# 74HC4316; 74HCT4316

## Quad single-pole single-throw analog switch

Rev. 7 — 26 March 2024 Product data sheet

## 1. General description

The 74HC4316; 74HCT4316 is a quad single pole, single throw analog switch (SPST). Each switch features two input/output terminals (nY and nZ) and an active HIGH enable input (nS). When nS is LOW, the analog switch is turned off. When $\overline{E}$ is HIGH all four analog 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

- CMOS low power dissipation
- High noise immunity
- Input levels $\overline{E}$ and nS inputs:
  - For 74HC4316: CMOS level
  - For 74HCT4316: TTL level
- Low ON resistance:
  - 160 Ω (typical) at $V_{CC}$ - $V_{EE}$ = 4.5 V
  - 120 Ω (typical) at $V_{CC}$ - $V_{EE}$ = 6.0 V
  - 80 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
- Latch-up performance exceeds 100 mA per JESD 78 Class II Level B
- Complies with JEDEC standards:
  - JESD8C (2.7 V to 3.6 V)
  - JESD7A (2.0 V to 6.0 V)
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Specified from -40 °C to +85 °C and -40 °C to +125 °C

## 3. Applications

- Signal gating
- Modulation
- Demodulation
- Chopper

# 4. Ordering information

**Table 1. Ordering information**

| Type number | Package | | | |
|---|---|---|---|---|
| | Temperature range | Name | Description | Version |
| 74HC4316D<br>74HCT4316D | -40 °C to +125 °C | SO16 | plastic small outline package; 16 leads; body width 3.9 mm | SOT109-1 |
| 74HC4316PW<br>74HCT4316PW | -40 °C to +125 °C | TSSOP16 | plastic thin shrink small outline package; 16 leads; body width 4.4 mm | SOT403-1 |

# 5. Functional diagram

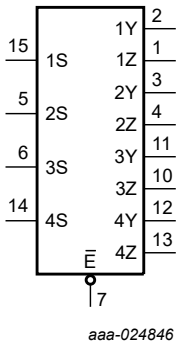



**Fig. 1. Logic symbol**

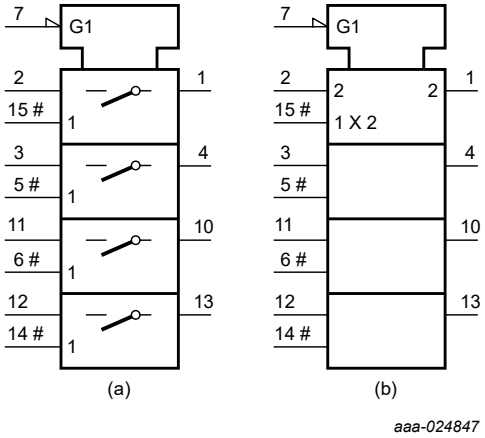



**Fig. 2. IEC logic symbol**

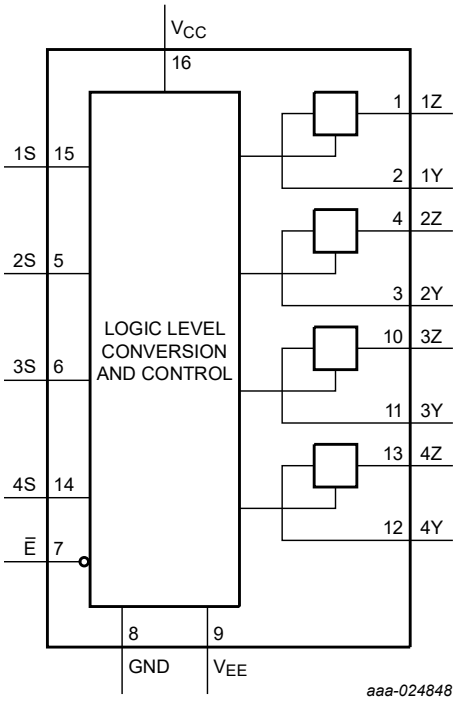



**Fig. 3. Functional diagram**

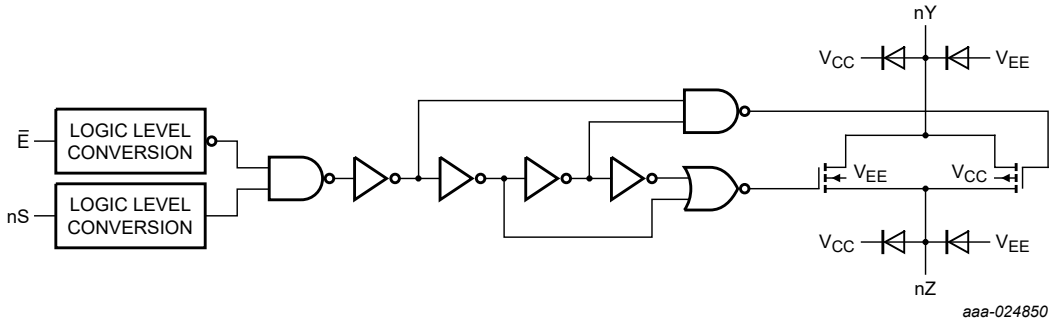
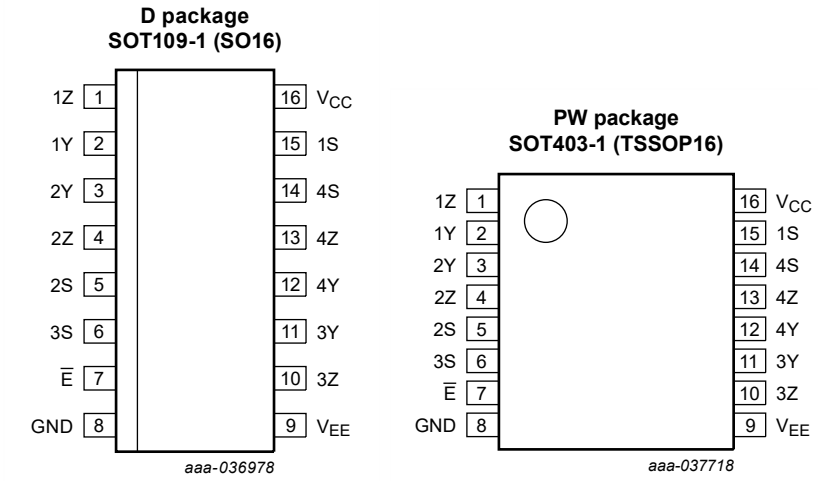



