Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

74HC423
Dual retriggerable monostable multivibrator with reset
Rev. 7 — 11 February 2016   **Product data sheet**

1. General description

The 74HC423 is a dual retriggerable monostable multivibrator with output pulse width control by two methods. The basic pulse time is programmed by selection of an external resistor (R_{EXT}) and capacitor (C_{EXT}). Once triggered, the basic output pulse width may be extended by retriggering ($n\overline{A}$) or (nB). By repeating this process, the output pulse period (nQ = HIGH, $n\overline{Q}$ = LOW) can be made as long as desired. When $n\overline{RD}$ is LOW, it forces the nQ output LOW, the $n\overline{Q}$ output HIGH and also inhibits the triggering. Schmitt-trigger action in the $n\overline{A}$ and nB inputs, makes the circuit highly tolerant to slower input rise and fall times. The '423' is identical to the '123' but cannot be triggered via the reset input. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of V_{CC}.

2. Features and benefits

- DC triggered from active HIGH or active LOW inputs
- Retriggerable for very long pulses up to 100 % duty factor
- Direct reset terminates output pulse
- Schmitt-trigger action on all inputs except for the reset input
- Complies with JEDEC standard no. 7A
- Input levels:
  - ◆ For 74HC423: CMOS level
- 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. Ordering information

Table 1.   Ordering information

Type number	Package				
	Temperature range	**Name**	**Description**		**Version**
74HC423D	−40 °C to +125 °C	SO16	plastic small outline package; 16 leads; body width 3.9 mm		SOT109-1
74HC423BQ	−40 °C to +125 °C	DHVQFN16	plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads; 16 terminals; body 2.5 × 3.5 × 0.85 mm		SOT763-1

nexperia

4. Functional diagram
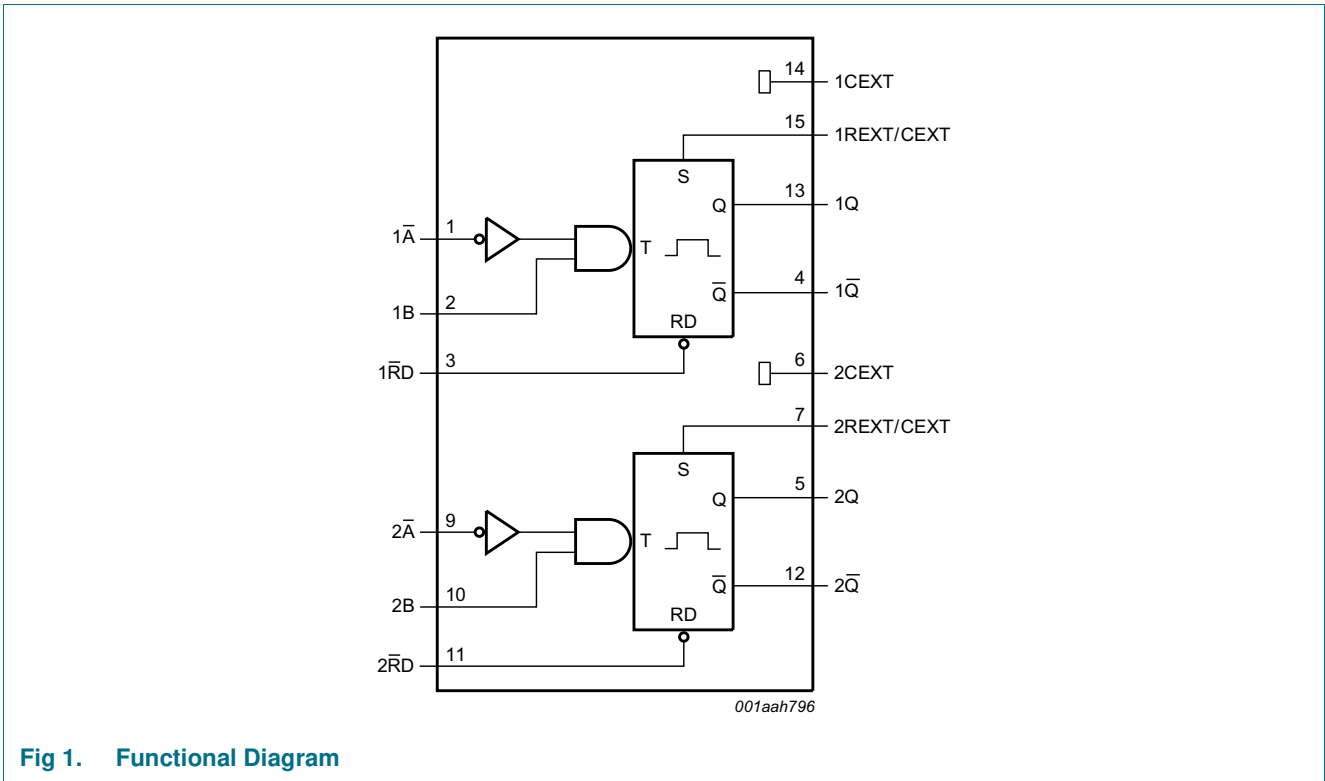
Fig 1. **Functional Diagram**
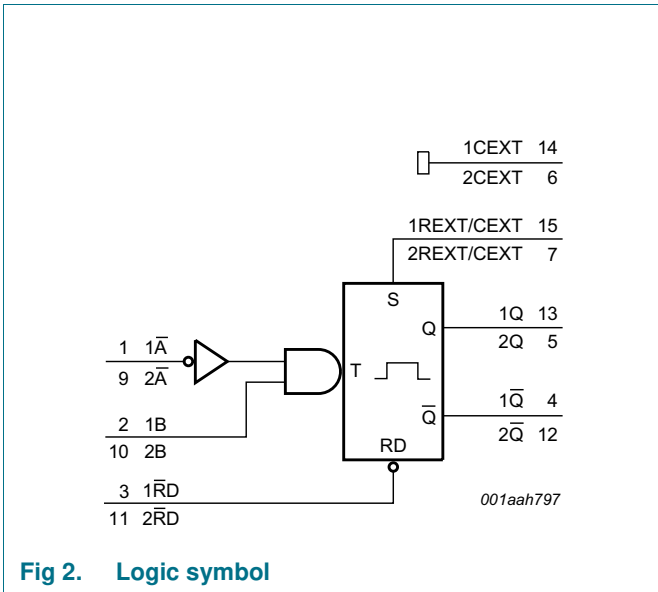
Fig 2. **Logic symbol**

Fig 3. **IEC Logic symbol**

74HC423

All information provided in this document is subject to legal disclaimers.

