

# 74HC597-Q100; 74HCT597-Q100

## 8-bit shift register with input flip-flops

Rev. 1 — 26 May 2014

Product data sheet

### 1. General description

The 74HC597-Q100; 74HCT597-Q100 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  $V_{CC}$ .

This product has been qualified to the Automotive Electronics Council (AEC) standard Q100 (Grade 1) and is suitable for use in automotive applications.

### 2. Features and benefits

- Automotive product qualification in accordance with AEC-Q100 (Grade 1)
  - ◆ Specified from  $-40\text{ °C}$  to  $+85\text{ °C}$  and from  $-40\text{ °C}$  to  $+125\text{ °C}$
- Complies with JEDEC standard JESD7A
- Input levels:
  - ◆ For 74HC597-Q100: CMOS level
  - ◆ For 74HCT597-Q100: TTL level
- 8-bit parallel storage register inputs
- Shift register has direct overriding load and clear
- ESD protection:
  - ◆ MIL-STD-883, method 3015 exceeds 2000 V
  - ◆ HBM JESD22-A114F exceeds 2000 V
  - ◆ MM JESD22-A115-A exceeds 200 V ( $C = 200\text{ pF}$ ,  $R = 0\ \Omega$ )
- Multiple package options

### 3. Ordering information

Table 1. Ordering information

Type number	Package			Version
	Temperature range	Name	Description	
74HC597D-Q100	$-40\text{ °C}$ to $+125\text{ °C}$	SO16	plastic small outline package; 16 leads; body width 3.9 mm	SOT109-1
74HCT597D-Q100				
74HC597PW-Q100	$-40\text{ °C}$ to $+125\text{ °C}$	TSSOP16	plastic thin shrink small outline package; 16 leads; body width 4.4 mm	SOT403-1



