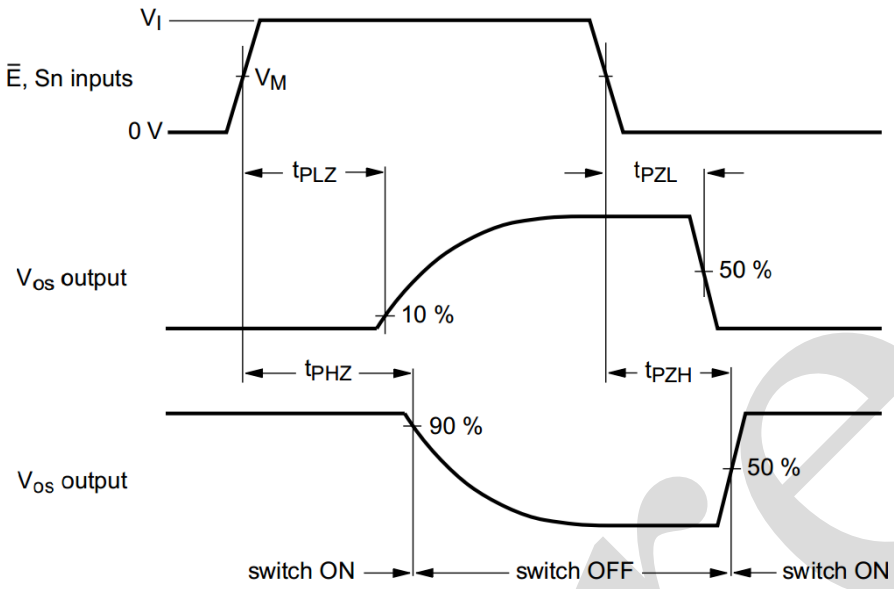


Figure 9. Input (V_{is}) to output (V_{os}) propagation delays



For AiP74HC48753: $V_M = 0.5 \times V_{CC}$.

For AiP74HCT48753: $V_M = 1.3$ V.

Figure 10. Turn-on and turn-off times

4.4、AC Testing Circuit 1

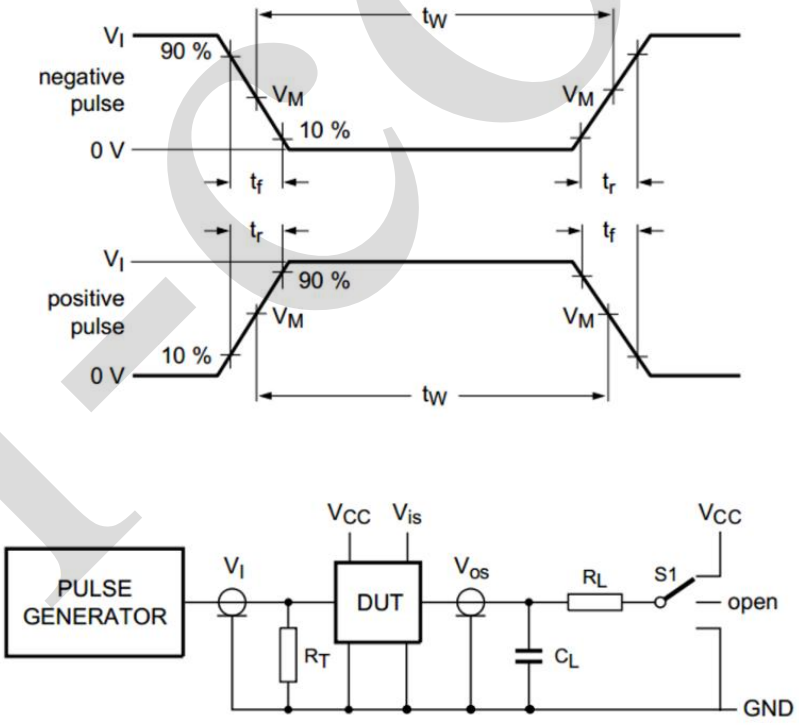


Figure 11. Test circuit for measuring switching times

Definitions for test circuit:

R_T = termination resistance should be equal to the output impedance Z_O of the pulse generator.

