# 74HC4094; 74HCT4094

## 8-stage shift-and-store bus register

Rev. 9 — 22 October 2021

Product data sheet

### 1. General description

The 74HC4094; 74HCT4094 is an 8-bit serial-in/serial or parallel-out shift register with a storage register and 3-state outputs. Both the shift and storage register have separate clocks. The device features a serial input (D) and two serial outputs (QS1 and QS2) to enable cascading. Data is shifted on the LOW-to-HIGH transitions of the CP input. Data is available at QS1 on the LOW-to-HIGH transitions of the CP input to allow cascading when clock edges are fast. The same data is available at QS2 on the next HIGH-to-LOW transition of the CP input to allow cascading when clock edges are slow. The data in the shift register is transferred to the storage register when the STR input is HIGH. Data in the storage register appears at the outputs whenever the output enable input (OE) is HIGH. A LOW on OE causes the outputs to assume a high-impedance OFF-state. Operation of the OE input does not affect the state of the registers. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{\rm CC}$ .

#### 2. Features and benefits

- Complies with JEDEC standard JESD7A
- Input levels:
  - For 74HC4094: CMOS level
  - For 74HCT4094: TTL level
- Low-power dissipation
- ESD protection:
- HBM JESD22-A114F exceeds 2000 V
  - MM JESD22-A115-A exceeds 200 V
- Specified from -40 °C to +85 °C and from -40 °C to +125 °C

### 3. Applications

- Serial-to-parallel data conversion
- · Remote control holding register

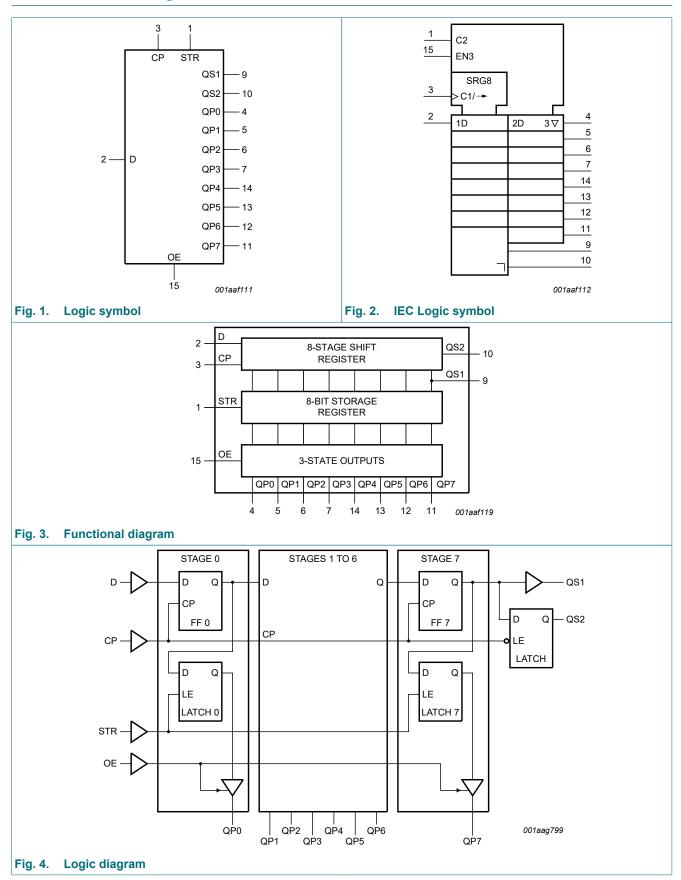
### 4. Ordering information

#### **Table 1. Ordering information**

Type number	Package	Package									
	Temperature range	Name	Description	Version							
74HC4094D	-40 °C to +125 °C	SO16	plastic small outline package; 16 leads;	SOT109-1							
74HCT4094D			body width 3.9 mm								
74HCT4094DB	-40 °C to +125 °C	SSOP16	plastic shrink small outline package; 16 leads; body width 5.3 mm	SOT338-1							
74HC4094PW	-40 °C to +125 °C	TSSOP16	plastic thin shrink small outline package;	SOT403-1							
74HCT4094PW			16 leads; body width 4.4 mm								

