

# 74HC2G14-Q100; 74HCT2G14-Q100

Dual inverting Schmitt trigger

Rev. 3 — 4 December 2023

Product data sheet

## 1. General description

The 74HC2G14-Q100; 74HCT2G14-Q100 is a dual inverter with Schmitt trigger inputs. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ . Schmitt trigger inputs transform slowly changing input signals into sharply defined jitter-free output signals.

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  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  and from  $-40\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$
- Wide supply voltage range from 2.0 V to 6.0 V
- Input levels:
  - For 74HC2G14-Q100: CMOS level
  - For 74HCT2G14-Q100: TTL level
- High noise immunity
- CMOS low power dissipation
- Balanced propagation delays
- Unlimited input rise and fall times
- Latch-up performance exceeds 100 mA per JESD 78 Class II Level B
- Complies with JEDEC standards
  - JESD8C (2.7 V to 3.6 V)
  - JESD7A (2.0 V to 6.0 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

## 3. Applications

- Wave and pulse shaper for highly noisy environments
- Astable multivibrators
- Monostable multivibrators

## 4. Ordering information

Table 1. Ordering information

Type number	Package			Version
	Temperature range	Name	Description	
<a href="#">74HC2G14GW-Q100</a>	-40 °C to +125 °C	TSSOP6	plastic thin shrink small outline package; 6 leads; body width 1.25 mm	<a href="#">SOT363-2</a>
<a href="#">74HCT2G14GW-Q100</a>				
<a href="#">74HC2G14GV-Q100</a>	-40 °C to +125 °C	SC-74; TSOP6	plastic surface-mounted package; 6 leads	<a href="#">SOT457</a>
<a href="#">74HCT2G14GV-Q100</a>				

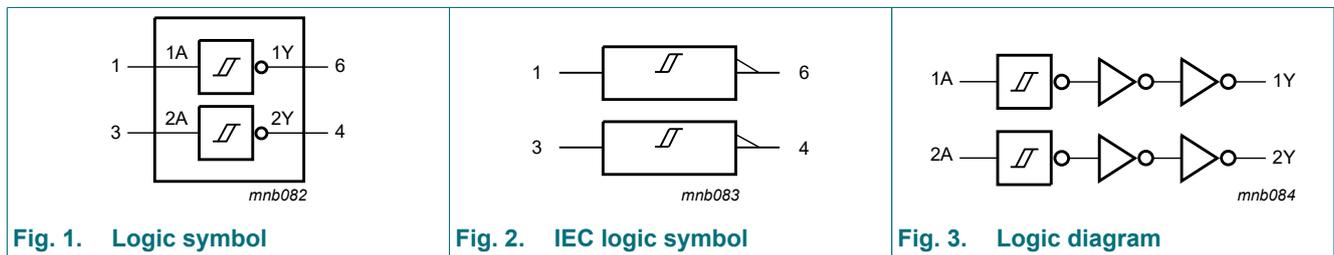
## 5. Marking

Table 2. Marking

Type number	Marking code <sup>[1]</sup>
74HC2G14GW-Q100	HK
74HCT2G14GW-Q100	TK
74HC2G14GV-Q100	H14
74HCT2G14GV-Q100	T14

[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

## 6. Functional diagram



## 7. Pinning information

### 7.1. Pinning

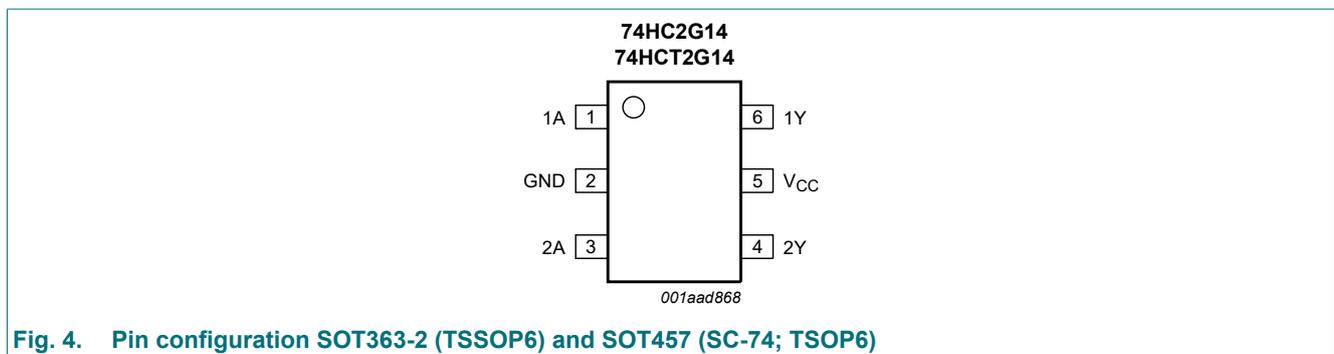


Fig. 4. Pin configuration SOT363-2 (TSSOP6) and SOT457 (SC-74; TSOP6)

### 7.2. Pin description

Table 3. Pin description

Symbol	Pin	Description
1A	1	data input
GND	2	ground (0 V)
2A	3	data input
2Y	4	data output
V <sub>CC</sub>	5	supply voltage
1Y	6	data output

