74AXP1T57-Q100

Dual supply configurable multiple function gate

Rev. 1 — 14 September 2016 Product data sheet

1. General description

The 74AXP1T57-Q100 is a dual supply configurable multiple function gate with Schmitt-trigger inputs. It features three inputs (A, B and C), an output (Y) and dual supply pins (V_{CCI} and V_{CCO}). The inputs are referenced to V_{CCI} and the output is referenced to V_{CCO}. All inputs can be connected directly to V_{CCI} or GND. V_{CCI} can be supplied at any voltage between 0.7 V and 2.75 V and V_{CCO} can be supplied at any voltage between 1.2 V and 5.5 V. This feature allows voltage level translation. The 74AXP1T57-Q100 can be configured as any of the following logic functions AND, OR, NAND, NOR, XNOR, inverter and buffer.

This device ensures very low static and dynamic power consumption across the entire supply range and is fully specified for partial power down applications using I_{OFF}. The I_{OFF} circuitry disables the output, preventing the potentially damaging backflow current through the device when it is powered down.

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:
  - V_{CCI}: 0.7 V to 2.75 V
  - V_{CCO}: 1.2 V to 5.5 V
- Low input capacitance; C_I = 0.6 pF (typical)
- Low output capacitance; C_O = 1.8 pF (typical)
- Low dynamic power consumption; C_{PD} = 0.6 pF at V_{CCI} = 1.2 V (typical)
- Low dynamic power consumption; C_{PD} = 7.1 pF at V_{CCO} = 3.3 V (typical)
- Low static power consumption; I_{CCI} = 0.5 μA (85 °C maximum)
- Low static power consumption; I_{CCO} = 1.8 μA (85 °C maximum)
- High noise immunity
- Complies with JEDEC standard:
  - JESD8-12A.01 (1.1 V to 1.3 V; A, B, C inputs)
  - JESD8-11A.01 (1.4 V to 1.6 V)
  - JESD8-7A (1.65 V to 1.95 V)
  - JESD8-5A.01 (2.3 V to 2.7 V)
  - JESD8-C (2.7 V to 3.6 V; Y output)
  - JESD12-6 (4.5 V to 5.5 V; Y output)

- ESD protection:
  - MIL-STD-883, method 3015 Class 2. Exceeds 2 kV
  - HBM ANSI/ESDA/JEDEC JS-001 Class 2 exceeds 2 kV
  - CDM JESD22-C101E exceeds 1000 V
- Latch-up performance exceeds 100 mA per JESD78D Class II
- Inputs accept voltages up to 2.75 V
- Low noise overshoot and undershoot < 10% of V_{CCO}
- I_{OFF} circuitry provides partial power-down mode operation

3. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74AXP1T57DC-Q100	–40 °C to +125 °C	VSSOP8	plastic very thin shrink small outline package; 8 leads; body width 2.3 mm	SOT765-1

4. Marking

Table 2. Marking

Type number	Marking code[1]
74AXP1T57DC-Q100	rD

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

5. Functional diagram

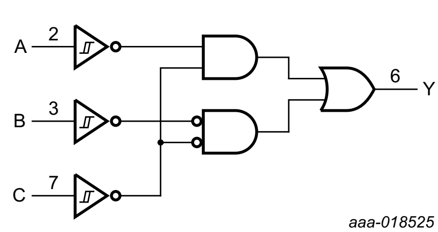


Fig 1. Logic symbol

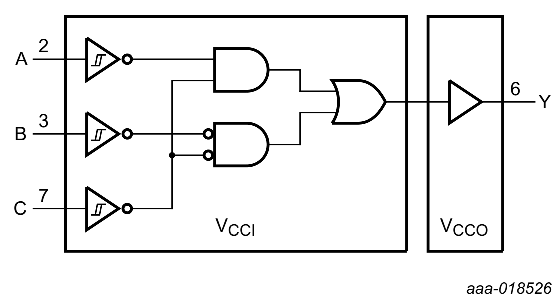


Fig 2. Logic diagram

6. Pinning information

6.1 Pinning

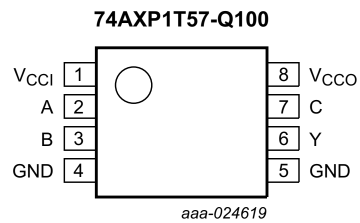


Fig 3. Pin configuration SOT765-1

6.2 Pin description

Table 3. Pin description

Symbol	Pin	Description
V_{CCI}	1	input supply voltage
A, B, C	2, 3, 7	data input
GND[1]	4, 5	ground (0 V)
Y	6	data output
V_{CCO}	8	output supply voltage

[1] All GND pins must be connected to ground (0 V).

