

# 74LVC1G66-Q100

Bilateral switch

Rev. 4 — 12 January 2022

Product data sheet

## 1. General description

The 74LVC1G66-Q100 is a single-pole, single-throw analog switch with two input/output terminals (nY and nZ) and a digital enable input (nE). When nE is LOW, the analog switch is turned off. Control inputs can be driven from either 3.3 V or 5 V devices. This feature allows the use of these devices as translators in mixed 3.3 V and 5 V environments.

Schmitt-trigger action at control inputs makes the circuit 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
- Wide supply voltage range from 1.65 V to 5.5 V
- Very low ON resistance:
  - 7.5  $\Omega$  (typical) at  $V_{CC} = 2.7$  V
  - 6.5  $\Omega$  (typical) at  $V_{CC} = 3.3$  V
  - 6  $\Omega$  (typical) at  $V_{CC} = 5$  V
- Switch current capability of 32 mA
- High noise immunity
- CMOS low power consumption
- TTL interface compatibility at 3.3 V
- Overvoltage tolerant control inputs to 5.5 V
- Latch-up performance meets requirements of JESD78 Class I
- ESD protection:
  - MIL-STD-883, method 3015 exceeds 2000 V
  - HBM JESD22-A114F exceeds 2000 V
  - MM JESD22-A115-A exceeds 200 V (C = 200 pF, R = 0  $\Omega$ )

## 3. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74LVC1G66GW-Q100	-40 °C to +125 °C	TSSOP5	plastic thin shrink small outline package; 5 leads; body width 1.25 mm	SOT353-1
74LVC1G66GV-Q100	-40 °C to +125 °C	SC-74A	plastic surface-mounted package; 5 leads	SOT753

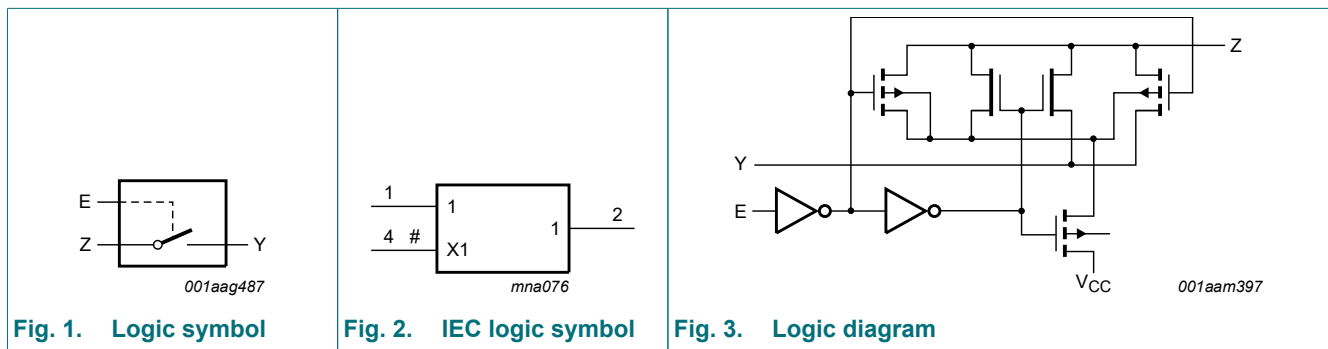
## 4. Marking

Table 2. Marking

Type number	Marking code [1]
74LVC1G66GW-Q100	VL
74LVC1G66GV-Q100	V66

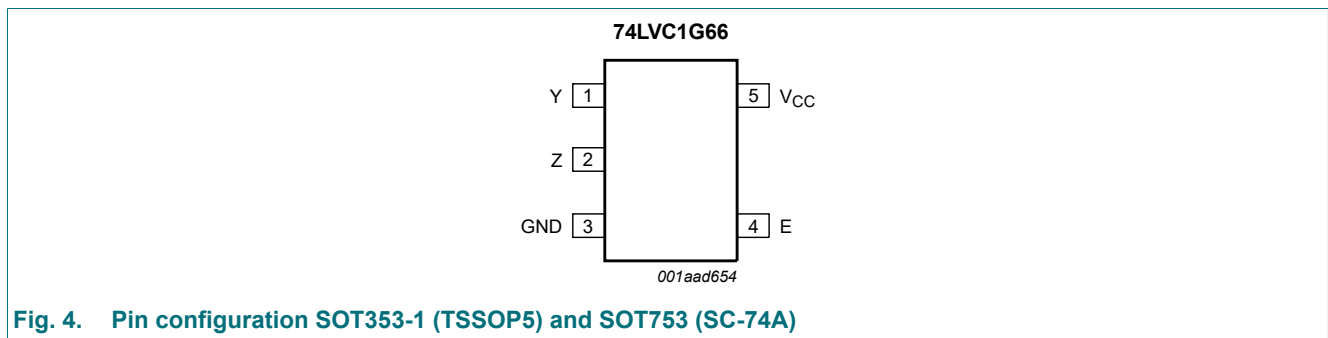
[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

## 5. Functional diagram



## 6. Pinning information

### 6.1. Pinning



### 6.2. Pin description

Table 3. Pin description

Symbol	Pin	Description
Y	1	independent input or output
Z	2	independent output or input
GND	3	ground (0 V)
E	4	enable input (active HIGH)
V <sub>CC</sub>	5	supply voltage

## 7. Functional description

**Table 4. Function table**

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

Input E	Switch
L	OFF-state
H	ON-state

## 8. 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	+6.5	V
$V_I$	input voltage		[1] -0.5	+6.5	V
$I_{IK}$	input clamping current	$V_I < -0.5\text{ V}$ or $V_I > V_{CC} + 0.5\text{ V}$	-50	-	mA
$I_{SK}$	switch clamping current	$V_I < -0.5\text{ V}$ or $V_I > V_{CC} + 0.5\text{ V}$	-	$\pm 50$	mA
$V_{SW}$	switch voltage	enable and disable mode	[2] -0.5	$V_{CC} + 0.5$	V
$I_{SW}$	switch current	$V_{SW} > -0.5\text{ V}$ or $V_{SW} < V_{CC} + 0.5\text{ V}$	-	$\pm 50$	mA
$I_{CC}$	supply current		-	100	mA
$I_{GND}$	ground current		-100	-	mA
$T_{stg}$	storage temperature		-65	+150	°C
$P_{tot}$	total power dissipation	$T_{amb} = -40\text{ °C}$ to $+125\text{ °C}$	[3] -	250	mW

[1] The minimum input voltage rating may be exceeded if the input current rating is observed.

