



**THE DATASHEET OF  
74HCT112D,653**



# 74HC112; 74HCT112

Dual JK flip-flop with set and reset; negative-edge trigger

Rev. 3 — 9 August 2016

Product data sheet

## 1. General description

The 74HC112; 74HCT112 is a dual negative-edge triggered JK flip-flop. It features individual J and K inputs, clock ( $\overline{nCP}$ ) set ( $\overline{nSD}$ ) and reset ( $\overline{nRD}$ ) inputs. It also has complementary  $\overline{nQ}$  and  $\overline{n\overline{Q}}$  outputs. The set and reset are asynchronous active LOW inputs and operate independently of the clock input. The J and K inputs control the state changes of the flip-flops as described in the mode select function table. The J and K inputs must be stable one set-up time prior to the HIGH-to-LOW clock transition for predictable operation. Inputs include clamp diodes that enable the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

Schmitt-trigger action in the clock input makes the circuit highly tolerant to slower clock rise and fall times.

## 2. Features and benefits

- Input levels:
  - ◆ For 74HC112: CMOS level
  - ◆ For 74HCT112: TTL level
- Asynchronous set and reset
- Specified in compliance with JEDEC standard no. 7A
- ESD protection:
  - ◆ HBM JESD22-A114F exceeds 2000 V
  - ◆ MM JESD22-A115-A exceeds 200 V
- Multiple package options
- Specified from  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  and from  $-40\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$

## 3. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74HC112D	$-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$	SO16	plastic small outline package; 16 leads; body width 3.9 mm	SOT109-1
74HCT112D				
74HC112DB	$-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$	SSOP16	plastic shrink small outline package; 16 leads; body width 5.3 mm	SOT338-1
74HCT112DB				
74HC112PW	$-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$	TSSOP16	plastic thin shrink small outline package; 16 leads; body width 4.4 mm	SOT403-1
74HCT112PW				

