



# 74HC4852; 74HCT4852

Dual 4-channel analog multiplexer/demultiplexer with  
injection-current effect control

Rev. 5 — 16 April 2024

Product data sheet

## 1. General description

The 74HC4852; 74HCT4852 are dual single-pole quad-throw analog switches (SP4T) suitable for use in analog or digital 4:1 multiplexer/demultiplexer applications. Each switch features four independent inputs/outputs (nY0, nY1, nY2 and nY3) and a common input/output (nZ). A digital enable input ( $\bar{E}$ ) and two digital select inputs (S0 & S1) are common to both switches. When  $\bar{E}$  is HIGH, the switches are turned off. The device features injection-current effect control. This allows signals at disabled analog input channels to exceed the supply voltage without affecting the signal of the enabled analog channel, eliminating the need for external diode/resistor networks typically used to keep the analog channel signals within the supply-voltage range. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

## 2. Features and benefits

- Injection-current cross coupling  $< 1 \text{ mV/mA}$
- Wide supply voltage range from 2.0 V to 6.0 V for 74HC4852
- Latch-up performance exceeds 100 mA per JESD 78 Class II level A
- Low ON-state resistance:
  - 400  $\Omega$  (typical) at  $V_{CC} = 2.0 \text{ V}$
  - 215  $\Omega$  (typical) at  $V_{CC} = 3.0 \text{ V}$
  - 120  $\Omega$  (typical) at  $V_{CC} = 3.3 \text{ V}$
  - 76  $\Omega$  (typical) at  $V_{CC} = 4.5 \text{ V}$
  - 59  $\Omega$  (typical) at  $V_{CC} = 6.0 \text{ V}$
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Specified from  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  and from  $-40^\circ\text{C}$  to  $+125^\circ\text{C}$

## 3. Applications

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

**nexperia**

## 4. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
<a href="#">74HC4852D</a> <a href="#">74HCT4852D</a>	-40 °C to +125 °C	SO16	plastic small outline package; 16 leads; body width 3.9 mm	<a href="#">SOT109-1</a>
<a href="#">74HC4852PW</a> <a href="#">74HCT4852PW</a>	-40 °C to +125 °C	TSSOP16	plastic thin shrink small outline package; 16 leads; body width 4.4 mm	<a href="#">SOT403-1</a>
<a href="#">74HC4852BQ</a> <a href="#">74HCT4852BQ</a>	-40 °C to +125 °C	DHVQFN16	plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads; 16 terminals; body 2.5 × 3.5 × 0.85 mm	<a href="#">SOT763-1</a>

## 5. Functional diagram

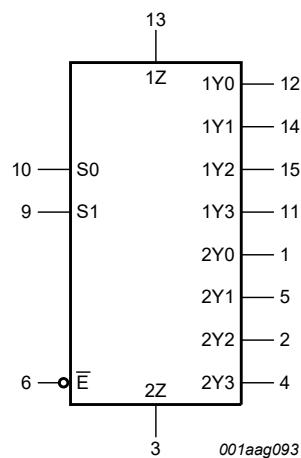


Fig. 1. Logic symbol

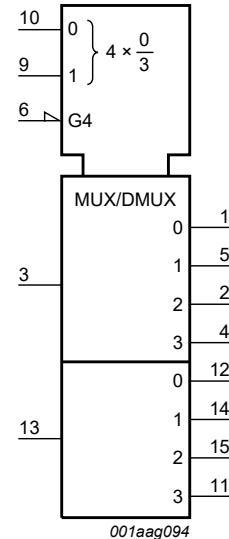
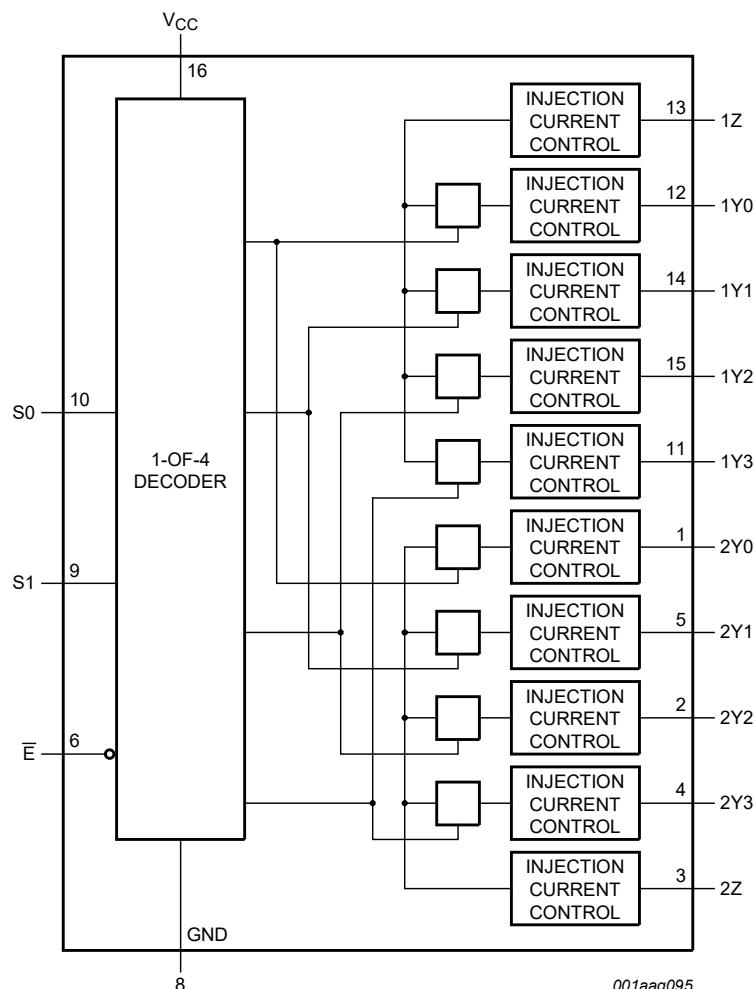