7. Functional description

Table 4. Function table[1]

Supply voltage		Input			Output
V_{CCI}	V_{CCO}	C	B	A	Y
0.7 V to 2.75 V	1.2 V to 5.5 V	L	L	L	H
0.7 V to 2.75 V	1.2 V to 5.5 V	L	L	H	L
0.7 V to 2.75 V	1.2 V to 5.5 V	L	H	L	H
0.7 V to 2.75 V	1.2 V to 5.5 V	L	H	H	L
0.7 V to 2.75 V	1.2 V to 5.5 V	H	L	L	L
0.7 V to 2.75 V	1.2 V to 5.5 V	H	L	H	L
0.7 V to 2.75 V	1.2 V to 5.5 V	H	H	L	H
0.7 V to 2.75 V	1.2 V to 5.5 V	H	H	H	H
GND	1.2 V to 5.5 V	X	X	X	Z
0.7 V to 2.75 V	GND	X	X	X	Z
GND	GND	X	X	X	Z

[1] H = HIGH voltage level; L = LOW voltage level; X = don’t care; Z = high-impedance OFF-state.

7.1 Logic configurations

Table 5. Function selection table

Logic function	Figure
2-input AND	see Figure 4
2-input AND with both inputs inverted	see Figure 7
2-input NAND with inverted input	see Figure 5 and Figure 6
2-input OR with inverted input	see Figure 5 and Figure 6
2-input NOR	see Figure 7
2-input NOR with both inputs inverted	see Figure 4
2-input XNOR	see Figure 8
Inverter	see Figure 9
Buffer	see Figure 10

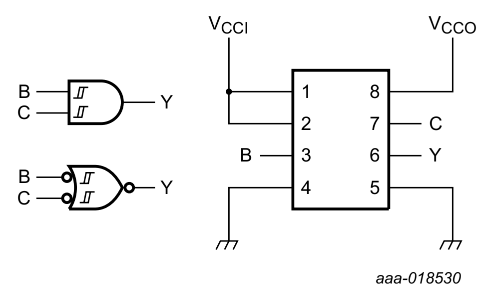


Fig 4. 2-input AND gate or 2-input NOR gate with both inputs inverted

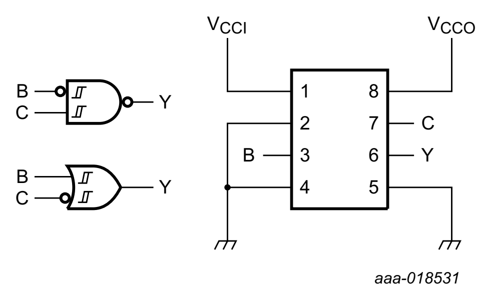


Fig 5. 2-input NAND gate with input B inverted or 2-input OR gate with inverted C input

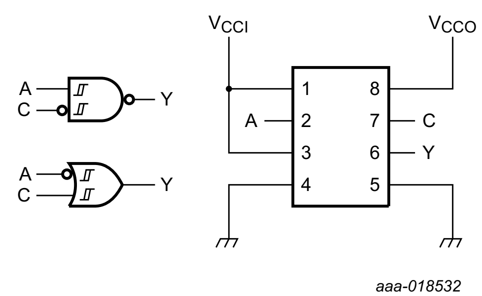


Fig 6. 2-input NAND gate with input C inverted or 2-input OR gate with inverted A input