## 4. Functional diagram

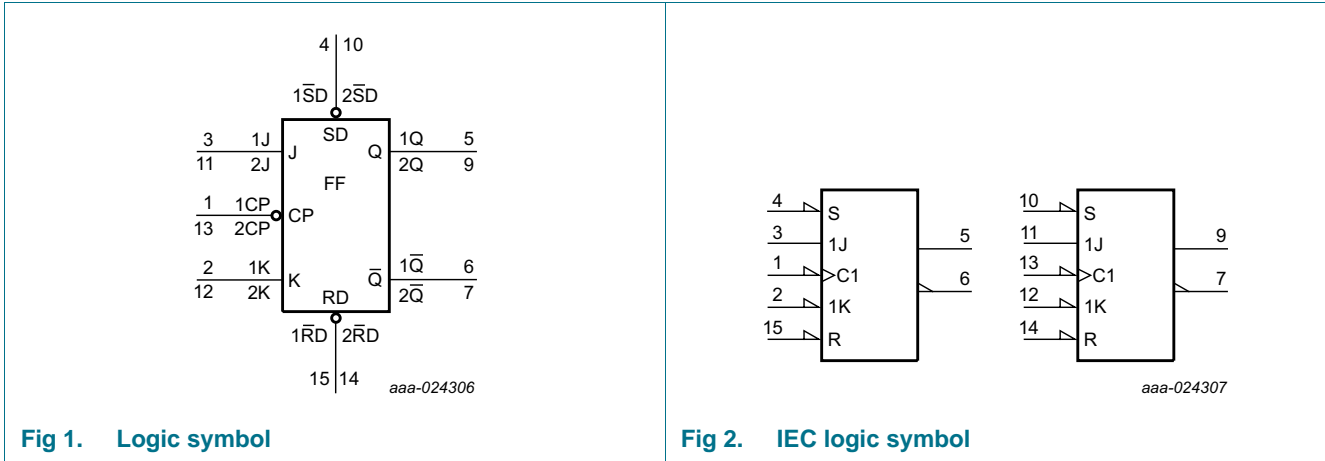


Fig 1. Logic symbol

Fig 2. IEC logic symbol

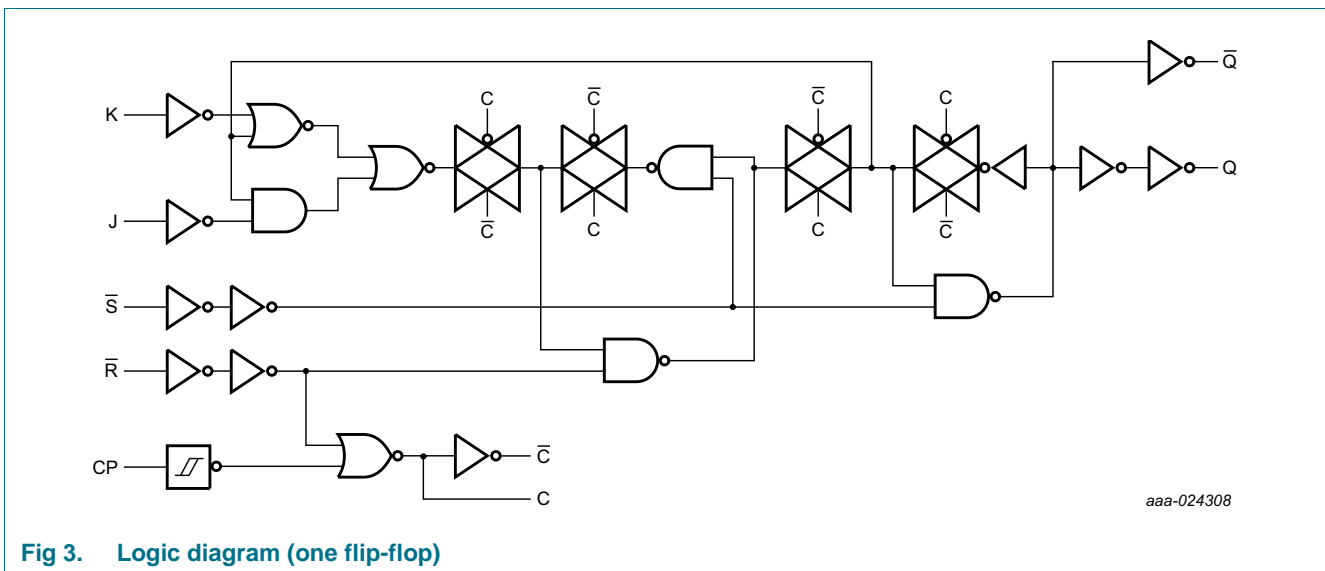
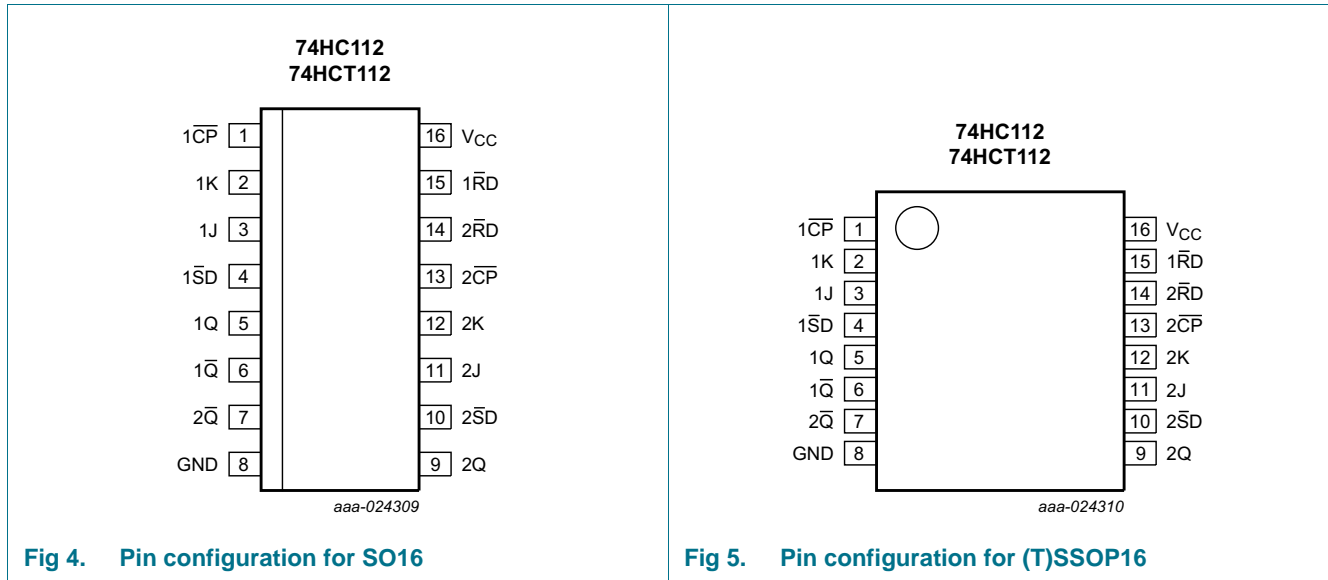


Fig 3. Logic diagram (one flip-flop)

## 5. Pinning information

### 5.1 Pinning



### 5.2 Pin description

Table 2. Pin description

Symbol	Pin	Description
1CP, 2CP	1, 13	clock input (HIGH-to-LOW; edge-triggered)
1K, 2K	2, 12	data input
1J, 2J	3, 11	data input
1SD, 2SD	4, 10	set input (active LOW)
1Q, 2Q	5, 9	true flip-flop output
1Q̄, 2Q̄	6, 7	complement flip-flop output
GND	8	ground (0 V)
1RD, 2RD	15, 14	reset input (active LOW)
V <sub>CC</sub>	16	supply voltage

## 6. Functional description

Table 3. Function selection<sup>[1]</sup>

Operating modes	Input					Output	
	nSD	nRD	nCP	nJ	nK	nQ	nQ
Asynchronous set	L	H	X	X	X	H	L
Asynchronous reset	H	L	X	X	X	L	H
Undetermined	L	L	X	X	X	H	L
Toggle	H	H	↓	h	h	$\bar{q}$	q
Load 0 (reset)	H	H	↓	l	h	L	H
Load 1 (set)	H	H	↓	h	l	H	L
Hold no change	H	H	↓	l	l	q	$\bar{q}$

[1] If nSD and nRD simultaneously go from LOW-to-HIGH, the output states are unpredictable.