Product data sheet **Rev. 7 — 11 February 2016** **2 of 19**

001aah799

Fig 4.   Logic diagram

74HC423

All information provided in this document is subject to legal disclaimers.

Product data sheet

Rev. 7 — 11 February 2016

3 of 19
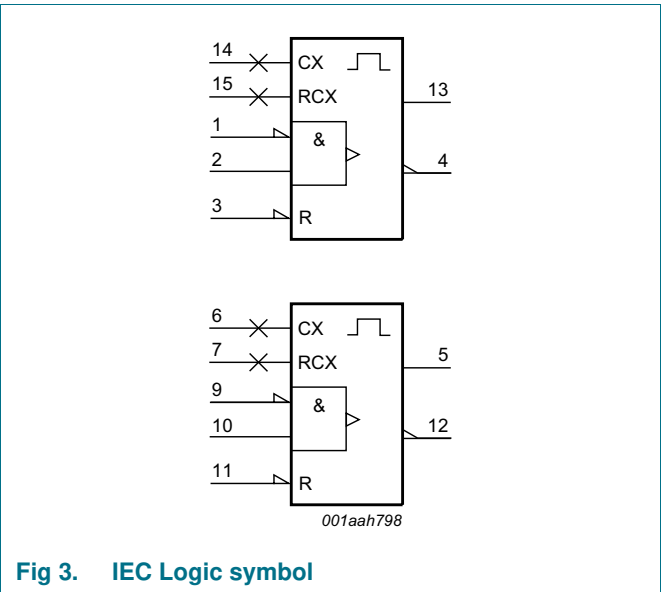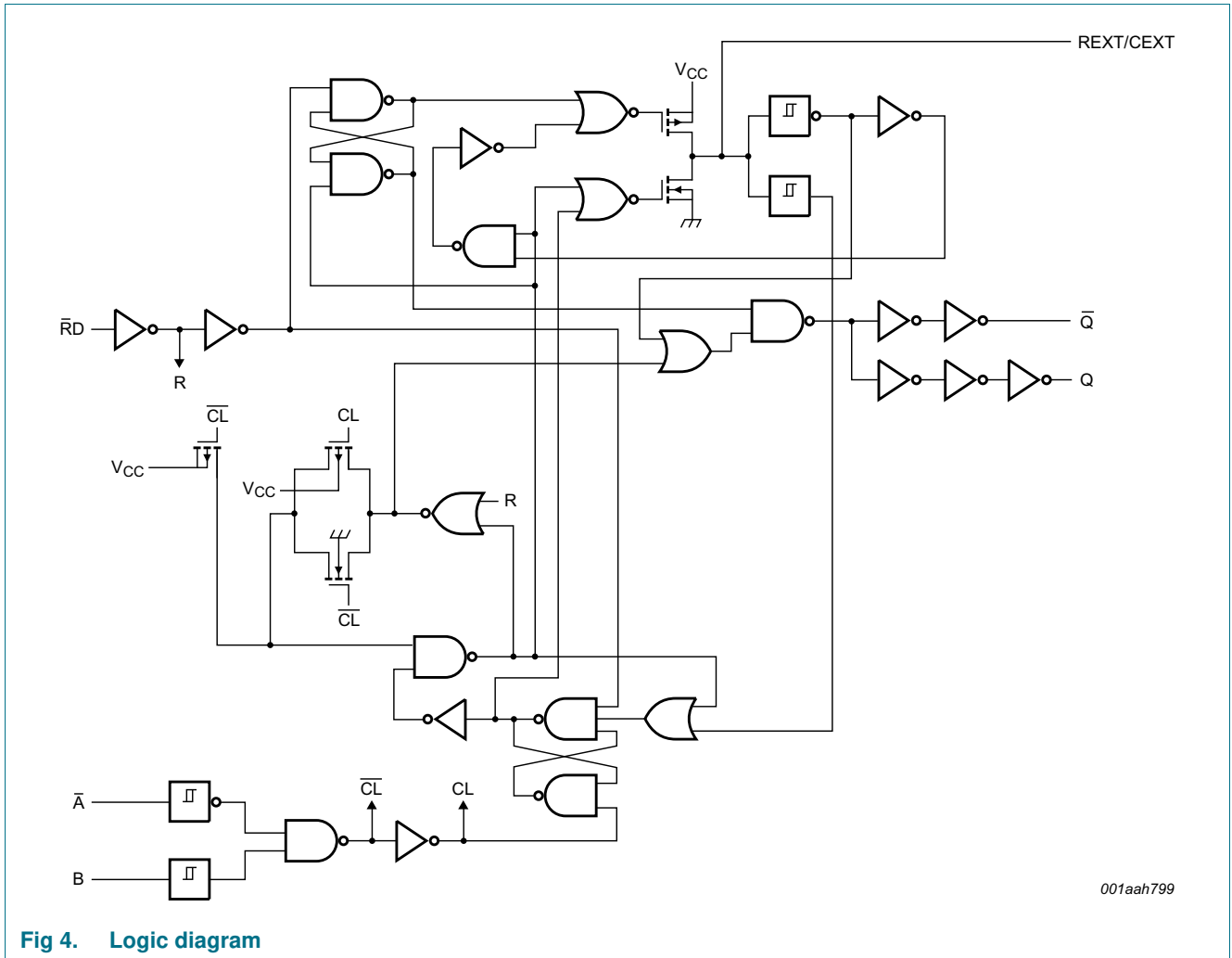
5. Pinning information

5.1 Pinning

Fig 5. Pin configuration SO16

(1) This is not a supply pin. The substrate is attached to this pad using conductive die attach material. There is no electrical or mechanical requirement to solder this pad. However, if it is soldered, the solder land should remain floating or be connected to V_{CC}.