Fig. 4. Schematic diagram (one switch)

# 6. Pinning information

## 6.1. Pinning




## 6.2. Pin description

Table 2. Pin description

| Symbol | Pin | Description |
|---|---|---|
| 1Z, 2Z, 3Z, 4Z | 1, 4, 10, 13 | independent input or output |
| 1Y, 2Y, 3Y, 4Y | 2, 3, 11, 12 | independent input or output |
| $\overline{E}$ | 7 | enable input (active LOW) |
| GND | 8 | ground (0 V) |
| $V_{EE}$ | 9 | negative supply voltage |
| 1S, 2S, 3S, 4S | 15, 5, 6, 14 | select input (active HIGH) |
| $V_{CC}$ | 14 | positive supply voltage |

# 7. Functional description

**Table 3. Function table**

*H = HIGH voltage level; L = LOW voltage level; X = don't care.*

| Input | | Switch |
|---|---|---|
| $\overline{E}$ | nS | |
| L | L | OFF |
| L | H | ON |
| H | X | OFF |

# 8. Limiting values

**Table 4. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).*

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | | -0.5 | +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 | $V_{SW}$ = -0.5 V to $V_{CC}$ + 0.5 V | [1] | - | ±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 | $T_{amb}$ = -40 °C to +125 °C | [2] | - | 500 | mW |
| P | power dissipation | per switch | | - | 100 | mW |

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

[2] For SOT109-1 (SO16) package: $P_{tot}$ derates linearly with 12.4 mW/K above 110 °C.
For SOT403-1 (TSSOP16) package: $P_{tot}$ derates linearly with 8.5 mW/K above 91 °C.

# 9. Recommended operating conditions

**Table 5. Recommended operating conditions**

| Symbol | Parameter | Conditions | 74HC4316 | | | 74HCT4316 | | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | Min | Typ | Max | |
| $V_{CC}$ | supply voltage | see Fig. 5 and Fig. 6 | | | | | | | |
| | | $V_{CC}$ - GND | 2.0 | 5.0 | 10.0 | 4.5 | 5.0 | 5.5 | V |
| | | $V_{EE}$ - GND | 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 |
| Δt/ΔV | 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 | - | - | 35 | - | - | - | ns/V |

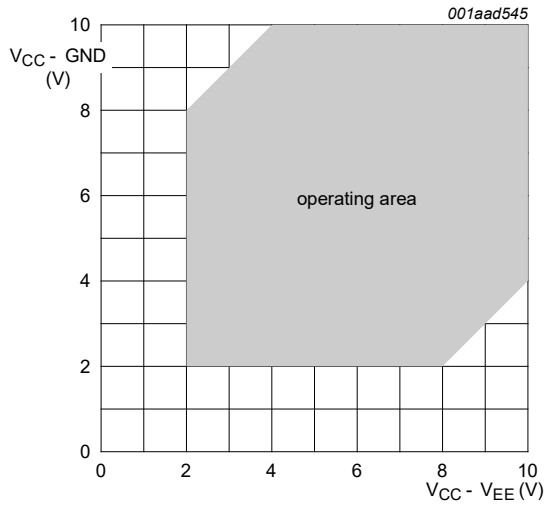



Fig. 5. Guaranteed operating area as a function of the supply voltages for 74HC4316

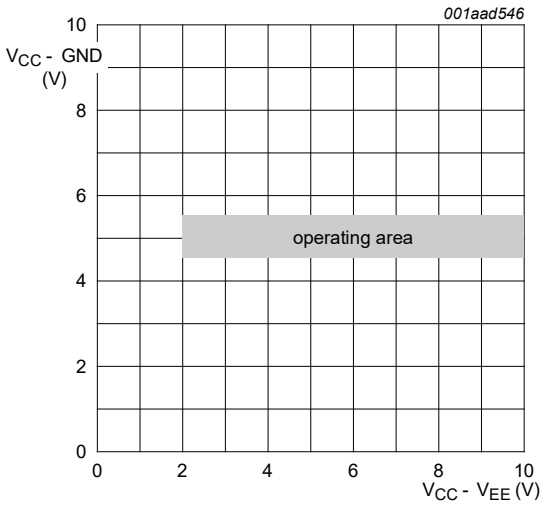



Fig. 6. Guaranteed operating area as a function of the supply voltages for 74HCT4316

## 10. Static characteristics

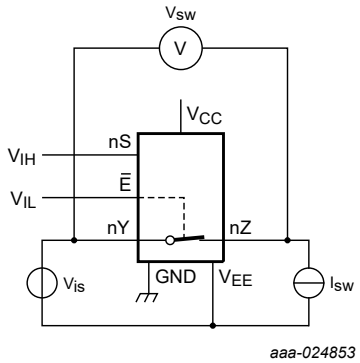
**Table 6. $R_{ON}$ resistance per switch for types 74HC4316 and 74HCT4316**

*$V_I$ = $V_{IH}$ or $V_{IL}$; for test circuit see Fig. 7.*
*$V_{is}$ is the input voltage at a nY or nZ terminal, whichever is assigned as an input.*
*$V_{os}$ is the output voltage at a nY or nZ terminal, whichever is assigned as an output.*
*For 74HC4316: $V_{CC}$ - GND or $V_{CC}$ - $V_{EE}$ = 2.0 V, 4.5 V, 6.0 V and 9.0 V.*
*For 74HCT4316: $V_{CC}$ - 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 | 25 °C | | -40 °C to +85 °C | | -40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Typ | Max | Min | Max | Min | Max | |
| $R_{ON(peak)}$ | ON resistance (peak) | $V_{is}$ = $V_{CC}$ to $V_{EE}$ [1] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V; $I_{SW}$ = 100 µA | - | - | - | - | - | - | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V; $I_{SW}$ = 1000 µA | 160 | 320 | - | 400 | - | 480 | Ω |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V; $I_{SW}$ = 1000 µA | 120 | 240 | - | 300 | - | 360 | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V; $I_{SW}$ = 1000 µA | 85 | 170 | - | 215 | - | 255 | Ω |

| Symbol | Parameter | Conditions | 25 °C | | -40 °C to +85 °C | | -40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Typ | Max | Min | Max | Min | Max | |
| $R_{ON(rail)}$ | ON resistance (rail) | $V_{is} = V_{EE}$ [1] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V; $I_{SW}$ = 100 µA | 160 | - | - | - | - | - | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V; $I_{SW}$ = 1000 µA | 80 | 160 | - | 200 | - | 240 | Ω |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V; $I_{SW}$ = 1000 µA | 70 | 140 | - | 175 | - | 210 | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V; $I_{SW}$ = 1000 µA | 60 | 120 | - | 150 | - | 180 | Ω |
| | | $V_{is} = V_{CC}$ [1] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V; $I_{SW}$ = 100 µA | 170 | - | - | - | - | - | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V; $I_{SW}$ = 1000 µA | 90 | 180 | - | 225 | - | 270 | Ω |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V; $I_{SW}$ = 1000 µA | 80 | 160 | - | 200 | - | 240 | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V; $I_{SW}$ = 1000 µA | 65 | 135 | - | 170 | - | 205 | Ω |
| $\Delta R_{ON}$ | ON resistance mismatch between channels | $V_{is}$ = $V_{CC}$ to $V_{EE}$ [1] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V | - | - | - | - | - | - | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 16 | - | - | - | - | - | Ω |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | 9 | - | - | - | - | - | Ω |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 6 | - | - | - | - | - | Ω |