Fig. 2. IEC logic symbol

## Dual 4-channel analog multiplexer/demultiplexer with injection-current effect control

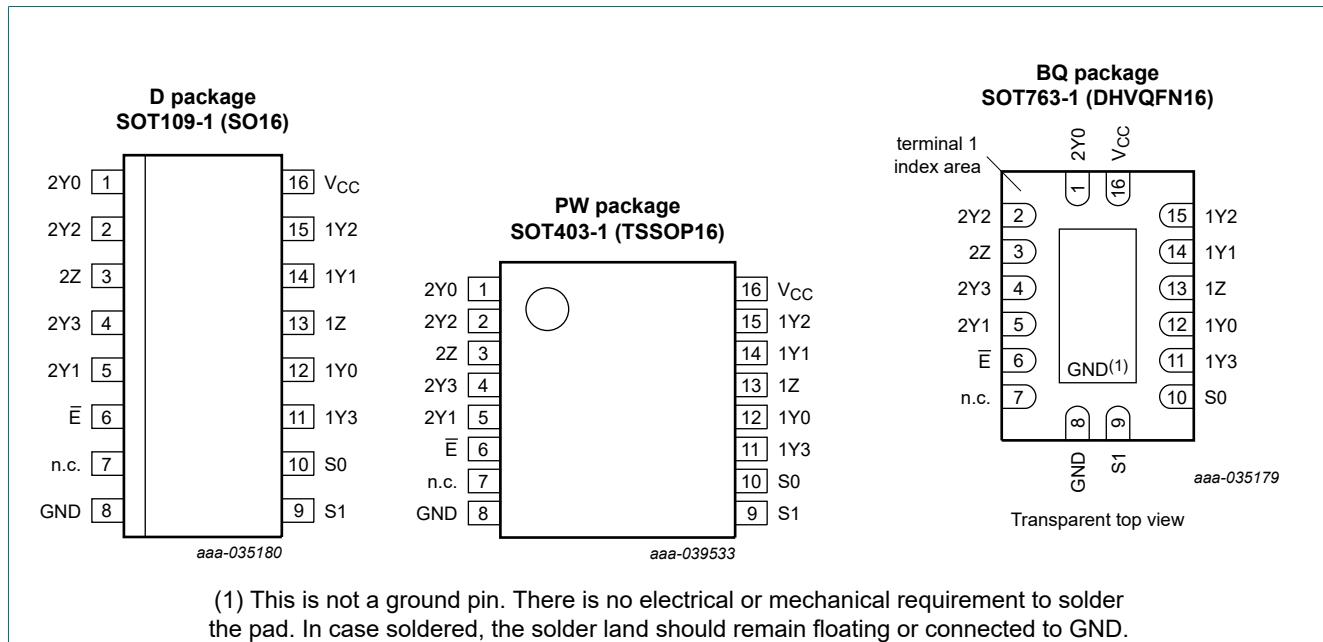


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Fig. 3. Functional diagram

## 6. Pinning information

### 6.1. Pinning



### 6.2. Pin description

Table 2. Pin description

Symbol	Pin	Description
2Y0	1	independent input/output
2Y2	2	independent input/output
2Z	3	common input/output
2Y3	4	independent input/output
2Y1	5	independent input/output
E	6	enable input (active LOW)
n.c.	7	not connected
GND	8	ground (0 V)
S1	9	select input
S0	10	select input
1Y3	11	independent input/output
1Y0	12	independent input/output
1Z	13	common input/output
1Y1	14	independent input/output
1Y2	15	independent input/output
V <sub>CC</sub>	16	supply voltage

## 7. Functional description

**Table 3. Function table**

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

Input	Channel ON		
E	S1	S0	
L	L	L	nY0 to nZ
L	L	H	nY1 to nZ
L	H	L	nY2 to nZ
L	H	H	nY3 to nZ
H	X	X	-

## 8. Limiting values

**Table 4. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).*

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>CC</sub>	supply voltage		-0.5	+7.0	V
V <sub>I</sub>	input voltage		[1]	-0.5	V <sub>CC</sub> + 0.5
V <sub>SW</sub>	switch voltage		[2]	-0.5	V <sub>CC</sub> + 0.5
I <sub>IK</sub>	input clamping current	V <sub>I</sub> < -0.5 V or V <sub>I</sub> > V <sub>CC</sub> + 0.5 V	-	±20	mA
I <sub>SK</sub>	switch clamping current	V <sub>SW</sub> < -0.5 V or V <sub>SW</sub> > V <sub>CC</sub> + 0.5 V	-	±20	mA
I <sub>SW</sub>	switch current	V <sub>SW</sub> > -0.5 V or V <sub>SW</sub> < V <sub>CC</sub> + 0.5 V	-	±25	mA
I <sub>CC</sub>	supply current		-	50	mA
I <sub>GND</sub>	ground current		-50	-	mA
T <sub>stg</sub>	storage temperature		-65	+150	°C
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> = -40 °C to +125 °C	[3]	-	500 mW

[1] The minimum and maximum input voltage rating may be exceeded if the input clamping current rating is observed.

[2] The minimum and maximum switch voltage rating may be exceeded if the switch clamping current rating is observed.

[3] For SOT109-1 (SO16) package: P<sub>tot</sub> derates linearly with 12.4 mW/K above 110 °C.

For SOT403-1 (TSSOP16) package: P<sub>tot</sub> derates linearly with 8.5 mW/K above 91 °C.

For SOT763-1 (DHVQFN16) package: P<sub>tot</sub> derates linearly with 11.2 mW/K above 106 °C.

## 9. Recommended operating conditions

Table 5. Recommended operating conditions

Symbol	Parameter	Conditions	74HC4852			74HCT4852			Unit
			Min	Typ	Max	Min	Typ	Max	
$V_{CC}$	supply voltage		2.0	-	6.0	4.5	5.0	5.5	V
$V_I$	input voltage		0	-	$V_{CC}$	0	-	$V_{CC}$	V
$V_{SW}$	switch voltage		0	-	$V_{CC}$	0	-	$V_{CC}$	V
$T_{amb}$	ambient temperature		-40	-	+125	-40	-	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CC} = 2.0$ V	-	6.0	1 000	-	-	-	ns/V
		$V_{CC} = 3.0$ V	-	6.0	800	-	-	-	ns/V
		$V_{CC} = 3.3$ V	-	6.0	800	-	-	-	ns/V
		$V_{CC} = 4.5$ V	-	6.0	500	-	6.0	500	ns/V
		$V_{CC} = 6.0$ V	-	6.0	400	-	-	-	ns/V

## 10. Static characteristics

Table 6.  $R_{ON}$  resistance

At recommended operating conditions; voltages are referenced to GND (ground 0 V); For test circuit see Fig. 6.