## 4. Functional diagram

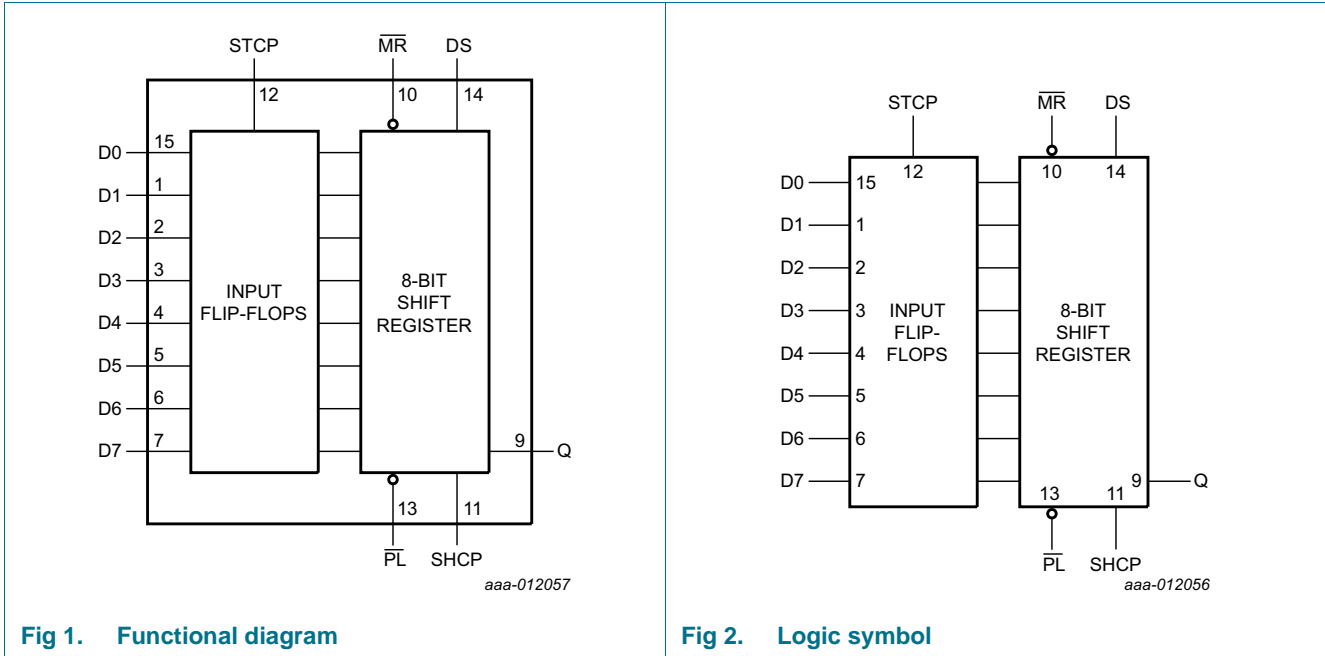


Fig 1. Functional diagram

Fig 2. Logic symbol

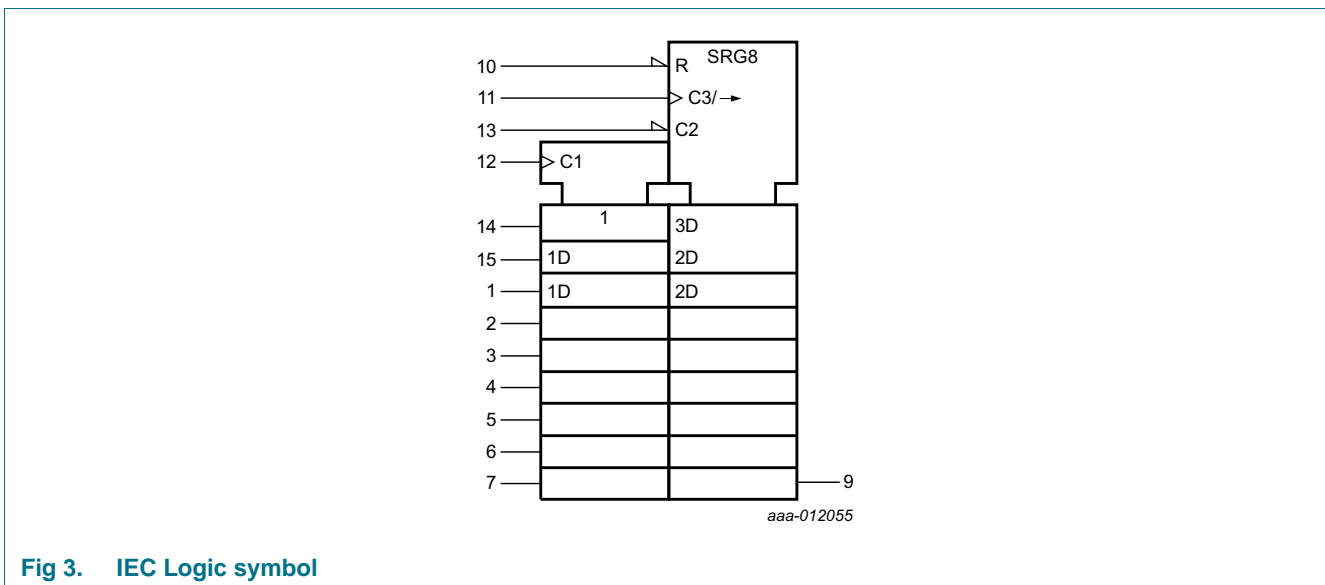


Fig 3. IEC Logic symbol



Fig 4. Logic diagram

## 5. Pinning information

### 5.1 Pinning

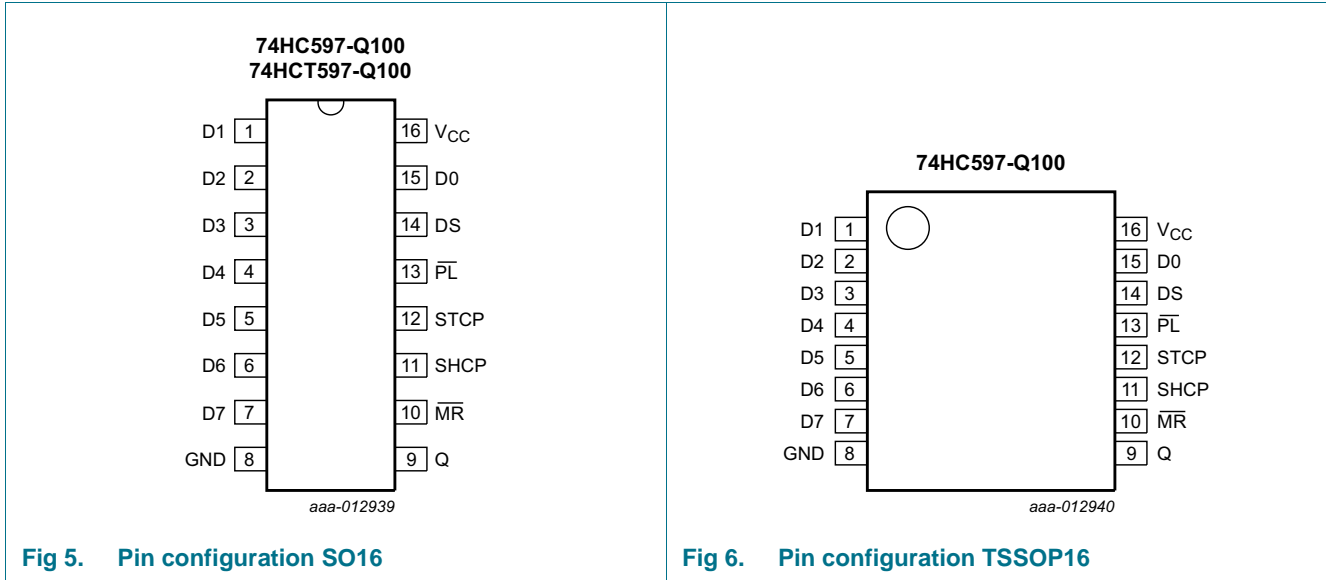


Fig 5. Pin configuration SO16

Fig 6. Pin configuration TSSOP16

### 5.2 Pin description

Table 2. Pin description

