



# 74LVC74A-Q100

Dual D-type flip-flop with set and reset; positive-edge trigger

Rev. 6 — 22 September 2025

Product data sheet

## 1. General description

The 74LVC74A-Q100 is a dual edge triggered D-type flip-flop with individual data (nD) inputs, clock (nCP) inputs, set (nSD) and (nRD) inputs, and complementary nQ and nQ̄ outputs.

The set and reset are asynchronous active LOW inputs and operate independently of the clock input. Information on the data input is transferred to the nQ output on the LOW-to-HIGH transition of the clock pulse. The nD inputs must be stable one set-up time prior to the LOW-to-HIGH clock transition, for predictable operation.

Schmitt trigger action at all inputs makes the circuit highly tolerant of slower input rise and fall times.

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 °C to +85 °C and from -40 °C to +125 °C
- 5 V tolerant inputs for interlacing with 5 V logic
- Wide supply voltage range from 1.2 V to 3.6 V
- CMOS low power consumption
- Direct interface with TTL levels
- Complies with JEDEC standard:
  - JESD8-7A (1.65 V to 1.95 V)
  - JESD8-5A (2.3 V to 2.7 V)
  - JESD8-C/JESD36 (2.7 V to 3.6 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
- Multiple package options
- DHVQFN package with Side-Wettable Flanks enabling Automated Optical Inspection (AOI) of solder joints

## 3. Ordering information

Table 1. Ordering information

Type number	Package				Version
	Temperature range	Name	Description		
74LVC74AD-Q100	-40 °C to +125 °C	SO14	plastic small outline package; 14 leads; body width 3.9 mm		SOT108-1
74LVC74APW-Q100	-40 °C to +125 °C	TSSOP14	plastic thin shrink small outline package; 14 leads; body width 4.4 mm		SOT402-1
74LVC74ABQ-Q100	-40 °C to +125 °C	DHVQFN14	plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads; 14 terminals; body 2.5 x 3 x 0.85 mm		SOT762-1