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HC4852</b>										
$R_{ON(peak)}$	ON resistance (peak)	$V_I = V_{CC}$ to GND; $\bar{E} = V_{IL}$								
		$V_{CC} = 2.0$ V; $I_{SW} = 2$ mA	-	400	650	-	670	-	700	Ω
		$V_{CC} = 3.0$ V; $I_{SW} \leq 2$ mA	-	215	330	-	360	-	380	Ω
		$V_{CC} = 3.3$ V; $I_{SW} \leq 2$ mA	-	120	270	-	305	-	345	Ω
		$V_{CC} = 4.5$ V; $I_{SW} \leq 2$ mA	-	76	210	-	240	-	270	Ω
		$V_{CC} = 6.0$ V; $I_{SW} \leq 2$ mA	-	59	195	-	220	-	250	Ω
$\Delta R_{ON}$	ON resistance mismatch between channels	$V_I = 0.5 \times V_{CC}$ ; $\bar{E} = V_{IL}$								
		$V_{CC} = 2.0$ V; $I_{SW} = 2$ mA	-	4	10	-	15	-	20	Ω
		$V_{CC} = 3.0$ V; $I_{SW} \leq 2$ mA	-	2	8	-	12	-	16	Ω
		$V_{CC} = 3.3$ V; $I_{SW} \leq 2$ mA	-	2	8	-	12	-	16	Ω
		$V_{CC} = 4.5$ V; $I_{SW} \leq 2$ mA	-	2	8	-	12	-	16	Ω
		$V_{CC} = 6.0$ V; $I_{SW} \leq 2$ mA	-	3	9	-	13	-	18	Ω
<b>74HCT4852</b>										
$R_{ON(peak)}$	ON resistance (peak)	$V_I = V_{CC}$ to GND; $\bar{E} = V_{IL}$								
		$V_{CC} = 4.5$ V; $I_{SW} \leq 2$ mA	-	76	210	-	240	-	270	Ω
$\Delta R_{ON}$	ON resistance mismatch between channels	$V_I = 0.5 \times V_{CC}$ ; $\bar{E} = V_{IL}$								
		$V_{CC} = 4.5$ V; $I_{SW} \leq 2$ mA	-	2	8	-	12	-	16	Ω

**Table 7. Injection current coupling**At recommended operating conditions; voltages are referenced to GND (ground 0 V); For test circuit see [Fig. 7](#).

Symbol	Parameter	Conditions	74HC4852			74HCT4852			Unit
			Min	Typ[1]	Max	Min	Typ[1]	Max	
<b>T<sub>amb</sub> = -40 °C to +125 °C</b>									
$\Delta V_O$	output voltage variation	$ I_{sw}  \leq 1 \text{ mA}; R_S \leq 3.9 \text{ k}\Omega$	[2]	[3]					
		$V_{CC} = 3.3 \text{ V}$	-	0.05	1	-	-	-	mV
		$V_{CC} = 5.0 \text{ V}$	-	0.03	1	-	0.03	1	mV
		$ I_{sw}  \leq 10 \text{ mA}; R_S \leq 3.9 \text{ k}\Omega$							
		$V_{CC} = 3.3 \text{ V}$	-	0.55	5	-	-	-	mV
		$V_{CC} = 5.0 \text{ V}$	-	0.27	5	-	0.27	5	mV
		$ I_{sw}  \leq 1 \text{ mA}; R_S \leq 20 \text{ k}\Omega$							
		$V_{CC} = 3.3 \text{ V}$	-	0.04	2	-	-	-	mV
		$V_{CC} = 5.0 \text{ V}$	-	0.03	2	-	0.03	2	mV
		$ I_{sw}  \leq 10 \text{ mA}; R_S \leq 20 \text{ k}\Omega$							
		$V_{CC} = 3.3 \text{ V}$	-	0.56	20	-	-	-	mV
		$V_{CC} = 5.0 \text{ V}$	-	0.48	20	-	0.48	20	mV

[1] Typical values are measured at  $T_{amb} = 25 \text{ °C}$ .[2]  $\Delta V_O$  here is the maximum variation of output voltage of an enabled analog channel when current is injected into any disabled channel.[3]  $I_{sw}$  = total current injected into all disabled channels.**Table 8. Static characteristics**

At recommended operating conditions; voltages are referenced to GND (ground 0 V).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HC4852</b>										
$V_{IH}$	HIGH-level input voltage	control inputs								
		$V_{CC} = 2.0 \text{ V}$	1.5	-	-	1.5	-	1.5	-	V
		$V_{CC} = 3.0 \text{ V}$	2.1	-	-	2.1	-	2.1	-	V
		$V_{CC} = 3.3 \text{ V}$	2.3	-	-	2.3	-	2.3	-	V
		$V_{CC} = 4.5 \text{ V}$	3.15	-	-	3.15	-	3.15	-	V
		$V_{CC} = 6.0 \text{ V}$	4.2	-	-	4.2	-	4.2	-	V
$V_{IL}$	LOW-level input voltage	control inputs								
		$V_{CC} = 2.0 \text{ V}$	-	-	0.5	-	0.5	-	0.5	V
		$V_{CC} = 3.0 \text{ V}$	-	-	0.9	-	0.9	-	0.9	V
		$V_{CC} = 3.3 \text{ V}$	-	-	1.0	-	1.0	-	1.0	V
		$V_{CC} = 4.5 \text{ V}$	-	-	1.35	-	1.35	-	1.35	V
		$V_{CC} = 6.0 \text{ V}$	-	-	1.8	-	1.8	-	1.8	V
$I_I$	input leakage current	control inputs; $V_I = \text{GND or } V_{CC}$								
		$V_{CC} = 6.0 \text{ V}$	-	-	$\pm 0.1$	-	$\pm 0.1$	-	$\pm 1.0$	$\mu\text{A}$
$I_{S(OFF)}$	OFF-state leakage current	$\bar{E} = V_{IH}; V_I = \text{GND or } V_{CC}; V_O = V_{CC} \text{ or GND}; V_{CC} = 6.0 \text{ V}; \text{ see Fig. 4}$								
		$nYn$ ; per channel	-	-	$\pm 0.1$	-	$\pm 0.5$	-	$\pm 1.0$	$\mu\text{A}$
		$nZ$ ; all channels	-	-	$\pm 0.2$	-	$\pm 2.0$	-	$\pm 4.0$	$\mu\text{A}$