C_L = load capacitance including jig and probe capacitance.

R_L = load resistance.

S1 = Test selection switch.

4.5、Test Data

Test	Input				Load		S1 position
	V_I	V_{is}	t_r, t_f		C_L	R_L	
			at f_{max}	other[1]			
t_{PHL}, t_{PLH}	[2]	pulse	< 2ns	6ns	50pF	1kΩ	open
t_{PZH}, t_{PHZ}	[2]	V_{CC}	< 2ns	6ns	50pF	1kΩ	GND
t_{PZL}, t_{PLZ}	[2]	GND	< 2ns	6ns	50pF	1kΩ	V_{CC}

Note:

[1] $t_r = t_f$= 6 ns; when measuring f_{max}, there is no constraint to t_r and t_f with 50 % duty factor.

[2] V_I values:

For AiP74HC48753: $V_I = V_{CC}$.

For AiP74HCT48753: V_I = 3V.

4.6、AC Testing Circuit 2

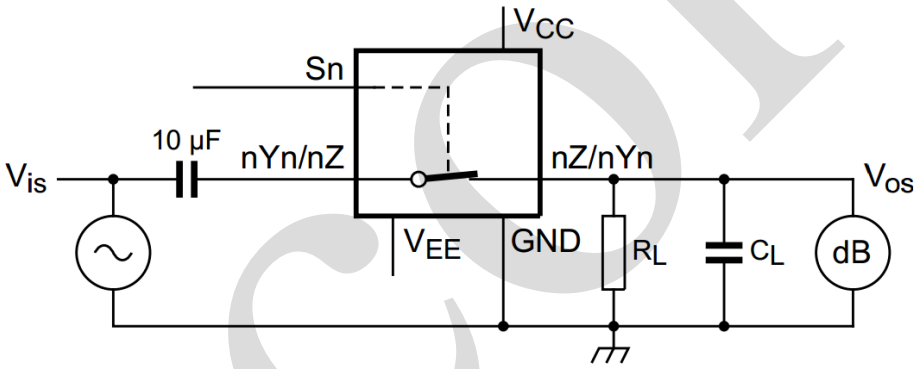
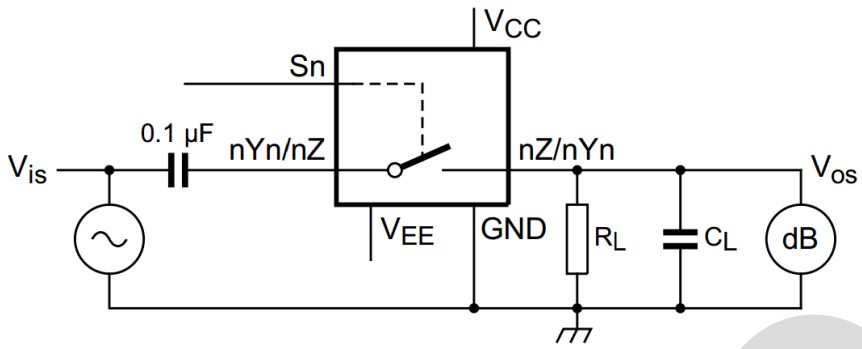
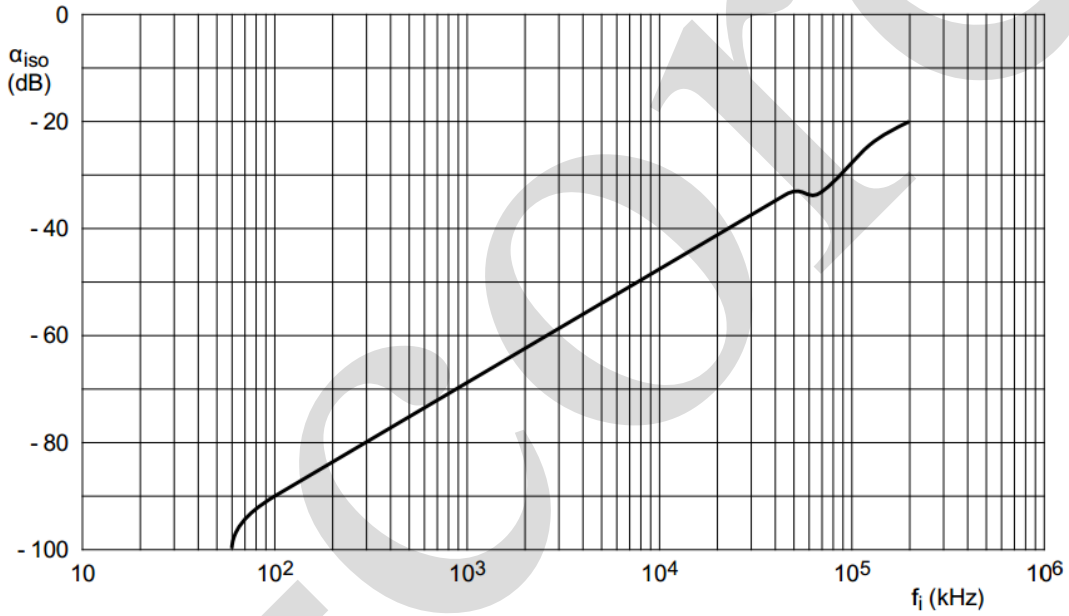


