74HC4052; 74HCT4052

Dual 4-channel analog multiplexer/demultiplexer

Rev. 12 — 10 October 2017 Product data sheet

1 General description

The 74HC4052; 74HCT4052 is a dual single-pole quad-throw analog switch (2x SP4T) suitable for use in analog or digital 4:1 multiplexer/demultiplexer applications. Each switch features four independent inputs/outputs (nY0, nY1, nY2 and nY3) and a common input/output (nZ). A digital enable input ($\overline{E}$) and two digital select inputs (S0 and S1) are common to both switches. When $\overline{E}$ is HIGH, the switches are turned off. 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

- Wide analog input voltage range from -5 V to +5 V
- Low ON resistance:
  - 80 Ω (typical) at V_{CC} - V_{EE} = 4.5 V
  - 70 Ω (typical) at V_{CC} - V_{EE} = 6.0 V
  - 60 Ω (typical) at V_{CC} - V_{EE} = 9.0 V
- Logic level translation: to enable 5 V logic to communicate with ±5 V analog signals
- Typical ‘break before make’ built-in
- Complies with JEDEC standard no. 7A
- Input levels:
  - For 74HC4052: CMOS level
  - For 74HCT4052: TTL level
- ESD protection:
  - HBM JESD22-A114F exceeds 2000 V
  - MM JESD22-A115-A exceeds 200 V
  - CDM JESD22-C101E exceeds 1000 V
- Specified from -40 °C to +85 °C and -40 °C to +125 °C

3 Applications

- Analog multiplexing and demultiplexing
- Digital multiplexing and demultiplexing
- Signal gating

nexperia

4 Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74HC4052D	-40 °C to +125 °C	SO16	plastic small outline package; 16 leads; body width 3.9 mm	SOT109-1
74HCT4052D				
74HC4052DB	-40 °C to +125 °C	SSOP16	plastic shrink small outline package; 16 leads; body width 5.3 mm	SOT338-1
74HCT4052DB				
74HC4052PW	-40 °C to +125 °C	TSSOP16	plastic thin shrink small outline package; 16 leads; body width 4.4 mm	SOT403-1
74HCT4052PW				
74HC4052BQ	-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 x 3.5 x 0.85 mm	SOT763-1
74HCT4052BQ				

5 Functional diagram

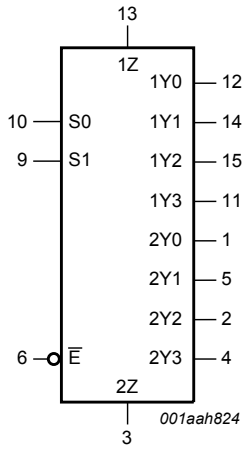


Figure 1. Logic symbol

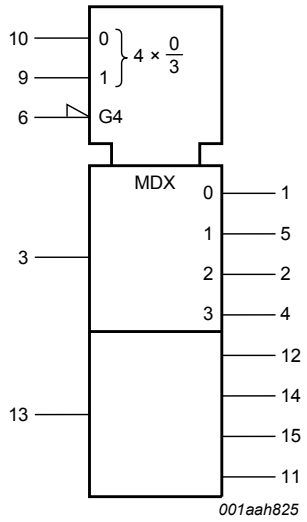


Figure 2. IEC logic symbol

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

© Nexperia B.V. 2017. All rights reserved.

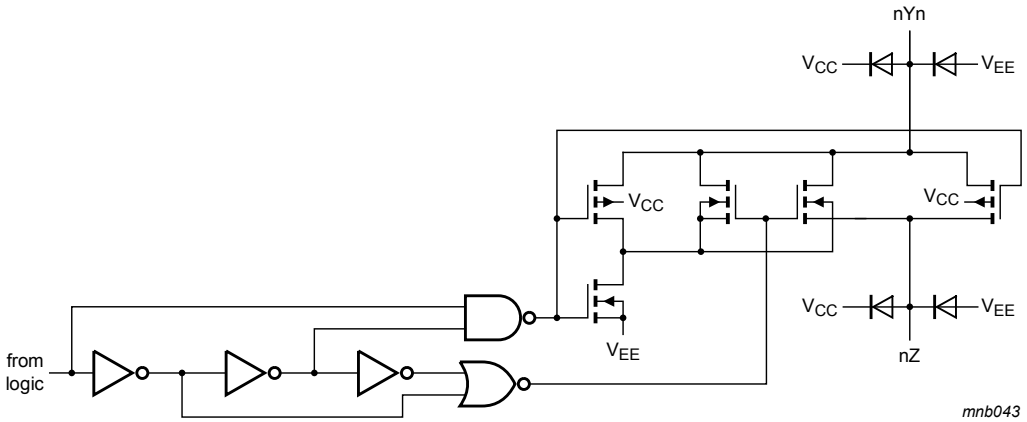


Figure 3. Schematic diagram (one switch)

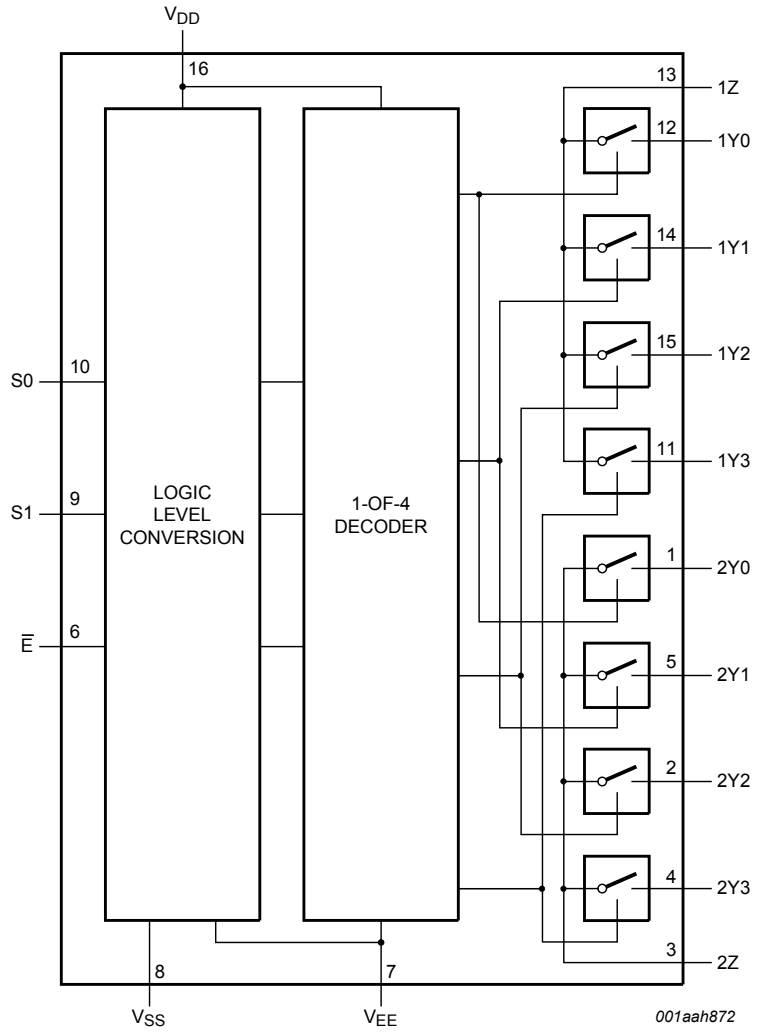


Figure 4. Functional diagram

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

© Nexperia B.V. 2017. All rights reserved.

6 Pinning information

6.1 Pinning

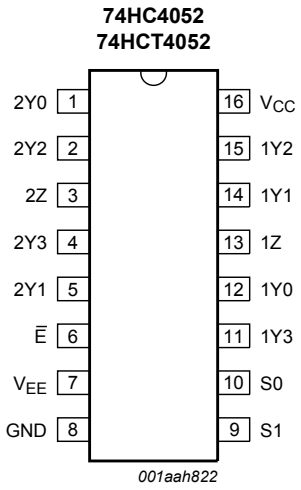
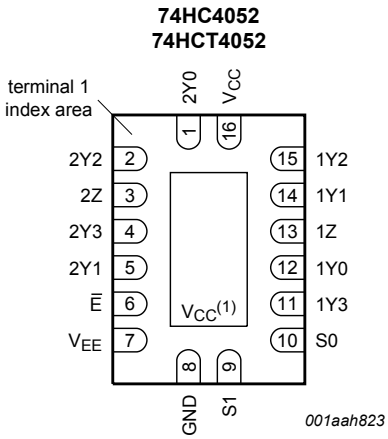


Figure 5. Pin configuration for SO16 and (T)SSOP16



Transparent top view

(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}.

