

# DATA SHEET

For a complete data sheet, please also download:

- The IC06 74HC/HCT/HCU/HCMOS Logic Family Specifications
- The IC06 74HC/HCT/HCU/HCMOS Logic Package Information
- The IC06 74HC/HCT/HCU/HCMOS Logic Package Outlines

## **74HC/HCT7080** 16-bit even/odd parity generator/checker

Product specification  
File under Integrated Circuits, IC06

December 1990

# 16-bit even/odd parity generator/checker

## 74HC/HCT7080

### FEATURES

- Word-length easily expanded by cascading
- Generates either even or odd parity for 16-data bits
- Output capability: standard
- I<sub>CC</sub> category: MSI

### GENERAL DESCRIPTION

The 74HC/HCT7080 are high-speed Si-gate CMOS devices. They are specified in compliance with JEDEC standard no. 7A.

The 74HC/HCT7080 are 16-bit parity generators or checkers commonly used to detect errors in high-speed data transmission or data retrieval systems.

The even and odd parity output is available for generating or checking even/odd parity up to 16-bits.

The even/odd parity output ( $E/\bar{O}$ ) is HIGH when an even number of data inputs ( $I_0$  to  $I_{15}$ ) are HIGH and the cascade/even-odd-changing input ( $\bar{X}$ ) is HIGH.

Expansion to larger word sizes is accomplished by connecting the even/odd parity output ( $E/\bar{O}$ ) to the cascade/even-odd-changing input ( $\bar{X}$ ) of the final stage.

### QUICK REFERENCE DATA

GND = 0 V; T<sub>amb</sub> = 25 °C; t<sub>r</sub> = t<sub>f</sub> = 6 ns

SYMBOL	PARAMETER	CONDITIONS	TYPICAL		UNIT
			HC	HCT	
t <sub>PHL</sub> / t <sub>PLH</sub>	propagation delay I <sub>n</sub> to E/ $\bar{O}$ $\bar{X}$ to E/ $\bar{O}$	C <sub>L</sub> = 15 pF; V <sub>CC</sub> = 5 V	29 12	32 15	ns ns
C <sub>I</sub>	input capacitance		3.5	3.5	pF
C <sub>PD</sub>	power dissipation capacitance per package	notes 1 and 2	24	25	pF

### Notes

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

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

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

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

$\sum (C_L \times V_{CC}^2 \times f_o)$  = sum of outputs

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

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

2. For HC the condition is V<sub>I</sub> = GND to V<sub>CC</sub>  
For HCT the condition is V<sub>I</sub> = GND to V<sub>CC</sub> - 1.5 V