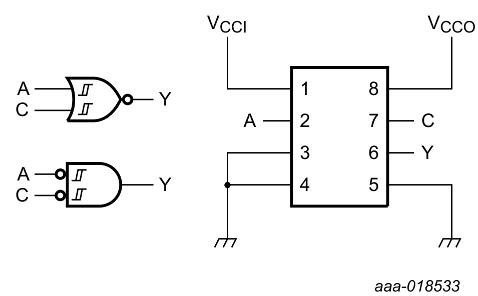


Fig 7. 2-input NOR gate or 2-input AND gate with both inputs inverted

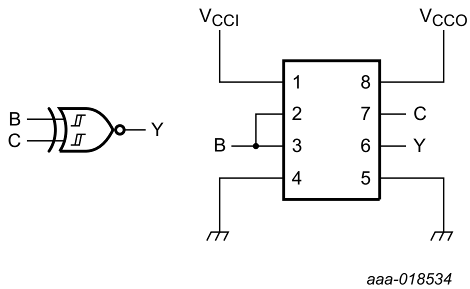


Fig 8. 2-input XNOR gate

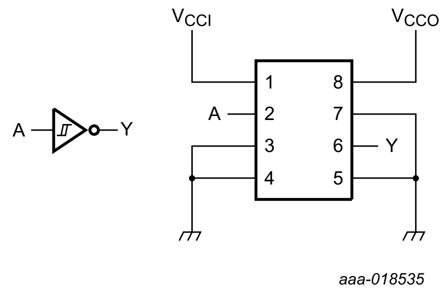


Fig 9. Inverter

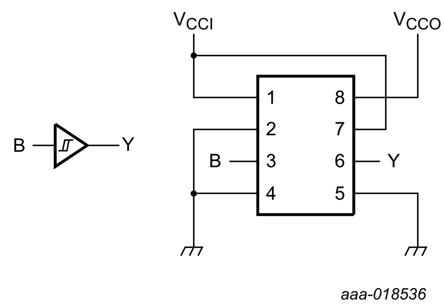


Fig 10. Buffer

8. Limiting values

Table 6. 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_{CCI}	input supply voltage		–0.5	+3.3	V
V_{CCO}	output supply voltage		–0.5	+6.0	V
I_{IK}	input clamping current	$V_I < 0$ V	–50	-	mA
V_I	input voltage	[1]	–0.5	+3.3	V
I_{OK}	output clamping current	$V_O < 0$ V	–50	-	mA
V_O	output voltage	Active mode [1][2]	–0.5	V_{CCO} + 0.5	V
		Power-down or 3-state mode [1]	–0.5	+6.0	V
I_O	output current	V_O = 0 V to V_{CCO}	-	±25	mA
I_{CCI}	input supply current		-	50	mA
I_{CCO}	output supply current		-	50	mA
I_{GND}	ground current		–50	-	mA
T_{stg}	storage temperature		–65	+150	°C
P_{tot}	total power dissipation	T_{amb} = –40 °C to +125 °C	-	300	mW

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

[2] V_{CCO} + 0.5 V should not exceed 6.0 V.

[3] For VSSOP8 package: above 110 °C the value of P_{tot} derates linearly with 8 mW/K.

9. Recommended operating conditions

Table 7. Recommended operating conditions

Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CCI}	input supply voltage		0.7	2.75	V
V_{CCO}	output supply voltage		1.2	5.5	V
V_I	input voltage		0	2.75	V
V_O	output voltage	Active mode	0	V_{CCO}	V
		Power-down or 3-state mode	0	5.5	V
T_{amb}	ambient temperature		–40	+125	°C

10. Static characteristics

Table 8. Static characteristics

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

Symbol	Parameter	Conditions	T_{amb} = –40 °C to +125 °C					Unit
			Min	Typ 25 °C	Max 25 °C	Max 85 °C	Max 125 °C	
V_{T+}	positive-going threshold voltage	see Figure 11 and Figure 12						
		V_{CCI} = 0.75 V to 0.85 V	$0.3V_{CCI}$	-	$0.8V_{CCI}$	$0.8V_{CCI}$	$0.8V_{CCI}$	V
		V_{CCI} = 1.1 V to 1.95 V	$0.4V_{CCI}$	-	$0.7V_{CCI}$	$0.7V_{CCI}$	$0.7V_{CCI}$	V
		V_{CCI} = 2.3 V to 2.7 V	0.9	-	1.7	1.7	1.7	V
V_{T-}	negative-going threshold voltage	see Figure 11 and Figure 12						
		V_{CCI} = 0.75 V to 0.85 V	$0.2V_{CCI}$	-	$0.7V_{CCI}$	$0.7V_{CCI}$	$0.7V_{CCI}$	V
		V_{CCI} = 1.1 V to 1.95 V	$0.3V_{CCI}$	-	$0.6V_{CCI}$	$0.6V_{CCI}$	$0.6V_{CCI}$	V
		V_{CCI} = 2.3 V to 2.7 V	0.7	-	1.5	1.5	1.5	V
V_H	hysteresis voltage	see Figure 11 and Figure 12						
		V_{CCI} = 0.75 V to 0.85 V	$0.06V_{CCI}$	-	$0.5V_{CCI}$	$0.5V_{CCI}$	$0.5V_{CCI}$	V
		V_{CCI} = 1.1 V to 1.95 V	$0.1V_{CCI}$	-	$0.4V_{CCI}$	$0.4V_{CCI}$	$0.4V_{CCI}$	V
		V_{CCI} = 2.3 V to 2.7 V	0.2	-	1.0	1.0	1.0	V
V_{OH}	HIGH-level output voltage	I_O = –2 mA; V_{CCO} = 1.2 V [1]	-	1.05	-	-	-	V
		I_O = –3 mA; V_{CCO} = 1.4 V	1.05	-	-	-	-	V
		I_O = –4.5 mA; V_{CCO} = 1.65 V	1.2	-	-	-	-	V
		I_O = –8 mA; V_{CCO} = 2.3 V	1.7	-	-	-	-	V
		I_O = –10 mA; V_{CCO} = 3.0 V	2.2	-	-	-	-	V
		I_O = –12 mA; V_{CCO} = 4.5 V	3.7	-	-	-	-	V