Figure 6. Pin configuration for DHVQFN16

6.2 Pin description

Table 2. Pin description

Symbol	Pin	Description
2Y0, 2Y1, 2Y2, 2Y3	1, 5, 2, 4	independent input or output
1Z, 2Z	13, 3	common input or output
$\overline{E}$	6	enable input (active LOW)
V_{EE}	7	negative supply voltage
GND	8	ground (0 V)
S0, S1	10, 9	select logic input
1Y0, 1Y1, 1Y2, 1Y3	12, 14, 15, 11	independent input or output
V_{CC}	16	positive supply voltage

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

© Nexperia B.V. 2017. All rights reserved.

7 Functional description

Table 3. Function table [1]

Input			Channel on
$\overline{E}$	S1	S0	
L	L	L	nY0 and nZ
L	L	H	nY1 and nZ
L	H	L	nY2 and nZ
L	H	H	nY3 and nZ
H	X	X	none

[1] H = HIGH voltage level; L = LOW voltage level; X = don't care.

8 Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Voltages are referenced to V_{EE} = GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CC}	supply voltage	[1]	-0.5	+11.0	V
I_{IK}	input clamping current	$V_I < -0.5$ V or $V_I > V_{CC} + 0.5$ V	-	±20	mA
I_{SK}	switch clamping current	$V_{SW} < -0.5$ V or $V_{SW} > V_{CC} + 0.5$ V	-	±20	mA
I_{SW}	switch current	-0.5 V $< V_{SW} < V_{CC} + 0.5$ V	-	±25	mA
I_{EE}	supply current		-	±20	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, SSOP16, TSSOP16 and DHVQFN16 package [2]	-	500	mW
P	power dissipation	per switch	-	100	mW

[1] To avoid drawing V_{CC} current out of pins nZ, when switch current flows in pins nYn, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into pins nZ, no V_{CC} current will flow out of pins nYn. In this case there is no limit for the voltage drop across the switch, but the voltages at pins nYn and nZ may not exceed V_{CC} or V_{EE}.

[2] For SO16 packages: above 70 °C the value of P_{tot} derates linearly with 8 mW/K.
For SSOP16 and TSSOP16 packages: above 60 °C the value of P_{tot} derates linearly with 5.5 mW/K.
For DHVQFN16 packages: above 60 °C the value of P_{tot} derates linearly with 4.5 mW/K.

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

© Nexperia B.V. 2017. All rights reserved.

9 Recommended operating conditions

Table 5. Recommended operating conditions

Symbol	Parameter	Conditions	74HC4052			74HCT4052			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{CC}	supply voltage	see Figure 7 and Figure 8							
		V_{CC} - GND	2.0	5.0	10.0	4.5	5.0	5.5	V
		V_{CC} - V_{EE}	2.0	5.0	10.0	2.0	5.0	10.0	V
V_I	input voltage		GND	-	V_{CC}	GND	-	V_{CC}	V
V_{SW}	switch voltage		V_{EE}	-	V_{CC}	V_{EE}	-	V_{CC}	V
T_{amb}	ambient temperature		-40	+25	+125	-40	+25	+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	-	1.67	139	ns/V
		V_{CC} = 6.0 V	-	-	83	-	-	-	ns/V
		V_{CC} = 10.0 V	-	-	31	-	-	-	ns/V

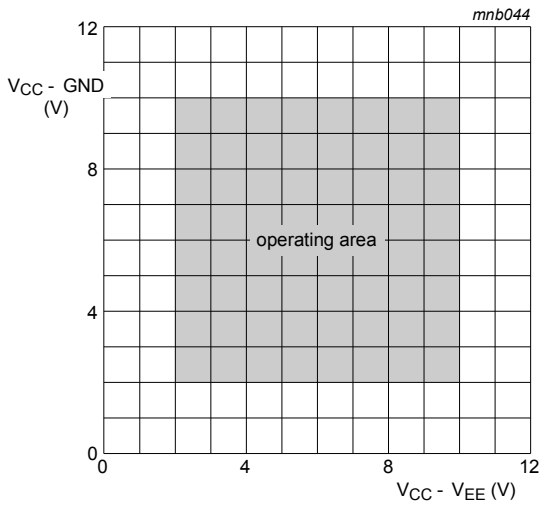


Figure 7. Guaranteed operating area as a function of the supply voltages for 74HC4052

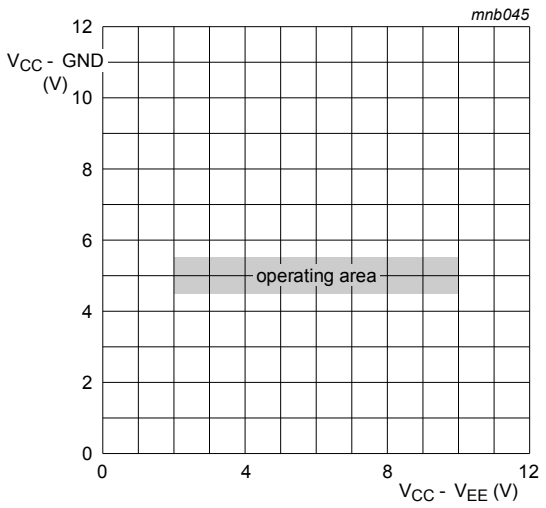


Figure 8. Guaranteed operating area as a function of the supply voltages for 74HCT4052

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

© Nexperia B.V. 2017. All rights reserved.

10 Static characteristics

Table 6. R_{ON} resistance per switch for 74HC4052 and 74HCT4052

V_I = V_{IH} or V_{IL}; for test circuit see Figure 9.

V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

For 74HC4052: V_{CC} - GND or V_{CC} - V_{EE} = 2.0 V, 4.5 V, 6.0 V and 9.0 V.

For 74HCT4052: V_{CC} - GND = 4.5 V and 5.5 V, V_{CC} - V_{EE} = 2.0 V, 4.5 V, 6.0 V and 9.0 V.

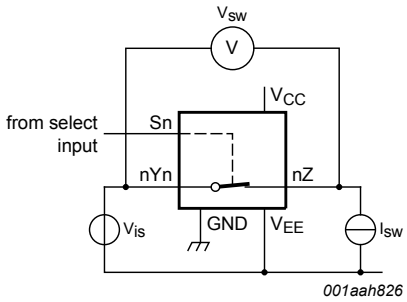
Symbol	Parameter	Conditions		Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +85 °C							
$R_{ON(peak)}$	ON resistance (peak)	V_{is} = V_{CC} to V_{EE}					
		V_{CC} = 2.0 V; V_{EE} = 0 V; I_{SW} = 100 µA	[2]	-	-	-	Ω
		V_{CC} = 4.5 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	100	225	Ω
		V_{CC} = 6.0 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	90	200	Ω
		V_{CC} = 4.5 V; V_{EE} = -4.5 V; I_{SW} = 1000 µA		-	70	165	Ω
$R_{ON(rail)}$	ON resistance (rail)	V_{is} = V_{EE}					
		V_{CC} = 2.0 V; V_{EE} = 0 V; I_{SW} = 100 µA	[2]	-	150	-	Ω
		V_{CC} = 4.5 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	80	175	Ω
		V_{CC} = 6.0 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	70	150	Ω
		V_{CC} = 4.5 V; V_{EE} = -4.5 V; I_{SW} = 1000 µA		-	60	130	Ω
		V_{is} = V_{CC}					
		V_{CC} = 2.0 V; V_{EE} = 0 V; I_{SW} = 100 µA	[2]	-	150	-	Ω
		V_{CC} = 4.5 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	90	200	Ω
		V_{CC} = 6.0 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	80	175	Ω
		V_{CC} = 4.5 V; V_{EE} = -4.5 V; I_{SW} = 1000 µA		-	65	150	Ω
ΔR_{ON}	ON resistance mismatch between channels	V_{is} = V_{CC} to V_{EE}					
		V_{CC} = 2.0 V; V_{EE} = 0 V	[2]	-	-	-	Ω
		V_{CC} = 4.5 V; V_{EE} = 0 V		-	9	-	Ω
		V_{CC} = 6.0 V; V_{EE} = 0 V		-	8	-	Ω
		V_{CC} = 4.5 V; V_{EE} = -4.5 V		-	6	-	Ω

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

© Nexperia B.V. 2017. All rights reserved.