Fig 6. Pin configuration DHVQFN16
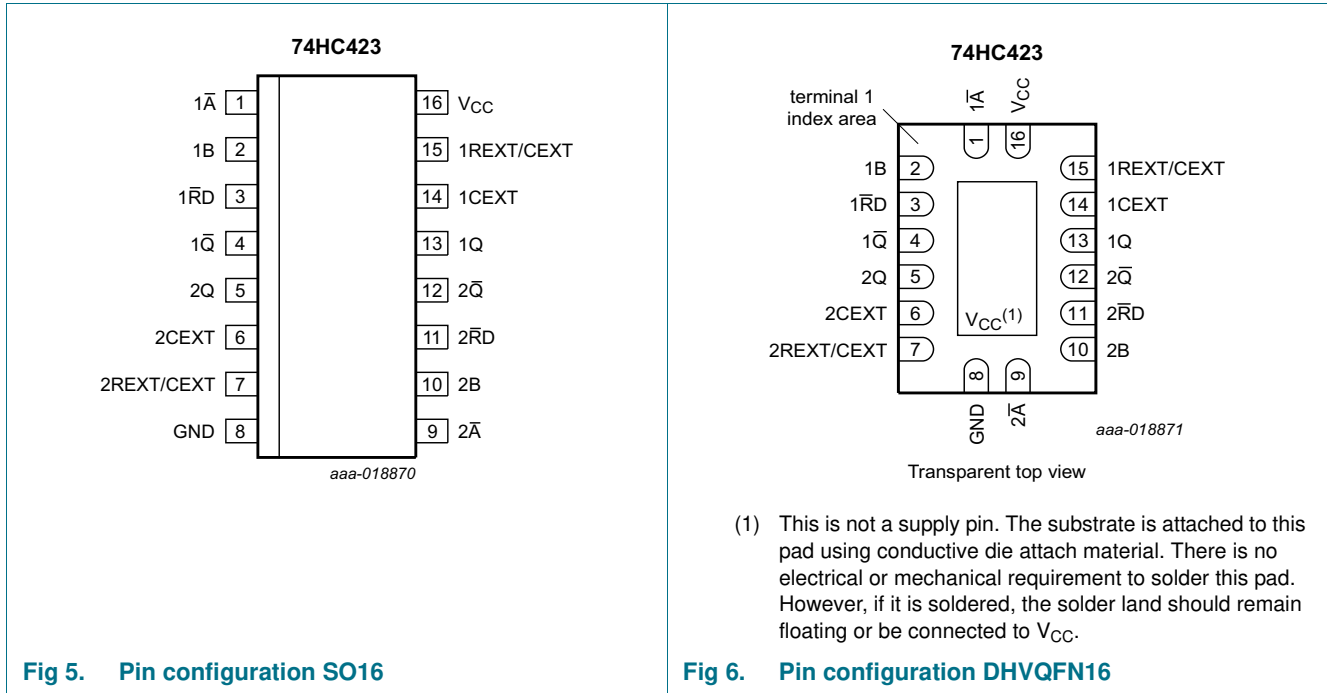
5.2 Pin description

Table 2. Pin description

Symbol	Pin	Description
$1\overline{A}$, $2\overline{A}$	1, 9	trigger input (negative edge triggered)
1B, 2B	2, 10	trigger input (positive edge triggered)
$1\overline{RD}$, $2\overline{RD}$	3, 11	direct reset (active LOW)
$1\overline{Q}$, $2\overline{Q}$	4, 12	output (active LOW)
GND	8	ground (0 V)
1Q, 2Q	13, 5	output (active HIGH)
1CEXT, 2CEXT	14, 6	external capacitor connection
1REXT/CEXT, 2REXT/CEXT	15, 7	external resistor/capacitor connection
V_{CC}	16	supply voltage

74HC423

All information provided in this document is subject to legal disclaimers.

Product data sheet Rev. 7 — 11 February 2016 **4 of 19**

6. Functional description

Table 3.   Function table[1]

Input			Output	
nRD	**nA**	**nB**	**nQ**	**nQ̄**
L	X	X	L	H
X	H	X	L [2]	H [2]
X	X	L	L [2]	H [2]
H	L	↑	⊓	⊔
H	↓	H	⊓	⊔

[1]   H = HIGH voltage level;

L = LOW voltage level;

X = don't care;

↑ = LOW-to-HIGH transition;

↓ = HIGH-to-LOW transition;

⊓ = one HIGH level output pulse;

⊔ = one LOW level output pulse.

[2]   If the monostable multivibrator was triggered before this condition was established, the pulse will continue as programmed.

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	$V_I < -0.5$ V or $V_I > V_{CC} + 0.5$ V	[1]	-	±20	mA
I_{OK}	output clamping current	$V_O < -0.5$ V or $V_O > V_{CC} + 0.5$ V	[1]	-	±20	mA
I_O	output current	-0.5 V $< V_O < V_{CC} + 0.5$ V		-	±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	SO16 and DHVQFN16 packages	[2]	-	500	mW

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

[2]   For SO16 package: above 70 °C the value of P_{tot} derates linearly at 8 mW/K;

For DHVQFN16 package: above 60 °C the value of P_{tot} derates linearly at 4.5 mW/K.

74HC423

Product data sheet **Rev. 7 — 11 February 2016** **5 of 19**

8. Recommended operating conditions

Table 5.   Recommended operating conditions
Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	supply voltage		2.0	5.0	6.0	V
V_I	input voltage		0	-	V_{CC}	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} = 2.0 V	-	-	625	ns/V
		V_{CC} = 4.5 V	-	1.67	139	ns/V
		V_{CC} = 6.0 V	-	-	83	ns/V

9. Static characteristics

Table 6.   Static characteristics
At recommended operating conditions; voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	25 °C			−40 °C to +85 °C		−40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
V_{IH}	HIGH-level input voltage	V_{CC} = 2.0 V	1.5	1.2	-	1.5	-	1.5	-	V
		V_{CC} = 4.5 V	3.15	2.4	-	3.15	-	3.15	-	V
		V_{CC} = 6.0 V	4.2	3.2	-	4.2	-	4.2	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 2.0 V	-	0.8	0.5	-	0.5	-	0.5	V
		V_{CC} = 4.5 V	-	2.1	1.35	-	1.35	-	1.35	V
		V_{CC} = 6.0 V	-	2.8	1.8	-	1.8	-	1.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}								
		I_O = −20 μA; V_{CC} = 2.0 V	1.9	2.0	-	1.9	-	1.9	-	V
		I_O = −20 μA; V_{CC} = 4.5 V	4.4	4.5	-	4.4	-	4.4	-	V
		I_O = −20 μA; V_{CC} = 6.0 V	5.9	6.0	-	5.9	-	5.9	-	V
		I_O = −4.0 mA; V_{CC} = 4.5 V	3.98	4.32	-	3.84	-	3.7	-	V
		I_O = −5.2 mA; V_{CC} = 6.0 V	5.48	5.81	-	5.34	-	5.2	-	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}								
		I_O = 20 μA; V_{CC} = 2.0 V	-	0	0.1	-	0.1	-	0.1	V
		I_O = 20 μA; V_{CC} = 4.5 V	-	0	0.1	-	0.1	-	0.1	V
		I_O = 20 μA; V_{CC} = 6.0 V	-	0	0.1	-	0.1	-	0.1	V
		I_O = 4.0 mA; V_{CC} = 4.5 V	-	0.15	0.26	-	0.33	-	0.4	V
		I_O = 5.2 mA; V_{CC} = 6.0 V	-	0.16	0.26	-	0.33	-	0.4	V
I_I	input leakage current	$V_I = V_{CC}$ or GND; V_{CC} = 6.0 V	-	-	±0.1	-	±1.0	-	±1.0	μA
I_{CC}	supply current	$V_I = V_{CC}$ or GND; I_O = 0 A; V_{CC} = 6.0 V	-	-	8.0	-	80	-	160	μA
C_I	input capacitance		-	3.5	-	-	-	-	-	pF

74HC423
All information provided in this document is subject to legal disclaimers.