Table 8. Static characteristics *…continued*
At recommended operating conditions, unless otherwise specified; voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	T_{amb} = –40 °C to +125 °C					Unit
			Min	Typ 25 °C	Max 25 °C	Max 85 °C	Max 125 °C	
V_{OL}	LOW-level output voltage	I_O = 2 mA; V_{CCO} = 1.2 V [1]	-	0.18	-	-	-	V
		I_O = 3 mA; V_{CCO} = 1.4 V	-	-	0.35	0.35	0.35	V
		I_O = 4.5 mA; V_{CCO} = 1.65 V	-	-	0.45	0.45	0.45	V
		I_O = 8 mA; V_{CCO} = 2.3 V	-	-	0.7	0.7	0.7	V
		I_O = 10 mA; V_{CCO} = 3.0 V	-	-	0.8	0.8	0.8	V
		I_O = 12 mA; V_{CCO} = 4.5 V	-	-	0.8	0.8	0.8	V
I_I	input leakage current	V_I = 0 V to 2.75 V; V_{CCI} = 0 V to 2.75 V [1]	-	±0.001	±0.1	±0.5	±1.0	μA
I_{OZ}	OFF-state output current	V_O = 0 V to 5.5 V; V_{CCO} = 1.2 V to 5.5 V	-	±0.001	±0.1	±0.5	±2.0	μA
I_{OFF}	power-off leakage current	inputs; V_I = 0 V to 2.75 V; V_{CCI} = 0 V; V_{CCO} = 0 V to 5.5 V [1]	-	±0.01	±0.1	±0.5	±2.0	μA
		output; V_O = 0 V to 5.5 V; V_{CCO} = 0 V; V_{CCI} = 0 V to 2.75 V; V_I = 0 V to 2.75 V [1]	-	±0.01	±0.1	±0.5	±2.0	μA
ΔI_{OFF}	additional power-off leakage current	inputs; V_I = 0 V or 2.75 V; V_{CCI} = 0 V to 0.1 V; V_{CCO} = 0 V to 5.5 V [1]	-	±0.02	±0.1	±0.5	±2.0	μA
		output; V_O = 0 V or 5.5 V; V_{CCO} = 0 V to 0.1 V; V_{CCI} = 0 V to 2.75 V; V_I = 0 V or 2.75 V [1]	-	±0.02	±0.1	±0.5	±2.0	μA

[1] Typical values are measured at V_{CCI} = V_{CCO} = 1.2 V unless otherwise specified.

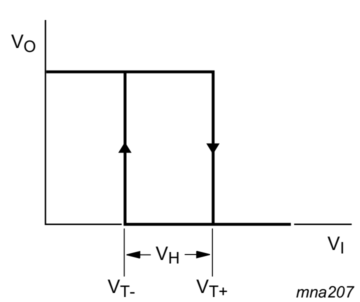


Fig 11. Transfer characteristic

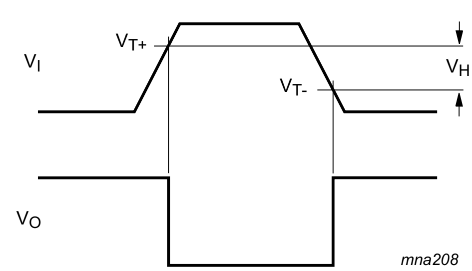


Fig 12. Definition of V_{T+}, V_{T-}, and V_H

Table 9. Static characteristics supply current

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

Symbol	Parameter	Conditions	T_{amb} = –40 °C to +125 °C					Unit
			Typ 25 °C	Max 25 °C	Typ 85 °C	Max 85 °C	Max 125 °C	
I_{CCI}	input supply current	V_I = 0 V or V_{CCI};						
		V_{CCI} = 0.7 V to 1.3 V [1]	1	100	10	300	500	nA
		V_{CCI} = 1.3 V to 2.75 V [2]	1	100	20	500	1000	nA
		V_{CCI} = 2.75 V; V_{CCO} = 0 V	1	100	20	500	1000	nA
		V_{CCI} = 0 V; V_{CCO} = 5.5 V	1	100	1	100	500	nA
I_{CCO}	output supply current	V_I = 0 V or V_{CCI}; I_O = 0 A; see Table 10						
		V_{CCO} = 1.2 V to 3.6 V [1]	0.001	1.0	0.01	1.2	1.3	μA
		V_{CCO} = 3.6 V to 5.5 V [3]	0.8	1.5	1.0	1.8	2.0	μA
		V_{CCI} = 2.75 V; V_{CCO} = 0 V	0.001	0.1	0.003	0.2	0.5	μA
		V_{CCI} = 0 V; V_{CCO} = 3.6 V	0.2	0.6	0.3	0.8	1.2	μA
		V_{CCI} = 0 V; V_{CCO} = 5.5 V	0.4	0.8	0.5	1.0	1.5	μA
ΔI_{CCI}	additional input supply current	$V_I = V_{CCI} - 0.5$ V; V_{CCI} = 2.5 V	2	100	14	150	200	μA

[1] Typical values are measured at $V_{CCI} = V_{CCO}$ = 1.2 V.

[2] Typical values are measured at $V_{CCI} = V_{CCO}$ = 2.5 V.

[3] Typical values are measured at V_{CCI} = 1.2 V and V_{CCO} = 5.0 V.

Table 10. Typical output supply current (I_{CCO})

V_{CCI}	V_{CCO}							Unit
	0 V	1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
0 V	0	1	5	20	100	200	400	nA
0.8 V	1	10	150	200	300	500	800	nA
1.2 V	1	1	5	200	300	500	800	nA
1.5 V	1	1	5	100	300	500	800	nA
1.8 V	1	1	5	100	300	500	800	nA
2.5 V	1	1	5	100	100	500	800	nA

11. Dynamic characteristics

Table 11. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); for test circuit, see Figure 20; for wave form, see Figure 13.