Figure 12. Test circuit for measuring sine-wave distortion



V_{CC} = 9.0 V; GND = 0 V; R_L = 600 Ω; R_S = 1 kΩ.

a. Test circuit



b. Isolation (OFF-state) as a function of frequency

Figure 13. Test circuit for measuring isolation (OFF-state)

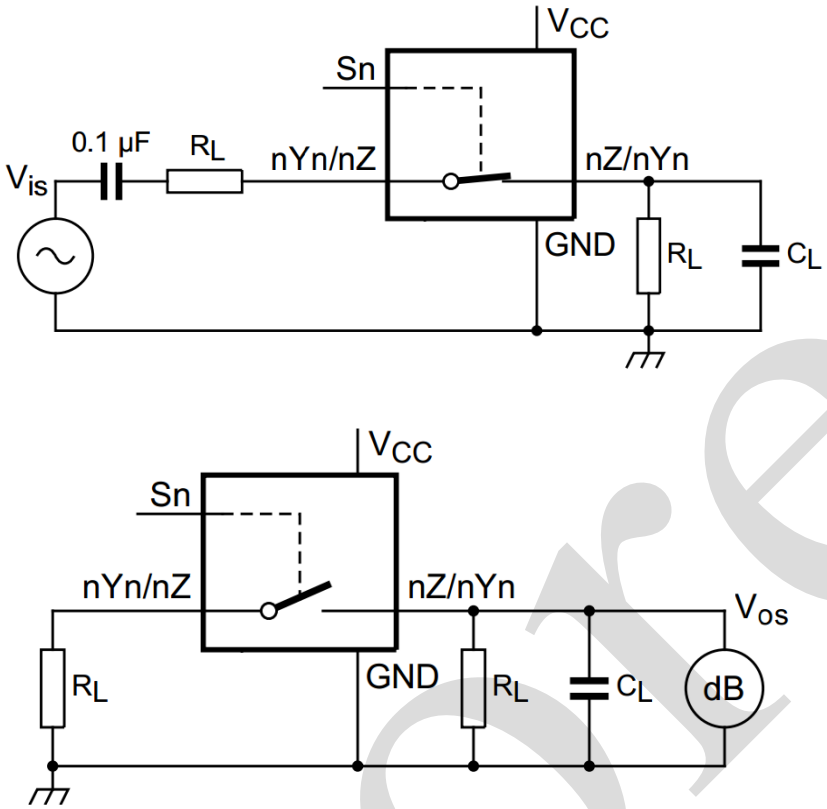


Figure 14. Test circuit for measuring crosstalk between control input and any switch