## 4. Functional diagram

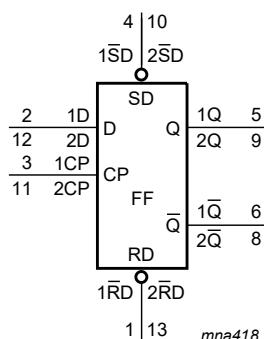


Fig. 1. Logic symbol

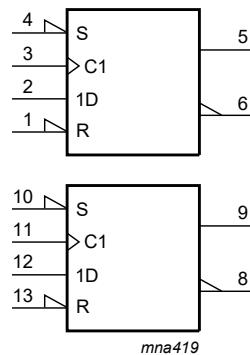


Fig. 2. IEC logic symbol

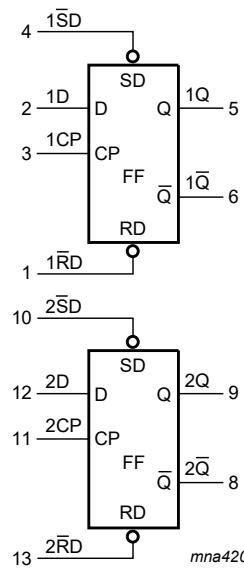


Fig. 3. Functional diagram

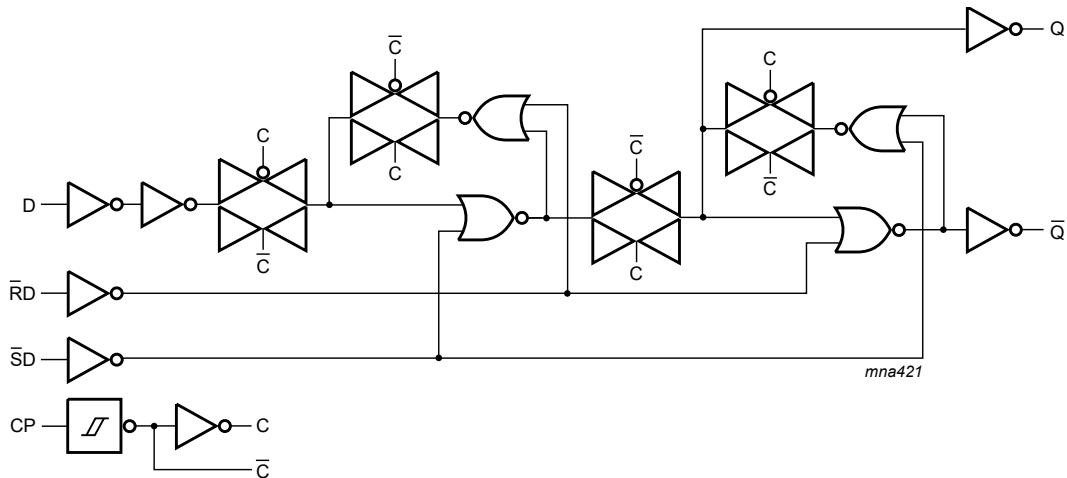
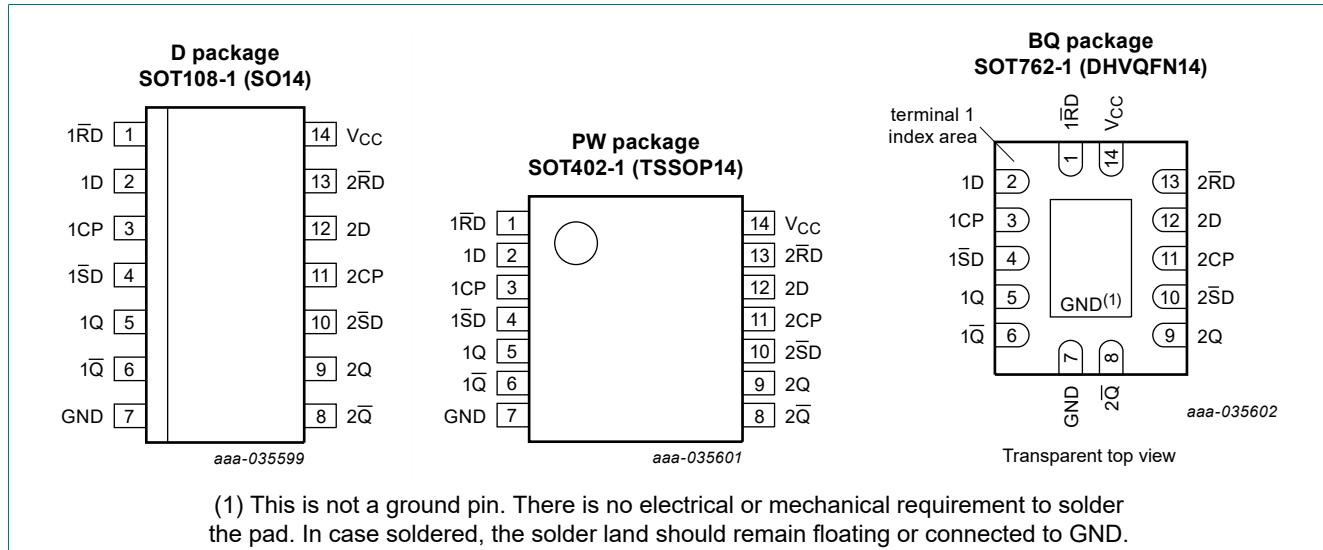


Fig. 4. Logic diagram for one flip-flop

## 5. Pinning information

### 5.1. Pinning



### 5.2. Pin description

Table 2. Pin description

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

## 6. Functional description

**Table 3. Function table**

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

Input				Output	
nSD	nRD	nCP	nD	nQ	nQ̄
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	L	X	nQ	nQ̄

**Table 4. Function table**

*H = HIGH voltage level; L = LOW voltage level;*

*↑ = LOW-to-HIGH transition; Q<sub>n+1</sub> = state after the next LOW-to-HIGH CP transition*

Input				Output	
nSD	nRD	nCP	nD	nQ <sub>n+1</sub>	nQ̄ <sub>n+1</sub>
H	H	↑	L	L	H
H	H	↑	H	H	L

## 7. Limiting values

**Table 5. 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	+6.5	V
I <sub>IK</sub>	input clamping current	V <sub>I</sub> < 0 V	-50	-	mA
V <sub>I</sub>	input voltage		[1]	-0.5	+6.5
I <sub>OK</sub>	output clamping current	V <sub>O</sub> > V <sub>CC</sub> or V <sub>O</sub> < 0 V	-	±50	mA
V <sub>O</sub>	output voltage		[2]	-0.5	V <sub>CC</sub> + 0.5
I <sub>O</sub>	output current	V <sub>O</sub> = 0 V to V <sub>CC</sub>	-	±50	mA
I <sub>CC</sub>	supply current		-	100	mA
I <sub>GND</sub>	ground current		-100	-	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			
		SOT108-1 (SO14) SOT402-1 (TSSOP14) SOT762-1 (DHVQFN14)	[3]	-	500 mW

[1] The minimum input voltage ratings may be exceeded if the input current ratings are observed.

[2] The output voltage ratings may be exceeded if the output current ratings are observed.

[3] For SOT108-1 (SO14) package: P<sub>tot</sub> derates linearly with 10.1 mW/K above 100 °C.

For SOT402-1 (TSSOP14) package: P<sub>tot</sub> derates linearly with 7.3 mW/K above 81 °C.

For SOT762-1 (DHVQFN14) package: P<sub>tot</sub> derates linearly with 9.6 mW/K above 98 °C.

## 8. Recommended operating conditions

**Table 6. Recommended operating conditions**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CC}$	supply voltage	for maximum speed performance	1.65	-	3.6	V
		for low-voltage applications	1.2	-	3.6	V
$V_I$	input voltage		0	-	5.5	V
$V_O$	output voltage		0	-	$V_{CC}$	V
$T_{amb}$	ambient temperature		-40	-	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CC} = 1.65 \text{ V to } 2.7 \text{ V}$	0	-	20	ns/V
		$V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$	0	-	10	ns/V