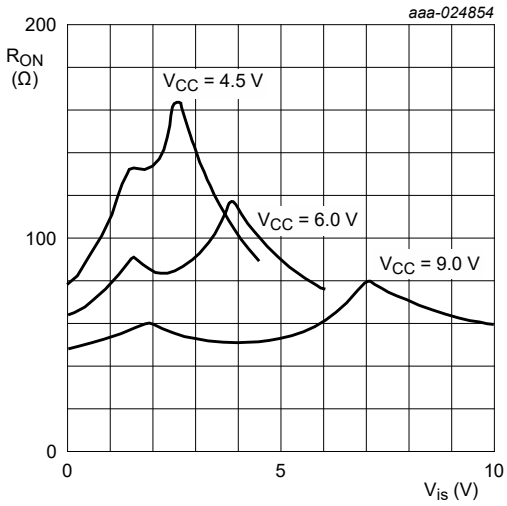
[1] When supply voltages ($V_{CC}$ - $V_{EE}$) near 2.0 V the analog switch ON resistance becomes extremely non-linear. When using a supply of 2 V, it is recommended to use these devices only for transmitting digital signals.




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

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

**Fig. 7. Test circuit for measuring $R_{ON}$**




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

**Fig. 8. Typical $R_{ON}$ as a function of input voltage $V_{is}$**

**Table 7. Static characteristics 74HC4316**

*At recommended operating conditions; voltages are referenced to GND (ground = 0 V).*
*$V_{is}$ is the input voltage at a nY or nZ terminal, whichever is assigned as an input.*
*$V_{os}$ is the output voltage at a nY or nZ terminal, whichever is assigned as an output.*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **$T_{amb}$ = 25 °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 | 4.3 | - | 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 | $V_I$ = $V_{CC}$ or GND | | | | |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | - | - | ±0.1 | µA |
| | | $V_{CC}$ = 10.0 V; $V_{EE}$ = 0 V | - | - | ±0.2 | 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 Fig. 9 | - | - | ±0.1 | 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 Fig. 10 | - | - | ±0.1 | µA |
| $I_{CC}$ | supply current | $V_I$ = $V_{CC}$ or GND; $V_{is}$ = $V_{EE}$ or $V_{CC}$; $V_{os}$ = $V_{CC}$ or $V_{EE}$ | | | | |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | - | - | 8.0 | µA |
| | | $V_{CC}$ = 10.0 V; $V_{EE}$ = 0 V | - | - | 16.0 | µA |
| $C_I$ | input capacitance | | - | 3.5 | - | pF |
| $C_{sw}$ | switch capacitance | | - | 5 | - | pF |
| **$T_{amb}$ = -40 °C to +85 °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 | $V_I$ = $V_{CC}$ or GND | | | | |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | - | - | ±1.0 | µA |
| | | $V_{CC}$ = 10.0 V; $V_{EE}$ = 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 Fig. 9 | - | - | ±1.0 | 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 Fig. 10 | - | - | ±1.0 | µA |
| $I_{CC}$ | supply current | $V_I$ = $V_{CC}$ or GND; $V_{is}$ = $V_{EE}$ or $V_{CC}$; $V_{os}$ = $V_{CC}$ or $V_{EE}$ | | | | |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | - | - | 80.0 | µA |
| | | $V_{CC}$ = 10.0 V; $V_{EE}$ = 0 V | - | - | 160.0 | µA |

| Symbol | Parameter | Conditions | Min | Typ | 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 | $V_I$ = $V_{CC}$ or GND | | | | |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | - | - | ±1.0 | µA |
| | | $V_{CC}$ = 10.0 V; $V_{EE}$ = 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 $V_{IL}$; $\lvert V_{SW}\rvert$ = $V_{CC}$ - $V_{EE}$; see Fig. 9 | - | - | ±1.0 | µA |
| $I_{S(ON)}$ | ON-state leakage current | $V_{CC}$ = 10.0 V; $V_{EE}$ = 0 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $\lvert V_{SW}\rvert$ = $V_{CC}$ - $V_{EE}$; see Fig. 10 | - | - | ±1.0 | µA |
| $I_{CC}$ | supply current | $V_I$ = $V_{CC}$ or GND; $V_{is}$ = $V_{EE}$ or $V_{CC}$; $V_{os}$ = $V_{CC}$ or $V_{EE}$ | | | | |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | - | - | 160 | µA |
| | | $V_{CC}$ = 10.0 V; $V_{EE}$ = 0 V | - | - | 320 | µA |

**Table 8. Static characteristics 74HCT4316**

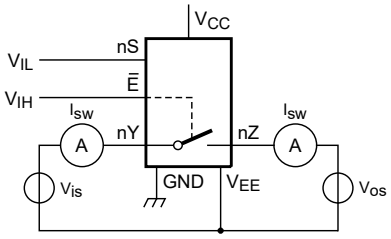
*At recommended operating conditions; voltages are referenced to GND (ground = 0 V).*

