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# 74HC597; 74HCT597

8-bit shift register with input flip-flops

Rev. 3 — 15 April 2014

Product data sheet

## 1. General description

The 74HC597; 74HCT597 is an 8-bit shift register with input flip-flops. It consists of an 8-bit storage register feeding a parallel-in, serial-out 8-bit shift register. Both the storage register and the shift register have positive edge-triggered clocks. The shift register also has direct load (from storage) and clear inputs. Inputs include clamp diodes that enable the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

## 2. Features and benefits

- Complies with JEDEC standard JESD7A
- Input levels:
  - ◆ For 74HC597: CMOS level
  - ◆ For 74HCT597: TTL level
- 8-bit parallel storage register inputs
- Shift register has direct overriding load and clear
- ESD protection:
  - ◆ HBM EIA/JESD22-A114F exceeds 2000 V
  - ◆ MM EIA/JESD22-A115-A exceeds 200 V
- Specified from  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  and from  $-40\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$
- Multiple package options

## 3. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74HC5974N	-40 °C to +125 °C	DIP16	plastic dual in-line package; 16 leads (300 mil)	SOT38-4
74HCT597N				
74HC597D	-40 °C to +125 °C	SO16	plastic small outline package; 16 leads; body width 3.9 mm	SOT109-1
74HCT597D				
74HC597DB	-40 °C to +125 °C	SSOP16	plastic shrink small outline package; 16 leads; body width 5.3 mm	SOT338-1
74HCT597DB				
74HC597PW	-40 °C to +125 °C	TSSOP16	plastic thin shrink small outline package; 16 leads; body width 4.4 mm	SOT403-1