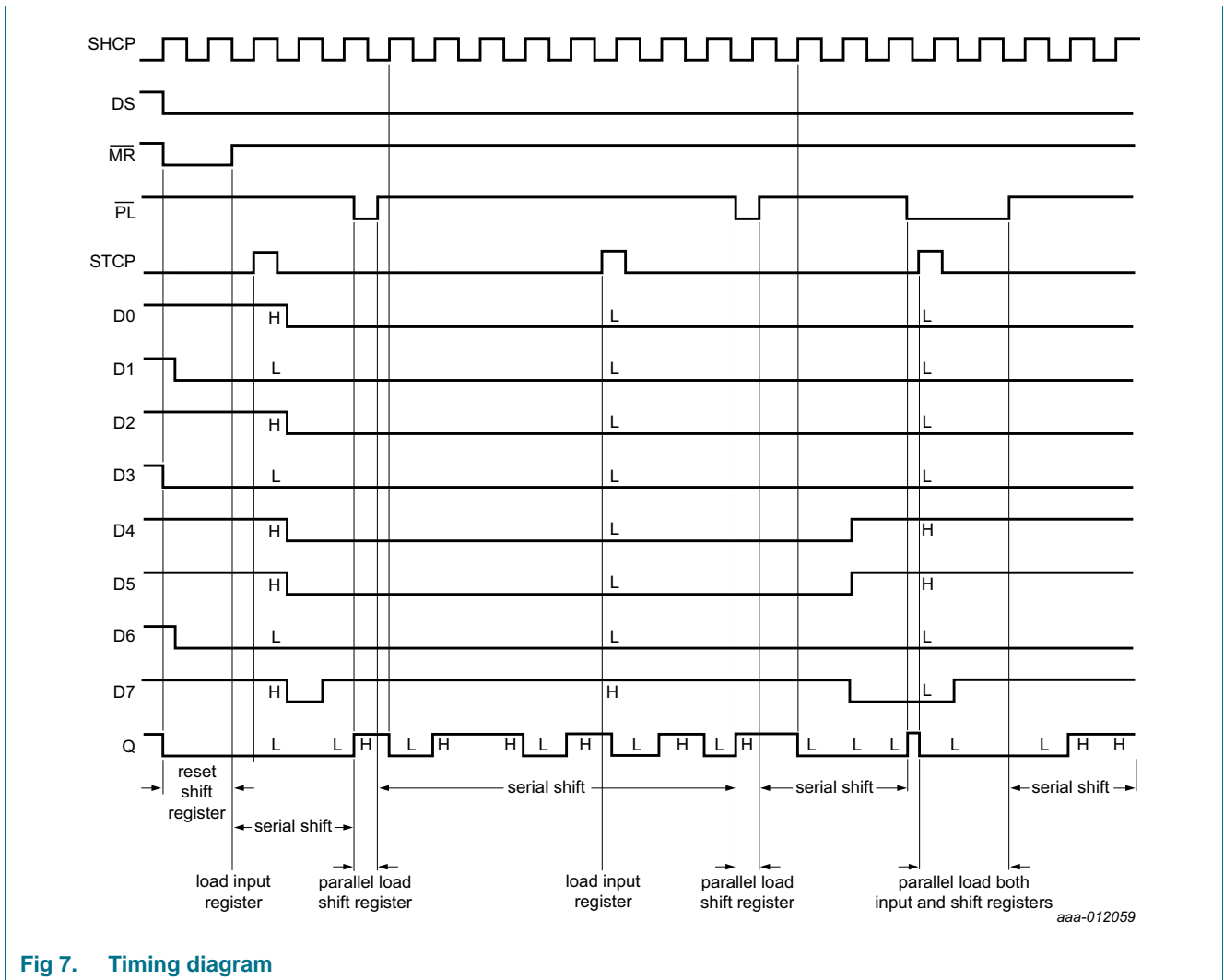
Symbol	Pin	Description
GND	8	ground (0 V)
Q	9	serial data output
$\overline{\text{MR}}$	10	asynchronous master reset input (active LOW)
SHCP	11	shift register clock input (LOW-to-HIGH, edge-triggered)
STCP	12	storage register clock input (LOW-to-HIGH, edge-triggered)
$\overline{\text{PL}}$	13	parallel 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		[1]	500	mW