### ORDERING INFORMATION

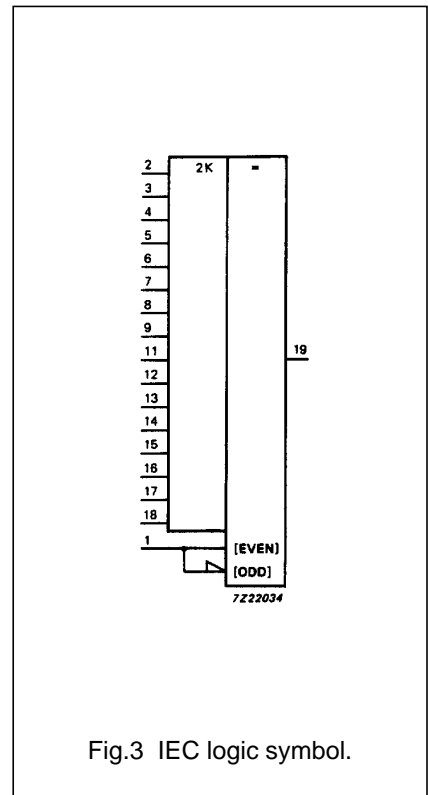
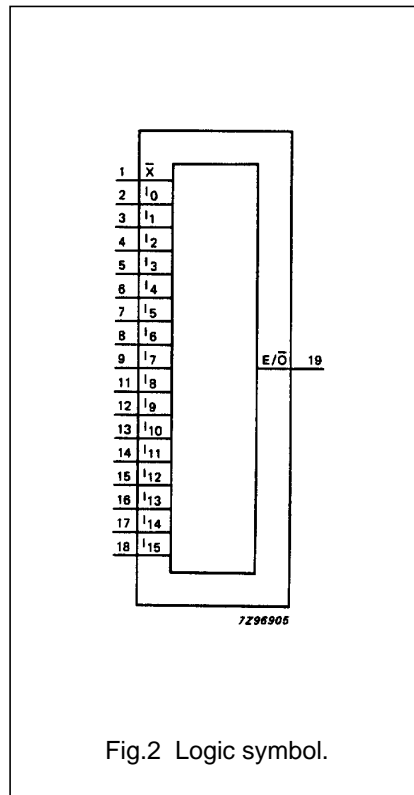
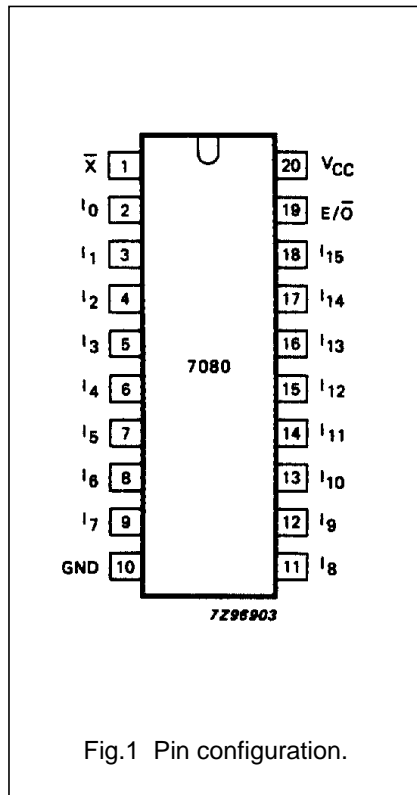
See "74HC/HCT/HCU/HCMOS Logic Package Information".