## 4. Functional diagram

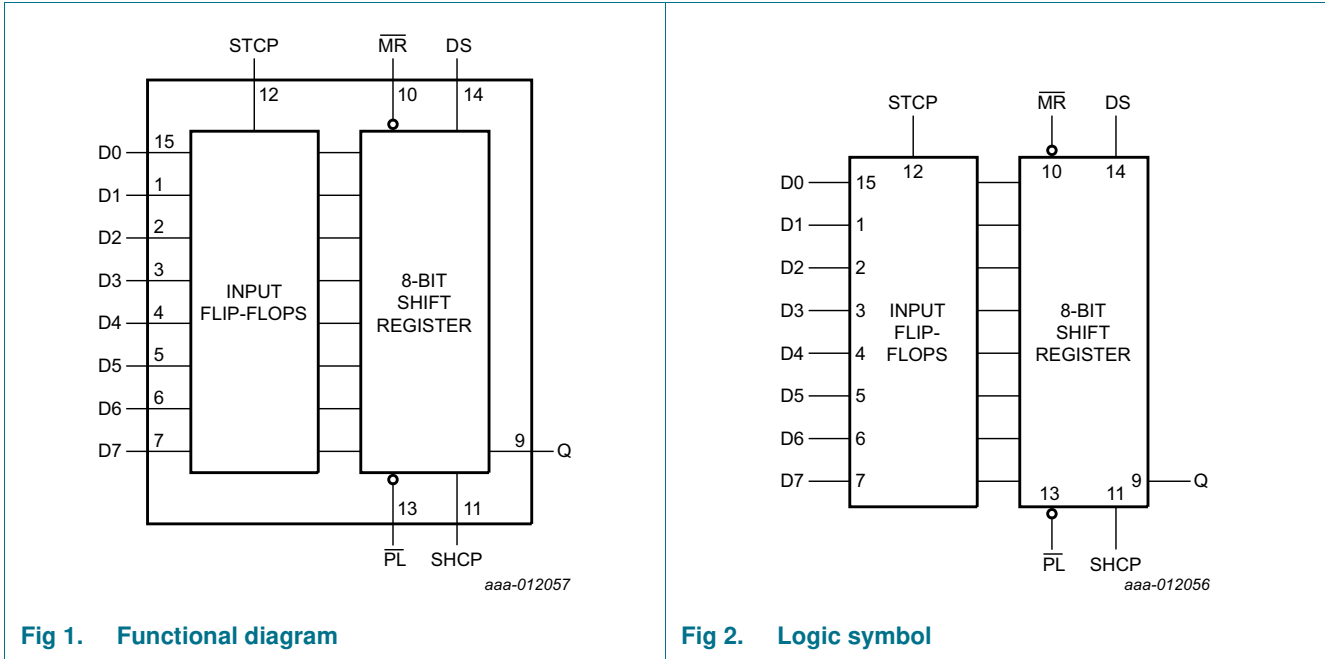


Fig 1. Functional diagram

Fig 2. Logic symbol

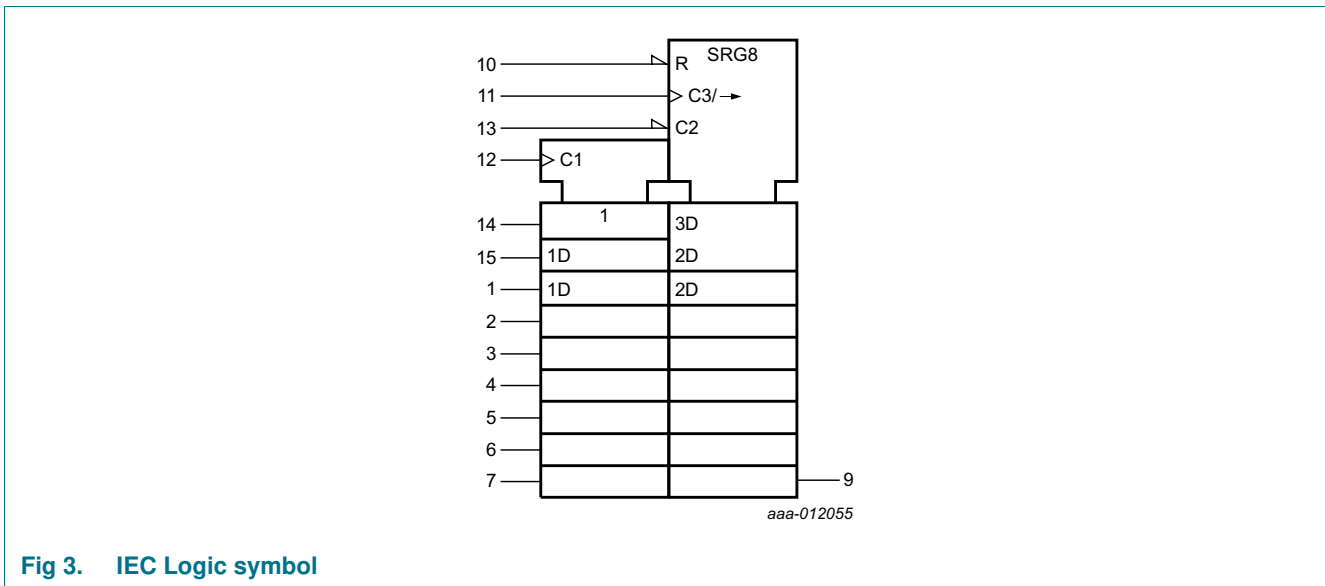


Fig 3. IEC Logic symbol

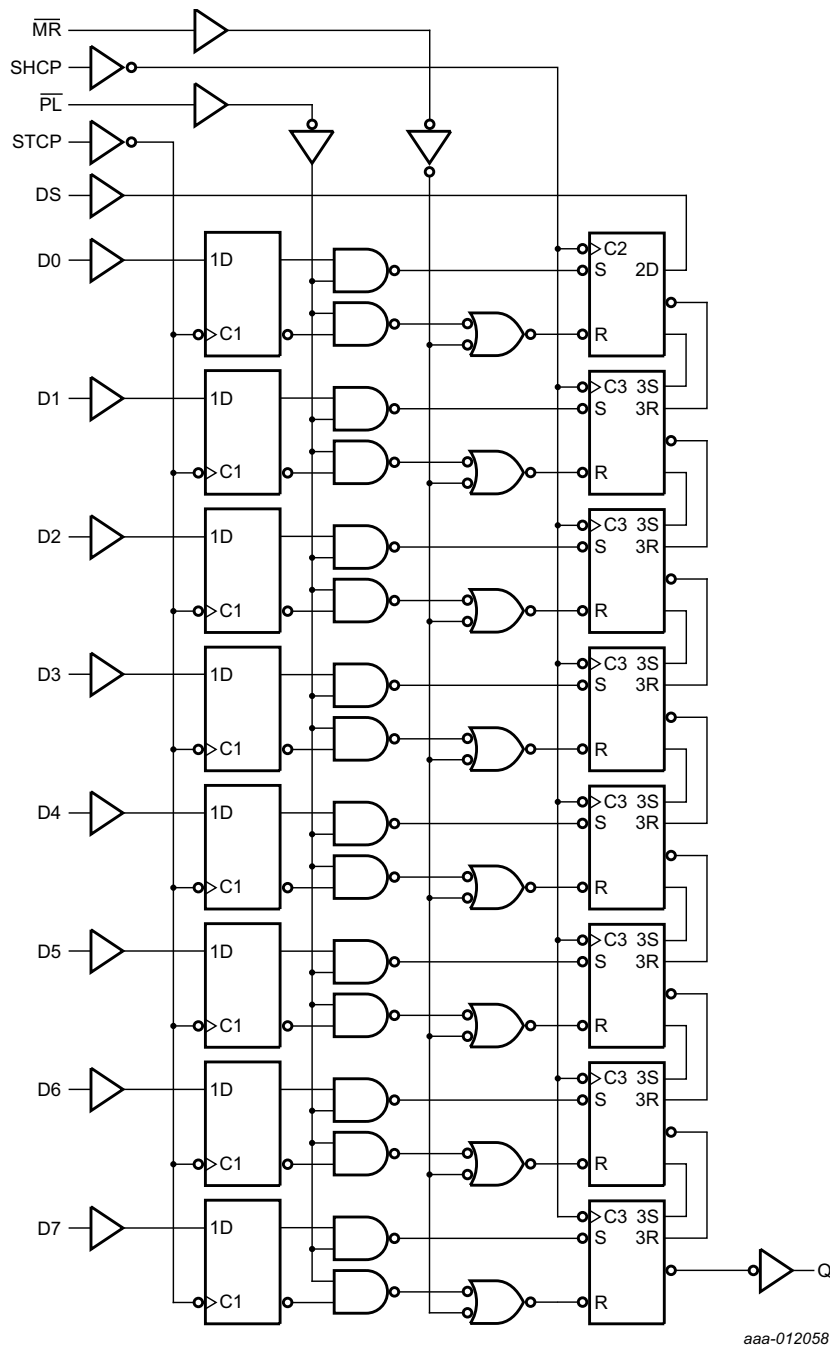
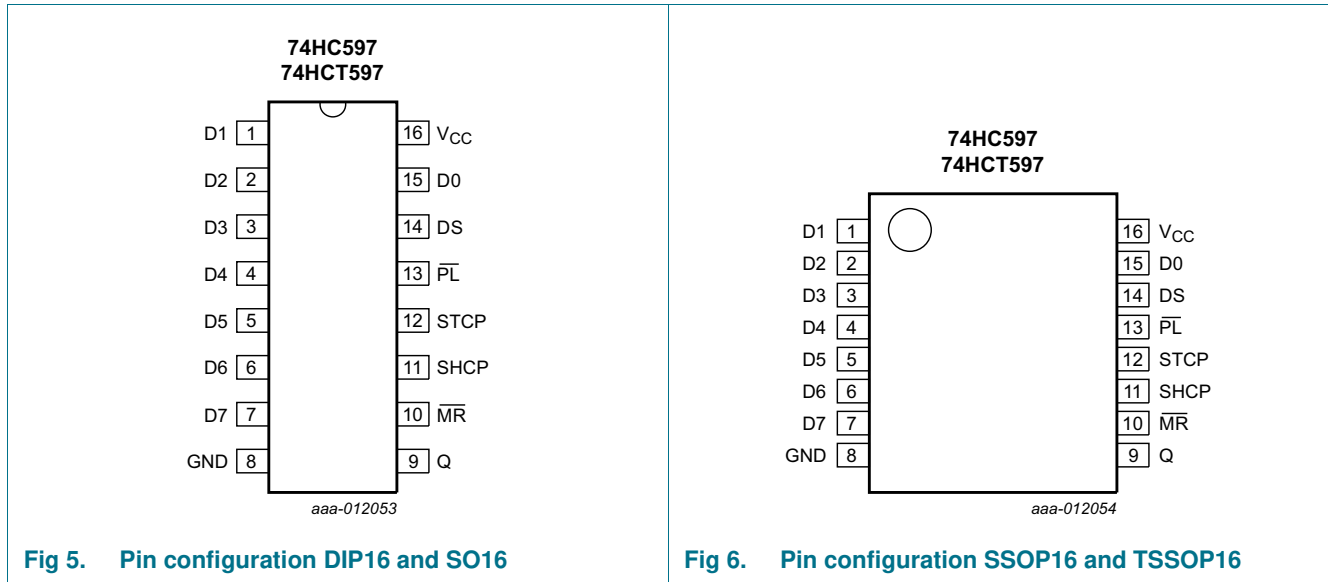