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

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

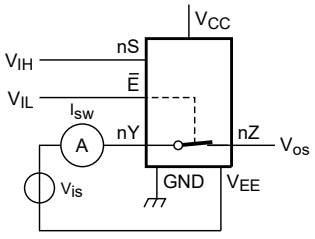
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **$T_{amb}$ = 25 °C** | | | | | | |
| $V_{IH}$ | HIGH-level input voltage | $V_{CC}$ = 4.5 V to 5.5 V | 2.0 | 1.6 | - | V |
| $V_{IL}$ | LOW-level input voltage | $V_{CC}$ = 4.5 V to 5.5 V | - | 1.2 | 0.8 | V |
| $I_I$ | input leakage current | $V_I$ = $V_{CC}$ or GND; $V_{CC}$ = 5.5 V; $V_{EE}$ = 0 V | - | - | ±0.1 | µA |
| $I_{S(OFF)}$ | OFF-state leakage current | $V_{CC}$ = 10 V; $V_{EE}$ = 0 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $\lvert V_{SW}\rvert$ = $V_{CC}$ - $V_{EE}$; see Fig. 9 | - | - | ±0.1 | µA |
| $I_{S(ON)}$ | ON-state leakage current | $V_{CC}$ = 10 V; $V_{EE}$ = 0 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $\lvert V_{SW}\rvert$ = $V_{CC}$ - $V_{EE}$; see Fig. 10 | - | - | ±0.1 | 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 | - | - | 8.0 | µA |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = -5.0 V | - | - | 16.0 | µA |
| $\Delta I_{CC}$ | additional supply current | nS and $\overline{E}$; per input pin; $V_I$ = $V_{CC}$ - 2.1 V; other inputs at $V_{CC}$ or GND; $V_{CC}$ = 4.5 V to 5.5 V; $V_{EE}$ = 0 V | - | 50 | 180 | µA |
| $C_I$ | input capacitance | | - | 3.5 | - | pF |
| $C_{sw}$ | switch capacitance | | - | 5 | - | pF |

| Symbol | Parameter | Conditions | Min | Typ | 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 | - | - | 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 V; $V_{EE}$ = 0 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $\|V_{SW}\|$ = $V_{CC}$ - $V_{EE}$; see Fig. 9 | - | - | ±1.0 | µA |
| $I_{S(ON)}$ | ON-state leakage current | $V_{CC}$ = 10 V; $V_{EE}$ = 0 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $\|V_{SW}\|$ = $V_{CC}$ - $V_{EE}$; see Fig. 10 | - | - | ±1.0 | 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 | µA |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = -5.0 V | - | - | 160 | µA |
| $\Delta I_{CC}$ | additional supply current | nS and $\overline{E}$; per input pin; $V_I$ = $V_{CC}$ - 2.1 V; other inputs at $V_{CC}$ or GND; $V_{CC}$ = 4.5 V to 5.5 V; $V_{EE}$ = 0 V | - | - | 225 | µA |
| **$T_{amb}$ = -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 V; $V_{EE}$ = 0 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $\|V_{SW}\|$ = $V_{CC}$ - $V_{EE}$; see Fig. 9 | - | - | ±1.0 | µA |
| $I_{S(ON)}$ | ON-state leakage current | $V_{CC}$ = 10 V; $V_{EE}$ = 0 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $\|V_{SW}\|$ = $V_{CC}$ - $V_{EE}$; see Fig. 10 | - | - | ±1.0 | 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 | µA |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = -5.0 V | - | - | 320 | µA |
| $\Delta I_{CC}$ | additional supply current | nS and $\overline{E}$; per input pin; $V_I$ = $V_{CC}$ - 2.1 V; other inputs at $V_{CC}$ or GND; $V_{CC}$ = 4.5 V to 5.5 V; $V_{EE}$ = 0 V | - | - | 245 | µA |




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

**Fig. 9. Test circuit for measuring OFF-state leakage current**




$V_{is}$ = $V_{CC}$ and $V_{os}$ = open
$V_{is}$ = $V_{EE}$ and $V_{os}$ = open

**Fig. 10. Test circuit for measuring ON-state leakage current**

# 11. Dynamic characteristics

**Table 9. Dynamic characteristics**

*GND = 0 V; $t_r = t_f$ = 6 ns; $C_L$ = 50 pF unless specified otherwise; for test circuit see Fig. 13.*

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

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

| Symbol | Parameter | Conditions | 25 °C | | -40 °C to +85 °C | | -40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Typ | Max | Min | Max | Min | Max | |
| **74HC4316** | | | | | | | | | |
| $t_{pd}$ | propagation delay | nY to nZ or nZ to nY; $R_L$ = ∞ Ω; see Fig. 11 [1] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V | 17 | 60 | - | 75 | - | 90 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 6 | 12 | - | 15 | - | 18 | ns |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | 5 | 10 | - | 13 | - | 15 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 4 | 8 | - | 10 | - | 12 | ns |
| $t_{off}$ | turn-off time | $\overline{E}$ to nY or nZ; see Fig. 12 [2] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V | 63 | 220 | - | 275 | - | 330 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 23 | 44 | - | 55 | - | 66 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V;$C_L$ = 15 pF | 20 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | 18 | 37 | - | 47 | - | 56 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 21 | 39 | - | 49 | - | 59 | ns |
| | | nS to nY or nZ; see Fig. 12 [2] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V | 55 | 175 | - | 220 | - | 265 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 20 | 35 | - | 44 | - | 53 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 16 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | 16 | 30 | - | 37 | - | 45 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 18 | 36 | - | 45 | - | 54 | ns |
| $t_{on}$ | turn-on time | $\overline{E}$ to nY or nZ; see Fig. 12 [3] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V | 61 | 205 | - | 255 | - | 310 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 22 | 41 | - | 51 | - | 62 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 19 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | 18 | 35 | - | 43 | - | 53 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 19 | 37 | - | 47 | - | 56 | ns |
| | | nS to nY or nZ; see Fig. 12 [3] | | | | | | | |
| | | $V_{CC}$ = 2.0 V; $V_{EE}$ = 0 V | 52 | 175 | - | 220 | - | 265 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 19 | 35 | - | 44 | - | 53 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 16 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 6.0 V; $V_{EE}$ = 0 V | 15 | 30 | - | 37 | - | 45 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 17 | 34 | - | 43 | - | 51 | ns |
| $C_{PD}$ | power dissipation capacitance | per switch; $V_I$ = GND to $V_{CC}$ [4] | 13 | - | - | - | - | - | pF |