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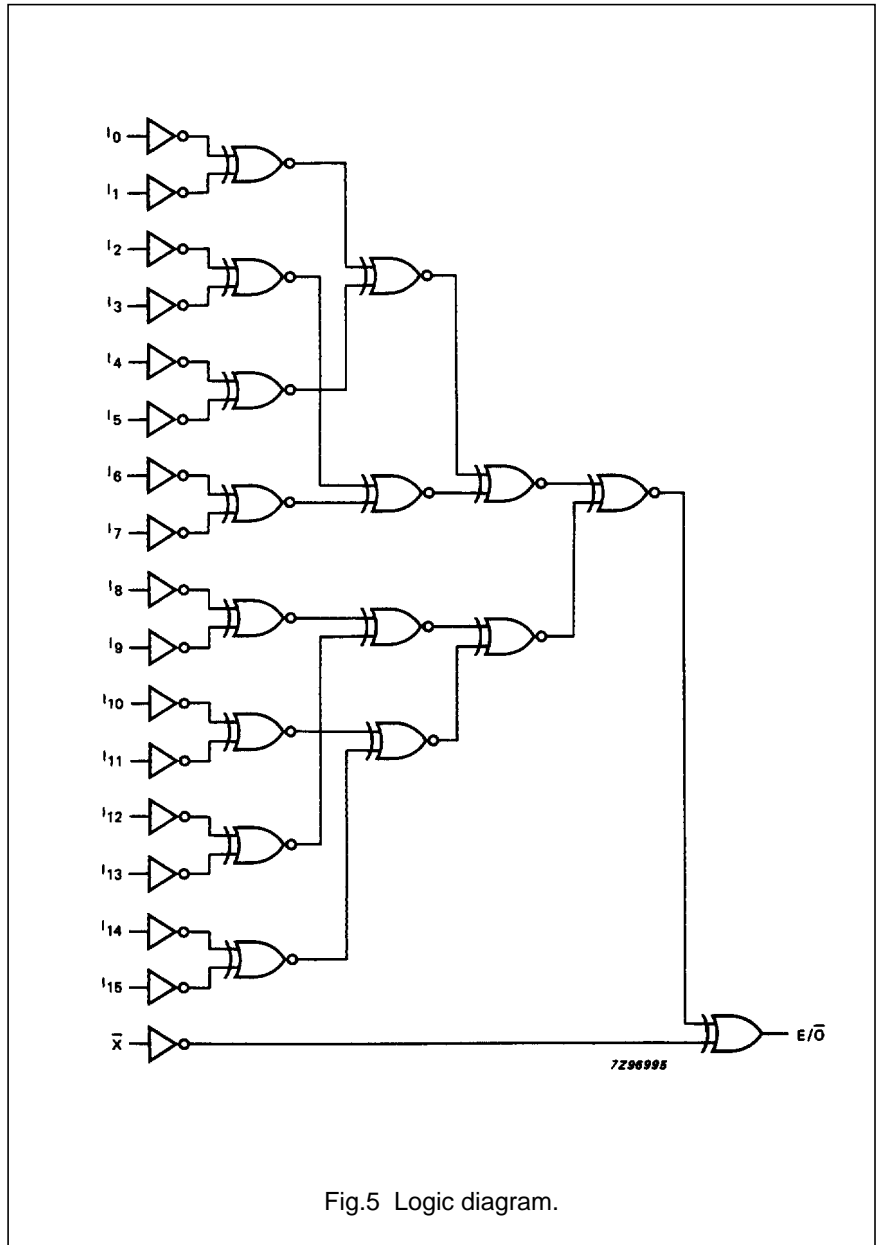
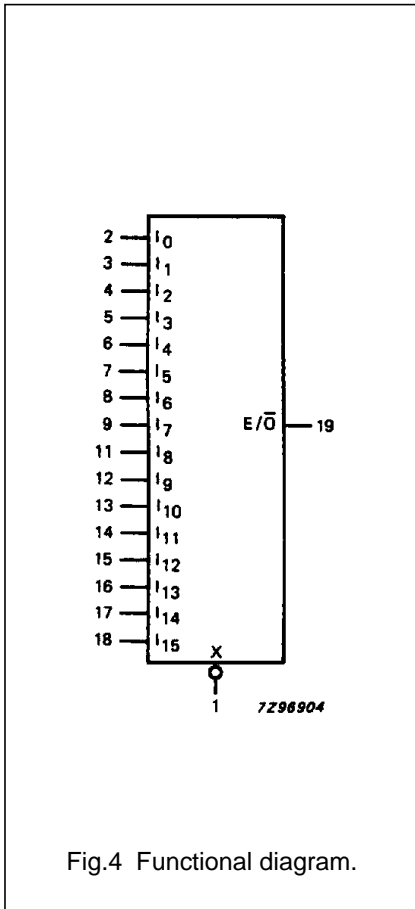
## PIN DESCRIPTION

PIN NO.	SYMBOL	NAME AND FUNCTION
1	$\bar{X}$	cascade/even-odd-changing input
2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18	$I_0$ to $I_{15}$	data inputs
10	GND	ground (0 V)
19	$E/\bar{O}$	even/odd parity output
20	$V_{CC}$	positive supply voltage



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FUNCTION TABLE

INPUTS		OUTPUTS
$I_n$	$\bar{X}$	$E/\bar{O}$
$\Sigma = E$	H	H
	L	L
$\Sigma \neq E$	H	L
	L	H

Notes

1. H = HIGH voltage level  
L = LOW voltage level  
E = even

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## 74HC/HCT7080

**DC CHARACTERISTICS FOR 74HC**

For the DC characteristics see *"74HC/HCT/HCU/HCMOS Logic Family Specifications"*.