- [1] For SO16:  $P_{tot}$  derates linearly with 8 mW/K above 70 °C.  
For 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-Q100			74HCT597-Q100			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-Q100</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-Q100</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
C <sub>I</sub>	input capacitance	per input pin; STCP, SHCP inputs	-	150	540	-	675	-	735	μA
		-	-	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-Q100</b>											
t <sub>pd</sub>	propagation delay	SHCP to Q; see <a href="#">Figure 8</a> <sup>[1]</sup>									
		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> <sup>[1]</sup>									
		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> <sup>[1]</sup>									
		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> <sup>[1]</sup>									
		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			
$t_t$	transition time	see <a href="#">Figure 10</a> <a href="#">[2]</a>										
		$V_{CC} = 2.0$ 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	STCP HIGH or LOW; see <a href="#">Figure 8</a>										
		$V_{CC} = 2.0$ V	80	11	-	100	-	120	-	ns		
		$V_{CC} = 4.5$ V	16	4	-	20	-	24	-	ns		
		$V_{CC} = 6.0$ V	14	3	-	17	-	20	-	ns		
		SHCP HIGH or LOW; see <a href="#">Figure 8</a>										
		$V_{CC} = 2.0$ V	80	14	-	100	-	120	-	ns		
		$V_{CC} = 4.5$ V	16	5	-	20	-	24	-	ns		
		$V_{CC} = 6.0$ V	14	4	-	17	-	20	-	ns		
		$\overline{MR}$ LOW; see <a href="#">Figure 9</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		
		$\overline{PL}$ LOW; see <a href="#">Figure 10</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		
		$t_{rec}$	recovery time	$\overline{MR}$ to SHCP; see <a href="#">Figure 11</a>								
				$V_{CC} = 2.0$ V	60	-3	-	75	-	90	-	ns
				$V_{CC} = 4.5$ V	12	-1	-	15	-	18	-	ns
$V_{CC} = 6.0$ V	10			-1	-	13	-	15	-	ns		
$t_{su}$	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		
		$\overline{PL}$ 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		

**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>									
		$V_{CC} = 2.0$ 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	
		$\overline{PL}$ , 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; $V_I = GND$ to $V_{CC}$ <a href="#">[3]</a>	-	29	-	-	-	-	-	pF	

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$t_{pd}$	propagation delay	SHCP to Q; see <a href="#">Figure 8</a> <a href="#">[1]</a>								
		$V_{CC} = 4.5$ 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> <a href="#">[1]</a>								
		$V_{CC} = 4.5$ V	-	28	49	-	61	-	74	ns
		STCP to Q; see <a href="#">Figure 8</a> <a href="#">[1]</a>								
		$V_{CC} = 4.5$ 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> <a href="#">[1]</a>								
		$V_{CC} = 4.5$ 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> <a href="#">[2]</a>								
		$V_{CC} = 4.5$ 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

**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>su</sub>	set-up time	Dn to STCP; see <a href="#">Figure 12</a>								
		V <sub>CC</sub> = 4.5 V	12	5	-	15	-	18	-	ns
		DS to SHCP; see <a href="#">Figure 12</a>								
		V <sub>CC</sub> = 4.5 V	12	2	-	15	-	18	-	ns
t <sub>h</sub>	hold time	PL to SHCP; see <a href="#">Figure 13</a>								
		V <sub>CC</sub> = 4.5 V	12	4	-	15	-	18	-	ns
		Dn to STCP; see <a href="#">Figure 12</a>								
f <sub>max</sub>	maximum frequency	V <sub>CC</sub> = 4.5 V	5	-1	-	5	-	5	-	ns
		PL, DS to SHCP; see <a href="#">Figure 12</a>								
		V <sub>CC</sub> = 4.5 V	5	-2	-	5	-	5	-	ns
C <sub>PD</sub>	power dissipation capacitance	SHCP; see <a href="#">Figure 8</a>								
		V <sub>CC</sub> = 4.5 V	30	75	-	24	-	20	-	MHz
		V <sub>CC</sub> = 5.0 V; C <sub>L</sub> = 15 pF	-	83	-	-	-	-	-	MHz
		C <sub>L</sub> = 50 pF; f = 1 MHz; <sup>[3]</sup> V <sub>I</sub> = GND to V <sub>CC</sub> - 1.5 V	-	32	-	-	-	-	-	pF

[1] t<sub>pd</sub> is the same as t<sub>PLH</sub> and t<sub>PHL</sub>.