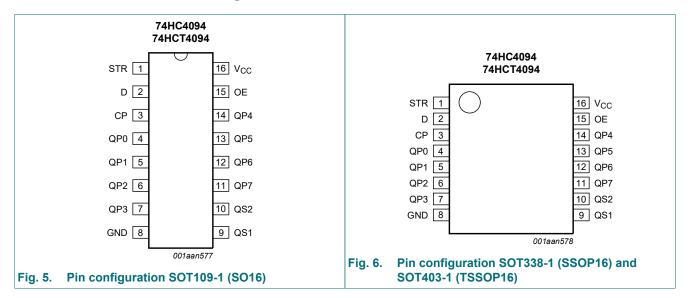


## 5. Functional diagram



### 6. Pinning information

#### 6.1. Pinning



### 6.2. Pin description

Table 2. Pin description

Symbol	Pin	Description
STR	1	strobe input
D	2	data input
СР	3	clock input
QP0 to QP7	4, 5, 6, 7, 14, 13, 12, 11	parallel output
GND	8	ground supply voltage
QS1, QS2	9, 10	serial output
OE	15	output enable input
V <sub>CC</sub>	16	supply voltage

### 7. Functional description

#### Table 3. Function table

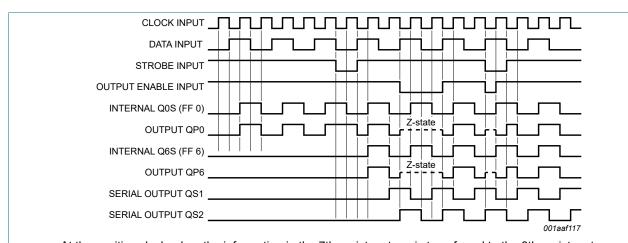
H = HIGH voltage level; L = LOW voltage level; X = don't care; Z = HIGH-impedance OFF-state; NC = no change;

 $\uparrow$  = positive-going transition;  $\downarrow$  = negative-going transition;

Q6S = the data in register stage 6 before the LOW to HIGH clock transition;

Q7S = the data in register stage 7 before the HIGH to LOW clock transition.

Inputs				Parallel o	outputs	Serial out	Serial outputs		
СР	OE STR D			QP0	QPn	QS1	QS2		
$\uparrow$	L	X	Х	Z	Z	Q6S	NC		
$\downarrow$	L	X	X	Z	Z	NC	Q7S		
<b>↑</b>	Н	L	Х	NC	NC	Q6S	NC		
<b>↑</b>	Н	Н	L	L	QPn -1	Q6S	NC		
<b>↑</b>	Н	Н	Н	Н	QPn -1	Q6S	NC		
$\downarrow$	Н	Н	Н	NC	NC	NC	Q7S		



At the positive clock edge, the information in the 7th register stage is transferred to the 8th register stage and the QSn outputs.

Fig. 7. Timing diagram

### 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	V
I <sub>IK</sub>	input clamping current	$V_{I} < -0.5 \text{ V or } V_{I} > V_{CC} + 0.5 \text{ V}$	-	±20	mA
I <sub>OK</sub>	output clamping current	$V_{O} < -0.5 \text{ V or } V_{O} > V_{CC} + 0.5 \text{ V}$	-	±20	mA
Io	output current	$V_{O} = -0.5 \text{ V to } (V_{CC} + 0.5 \text{ V})$	-	±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	[1	] -	500	mW

<sup>[1]</sup> For SOT109-1 (SO16) package: P<sub>tot</sub> derates linearly with 12.4 mW/K above 110 °C. For SOT338-1 (SSOP16) package: P<sub>tot</sub> derates linearly with 8.5 mW/K above 91 °C. For SOT403-1 (TSSOP16) package: P<sub>tot</sub> derates linearly with 8.5 mW/K above 91 °C.