## Dual 4-channel analog multiplexer/demultiplexer with injection-current effect control

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$I_{S(ON)}$	ON-state leakage current	$\bar{E} = V_{IL}$ ; $V_I = GND$ or $V_{CC}$ ; $V_O = V_{CC}$ or $GND$ ; $V_{CC} = 6.0$ V; see Fig. 5	-	-	$\pm 0.1$	-	$\pm 0.5$	-	$\pm 1.0$	$\mu A$
$I_{CC}$	supply current	$V_I = GND$ or $V_{CC}$								
		$V_{CC} = 6.0$ V	-	-	2.0	-	5.0	-	20.0	$\mu A$
$C_I$	input capacitance	S0, S1, S2 and $\bar{E}$	-	2	10	-	10	-	10	$pF$
$C_{sw}$	switch capacitance	nZ; OFF-state	-	15	40	-	40	-	40	$pF$
		nYn; OFF-state	-	3	15	-	15	-	15	$pF$

## 74HCT4852

$V_{IH}$	HIGH-level input voltage	control inputs								
		$V_{CC} = 4.5$ V to 5.5 V	2.0	-	-	2.0	-	2.0	-	V
$V_{IL}$	LOW-level input voltage	control inputs								
		$V_{CC} = 4.5$ V to 5.5 V	-	-	0.8	-	0.8	-	0.8	V
$I_I$	input leakage current	control inputs; $V_I = GND$ or $V_{CC}$								
		$V_{CC} = 5.5$ V	-	-	$\pm 0.1$	-	$\pm 0.1$	-	$\pm 1.0$	$\mu A$
$I_{S(OFF)}$	OFF-state leakage current	$\bar{E} = V_{IL}$ ; $V_I = GND$ or $V_{CC}$ ; $V_O = V_{CC}$ or $GND$ ; $V_{CC} = 5.5$ V; see Fig. 4								
		per channel	-	-	$\pm 0.1$	-	$\pm 0.5$	-	$\pm 1.0$	$\mu A$
		all channels	-	-	$\pm 0.2$	-	$\pm 2.0$	-	$\pm 4.0$	$\mu A$
$I_{S(ON)}$	ON-state leakage current	$\bar{E} = V_{IL}$ ; $V_I = GND$ or $V_{CC}$ ; $V_O = V_{CC}$ or $GND$ ; $V_{CC} = 5.5$ V; see Fig. 5	-	-	$\pm 0.1$	-	$\pm 0.5$	-	$\pm 1.0$	$\mu A$
$I_{CC}$	supply current	$V_I = GND$ or $V_{CC}$								
		$V_{CC} = 5.5$ V	-	-	2.0	-	5.0	-	20.0	$\mu A$
$\Delta I_{CC}$	additional supply current	control inputs; $V_I = V_{CC} - 2.1$ V; other inputs at $V_{CC}$ or $GND$ ; $V_{CC} = 4.5$ V to 5.5 V; $I_O = 0$ A	-	-	300	-	370	-	370	$\mu A$
$C_I$	input capacitance	S0, S1, S2 and $\bar{E}$	-	2	10	-	10	-	10	$pF$
$C_{sw}$	switch capacitance	nZ; OFF-state	-	9	40	-	40	-	40	$pF$
		nYn; OFF-state	-	3	15	-	15	-	15	$pF$

## Dual 4-channel analog multiplexer/demultiplexer with injection-current effect control

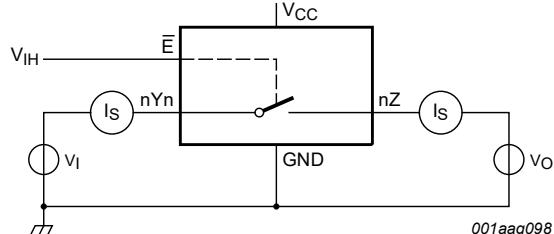
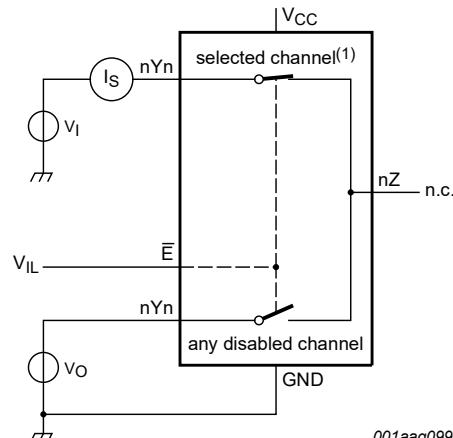
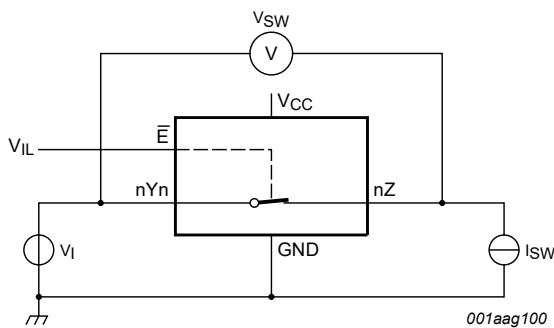


Fig. 4. Test circuit for measuring OFF-state leakage current



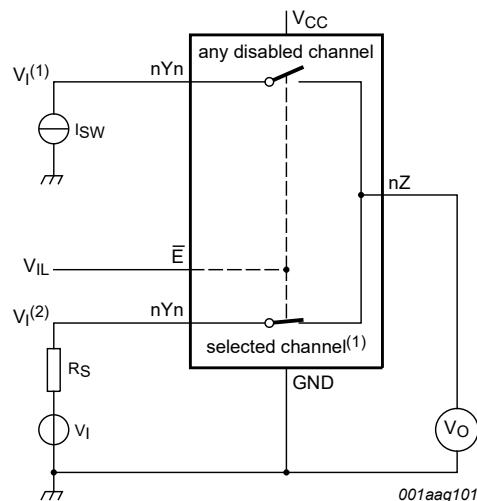
(1) Channel is selected by S0 and S1.