Symbol	Parameter	Conditions		Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +125 °C							
$R_{ON(peak)}$	ON resistance (peak)	V_{is} = V_{CC} to V_{EE}					
		V_{CC} = 2.0 V; V_{EE} = 0 V; I_{SW} = 100 µA	[2]	-	-	-	Ω
		V_{CC} = 4.5 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	-	270	Ω
		V_{CC} = 6.0 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	-	240	Ω
		V_{CC} = 4.5 V; V_{EE} = -4.5 V; I_{SW} = 1000 µA		-	-	195	Ω
$R_{ON(rail)}$	ON resistance (rail)	V_{is} = V_{EE}					
		V_{CC} = 2.0 V; V_{EE} = 0 V; I_{SW} = 100 µA	[2]	-	-	-	Ω
		V_{CC} = 4.5 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	-	210	Ω
		V_{CC} = 6.0 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	-	180	Ω
		V_{CC} = 4.5 V; V_{EE} = -4.5 V; I_{SW} = 1000 µA		-	-	160	Ω
		V_{is} = V_{CC}					
		V_{CC} = 2.0 V; V_{EE} = 0 V; I_{SW} = 100 µA	[2]	-	-	-	Ω
		V_{CC} = 4.5 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	-	240	Ω
		V_{CC} = 6.0 V; V_{EE} = 0 V; I_{SW} = 1000 µA		-	-	210	Ω
		V_{CC} = 4.5 V; V_{EE} = -4.5 V; I_{SW} = 1000 µA		-	-	180	Ω

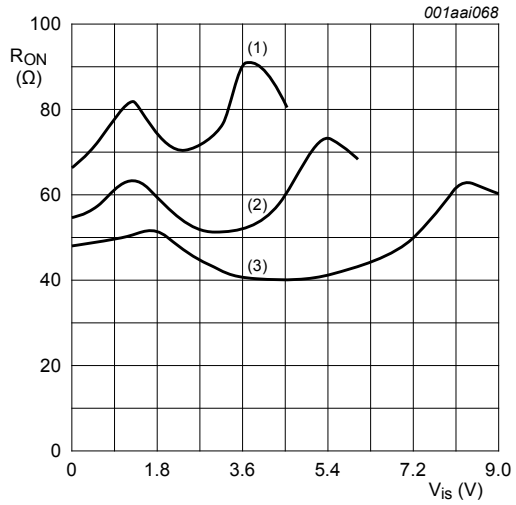
[1] All typical values are measured at T_{amb} = 25 °C.
[2] When supply voltages (V_{CC} - V_{EE}) near 2.0 V the analog switch ON resistance becomes extremely non-linear. When using a supply of 2 V, it is recommended to use these devices only for transmitting digital signals.



V_{is} = 0 V to (V_{CC} - V_{EE}).

$$R_{ON} = \frac{V_{sw}}{I_{sw}}$$

Figure 9. Test circuit for measuring R_{ON}



V_{is} = 0 V to (V_{CC} - V_{EE}).
(1) V_{CC} = 4.5 V
(2) V_{CC} = 6 V
(3) V_{CC} = 9 V

Figure 10. Typical R_{ON} as a function of input voltage V_{is}

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

© Nexperia B.V. 2017. All rights reserved.

Table 7. Static characteristics for 74HC4052

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

V_{is} is the input voltage at pins nYn or nZ, whichever is assigned as an input.

V_{os} is the output voltage at pins nZ or nYn, whichever is assigned as an output.

Symbol	Parameter	Conditions	Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +85 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 2.0 V	1.5	1.2	-	V
		V_{CC} = 4.5 V	3.15	2.4	-	V
		V_{CC} = 6.0 V	4.2	3.2	-	V
		V_{CC} = 9.0 V	6.3	4.7	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 2.0 V	-	0.8	0.5	V
		V_{CC} = 4.5 V	-	2.1	1.35	V
		V_{CC} = 6.0 V	-	2.8	1.8	V
		V_{CC} = 9.0 V	-	4.3	2.7	V
I_I	input leakage current	V_{EE} = 0 V; V_I = V_{CC} or GND				
		V_{CC} = 6.0 V	-	-	±1.0	µA
		V_{CC} = 10.0 V	-	-	±2.0	µA
$I_{S(OFF)}$	OFF-state leakage current	V_{CC} = 10.0 V; V_{EE} = 0 V; V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; see Figure 11				
		per channel	-	-	±1.0	µA
		all channels	-	-	±2.0	µA
$I_{S(ON)}$	ON-state leakage current	V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; V_{CC} = 10.0 V; V_{EE} = 0 V; see Figure 12	-	-	±2.0	µA
I_{CC}	supply current	V_{EE} = 0 V; V_I = V_{CC} or GND; V_{is} = V_{EE} or V_{CC}; V_{os} = V_{CC} or V_{EE}				
		V_{CC} = 6.0 V	-	-	80.0	µA
		V_{CC} = 10.0 V	-	-	160.0	µA
C_I	input capacitance		-	3.5	-	pF
C_{sw}	switch capacitance	independent pins nYn	-	5	-	pF
		common pins nZ	-	12	-	pF

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

© Nexperia B.V. 2017. All rights reserved.

Symbol	Parameter	Conditions	Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +125 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 2.0 V	1.5	-	-	V
		V_{CC} = 4.5 V	3.15	-	-	V
		V_{CC} = 6.0 V	4.2	-	-	V
		V_{CC} = 9.0 V	6.3	-	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 2.0 V	-	-	0.5	V
		V_{CC} = 4.5 V	-	-	1.35	V
		V_{CC} = 6.0 V	-	-	1.8	V
		V_{CC} = 9.0 V	-	-	2.7	V
I_I	input leakage current	V_{EE} = 0 V; V_I = V_{CC} or GND				
		V_{CC} = 6.0 V	-	-	±1.0	µA
		V_{CC} = 10.0 V	-	-	±2.0	µA
$I_{S(OFF)}$	OFF-state leakage current	V_{CC} = 10.0 V; V_{EE} = 0 V; V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; see Figure 11				
		per channel	-	-	±1.0	µA
		all channels	-	-	±2.0	µA
$I_{S(ON)}$	ON-state leakage current	V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; V_{CC} = 10.0 V; V_{EE} = 0 V; see Figure 12	-	-	±2.0	µA
I_{CC}	supply current	V_{EE} = 0 V; V_I = V_{CC} or GND; V_{is} = V_{EE} or V_{CC}; V_{os} = V_{CC} or V_{EE}				
		V_{CC} = 6.0 V	-	-	160.0	µA
		V_{CC} = 10.0 V	-	-	320.0	µA

[1] All typical values are measured at T_{amb} = 25 °C.

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

© Nexperia B.V. 2017. All rights reserved.

Table 8. Static characteristics for 74HCT4052

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

V_{is} is the input voltage at pins nYn or nZ, whichever is assigned as an input.

V_{os} is the output voltage at pins nZ or nYn, whichever is assigned as an output.