Fig 4. Logic diagram

## 5. Pinning information

### 5.1 Pinning



### 5.2 Pin description

Table 2. Pin description

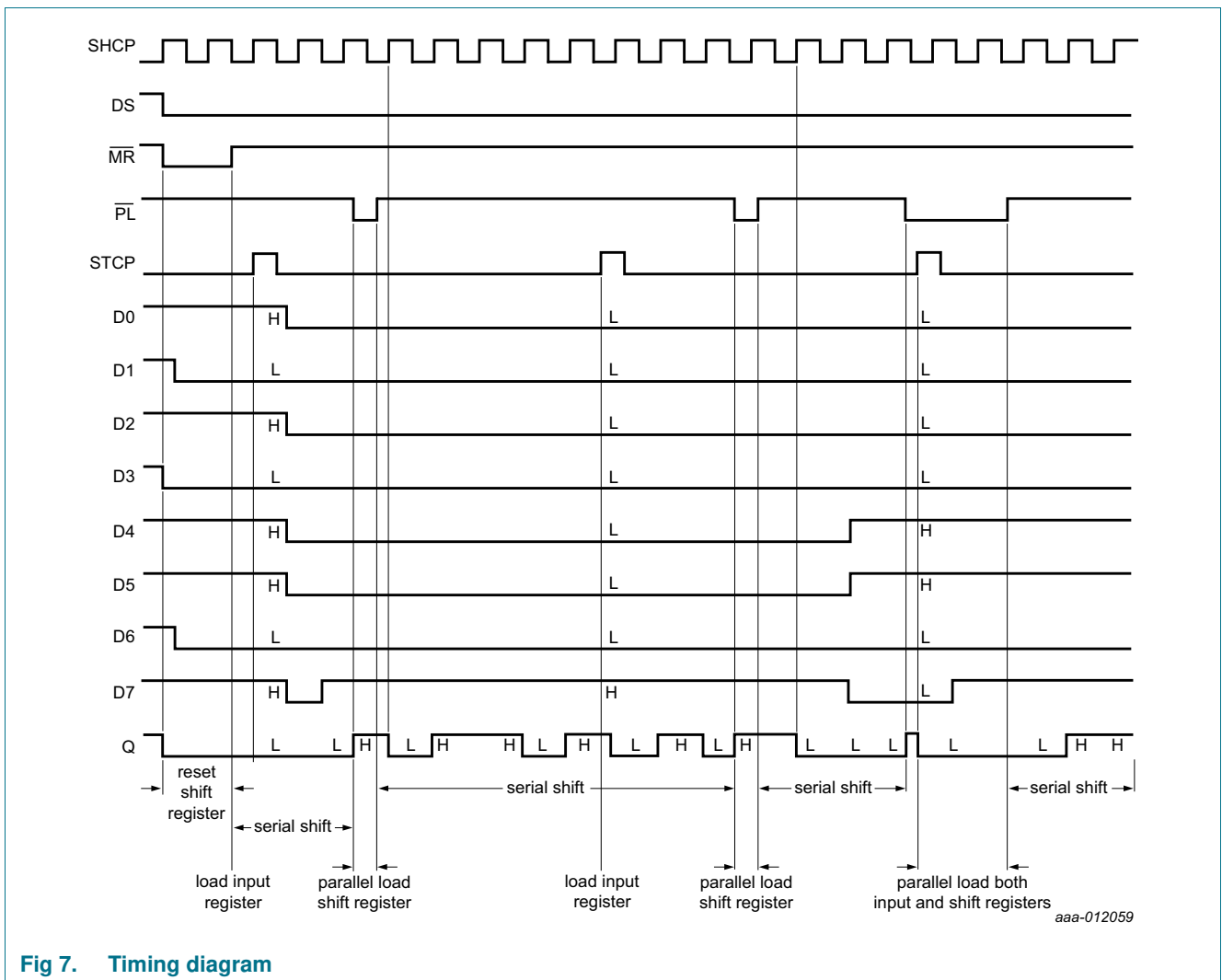
Symbol	Pin	Description
GND	8	ground (0 V)
Q	9	serial data output
$\overline{\text{MR}}$	10	asynchronous master reset input (active LOW)
SHCP	11	shift register clock input (LOW-to-HIGH, edge-triggered)
STCP	12	storage register clock input (LOW-to-HIGH, edge-triggered)
$\overline{\text{PL}}$	13	parallel load input (active LOW)
DS	14	serial data input
D0, D1, D2, D3, D4, D5, D6, D7	15, 1, 2, 3, 4, 5, 6, 7	parallel data inputs
V <sub>CC</sub>	16	supply voltage

## 6. Functional description

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

Inputs				Function
STCP	SHCP	$\overline{PL}$	$\overline{MR}$	
↑	X	X	X	data loaded to input latches
↑	X	L	H	data loaded from inputs to shift register
no clock edge	X	L	H	data transferred from input flip-flops to shift register
X	X	L	L	invalid logic, state of shift register is indeterminate when signals removed
X	X	H	L	shift register cleared
X	↑	H	H	shift register clocked $Q_n = Q_{n-1}$ , $Q_0 = DS$

- [1] H = HIGH voltage level.  
 L = LOW voltage level.  
 X = don't care.  
 ↑ = positive-going 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
$V_{CC}$	supply voltage		-0.5	+7	V
$I_{IK}$	input clamping current	$V_I < -0.5\text{ V}$ or $V_I > V_{CC} + 0.5\text{ V}$	-	$\pm 20$	mA
$I_{OK}$	output clamping current	$V_O < -0.5\text{ V}$ or $V_O > V_{CC} + 0.5\text{ V}$	-	$\pm 20$	mA
$I_O$	output current	$V_O = -0.5\text{ V}$ to $(V_{CC} + 0.5\text{ V})$	-	$\pm 25$	mA
$I_{CC}$	supply current		-	+50	mA
$I_{GND}$	ground current		-50	-	mA
$T_{stg}$	storage temperature		-65	+150	°C
$P_{tot}$	total power dissipation	DIP16 package <a href="#">[1]</a>	-	750	mW
		SO16, SSOP16 and TSSOP16 packages <a href="#">[2]</a>	-	500	mW

[1] For DIP16 package:  $P_{tot}$  derates linearly with 12 mW/K above 70 °C.

[2] For SO16:  $P_{tot}$  derates linearly with 8 mW/K above 70 °C.

For SSOP16 and TSSOP16 packages:  $P_{tot}$  derates linearly with 5.5 mW/K above 60 °C.

## 8. Recommended operating conditions

**Table 5. Recommended operating conditions**

Voltages are referenced to GND (ground = 0 V)