H = HIGH voltage level

h = HIGH voltage level one set-up time before the HIGH-to-LOW clock transition

L = LOW voltage level

l = LOW voltage level one set-up time before the HIGH-to-LOW clock transition

q = lowercase letters indicate the state of the referenced output one set-up time before the HIGH-to-LOW clock transition

X = don't care

↓ = HIGH-to-LOW clock transition

## 7. 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	V
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>OK</sub>	output clamping current	V <sub>O</sub> < -0.5 V or V <sub>O</sub> > V <sub>CC</sub> + 0.5 V	-	±20	mA
I <sub>O</sub>	output current	-0.5 V < V <sub>O</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	SO16 and (T)SSOP16 packages <sup>[1]</sup>	-	500	mW

[1] For SO16 packages: above 70 °C, the value of P<sub>tot</sub> derates linearly with 8 mW/K.

For (T)SSOP16 packages: above 60 °C, the value of P<sub>tot</sub> derates linearly with 5.5 mW/K.

## 8. Recommended operating conditions

**Table 5. Recommended operating conditions**

Voltages are referenced to GND (ground = 0 V)

Symbol	Parameter	Conditions	74HC112			74HCT112			Unit
			Min	Typ	Max	Min	Typ	Max	
V <sub>CC</sub>	supply voltage		2.0	5.0	6.0	4.5	5.0	5.5	V
V <sub>I</sub>	input voltage		0	-	V <sub>CC</sub>	0	-	V <sub>CC</sub>	V
V <sub>O</sub>	output voltage		0	-	V <sub>CC</sub>	0	-	V <sub>CC</sub>	V
T <sub>amb</sub>	ambient temperature		-40	+25	+125	-40	+25	+125	°C
Δt/ΔV	input transition rise and fall rate	V <sub>CC</sub> = 2.0 V	-	-	625	-	-	-	ns/V
		V <sub>CC</sub> = 4.5 V	-	1.67	139	-	1.67	139	ns/V
		V <sub>CC</sub> = 6.0 V	-	-	83	-	-	-	ns/V

## 9. Static characteristics

**Table 6. 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>74HC112</b>										
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 2.0 V	1.5	1.2	-	1.5	-	1.5	-	V
		V <sub>CC</sub> = 4.5 V	3.15	2.4	-	3.15	-	3.15	-	V
		V <sub>CC</sub> = 6.0 V	4.2	3.2	-	4.2	-	4.2	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> = 2.0 V	-	0.8	0.5	-	0.5	-	0.5	V
		V <sub>CC</sub> = 4.5 V	-	2.1	1.35	-	1.35	-	1.35	V
		V <sub>CC</sub> = 6.0 V	-	2.8	1.8	-	1.8	-	1.8	V
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>								
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 2.0 V	1.9	2.0	-	1.9	-	1.9	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V	4.4	4.5	-	4.4	-	4.4	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 6.0 V	5.9	6.0	-	5.9	-	5.9	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC</sub> = 4.5 V	3.98	4.32	-	3.84	-	3.7	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>								
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 2.0 V	-	0	0.1	-	0.1	-	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	0	0.1	-	0.1	-	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 6.0 V	-	0	0.1	-	0.1	-	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 4.5 V	-	0.15	0.26	-	0.33	-	0.4	V
I <sub>I</sub>	input leakage current	I <sub>O</sub> = 5.2 mA; V <sub>CC</sub> = 6.0 V	-	0.16	0.26	-	0.33	-	0.4	V
		V <sub>I</sub> = V <sub>CC</sub> or GND; V <sub>CC</sub> = 6.0 V	-	-	±0.1	-	±1	-	±1	μA
I <sub>CC</sub>	supply current	V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> = 0 A; V <sub>CC</sub> = 6.0 V	-	-	4.0	-	40	-	80	μA

**Table 6. Static characteristics ...continued**

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	
C <sub>I</sub>	input capacitance		-	3.5	-	-	-	-	-	pF
<b>74HCT112</b>										
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 4.5 V to 5.5 V	2.0	1.6	-	2.0	-	2.0	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> = 4.5 V to 5.5 V	-	1.2	0.8	-	0.8	-	0.8	V
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> = 4.5 V								
		I <sub>O</sub> = −20 μA	4.4	4.5	-	4.4	-	4.4	-	V
		I <sub>O</sub> = −4.0 mA	3.98	4.32	-	3.84	-	3.7	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> = 4.5 V								
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	0	0.1	-	0.1	-	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 5.5 V	-	0.15	0.26	-	0.33	-	0.4	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = V <sub>CC</sub> or GND; V <sub>CC</sub> = 5.5 V	-	-	±0.1	-	±1	-	±1	μA
I <sub>CC</sub>	supply current	V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> = 0 A; V <sub>CC</sub> = 5.5 V	-	-	4.0	-	40	-	80	μA
ΔI <sub>CC</sub>	additional supply current	per input pin; V <sub>I</sub> = V <sub>CC</sub> − 2.1 V; other inputs at V <sub>CC</sub> or GND; V <sub>CC</sub> = 4.5 V to 5.5 V								
		nSD inputs	-	50	180	-	225	-	245	μA
		nK inputs	-	60	216	-	270	-	294	μA
		nRD inputs	-	65	236	-	293	-	319	μA
		nJ, and nCP inputs	-	100	360	-	450	-	490	μA
C <sub>I</sub>	input capacitance		-	3.5	-	-	-	-	-	pF