Product data sheet **Rev. 7 — 11 February 2016** **6 of 19**

10. Dynamic characteristics

Table 7. **Dynamic characteristics**
GND = 0 V; test circuit see Figure 12.

Symbol	Parameter	Conditions		25 °C			–40 °C to +85 °C		–40 °C to +125 °C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
t_{pd}	propagation delay	$n\overline{A}$ or nB to nQ or $n\overline{Q}$; R_{EXT} = 5 kΩ; C_{EXT} = 0 pF; see Figure 7	[1]								
		V_{CC} = 2.0 V		-	80	255	-	320	-	385	ns
		V_{CC} = 4.5 V		-	29	51	-	64	-	77	ns
		V_{CC} = 5.0 V; C_L = 15 pF		-	25	-	-	-	-	-	ns
		V_{CC} = 6.0 V		-	23	43	-	54	-	65	ns
		$n\overline{RD}$ to nQ or $n\overline{Q}$; see Figure 7	[1]								
		V_{CC} = 2.0 V		-	66	215	-	270	-	325	ns
		V_{CC} = 4.5 V		-	24	43	-	54	-	65	ns
		V_{CC} = 5.0 V; C_L = 15 pF		-	20	-	-	-	-	-	ns
		V_{CC} = 6.0 V		-	19	37	-	46	-	55	ns
t_t	transition time	see Figure 7	[2]								
		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	$n\overline{A}$ input LOW; see Figure 7 and Figure 8									
		V_{CC} = 2.0 V		100	11	-	125	-	150	-	ns
		V_{CC} = 4.5 V		20	4	-	25	-	30	-	ns
		V_{CC} = 6.0 V		17	3	-	21	-	26	-	ns
		nB input HIGH; see Figure 7 and Figure 8									
		V_{CC} = 2.0 V		100	17	-	125	-	150	-	ns
		V_{CC} = 4.5 V		20	6	-	25	-	30	-	ns
		V_{CC} = 6.0 V		17	5	-	21	-	26	-	ns
		$n\overline{RD}$ input LOW; see Figure 7 and Figure 8									
		V_{CC} = 2.0 V		100	14	-	125	-	150	-	ns
		V_{CC} = 4.5 V		20	5	-	25	-	30	-	ns
		V_{CC} = 6.0 V		17	4	-	21	-	26	-	ns
		nQ HIGH or $n\overline{Q}$ LOW; V_{CC} = 5.0 V; R_{EXT} = 10 kΩ; C_{EXT} = 100 nF; see Figure 7 and Figure 8		-	450	-	-	-	-	-	μs
		nQ HIGH or $n\overline{Q}$ LOW; V_{CC} = 5.0 V; R_{EXT} = 5 kΩ; C_{EXT} = 0 pF; V_I = GND to V_{CC}; see Figure 7 and Figure 8	[3]	-	75	-	-	-	-	-	ns
t_{rtrig}	retrigger time	$n\overline{A}$ or nB input; V_{CC} = 5.0 V; R_{EXT} = 5 kΩ; C_{EXT} = 0 pF; see Figure 10	[4]	-	110	-	-	-	-	-	ns

74HC423

All information provided in this document is subject to legal disclaimers.

Product data sheet **Rev. 7 — 11 February 2016** **7 of 19**

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

GND = 0 V; test circuit see Figure 12.

Symbol	Parameter	Conditions		25 °C			–40 °C to +85 °C		–40 °C to +125 °C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
R_{EXT}	external timing resistor	V_{CC} = 2.0 V; see Figure 8		10	-	1000	-	-	-	-	kΩ
		V_{CC} = 5.0 V		2	-	1000	-	-	-	-	kΩ
C_{EXT}	external timing capacitor	V_{CC} = 5.0 V; see Figure 8	[5]		no limits						pF
C_{PD}	power dissipation capacitance	per package; V_I = GND to V_{CC}	[6]	-	54	-	-	-	-	-	pF

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

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

[3] For other R_{EXT} and C_{EXT} combinations see Figure 8. If C_{EXT} > 10 pF, the next formula is valid:

$t_W = K \times R_{EXT} \times C_{EXT}$ (typ.), where:

t_W = output pulse width in ns;

R_{EXT} = external resistor in kΩ;

C_{EXT} = external capacitor in pF;

K = 0.55 for V_{CC} = 2.0 V and 0.45 for V_{CC} = 5.0 V; see Figure 9.

Inherent test jig and pin capacitance at pins 15 and 7 (nREXT/CEXT) is 7 pF.

[4] The time to retrigger the monostable multivibrator depends on the values of R_{EXT} and C_{EXT}. The output pulse width will only be extended when the time between the active-going edges of the trigger input pulses meets the minimum retrigger time.

If C_{EXT} > 10 pF, the next formula (at V_{CC} = 5.0 V) for the set-up time of a retrigger pulse is valid:

$t_{rtrig} = 30 + 0.19 \times R_{EXT} \times C_{EXT}^{0.9} + 13 \times R_{EXT}^{1.05}$ (typ.); where:

t_{rtrig} = retrigger time in ns;

C_{EXT} = external capacitor in pF;

R_{EXT} = external resistor in kΩ.

Inherent test jig and pin capacitance at pins 15 and 7 (nREXT/CEXT) is 7 pF.

[5] When the device is powered-up, initiate the device via a reset pulse, when C_{EXT} < 50 pF.