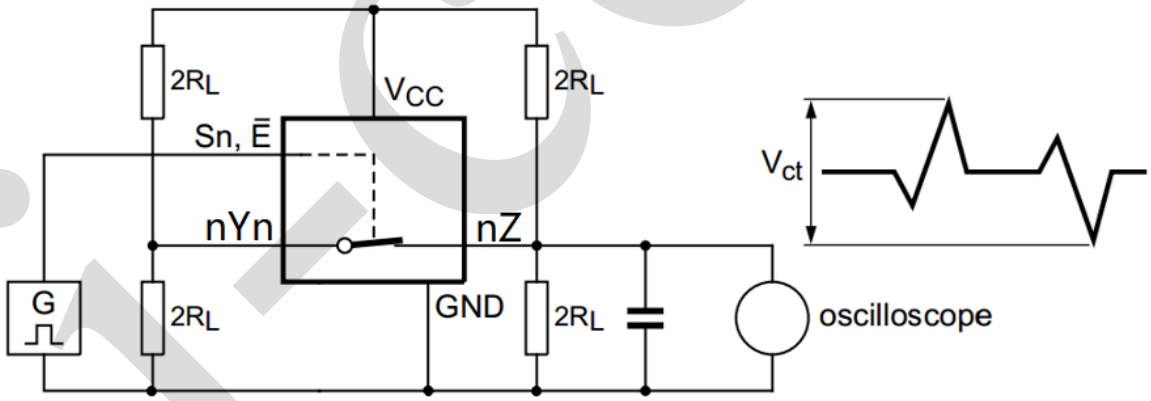
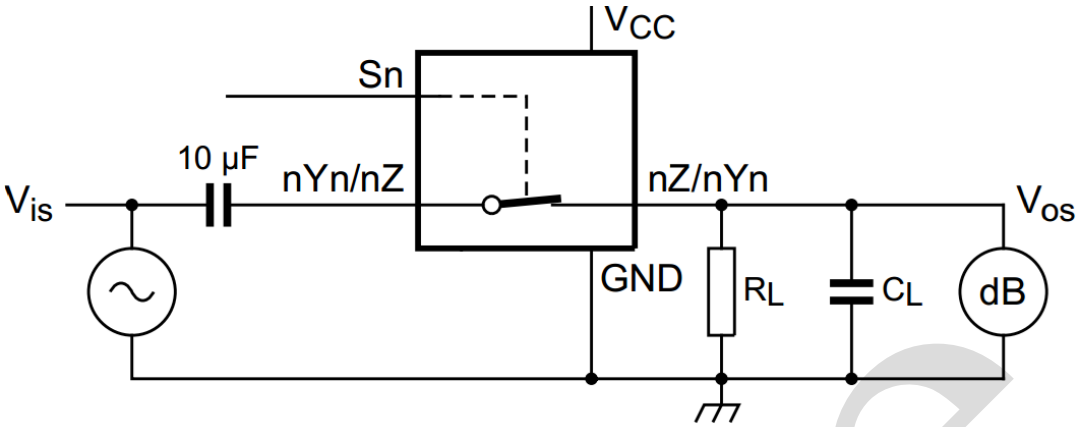
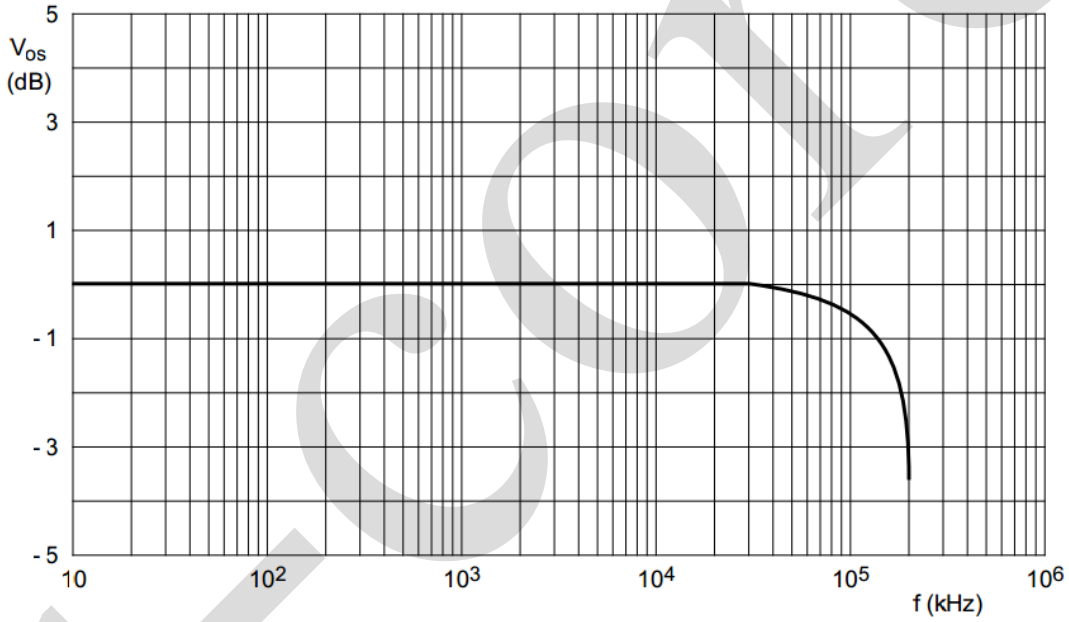