[2] The minimum and maximum switch voltage ratings may be exceeded if the switch clamping current rating is observed.

[3] For SOT353-1 (TSSOP5) package:  $P_{tot}$  derates linearly with 3.3 mW/K above 74 °C.  
For SOT753 (SC-74A) package:  $P_{tot}$  derates linearly with 3.8 mW/K above 85 °C.

## 9. Recommended operating conditions

**Table 6. Recommended operating conditions**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CC}$	supply voltage		1.65	-	5.5	V
$V_I$	input voltage		0	-	5.5	V
$V_{SW}$	switch voltage		[1] 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 $2.7\text{ V}$	[2] -	-	20	ns/V
		$V_{CC} = 2.7\text{ V}$ to $5.5\text{ V}$	[2] -	-	10	ns/V

[1] To avoid sinking GND current from terminal Z when switch current flows in terminal Y, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into terminal Z, no GND current will flow from terminal Y. In this case, there is no limit for the voltage drop across the switch.

[2] Applies to control signal levels.

## 10. Static characteristics

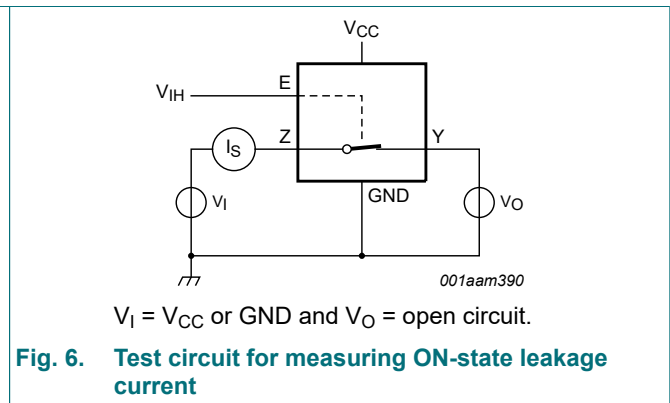
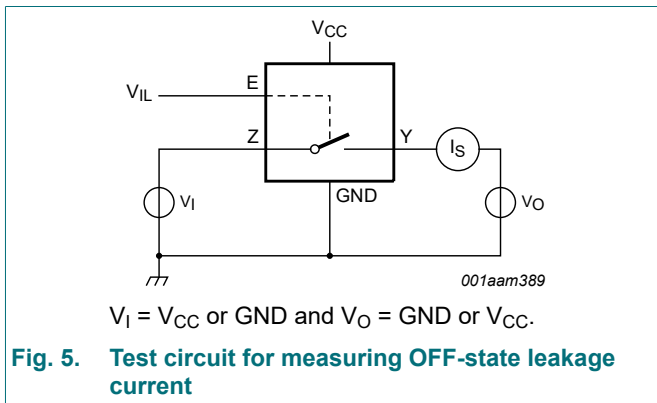
**Table 7. Static characteristics**

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 <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 1.65 V to 1.95 V	0.65V <sub>CC</sub>	-	-	0.65V <sub>CC</sub>	-	V	
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.7	-	-	1.7	-	V	
		V <sub>CC</sub> = 2.7 V to 3.6 V	2.0	-	-	2.0	-	V	
		V <sub>CC</sub> = 4.5 V to 5.5 V	0.7V <sub>CC</sub>	-	-	0.7V <sub>CC</sub>	-	V	
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> = 1.65 V to 1.95 V	-	-	0.35V <sub>CC</sub>	-	0.35V <sub>CC</sub>	V	
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	-	0.7	-	0.7	V	
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	-	0.8	-	0.8	V	
		V <sub>CC</sub> = 4.5 V to 5.5 V	-	-	0.3V <sub>CC</sub>	-	0.3V <sub>CC</sub>	V	
I <sub>I</sub>	input leakage current	pin E; V <sub>I</sub> = 5.5 V or GND; V <sub>CC</sub> = 0 V to 5.5 V	[2]	-	±0.1	±1	-	±1	µA
I <sub>S(OFF)</sub>	OFF-state leakage current	V <sub>CC</sub> = 5.5 V; see Fig. 5	[2]	-	±0.1	±0.2	-	±0.5	µA
I <sub>S(ON)</sub>	ON-state leakage current	V <sub>CC</sub> = 5.5 V; see Fig. 6	[2]	-	±0.1	±1	-	±2	µA
I <sub>CC</sub>	supply current	V <sub>I</sub> = 5.5 V or GND; V <sub>SW</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 1.65 V to 5.5 V	[2]	-	0.1	4	-	4	µA
ΔI <sub>CC</sub>	additional supply current	pin E; V <sub>I</sub> = V <sub>CC</sub> - 0.6 V; V <sub>SW</sub> = GND or V <sub>CC</sub> ; V <sub>CC</sub> = 5.5 V	[2]	-	5	500	-	500	µA
C <sub>I</sub>	input capacitance			-	2.0	-	-	-	pF
C <sub>S(OFF)</sub>	OFF-state capacitance			-	6.5	-	-	-	pF
C <sub>S(ON)</sub>	ON-state capacitance			-	11	-	-	-	pF

- [1] All typical values are measured at T<sub>amb</sub> = 25 °C.  
 [2] These typical values are measured at V<sub>CC</sub> = 3.3 V.

### 10.1. Test circuits



## 10.2. ON resistance

**Table 8. ON resistance**

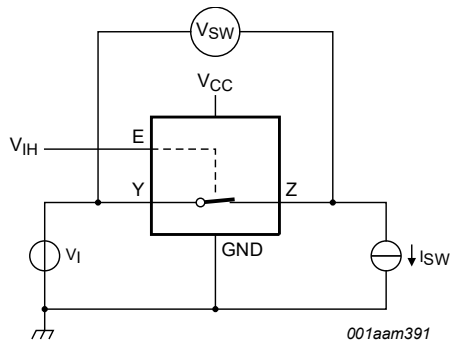
At recommended operating conditions; voltages are referenced to GND (ground 0 V);  
for test circuit see Fig. 7; for graphs see Fig. 8 to Fig. 13.