### 9. Recommended operating conditions

#### Table 5. Recommended operating conditions

Voltages are referenced to GND (ground = 0 V)

Symbol	Parameter	Conditions	7	4HC409	4	7-	Unit		
			Min	Тур	Max	Min	Тур	Max	
V <sub>CC</sub>	supply voltage		2.0	5.0	6.0	4.5	5.0	5.5	V
VI	input voltage		0	-	V <sub>CC</sub>	0	-	V <sub>CC</sub>	V
Vo	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

### 10. 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	o +85 °C	-40 °C to	+125 °C	Unit
			Min	Тур	Max	Min	Max	Min	Max	
74HC409	94		'							
V <sub>IH</sub>	HIGH-level	V <sub>CC</sub> = 2.0 V	1.5	1.2	-	1.5	-	1.5	-	V
	input voltage	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	V <sub>CC</sub> = 2.0 V	-	0.8	0.5	-	0.5	-	0.5	V
	input voltage	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	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>								
	output voltage	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
		I <sub>O</sub> = -5.2 mA; V <sub>CC</sub> = 6.0 V	5.48	5.81	-	5.34	-	5.2	-	V
V <sub>OL</sub>	LOW-level	$V_I = V_{IH}$ or $V_{IL}$								
	output voltage	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>O</sub> = 5.2 mA; V <sub>CC</sub> = 6.0 V	-	0.16	0.26	-	0.33	-	0.4	V
l <sub>l</sub>	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 6.0 \text{ V}$	-	-	±0.1	-	±1.0	-	±1.0	μΑ
l <sub>OZ</sub>	OFF-state output current	$V_I = V_{IH} \text{ or } V_{IL};$ $V_O = V_{CC} \text{ or GND};$ $V_{CC} = 6.0 \text{ V}$	-	-	±0.5	-	±5.0	-	±10.0	μА
I <sub>CC</sub>	supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A; $V_{CC} = 6.0 \text{ V}$	-	-	8.0	-	80	-	160	μΑ
C <sub>I</sub>	input capacitance		-	3.5	-	-	-	-	-	pF

Symbol	Parameter	Conditions		25 °C		-40 °C t	o +85 °C	-40 °C to	+125 °C	Unit
			Min	Тур	Max	Min	Max	Min	Max	
74HCT4	094									1
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	$V_I = V_{IH}$ or $V_{IL}$ ; $V_{CC} = 4.5 \text{ V}$								
	output voltage	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	$V_I = V_{IH}$ or $V_{IL}$ ; $V_{CC} = 4.5 V$								
	output voltage	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
l <sub>l</sub>	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5 \text{ V}$	-	-	±0.1	-	±1.0	-	±1.0	μΑ
l <sub>OZ</sub>	OFF-state output current	$V_I = V_{IH}$ or $V_{IL}$ ; $V_O = V_{CC}$ or GND; $V_{CC} = 5.5 \text{ V}$	-	-	±0.5	-	±5.0	-	±10	μA
I <sub>CC</sub>	supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A; $V_{CC} = 5.5 \text{ V}$	-	-	8.0	-	80	-	160	μΑ
ΔI <sub>CC</sub>	additional supply current	$V_I = V_{CC}$ - 2.1 V; other inputs at $V_{CC}$ or GND; $V_{CC}$ = 4.5 V to 5.5 V; $I_O$ = 0 A								
		per input pin; STR input	-	100	360	-	450	-	490	μΑ
		per input pin; OE input	-	150	540	-	675	-	735	μΑ
		per input pin; CP input	-	150	540	-	675	-	735	μΑ
		per input pin; D input	-	40	144	-	180	-	196	μΑ
Cı	input capacitance		-	3.5	-	-	-	-	-	pF