Figure 15. Test circuit for measuring crosstalk between control input and any switch



V_{CC} = 9.0 V; GND = 0 V; R_L = 50 Ω; R_S = 1 kΩ

a. Test circuit

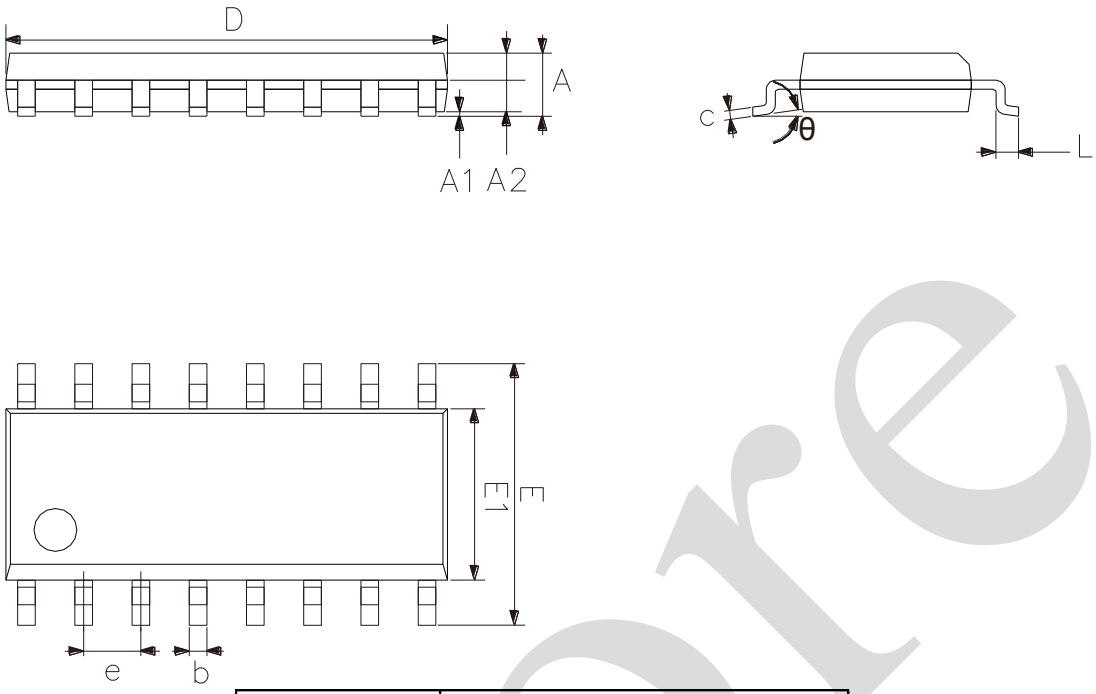


b. Typical frequency response

Figure 16. Test circuit for frequency response

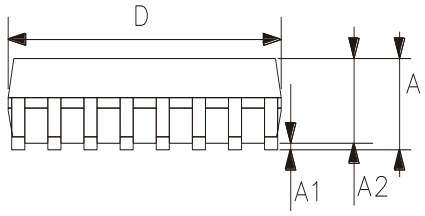
5、Package Information

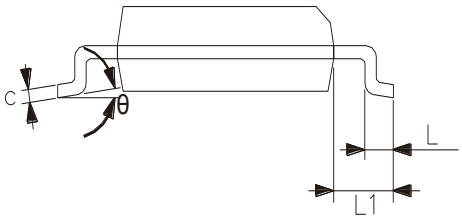
5.1、SOP16

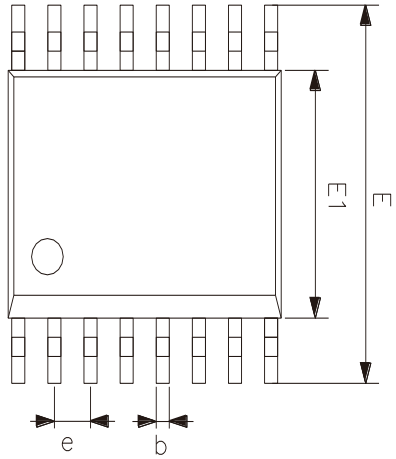


2023/12/A	Dimensions In Millimeters	