Fig. 5. Test circuit for measuring ON-state leakage current



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

Fig. 6. Test circuit for measuring ON resistance



(1) Channel is selected by S0 and S1.

$$V_I^{(1)} < GND \text{ or } V_I^{(1)} > V_{CC}.$$

$$GND < V_I^{(2)} < V_{CC}.$$

Fig. 7. Test circuit for injection current coupling

## 11. Dynamic characteristics

**Table 9. Dynamic characteristics**

At recommended operating conditions; voltages are referenced to GND (ground 0 V); for test circuit see [Fig. 12](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HC4852</b>										
$t_{pd}$	propagation delay	nZ, nYn to nYn, nZ; see <a href="#">Fig. 8</a> [1]								
		$V_{CC} = 2.0$ V	2.2	9.3	33	2.2	34	2.2	35	ns
		$V_{CC} = 3.0$ V	2.2	4.9	16.5	1.9	18	1.9	19.5	ns
		$V_{CC} = 3.3$ V	2.0	4.4	15.0	1.6	16.5	1.6	18.5	ns
		$V_{CC} = 4.5$ V	1.6	3.2	11.6	1.1	12.5	1.1	13.5	ns
		$V_{CC} = 6.0$ V	1.5	2.5	10.2	0.9	11	0.9	12	ns
		Sn to nZ, nYn; see <a href="#">Fig. 9</a> [1]								
		$V_{CC} = 2.0$ V	7.7	16.8	38	6.3	40	6.3	42	ns
		$V_{CC} = 3.0$ V	4.9	8.8	20	3.9	21.5	3.9	23	ns
		$V_{CC} = 3.3$ V	4.4	7.9	17.5	3.4	19	3.4	22	ns
$t_{en}$	enable time	$\bar{E}$ to nZ, nYn; see <a href="#">Fig. 10</a> [2]								
		$V_{CC} = 2.0$ V	10.5	20.5	47.5	8.5	52.5	8.5	57.5	ns
		$V_{CC} = 3.0$ V	6.2	10.6	45	5.2	50	5.2	55	ns
		$V_{CC} = 3.3$ V	5.6	9.4	42.5	4.6	47.5	4.6	52.5	ns
		$V_{CC} = 4.5$ V	4.2	6.9	40	3	45	3	50	ns
		$V_{CC} = 6.0$ V	3.2	5.6	39	2.2	40	2.2	40	ns
$t_{dis}$	disable time	$\bar{E}$ to nZ, nYn; see <a href="#">Fig. 10</a> [3]								
		$V_{CC} = 2.0$ V	39.5	75.4	100	39.3	105	39	115	ns
		$V_{CC} = 3.0$ V	35.2	69.5	90	35.5	100	35	110	ns
		$V_{CC} = 3.3$ V	34.6	68.1	85	34.6	95	34.5	105	ns
		$V_{CC} = 4.5$ V	28.5	63	80	28.2	90	28	100	ns
		$V_{CC} = 6.0$ V	14.4	57.9	78	13.5	80	13.0	80	ns
$C_{PD}$	power dissipation capacitance	per channel; see <a href="#">Fig. 11</a> [4]								
		$V_{CC} = 3.3$ V	-	42	-	-	-	-	-	pF
		$V_{CC} = 5.0$ V	-	47	-	-	-	-	-	pF

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HCT4852</b>										
$t_{pd}$	propagation delay	nZ, nYn to nYn, nZ; see <a href="#">Fig. 8</a> [1]								
		$V_{CC} = 4.5$ V	1.6	3.5	11.5	1.1	12.5	1.1	13.5	ns
		Sn to nZ, nYn; see <a href="#">Fig. 9</a> [1]								
		$V_{CC} = 4.5$ V	3.2	7.6	13	2.3	15	1.6	17	ns
$t_{en}$	enable time	E to nZ, nYn; see <a href="#">Fig. 10</a> [2]								
		$V_{CC} = 4.5$ V	4.2	8.3	25	3.0	30	3.0	35	ns
$t_{dis}$	disable time	E to nZ, nYn; see <a href="#">Fig. 10</a> [3]								
		$V_{CC} = 4.5$ V	28.5	61.8	80	28.2	90	28.0	100	ns
$C_{PD}$	power dissipation capacitance	per channel; see <a href="#">Fig. 11</a> [4]								
		$V_{CC} = 5.0$ V	-	47	-	-	-	-	-	pF

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

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

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

[4]  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in  $\mu$ W):

$$P_D = C_{PD} \times V_{CC}^2 \times f_i + \sum \{ (C_L + C_{sw}) \times V_{CC}^2 \times f_o \} \text{ where:}$$

$f_i$  = input frequency in MHz;

$f_o$  = output frequency in MHz;

$\sum \{ (C_L + C_{sw}) \times V_{CC}^2 \times f_o \}$  = sum of outputs;

$C_L$  = output load capacitance in pF;

$C_{sw}$  = switch capacitance in pF;

$V_{CC}$  = supply voltage in V.

## 11.1. Waveforms and test circuit

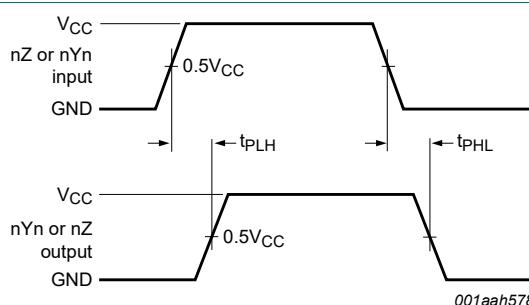
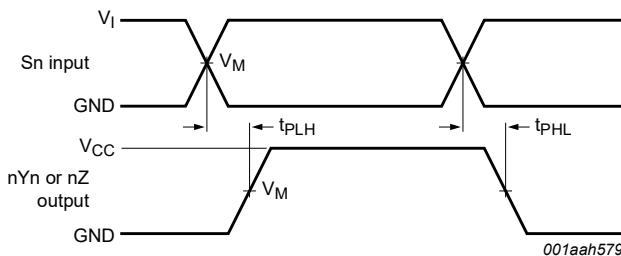