| Symbol | Parameter | Conditions | 25 °C | | -40 °C to +85 °C | | -40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Typ | Max | Min | Max | Min | Max | |
| **74HCT4316** | | | | | | | | | |
| $t_{pd}$ | propagation delay | nY to nZ or nZ to nY; $R_L$ = ∞ Ω; see Fig. 11 [1] | | | | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 6 | 12 | - | 15 | - | 18 | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 4 | 8 | - | 10 | - | 12 | ns |
| $t_{PZH}$ | OFF-state to HIGH propagation delay | $\overline{E}$ to nY or nZ; see Fig. 12 | | | | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 22 | 44 | - | 55 | - | 66 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 19 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 21 | 42 | - | 53 | - | 63 | ns |
| | | nS to nY or nZ; see Fig. 12 | | | | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 20 | 40 | - | 53 | - | 60 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 17 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 17 | 34 | - | 43 | - | 51 | ns |
| $t_{PZL}$ | OFF-state to LOW propagation delay | $\overline{E}$ to nY or nZ; see Fig. 12 | | | | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 28 | 56 | - | 70 | - | 84 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 24 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 21 | 42 | - | 53 | - | 63 | ns |
| | | nS to nY or nZ; see Fig. 12 | | | | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 25 | 50 | - | 63 | - | 75 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 21 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 17 | 34 | - | 43 | - | 51 | ns |
| $t_{off}$ | turn-off time | $\overline{E}$ to nY or nZ; see Fig. 12 [2] | | | | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 25 | 50 | - | 63 | - | 75 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 21 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 23 | 46 | - | 58 | - | 69 | ns |
| | | nS to nY or nZ; see Fig. 12 [2] | | | | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | 22 | 44 | - | 55 | - | 66 | ns |
| | | $V_{CC}$ = 5.0 V; $V_{EE}$ = 0 V; $C_L$ = 15 pF | 19 | - | - | - | - | - | ns |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | 20 | 40 | - | 50 | - | 60 | ns |
| $C_{PD}$ | power dissipation capacitance | per switch; $V_I$ = GND to ($V_{CC}$ - 1.5 V) [4] | 14 | - | - | - | - | - | pF |

[1] $t_{pd}$ is the same as $t_{PHL}$ and $t_{PLH}$.
[2] $t_{off}$ is the same as $t_{PHZ\ and}$ $t_{PLZ}$.
[3] $t_{on}$ is the same as $t_{PZH}$ and $t_{PZL}$.
[4] $C_{PD}$ is used to determine the dynamic power dissipation ($P_D$ in µW).
$P_D = C_{PD} \times V_{CC}^2 \times f_i + \sum((C_L + C_{sw}) \times V_{CC}^2 \times f_o)$ where:
$f_i$ = input frequency in MHz;
$f_o$ = output frequency in MHz;
$\sum((C_L + C_{sw}) \times V_{CC}^2 \times f_o)$ = sum of outputs;
$C_L$ = output load capacitance in pF;
$C_{sw}$ = switch capacitance in pF;
$V_{CC}$ = supply voltage in V.

## 11.1. Waveforms and test circuit

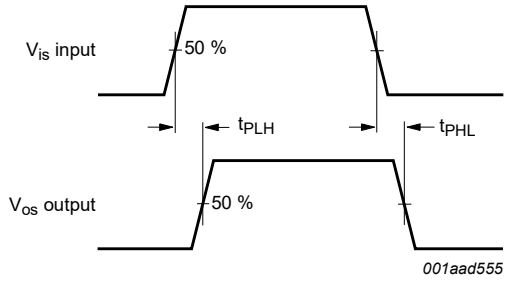
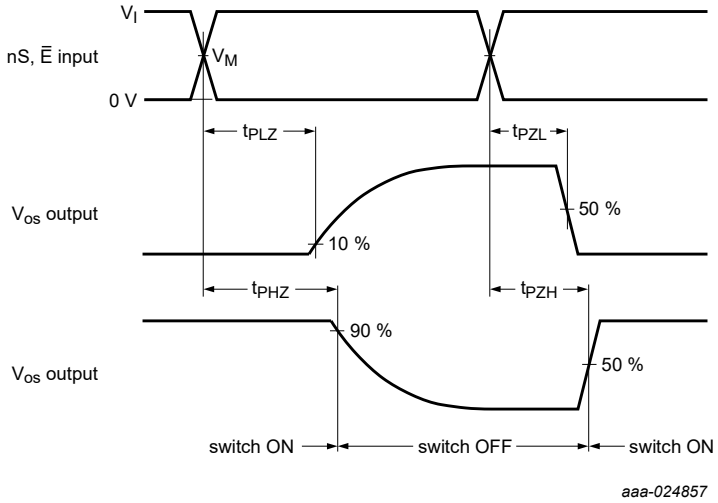



**Fig. 11. Input ($V_{is}$) to output ($V_{os}$) propagation delays**

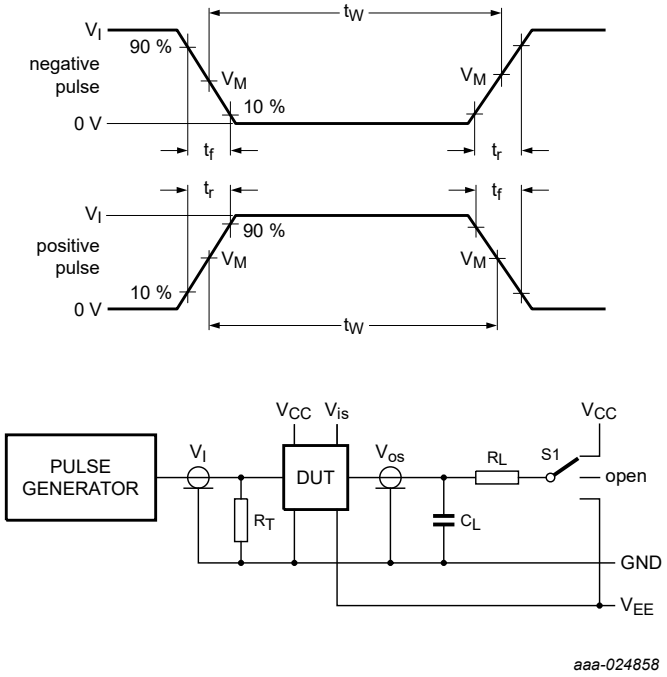



Measurement points are shown in Table 10.

**Fig. 12. Turn-on and turn-off times**

**Table 10. Measurement points**

| Type | $V_I$ | $V_M$ |
|---|---|---|
| 74HC4316 | $V_{CC}$ | $0.5V_{CC}$ |
| 74HCT4316 | 3.0 V | 1.3 V |







Test data is given in Table 11.

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;

S1 = Test selection switch.