## 9. Static characteristics

**Table 7. Static characteristics**

At recommended operating conditions. Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ[1]	Max	Min	Max	
$V_{IH}$	HIGH-level input voltage	$V_{CC} = 1.2 \text{ V}$	1.08	-	-	1.08	-	V
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	$0.65V_{CC}$	-	-	$0.65V_{CC}$	-	V
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.7	-	-	1.7	-	V
		$V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$	2.0	-	-	2.0	-	V
$V_{IL}$	LOW-level input voltage	$V_{CC} = 1.2 \text{ V}$	-	-	0.12	-	0.12	V
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	-	-	$0.35V_{CC}$	-	$0.35V_{CC}$	V
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	-	-	0.7	-	0.7	V
		$V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$	-	-	0.8	-	0.8	V
$V_{OH}$	HIGH-level output voltage	$V_I = V_{IH}$ or $V_{IL}$						
		$I_O = -100 \mu\text{A}; V_{CC} = 1.65 \text{ V to } 3.6 \text{ V}$	$V_{CC} - 0.2$	-	-	$V_{CC} - 0.3$	-	V
		$I_O = -4 \text{ mA}; V_{CC} = 1.65 \text{ V}$	1.2	-	-	1.05	-	V
		$I_O = -8 \text{ mA}; V_{CC} = 2.3 \text{ V}$	1.8	-	-	1.65	-	V
		$I_O = -12 \text{ mA}; V_{CC} = 2.7 \text{ V}$	2.2	-	-	2.05	-	V
		$I_O = -18 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.4	-	-	2.25	-	V
		$I_O = -24 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.2	-	-	2.0	-	V
$V_{OL}$	LOW-level output voltage	$V_I = V_{IH}$ or $V_{IL}$						
		$I_O = 100 \mu\text{A}; V_{CC} = 1.65 \text{ V to } 3.6 \text{ V}$	-	-	0.2	-	0.3	V
		$I_O = 4 \text{ mA}; V_{CC} = 1.65 \text{ V}$	-	-	0.45	-	0.65	V
		$I_O = 8 \text{ mA}; V_{CC} = 2.3 \text{ V}$	-	-	0.6	-	0.8	V
		$I_O = 12 \text{ mA}; V_{CC} = 2.7 \text{ V}$	-	-	0.4	-	0.6	V
		$I_O = 24 \text{ mA}; V_{CC} = 3.0 \text{ V}$	-	-	0.55	-	0.8	V
$I_I$	input leakage current	$V_{CC} = 3.6 \text{ V}; V_I = 5.5 \text{ V or GND}$	-	$\pm 0.1$	$\pm 5$	-	$\pm 20$	$\mu\text{A}$
$I_{CC}$	supply current	$V_{CC} = 3.6 \text{ V}; V_I = V_{CC} \text{ or GND}; I_O = 0 \text{ A}$	-	0.1	10	-	40	$\mu\text{A}$

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ[1]	Max	Min	Max	
$\Delta I_{CC}$	additional supply current	per input pin; $V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$ ; $V_I = V_{CC} - 0.6 \text{ V}$ ; $I_O = 0 \text{ A}$	-	5	500	-	5000	$\mu\text{A}$
$C_I$	input capacitance	$V_{CC} = 0 \text{ V to } 3.6 \text{ V}$ ; $V_I = \text{GND to } V_{CC}$	-	4.0	-	-	-	$\text{pF}$

[1] All typical values are measured at  $V_{CC} = 3.3 \text{ V}$  (unless stated otherwise) and  $T_{amb} = 25 \text{ °C}$ .

## 10. Dynamic characteristics

**Table 8. Dynamic characteristics**

Voltages are referenced to GND (ground = 0 V). For test circuit see [Fig. 7](#).

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ[1]	Max	Min	Max	
$t_{pd}$	propagation delay	nCP to nQ, n $\bar{Q}$ ; see <a href="#">Fig. 5</a> [2]						
		$V_{CC} = 1.2 \text{ V}$	-	15	-	-	-	ns
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	1.0	5.0	10.3	1.0	11.9	ns
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.8	2.9	5.8	1.8	6.7	ns
		$V_{CC} = 2.7 \text{ V}$	1.0	2.7	6.0	1.0	7.5	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	1.0	2.6	5.2	1.0	6.5	ns
		nSD to nQ, n $\bar{Q}$ ; see <a href="#">Fig. 6</a>						
		$V_{CC} = 1.2 \text{ V}$	-	15	-	-	-	ns
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	0.5	4.0	10.6	0.5	12.2	ns
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.0	2.4	6.1	1.0	7.1	ns
		$V_{CC} = 2.7 \text{ V}$	1.0	2.9	6.4	1.0	8.0	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	1.0	2.2	5.4	1.0	7.0	ns
		nRD to nQ, n $\bar{Q}$ ; see <a href="#">Fig. 6</a>						
		$V_{CC} = 1.2 \text{ V}$	-	15	-	-	-	ns
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	0.5	4.1	10.7	0.5	12.4	ns
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.0	2.4	6.1	1.0	7.1	ns
		$V_{CC} = 2.7 \text{ V}$	1.0	3.0	6.4	1.0	8.0	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	1.0	2.2	5.4	1.0	7.0	ns
$t_w$	pulse width	clock HIGH or LOW; see <a href="#">Fig. 5</a>						
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	5.0	-	-	5.0	-	ns
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	4.0	-	-	4.0	-	ns
		$V_{CC} = 2.7 \text{ V}$	3.3	-	-	4.5	-	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	3.3	1.3	-	4.5	-	ns
		set or reset LOW; see <a href="#">Fig. 6</a>						
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	5.0	-	-	5.0	-	ns
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	4.0	-	-	4.0	-	ns
		$V_{CC} = 2.7 \text{ V}$	3.3	-	-	4.5	-	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	3.3	1.7	-	4.5	-	ns