Symbol	**Min.**	**Max.**
A	1.35	1.80
A1	0.10	0.25
A2	1.25	1.55
b	0.33	0.51
c	0.19	0.25
D	9.50	10.10
E	5.80	6.30
E1	3.70	4.10
e	1.27	
L	0.35	0.89
θ	0°	8°

5.2、SSOP16

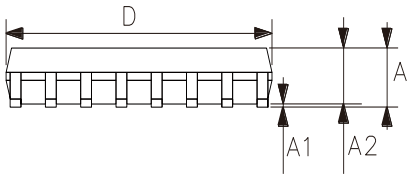


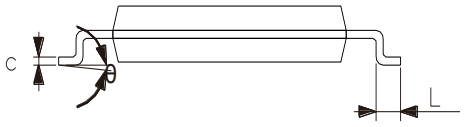


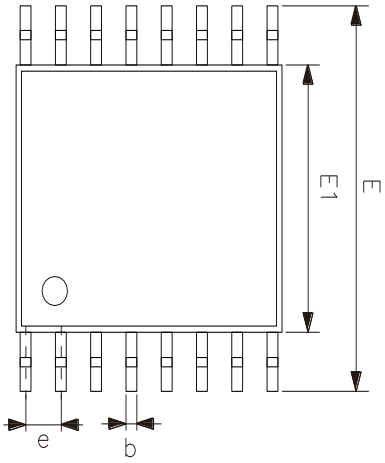


2023/12/A	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	—	1.75
A1	0.02	0.23
A2	1.30	1.50
b	0.23	0.31
c	0.20	0.24
D	4.70	5.10
E	5.80	6.25
E1	3.80	4.02
e	0.635	
L	0.45	0.80
L1	1.05	
θ	0°	8°