# 11. 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 Fig. 12.

Symbol	Parameter	Conditions		25 °C		-40 °C to	o +85 °C	-40 °C to	+125 °C	Unit
			Min	Тур	Max	Min	Max	Min	Max	
74HC40	94		'	'				'		
t <sub>pd</sub>	propagation	CP to QS1; see Fig. 8 [1]								
	delay	V <sub>CC</sub> = 2.0 V	-	50	150	-	190	-	225	ns
		V <sub>CC</sub> = 4.5 V	-	18	30	-	38	-	45	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF	-	15	-	-	-	-	-	ns
		V <sub>CC</sub> = 6.0 V	-	14	26	-	33	-	38	ns
		CP to QS2; see Fig. 8 [1]								
		V <sub>CC</sub> = 2.0 V	-	44	135	-	170	-	205	ns
		V <sub>CC</sub> = 4.5 V	-	16	27	-	34	-	41	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF	-	13	-	-	-	-	-	ns
		V <sub>CC</sub> = 6.0 V	-	13	23	-	29	-	35	ns
		CP to QPn; see Fig. 8 [1]								
		V <sub>CC</sub> = 2.0 V	-	63	195	-	245	-	295	ns
		V <sub>CC</sub> = 4.5 V	-	23	39	-	49	-	59	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF	-	20	-	-	-	-	-	ns
		V <sub>CC</sub> = 6.0 V	-	18	33	-	42	-	50	ns
		STR to QPn; see Fig. 9 [1]								
		V <sub>CC</sub> = 2.0 V	-	58	180	-	225	-	270	ns
		V <sub>CC</sub> = 4.5 V	-	21	36	-	45	-	54	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF	-	18	-	-	-	-	-	ns
		V <sub>CC</sub> = 6.0 V	-	17	31	-	38	-	46	ns
t <sub>en</sub>	enable time	OE to QPn; see Fig. 10 [1]								
		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> = 6.0 V	-	16	30	-	37	-	45	ns
t <sub>dis</sub>	disable time	OE to QPn; see Fig. 10 [1]								
		V <sub>CC</sub> = 2.0 V	-	41	125	-	155	-	190	ns
		V <sub>CC</sub> = 4.5 V	-	15	25	-	31	-	38	ns
		V <sub>CC</sub> = 6.0 V	-	12	21	-	26	-	32	ns
t <sub>t</sub>	transition	QPn and QSn; see Fig. 8 [1]								
	time	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

Symbol	Parameter	Conditions		25 °C		-40 °C t	o +85 °C	-40 °C to	+125 °C	Unit
			Min	Тур	Max	Min	Max	Min	Max	1
t <sub>W</sub>	pulse width	CP HIGH or LOW; see Fig. 8								
		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
		STR HIGH; see Fig. 9								
		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
t <sub>su</sub>	set-up time	D to CP; see Fig. 11								
		V <sub>CC</sub> = 2.0 V	50	14	-	65	-	75	-	ns
		V <sub>CC</sub> = 4.5 V	10	5	-	13	-	15	-	ns
		V <sub>CC</sub> = 6.0 V	9	4	-	11	-	13	-	ns
		CP to STR; see Fig. 9								
		V <sub>CC</sub> = 2.0 V	100	28	-	125	-	150	-	ns
		V <sub>CC</sub> = 4.5 V	20	10	-	25	-	30	-	ns
		V <sub>CC</sub> = 6.0 V	17	8	-	21	-	26	-	ns
t <sub>h</sub>	hold time	D to CP; see Fig. 11								
		V <sub>CC</sub> = 2.0 V	3	-6	-	3	-	3	-	ns
		V <sub>CC</sub> = 4.5 V	3	-2	-	3	-	3	-	ns
		V <sub>CC</sub> = 6.0 V	3	-2	-	3	-	3	-	ns
		CP to STR; see Fig. 9								
		V <sub>CC</sub> = 2.0 V	0	-14	-	0	-	0	-	ns
		V <sub>CC</sub> = 4.5 V	0	-5	-	0	-	0	-	ns
		V <sub>CC</sub> = 6.0 V	0	-4	-	0	-	0	-	ns
f <sub>max</sub>	maximum	CP; see Fig. 8								
	frequency	V <sub>CC</sub> = 2.0 V	6.0	28	-	4.8	-	4.0	-	MHz
		V <sub>CC</sub> = 4.5 V	30	87	-	24	-	20	-	MHz
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF	-	95	-	-	-	-	-	MHz
		V <sub>CC</sub> = 6.0 V	35	103	-	28	-	24	-	MHz
C <sub>PD</sub>	power dissipation capacitance	$C_L = 50 \text{ pF; } f = 1 \text{ MHz;}$ [2] $V_I = \text{GND to } V_{CC}$	-	83	-	-	-	-	-	pF