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ[1]	Max	Min	Max	
t <sub>rec</sub>	recovery time	set or reset; see <a href="#">Fig. 6</a>						
		V <sub>CC</sub> = 1.65 V to 1.95 V	1.5	-	-	1.5	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.5	-	-	1.5	-	ns
		V <sub>CC</sub> = 2.7 V	1.5	-	-	1.0	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	+1.0	-3.0	-	1.0	-	ns
t <sub>su</sub>	set-up time	nD to nCP; see <a href="#">Fig. 5</a>						
		V <sub>CC</sub> = 1.65 V to 1.95 V	3.0	-	-	3.0	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	2.5	-	-	2.5	-	ns
		V <sub>CC</sub> = 2.7 V	2.2	-	-	2.2	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	2.0	0.8	-	2.0	-	ns
t <sub>h</sub>	hold time	nD to nCP; see <a href="#">Fig. 5</a>						
		V <sub>CC</sub> = 1.65 V to 1.95 V	2.0	-	-	2.0	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.5	-	-	1.5	-	ns
		V <sub>CC</sub> = 2.7 V	1.0	-	-	1.0	-	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	+1.0	-0.2	-	1.0	-	ns
f <sub>max</sub>	maximum frequency	nCP; see <a href="#">Fig. 5</a>						
		V <sub>CC</sub> = 1.65 V to 1.95 V	100	-	-	80	-	MHz
		V <sub>CC</sub> = 2.3 V to 2.7 V	125	-	-	100	-	MHz
		V <sub>CC</sub> = 2.7 V	150	-	-	120	-	MHz
		V <sub>CC</sub> = 3.0 V to 3.6 V	150	250	-	120	-	MHz
t <sub>sk(o)</sub>	output skew time	V <sub>CC</sub> = 3.0 V to 3.6 V	[3]	-	-	1.0	-	1.5 ns
C <sub>PD</sub>	power dissipation capacitance	per flip-flop; V <sub>I</sub> = GND to V <sub>CC</sub>	[4]					
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	12.4	-	-	-	pF
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	16.0	-	-	-	pF
		V <sub>CC</sub> = 3.0 V to 3.6 V	-	19.1	-	-	-	pF

[1] Typical values are measured at T<sub>amb</sub> = 25 °C and V<sub>CC</sub> = 1.2 V, 1.8 V, 2.5 V, 2.7 V and 3.3 V respectively.

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

[3] Skew between any two outputs of the same package switching in the same direction. This parameter is guaranteed by design.

[4] C<sub>PD</sub> is used to determine the dynamic power dissipation (P<sub>D</sub> in  $\mu$ W).

P<sub>D</sub> = C<sub>PD</sub> x V<sub>CC</sub><sup>2</sup> x f<sub>i</sub> x N +  $\Sigma$ (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

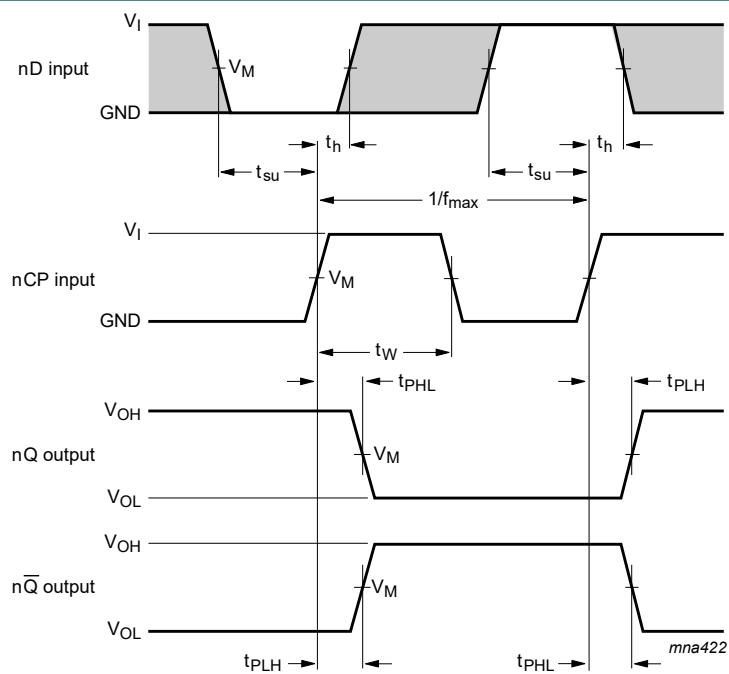
C<sub>L</sub> = output load capacitance in pF

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

N = number of inputs switching

$\Sigma$ (C<sub>L</sub> x V<sub>CC</sub><sup>2</sup> x f<sub>o</sub>) = sum of the outputs