Symbol	Parameter	Conditions	V_{CCO} [1]																Unit
			1.2 V	1.5 V ± 0.1 V			1.8 V ± 0.15 V			2.5 V ± 0.2 V			3.3 V ± 0.3 V			5.0 V ± 0.5 V			
			Typ	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
T_{amb} = 25 °C																			
t_{pd}	propagation delay	A, B and C to Y [2]																	
		V_{CCI} = 0.75 V to 0.85 V	25	4	20	76	4	18	72	3	16	72	3	16	80	3	17	92	ns
		V_{CCI} = 1.1 V to 1.3 V	16.5	3.4	10.9	21.0	3.0	8.9	17.0	2.6	7.3	12.0	2.5	6.7	10.7	2.4	6.4	10.2	ns
		V_{CCI} = 1.4 V to 1.6 V	15.5	3.1	9.9	19.0	2.6	7.9	14.0	2.3	6.2	9.9	2.1	5.6	9.0	2.1	5.3	8.5	ns
		V_{CCI} = 1.65 V to 1.95 V	15.0	2.6	9.4	18.0	2.1	7.4	12.5	1.7	5.7	9.3	1.6	5.1	8.3	1.5	4.8	7.9	ns
		V_{CCI} = 2.3 V to 2.7 V	14.5	2.7	8.9	17.5	2.2	6.9	11.7	1.9	5.2	8.7	1.8	4.6	7.7	1.7	4.3	7.2	ns
T_{amb} = −40 °C to +85 °C																			
t_{pd}	propagation delay	A, B and C to Y [2]																	
		V_{CCI} = 0.75 V to 0.85 V	25	3	20	151	3	18	148	2	16	167	2	16	194	2	17	225	ns
		V_{CCI} = 1.1 V to 1.3 V	16.5	3.4	10.9	21.0	3.0	8.9	17.0	2.6	7.3	12.0	2.5	6.7	10.7	2.4	6.4	10.2	ns
		V_{CCI} = 1.4 V to 1.6 V	15.5	3.1	9.9	19.0	2.6	7.9	14.0	2.3	6.2	9.9	2.1	5.6	9.0	2.1	5.3	8.5	ns
		V_{CCI} = 1.65 V to 1.95 V	15.0	2.6	9.4	18.0	2.1	7.4	12.5	1.7	5.7	9.3	1.6	5.1	8.3	1.5	4.8	7.9	ns
		V_{CCI} = 2.3 V to 2.7 V	14.5	2.7	8.9	17.5	2.2	6.9	11.7	1.9	5.2	8.7	1.8	4.6	7.7	1.7	4.3	7.2	ns
T_{amb} = −40 °C to +125 °C																			
t_{pd}	propagation delay	A, B and C to Y [2]																	
		V_{CCI} = 0.75 V to 0.85 V	25	3	20	151	3	18	148	2	16	167	2	16	194	2	17	225	ns
		V_{CCI} = 1.1 V to 1.3 V	16.5	3.4	10.9	21.0	3.0	8.9	17.5	2.6	7.3	15.0	2.5	6.7	13.0	2.4	6.4	12.0	ns
		V_{CCI} = 1.4 V to 1.6 V	15.5	3.1	9.9	20.0	2.6	7.9	16.5	2.3	6.2	12.0	2.1	5.6	10.9	2.1	5.3	10.3	ns
		V_{CCI} = 1.65 V to 1.95 V	15.0	2.6	9.4	19.0	2.1	7.4	15.5	1.7	5.7	11.3	1.6	5.1	10.4	1.5	4.8	9.7	ns
		V_{CCI} = 2.3 V to 2.7 V	14.5	2.7	8.9	18.0	2.2	6.9	14.5	1.9	5.2	10.6	1.8	4.6	9.6	1.7	4.3	8.9	ns
t_t	transition time	V_{CCI} = 0.75 V to 2.7 V [3]	-	1.0	-	-	1.0	-	-	1.0	-	-	1.0	-	-	1.0	-	-	ns

[1] Typical values are measured at nominal supply voltages and T_{amb} = +25 °C.

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

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

Table 12. Typical dynamic characteristics at T_{amb} = 25 °C

Voltages are referenced to GND (ground = 0 V); for test circuit, see Figure 20; for wave form, see Figure 13.

Symbol	Parameter	Conditions	V_{CCO}						Unit
			1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
C_{PD}	power dissipation capacitance	f_i = 1 MHz; $R_L = \infty\ \Omega$; V_I = 0 V to V_{CCI} [1]							
		input supply [2]							
		V_{CCI} = 0.8 V	0.5	0.5	0.5	0.5	0.5	0.5	pF
		V_{CCI} = 1.2 V	0.6	0.6	0.6	0.6	0.6	0.6	pF
		V_{CCI} = 1.5 V	0.7	0.7	0.7	0.7	0.7	0.7	pF
		V_{CCI} = 1.8 V	0.8	0.8	0.8	0.8	0.8	0.8	pF
		V_{CCI} = 2.5 V	1.0	1.0	1.0	1.0	1.0	1.0	pF
		output supply [3]							
		V_{CCI} = 0.8 V	6.7	6.8	6.8	6.9	7.5	9.5	pF
		V_{CCI} = 1.2 V	6.8	6.9	7.0	7.0	7.1	7.6	pF
		V_{CCI} = 1.5 V	6.9	6.9	6.9	7.0	7.1	7.6	pF
		V_{CCI} = 1.8 V	6.9	6.9	6.9	7.0	7.2	7.6	pF
		V_{CCI} = 2.5 V	6.9	7.0	7.0	7.0	7.2	7.6	pF
C_I	input capacitance	V_I = 0 V or V_{CCI}; V_{CCI} = 0 V to 2.7 V	0.6	0.6	0.6	0.6	0.6	0.6	pF
C_O	output capacitance	V_O = 0 V; V_{CCO} = 0 V	1.8	1.8	1.8	1.8	1.8	1.8	pF