**Fig. 13. Test circuit for measuring switching times**

**Table 11. Test data**

| Test | Input | | | | | Output | | S1 position |
|---|---|---|---|---|---|---|---|---|
| | $\overline{E}$ | nS | Switch nY (nZ) | $t_r$, $t_f$ | | Switch nZ (nY) | | |
| | $V_I$ | | $V_{is}$ | at $f_{max}$ | other [1] | $C_L$ | $R_L$ | |
| $t_{PHL}$, $t_{PLH}$ | [2] | | GND to $V_{CC}$ | < 2 ns | 6 ns | 50 pF | - | open |
| $t_{PHZ}$, $t_{PZH}$ | [2] | | $V_{CC}$ | < 2 ns | 6 ns | 50 pF, 15 pF | 1 kΩ | $V_{EE}$ |
| $t_{PLZ}$, $t_{PZL}$ | [2] | | $V_{EE}$ | < 2 ns | 6 ns | 50 pF, 15 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 74HC4316: $V_I = V_{CC}$

For 74HCT4316: $V_I$ = 3 V

## 11.2. 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 a nY or nZ terminal, whichever is assigned as an input.*
*$V_{os}$ is the output voltage at a nY or nZ terminal, whichever is assigned as an output.*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| THD | total harmonic distortion | $f_i$ = 1 kHz; $R_L$ = 10 kΩ; see Fig. 14 | | | | |
| | | $V_{is}$ = 4.0 V (p-p); $V_{CC}$ = 2.25 V; $V_{EE}$ = -2.25 V | - | 0.80 | - | % |
| | | $V_{is}$ = 8.0 V (p-p); $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | - | 0.40 | - | % |
| | | $f_i$ = 10 kHz; $R_L$ = 10 kΩ; see Fig. 14 | | | | |
| | | $V_{is}$ = 4.0 V (p-p); $V_{CC}$ = 2.25 V; $V_{EE}$ = -2.25 V | - | 2.40 | - | % |
| | | $V_{is}$ = 8.0 V (p-p); $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | - | 1.20 | - | % |
| $f_{(-3dB)}$ | -3 dB frequency response | $R_L$ = 50 Ω; $C_L$ = 10 pF; see Fig. 15 [1] | | | | |
| | | $V_{CC}$ = 2.25 V; $V_{EE}$ = -2.25 V | - | 150 | - | MHz |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | - | 160 | - | MHz |
| $\alpha_{iso}$ | isolation (OFF-state) | $R_L$ = 600 Ω; $f_i$ = 1 MHz; see Fig. 16 [2] | | | | |
| | | $V_{CC}$ = 2.25 V; $V_{EE}$ = -2.25 V | - | -50 | - | dB |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | - | -50 | - | dB |
| $V_{ct}$ | crosstalk voltage | between digital input and switch (peak to peak value); $R_L$ = 600 Ω; $f_i$ = 1 MHz; $\overline{E}$ or nS square wave between $V_{CC}$ and GND; $t_r = t_f$ = 6 ns; see Fig. 17 | | | | |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = 0 V | - | 110 | - | mV |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | - | 220 | - | mV |
| Xtalk | crosstalk | between switches; $R_L$ = 600 Ω; $f_i$ = 1 MHz; see Fig. 18 [2] | | | | |
| | | $V_{CC}$ = 2.25 V; $V_{EE}$ = -2.25 V | - | -60 | - | dB |
| | | $V_{CC}$ = 4.5 V; $V_{EE}$ = -4.5 V | - | -60 | - | dB |

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

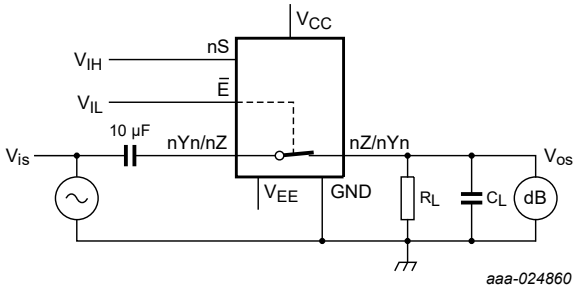
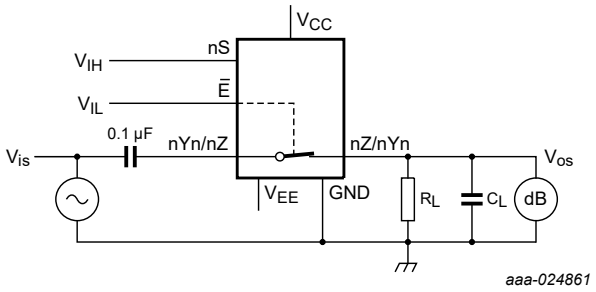
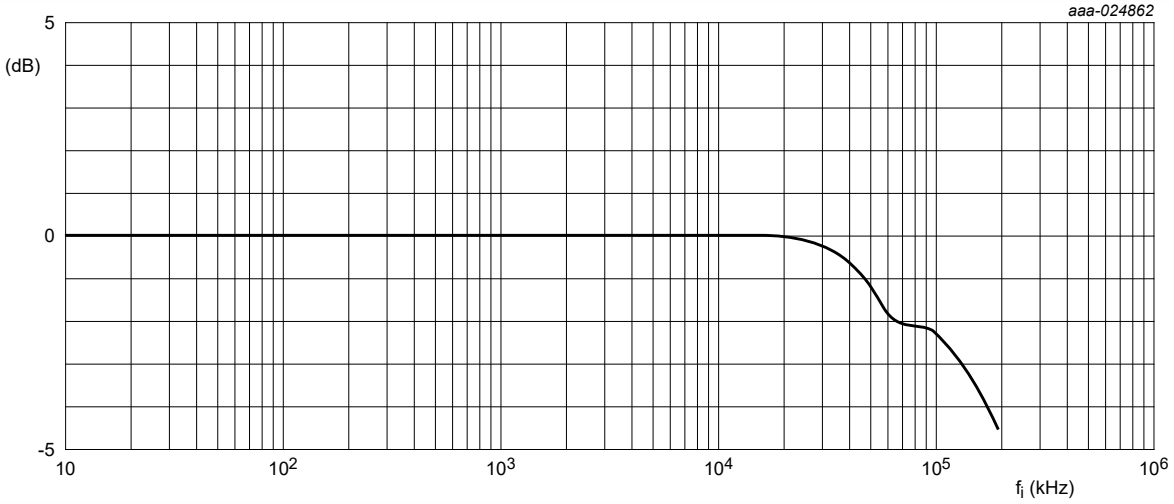