Symbol	Parameter	Conditions			25 °C		-40 °C t	o +85 °C	-40 °C to	+125 °C	Unit
				Min	Тур	Max	Min	Max	Min	Max	
74HCT4	094								'	'	1
t <sub>pd</sub>	propagation	CP to QS1; see Fig. 8	[1]								
	delay	V <sub>CC</sub> = 4.5 V		-	23	39	-	49	-	59	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF		-	19	-	-	-	-	-	ns
		CP to QS2; see Fig. 8	[1]								
		V <sub>CC</sub> = 4.5 V		-	21	36	-	45	-	54	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF		-	18	-	-	-	-	-	ns
		CP to QPn; see Fig. 8	[1]								
		V <sub>CC</sub> = 4.5 V		-	25	43	-	54	-	65	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF		-	21	-	-	-	-	-	ns
		STR to QPn; see Fig. 9	[1]								
		V <sub>CC</sub> = 4.5 V		-	22	39	-	49	-	59	ns
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF		-	19	-	-	-	-	-	ns
t <sub>en</sub>	enable time	OE to QPn; see Fig. 10	[1]								
		V <sub>CC</sub> = 4.5 V		-	20	35	-	44	-	53	ns
t <sub>dis</sub>	disable time	OE to QPn; see Fig. 10	[1]								
		V <sub>CC</sub> = 4.5 V		-	21	35	-	44	_	53	ns
t <sub>t</sub>	transition	QPn and QSn; see Fig. 8	[1]								
	time	V <sub>CC</sub> = 4.5 V		-	7	15	-	19	-	22	ns
t <sub>W</sub>	pulse width	CP HIGH or LOW; see Fig. 8									
		V <sub>CC</sub> = 4.5 V		16	7	-	20	-	24	-	ns
		STR HIGH; see Fig. 9									
		V <sub>CC</sub> = 4.5 V		16	5	-	20	-	24	-	ns
t <sub>su</sub>	set-up time	Dn to CP; see Fig. 11									
		V <sub>CC</sub> = 4.5 V		10	4	-	13	-	15	-	ns
		CP to STR; see Fig. 9									
		V <sub>CC</sub> = 4.5 V		20	9	-	25	-	30	-	ns
t <sub>h</sub>	hold time	Dn to CP; see Fig. 11									
		V <sub>CC</sub> = 4.5 V		4	0	-	4	-	4	-	ns
		CP to STR; see Fig. 9									
		V <sub>CC</sub> = 4.5 V		0	-4	-	0	-	0	-	ns
f <sub>max</sub>	maximum	CP; see Fig. 8									
	frequency	V <sub>CC</sub> = 4.5 V		30	80	-	24	-	20	-	MHz
		V <sub>CC</sub> = 5 V; C <sub>L</sub> = 15 pF		-	86	-	-	-	-	-	MHz
C <sub>PD</sub>	power dissipation capacitance	$C_L = 50 \text{ pF; } f = 1 \text{ MHz;}$ $V_I = \text{GND to } V_{CC} - 1.5 \text{ V}$	[2]	-	92	-	-	-	-	-	pF

 <sup>[1]</sup> t<sub>pd</sub> is the same as t<sub>PLH</sub> and t<sub>PHL</sub>; t<sub>en</sub> is the same as t<sub>PZH</sub> and t<sub>PZL</sub>; t<sub>dis</sub> is the same as t<sub>PLZ</sub> and t<sub>PHZ</sub>; t<sub>t</sub> is the same as t<sub>THL</sub> and t<sub>TLH</sub>.
 [2] C<sub>PD</sub> is used to determine the dynamic power dissipation (P<sub>D</sub> in μW).
 P<sub>D</sub> = C<sub>PD</sub> x V<sub>CC</sub><sup>2</sup> x f<sub>i</sub> x N + ∑(C<sub>L</sub> x V<sub>CC</sub><sup>2</sup> x f<sub>o</sub>) where:
 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;

 $V_{CC}$  = supply voltage in V; N = number of inputs switching;  $\sum (C_L \times V_{CC})^2 \times f_0$  = sum of outputs.