## 8. Functional description

**Table 4. Function table**

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

Input	Output
nA	nY
L	H
H	L

## 9. 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
$V_{CC}$	supply voltage		-0.5	+7.0	V
$I_{IK}$	input clamping current	$V_I < -0.5\text{ V}$ or $V_I > V_{CC} + 0.5\text{ V}$ [1]	-	$\pm 20$	mA
$I_{OK}$	output clamping current	$V_O < -0.5\text{ V}$ or $V_O > V_{CC} + 0.5\text{ V}$ [1]	-	$\pm 20$	mA
$I_O$	output current	$V_O = -0.5\text{ V}$ to $V_{CC} + 0.5\text{ V}$ [1]	-	$\pm 25$	mA
$I_{CC}$	supply current	[1]	-	+50	mA
$I_{GND}$	ground current	[1]	-	-50	mA
$T_{stg}$	storage temperature		-65	+150	°C
$P_{tot}$	total power dissipation	[2]	-	250	mW

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

[2] For SOT363-2 (TSSOP6) package:  $P_{tot}$  derates linearly with 3.7 mW/K above 83 °C.

For SOT457 (SC-74; TSOP6) package:  $P_{tot}$  derates linearly with 4.1 mW/K above 89 °C.

## 10. Recommended operating conditions

**Table 6. Recommended operating conditions**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>74HC2G14-Q100</b>						
$V_{CC}$	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	+25	+125	°C
<b>74HCT2G14-Q100</b>						
$V_{CC}$	supply voltage		4.5	5.0	5.5	V
$V_I$	input voltage		0	-	$V_{CC}$	V
$V_O$	output voltage		0	-	$V_{CC}$	V
$T_{amb}$	ambient temperature		-40	+25	+125	°C

## 11. Static characteristics

**Table 7. Static characteristics for 74HC2G14-Q100**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>T<sub>amb</sub> = 25 °C</b>						
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 2.0 V	1.9	2.0	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V	4.4	4.5	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 6.0 V	5.9	6.0	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC</sub> = 4.5 V	4.18	4.32	-	V
		I <sub>O</sub> = -5.2 mA; V <sub>CC</sub> = 6.0 V	5.68	5.81	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 2.0 V	-	0	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	0	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 6.0 V	-	0	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 4.5 V	-	0.15	0.26	V
		I <sub>O</sub> = 5.2 mA; V <sub>CC</sub> = 6.0 V	-	0.16	0.26	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 6.0 V	-	-	±0.1	μA
I <sub>CC</sub>	supply current	V <sub>I</sub> = GND or V <sub>CC</sub> ; I <sub>O</sub> = 0 μA; V <sub>CC</sub> = 6.0 V	-	-	1.0	μA
C <sub>I</sub>	input capacitance		-	2.0	-	pF
<b>T<sub>amb</sub> = -40 °C to +85 °C</b>						
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 2.0 V	1.9	-	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V	4.4	-	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 6.0 V	5.9	-	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC</sub> = 4.5 V	4.13	-	-	V
		I <sub>O</sub> = -5.2 mA; V <sub>CC</sub> = 6.0 V;	5.63	-	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 2.0 V	-	-	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	-	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 6.0 V	-	-	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 4.5 V	-	-	0.33	V
		I <sub>O</sub> = 5.2 mA; V <sub>CC</sub> = 6.0 V	-	-	0.33	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 6.0 V	-	-	±1.0	μA
I <sub>CC</sub>	supply current	V <sub>I</sub> = GND or V <sub>CC</sub> ; I <sub>O</sub> = 0 μA; V <sub>CC</sub> = 6.0 V	-	-	10.0	μA

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>T<sub>amb</sub> = -40 °C to +125 °C</b>						
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 2.0 V	1.9	-	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V	4.4	-	-	V
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 6.0 V	5.9	-	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC</sub> = 4.5 V	3.7	-	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 2.0 V	-	-	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	-	0.1	V
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 6.0 V	-	-	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 4.5 V	-	-	0.4	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 6.0 V	-	-	±1.0	μA
		V <sub>I</sub> = GND or V <sub>CC</sub> ; I <sub>O</sub> = 0 μA; V <sub>CC</sub> = 6.0 V	-	-	20.0	μA

**Table 8. Static characteristics for 74HCT2G14-Q100**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>T<sub>amb</sub> = 25 °C</b>						
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V	4.4	4.5	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC</sub> = 4.5 V	4.18	4.32	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	0	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 4.5 V	-	0.15	0.26	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 5.5 V	-	-	±0.1	μA
I <sub>CC</sub>	supply current	V <sub>I</sub> = GND or V <sub>CC</sub> ; I <sub>O</sub> = 0 μA; V <sub>CC</sub> = 5.5 V	-	-	1.0	μA
ΔI <sub>CC</sub>	additional supply current	V <sub>I</sub> = V <sub>CC</sub> - 2.1 V; V <sub>CC</sub> = 4.5 V to 5.5 V; I <sub>O</sub> = 0 μA	-	-	300	μA
C <sub>I</sub>	input capacitance		-	2.0	-	pF
<b>T<sub>amb</sub> = -40 °C to +85 °C</b>						
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V	4.4	-	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC</sub> = 4.5 V	4.13	-	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	-	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 4.5 V	-	-	0.33	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 5.5 V	-	-	±1.0	μA
I <sub>CC</sub>	supply current	V <sub>I</sub> = GND or V <sub>CC</sub> ; I <sub>O</sub> = 0 μA; V <sub>CC</sub> = 5.5 V	-	-	10.0	μA
ΔI <sub>CC</sub>	additional supply current	V <sub>I</sub> = V <sub>CC</sub> - 2.1 V; V <sub>CC</sub> = 4.5 V to 5.5 V; I <sub>O</sub> = 0 μA	-	-	375	μA