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

[2] Power dissipated from input supply (V_{CCI})

$P_D = C_{PD} \times V_{CCI}^2 \times f_i \times N$ where:

C_{PD} = power dissipation capacitance of the input supply.

V_{CCI} = input supply voltage in V;

f_i = input frequency in MHz;

N = number of inputs switching;

[3] Power dissipated from output supply (V_{CCO})

$P_D = (C_L + C_{PD}) \times V_{CCO}^2 \times f_o$ where:

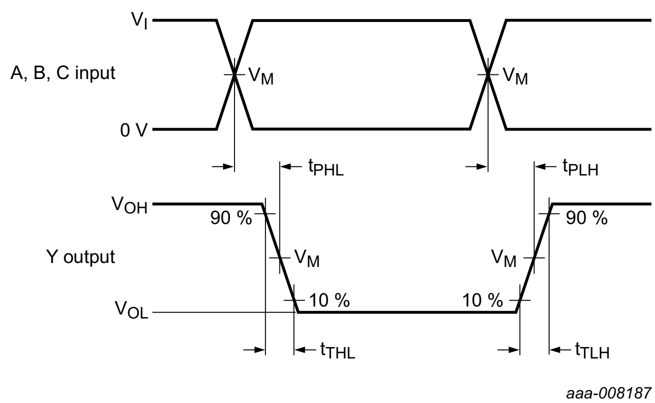
C_L = load capacitance in pF;

C_{PD} = power dissipation capacitance of the output supply.

V_{CCO} = output supply voltage in V;

f_o = output frequency in MHz;

11.1 Waveforms and graphs



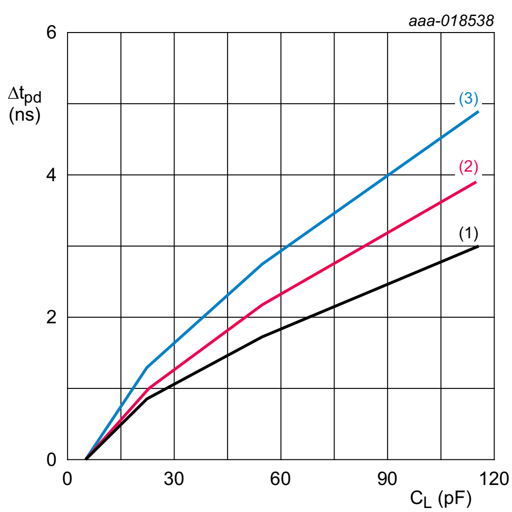
Measurement points are given in Table 13.

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

Fig 13. Input A, B and C to output Y propagation delay times and output transition times

Table 13. Measurement points

Supply voltage		Output	Input	
V_{CCI}	V_{CCO}	V_M	V_M	V_I
0.75 V to 2.7 V	1.2 V to 5.5 V	$0.5V_{CCO}$	$0.5V_{CCI}$	V_{CCI}



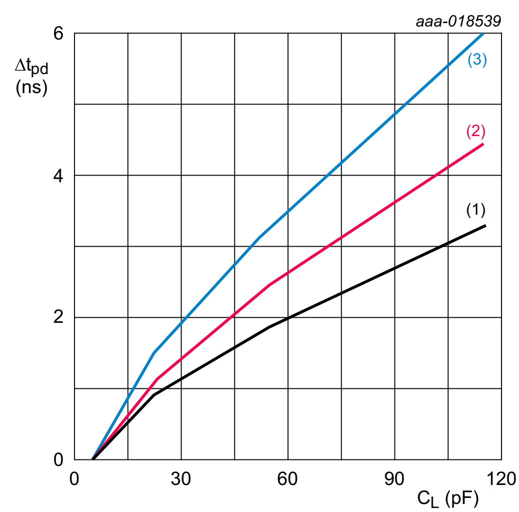
T_{amb} = −40 °C to +85 °C unless otherwise specified.