#### 11.1. Waveforms and test circuits

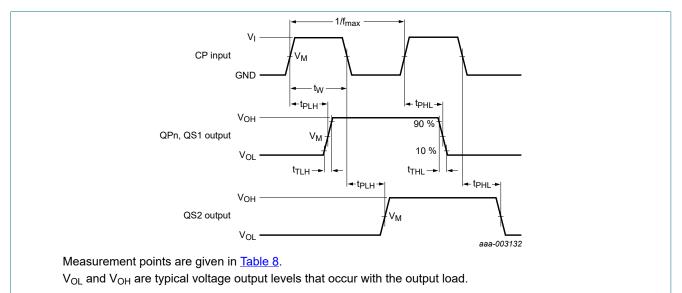
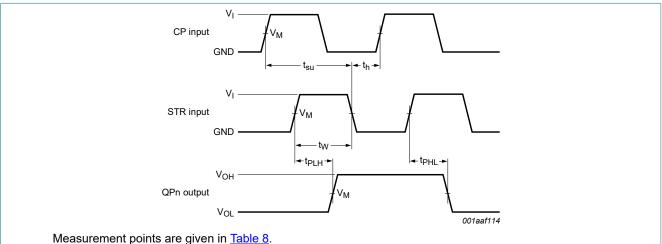
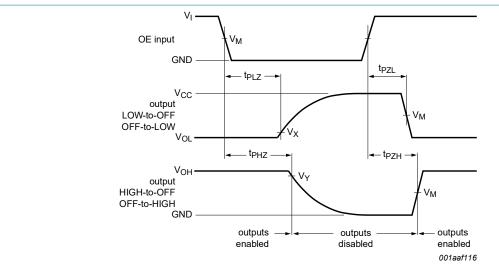


Fig. 8. Propagation delay input (CP) to output (QPn, QS1, QS2), output transition time, clock input (CP) pulse width and the maximum frequency (CP)



V<sub>OL</sub> and V<sub>OH</sub> are typical voltage output levels that occur with the output load.

Fig. 9. Propagation delay strobe input (STR) to output (QPn), strobe input (STR) pulse width and the clock set-up and hold times for strobe input



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. Enable and disable times

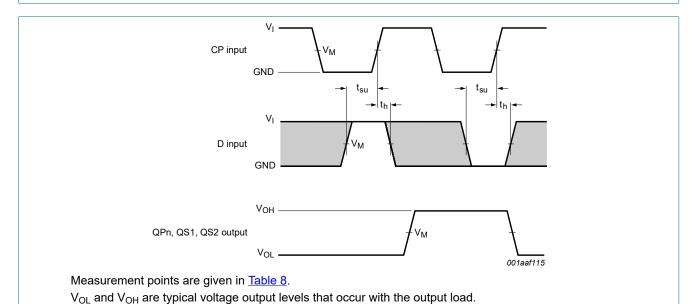
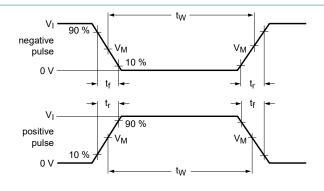
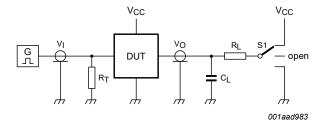


Fig. 11. The data input (D) to clock input (CP) set-up times and clock input (CP) to data input (D) hold times

**Table 8. Measurement points** 

Туре	Input	Output		
	V <sub>M</sub>	V <sub>M</sub>	V <sub>X</sub>	$V_{Y}$
74HC4094	0.5V <sub>CC</sub>	0.5V <sub>CC</sub>	0.1V <sub>OH</sub>	0.9V <sub>OH</sub>
74HCT4094	1.3 V	1.3 V	0.1V <sub>OH</sub>	0.9V <sub>OH</sub>





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<sub>L</sub> = Load capacitance including jig and probe capacitance.