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>T<sub>amb</sub> = -40 °C to +125 °C</b>						
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC</sub> = 4.5 V	4.4	-	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC</sub> = 4.5 V	3.7	-	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>T+</sub> or V <sub>T-</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 4.5 V	-	-	0.1	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 4.5 V	-	-	0.4	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 5.5 V	-	-	±1.0	μA
I <sub>CC</sub>	supply current	V <sub>I</sub> = GND or V <sub>CC</sub> ; I <sub>O</sub> = 0 μA; V <sub>CC</sub> = 5.5 V	-	-	20.0	μA
ΔI <sub>CC</sub>	additional supply current	V <sub>I</sub> = V <sub>CC</sub> - 2.1 V; V <sub>CC</sub> = 4.5 V to 5.5 V; I <sub>O</sub> = 0 μA	-	-	410	μA

## 12. Dynamic characteristics

**Table 9. Dynamic characteristics**

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 6.

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HC2G14-Q100</b>										
t <sub>pd</sub>	propagation delay	nA to nY; see Fig. 5 [1]								
		V <sub>CC</sub> = 2.0 V; C <sub>L</sub> = 50 pF	-	53	125	-	155	-	190	ns
		V <sub>CC</sub> = 4.5 V; C <sub>L</sub> = 50 pF	-	16	25	-	31	-	38	ns
		V <sub>CC</sub> = 6.0 V; C <sub>L</sub> = 50 pF	-	13	21	-	26	-	32	ns
t <sub>t</sub>	transition time	nY; see Fig. 5 [2]								
		V <sub>CC</sub> = 2.0 V; C <sub>L</sub> = 50 pF	-	20	75	-	95	-	110	ns
		V <sub>CC</sub> = 4.5 V; C <sub>L</sub> = 50 pF	-	7	15	-	19	-	22	ns
		V <sub>CC</sub> = 6.0 V; C <sub>L</sub> = 50 pF	-	5	13	-	16	-	19	ns
C <sub>PD</sub>	power dissipation capacitance	V <sub>I</sub> = GND to V <sub>CC</sub> [3]	-	10	-	-	-	-	-	pF
<b>74HCT2G14-Q100</b>										
t <sub>pd</sub>	propagation delay	nA to nY; see Fig. 5 [1]								
		V <sub>CC</sub> = 4.5 V; C <sub>L</sub> = 50 pF	-	21	32	-	40	-	48	ns
t <sub>t</sub>	transition time	nY; see Fig. 5 [2]								
		V <sub>CC</sub> = 4.5 V; C <sub>L</sub> = 50 pF	-	6	15	-	19	-	22	ns
C <sub>PD</sub>	power dissipation capacitance	V <sub>I</sub> = GND to V <sub>CC</sub> - 1.5 V [3]	-	10	-	-	-	-	-	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>TLH</sub> and t<sub>THL</sub>

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

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

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

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

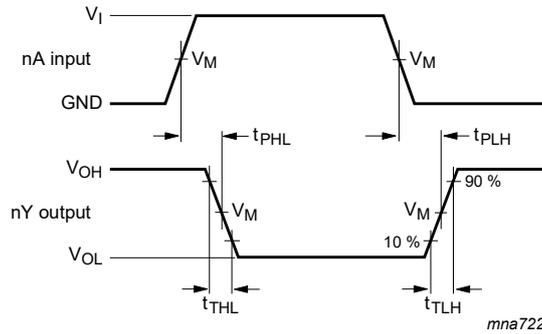
C<sub>L</sub> = output load capacitance in pF;

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

N = number of inputs switching;

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

12.1. Waveforms and test circuit



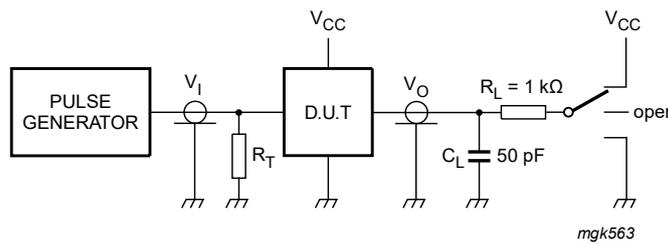
Measurement points are given in [Table 10](#).

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

Fig. 5. The data input (nA) to output (nY) propagation delays and output transition times

Table 10. Measurement points

Type	Input			Output
	$V_M$	$V_I$	$t_r = t_f$	$V_M$
74HC2G14-Q100	$0.5V_{CC}$	GND to $V_{CC}$	6.0 ns	$0.5V_{CC}$
74HCT2G14-Q100	1.3 V	GND to 3.0 V	6.0 ns	1.3 V



Test data is given in [Table 11](#).