## 10. Dynamic characteristics

**Table 7. Dynamic characteristics**

Voltages are referenced to GND (ground = 0 V);  $C_L = 50$  pF unless otherwise specified; for test circuit, see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max	Min	Max	
<b>74HC112</b>										
$t_{pd}$	propagation delay	$\overline{nCP}$ to $nQ$ ; see <a href="#">Figure 6</a> <sup>[2]</sup>								
		$V_{CC} = 2.0$ V	-	55	175	-	220	-	265	ns
		$V_{CC} = 4.5$ V	-	20	35	-	44	-	53	ns
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	17	-	-	-	-	-	ns
		$V_{CC} = 6.0$ V	-	16	30	-	37	-	45	ns
		$\overline{nCP}$ to $\overline{nQ}$ ; see <a href="#">Figure 6</a>								
		$V_{CC} = 2.0$ V	-	55	175	-	220	-	265	ns
		$V_{CC} = 4.5$ V	-	20	35	-	44	-	53	ns
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	17	-	-	-	-	-	ns
		$V_{CC} = 6.0$ V	-	16	30	-	37	-	45	ns
		$\overline{nRD}$ to $nQ$ , $\overline{nQ}$ ; see <a href="#">Figure 7</a>								
		$V_{CC} = 2.0$ V	-	58	180	-	225	-	270	ns
		$V_{CC} = 4.5$ V	-	21	36	-	45	-	54	ns
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	18	-	-	-	-	-	ns
		$V_{CC} = 6.0$ V	-	17	31	-	38	-	46	ns
		$\overline{nSD}$ to $nQ$ , $\overline{nQ}$ ; see <a href="#">Figure 7</a>								
$V_{CC} = 2.0$ V	-	50	155	-	295	-	235	ns		
$V_{CC} = 4.5$ V	-	18	31	-	39	-	47	ns		
$V_{CC} = 5$ V; $C_L = 15$ pF	-	15	-	-	-	-	-	ns		
$V_{CC} = 6.0$ V	-	14	26	-	33	-	40	ns		
$t_t$	transition time	$nQ$ , $\overline{nQ}$ ; see <a href="#">Figure 6</a> <sup>[3]</sup>								
		$V_{CC} = 2.0$ V	-	19	75	-	95	-	110	ns
		$V_{CC} = 4.5$ V	-	7	15	-	19	-	22	ns
		$V_{CC} = 6.0$ V	-	6	13	-	16	-	19	ns
$t_w$	pulse width	$\overline{nCP}$ HIGH or LOW; see <a href="#">Figure 6</a>								
		$V_{CC} = 2.0$ V	80	22	-	100	-	120	-	ns
		$V_{CC} = 4.5$ V	16	8	-	20	-	24	-	ns
		$V_{CC} = 6.0$ V	14	6	-	17	-	20	-	ns
		$\overline{nSD}$ , $\overline{nRD}$ LOW; see <a href="#">Figure 7</a>								
		$V_{CC} = 2.0$ V	80	22	-	100	-	120	-	ns
		$V_{CC} = 4.5$ V	16	8	-	20	-	24	-	ns
$V_{CC} = 6.0$ V	14	6	-	17	-	20	-	ns		

**Table 7. Dynamic characteristics ...continued**

Voltages are referenced to GND (ground = 0 V);  $C_L = 50$  pF unless otherwise specified; for test circuit, see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			−40 °C to +85 °C		−40 °C to +125 °C		Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max	Min	Max	
$t_{rec}$	recovery time	$\overline{nRD}$ to $\overline{nCP}$ ; see <a href="#">Figure 7</a>								
		$V_{CC} = 2.0$ V	80	22	-	125	-	150	-	ns
		$V_{CC} = 4.5$ V	16	8	-	25	-	30	-	ns
		$V_{CC} = 6.0$ V	14	6	-	21	-	26	-	ns
		$\overline{nSD}$ to $\overline{nCP}$ ; see <a href="#">Figure 7</a>								
		$V_{CC} = 2.0$ V	80	−19	-	100	-	120	-	ns
		$V_{CC} = 4.5$ V	16	−7	-	20	-	24	-	ns
$V_{CC} = 6.0$ V	14	−6	-	17	-	20	-	ns		
$t_{su}$	set-up time	$nJ$ and $nK$ to $\overline{nCP}$ ; see <a href="#">Figure 6</a>								
		$V_{CC} = 2.0$ V	80	19	-	100	-	120	-	ns
		$V_{CC} = 4.5$ V	16	7	-	20	-	24	-	ns
		$V_{CC} = 6.0$ V	14	6	-	17	-	20	-	ns
$t_h$	hold time	$nJ$ and $nK$ to $\overline{nCP}$ ; see <a href="#">Figure 6</a>								
		$V_{CC} = 2.0$ V	0	−11	-	0	-	0	-	ns
		$V_{CC} = 4.5$ V	0	−4	-	0	-	0	-	ns
		$V_{CC} = 6.0$ V	0	−3	-	0	-	0	-	ns
$f_{max}$	maximum frequency	$\overline{nCP}$ ; see <a href="#">Figure 6</a>								
		$V_{CC} = 2.0$ V	6	20	-	4.8	-	4.0	-	MHz
		$V_{CC} = 4.5$ V	30	60	-	24	-	20	-	MHz
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	66	-	-	-	-	-	MHz
		$V_{CC} = 6.0$ V	35	71	-	28	-	24	-	MHz
$C_{PD}$	power dissipation capacitance	$C_L = 50$ pF; $f = 1$ MHz; $V_I = GND$ to $V_{CC}$ <a href="#">[4]</a>	-	27	-			-	-	pF