(1) Minimum: V_{CCO} = 5.5 V

(2) Typical: T_{amb} = 25 °C; V_{CCO} = 5 V

(3) Maximum: V_{CCO} = 4.5 V

Fig 14. Additional propagation delay versus load capacitance



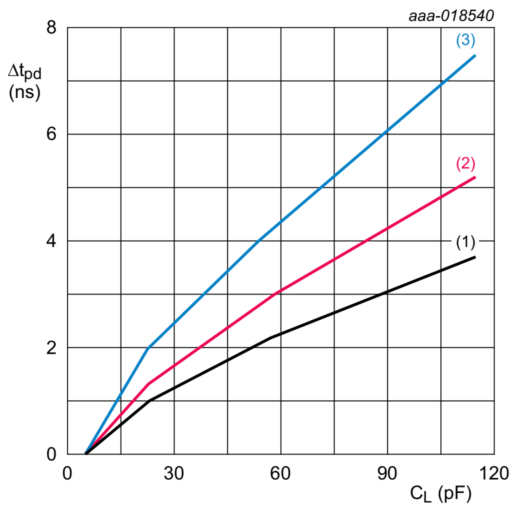
T_{amb} = −40 °C to +85 °C unless otherwise specified.

(1) Minimum: V_{CCO} = 3.6 V

(2) Typical: T_{amb} = 25 °C; V_{CCO} = 3.3 V

(3) Maximum: V_{CCO} = 3 V

Fig 15. Additional propagation delay versus load capacitance



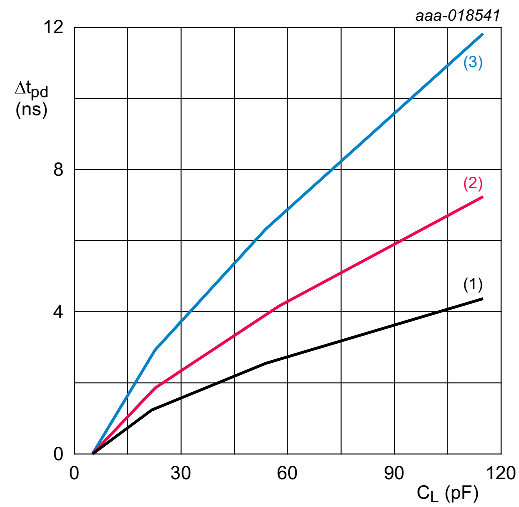
T_{amb} = –40 °C to +85 °C unless otherwise specified.

(1) Minimum: V_{CCO} = 2.7 V

(2) Typical: T_{amb} = 25 °C; V_{CCO} = 2.5 V

(3) Maximum: V_{CCO} = 2.3 V

Fig 16. Additional propagation delay versus load capacitance



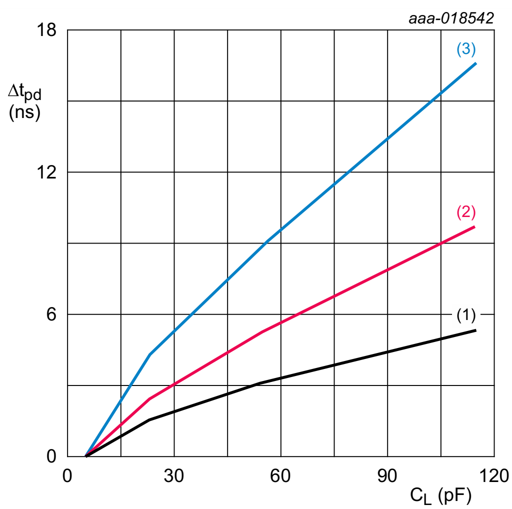
T_{amb} = –40 °C to +85 °C unless otherwise specified.

(1) Minimum: V_{CCO} = 1.95 V

(2) Typical: T_{amb} = 25 °C; V_{CCO} = 1.8 V

(3) Maximum: V_{CCO} = 1.65 V

Fig 17. Additional propagation delay versus load capacitance



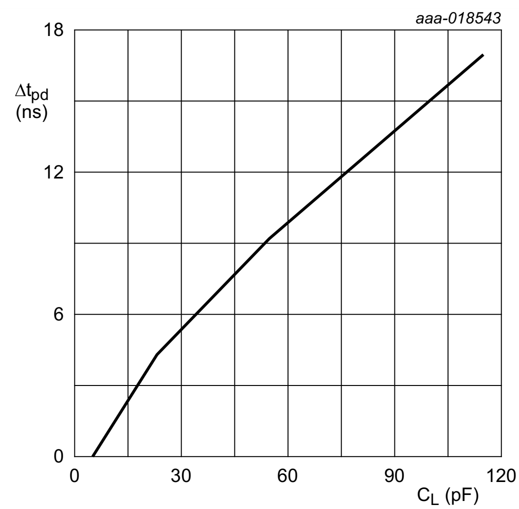
T_{amb} = –40 °C to +85 °C unless otherwise specified.