Definitions 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. 6. Test circuit for measuring switching times

Table 11. Test data

Type	Input		Test
	$V_I$	$t_r, t_f$	$t_{PHL}, t_{PLH}$
74HC2G14-Q100	GND to $V_{CC}$	6 ns	open
74HCT2G14-Q100	GND to 3.0 V	6 ns	open

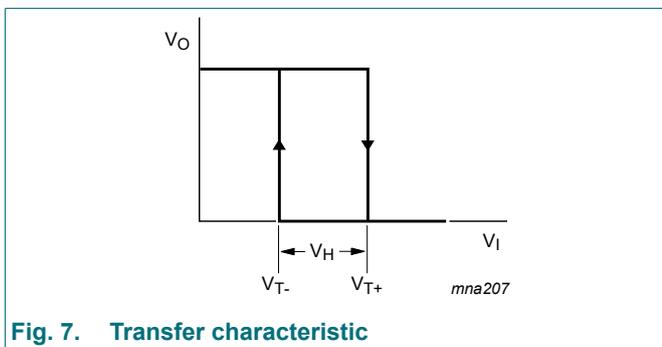
### 13. Transfer characteristics

**Table 12. Transfer characteristics**

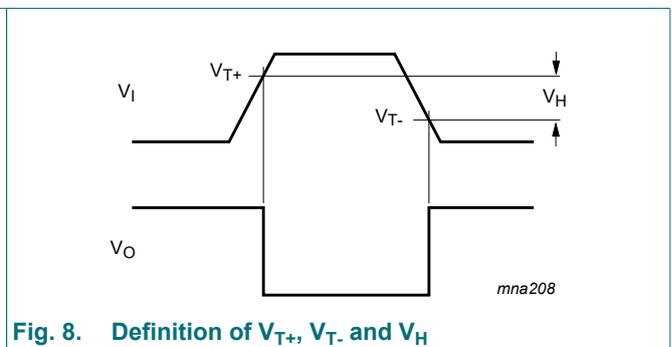
Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 6.

Symbol	Parameter	Conditions	25 °C			-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
<b>74HC2G14-Q100</b>										
V <sub>T+</sub>	positive-going threshold voltage	see Fig. 7, Fig. 8								
		V <sub>CC</sub> = 2.0 V	1.00	1.18	1.50	1.00	1.50	1.00	1.50	V
		V <sub>CC</sub> = 4.5 V	2.30	2.60	3.15	2.30	3.15	2.30	3.15	V
		V <sub>CC</sub> = 6.0 V	3.00	3.46	4.20	3.00	4.20	3.00	4.20	V
V <sub>T-</sub>	negative-going threshold voltage	see Fig. 7, Fig. 8								
		V <sub>CC</sub> = 2.0 V	0.30	0.60	0.90	0.30	0.90	0.30	0.90	V
		V <sub>CC</sub> = 4.5 V	1.13	1.47	2.00	1.13	2.00	1.13	2.00	V
		V <sub>CC</sub> = 6.0 V	1.50	2.06	2.60	1.50	2.60	1.50	2.60	V
V <sub>H</sub>	hysteresis voltage	(V <sub>T+</sub> - V <sub>T-</sub> ); see Fig. 7, Fig. 8 and Fig. 9								
		V <sub>CC</sub> = 2.0 V	0.30	0.60	1.00	0.30	1.00	0.30	1.00	V
		V <sub>CC</sub> = 4.5 V	0.60	1.13	1.40	0.60	1.40	0.60	1.40	V
		V <sub>CC</sub> = 6.0 V	0.80	1.40	1.70	0.80	1.70	0.80	1.70	V
<b>74HCT2G14-Q100</b>										
V <sub>T+</sub>	positive-going threshold voltage	see Fig. 7 and Fig. 8								
		V <sub>CC</sub> = 4.5 V	1.20	1.58	1.90	1.20	1.90	1.20	1.90	V
		V <sub>CC</sub> = 5.5 V	1.40	1.78	2.10	1.40	2.10	1.40	2.10	V
V <sub>T-</sub>	negative-going threshold voltage	see Fig. 7 and Fig. 8								
		V <sub>CC</sub> = 4.5 V	0.50	0.87	1.20	0.50	1.20	0.50	1.20	V
		V <sub>CC</sub> = 5.5 V	0.60	1.11	1.40	0.60	1.40	0.60	1.40	V
V <sub>H</sub>	hysteresis voltage	(V <sub>T+</sub> - V <sub>T-</sub> ); see Fig. 7, Fig. 8 and Fig. 10								
		V <sub>CC</sub> = 4.5 V	0.40	0.71	-	0.40	-	0.40	-	V
		V <sub>CC</sub> = 5.5 V	0.40	0.67	-	0.40	-	0.40	-	V