**Table 7. Dynamic characteristics ...continued**

Voltages are referenced to GND (ground = 0 V);  $C_L = 50$  pF unless otherwise specified; for test circuit, see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max	Min	Max	
<b>74HCT112</b>										
$t_{pd}$	propagation delay	$\overline{nCP}$ to nQ; see <a href="#">Figure 6</a> <sup>[2]</sup>								
		$V_{CC} = 4.5$ V	-	21	35	-	44	-	53	ns
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	19	-	-	-	-	-	ns
		$\overline{nCP}$ to $\overline{nQ}$ ; see <a href="#">Figure 6</a> <sup>[2]</sup>								
		$V_{CC} = 4.5$ V	-	23	40	-	50	-	60	ns
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	19	-	-	-	-	-	ns
		$\overline{nRD}$ to nQ, $\overline{nQ}$ ; see <a href="#">Figure 7</a>								
		$V_{CC} = 4.5$ V	-	22	37	-	46	-	56	ns
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	19	-	-	-	-	-	ns
		$\overline{nSD}$ to nQ, $\overline{nQ}$ ; see <a href="#">Figure 7</a>								
$V_{CC} = 4.5$ V	-	18	32	-	40	-	48	ns		
$V_{CC} = 5$ V; $C_L = 15$ pF	-	15	-	-	-	-	-	ns		
$t_t$	transition time	nQ, $\overline{nQ}$ ; see <a href="#">Figure 6</a> <sup>[3]</sup>								
		$V_{CC} = 4.5$ V	-	7	15	-	19	-	22	ns
$t_w$	pulse width	$\overline{nCP}$ HIGH or LOW; see <a href="#">Figure 6</a>								
		$V_{CC} = 4.5$ V	16	8	-	20	-	24	-	ns
		$\overline{nSD}$ , $\overline{nRD}$ LOW; see <a href="#">Figure 7</a>								
$V_{CC} = 4.5$ V	18	10	-	23	-	27	-	ns		
$t_{rec}$	recovery time	$\overline{nRD}$ to $\overline{nCP}$ ; see <a href="#">Figure 7</a>								
		$V_{CC} = 4.5$ V	20	11	-	25	-	30	-	ns
		$\overline{nSD}$ to $\overline{nCP}$ ; see <a href="#">Figure 7</a>								
$V_{CC} = 4.5$ V	20	-8	-	25	-	30	-	ns		
$t_{su}$	set-up time	nJ and nK to $\overline{nCP}$ ; see <a href="#">Figure 6</a>								
		$V_{CC} = 4.5$ V	16	7	-	20	-	24	-	ns
$t_h$	hold time	nJ and nK to $\overline{nCP}$ ; see <a href="#">Figure 6</a>								
		$V_{CC} = 4.5$ V	0	-7	-	0	-	0	-	ns
$f_{max}$	maximum frequency	$\overline{nCP}$ ; see <a href="#">Figure 6</a>								
		$V_{CC} = 4.5$ V	30	64	-	24	-	20	-	MHz
		$V_{CC} = 5$ V; $C_L = 15$ pF	-	70	-	-	-	-	-	MHz

**Table 7. Dynamic characteristics ...continued**

Voltages are referenced to GND (ground = 0 V);  $C_L = 50$  pF unless otherwise specified; for test circuit, see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			–40 °C to +85 °C		–40 °C to +125 °C		Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max	Min	Max	
$C_{PD}$	power dissipation capacitance	$C_L = 50$ pF; $f = 1$ MHz; <a href="#">[4]</a> $V_I = \text{GND to } V_{CC}$	-	30	-	-	-	-	-	pF

[1] All typical values are measured at  $T_{amb} = 25$  °C.

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

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

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

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

$f_i$  = input frequency in MHz;

$f_o$  = output frequency in MHz;

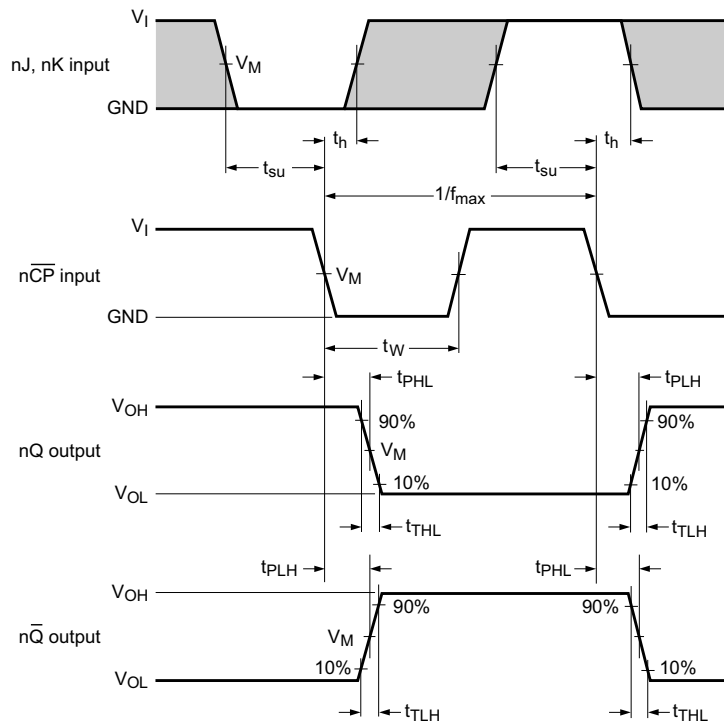
$C_L$  = output load capacitance in pF;

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

$N$  = number of inputs switching;