**Fig. 14. Test circuit for measuring total harmonic distortion**



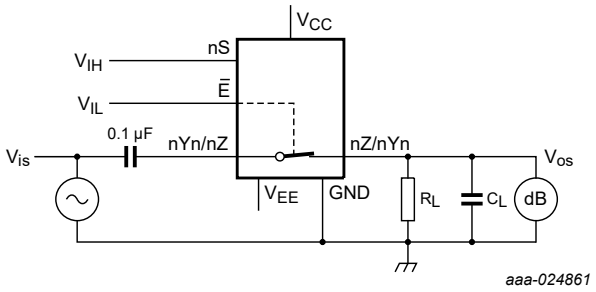

$V_{CC}$ = 4.5 V; GND = 0 V; $V_{EE}$ = -4.5 V; $R_L$ = 50 Ω; $R_S$ = 1 kΩ.

a. Test circuit



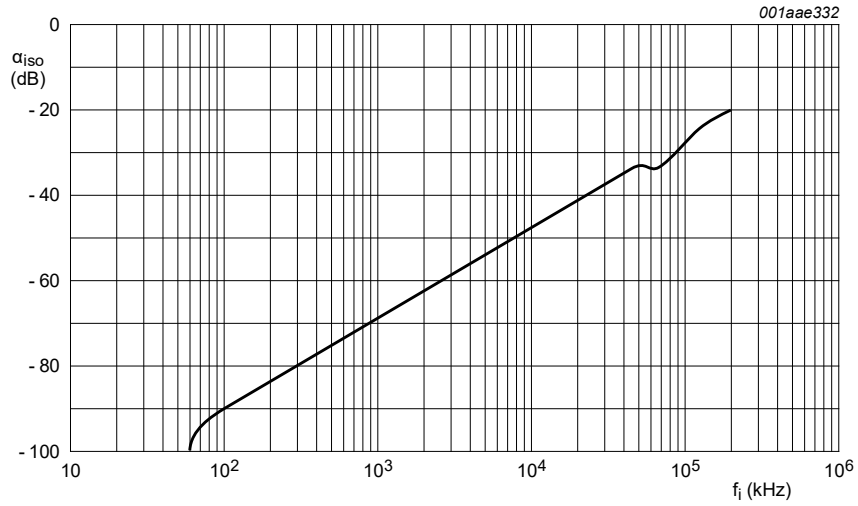

b. Typical -3 dB frequency response

**Fig. 15. -3 dB frequency response**




$V_{CC}$ = 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

**Fig. 16. Isolation (OFF-state) as a function of frequency**

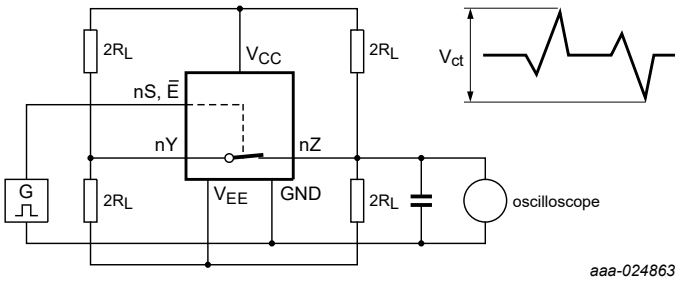



**Fig. 17. Test circuit for measuring crosstalk voltage (between the digital input and the switch)**

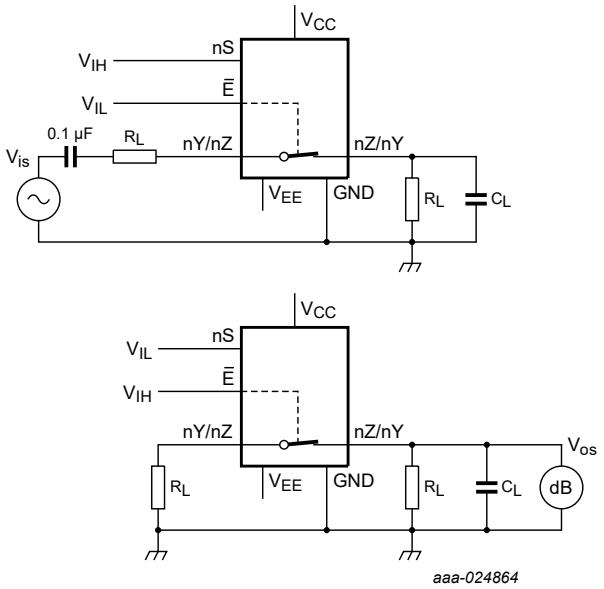
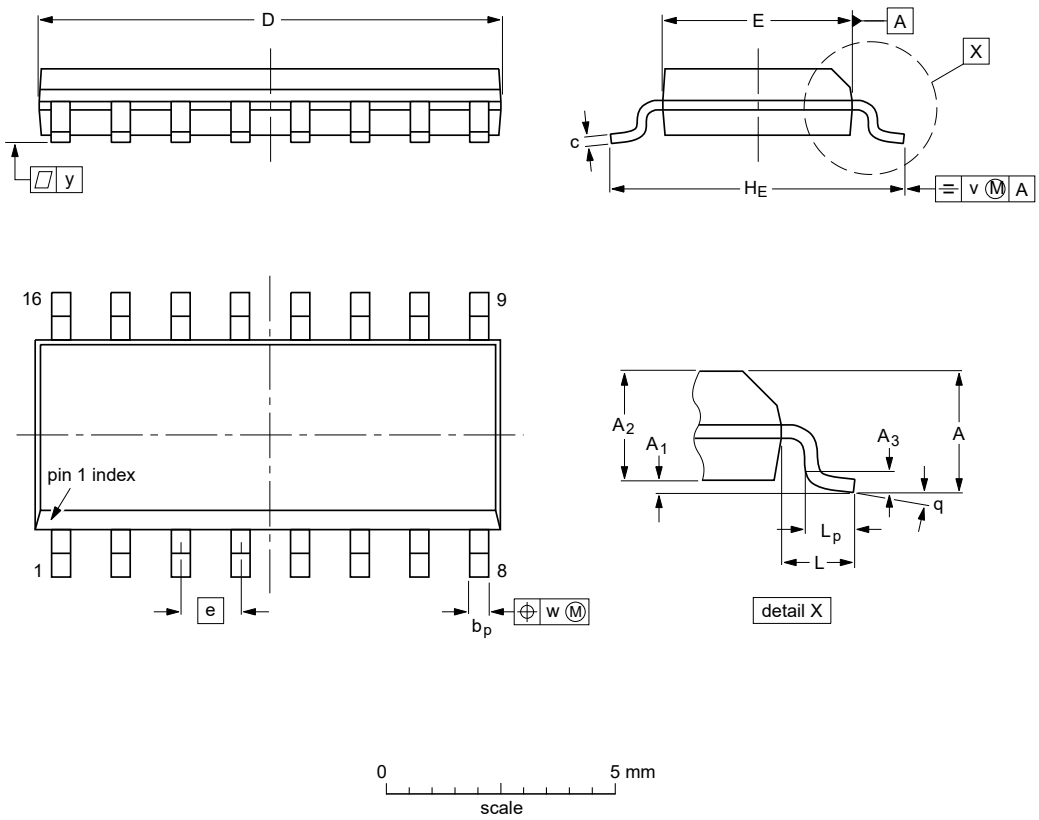