Output capability: standard

I<sub>CC</sub> category: MSI

**AC CHARACTERISTICS FOR 74HC**

GND = 0 V; t<sub>r</sub> = t<sub>f</sub> = 6 ns; C<sub>L</sub> = 50 pF

SYMBOL	PARAMETER	T <sub>amb</sub> (°C)							UNIT	TEST CONDITIONS	
		74HC								V <sub>CC</sub> (V)	WAVEFORMS
		+25			-40 to +85		-40 to +125				
		min.	typ.	max.	min.	max.	min.	max.			
t <sub>PHL</sub> / t <sub>PLH</sub>	propagation delay I <sub>n</sub> to E/ $\bar{O}$		91 33 26	280 56 48		350 70 60		420 84 71	ns	2.0 4.5 6.0	Fig.7
t <sub>PHL</sub> / t <sub>PLH</sub>	propagation delay X to E/ $\bar{O}$		41 15 12	150 30 26		190 38 33		225 45 38	ns	2.0 4.5 6.0	Fig.6
t <sub>THL</sub> / t <sub>TLH</sub>	output transition time		19 7 6	75 15 13		95 19 16		110 22 19	ns	2.0 4.5 6.0	Figs 6 and 7

## 16-bit even/odd parity generator/checker

## 74HC/HCT7080

**DC CHARACTERISTICS FOR 74HCT**

For the DC characteristics see *"74HC/HCT/HCU/HCMOS Logic Family Specifications"*.

Output capability: standard

I<sub>CC</sub> category: MSI

**Note to HCT types**

The value of additional quiescent supply current ( $\Delta I_{CC}$ ) for a unit load of 1 is given in the family specifications.

To determine  $\Delta I_{CC}$  per input, multiply this value by the unit load coefficient shown in the table below.