### 14. Waveforms transfer characteristics



**Fig. 7. Transfer characteristic**



**Fig. 8. Definition of V<sub>T+</sub>, V<sub>T-</sub> and V<sub>H</sub>**

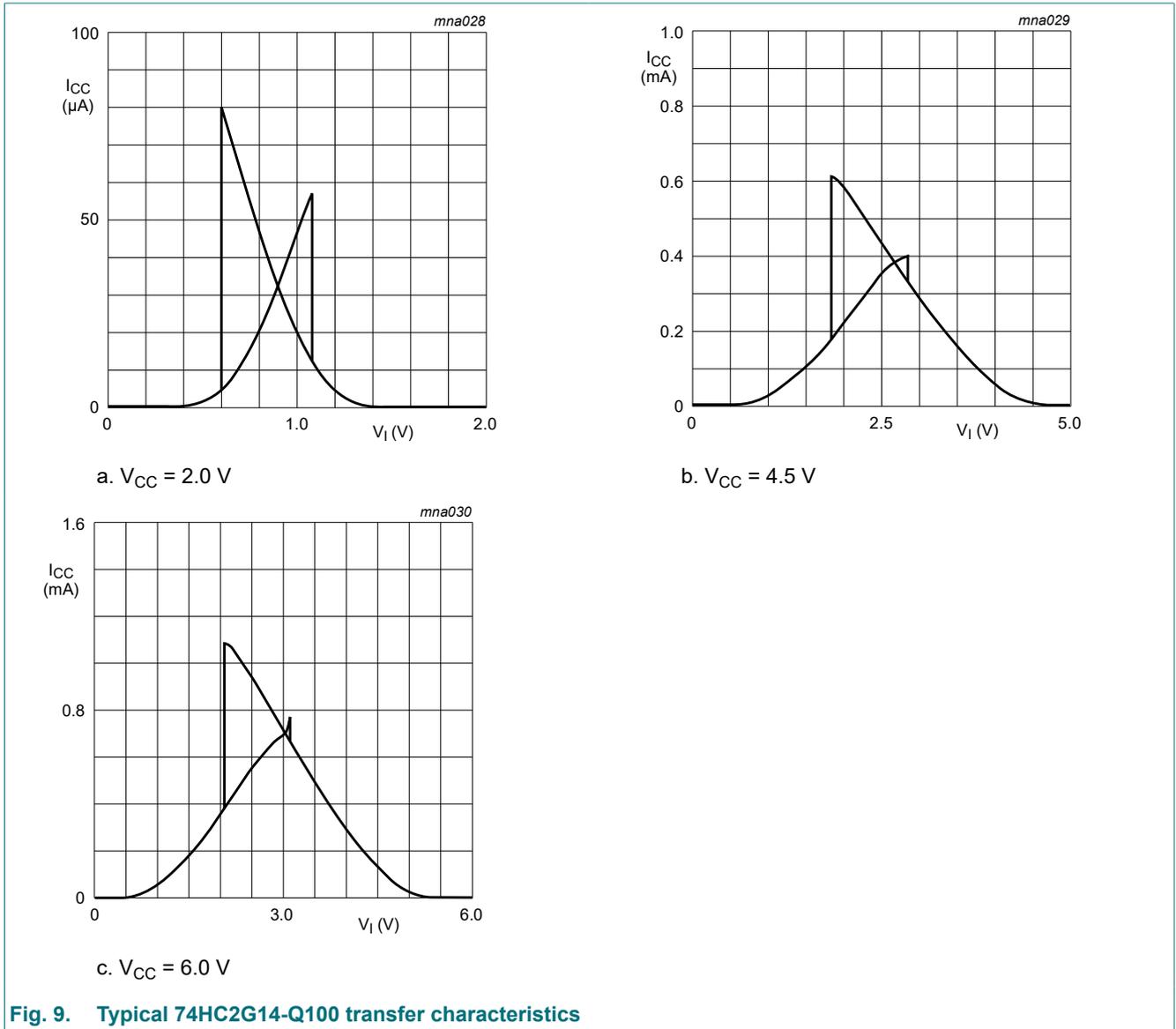


Fig. 9. Typical 74HC2G14-Q100 transfer characteristics

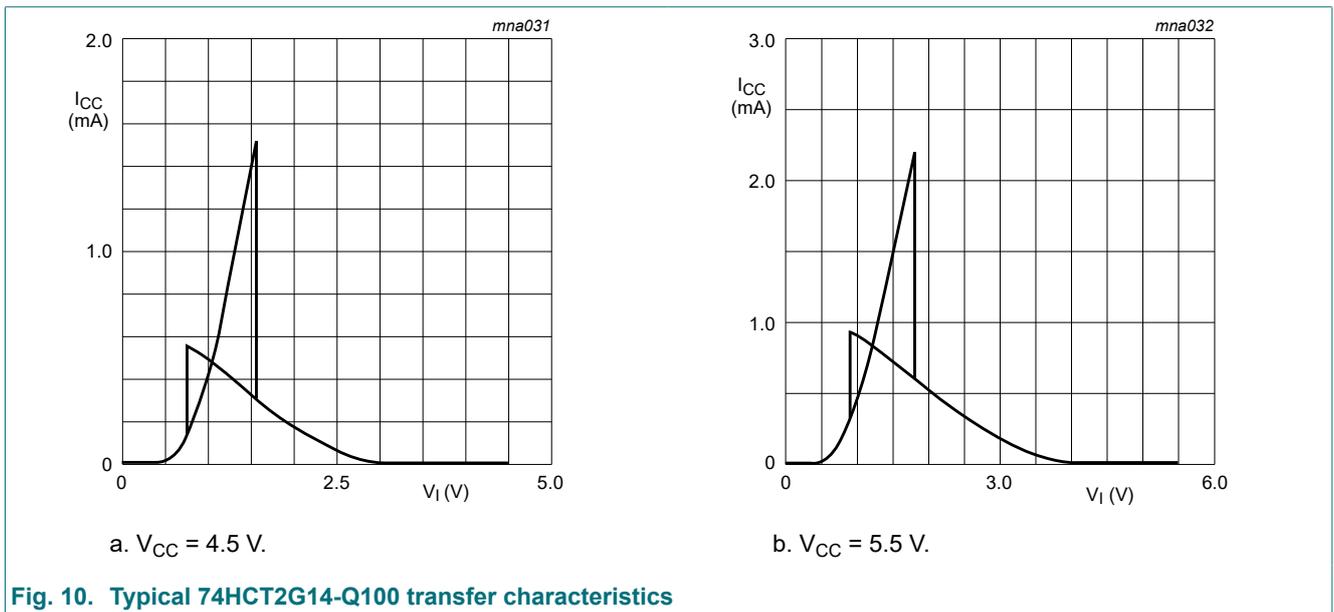


Fig. 10. Typical 74HCT2G14-Q100 transfer characteristics

## 15. Application information

The slow input rise and fall times cause additional power dissipation, this can be calculated using the following formula:

$$P_{add} = f_i \times (t_r \times \Delta I_{CC(AV)} + t_f \times \Delta I_{CC(AV)}) \times V_{CC} \text{ where:}$$

- $P_{add}$  = additional power dissipation ( $\mu\text{W}$ );
- $f_i$  = input frequency (MHz);
- $t_r$  = input rise time (ns); 10 % to 90 %;
- $t_f$  = input fall time (ns); 90 % to 10 %;
- $\Delta I_{CC(AV)}$  = average additional supply current ( $\mu\text{A}$ ).

$\Delta I_{CC(AV)}$  differs with positive or negative input transitions, as shown in Fig. 11 and Fig. 12.

An example of a relaxation circuit using the 74HC2G14-Q100; 74HCT2G14-Q100 is shown in Fig. 13.

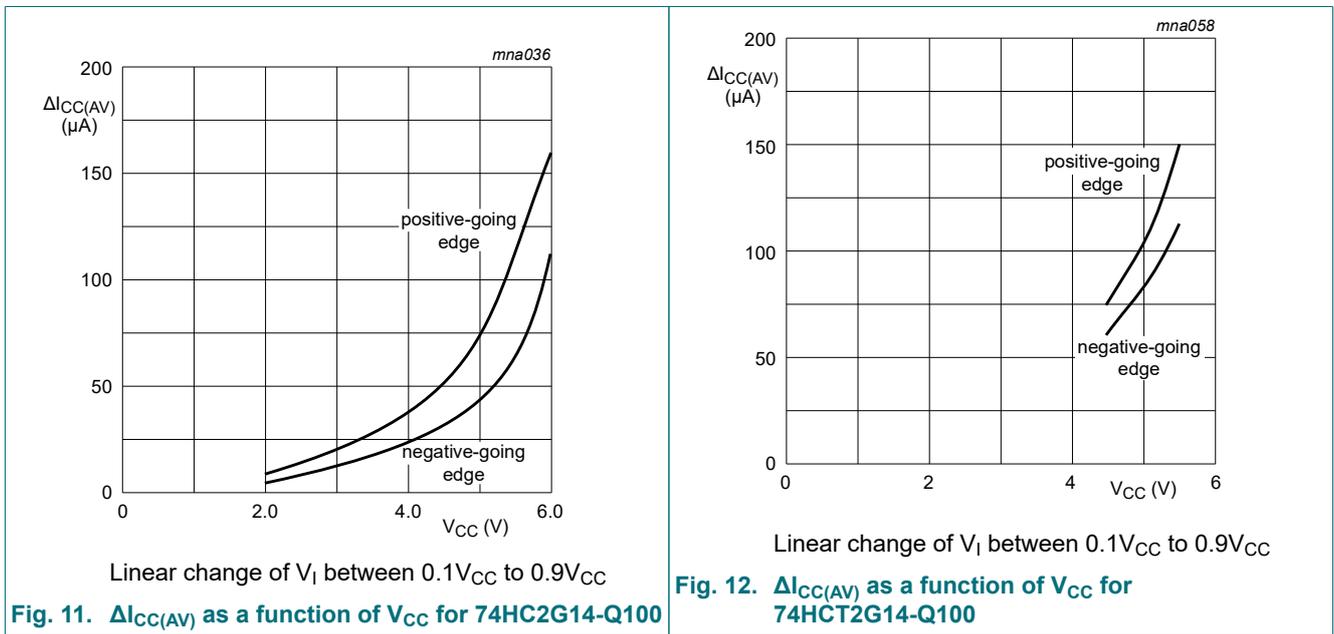
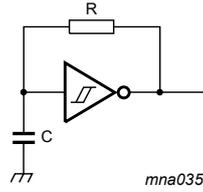