### 10.1. Waveforms and test circuit

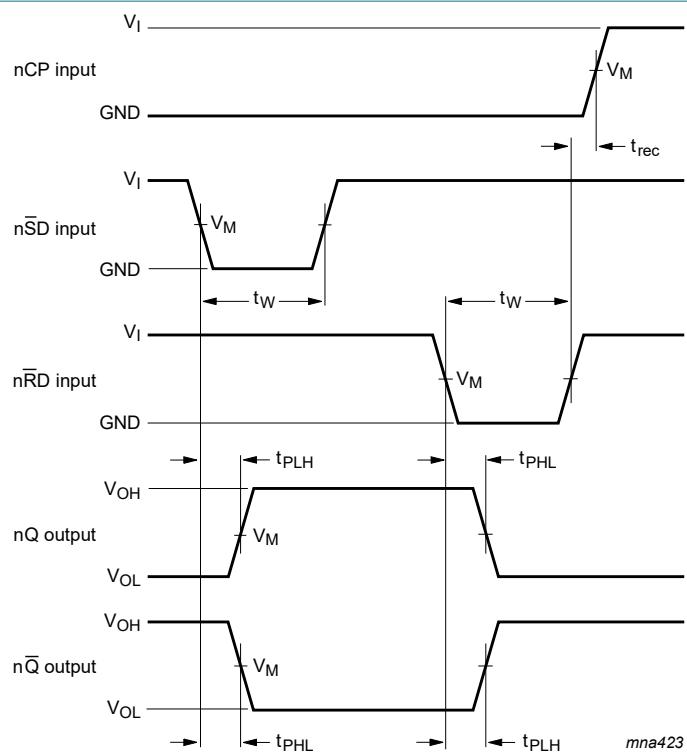


The shaded areas indicate when the input is permitted to change for predictable output performance.

Measurement points are given in [Table 9](#).

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

**Fig. 5. The clock input (nCP) to output (nQ, nQ̄) propagation delays, the clock pulse width, the nD to nCP set-up, the nCP to nD hold times, and the maximum frequency**



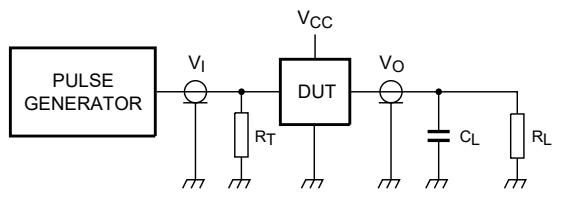
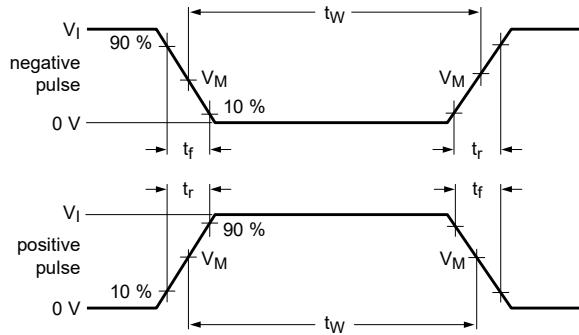
Measurement points are given in [Table 9](#).

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

**Fig. 6. The set ( $n\bar{S}D$ ) and reset ( $n\bar{R}D$ ) input to output ( $nQ$ ,  $n\bar{Q}$ ) propagation delays, the set and reset pulse widths, and the  $n\bar{R}D$  to  $nCP$  recovery time**

**Table 9. Measurement points**

Supply voltage	Input	Output
$V_{CC}$	$V_I$	$V_M$
1.2 V	$V_{CC}$	$0.5 \times V_{CC}$
1.65 V to 1.95 V	$V_{CC}$	$0.5 \times V_{CC}$
2.3 V to 2.7 V	$V_{CC}$	$0.5 \times V_{CC}$
2.7 V	2.7 V	1.5 V
3.0 V to 3.6 V	2.7 V	1.5 V



Test data is given in [Table 10](#).

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 output impedance  $Z_o$  of the pulse generator.

**Fig. 7. Test circuit for measuring switching times**

**Table 10. Test data**

Supply voltage	Input		Load	
$V_{CC}$	$V_I$	$t_r, t_f$	$C_L$	$R_L$
1.2 V	$V_{CC}$	$\leq 2$ ns	30 pF	1 k $\Omega$
1.65 V to 1.95 V	$V_{CC}$	$\leq 2$ ns	30 pF	1 k $\Omega$
2.3 V to 2.7 V	$V_{CC}$	$\leq 2$ ns	30 pF	500 $\Omega$
2.7 V	2.7 V	$\leq 2.5$ ns	50 pF	500 $\Omega$
3.0 V to 3.6 V	2.7 V	$\leq 2.5$ ns	50 pF	500 $\Omega$