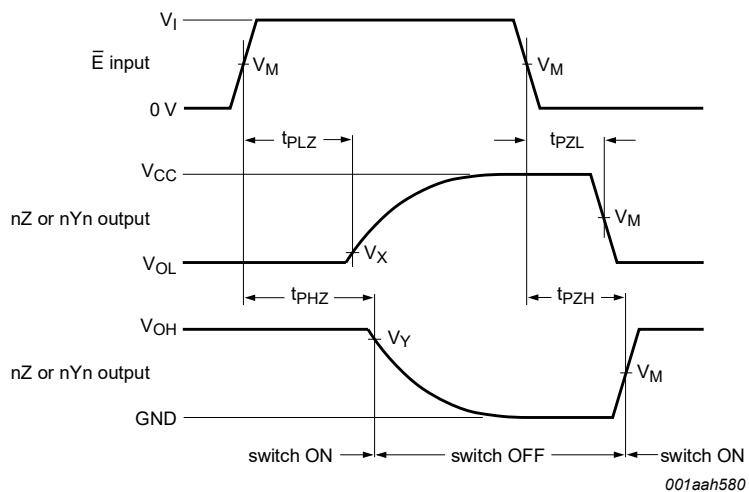
Fig. 8. Input (nZ, nYn) to output (nYn, nZ) propagation delays



Measurement points are given in [Table 10](#).

Fig. 9. Input (Sn) to output (nYn, nZ) propagation delays

**Dual 4-channel analog multiplexer/demultiplexer with injection-current effect control**



Measurement points are shown in [Table 10](#).

Logic levels:  $V_{OL}$  and  $V_{OH}$  are typical output voltage levels that occur with the output load.

**Fig. 10. Enable and disable times**

**Table 10. Measurement points**

Type	Input		Output		
	$V_M$	$V_I$	$V_M$	$V_X$	$V_Y$
74HC4852	0.5V <sub>CC</sub>	V <sub>CC</sub>	0.5V <sub>CC</sub>	V <sub>OL</sub> + 0.1(V <sub>CC</sub> - V <sub>OL</sub> )	0.9V <sub>OH</sub>
74HCT4852	1.3 V	3.0 V	0.5V <sub>CC</sub>	V <sub>OL</sub> + 0.1(V <sub>CC</sub> - V <sub>OL</sub> )	0.9V <sub>OH</sub>

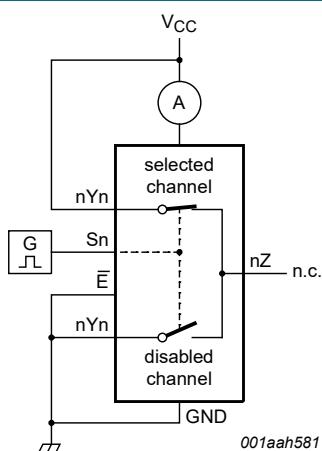
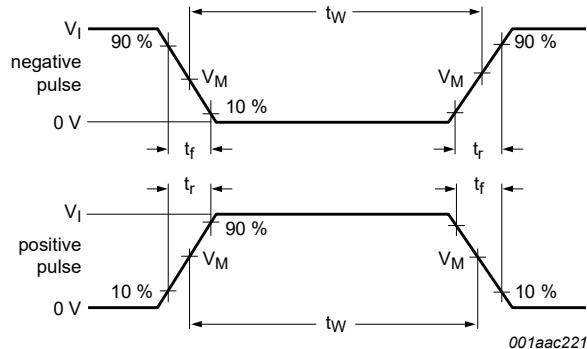
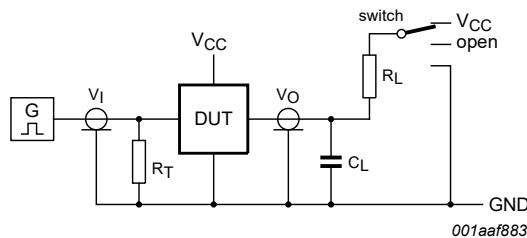


Fig. 11. Test circuit for measuring power dissipation capacitance



a. Input pulse definition

Test data is given in [Table 11](#).

Definitions for test circuit:

 $R_L$  = load resistance; $C_L$  = load capacitance including jig and probe capacitance; $R_T$  = termination resistance should be equal to the output impedance  $Z_o$  of the pulse generator.

b. Test circuit

Fig. 12. Input pulse definition and test circuit

Table 11. Test data

Test	Input			Output		S1 position	
	Control $\bar{E}$ , $S_n$	Switch $nYn$ ( $nZ$ )	$t_r, t_f$	Switch $nZ$ ( $nYn$ )			
	$V_I$ [1]	$V_I$		$C_L$	$R_L$		
$t_{PHL}, t_{PLH}$	$V_{CC}$	$V_{CC}$	6 ns	50 pF	-	open	
$t_{PHZ}, t_{PZH}$	$V_{CC}$	$V_{CC}$	6 ns	50 pF	$10 \text{ k}\Omega$	GND	
$t_{PLZ}, t_{PZL}$	$V_{CC}$	$V_{CC}$	6 ns	50 pF	$10 \text{ k}\Omega$	$V_{CC}$	
$C_{PD}$	$V_{CC}$	$V_{CC}$	6 ns	0 pF	-	open	

[1] For 74HCT4852: input voltage  $V_I = 3.0 \text{ V}$ .