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ [1]	Max	Min	Max	
R <sub>ON(peak)</sub>	ON resistance (peak)	V <sub>I</sub> = GND to V <sub>CC</sub>						
		I <sub>SW</sub> = 4 mA; V <sub>CC</sub> = 1.65 V to 1.95 V	-	34.0	130	-	195	Ω
		I <sub>SW</sub> = 8 mA; V <sub>CC</sub> = 2.3 V to 2.7 V	-	12.0	30	-	45	Ω
		I <sub>SW</sub> = 12 mA; V <sub>CC</sub> = 2.7 V	-	10.4	25	-	38	Ω
		I <sub>SW</sub> = 24 mA; V <sub>CC</sub> = 3.0 V to 3.6 V	-	7.8	20	-	30	Ω
		I <sub>SW</sub> = 32 mA; V <sub>CC</sub> = 4.5 V to 5.5 V	-	6.2	15	-	23	Ω
R <sub>ON(rail)</sub>	ON resistance (rail)	V <sub>I</sub> = GND						
		I <sub>SW</sub> = 4 mA; V <sub>CC</sub> = 1.65 V to 1.95 V	-	8.2	18	-	27	Ω
		I <sub>SW</sub> = 8 mA; V <sub>CC</sub> = 2.3 V to 2.7 V	-	7.1	16	-	24	Ω
		I <sub>SW</sub> = 12 mA; V <sub>CC</sub> = 2.7 V	-	6.9	14	-	21	Ω
		I <sub>SW</sub> = 24 mA; V <sub>CC</sub> = 3.0 V to 3.6 V	-	6.5	12	-	18	Ω
		I <sub>SW</sub> = 32 mA; V <sub>CC</sub> = 4.5 V to 5.5 V	-	5.8	10	-	15	Ω
		V <sub>I</sub> = V <sub>CC</sub>						
		I <sub>SW</sub> = 4 mA; V <sub>CC</sub> = 1.65 V to 1.95 V	-	10.4	30	-	45	Ω
		I <sub>SW</sub> = 8 mA; V <sub>CC</sub> = 2.3 V to 2.7 V	-	7.6	20	-	30	Ω
		I <sub>SW</sub> = 12 mA; V <sub>CC</sub> = 2.7 V	-	7.0	18	-	27	Ω
		I <sub>SW</sub> = 24 mA; V <sub>CC</sub> = 3.0 V to 3.6 V	-	6.1	15	-	23	Ω
		I <sub>SW</sub> = 32 mA; V <sub>CC</sub> = 4.5 V to 5.5 V	-	4.9	10	-	15	Ω
R <sub>ON(flat)</sub>	ON resistance (flatness)	V <sub>I</sub> = GND to V <sub>CC</sub> [2]						
		I <sub>SW</sub> = 4 mA; V <sub>CC</sub> = 1.65 V to 1.95 V	-	26.0	-	-	-	Ω
		I <sub>SW</sub> = 8 mA; V <sub>CC</sub> = 2.3 V to 2.7 V	-	5.0	-	-	-	Ω
		I <sub>SW</sub> = 12 mA; V <sub>CC</sub> = 2.7 V	-	3.5	-	-	-	Ω
		I <sub>SW</sub> = 24 mA; V <sub>CC</sub> = 3.0 V to 3.6 V	-	2.0	-	-	-	Ω
		I <sub>SW</sub> = 32 mA; V <sub>CC</sub> = 4.5 V to 5.5 V	-	1.5	-	-	-	Ω

[1] Typical values are measured at T<sub>amb</sub> = 25 °C and nominal V<sub>CC</sub>.

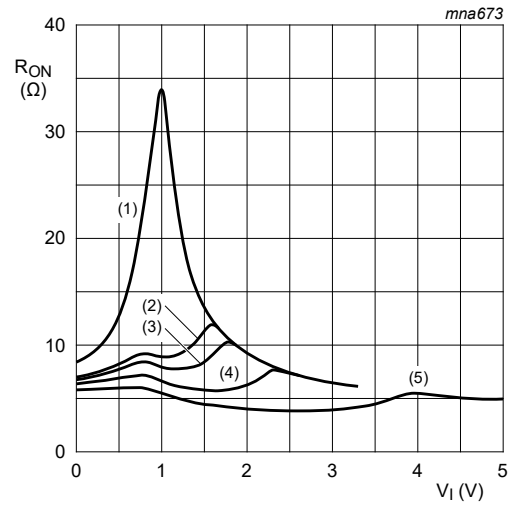
[2] Flatness is defined as the difference between the maximum and minimum value of ON resistance measured at identical V<sub>CC</sub> and temperature.

10.3. ON resistance test circuit and graphs



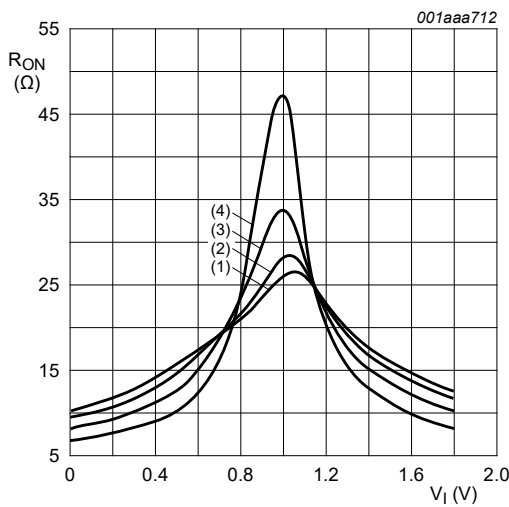
$$R_{ON} = V_{SW} / I_{SW}$$

Fig. 7. Test circuit for measuring ON resistance



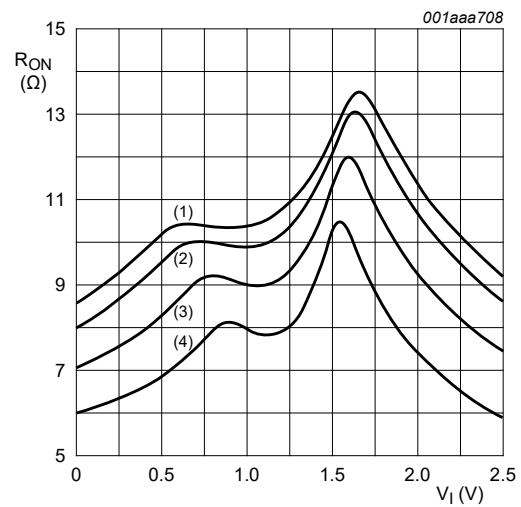
- (1)  $V_{CC} = 1.8 \text{ V}$ .
- (2)  $V_{CC} = 2.5 \text{ V}$ .
- (3)  $V_{CC} = 2.7 \text{ V}$ .
- (4)  $V_{CC} = 3.3 \text{ V}$ .
- (5)  $V_{CC} = 5.0 \text{ V}$ .