[6] C_{PD} is used to determine the dynamic power dissipation (P_D in μW):

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

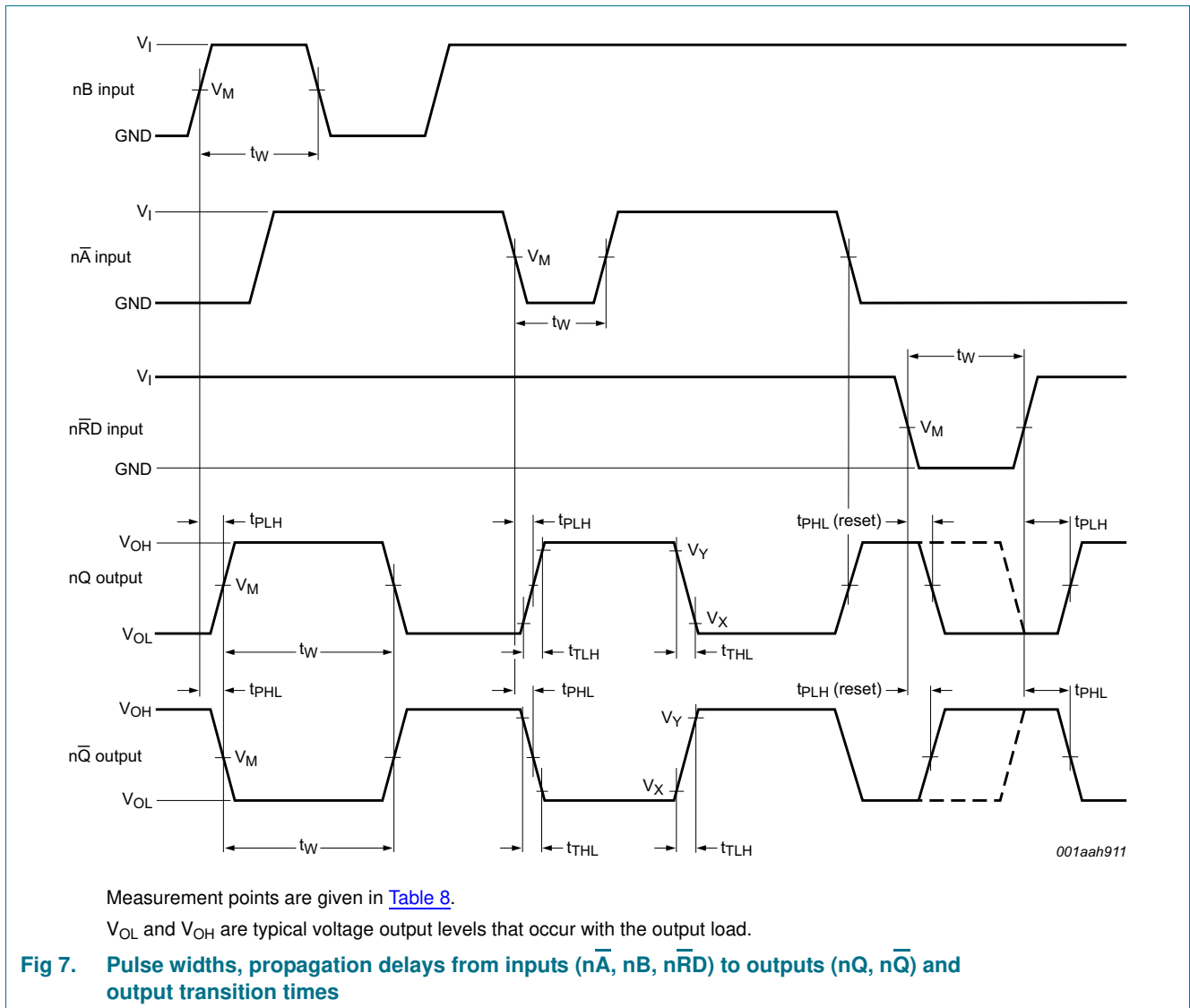$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of outputs.

74HC423

All information provided in this document is subject to legal disclaimers.

Product data sheet **Rev. 7 — 11 February 2016** **8 of 19**

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 7. Pulse widths, propagation delays from inputs (n$\overline{A}$, nB, n$\overline{RD}$) to outputs (nQ, n$\overline{Q}$) and output transition times

Table 8. Measurement points

Input		Output		
V_I	V_M	V_M	V_X	V_Y
V_{CC}	$0.5V_{CC}$	$0.5V_{CC}$	$0.1V_{CC}$	$0.9V_{CC}$

74HC423

Product data sheet Rev. 7 — 11 February 2016 9 of 19
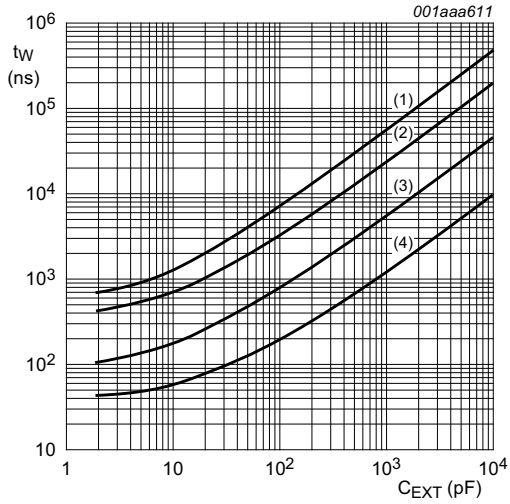
V_{CC} = 5.0 V and T_{amb} = 25 °C.

(1) R_{EXT} = 100 kΩ.

(2) R_{EXT} = 50 kΩ.

(3) R_{EXT} = 10 kΩ.

(4) R_{EXT} = 2 kΩ.

Fig 8. Typical output pulse width as a function of the external capacitor values
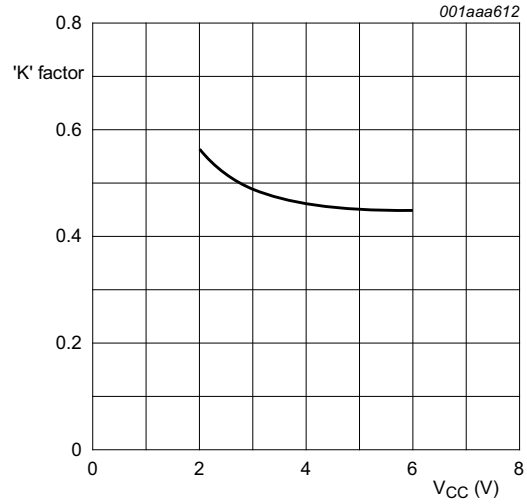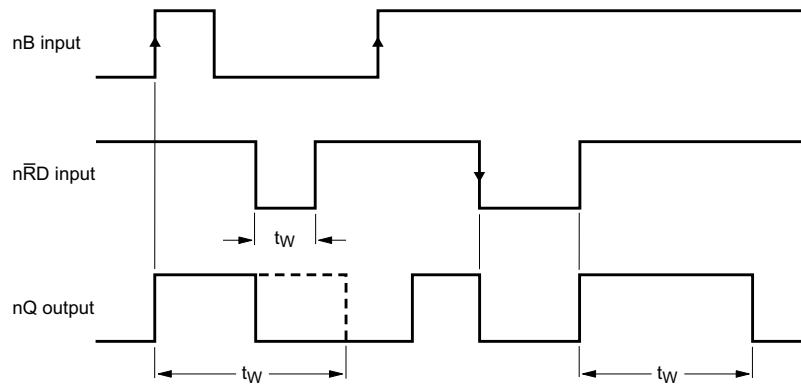