Symbol	Parameter	Conditions	74HC597			74HCT597			Unit
			Min	Typ	Max	Min	Typ	Max	
$V_{CC}$	supply voltage		2.0	5.0	6.0	4.5	5.0	5.5	V
$V_I$	input voltage		0	-	$V_{CC}$	0	-	$V_{CC}$	V
$V_O$	output voltage		0	-	$V_{CC}$	0	-	$V_{CC}$	V
$T_{amb}$	ambient temperature		-40	+25	+125	-40	+25	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CC} = 2.0\text{ V}$	-	-	625	-	-	-	ns/V
		$V_{CC} = 4.5\text{ V}$	-	1.67	139	-	1.67	139	ns/V
		$V_{CC} = 6.0\text{ V}$	-	-	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>74HC597</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	V <sub>I</sub> = V <sub>CC</sub> or GND; V <sub>CC</sub> = 6.0 V	-	-	±0.1	-	±1.0	-	±1.0	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	-	-	8.0	-	80.0	-
C <sub>I</sub>	input capacitance		-	3.5	-	-	-	-	-	pF
<b>74HCT597</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	-	0	0.1	-	0.1	-	0.1	V
		I <sub>O</sub> = 4.0 mA	-	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	-	±1.0	-	±1.0	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	
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	-	-	8.0	-	80.0	-	160.0	μA
ΔI <sub>CC</sub>	additional supply current	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; I <sub>O</sub> = 0 A								
		per input pin; DS input	-	25	90	-	112.5	-	122.5	μA
		per input pin; Dn inputs	-	30	108	-	135	-	147	μA
		per input pin; $\overline{PL}$ , $\overline{MR}$ inputs	-	150	540	-	675	-	735	μA
		per input pin; STCP, SHCP inputs	-	150	540	-	675	-	735	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<sub>L</sub> = 50 pF unless otherwise specified; for test circuit, see [Figure 14](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HC597</b>										
t <sub>pd</sub>	propagation delay	SHCP to Q; see <a href="#">Figure 8</a> <a href="#">[1]</a>								
		V <sub>CC</sub> = 2.0 V	-	55	175	-	220	-	265	ns
		V <sub>CC</sub> = 4.5 V	-	20	35	-	44	-	53	ns
		V <sub>CC</sub> = 5.0 V; C <sub>L</sub> = 15 pF	-	17	-	-	-	-	-	ns
		V <sub>CC</sub> = 6.0 V	-	16	30	-	37	-	45	ns
		$\overline{MR}$ to Q; see <a href="#">Figure 9</a> <a href="#">[1]</a>								
		V <sub>CC</sub> = 2.0 V	-	58	175	-	220	-	265	ns
		V <sub>CC</sub> = 4.5 V	-	21	35	-	44	-	53	ns
		V <sub>CC</sub> = 6.0 V	-	17	30	-	37	-	45	ns
		STCP to Q; see <a href="#">Figure 8</a> <a href="#">[1]</a>								
		V <sub>CC</sub> = 2.0 V	-	80	250	-	315	-	375	ns
		V <sub>CC</sub> = 4.5 V	-	29	50	-	63	-	75	ns
		V <sub>CC</sub> = 5.0 V; C <sub>L</sub> = 15 pF	-	25	-	-	-	-	-	ns
		V <sub>CC</sub> = 6.0 V	-	23	43	-	54	-	64	ns
		$\overline{PL}$ to Q; see <a href="#">Figure 10</a> <a href="#">[1]</a>								
		V <sub>CC</sub> = 2.0 V	-	69	215	-	270	-	325	ns
V <sub>CC</sub> = 4.5 V	-	25	43	-	54	-	65	ns		
V <sub>CC</sub> = 5.0 V; C <sub>L</sub> = 15 pF	-	21	-	-	-	-	-	ns		
V <sub>CC</sub> = 6.0 V	-	20	37	-	46	-	55	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 14](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
t <sub>t</sub>	transition time	see <a href="#">Figure 10</a> <a href="#">[2]</a>								
		V <sub>CC</sub> = 2.0 V	-	19	75	-	95	-	110	ns
		V <sub>CC</sub> = 4.5 V	-	7	15	-	19	-	22	ns
		V <sub>CC</sub> = 6.0 V	-	6	13	-	16	-	19	ns
t <sub>w</sub>	pulse width	STCP HIGH or LOW; see <a href="#">Figure 8</a>								
		V <sub>CC</sub> = 2.0 V	80	11	-	100	-	120	-	ns
		V <sub>CC</sub> = 4.5 V	16	4	-	20	-	24	-	ns
		V <sub>CC</sub> = 6.0 V	14	3	-	17	-	20	-	ns
		SHCP HIGH or LOW; see <a href="#">Figure 8</a>								
		V <sub>CC</sub> = 2.0 V	80	14	-	100	-	120	-	ns
		V <sub>CC</sub> = 4.5 V	16	5	-	20	-	24	-	ns
		V <sub>CC</sub> = 6.0 V	14	4	-	17	-	20	-	ns
		MR LOW; see <a href="#">Figure 9</a>								
		V <sub>CC</sub> = 2.0 V	80	22	-	100	-	120	-	ns
		V <sub>CC</sub> = 4.5 V	16	8	-	20	-	24	-	ns
		V <sub>CC</sub> = 6.0 V	14	6	-	17	-	20	-	ns
		PL LOW; see <a href="#">Figure 10</a>								
		V <sub>CC</sub> = 2.0 V	80	22	-	100	-	120	-	ns
		V <sub>CC</sub> = 4.5 V	16	8	-	20	-	24	-	ns
		V <sub>CC</sub> = 6.0 V	14	6	-	17	-	20	-	ns
t <sub>rec</sub>	recovery time	MR to SHCP; see <a href="#">Figure 11</a>								
		V <sub>CC</sub> = 2.0 V	60	-3	-	75	-	90	-	ns
		V <sub>CC</sub> = 4.5 V	12	-1	-	15	-	18	-	ns
		V <sub>CC</sub> = 6.0 V	10	-1	-	13	-	15	-	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 14](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$t_{su}$	set-up time	Dn to STCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 2.0$ V	60	8	-	75	-	90	-	ns
		$V_{CC} = 4.5$ V	12	3	-	15	-	18	-	ns
		$V_{CC} = 6.0$ V	10	2	-	13	-	15	-	ns
		DS to SHCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 2.0$ V	60	11	-	75	-	90	-	ns
		$V_{CC} = 4.5$ V	12	4	-	15	-	18	-	ns
		$V_{CC} = 6.0$ V	10	3	-	13	-	15	-	ns
		PL to SHCP; see <a href="#">Figure 13</a>								
		$V_{CC} = 2.0$ V	60	11	-	75	-	90	-	ns
		$V_{CC} = 4.5$ V	12	4	-	15	-	18	-	ns
		$V_{CC} = 6.0$ V	10	3	-	13	-	15	-	ns
$t_h$	hold time	Dn to STCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 2.0$ V	5	-3	-	5	-	5	-	ns
		$V_{CC} = 4.5$ V	5	-1	-	5	-	5	-	ns
		$V_{CC} = 6.0$ V	5	-1	-	5	-	5	-	ns
		PL, DS to SHCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 2.0$ V	5	-6	-	5	-	5	-	ns
		$V_{CC} = 4.5$ V	5	-2	-	5	-	5	-	ns
		$V_{CC} = 6.0$ V	5	-2	-	5	-	5	-	ns
$f_{max}$	maximum frequency	SHCP; see <a href="#">Figure 8</a>								
		$V_{CC} = 2.0$ V	6.0	29	-	4.8	-	4.0	-	MHz
		$V_{CC} = 4.5$ V	30	87	-	24	-	20	-	MHz
		$V_{CC} = 5.0$ V; $C_L = 15$ pF	-	96	-	-	-	-	-	MHz
		$V_{CC} = 6.0$ V	35	104	-	28	-	24	-	MHz
$C_{PD}$	power dissipation capacitance	$C_L = 50$ pF; $f = 1$ MHz; $V_1 = GND$ to $V_{CC}$ <sup>[3]</sup>	-	29	-	-	-	-	-	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 14](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HCT597</b>										
$t_{pd}$	propagation delay	SHCP to Q; see <a href="#">Figure 8</a> <sup>[1]</sup>								
		$V_{CC} = 4.5$ V	-	23	40	-	50	-	60	ns
		$V_{CC} = 5.0$ V; $C_L = 15$ pF	-	20	-	-	-	-	-	ns
		$\overline{MR}$ to Q; see <a href="#">Figure 9</a> <sup>[1]</sup>								
		$V_{CC} = 4.5$ V	-	28	49	-	61	-	74	ns
		STCP to Q; see <a href="#">Figure 8</a> <sup>[1]</sup>								
		$V_{CC} = 4.5$ V	-	33	57	-	71	-	86	ns
		$V_{CC} = 5.0$ V; $C_L = 15$ pF	-	29	-	-	-	-	-	ns
		$\overline{PL}$ to Q; see <a href="#">Figure 10</a> <sup>[1]</sup>								
$V_{CC} = 4.5$ V	-	30	52	-	65	-	78	ns		
$V_{CC} = 5.0$ V; $C_L = 15$ pF	-	26	-	-	-	-	-	ns		
$t_t$	transition time	see <a href="#">Figure 8</a> <sup>[2]</sup>								
		$V_{CC} = 4.5$ V	-	7	15	-	19	-	22	ns
$t_w$	pulse width	STCP HIGH or LOW; see <a href="#">Figure 8</a>								
		$V_{CC} = 4.5$ V	16	6	-	20	-	24	-	ns
		SHCP HIGH or LOW; see <a href="#">Figure 8</a>								
		$V_{CC} = 4.5$ V	16	7	-	20	-	24	-	ns
		$\overline{MR}$ LOW; see <a href="#">Figure 9</a>								
		$V_{CC} = 4.5$ V	25	14	-	31	-	38	-	ns
		$\overline{PL}$ LOW; see <a href="#">Figure 10</a>								
$V_{CC} = 4.5$ V	20	10	-	25	-	30	-	ns		
$t_{rec}$	recovery time	$\overline{MR}$ to SHCP; see <a href="#">Figure 11</a>								
		$V_{CC} = 4.5$ V	12	-2	-	15	-	18	-	ns
$t_{su}$	set-up time	Dn to STCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 4.5$ V	12	5	-	15	-	18	-	ns
		DS to SHCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 4.5$ V	12	2	-	15	-	18	-	ns
		$\overline{PL}$ to SHCP; see <a href="#">Figure 13</a>								
$V_{CC} = 4.5$ V	12	4	-	15	-	18	-	ns		