Fig. 8. Typical ON resistance as a function of input voltage;  $T_{amb} = 25 \text{ }^\circ\text{C}$



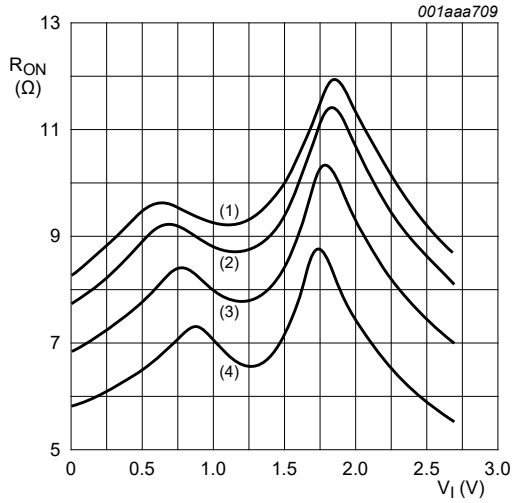
- (1)  $T_{amb} = 125 \text{ }^\circ\text{C}$ .
- (2)  $T_{amb} = 85 \text{ }^\circ\text{C}$ .
- (3)  $T_{amb} = 25 \text{ }^\circ\text{C}$ .
- (4)  $T_{amb} = -40 \text{ }^\circ\text{C}$ .

Fig. 9. ON resistance as a function of input voltage;  $V_{CC} = 1.8 \text{ V}$



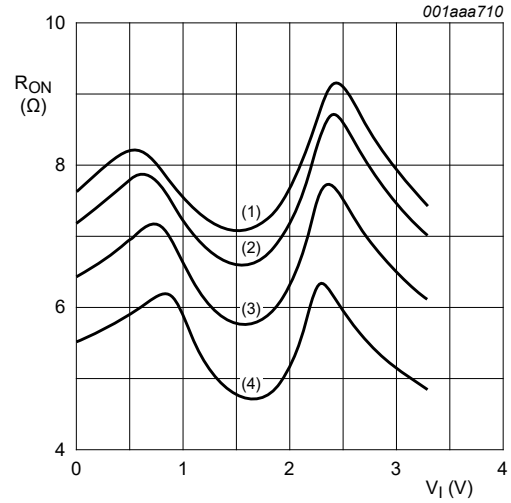
- (1)  $T_{amb} = 125 \text{ }^\circ\text{C}$ .
- (2)  $T_{amb} = 85 \text{ }^\circ\text{C}$ .
- (3)  $T_{amb} = 25 \text{ }^\circ\text{C}$ .
- (4)  $T_{amb} = -40 \text{ }^\circ\text{C}$ .

Fig. 10. ON resistance as a function of input voltage;  $V_{CC} = 2.5 \text{ V}$



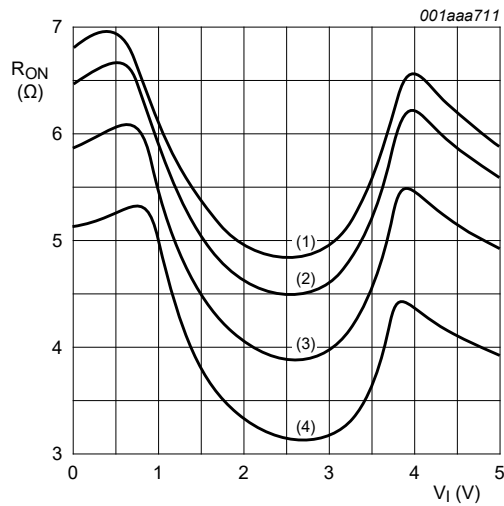
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$ .
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$ .
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ .
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}$ .

**Fig. 11. ON resistance as a function of input voltage;  $V_{CC} = 2.7\text{ V}$**



- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$ .
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$ .
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ .
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}$ .

**Fig. 12. ON resistance as a function of input voltage;  $V_{CC} = 3.3\text{ V}$**



- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$ .
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$ .
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ .
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}$ .

**Fig. 13. ON resistance as a function of input voltage;  $V_{CC} = 5.0\text{ V}$**

## 11. Dynamic characteristics

**Table 9. Dynamic characteristics**

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 16.

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ [1]	Max	Min	Max	
t <sub>pd</sub>	propagation delay	Y to Z or Z to Y; see Fig. 14 [2] [3]						
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	0.8	2.0	-	3.0	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	0.4	1.2	-	2.0	ns
		V <sub>CC</sub> = 2.7 V	-	0.4	1.0	-	1.5	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	-	0.3	0.8	-	1.5	ns
		V <sub>CC</sub> = 4.5 V to 5.5 V	-	0.2	0.6	-	1.0	ns
t <sub>en</sub>	enable time	E to Y or Z; see Fig. 15 [4]						
		V <sub>CC</sub> = 1.65 V to 1.95 V	1.0	5.3	12	1.0	15.5	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	3.0	6.5	1.0	8.5	ns
		V <sub>CC</sub> = 2.7 V	1.0	2.6	6.0	1.0	8.0	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.0	2.5	5.0	1.0	6.5	ns
		V <sub>CC</sub> = 4.5 V to 5.5 V	1.0	1.9	4.2	1.0	5.5	ns
t <sub>dis</sub>	disable time	E to Y or Z; see Fig. 15 [5]						
		V <sub>CC</sub> = 1.65 V to 1.95 V	1.0	4.2	10	1.0	13	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	2.4	6.9	1.0	9.0	ns
		V <sub>CC</sub> = 2.7 V	1.0	3.6	7.5	1.0	9.5	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.0	3.4	6.5	1.0	8.5	ns
		V <sub>CC</sub> = 4.5 V to 5.5 V	1.0	2.5	5.0	1.0	6.5	ns
C <sub>PD</sub>	power dissipation capacitance	C <sub>L</sub> = 50 pF; f <sub>i</sub> = 10 MHz; V <sub>I</sub> = GND to V <sub>CC</sub> [6]						
		V <sub>CC</sub> = 2.5 V	-	9.8	-	-	-	pF
		V <sub>CC</sub> = 3.3 V	-	12.0	-	-	-	pF
		V <sub>CC</sub> = 5.0 V	-	17.3	-	-	-	pF

[1] Typical values are measured at T<sub>amb</sub> = 25 °C and nominal V<sub>CC</sub>.