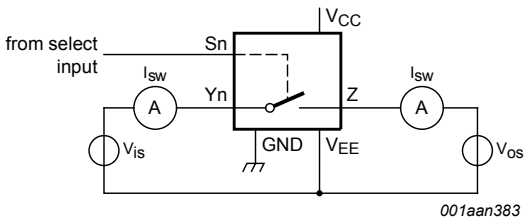
Symbol	Parameter	Conditions	Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +85 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 4.5 V to 5.5 V	2.0	1.6	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 4.5 V to 5.5 V	-	1.2	0.8	V
I_I	input leakage current	V_I = V_{CC} or GND; V_{CC} = 5.5 V; V_{EE} = 0 V	-	-	±1.0	µA
$I_{S(OFF)}$	OFF-state leakage current	V_{CC} = 10.0 V; V_{EE} = 0 V; V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; see Figure 11				
		per channel	-	-	±1.0	µA
		all channels	-	-	±2.0	µA
$I_{S(ON)}$	ON-state leakage current	V_{CC} = 10.0 V; V_{EE} = 0 V; V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; see Figure 12	-	-	±2.0	µA
I_{CC}	supply current	V_I = V_{CC} or GND; V_{is} = V_{EE} or V_{CC}; V_{os} = V_{CC} or V_{EE}				
		V_{CC} = 5.5 V; V_{EE} = 0 V	-	-	80.0	µA
		V_{CC} = 5.0 V; V_{EE} = -5.0 V	-	-	160.0	µA
ΔI_{CC}	additional supply current	per input; V_I = V_{CC} - 2.1 V; other inputs at V_{CC} or GND; V_{CC} = 4.5 V to 5.5 V; V_{EE} = 0 V	-	45	202.5	µA
C_I	input capacitance		-	3.5	-	pF
C_{sw}	switch capacitance	independent pins nYn	-	5	-	pF
		common pins nZ	-	12	-	pF

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

© Nexperia B.V. 2017. All rights reserved.

Symbol	Parameter	Conditions	Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +125 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 4.5 V to 5.5 V	2.0	-	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 4.5 V to 5.5 V	-	-	0.8	V
I_I	input leakage current	V_I = V_{CC} or GND; V_{CC} = 5.5 V; V_{EE} = 0 V	-	-	±1.0	µA
$I_{S(OFF)}$	OFF-state leakage current	V_{CC} = 10.0 V; V_{EE} = 0 V; V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; see Figure 11				
		per channel	-	-	±1.0	µA
		all channels	-	-	±2.0	µA
$I_{S(ON)}$	ON-state leakage current	V_{CC} = 10.0 V; V_{EE} = 0 V; V_I = V_{IH} or V_{IL}; $\|V_{SW}\|$ = V_{CC} - V_{EE}; see Figure 12	-	-	±2.0	µA
I_{CC}	supply current	V_I = V_{CC} or GND; V_{is} = V_{EE} or V_{CC}; V_{os} = V_{CC} or V_{EE}				
		V_{CC} = 5.5 V; V_{EE} = 0 V	-	-	160.0	µA
		V_{CC} = 5.0 V; V_{EE} = -5.0 V	-	-	320.0	µA
ΔI_{CC}	additional supply current	per input; V_I = V_{CC} - 2.1 V; other inputs at V_{CC} or GND; V_{CC} = 4.5 V to 5.5 V; V_{EE} = 0 V	-	-	220.5	µA

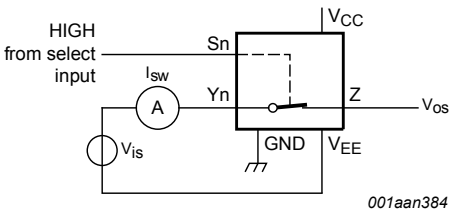
[1] All typical values are measured at T_{amb} = 25 °C.



V_{is} = V_{CC} and V_{os} = V_{EE}.

V_{is} = V_{EE} and V_{os} = V_{CC}.

Figure 11. Test circuit for measuring OFF-state current



V_{is} = V_{CC} and V_{os} = open-circuit.

V_{is} = V_{EE} and V_{os} = open-circuit.

Figure 12. Test circuit for measuring ON-state current

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

© Nexperia B.V. 2017. All rights reserved.

11 Dynamic characteristics

Table 9. Dynamic characteristics for 74HC4052

GND = 0 V; $t_r = t_f$ = 6 ns; C_L = 50 pF; for test circuit see Figure 15.

V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

Symbol	Parameter	Conditions	Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +85 °C						
t_{pd}	propagation delay	V_{is} to V_{os}; R_L = ∞ Ω; see Figure 13 [2]				
		V_{CC} = 2.0 V; V_{EE} = 0 V	-	14	75	ns
		V_{CC} = 4.5 V; V_{EE} = 0 V	-	5	15	ns
		V_{CC} = 6.0 V; V_{EE} = 0 V	-	4	13	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	4	10	ns
t_{on}	turn-on time	$\overline{E}$, Sn to V_{os}; R_L = ∞ Ω; see Figure 14 [3]				
		V_{CC} = 2.0 V; V_{EE} = 0 V	-	105	405	ns
		V_{CC} = 4.5 V; V_{EE} = 0 V	-	38	81	ns
		V_{CC} = 5.0 V; V_{EE} = 0 V; C_L = 15 pF	-	28	-	ns
		V_{CC} = 6.0 V; V_{EE} = 0 V	-	30	69	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	26	58	ns
t_{off}	turn-off time	$\overline{E}$, Sn to V_{os}; R_L = 1 kΩ; see Figure 14 [4]				
		V_{CC} = 2.0 V; V_{EE} = 0 V	-	74	315	ns
		V_{CC} = 4.5 V; V_{EE} = 0 V	-	27	63	ns
		V_{CC} = 5.0 V; V_{EE} = 0 V; C_L = 15 pF	-	21	-	ns
		V_{CC} = 6.0 V; V_{EE} = 0 V	-	22	54	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	22	48	ns
C_{PD}	power dissipation capacitance	per switch; V_I = GND to V_{CC} [5]	-	57	-	pF

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

© Nexperia B.V. 2017. All rights reserved.

Symbol	Parameter	Conditions	Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +125 °C						
t_{pd}	propagation delay	V_{is} to V_{os}; R_L = ∞ Ω; see Figure 13 [2]				
		V_{CC} = 2.0 V; V_{EE} = 0 V	-	-	90	ns
		V_{CC} = 4.5 V; V_{EE} = 0 V	-	-	18	ns
		V_{CC} = 6.0 V; V_{EE} = 0 V	-	-	15	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	-	12	ns
t_{on}	turn-on time	$\overline{E}$, Sn to V_{os}; R_L = ∞ Ω; see Figure 14 [3]				
		V_{CC} = 2.0 V; V_{EE} = 0 V	-	-	490	ns
		V_{CC} = 4.5 V; V_{EE} = 0 V	-	-	98	ns
		V_{CC} = 6.0 V; V_{EE} = 0 V	-	-	83	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	-	69	ns
t_{off}	turn-off time	$\overline{E}$, Sn to V_{os}; R_L = 1 kΩ; see Figure 14 [4]				
		V_{CC} = 2.0 V; V_{EE} = 0 V	-	-	375	ns
		V_{CC} = 4.5 V; V_{EE} = 0 V	-	-	75	ns
		V_{CC} = 6.0 V; V_{EE} = 0 V	-	-	64	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	-	57	ns

[1] All typical values are measured at T_{amb} = 25 °C.
[2] t_{pd} is the same as t_{PHL} and t_{PLH}.
[3] t_{on} is the same as t_{PZH} and t_{PZL}.
[4] t_{off} is the same as t_{PHZ} and t_{PLZ}.
[5] C_{PD} is used to determine the dynamic power dissipation (P_D in µW).
$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma\{(C_L + C_{sw}) \times V_{CC}^2 \times f_o\}$ where:
f_i = input frequency in MHz;
f_o = output frequency in MHz;
N = number of inputs switching;
$\Sigma\{(C_L + C_{sw}) \times V_{CC}^2 \times f_o\}$ = sum of outputs;
C_L = output load capacitance in pF;
C_{sw} = switch capacitance in pF;
V_{CC} = supply voltage in V.

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

© Nexperia B.V. 2017. All rights reserved.

Table 10. Dynamic characteristics for 74HCT4052

GND = 0 V; $t_r = t_f$ = 6 ns; C_L = 50 pF; for test circuit see Figure 15.

V_{is} is the input voltage at a nYn or nZ terminal, whichever is assigned as an input.

V_{os} is the output voltage at a nYn or nZ terminal, whichever is assigned as an output.