5.3、TSSOP16

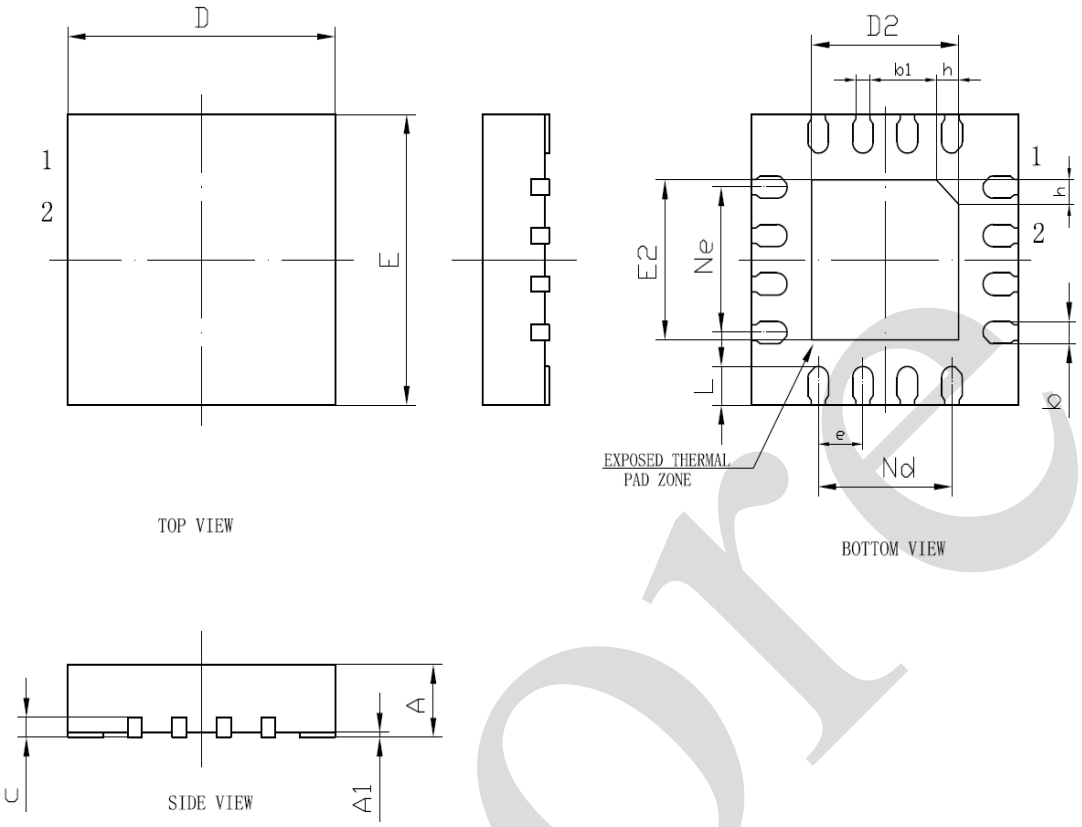






2023/12/A	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	—	1.20
A1	0.05	0.15
A2	0.80	1.05
b	0.19	0.30
c	0.09	0.20
D	4.90	5.10
E1	4.30	4.50
E	6.20	6.60
e	0.65	
L	0.45	0.75
θ	0°	8°

5.4、QFN16



2024/01/B	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	0.70	0.80
A1	0	0.05
b	0.18	0.30
b1	0.16	
c	0.18	0.25
D	2.90	3.10
D2	1.55	1.80
e	0.50	
Ne	1.50	
Nd	1.50	
E	2.90	3.10
E2	1.55	1.80
L	0.30	0.50
h	0.20	0.45

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、Notes

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