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

[3] Propagation delay is the calculated RC time constant of the typical ON resistance of the switch and the specified capacitance when driven by an ideal voltage source (zero output impedance).

[4] t<sub>en</sub> is the same as t<sub>PZH</sub> and t<sub>PZL</sub>.

[5] t<sub>dis</sub> is the same as t<sub>PLZ</sub> and t<sub>PHZ</sub>.

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

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

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;

C<sub>S(ON)</sub> = maximum ON-state switch capacitance in pF;

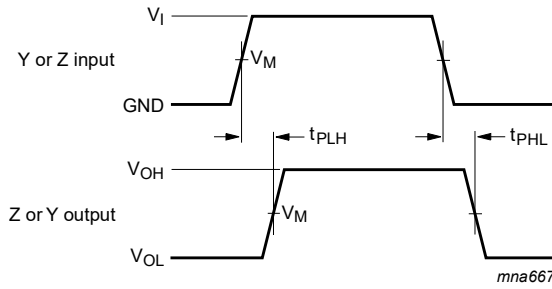
V<sub>CC</sub> = supply voltage in V;

N = number of inputs switching;

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



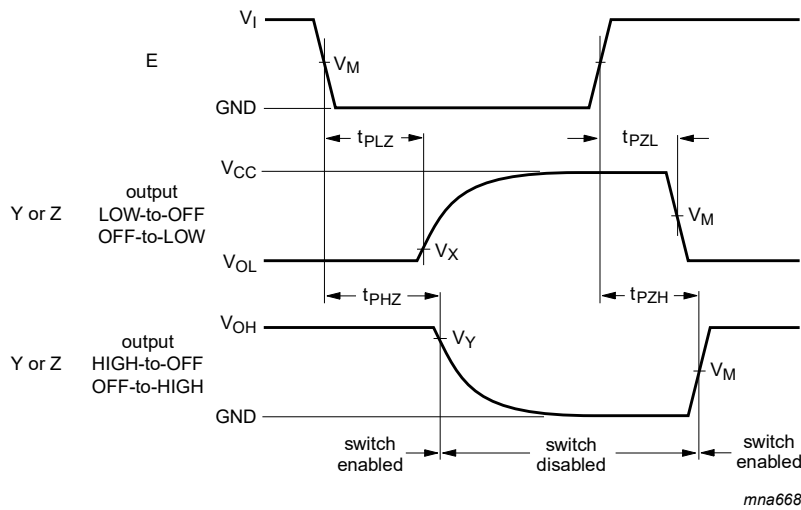
11.1. Waveforms and test circuit



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

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

Fig. 14. Input (Y or Z) to output (Z or Y) propagation delays



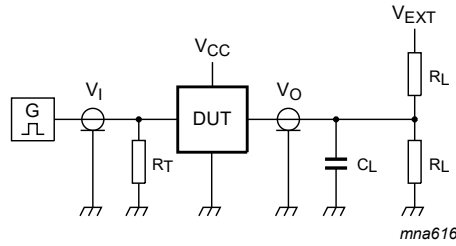
Measurement points are given in [Table 10](#).

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

Fig. 15. Enable and disable times

Table 10. Measurement points

Supply voltage	Input	Output		
$V_{CC}$	$V_M$	$V_M$	$V_X$	$V_Y$
1.65 V to 1.95 V	$0.5V_{CC}$	$0.5V_{CC}$	$V_{OL} + 0.15 V$	$V_{OH} - 0.15 V$
2.3 V to 2.7 V	$0.5V_{CC}$	$0.5V_{CC}$	$V_{OL} + 0.15 V$	$V_{OH} - 0.15 V$
2.7 V	1.5 V	1.5 V	$V_{OL} + 0.3 V$	$V_{OH} - 0.3 V$
3.0 V to 3.6 V	1.5 V	1.5 V	$V_{OL} + 0.3 V$	$V_{OH} - 0.3 V$
4.5 V to 5.5 V	$0.5V_{CC}$	$0.5V_{CC}$	$V_{OL} + 0.3 V$	$V_{OH} - 0.3 V$



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

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;

$R_L$  = Load resistance;

$V_{EXT}$  = External voltage for measuring switching times.

**Fig. 16. Test circuit for measuring switching times**

**Table 11. Test data**

Supply voltage	Input		Load		$V_{EXT}$		
$V_{CC}$	$V_I$	$t_r, t_f$	$C_L$	$R_L$	$t_{PLH}, t_{PHL}$	$t_{PZH}, t_{PHZ}$	$t_{PZL}, t_{PLZ}$
1.65 V to 1.95 V	$V_{CC}$	$\leq 2.0$ ns	30 pF	1 k $\Omega$	open	GND	$2V_{CC}$
2.3 V to 2.7 V	$V_{CC}$	$\leq 2.0$ ns	30 pF	500 $\Omega$	open	GND	$2V_{CC}$
2.7 V	2.7 V	$\leq 2.5$ ns	50 pF	500 $\Omega$	open	GND	6 V
3.0 V to 3.6 V	2.7 V	$\leq 2.5$ ns	50 pF	500 $\Omega$	open	GND	6 V
4.5 V to 5.5 V	$V_{CC}$	$\leq 2.5$ ns	50 pF	500 $\Omega$	open	GND	$2V_{CC}$

## 11.2. Additional dynamic characteristics

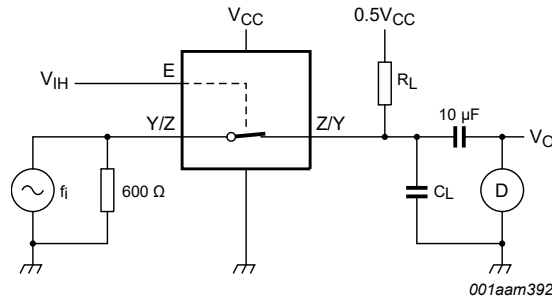
**Table 12. Additional dynamic characteristics**