(1) Minimum: V_{CCO} = 1.6 V

(2) Typical: T_{amb} = 25 °C; V_{CCO} = 1.5 V

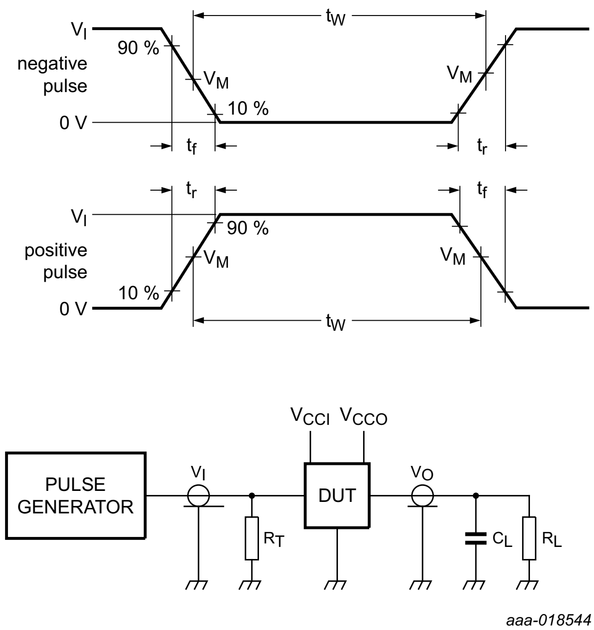
(3) Maximum: V_{CCO} = 1.4 V

Fig 18. Additional propagation delay versus load capacitance



T_{amb} = 25 °C; V_{CCO} = 1.2 V.

Fig 19. Additional propagation delay versus load capacitance



Test data is given in Table 14.

Definitions 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.

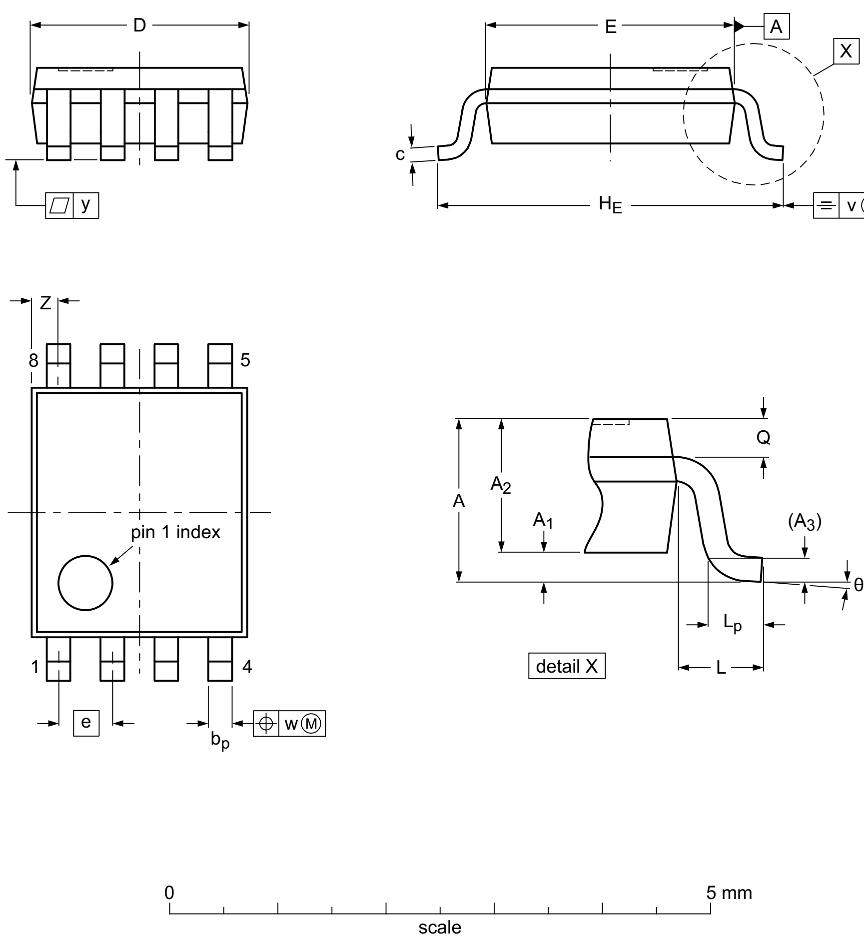
Fig 20. Test circuit for measuring switching times

Table 14. Test data

Supply voltage		Load		Input	
V_{CCI}	V_{CCO}	C_L	R_L	t_r, t_f	V_I
0.75 V to 2.7 V	1.2 V to 5.5 V	5 pF	5 kΩ	≤3.0 ns	V_{CCI}

12. Package outline

VSSOP8: plastic very thin shrink small outline package; 8 leads; body width 2.3 mm **SOT765-1**



Dimensions (mm are the original dimensions)

Unit		A max.	A_1	A_2	A_3	b_p	c	$D^{(1)}$	$E^{(2)}$	e	H_E	L	L_p	Q	v	w	y	$Z^{(1)}$	θ
mm	max		0.15	0.85		0.27	0.23	2.1	2.4		3.2		0.40	0.21				0.4	8°
	nom	1			0.12					0.5		0.4			0.2	0.08	0.1		
	min		0.00	0.60		0.17	0.08	1.9	2.2		3.0		0.15	0.19				0.1	0°

Note
1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.
2. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

sot765-1_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT765-1		MO-187				~~07-06-02~~ 16-05-31

Fig 21. Package outline SOT765-1 (VSSOP8)

13. Abbreviations

Table 15. Abbreviations

Acronym	Description
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model
MIL	Military

14. Revision history

Table 16. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74AXP1T57_Q100 v.1	20160914	Product data sheet	-	-

15. Legal information

15.1 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.

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