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

## 11. Waveforms

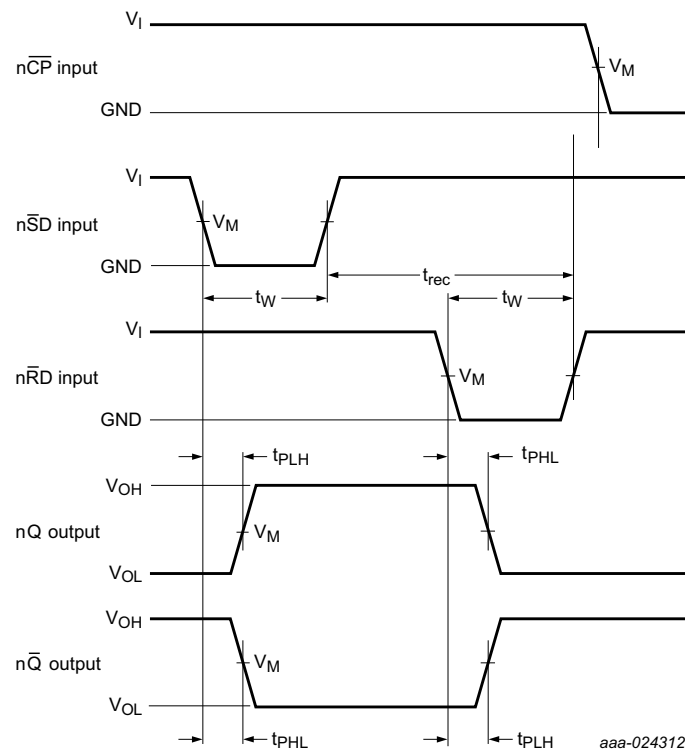


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Measurement points are given in [Table 8](#).

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

**Fig 6. Clock propagation delays, output transition time, pulse width, set-up, hold times, and maximum frequency**

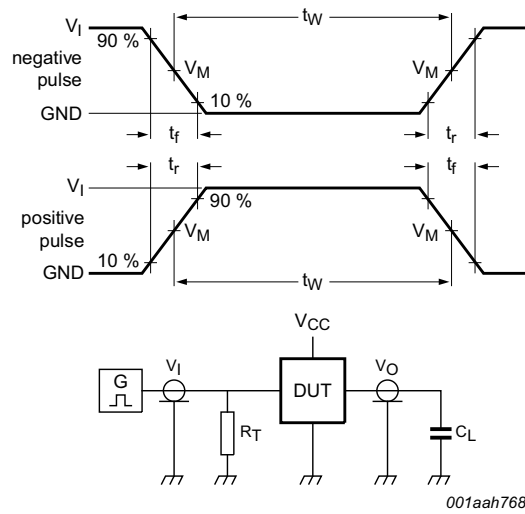


Measurement points are given in [Table 8](#).  
 $V_{OL}$  and  $V_{OH}$  are typical voltage output levels that occur with the output load.

**Fig 7. Set and reset propagation delays, pulse widths and recovery time**

**Table 8. Measurement points**

Type	Input	Output
	$V_M$	$V_M$
74HC112	$0.5V_{CC}$	$0.5V_{CC}$
74HCT112	1.3 V	1.3 V



001aah768

Test data is given in [Table 9](#).

Definitions test circuit:

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

$C_L$  = Load capacitance including jig and probe capacitance.

**Fig 8. Test circuit for measuring switching times**

**Table 9. Test data**

Type	Input		Load	Test
	$V_I$	$t_r, t_f$	$C_L$	
74HC112	$V_{CC}$	6 ns	15 pF, 50 pF	$t_{PLH}, t_{PHL}$
74HCT112	3 V	6 ns	15 pF, 50 pF	$t_{PLH}, t_{PHL}$