At recommended operating conditions; voltages are referenced to GND (ground = 0 V);  $T_{amb} = 25$  °C.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
THD	total harmonic distortion	$R_L = 10$ k $\Omega$ ; $C_L = 50$ pF; $f_i = 1$ kHz; see <a href="#">Fig. 17</a>					
		$V_{CC} = 1.65$ V	-	0.032	-	%	
		$V_{CC} = 2.3$ V	-	0.008	-	%	
		$V_{CC} = 3.0$ V	-	0.006	-	%	
		$V_{CC} = 4.5$ V	-	0.001	-	%	
		$R_L = 10$ k $\Omega$ ; $C_L = 50$ pF; $f_i = 10$ kHz; see <a href="#">Fig. 17</a>					
		$V_{CC} = 1.65$ V	-	0.068	-	%	
		$V_{CC} = 2.3$ V	-	0.009	-	%	
		$V_{CC} = 3.0$ V	-	0.008	-	%	
		$V_{CC} = 4.5$ V	-	0.006	-	%	

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$f_{(-3dB)}$	-3 dB frequency response	$R_L = 600 \Omega$ ; $C_L = 50 \text{ pF}$ ; see <a href="#">Fig. 18</a>				
		$V_{CC} = 1.65 \text{ V}$	-	135	-	MHz
		$V_{CC} = 2.3 \text{ V}$	-	145	-	MHz
		$V_{CC} = 3.0 \text{ V}$	-	150	-	MHz
		$V_{CC} = 4.5 \text{ V}$	-	155	-	MHz
		$R_L = 50 \Omega$ ; $C_L = 5 \text{ pF}$ ; see <a href="#">Fig. 18</a>				
		$V_{CC} = 1.65 \text{ V}$	-	> 500	-	MHz
		$V_{CC} = 2.3 \text{ V}$	-	> 500	-	MHz
		$V_{CC} = 3.0 \text{ V}$	-	> 500	-	MHz
		$V_{CC} = 4.5 \text{ V}$	-	> 500	-	MHz
		$R_L = 50 \Omega$ ; $C_L = 10 \text{ pF}$ ; see <a href="#">Fig. 18</a>				
		$V_{CC} = 1.65 \text{ V}$	-	200	-	MHz
		$V_{CC} = 2.3 \text{ V}$	-	350	-	MHz
		$V_{CC} = 3.0 \text{ V}$	-	410	-	MHz
$V_{CC} = 4.5 \text{ V}$	-	440	-	MHz		
$\alpha_{iso}$	isolation (OFF-state)	$R_L = 600 \Omega$ ; $C_L = 50 \text{ pF}$ ; $f_i = 1 \text{ MHz}$ ; see <a href="#">Fig. 19</a>				
		$V_{CC} = 1.65 \text{ V}$	-	-46	-	dB
		$V_{CC} = 2.3 \text{ V}$	-	-46	-	dB
		$V_{CC} = 3.0 \text{ V}$	-	-46	-	dB
		$V_{CC} = 4.5 \text{ V}$	-	-46	-	dB
		$R_L = 50 \Omega$ ; $C_L = 5 \text{ pF}$ ; $f_i = 1 \text{ MHz}$ ; see <a href="#">Fig. 19</a>				
		$V_{CC} = 1.65 \text{ V}$	-	-37	-	dB
		$V_{CC} = 2.3 \text{ V}$	-	-37	-	dB
		$V_{CC} = 3.0 \text{ V}$	-	-37	-	dB
		$V_{CC} = 4.5 \text{ V}$	-	-37	-	dB
$V_{ct}$	crosstalk voltage	between digital input and switch; $R_L = 600 \Omega$ ; $C_L = 50 \text{ pF}$ ; $f_i = 1 \text{ MHz}$ ; $t_r = t_f = 2 \text{ ns}$ ; see <a href="#">Fig. 20</a>				
		$V_{CC} = 1.65 \text{ V}$	-	69	-	mV
		$V_{CC} = 2.3 \text{ V}$	-	87	-	mV
		$V_{CC} = 3.0 \text{ V}$	-	156	-	mV
		$V_{CC} = 4.5 \text{ V}$	-	302	-	mV
$Q_{inj}$	charge injection	$C_L = 0.1 \text{ nF}$ ; $V_{gen} = 0 \text{ V}$ ; $R_{gen} = 0 \Omega$ ; $f_i = 1 \text{ MHz}$ ; $R_L = 1 \text{ M}\Omega$ ; see <a href="#">Fig. 21</a>				
		$V_{CC} = 1.8 \text{ V}$	-	3.3	-	pC
		$V_{CC} = 2.5 \text{ V}$	-	4.1	-	pC
		$V_{CC} = 3.3 \text{ V}$	-	5.0	-	pC
		$V_{CC} = 4.5 \text{ V}$	-	6.4	-	pC
		$V_{CC} = 5.5 \text{ V}$	-	7.5	-	pC

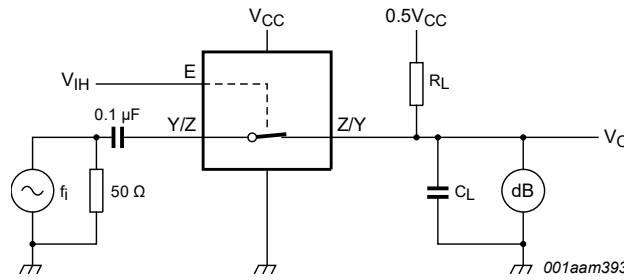
11.3. Test circuits



**Test conditions:**

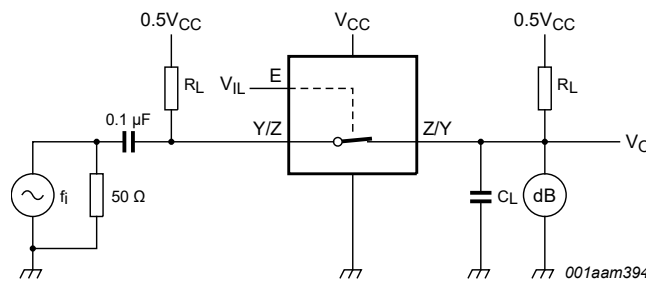
- $V_{CC} = 1.65\text{ V}$ :  $V_i = 1.4\text{ V (p-p)}$ .
- $V_{CC} = 2.3\text{ V}$ :  $V_i = 2\text{ V (p-p)}$ .
- $V_{CC} = 3\text{ V}$ :  $V_i = 2.5\text{ V (p-p)}$ .
- $V_{CC} = 4.5\text{ V}$ :  $V_i = 4\text{ V (p-p)}$ .