External capacitance = 10 nF,
external resistance = 10 kΩ to 100 kΩ and T_{amb} = 25 °C.
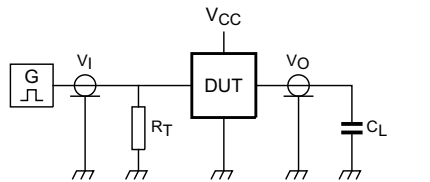
Fig 9. Typical 'K' factor
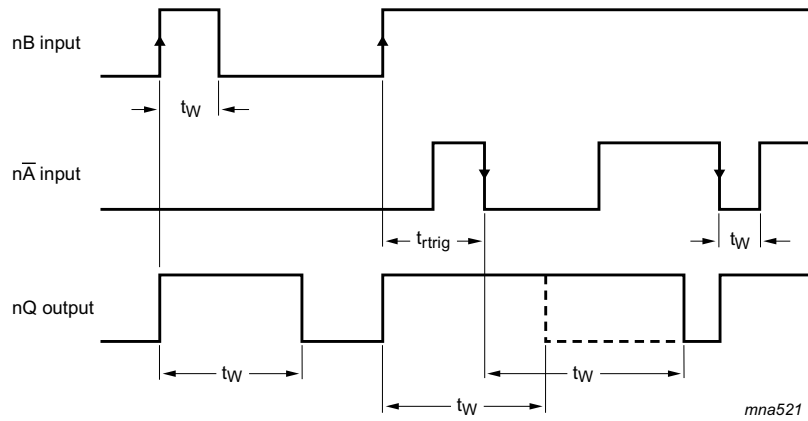
$n\overline{RD}$ = HIGH.

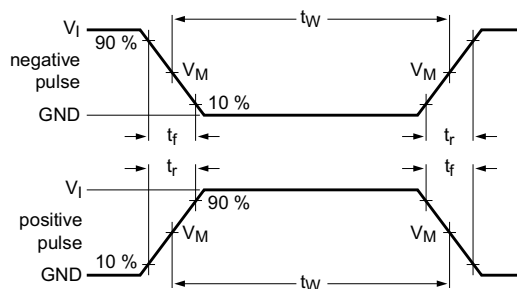**Fig 10. Output pulse control using retrigger pulse (t_{rtrig})**

$n\overline{A}$ = LOW.

Fig 11. Output pulse control using reset input $n\overline{RD}$

Test data is given in Table 9.

Definitions for test circuit:

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

C_L = Load capacitance including jig and probe capacitance.

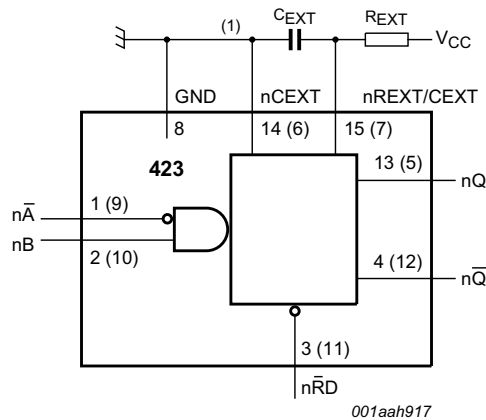**Fig 12. Test circuit for measuring switching times**

Table 9. Test data

Supply	Input		Load
V_{CC}	V_I	t_r, t_f	C_L
2.0 V to 6.0 V	V_{CC}	6 ns	15 pF, 50 pF

12. Application information

12.1 Timing component connections

The basic output pulse width is essentially determined by the values of the external timing components R_{EXT} and C_{EXT}.

(1) For minimum noise generation it is recommended that the nCEXT pins (6, 14) are connected to ground externally to the GND pin (8).

Fig 13. Timing component connections

12.1.1 Minimum monostable pulse width

To set the minimum pulse width, when $C_{EXT} < 10$ nF, see Figure 8 and when $C_{EXT} > 10$ nF, the output pulse width is defined as:

$t_W = 0.45 \times R_{EXT} \times C_{EXT}$ (typ.), where:

t_W = pulse width in μs;

R_{EXT} = external resistor in kΩ;

C_{EXT} = external capacitor in nF.

12.2 Power-up considerations

When the monostable is powered-up it may produce an output pulse, with a pulse width defined by the values of R_{EXT} and C_{EXT}, this output pulse can be eliminated using the circuit shown in Figure 14.
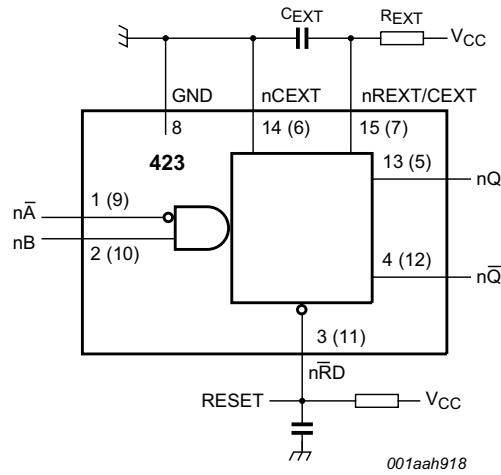
74HC423   All information provided in this document is subject to legal disclaimers.