Symbol	Parameter	Conditions		Min	Typ[1]	Max	Unit
T_{amb} = -40 °C to +85 °C							
t_{pd}	propagation delay	V_{is} to V_{os}; R_L = ∞ Ω; see Figure 13	[2]				
		V_{CC} = 4.5 V; V_{EE} = 0 V		-	5	15	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V		-	4	10	ns
t_{on}	turn-on time	$\overline{E}$, Sn to V_{os}; R_L = 1 kΩ; see Figure 14	[3]				
		V_{CC} = 4.5 V; V_{EE} = 0 V		-	41	88	ns
		V_{CC} = 5.0 V; V_{EE} = 0 V; C_L = 15 pF		-	18	-	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V		-	28	60	ns
t_{off}	turn-off time	$\overline{E}$, Sn to V_{os}; R_L = 1 kΩ; see Figure 14	[4]				
		V_{CC} = 4.5 V; V_{EE} = 0 V		-	26	63	ns
		V_{CC} = 5.0 V; V_{EE} = 0 V; C_L = 15 pF		-	13	-	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V		-	21	48	ns
C_{PD}	power dissipation capacitance	per switch; V_I = GND to V_{CC} - 1.5 V	[5]	-	57	-	pF
T_{amb} = -40 °C to +125 °C							
t_{pd}	propagation delay	V_{is} to V_{os}; R_L = ∞ Ω; see Figure 13	[2]				
		V_{CC} = 4.5 V; V_{EE} = 0 V		-	-	18	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V		-	-	12	ns
t_{on}	turn-on time	$\overline{E}$, Sn to V_{os}; R_L = 1 kΩ; see Figure 14	[3]				
		V_{CC} = 4.5 V; V_{EE} = 0 V		-	-	105	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V		-	-	72	ns
t_{off}	turn-off time	$\overline{E}$, Sn to V_{os}; R_L = 1 kΩ; see Figure 14	[4]				
		V_{CC} = 4.5 V; V_{EE} = 0 V		-	-	75	ns
		V_{CC} = 4.5 V; V_{EE} = -4.5 V		-	-	57	ns

[1] All typical values are measured at T_{amb} = 25 °C.
[2] t_{pd} is the same as t_{PHL} and t_{PLH}.
[3] t_{on} is the same as t_{PZH} and t_{PZL}.
[4] t_{off} is the same as t_{PHZ} and t_{PLZ}.
[5] C_{PD} is used to determine the dynamic power dissipation (P_D in µW).
$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma\{(C_L + C_{sw}) \times V_{CC}^2 \times f_o\}$ where:
f_i = input frequency in MHz;
f_o = output frequency in MHz;
N = number of inputs switching;
$\Sigma\{(C_L + C_{sw}) \times V_{CC}^2 \times f_o\}$ = sum of outputs;
C_L = output load capacitance in pF;
C_{sw} = switch capacitance in pF;
V_{CC} = supply voltage in V.

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

© Nexperia B.V. 2017. All rights reserved.

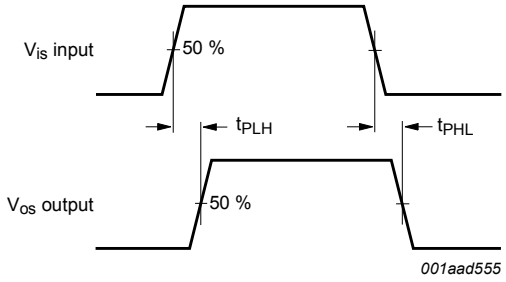
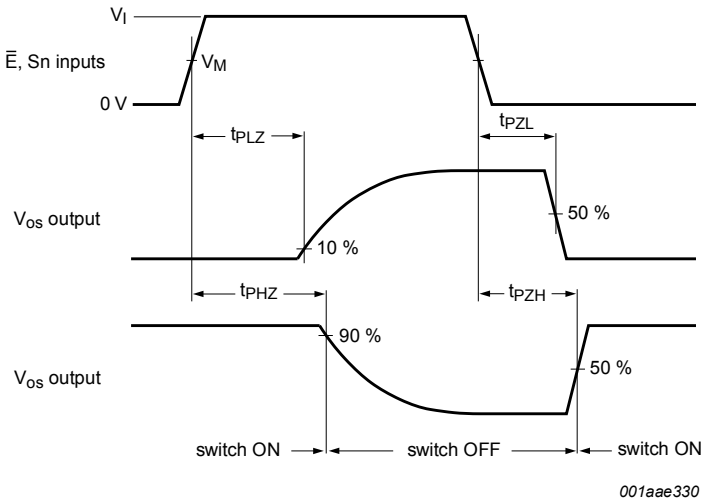


Figure 13. Input (V_{is}) to output (V_{os}) propagation delays



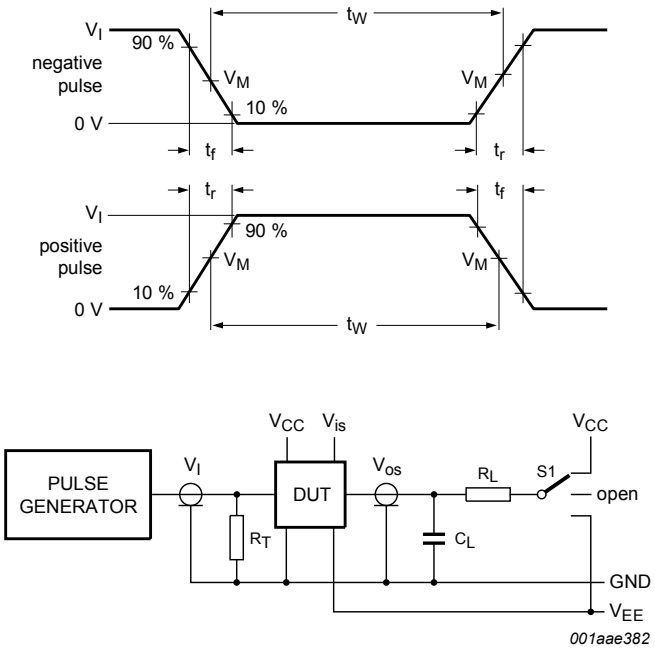
For 74HC4052: $V_M = 0.5 \times V_{CC}$.

For 74HCT4052: $V_M = 1.3$ V.

Figure 14. Turn-on and turn-off times

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

© Nexperia B.V. 2017. All rights reserved.



Definitions for test circuit; see Table 11:

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

C_L = Load capacitance including jig and probe capacitance.

R_L = Load resistance.

S1 = Test selection switch.

Figure 15. Test circuit for measuring switching times

Table 11. Test data

Test	Input				Load		S1 position
	V_I	V_{is}	t_r, t_f		C_L	R_L	
			at f_{max}	other [1]			
t_{PHL}, t_{PLH}	[2]	pulse	< 2 ns	6 ns	50 pF	1 kΩ	open
t_{PZH}, t_{PHZ}	[2]	V_{CC}	< 2 ns	6 ns	50 pF	1 kΩ	V_{EE}
t_{PZL}, t_{PLZ}	[2]	V_{EE}	< 2 ns	6 ns	50 pF	1 kΩ	V_{CC}

[1] $t_r = t_f$ = 6 ns; when measuring f_{max}, there is no constraint to t_r and t_f with 50 % duty factor.

[2] V_I values:
For 74HC4052: $V_I = V_{CC}$
For 74HCT4052: V_I = 3 V

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

© Nexperia B.V. 2017. All rights reserved.

12 Additional dynamic characteristics

Table 12. Additional dynamic characteristics

Recommended conditions and typical values; GND = 0 V; T_{amb} = 25 °C; C_L = 50 pF.

V_{is} is the input voltage at pins nYn or nZ, whichever is assigned as an input.