12. Package outline

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

SOT109-1

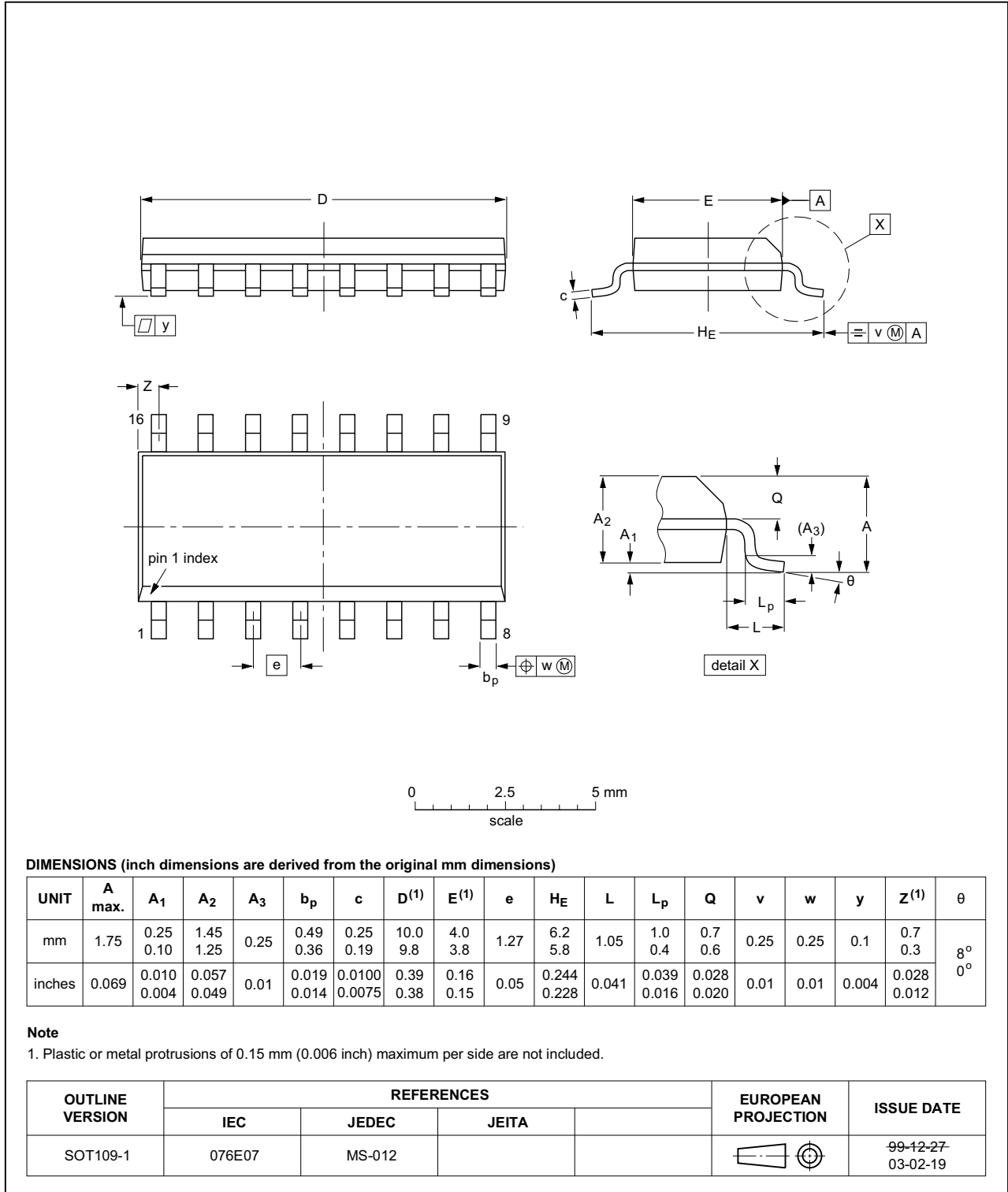


Fig 9. Package outline SOT109-1 (SO16)