Fig. 17. Test circuit for measuring total harmonic distortion



Adjust  $f_i$  voltage to obtain 0 dBm level at output. Increase  $f_i$  frequency until dB meter reads -3 dB.

Fig. 18. Test circuit for measuring the frequency response when switch is in ON-state



Adjust  $f_i$  voltage to obtain 0 dBm level at input.

Fig. 19. Test circuit for measuring isolation (OFF-state)

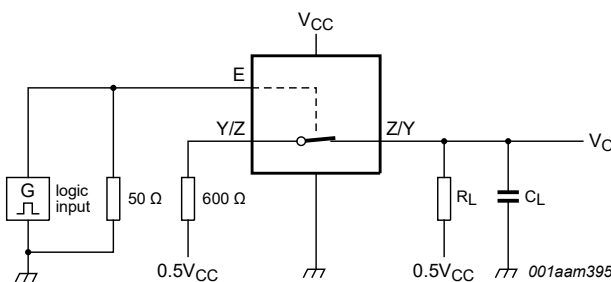
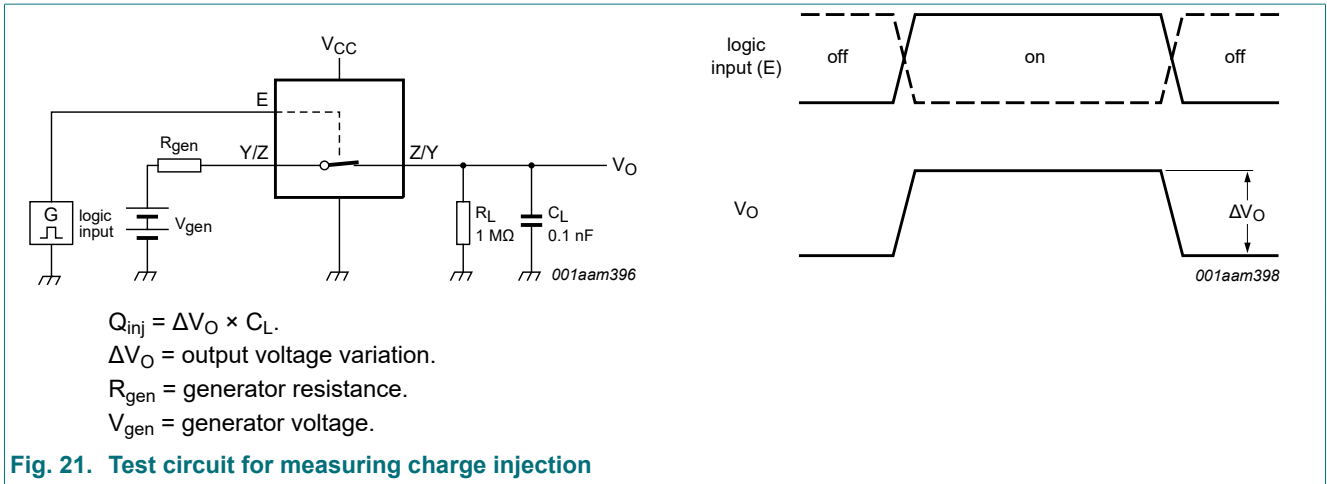