 $R_{I}$  = Load resistance.

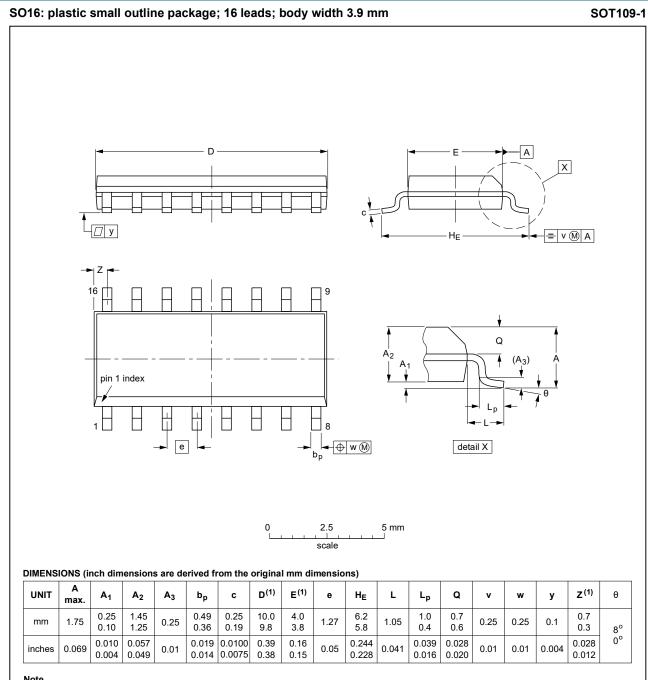
S1 = Test selection switch.

Fig. 12. Test circuit for measuring switching times

Table 9. Test data

Туре	Input		Load		S1 position		
	$V_{l}$	t <sub>r</sub> , t <sub>f</sub>	CL	$R_L$	t <sub>PHL</sub> , t <sub>PLH</sub>	t <sub>PZH</sub> , t <sub>PHZ</sub>	t <sub>PZL</sub> , t <sub>PLZ</sub>
74HC4094	V <sub>CC</sub>	6 ns	15 pF, 50 pF	1 kΩ	open	GND	V <sub>CC</sub>
74HCT4094	3 V	6 ns	15 pF, 50 pF	1 kΩ	open	GND	V <sub>CC</sub>

## 12. Package outline



1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.

OUTLINE	REFERENCES				EUROPEAN	ISSUE DATE
VERSION	IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
SOT109-1	076E07	MS-012				<del>99-12-27</del> 03-02-19