[2] t<sub>t</sub> is the same as t<sub>THL</sub> and t<sub>TLH</sub>.

[3] C<sub>PD</sub> is used to determine the dynamic power dissipation (P<sub>D</sub> in μW).

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

f<sub>i</sub> = input frequency in MHz;

f<sub>o</sub> = output frequency in MHz;

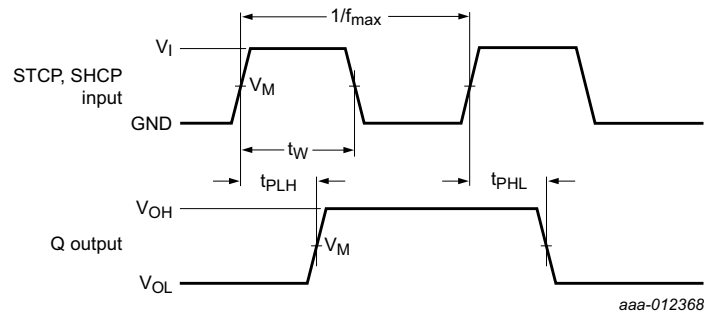
C<sub>L</sub> = output load capacitance in pF;

V<sub>CC</sub> = supply voltage in V;

N = number of inputs switching;

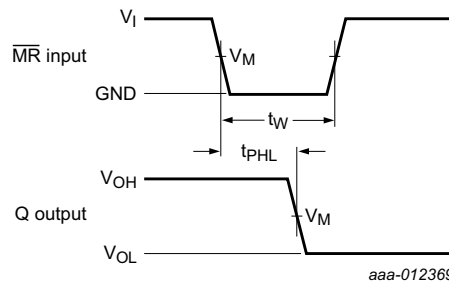
∑(C<sub>L</sub> × V<sub>CC</sub><sup>2</sup> × f<sub>o</sub>) = sum of outputs.

11. Waveforms



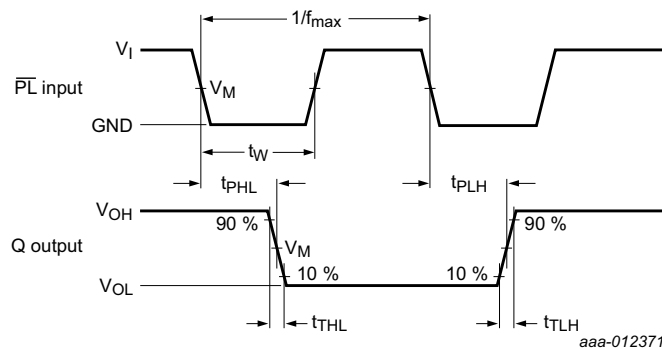
Measurement points are given in [Table 8](#).  
 VOL and VOH are typical voltage output levels that occur with the output load.

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



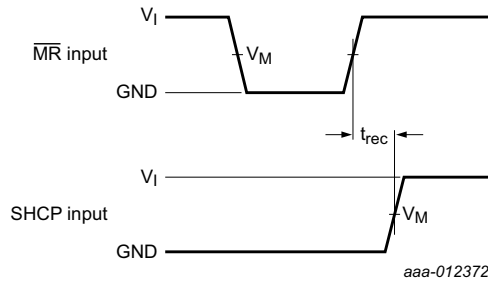
Measurement points are given in [Table 8](#).  
 VOL and VOH are typical voltage output levels that occur with the output load.

**Fig 9. input (MR) to (Q), output propagation delays and (MR) pulse width**



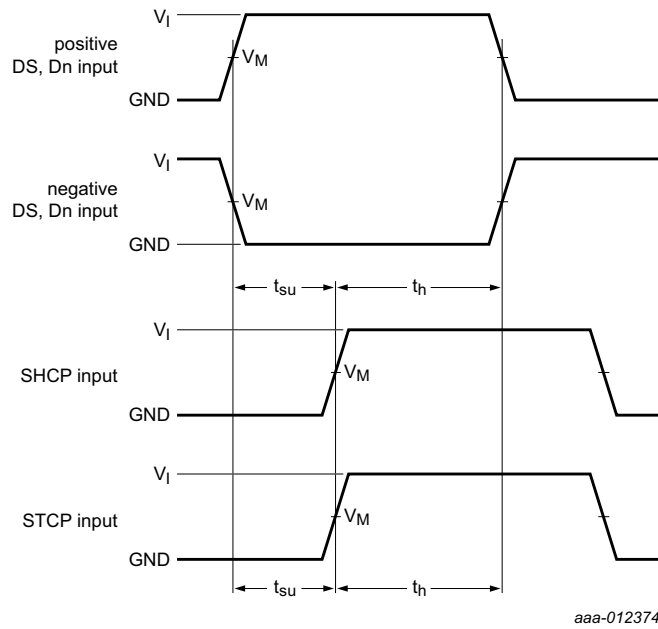
Measurement points are given in [Table 8](#).  
 VOL and VOH are typical voltage output levels that occur with the output load.