## 11. Package outline

SO14: plastic small outline package; 14 leads; body width 3.9 mm

SOT108-1

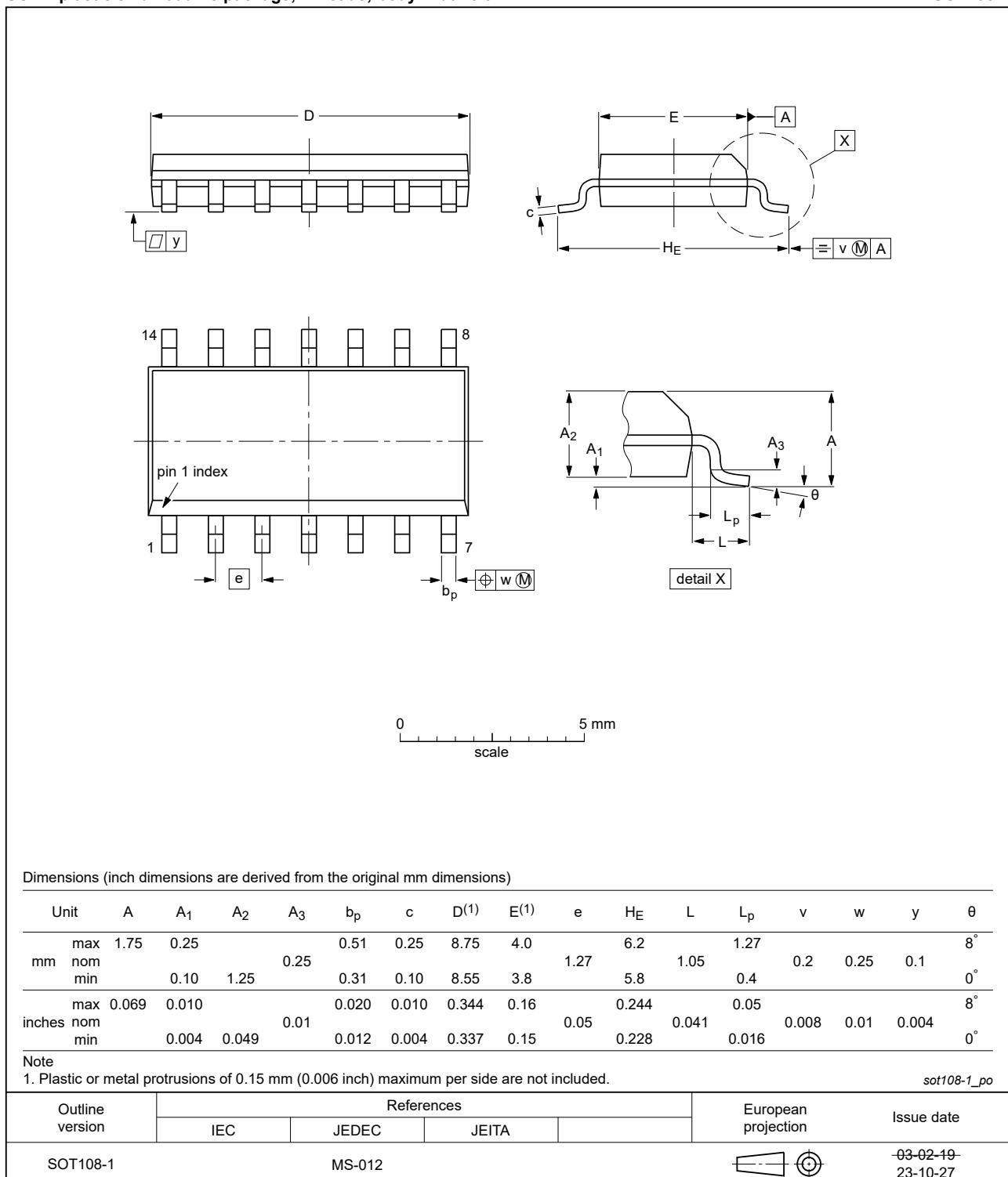


Fig. 8. Package outline SOT108-1 (SO14)