## 12. Package outline

SO16: plastic small outline package; 16 leads; body width 3.9 mm

SOT109-1

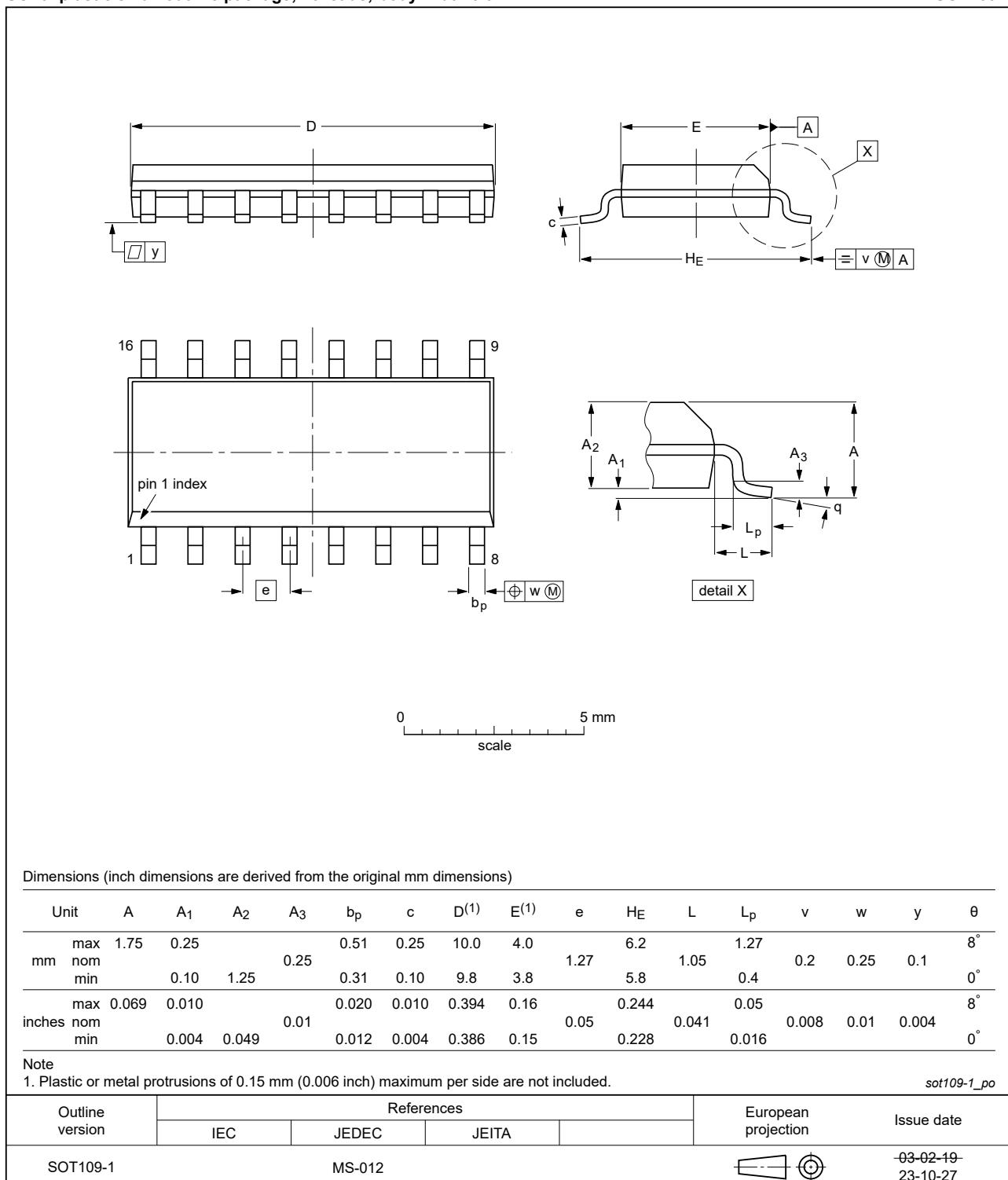


Fig. 13. Package outline SOT109-1 (SO16)

TSSOP16: plastic thin shrink small outline package; 16 leads; body width 4.4 mm

SOT403-1

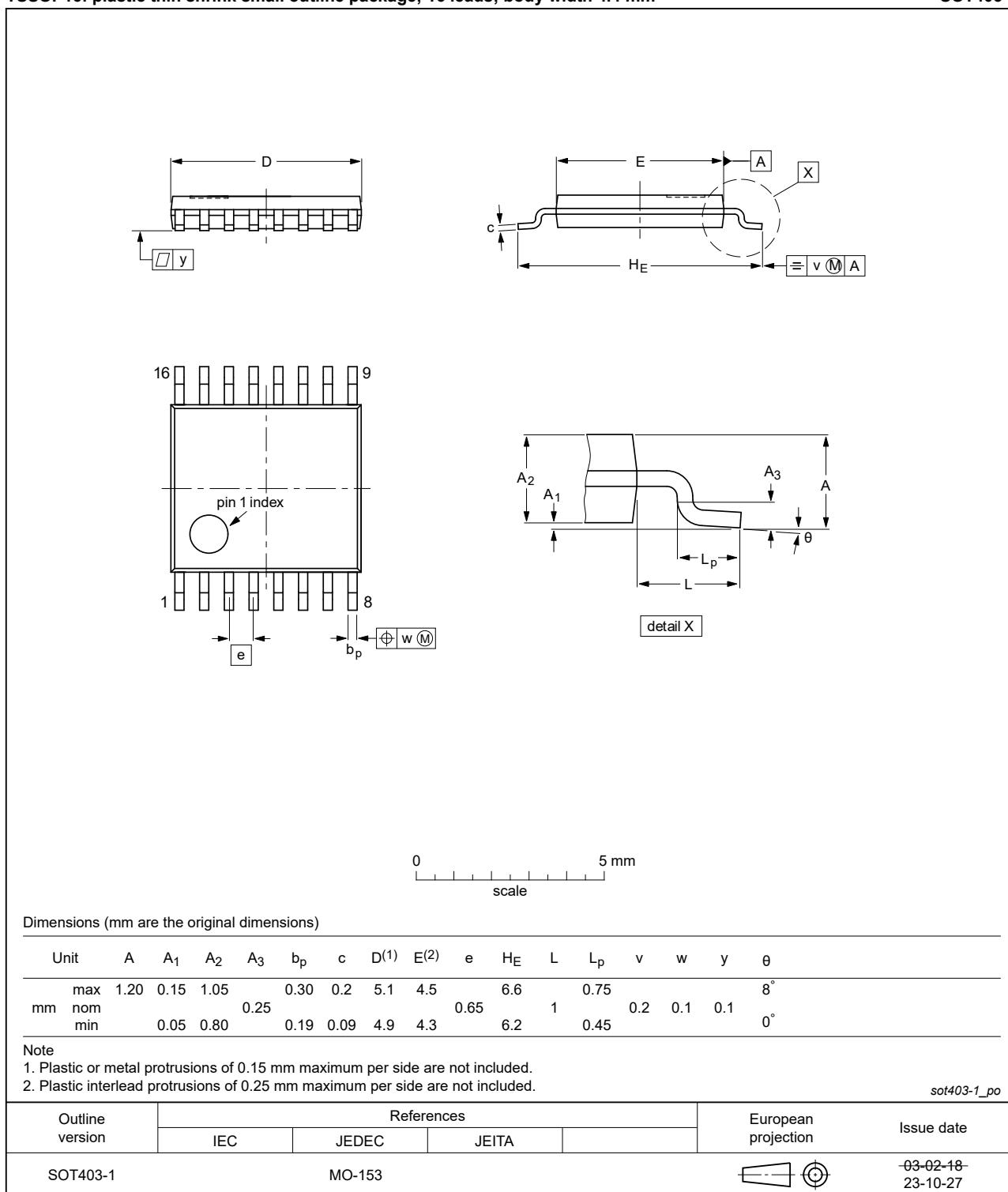


Fig. 14. Package outline SOT403-1 (TSSOP16)