V_{os} is the output voltage at pins nYn or nZ, whichever is assigned as an output.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
d_{sin}	sine-wave distortion	f_i = 1 kHz; R_L = 10 kΩ; see Figure 16				
		V_{is} = 4.0 V (p-p); V_{CC} = 2.25 V; V_{EE} = -2.25 V	-	0.04	-	%
		V_{is} = 8.0 V (p-p); V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	0.02	-	%
		f_i = 10 kHz; R_L = 10 kΩ; see Figure 16				
		V_{is} = 4.0 V (p-p); V_{CC} = 2.25 V; V_{EE} = -2.25 V	-	0.12	-	%
		V_{is} = 8.0 V (p-p); V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	0.06	-	%
α_{iso}	isolation (OFF-state)	R_L = 600 Ω; f_i = 1 MHz; see Figure 17				
		V_{CC} = 2.25 V; V_{EE} = -2.25 V [1]	-	-50	-	dB
		V_{CC} = 4.5 V; V_{EE} = -4.5 V [1]	-	-50	-	dB
Xtalk	crosstalk	between two switches/multiplexers; R_L = 600 Ω; f_i = 1 MHz; see Figure 18				
		V_{CC} = 2.25 V; V_{EE} = -2.25 V [1]	-	-60	-	dB
		V_{CC} = 4.5 V; V_{EE} = -4.5 V [1]	-	-60	-	dB
V_{ct}	crosstalk voltage	peak-to-peak value; between control and any switch; R_L = 600 Ω; f_i = 1 MHz; $\overline{E}$ or Sn square wave between V_{CC} and GND; $t_r = t_f$ = 6 ns; see Figure 19				
		V_{CC} = 4.5 V; V_{EE} = 0 V	-	110	-	mV
		V_{CC} = 4.5 V; V_{EE} = -4.5 V	-	220	-	mV
$f_{(-3dB)}$	-3 dB frequency response	R_L = 50 Ω; see Figure 20				
		V_{CC} = 2.25 V; V_{EE} = -2.25 V [2]	-	170	-	MHz
		V_{CC} = 4.5 V; V_{EE} = -4.5 V [2]	-	180	-	MHz

[1] Adjust input voltage V_{is} to 0 dBm level (0 dBm = 1 mW into 600 Ω).
[2] Adjust input voltage V_{is} to 0 dBm level at V_{os} for 1 MHz (0 dBm = 1 mW into 50 Ω).

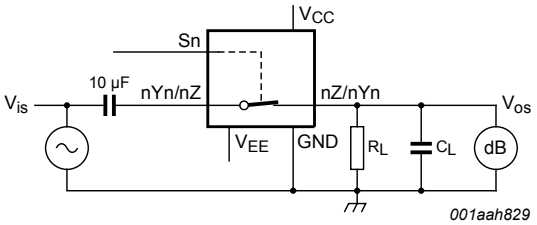
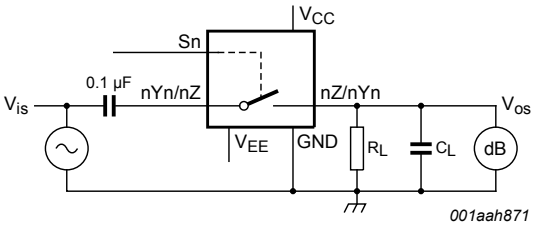


Figure 16. Test circuit for measuring sine-wave distortion

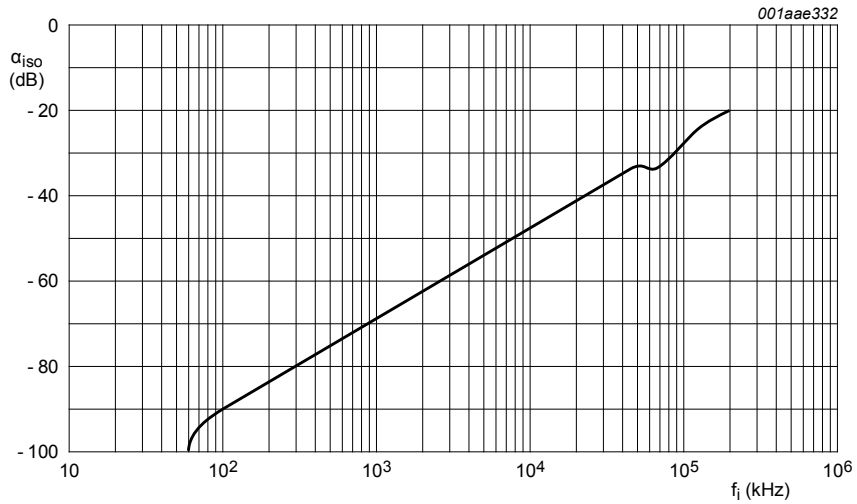
All information provided in this document is subject to legal disclaimers.

© Nexperia B.V. 2017. All rights reserved.



V_{CC} = 4.5 V; GND = 0 V; V_{EE} = -4.5 V; R_L = 600 Ω; R_S = 1 kΩ.

a. Test circuit



b. Isolation (OFF-state) as a function of frequency

Figure 17. Test circuit for measuring isolation (OFF-state)

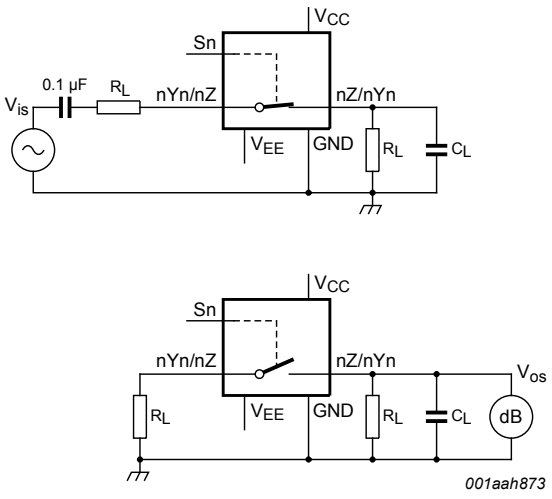


Figure 18. Test circuits for measuring crosstalk between any two switches/multiplexers

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

© Nexperia B.V. 2017. All rights reserved.

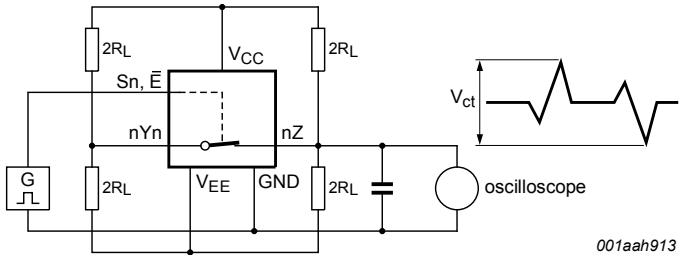
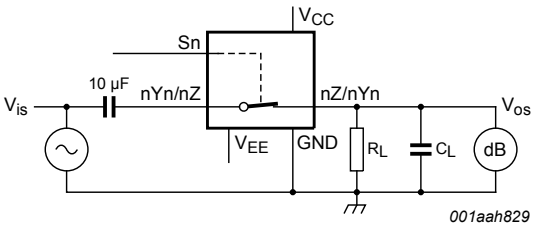
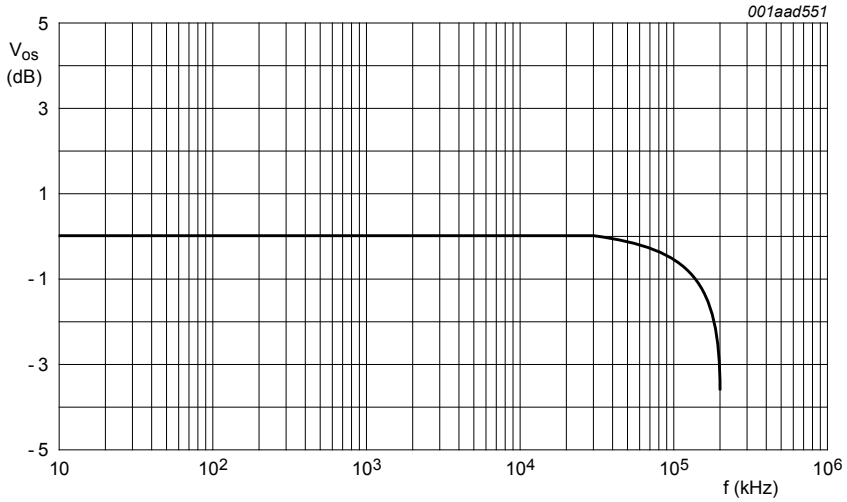


Figure 19. Test circuit for measuring crosstalk between control input and any switch



V_{CC} = 4.5 V; GND = 0 V; V_{EE} = -4.5 V; R_L = 50 Ω; R_S = 1 kΩ.