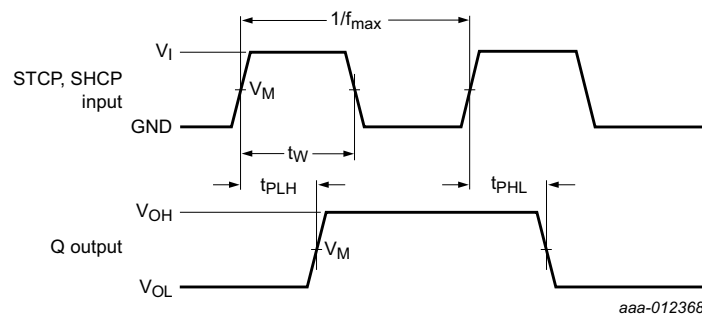
**Table 7. Dynamic characteristics ...continued**

Voltages are referenced to GND (ground = 0 V);  $C_L = 50$  pF unless otherwise specified; for test circuit, see [Figure 14](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$t_h$	hold time	Dn to STCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 4.5$ V	5	-1	-	5	-	5	-	ns
$t_h$	hold time	PL, DS to SHCP; see <a href="#">Figure 12</a>								
		$V_{CC} = 4.5$ V	5	-2	-	5	-	5	-	ns
$f_{max}$	maximum frequency	SHCP; see <a href="#">Figure 8</a>								
		$V_{CC} = 4.5$ V	30	75	-	24	-	20	-	MHz
$C_{PD}$	power dissipation capacitance	$V_{CC} = 5.0$ V; $C_L = 15$ pF	-	83	-	-	-	-	-	MHz
		$C_L = 50$ pF; $f = 1$ MHz; $V_I = GND$ to $V_{CC} - 1.5$ V <a href="#">[3]</a>	-	32	-	-	-	-	-	pF

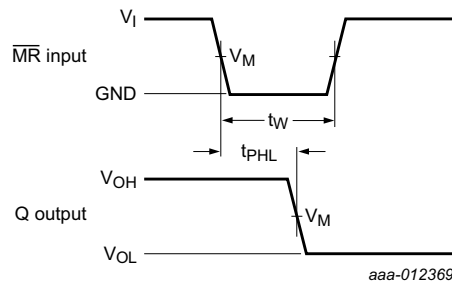
- [1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .
- [2]  $t_i$  is the same as  $t_{THL}$  and  $t_{TLH}$ .
- [3]  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in  $\mu$ W).  
 $P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \sum(C_L \times V_{CC}^2 \times f_o)$  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.

## 11. Waveforms



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

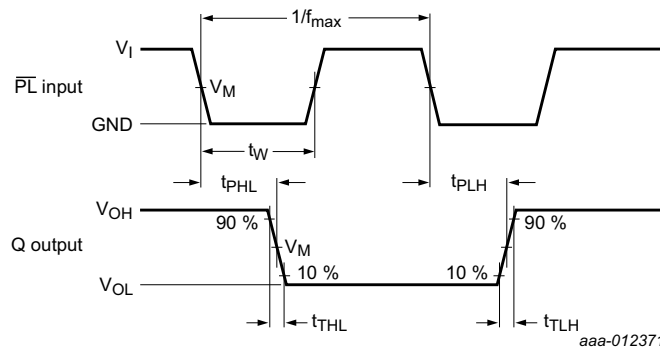
**Fig 8. Shift clock and storage clock inputs to output, propagation delays, pulse widths and maximum clock frequency**



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

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

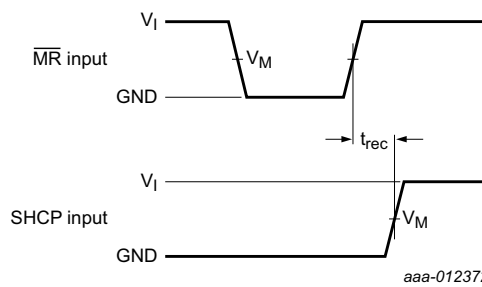
**Fig 9. input ( $\overline{MR}$ ) to (Q), output propagation delays and ( $\overline{MR}$ ) pulse width**



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

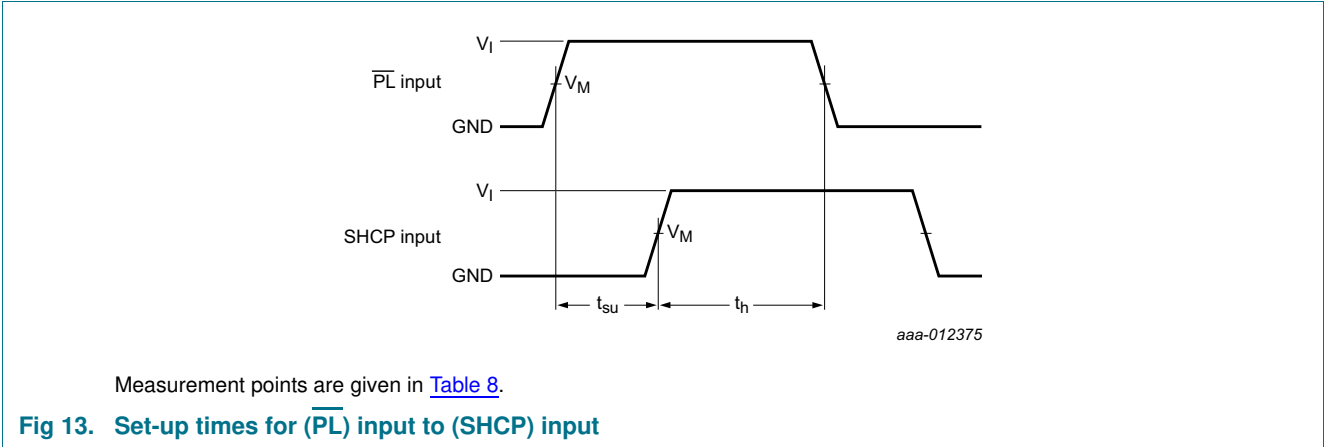
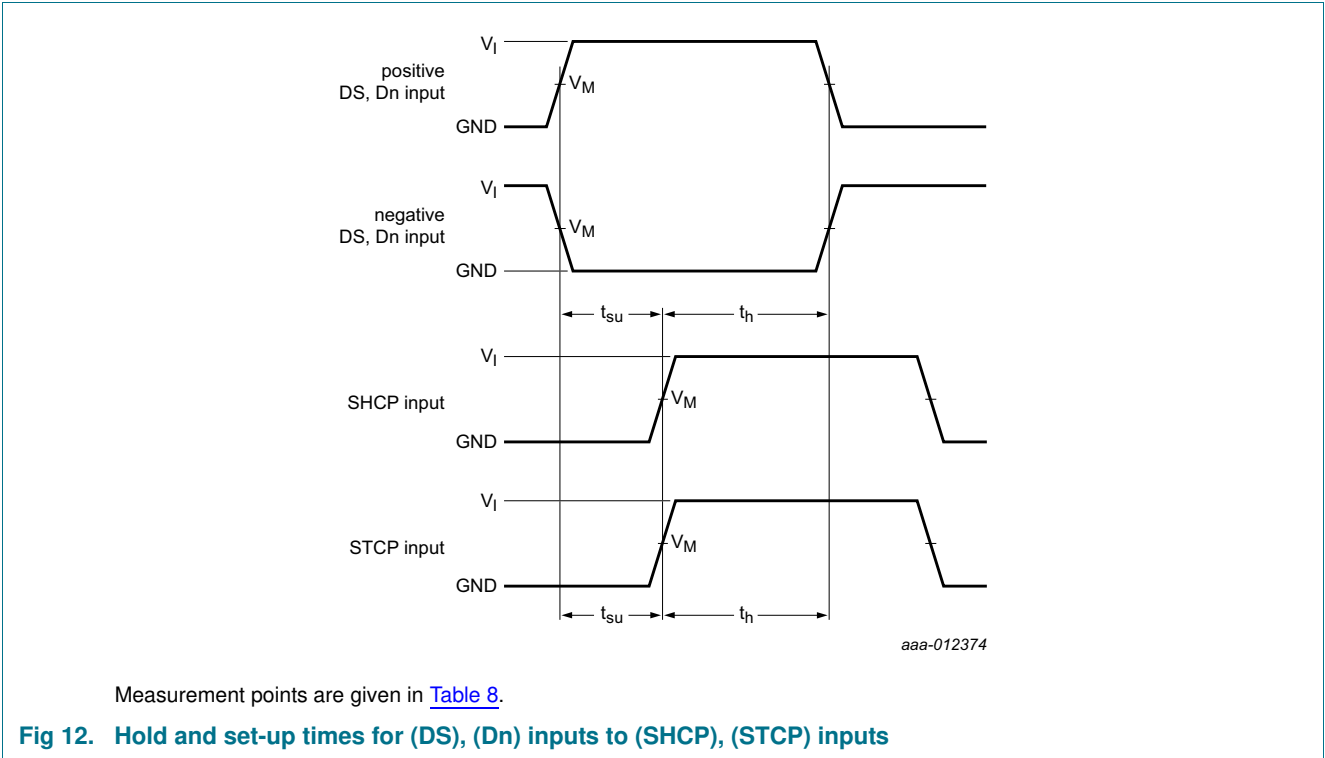
$V_{OL}$  and  $V_{OH}$  are typical voltage output levels that occur with the output load.