TSSOP14: plastic thin shrink small outline package; 14 leads; body width 4.4 mm

SOT402-1

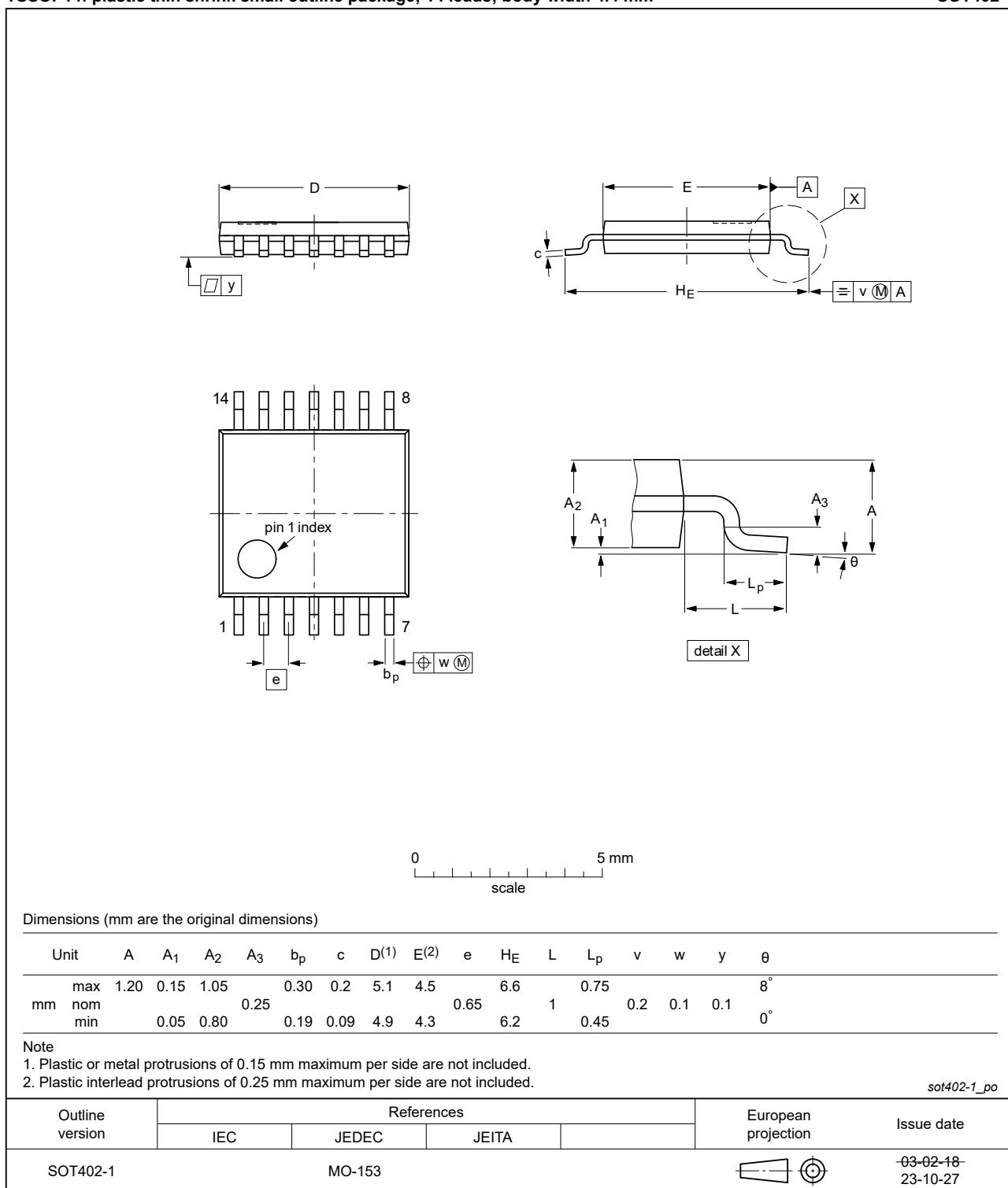


Fig. 9. Package outline SOT402-1 (TSSOP14)

DHVQFN14: plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads; 14 terminals; body  $2.5 \times 3 \times 0.85$  mm