SSOP16: plastic shrink small outline package; 16 leads; body width 5.3 mm

SOT338-1

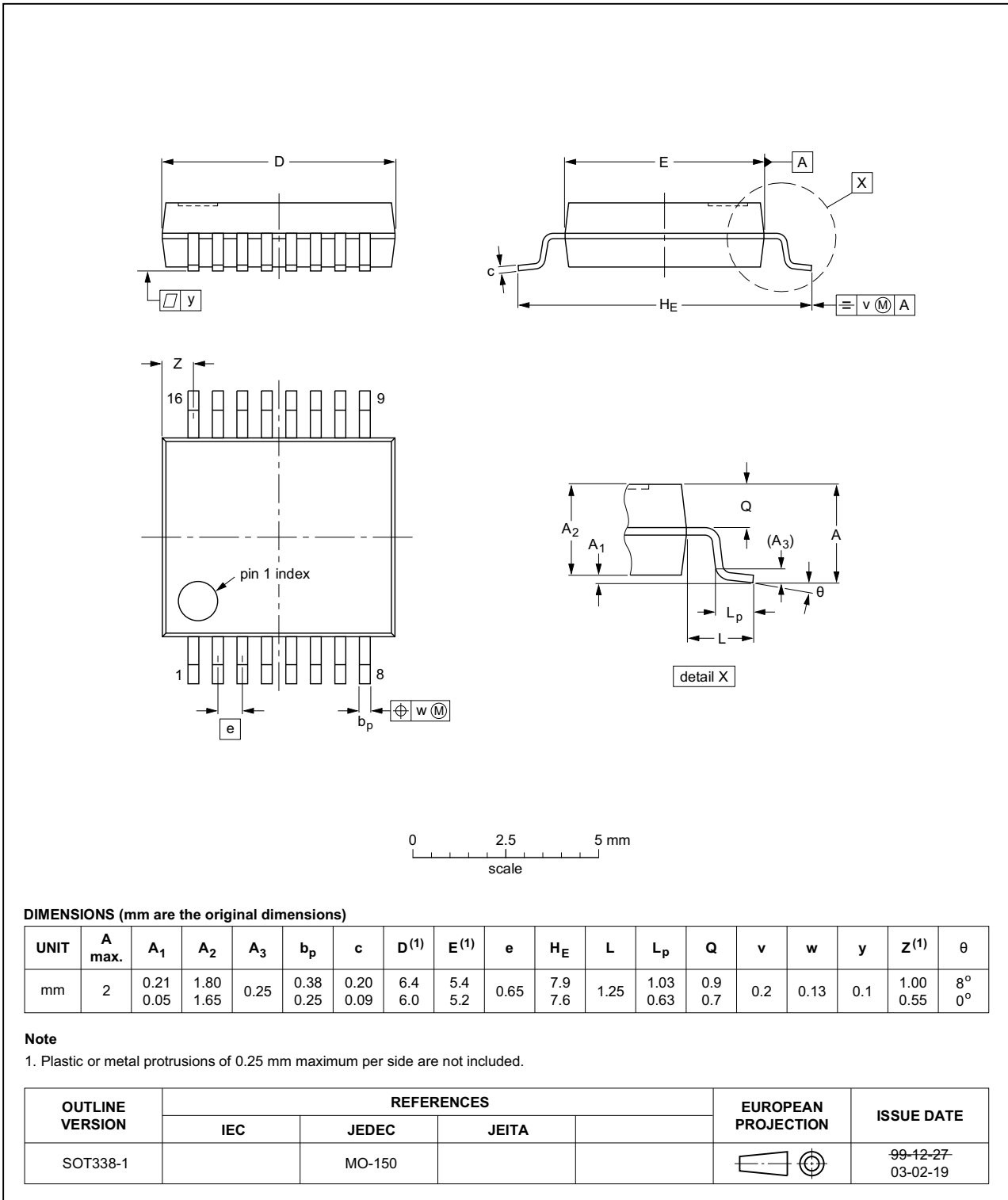


Fig 10. Package outline SOT338-1 (SSOP16)

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

SOT403-1

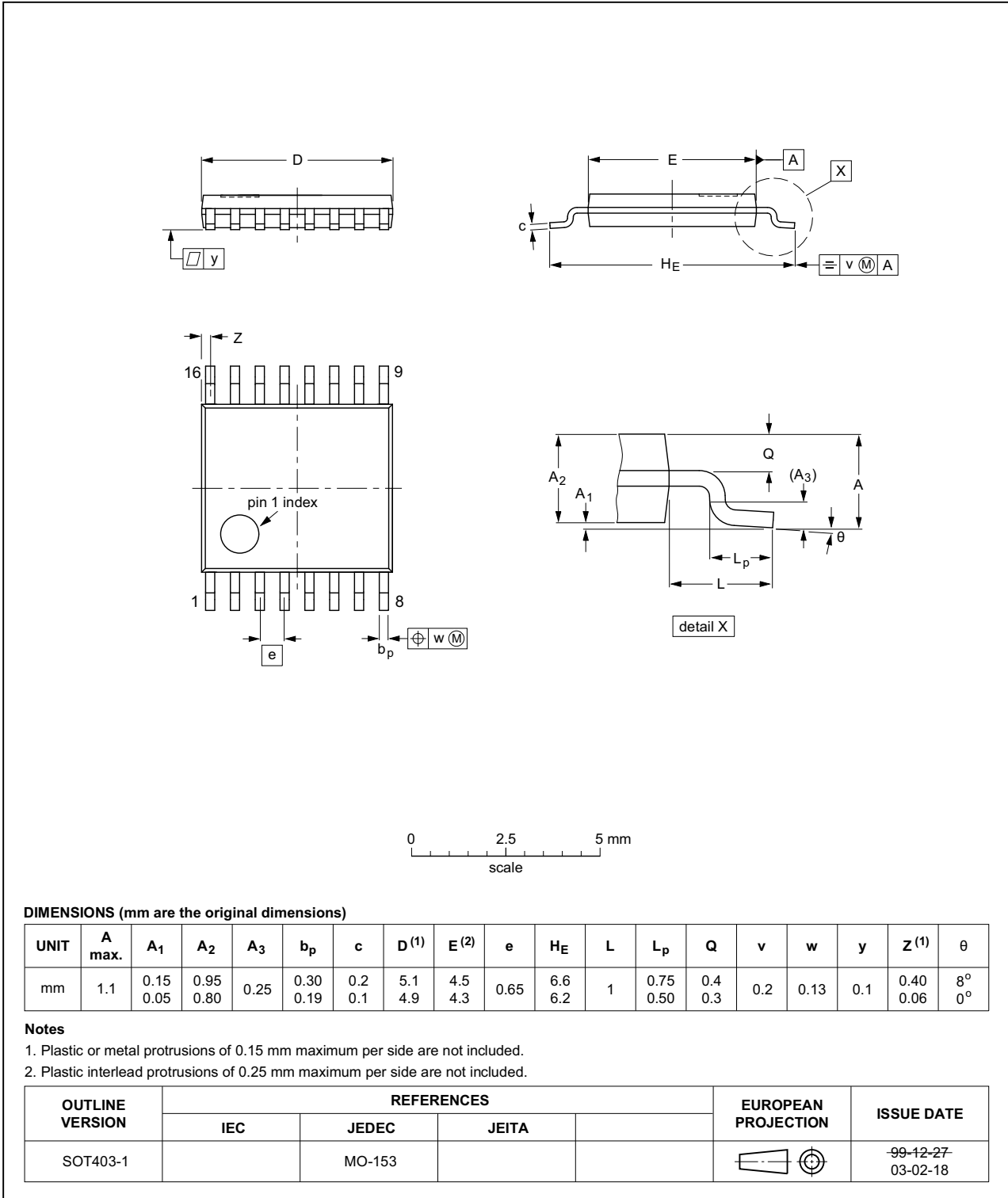


Fig 11. Package outline SOT403-1 (TSSOP16)

## 13. Abbreviations

Table 10. Abbreviations

Acronym	Description
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model
TTL	Transistor-Transistor Logic

## 14. Revision history

Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74HC_HCT112 v.3	20160809	Product data sheet	-	74HC_HCT112_CNV v.2
Modifications:	<ul style="list-style-type: none"> <li>The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li> <li>Legal texts have been adapted to the new company name where appropriate.</li> <li>Type numbers 74HC112N and 74HCT112N removed.</li> </ul>			
74HC_HCT112_CNV v.2	19980610	Product specification	-	-

## 15. Legal information

### 15.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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 URL <http://www.nexperia.com>.

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