**Fig 10. Input (PL) to (Q), output propagation delays, PL pulse width and output transition times**



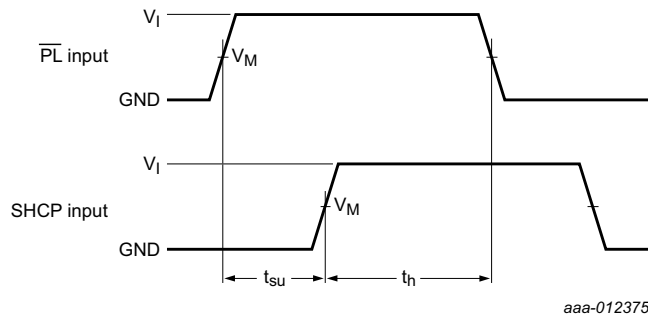
Measurement points are given in [Table 8](#).

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



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

**Fig 12. Hold and set-up times for (DS), (Dn) inputs to (SHCP), (STCP) inputs**

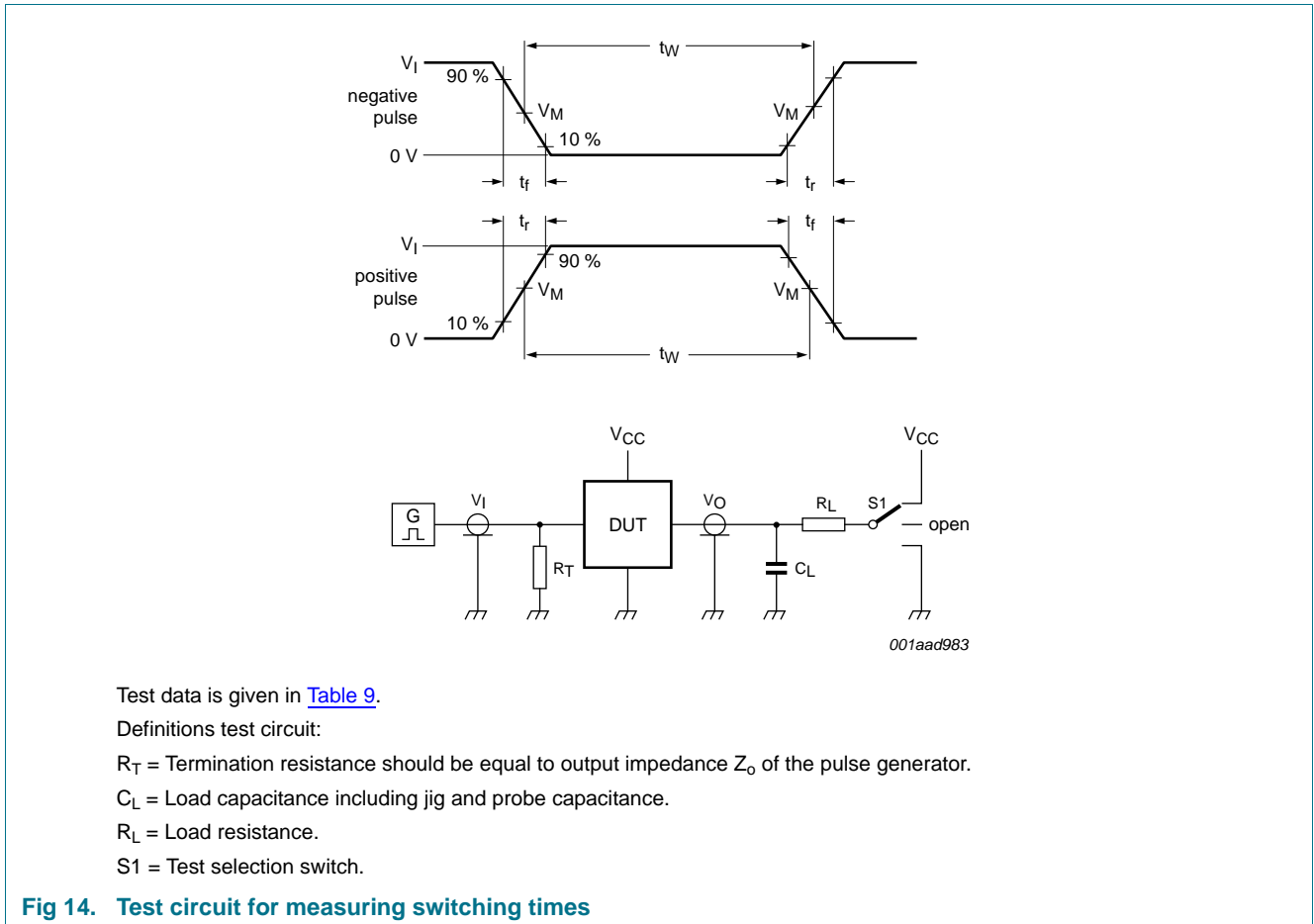


Measurement points are given in [Table 8](#).