a. Test circuit



b. Typical frequency response

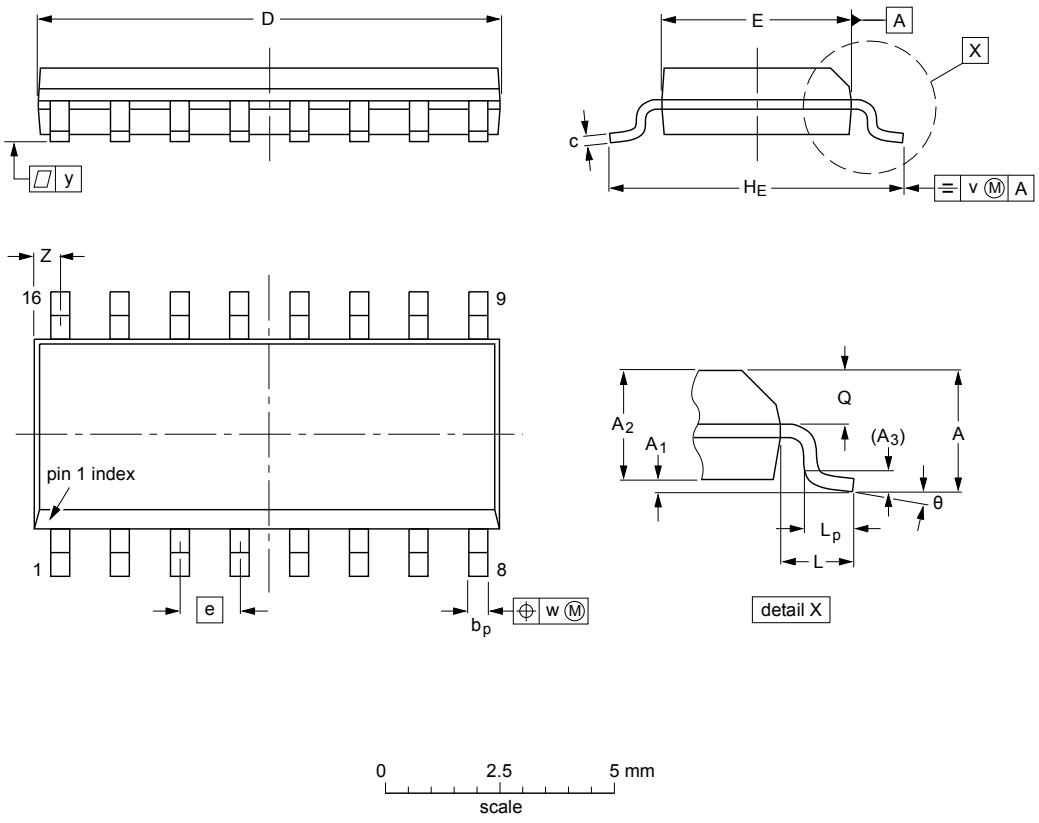
Figure 20. Test circuit for frequency response

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

© Nexperia B.V. 2017. All rights reserved.

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.

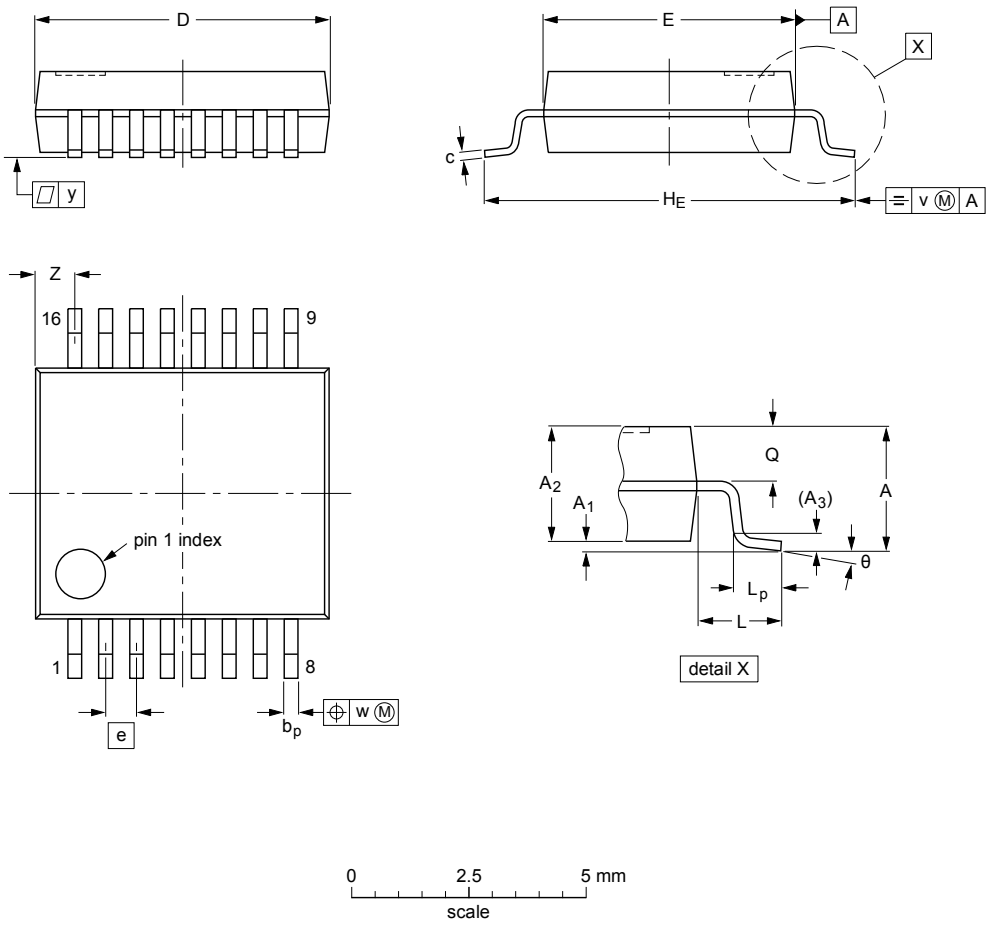
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT109-1	076E07	MS-012				~~99-12-27~~ 03-02-19

Figure 21. Package outline SOT109-1 (SO16)

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

© Nexperia B.V. 2017. All rights reserved.

SSOP16: plastic shrink small outline package; 16 leads; body width 5.3 mm **SOT338-1**



DIMENSIONS (mm are the original 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	2	0.21 0.05	1.80 1.65	0.25	0.38 0.25	0.20 0.09	6.4 6.0	5.4 5.2	0.65	7.9 7.6	1.25	1.03 0.63	0.9 0.7	0.2	0.13	0.1	1.00 0.55	8^o 0^o

Note

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

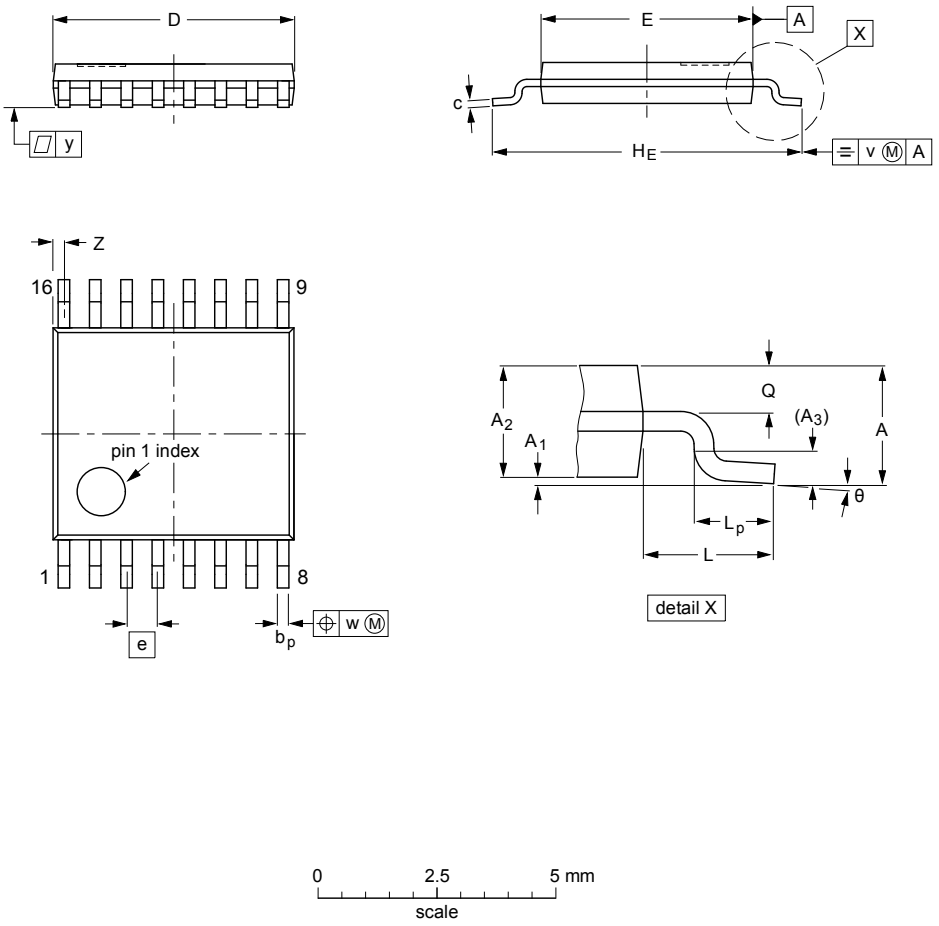
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT338-1		MO-150				~~99-12-27~~ 03-02-19