**Fig 10. Input ( $\overline{PL}$ ) to (Q), output propagation delays,  $\overline{PL}$  pulse width and output transition times**



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

**Fig 11. Input ( $\overline{MR}$ ) to shift clock (SHCP) and storage clock (STCP) recovery times**



**Table 8. Measurement points**

Type	Input		Output
	$V_M$	$V_I$	$V_M$
74HC597	$0.5 \times V_{CC}$	GND to $V_{CC}$	$0.5 \times V_{CC}$
74HCT597	1.3 V	GND to 3 V	1.3 V

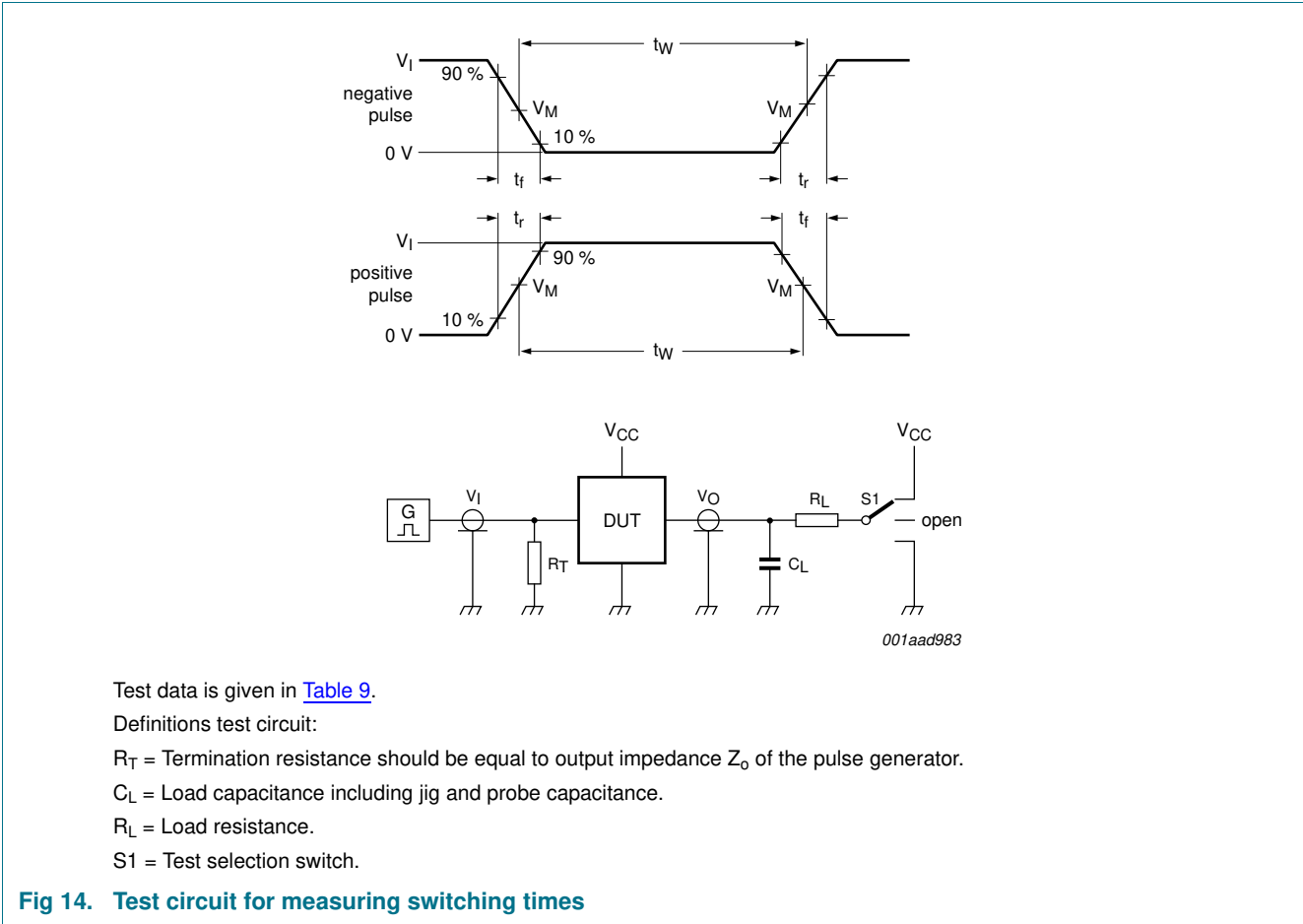


Table 9. Test data

Type	Input		Load		S1 position		
	$V_I$	$t_r, t_f$	$C_L$	$R_L$	$t_{PHL}, t_{PLH}$	$t_{PZH}, t_{PHZ}$	$t_{PZL}, t_{PLZ}$
74HC597	$V_{CC}$	6 ns	15 pF, 50 pF	1 k $\Omega$	open	GND	$V_{CC}$
74HCT597	3 V	6 ns	15 pF, 50 pF	1 k $\Omega$	open	GND	$V_{CC}$



12. Package outline

DIP16: plastic dual in-line package; 16 leads (300 mil)