Fig. 11.  $\Delta I_{CC(AV)}$  as a function of  $V_{CC}$  for 74HC2G14-Q100

Fig. 12.  $\Delta I_{CC(AV)}$  as a function of  $V_{CC}$  for 74HCT2G14-Q100

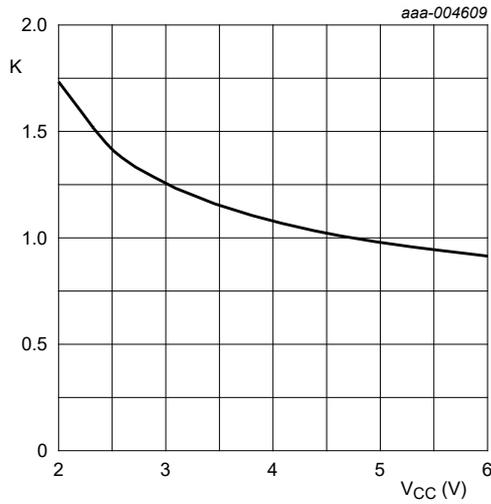


For 74HC2G14-Q100:  $f = \frac{1}{T} \approx \frac{1}{0.8 \times RC}$

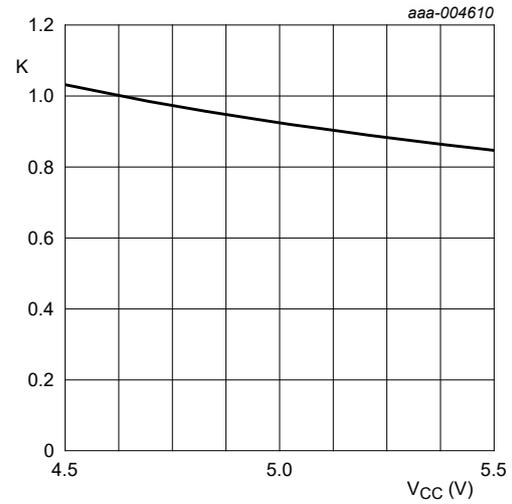
For 74HCT2G14-Q100:  $f = \frac{1}{T} \approx \frac{1}{0.67 \times RC}$

For K-factor, see [Fig. 14](#) or [Fig. 15](#)

**Fig. 13. Relaxation oscillator**



**Fig. 14. K-factor for 74HC2G14-Q100**



**Fig. 15. K-factor for 74HCT2G14-Q100**

### 16. Package outline

TSSOP6: plastic thin shrink small outline package; 6 leads; body width 1.25 mm

SOT363-2

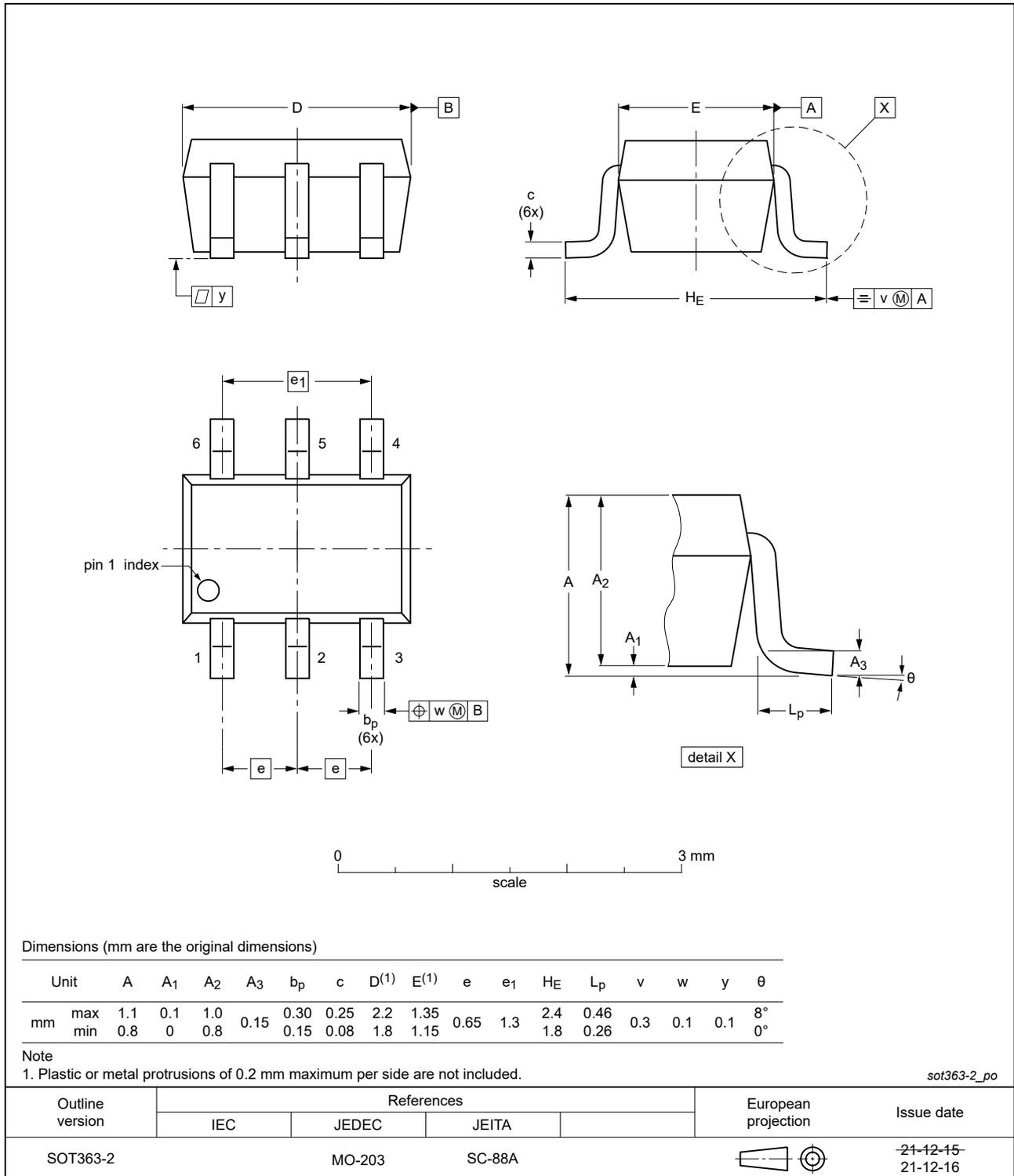


Fig. 16. Package outline SOT363-2 (TSSOP6)