**Fig 13. Set-up times for ( $\overline{PL}$ ) input to (SHCP) input**

**Table 8. Measurement points**

Type	Input		Output
	$V_M$	$V_I$	$V_M$
74HC597-Q100	$0.5 \times V_{CC}$	GND to $V_{CC}$	$0.5 \times V_{CC}$
74HCT597-Q100	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-Q100	$V_{CC}$	6 ns	15 pF, 50 pF	1 k $\Omega$	open	GND	$V_{CC}$
74HCT597-Q100	3 V	6 ns	15 pF, 50 pF	1 k $\Omega$	open	GND	$V_{CC}$

12. Package outline

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

SOT109-1

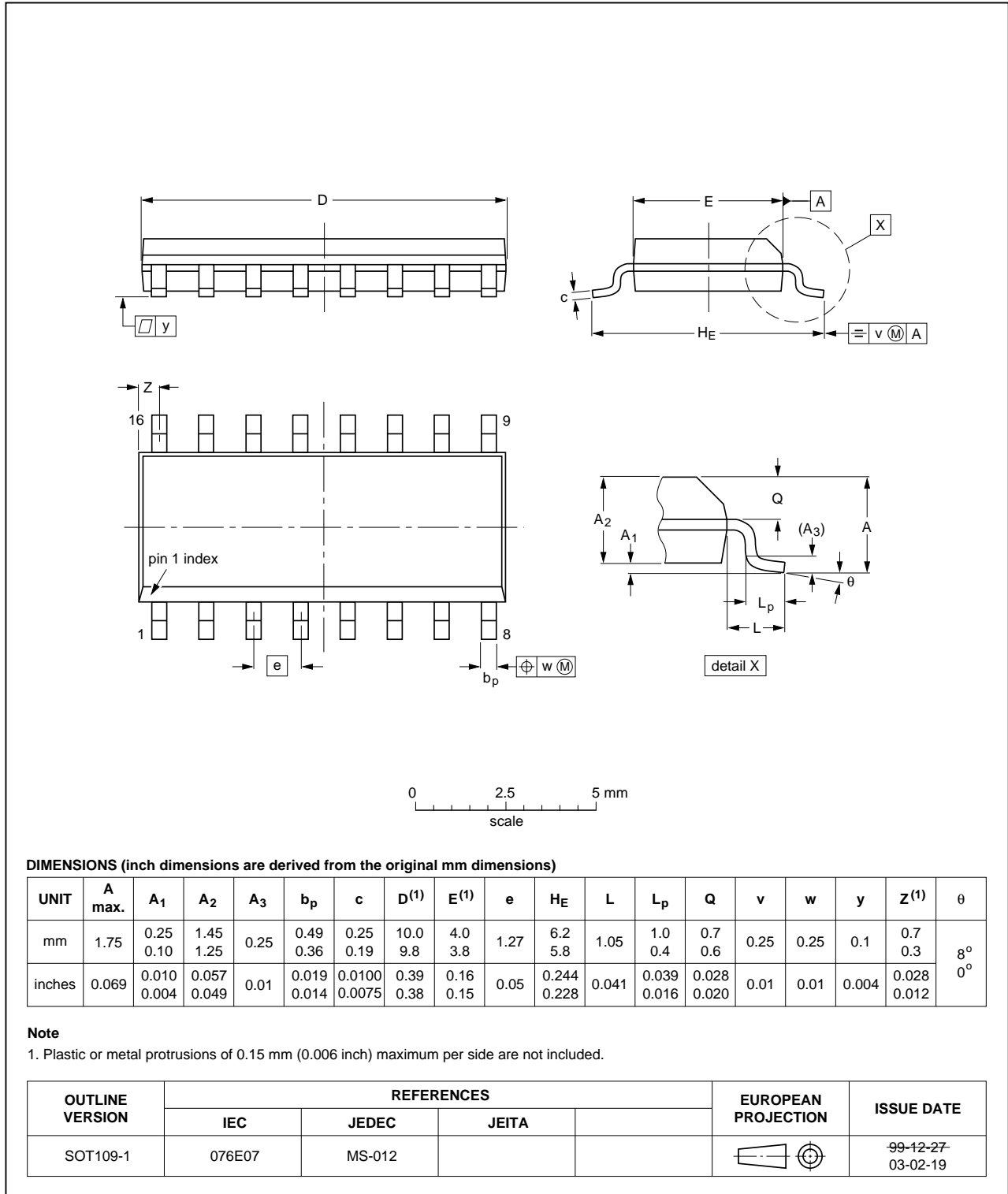


Fig 15. Package outline SOT109-1 (SO16)