DHVQFN16: plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads;  
16 terminals; body 2.5 x 3.5 x 0.85 mm

SOT763-1

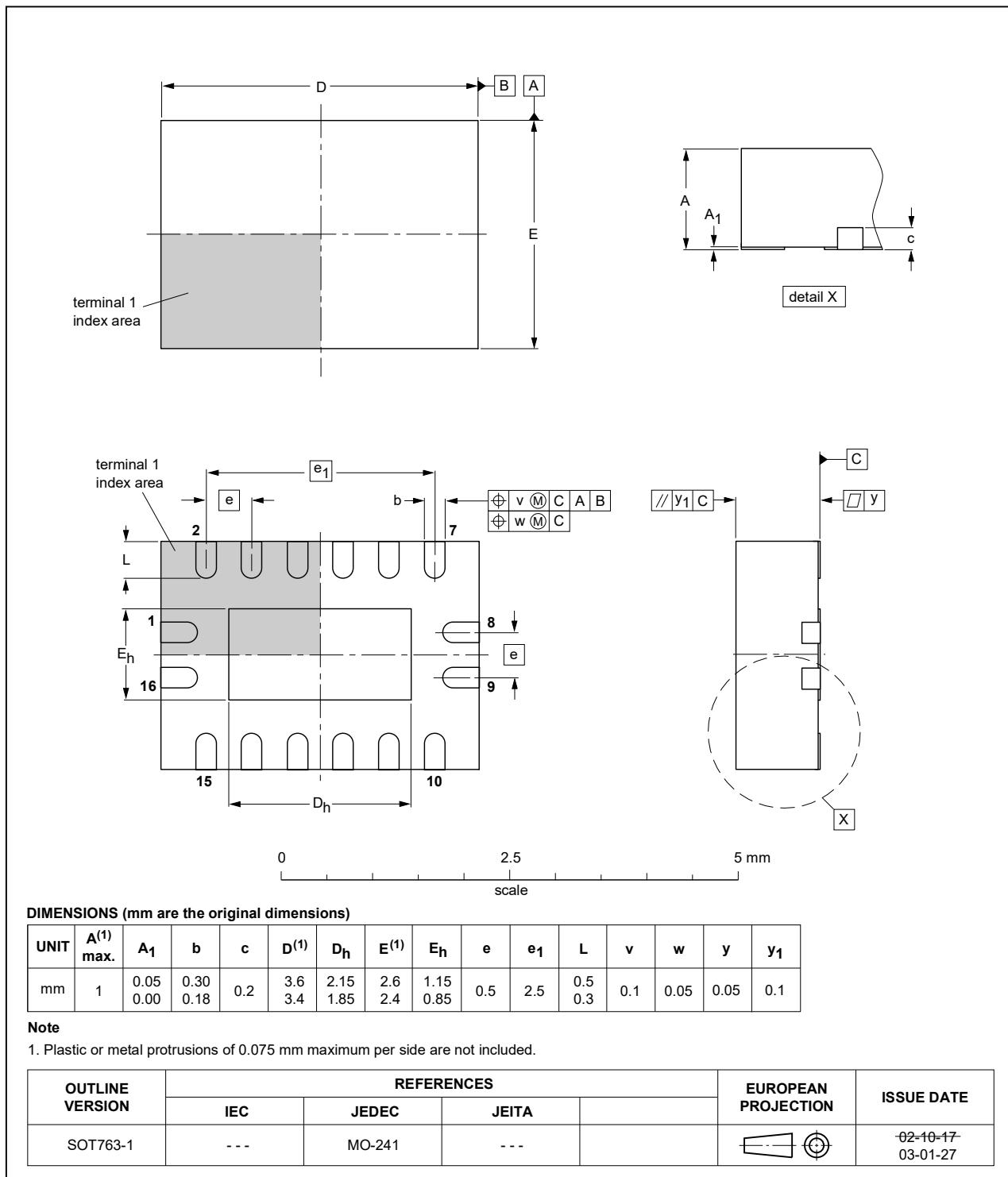


Fig. 15. Package outline SOT763-1 (DHVQFN16)

## 13. Abbreviations

**Table 12. Abbreviations**

Acronym	Description
CDM	Charged Device Model
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model

## 14. Revision history

**Table 13. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
74HC_HCT4852 v.5	20240416	Product data sheet	-	74HC_HCT4852 v.4
Modifications:	<ul style="list-style-type: none"><li><a href="#">Section 2</a>: ESD specification updated according to the latest JEDEC standard.</li><li><a href="#">Fig. 13, Fig. 14</a>: Aligned SO and TSSOP package outline drawings to JEDEC MS-012 and MO-153</li></ul>			
74HC_HCT4852 v.4	20200428	Product data sheet	-	74HC4852 v.3
Modifications:	<ul style="list-style-type: none"><li><a href="#">Section 1</a>: updated.</li><li><a href="#">Table 4</a>: Derating values for <math>P_{tot}</math> total power dissipation have been updated.</li></ul>			
74HC_HCT4852 v.3	20080902	Product data sheet	-	74HC4852 v.2
Modifications:	<ul style="list-style-type: none"><li>74HCT4852 device added.</li></ul>			
74HC4852 v.2	20070530	Product data sheet	-	74HC4852 v.1
74HC4852 v.1	20070323	Product data sheet	-	-

## 15. Legal information

### Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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Date of release: 16 April 2024

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