Product data sheet   **Rev. 7 — 11 February 2016**   **12 of 19**

Fig 14. Power-up output pulse elimination circuit

12.3 Power-down considerations

A large capacitor C_{EXT} may cause problems when powering-down the monostable due to the capacitor's stored energy. When a system containing this device is powered-down or a rapid decrease of V_{CC} to zero occurs, the monostable may sustain damage, due to the capacitor discharging through the input protection diodes. To avoid this possibility, use a damping diode D_{EXT} preferably a germanium or Schottky type diode able to withstand large current surges and connect as shown in Figure 15.
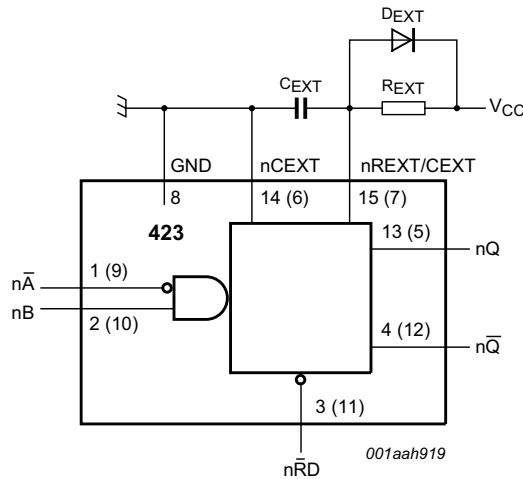

Fig 15. Power-down protection circuit

13. Package outline

SO16: plastic small outline package; 16 leads; body width 3.9 mm   **SOT109-1**

DIMENSIONS (inch dimensions are derived from the original mm dimensions)

UNIT	A max.	A_1	A_2	A_3	b_p	c	$D^{(1)}$	$E^{(1)}$	e	H_E	L	L_p	Q	v	w	y	$Z^{(1)}$	θ
mm	1.75	0.25 0.10	1.45 1.25	0.25	0.49 0.36	0.25 0.19	10.0 9.8	4.0 3.8	1.27	6.2 5.8	1.05	1.0 0.4	0.7 0.6	0.25	0.25	0.1	0.7 0.3	8° 0°
inches	0.069	0.010 0.004	0.057 0.049	0.01	0.019 0.014	0.0100 0.0075	0.39 0.38	0.16 0.15	0.05	0.244 0.228	0.041	0.039 0.016	0.028 0.020	0.01	0.01	0.004	0.028 0.012	

Note

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

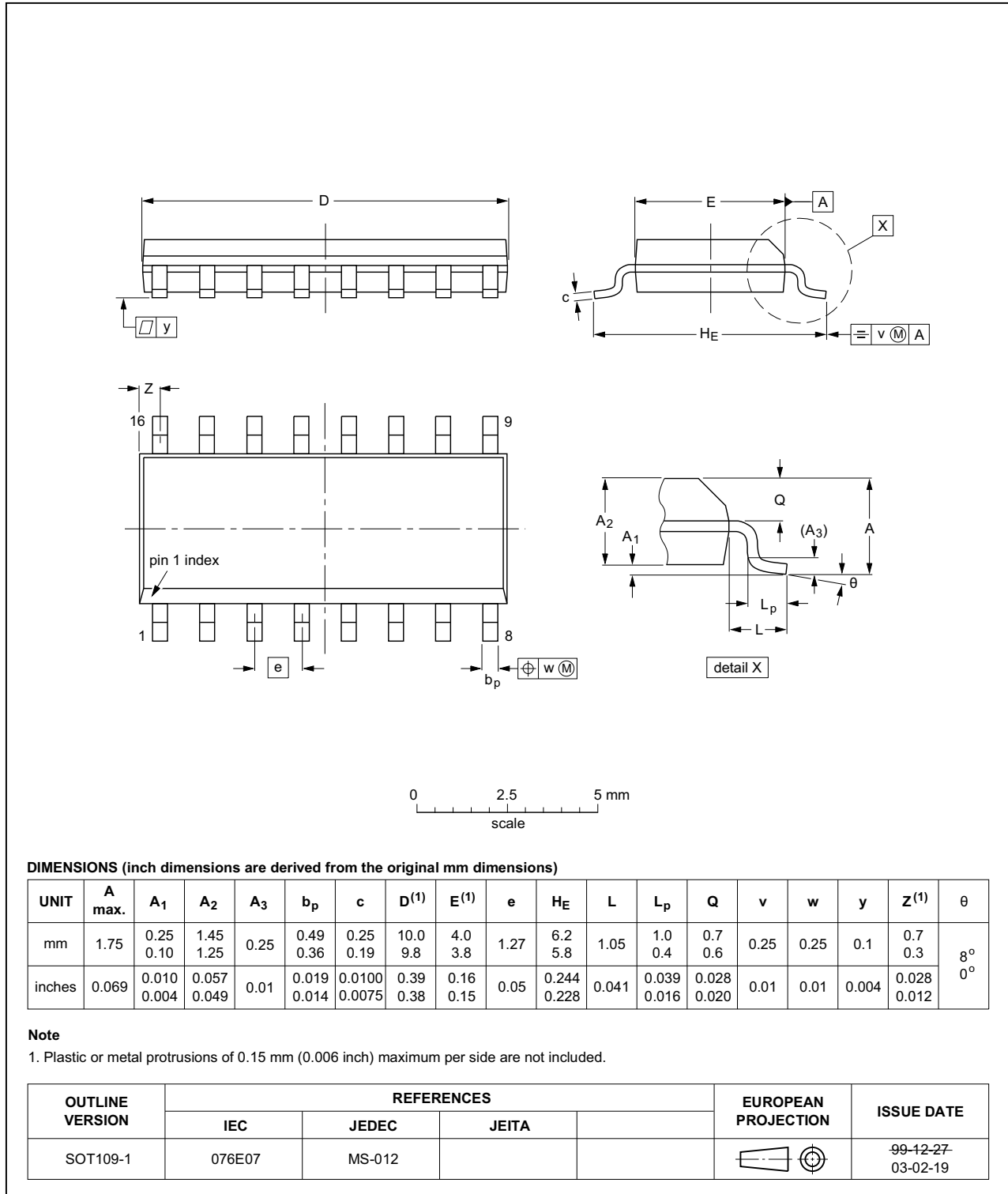| OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT109-1	076E07	MS-012				~~99-12-27~~ 03-02-19

Fig 16. Package outline SOT109-1 (SO16)