**Fig. 18. Test circuit for measuring crosstalk (between the switches)**

## 12. 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 | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | $D^{(1)}$ | $E^{(1)}$ | e | $H_E$ | L | $L_p$ | v | w | y | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 1.75 | 0.25 | | | 0.51 | 0.25 | 10.0 | 4.0 | | 6.2 | | 1.27 | | | | 8° |
| | nom | | | | 0.25 | | | | | 1.27 | | 1.05 | | 0.2 | 0.25 | 0.1 | |
| | min | | 0.10 | 1.25 | | 0.31 | 0.10 | 9.8 | 3.8 | | 5.8 | | 0.4 | | | | 0° |
| inches | max | 0.069 | 0.010 | | | 0.020 | 0.010 | 0.394 | 0.16 | | 0.244 | | 0.05 | | | | 8° |
| | nom | | | | 0.01 | | | | | 0.05 | | 0.041 | | 0.008 | 0.01 | 0.004 | |
| | min | | 0.004 | 0.049 | | 0.012 | 0.004 | 0.386 | 0.15 | | 0.228 | | 0.016 | | | | 0° |

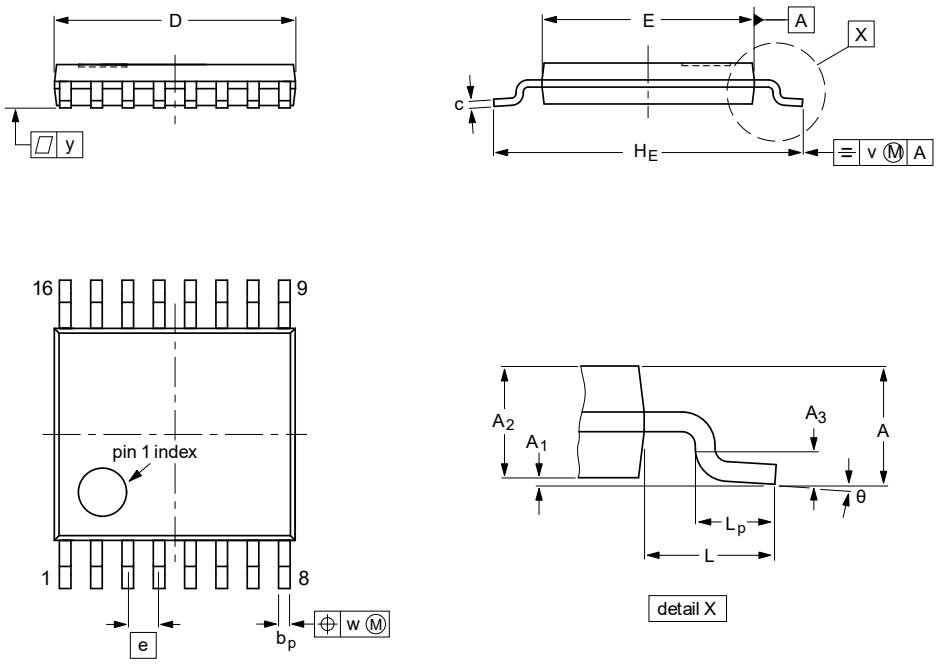
Note
1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.

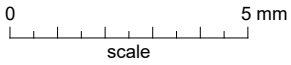
*sot109-1_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT109-1 | | MS-012 | | | | ~~03-02-19~~ 23-10-27 |

**Fig. 19. Package outline SOT109-1 (SO16)**

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




Dimensions (mm are the original dimensions)

| Unit | A | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | $D^{(1)}$ | $E^{(2)}$ | e | $H_E$ | L | $L_p$ | v | w | y | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| max | 1.20 | 0.15 | 1.05 | | 0.30 | 0.2 | 5.1 | 4.5 | | 6.6 | | 0.75 | | | | 8° |
| mm nom | | | | 0.25 | | | | | 0.65 | | 1 | | 0.2 | 0.1 | 0.1 | |
| min | | 0.05 | 0.80 | | 0.19 | 0.09 | 4.9 | 4.3 | | 6.2 | | 0.45 | | | | 0° |

Note
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.

*sot403-1_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT403-1 | | MO-153 | | | | ~~03-02-18~~ 23-10-27 |

**Fig. 20. Package outline SOT403-1 (TSSOP16)**

## 13. Abbreviations

**Table 13. Abbreviations**

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

## 14. Revision history

**Table 14. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| 74HC_HCT4316 v.7 | 20240326 | Product data sheet | - | 74HC_HCT4316 v.6.1 |
| Modifications: | • Fig. 19, Fig. 20: Aligned SO and TSSOP package outline drawings to JEDEC MS-012 and MO-153.<br>• Section 2: ESD specification updated according to the latest JEDEC standard. | | | |
| 74HC_HCT4316 v.6.1 | 20231018 | Product data sheet | - | 74HC_HCT4316 v.5 |
| Modifications: | • Type number 74HC4316DB (SOT338-1/SSOP16) removed.<br>• Section 2 updated. | | | |
| 74HC_HCT4316 v.5 | 20210310 | Product data sheet | - | 74HC_HCT4316 v.4 |
| Modifications: | • Section 8: Derating values for $P_{tot}$ total power dissipation have changed.<br>• Type number 74HCT4316DB (SOT338-1/SSOP16) removed. | | | |
| 74HC_HCT4316 v.4 | 20181016 | Product data sheet | - | 74HC_HCT4316 v.3 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.<br>• Legal texts have been adapted to the new company name where appropriate. | | | |
| 74HC_HCT4316 v.3 | 20170102 | Product data sheet | - | 74HC_HCT4316_CNV v.2 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.<br>• Legal texts have been adapted to the new company name where appropriate.<br>• Type numbers 74HC4316N and 74HCT4316N removed. | | | |
| 74HC_HCT4316_CNV v.2 | 19930901 | Product specification | - | - |

# 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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