SOT762-1

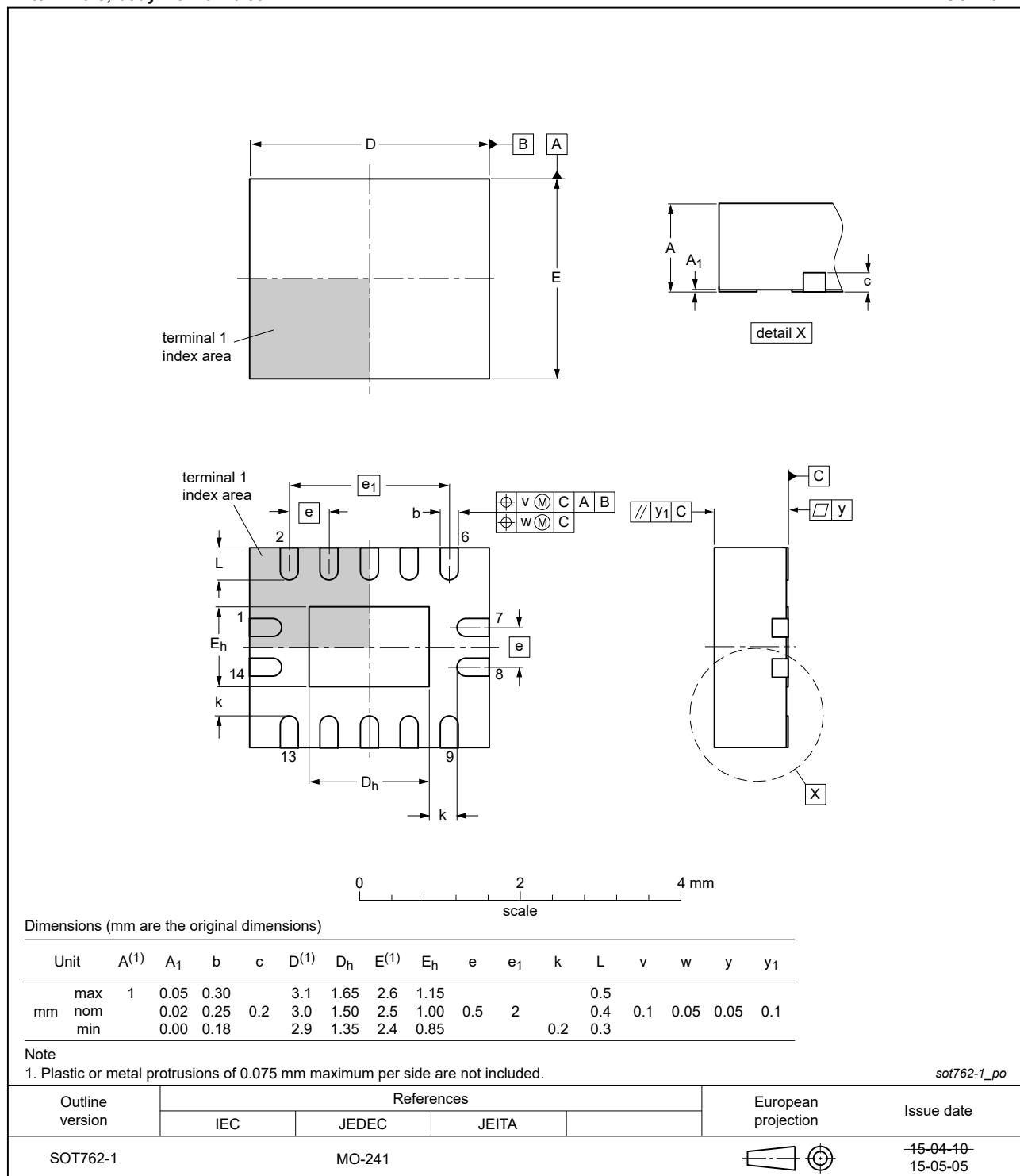


Fig. 10. Package outline SOT762-1 (DHVQFN14)

## 12. Abbreviations

**Table 11. Abbreviations**

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

## 13. Revision history

**Table 12. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
74LVC74A_Q100 v.6	20250922	Product data sheet	-	74LVC74A_Q100 v.5
Modifications:			<ul style="list-style-type: none"> <li>Updates made to <a href="#">Table 3</a>.</li> </ul>	
74LVC74A_Q100 v.5	20240222	Product data sheet	-	74LVC74A_Q100 v.4
Modifications:			<ul style="list-style-type: none"> <li><a href="#">Fig. 8, Fig. 9</a>: Aligned SO and TSSOP package outline drawings to JEDEC MS-012 and MO-153.</li> </ul>	
74LVC74A_Q100 v.4	20230824	Product data sheet	-	74LVC74A_Q100 v.3
Modifications:			<ul style="list-style-type: none"> <li><a href="#">Section 2</a>: ESD specification updated according to the latest JEDEC standard.</li> </ul>	
74LVC74A_Q100 v.3	20200618	Product data sheet	-	74LVC74A_Q100 v.2
Modifications:			<ul style="list-style-type: none"> <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><a href="#">Section 1</a> and <a href="#">Section 2</a> updated.</li> <li><a href="#">Table 5</a>: Derating values for <math>P_{tot}</math> total power dissipation have been updated.</li> <li><a href="#">Table 10</a> corrected (errata).</li> <li>Package outline drawing of SOT762-1 (<a href="#">Fig. 10</a>) updated.</li> </ul>	
74LVC74A_Q100 v.2	20130405	Product data sheet	-	74LVC74A_Q100 v.1
Modifications:			<ul style="list-style-type: none"> <li><a href="#">Section 2</a>: removed redundant temperature range.</li> </ul>	
74LVC74A_Q100 v.1	20130326	Product data sheet	-	-

## 14. 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>.

### Definitions

**Draft** — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. Nexperia does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

**Short data sheet** — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local Nexperia sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

**Product specification** — The information and data provided in a Product data sheet shall define the specification of the product as agreed between Nexperia and its customer, unless Nexperia and customer have explicitly agreed otherwise in writing. In no event however, shall an agreement be valid in which the Nexperia product is deemed to offer functions and qualities beyond those described in the Product data sheet.

### Disclaimers

**Limited warranty and liability** — Information in this document is believed to be accurate and reliable. However, Nexperia does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. Nexperia takes no responsibility for the content in this document if provided by an information source outside of Nexperia.

In no event shall Nexperia be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, Nexperia's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of Nexperia.

**Right to make changes** — Nexperia reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

**Suitability for use in automotive applications** — This Nexperia product has been qualified for use in automotive applications. Unless otherwise agreed in writing, the product is not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or

equipment, nor in applications where failure or malfunction of an Nexperia product can reasonably be expected to result in personal injury, death or severe property or environmental damage. Nexperia and its suppliers accept no liability for inclusion and/or use of Nexperia products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

**Quick reference data** — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

**Applications** — Applications that are described herein for any of these products are for illustrative purposes only. Nexperia makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using Nexperia products, and Nexperia accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the Nexperia product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

Nexperia does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using Nexperia products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). Nexperia does not accept any liability in this respect.

**Limiting values** — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

**Terms and conditions of commercial sale** — Nexperia products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.nexperia.com/profile/terms>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. Nexperia hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of Nexperia products by customer.

**No offer to sell or license** — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

**Export control** — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

**Translations** — A non-English (translated) version of a document is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

### Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

## Contents

1. General description.....	1
2. Features and benefits.....	1
3. Ordering information.....	1
4. Functional diagram.....	2
5. Pinning information.....	3
5.1. Pinning.....	3
5.2. Pin description.....	3
6. Functional description.....	4
7. Limiting values.....	4
8. Recommended operating conditions.....	5
9. Static characteristics.....	5
10. Dynamic characteristics.....	6
10.1. Waveforms and test circuit.....	8
11. Package outline.....	11
12. Abbreviations.....	14
13. Revision history.....	14
14. Legal information.....	15

© Nexperia B.V. 2025. All rights reserved

For more information, please visit: <http://www.nexperia.com>

For sales office addresses, please send an email to: [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)

Date of release: 22 September 2025