DHVQFN16: plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads; 16 terminals; body 2.5 x 3.5 x 0.85 mm
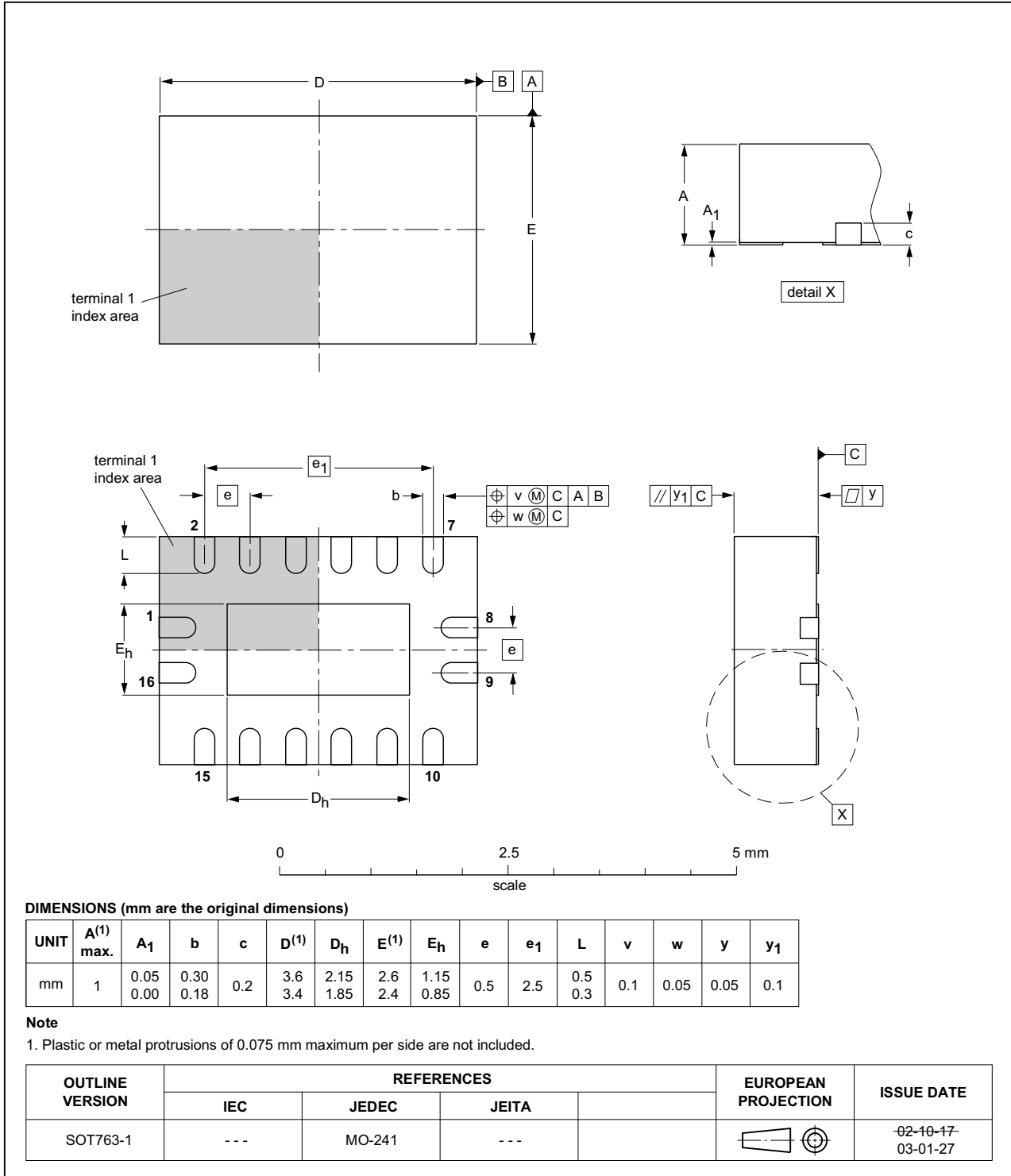
SOT763-1

DIMENSIONS (mm are the original dimensions)

UNIT	A[1] max.	A$_1$	b	c	D[1]	D$_h$	E[1]	E$_h$	e	e$_1$	L	v	w	y	y$_1$
mm	1	0.05 0.00	0.30 0.18	0.2	3.6 3.4	2.15 1.85	2.6 2.4	1.15 0.85	0.5	2.5	0.5 0.3	0.1	0.05	0.05	0.1

Note

1. Plastic or metal protrusions of 0.075 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT763-1	- - -	MO-241	- - -			02-10-17 03-01-27

Fig 17. Package outline SOT763-1 (DHVQFN16)

14. 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

15. Revision history

Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74HC423 v.7	20160211	Product data sheet	-	74HC_HCT423 v.6
Modifications:	• Type numbers 74HC423N, 74HCT423N, 74HCT423D, 74HCT423DB, 74HCT423PW and 74HCT423BQ removed.			
74HC_HCT423 v.6	20111219	Product data sheet	-	74HC_HCT423 v.5
Modifications:	• Legal pages updated.			
74HC_HCT423 v.5	20110825	Product data sheet	-	74HC_HCT423 v.4
74HC_HCT423 v.4	20110318	Product data sheet	-	74HC_HCT423 v.3
74HC_HCT423 v.3	20080724	Product data sheet	-	74HC_HCT423_CNV v.2
74HC_HCT423_CNV v.2	19980708	Product specification	-	-

74HC423

All information provided in this document is subject to legal disclaimers.

Product data sheet **Rev. 7 — 11 February 2016** **16 of 19**

16. Legal information

16.1 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 URL http://www.nexperia.com.

16.2 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.

16.3 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 — Nexperia products are 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 a 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.

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.

74HC423 All information provided in this document is subject to legal disclaimers.

Product data sheet **Rev. 7 — 11 February 2016** **17 of 19**

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.

Non-automotive qualified products — Unless this data sheet expressly states that this specific Nexperia product is automotive qualified, the product is not suitable for automotive use. It is neither qualified nor tested in accordance with automotive testing or application requirements. Nexperia accepts no liability for inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

In the event that customer uses the product for design-in and use in automotive applications to automotive specifications and standards, customer (a) shall use the product without Nexperia's warranty of the product for such automotive applications, use and specifications, and (b) whenever customer uses the product for automotive applications beyond

Nexperia's specifications such use shall be solely at customer's own risk, and (c) customer fully indemnifies Nexperia for any liability, damages or failed product claims resulting from customer design and use of the product for automotive applications beyond Nexperia's standard warranty and Nexperia's product specifications.

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.

16.4   Trademarks

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

17. Contact information

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

For sales office addresses, please send an email to: **salesaddresses@nexperia.com**

74HC423   All information provided in this document is subject to legal disclaimers.   .

Product data sheet   **Rev. 7 — 11 February 2016**   **18 of 19**

18. Contents