SOT38-4

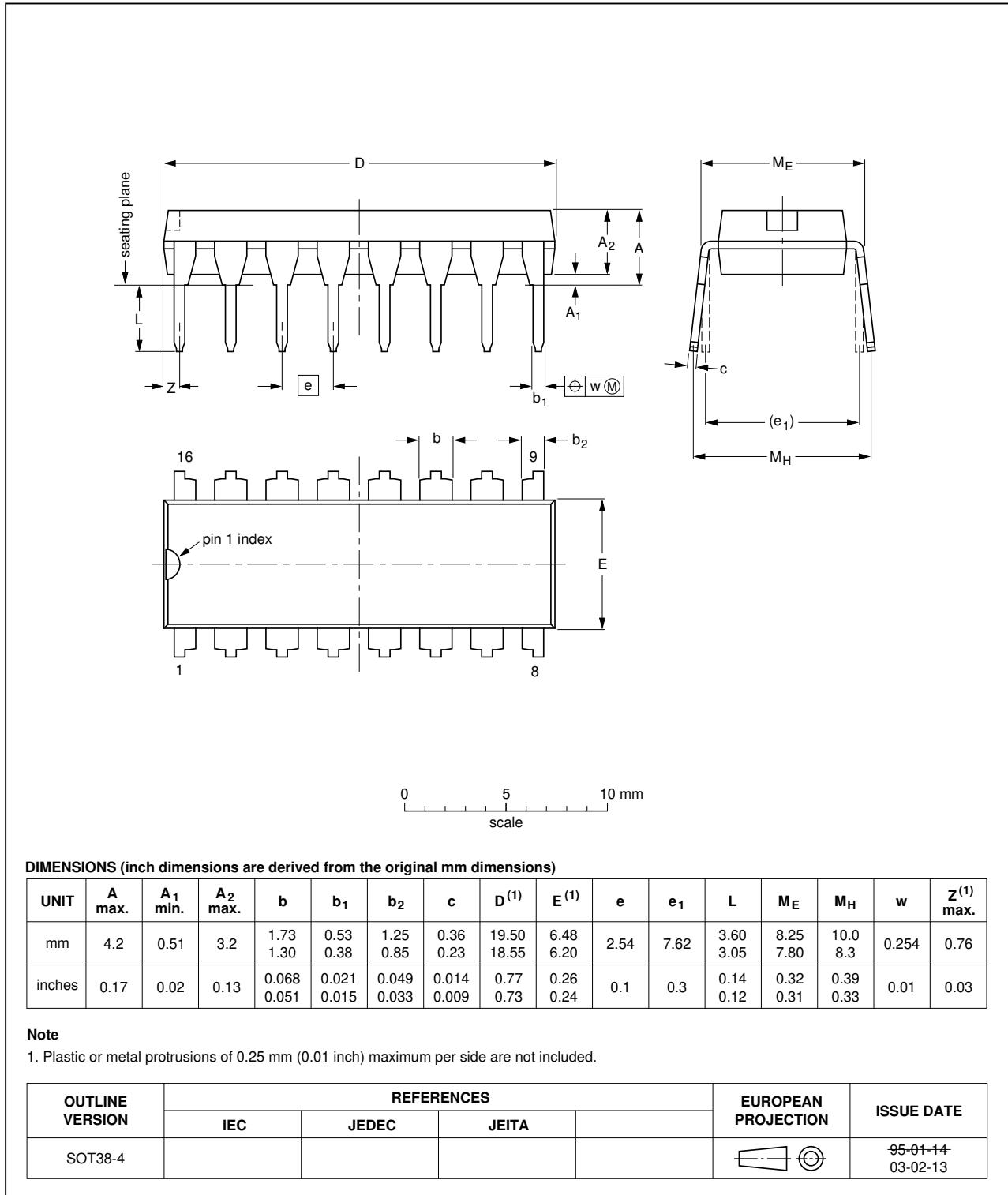


Fig 15. Package outline SOT38-4 (DIP16)

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

SOT109-1

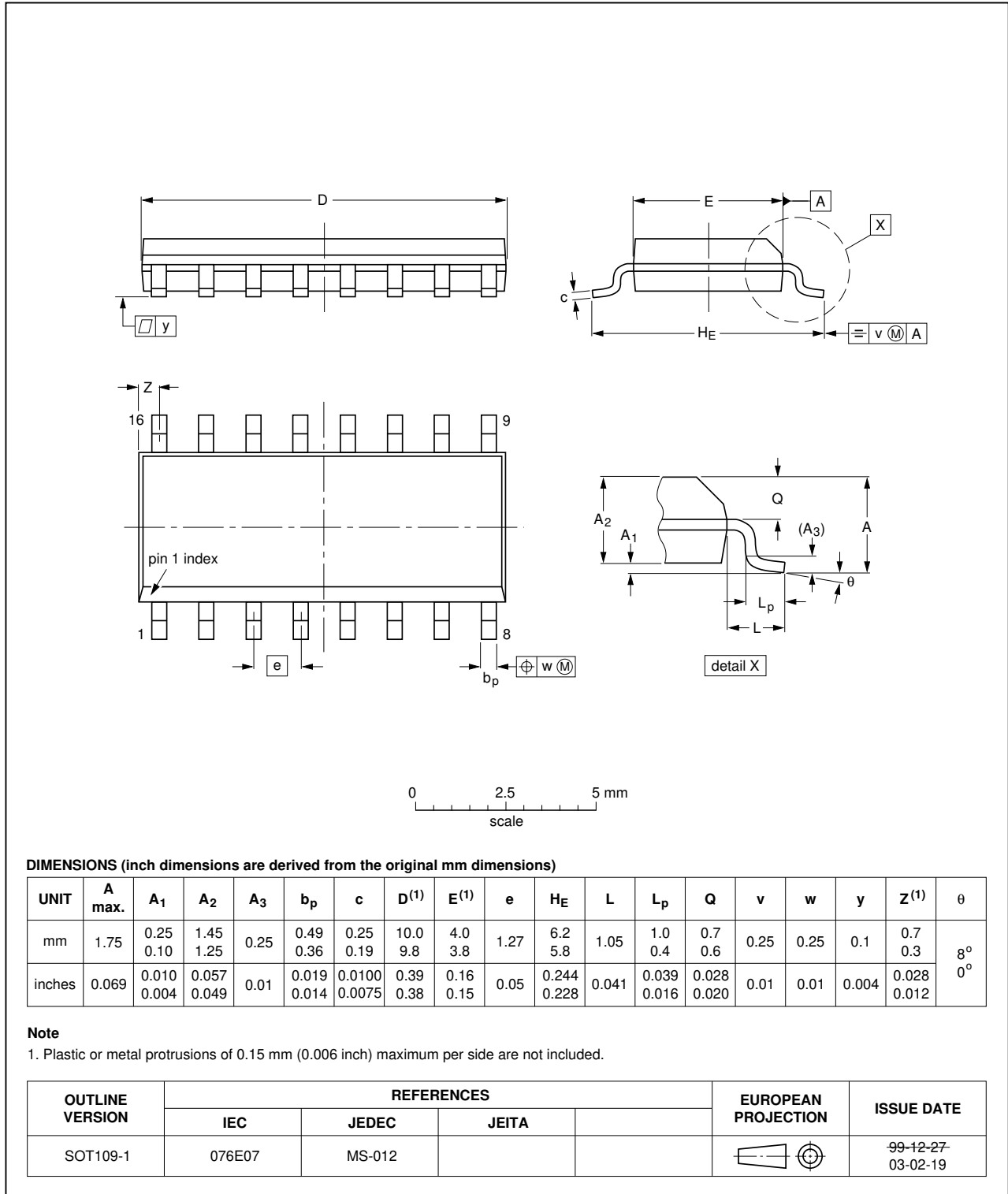


Fig 16. Package outline SOT109-1 (SO16)