Fig. 20. Test circuit for measuring crosstalk between digital input and switch



## 12. Package outline

TSSOP5: plastic thin shrink small outline package; 5 leads; body width 1.25 mm

SOT353-1

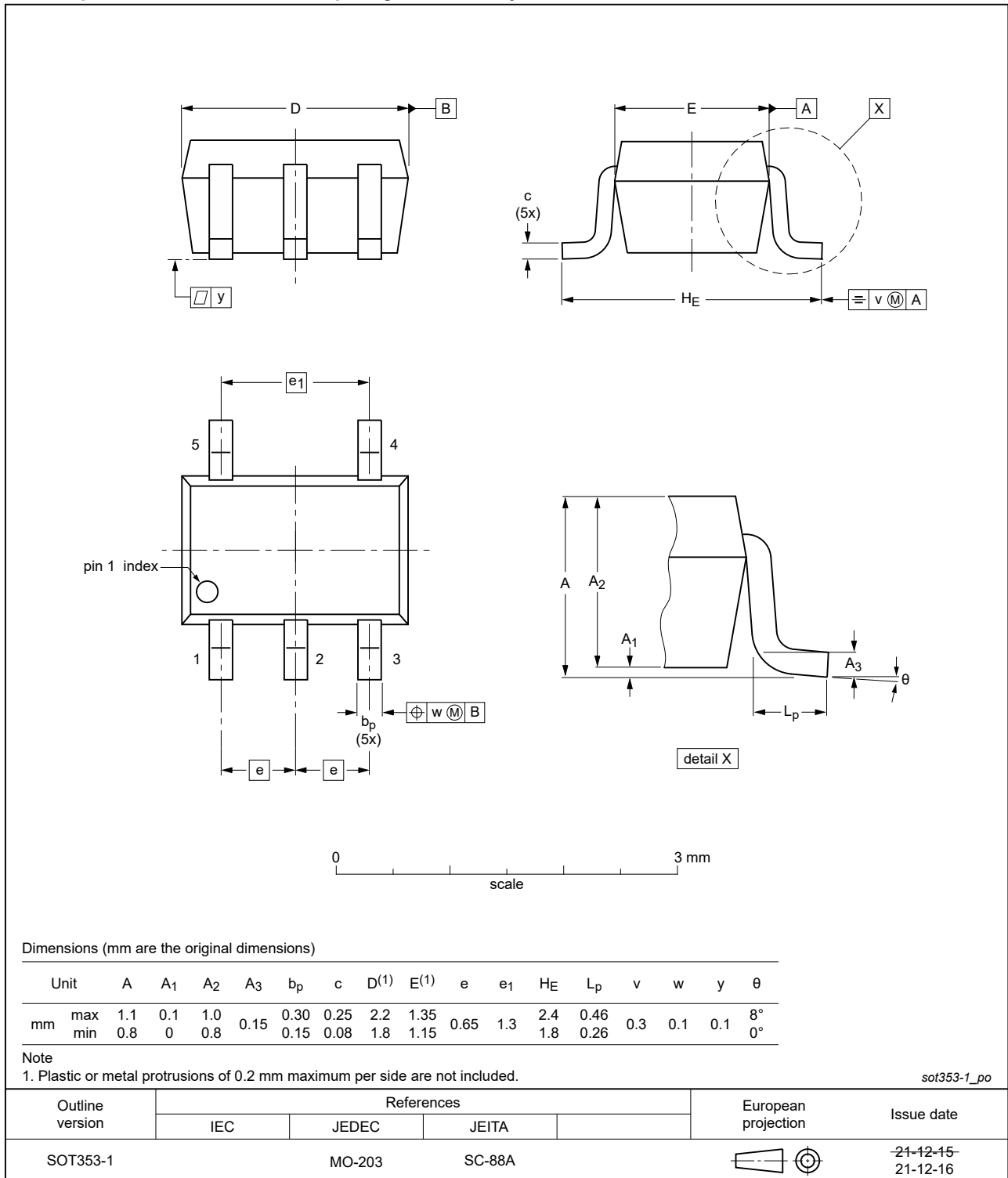


Fig. 22. Package outline SOT353-1 (TSSOP5)

Plastic surface-mounted package; 5 leads

SOT753

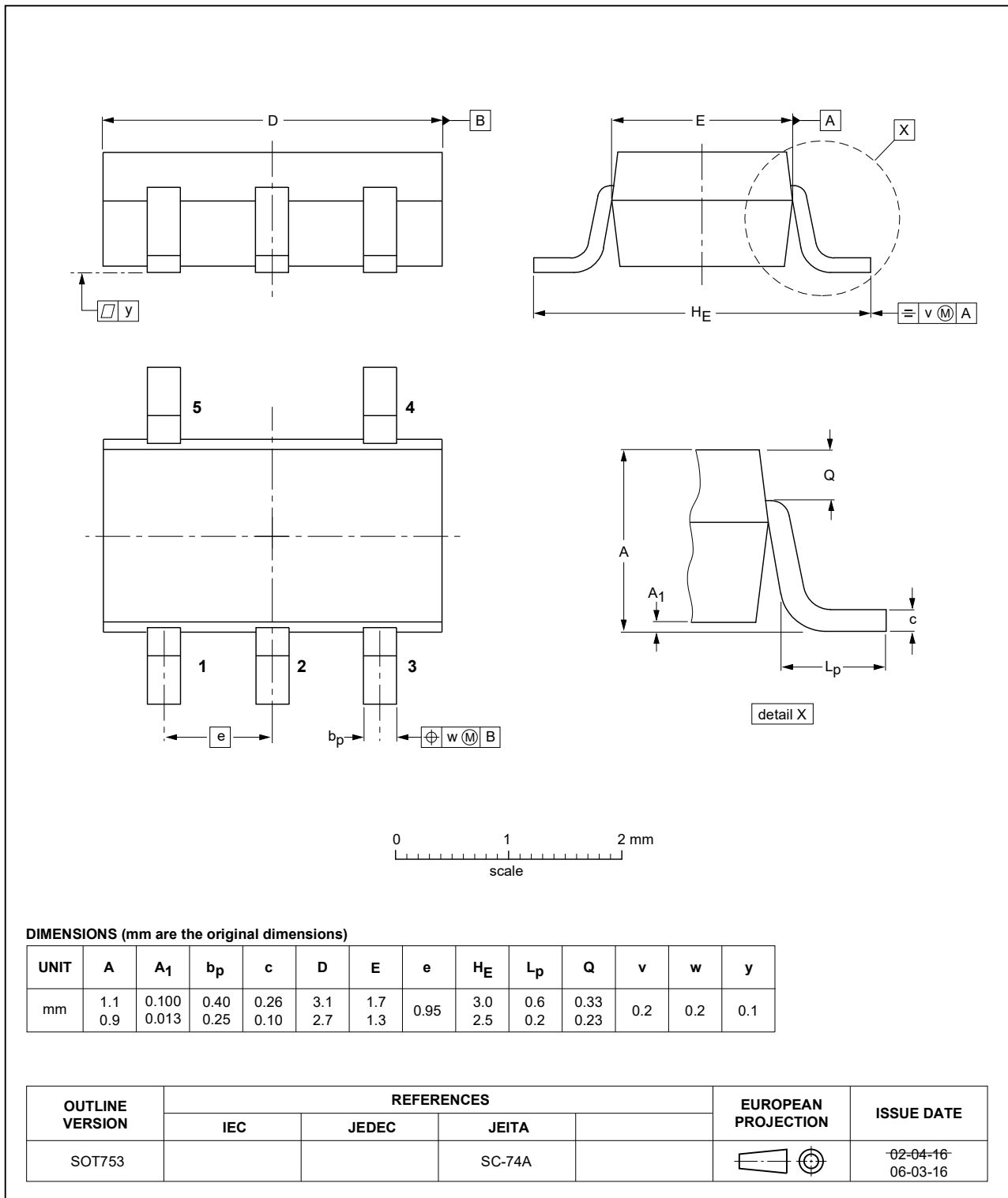


Fig. 23. Package outline SOT753 (SC-74A)

## 13. Abbreviations

Table 13. Abbreviations

Acronym	Description
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MIL	Military
MM	Machine Model
TTL	Transistor-Transistor Logic

## 14. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74LVC1G66_Q100 v.4	20220112	Product data sheet	-	74LVC1G66_Q100 v.3
Modifications:	<ul style="list-style-type: none"> <li><a href="#">Fig. 22</a>: Package outline drawing SOT353-1 (TSSOP5) has changed.</li> </ul>			
74LVC1G66_Q100 v.3	20210608	Product data sheet	-	74LVC1G66_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> updated.</li> <li><a href="#">Section 8</a>: Derating values for <math>P_{tot}</math> total power dissipation updated.</li> </ul>			
74LVC1G66_Q100 v.2	20161209	Product data sheet	-	74LVC1G66_Q100 v.1
Modifications:	<ul style="list-style-type: none"> <li><a href="#">Table 7</a>: The maximum limits for leakage current and supply current have changed.</li> </ul>			
74LVC1G66_Q100 v.1	20120801	Product data sheet	-	-



## 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.

- [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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