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

SOT403-1

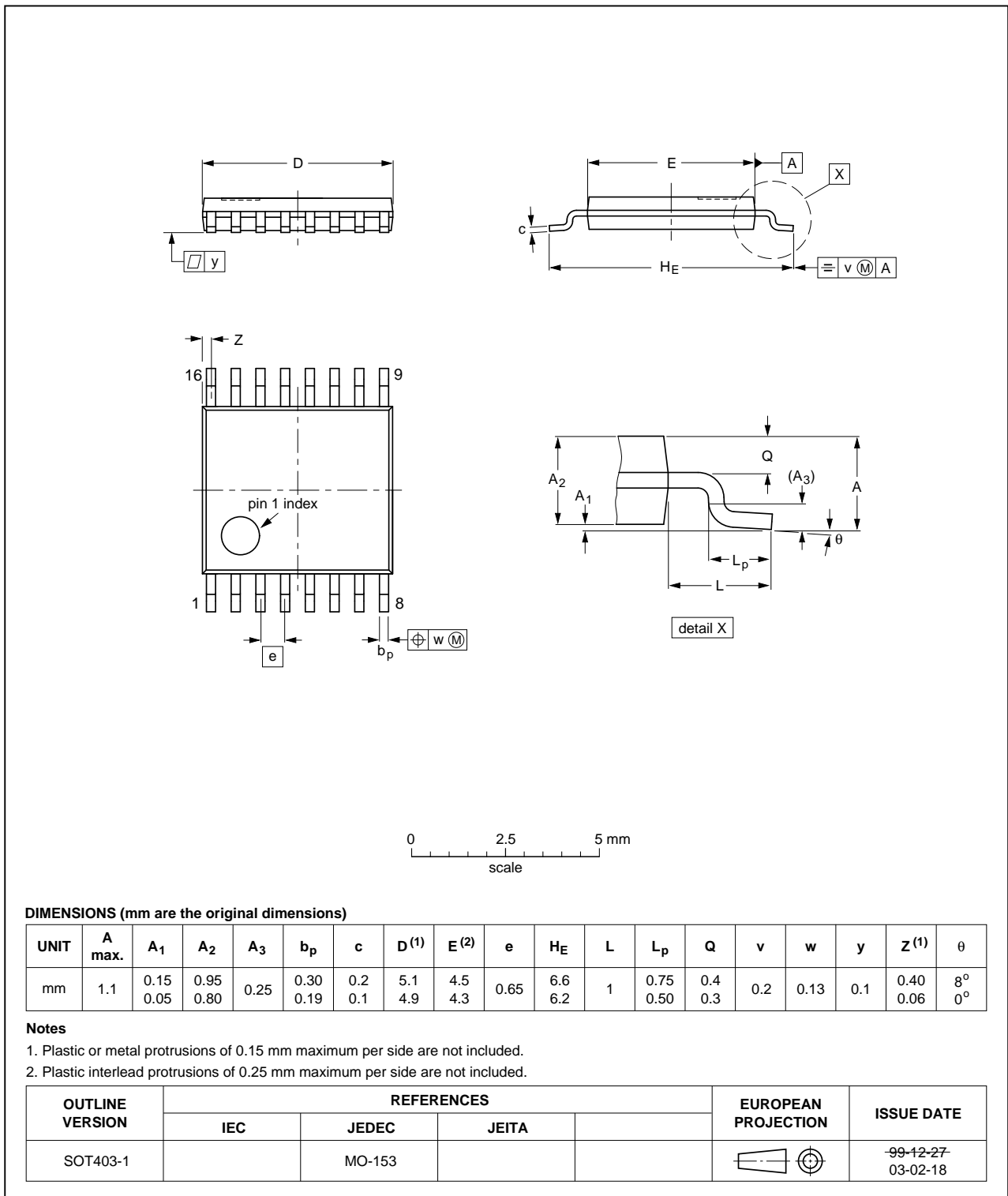


Fig 16. Package outline SOT403-1 (TSSOP16)



## 13. Abbreviations

Table 10. Abbreviations

Acronym	Description
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MIL	Military
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_Q100 v.1	20140526	Product data sheet	-	-

## 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".

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