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

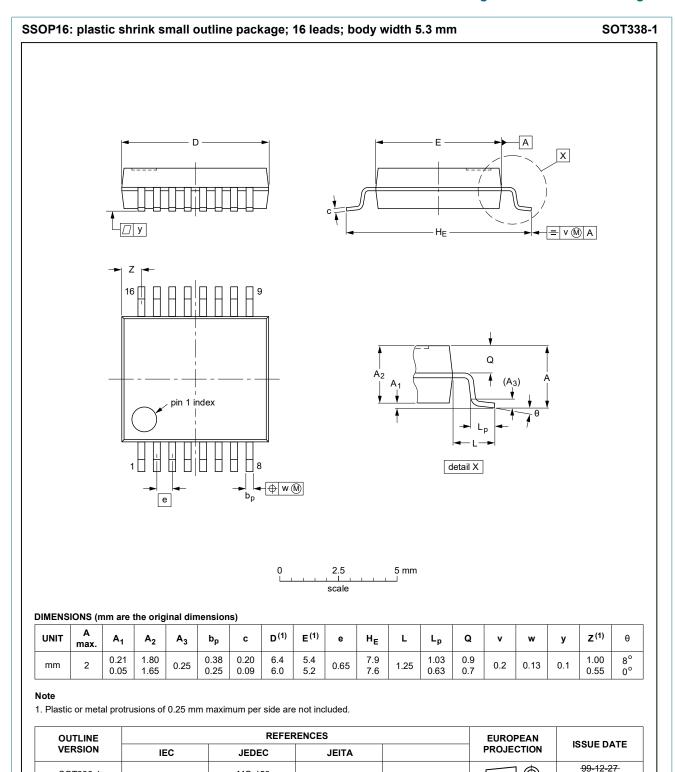
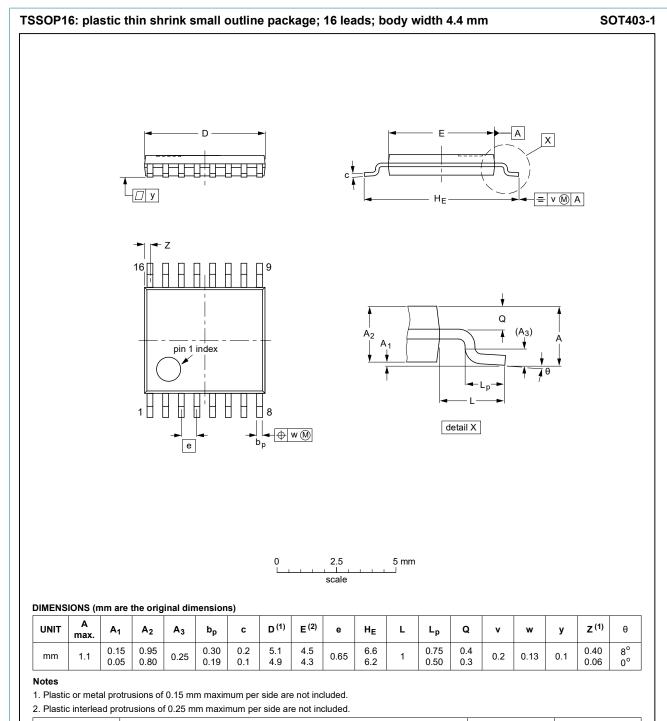


Fig. 14. Package outline SOT338-1 (SSOP16)

MO-150

SOT338-1

03-02-19



OUTLINE	REFERENCES			EUROPEAN	ISSUE DATE	
VERSION	IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
SOT403-1		MO-153				<del>99-12-27</del> 03-02-18

Fig. 15. Package outline SOT403-1 (TSSOP16)

### 13. Abbreviations

#### **Table 10. Abbreviations**

Acronym	Description
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
НВМ	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_HCT4094 v.9	20211022	Product data sheet	-	74HC_HCT4094 v.8		
Modifications:	<ul> <li>Type number 74HCT4094PW (SOT403-1/TSSOP16) added.</li> <li>Type number 74HC4094DB (SOT338-1/SSOP16) removed.</li> <li>Section 8: Derating values for P<sub>tot</sub> total power dissipation updated.</li> </ul>					
74HC_HCT4094 v.8	20181114	Product data sheet	-	74HC_HCT4094 v.7		
Modifications:	<ul> <li>The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li> <li>Legal texts have been adapted to the new company name where appropriate.</li> <li>Fig. 7 corrected.</li> </ul>					
74HC_HCT4094 v.7	20160210	Product data sheet	-	74HC_HCT4094 v.6		
Modifications:	Type numbe	Type numbers 74HC4094N and 74HCT4094N (SOT38-4) removed.				
74HC_HCT4094 v.6	20121231	Product data sheet	-	74HC_HCT4094 v.5		
Modifications:	General description updated.					
74HC_HCT4094 v.5	20120628	Product data sheet	-	74HC_HCT4094 v.4		
Modifications:	V <sub>X</sub> and V <sub>Y</sub> measurement points added to <u>Table 8</u> .					
74HC_HCT4094 v.4	20111219	Product data sheet	-	74HC_HCT4094 v.3		
Modifications:	Legal pages updated.					
74HC_HCT4094 v.3	20110214	Product data sheet	-	74HC_HCT4094_CNV v.2		
74HC_HCT4094_CNV v.2	19970901	Product specification	-	-		

### 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.

- 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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