Plastic, surface-mounted package (SC-74; TSOP6); 6 leads

SOT457

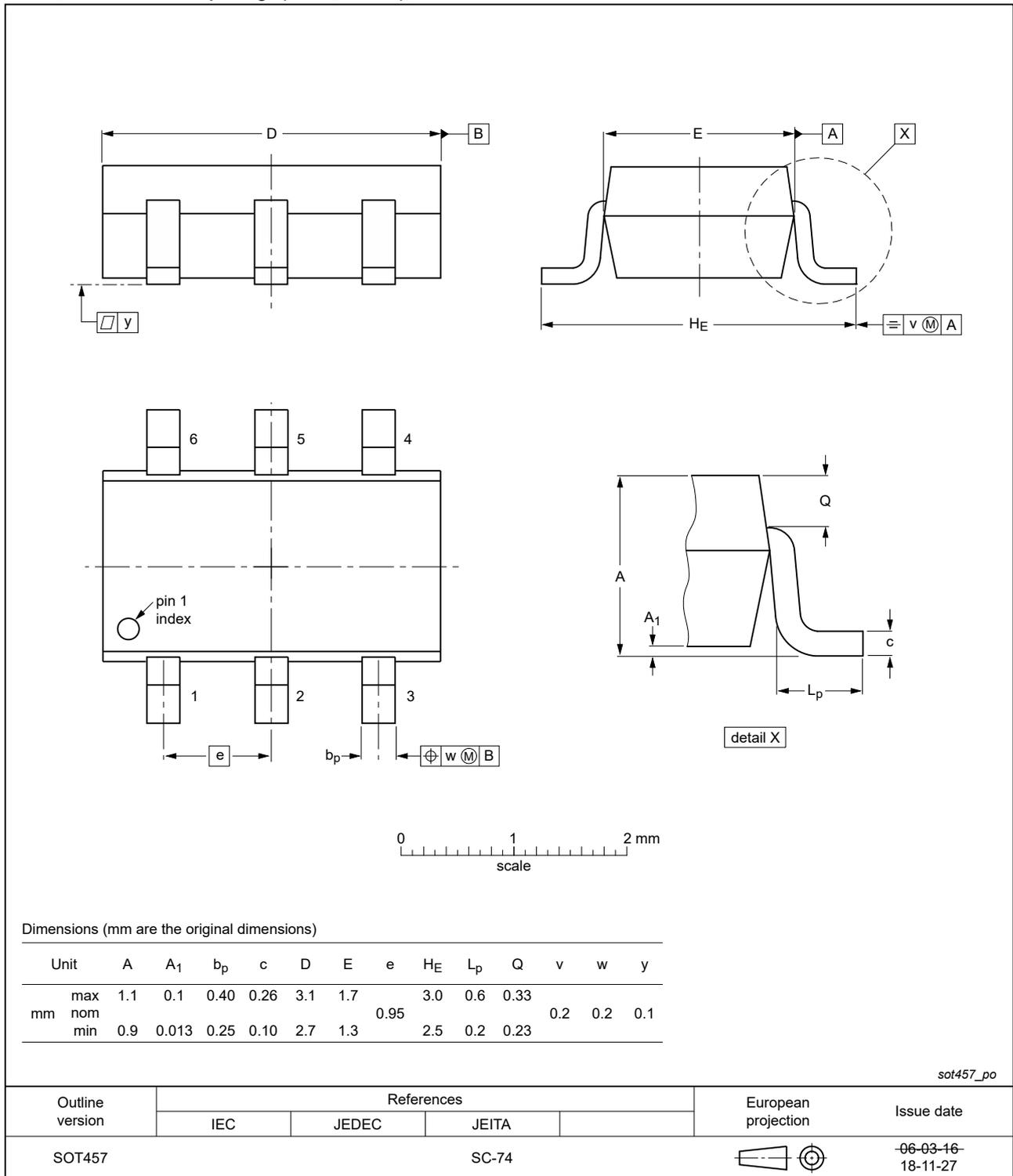


Fig. 17. Package outline SOT457 (SC-74; TSOP6)

## 17. Abbreviations

Table 13. Abbreviations

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

## 18. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74HC_HCT2G14_Q100 v.3	20231204	Product data sheet	-	74HC_HCT2G14_Q100 v.2
Modifications:	<ul style="list-style-type: none"> <li>• <a href="#">Section 2</a>: ESD specification updated according to the latest JEDEC standard.</li> </ul>			
74HC_HCT2G14_Q100 v.2	20220128	Product data sheet	-	74HC_HCT2G14_Q100 v.1
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>• Package SOT363 (SC-88) changed to SOT363-2 (TSSOP6).</li> <li>• <a href="#">Section 2</a> updated.</li> <li>• <a href="#">Section 9</a>: Derating values for <math>P_{tot}</math> total power dissipation updated.</li> <li>• <a href="#">Fig. 17</a>: Package outline drawing SOT457 (SC-74; TSOP6) updated.</li> </ul>			
74HC_HCT2G14_Q100 v.1	20140320	Product data sheet	-	-

## 19. 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>.

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