Figure 22. Package outline SOT338-1 (SSOP16)

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

© Nexperia B.V. 2017. All rights reserved.

TSSOP16: plastic thin shrink small outline package; 16 leads; body width 4.4 mm **SOT403-1**



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	1.1	0.15 0.05	0.95 0.80	0.25	0.30 0.19	0.2 0.1	5.1 4.9	4.5 4.3	0.65	6.6 6.2	1	0.75 0.50	0.4 0.3	0.2	0.13	0.1	0.40 0.06	8^o 0^o

Notes

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

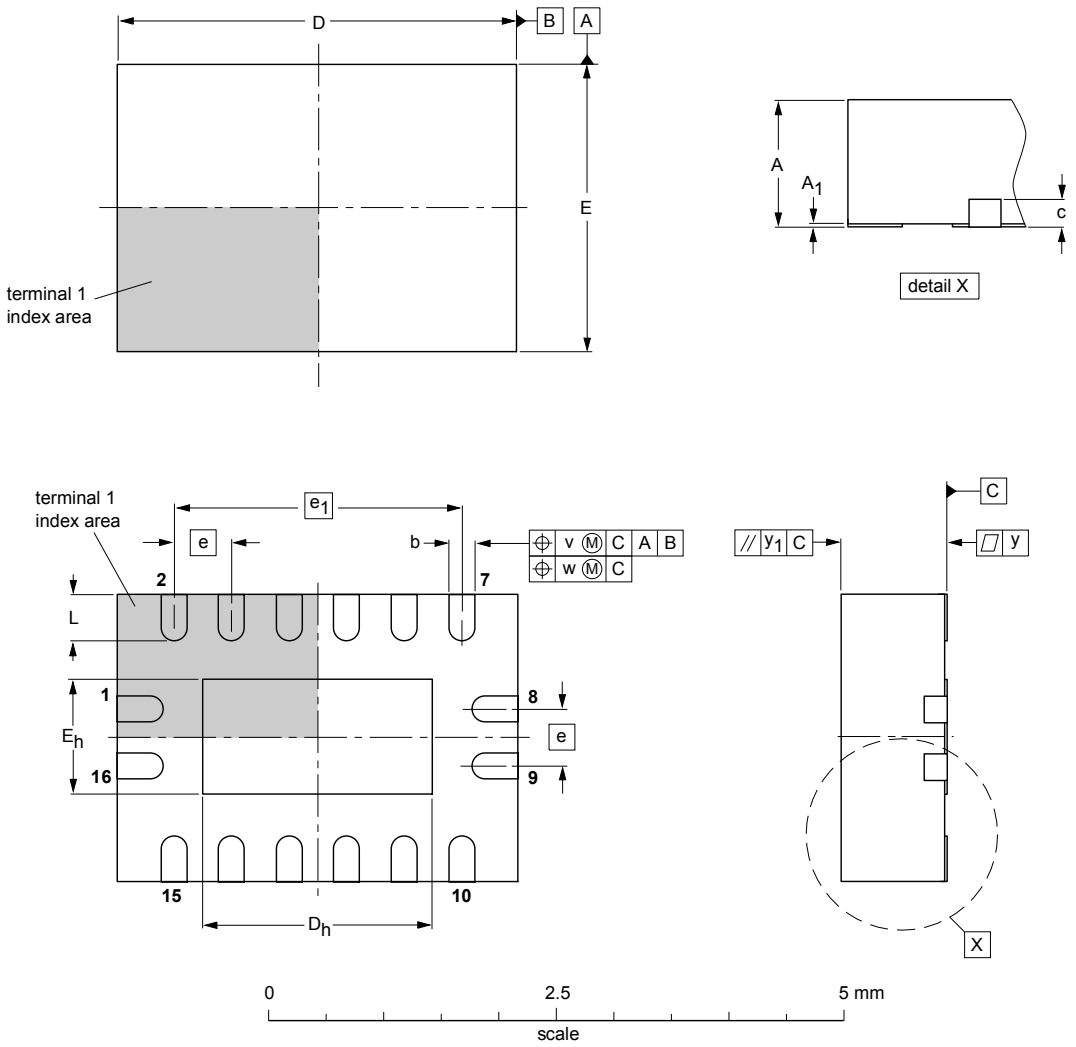
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT403-1		MO-153				~~99-12-27~~ 03-02-18

Figure 23. Package outline SOT403-1 (TSSOP16)

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

© Nexperia B.V. 2017. All rights reserved.

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

Figure 24. Package outline SOT763-1 (DHVQFN16)

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

© Nexperia B.V. 2017. All rights reserved.

14 Abbreviations

Table 13. Abbreviations

Acronym	Description
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model

15 Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74HC_HCT4052 v.12	20171010	Product data sheet	-	74HC_HCT4052 v.11
Modifications:	• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. • Legal texts have been adapted to the new company name where appropriate.			
74HC_HCT4052 v.11	20160210	Product data sheet	-	74HC_HCT4052 v.10
Modifications:	• Type numbers 74HC4052N and 74HCT4052N (SOT38-4) removed.			
74HC_HCT4052 v.10	20120719	Product data sheet	-	74HC_HCT4052 v.9
Modifications:	• CDM added to features.			
74HC_HCT4052 v.9	20111213	Product data sheet	-	74HC_HCT4052 v.8
Modifications:	• Legal pages updated.			
74HC_HCT4052 v.8	20110511	Product data sheet	-	74HC_HCT4052 v.7
74HC_HCT4052 v.7	20110112	Product data sheet	-	74HC_HCT4052 v.6
74HC_HCT4052 v.6	20100111	Product data sheet	-	74HC_HCT4052 v.5
74HC_HCT4052 v.5	20080505	Product data sheet	-	74HC_HCT4052 v.4
74HC_HCT4052 v.4	20041111	Product specification	-	74HC_HCT4052 v.3
74HC_HCT4052 v.3	20030516	Product specification	-	74HC_HCT4052 v.2
74HC_HCT4052 v.2	19901201	-	-	-

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

© Nexperia B.V. 2017. All rights reserved.

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 an Nexperia product can reasonably be expected to result in personal injury, death or severe property or environmental damage. Nexperia and its suppliers accept no liability for inclusion and/or use of Nexperia products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. Nexperia makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification. Customers are responsible for the design and operation of their applications and products using Nexperia products, and Nexperia accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the Nexperia product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products. Nexperia does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using Nexperia products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). Nexperia does not accept any liability in this respect.

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

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

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

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

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

© Nexperia B.V. 2017. All rights reserved.

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.

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

© Nexperia B.V. 2017. All rights reserved.

Contents

Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.

© Nexperia B.V. 2017. **All rights reserved.**

For more information, please visit: http://www.nexperia.com
For sales office addresses, please send an email to: salesaddresses@nexperia.com

Date of release: 10 October 2017
Document identifier: 74HC_HCT4052