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

SOT338-1

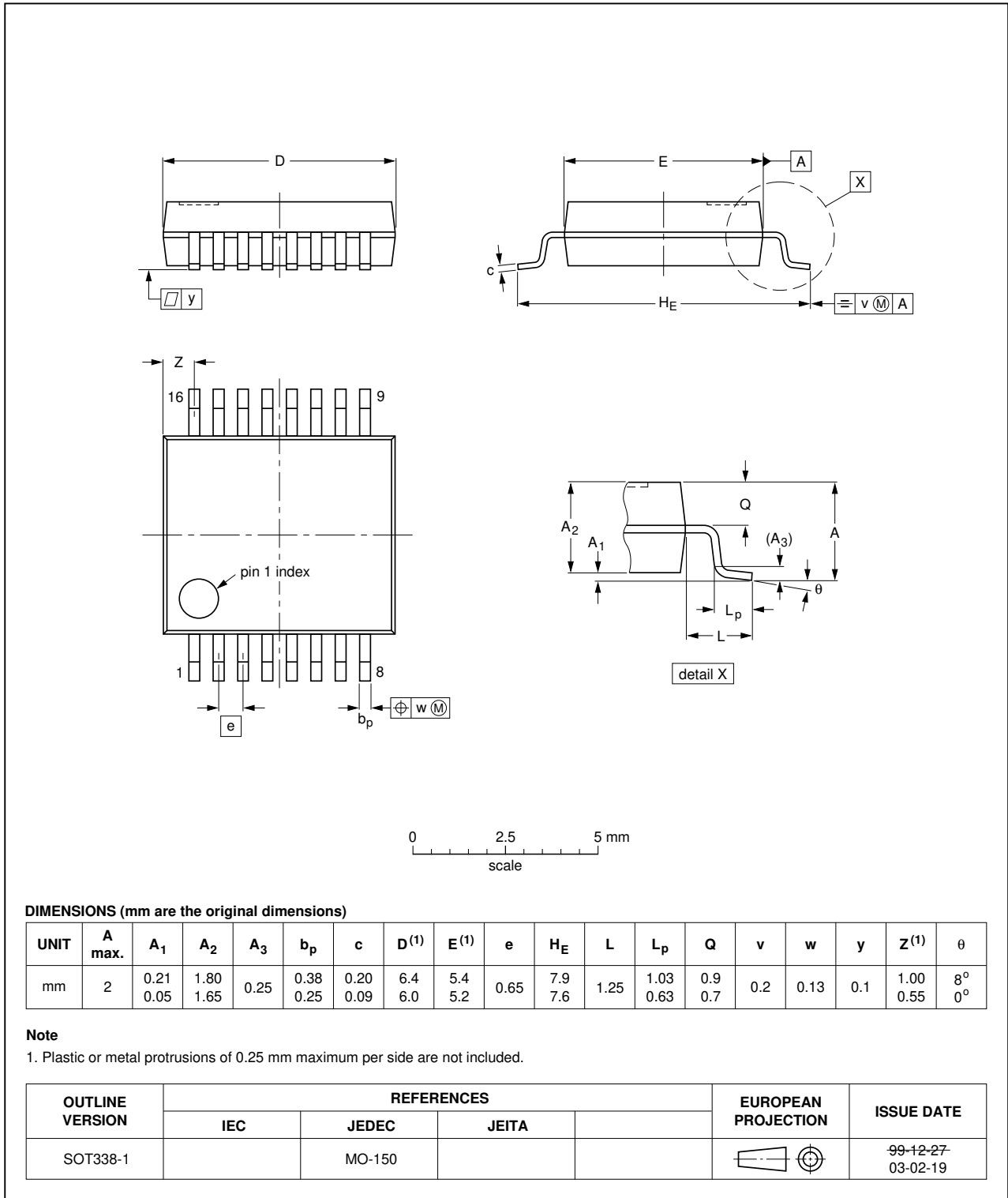


Fig 17. Package outline SOT338-1 (SSOP16)

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

SOT403-1

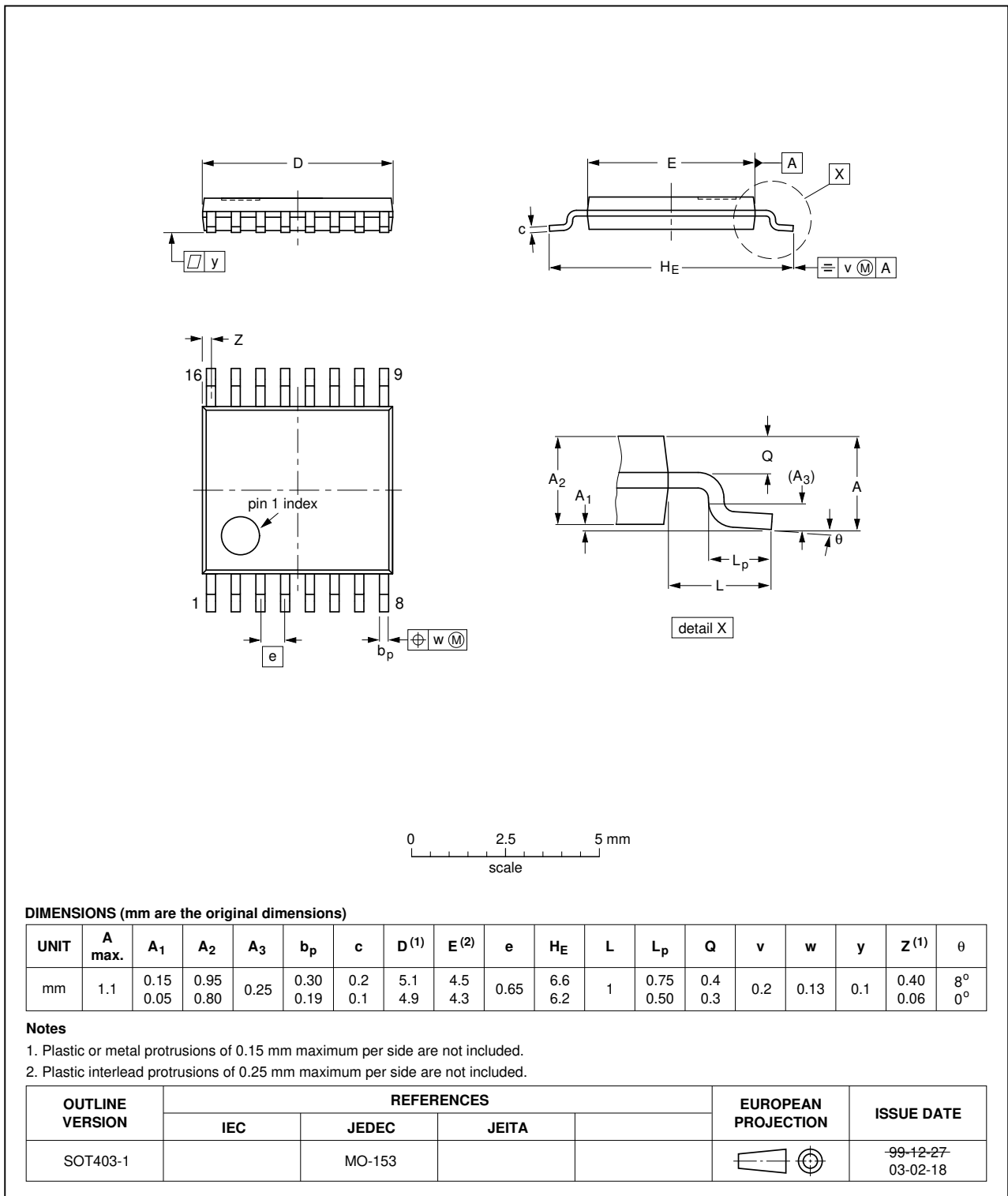


Fig 18. Package outline SOT403-1 (TSSOP16)

## 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_HCT597 v.3	20140415	Product data sheet	-	74HC_HCT597_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> </ul>			
74HC_HCT597_CNV v.2	19901201	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.nxp.com>.

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