INPUT	UNIT LOAD COEFFICIENT
I <sub>n</sub>	1.0
$\bar{X}$	1.0

**AC CHARACTERISTICS FOR 74HCT**

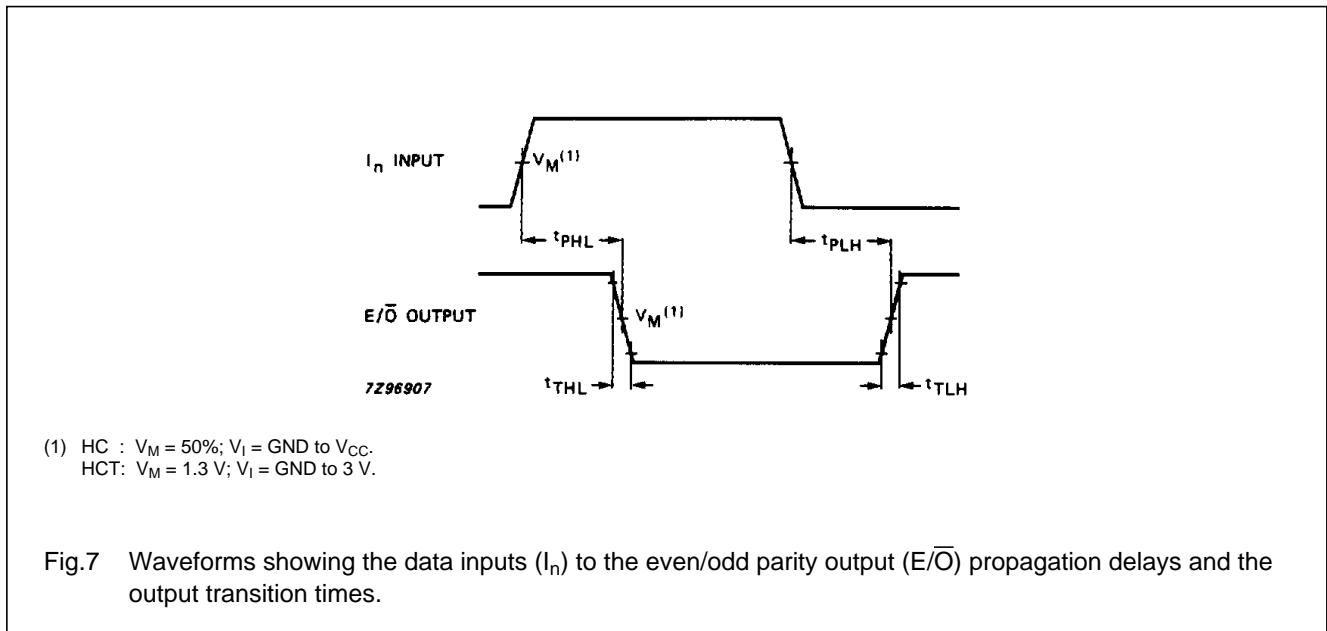
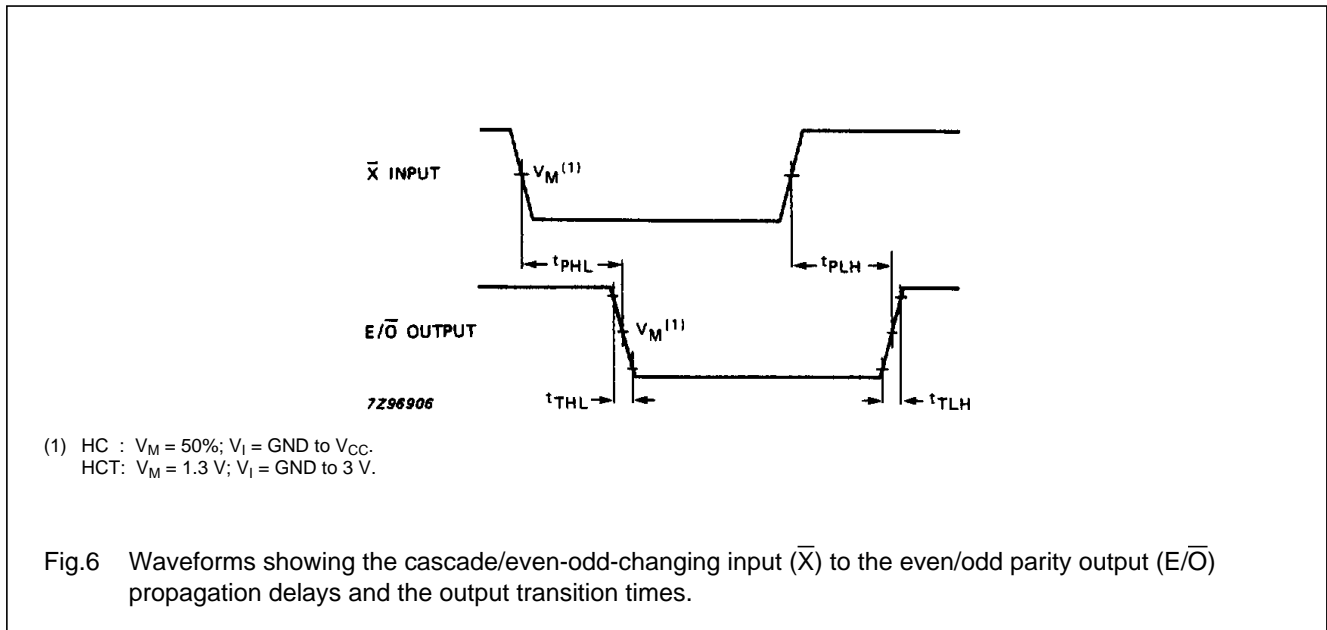
GND = 0 V; t<sub>r</sub> = t<sub>f</sub> = 6 ns; C<sub>L</sub> = 50 pF

SYMBOL	PARAMETER	T <sub>amb</sub> (°C)							UNIT	TEST CONDITIONS	
		74HCT								V <sub>CC</sub> (V)	WAVEFORMS
		+25			-40 to +85		-40 to +125				
		min.	typ.	max.	min.	max.	min.	max.			
t <sub>PHL</sub> / t <sub>PLH</sub>	propagation delay I <sub>n</sub> to E/ $\bar{O}$		37	63		79		95	ns	4.5	Fig.7
t <sub>PHL</sub> / t <sub>PLH</sub>	propagation delay $\bar{X}$ to E/ $\bar{O}$		18	32		40		48	ns	4.5	Fig.6
t <sub>THL</sub> / t <sub>TLH</sub>	output transition time		7	15		19		22	ns	4.5	Figs 6 and 7

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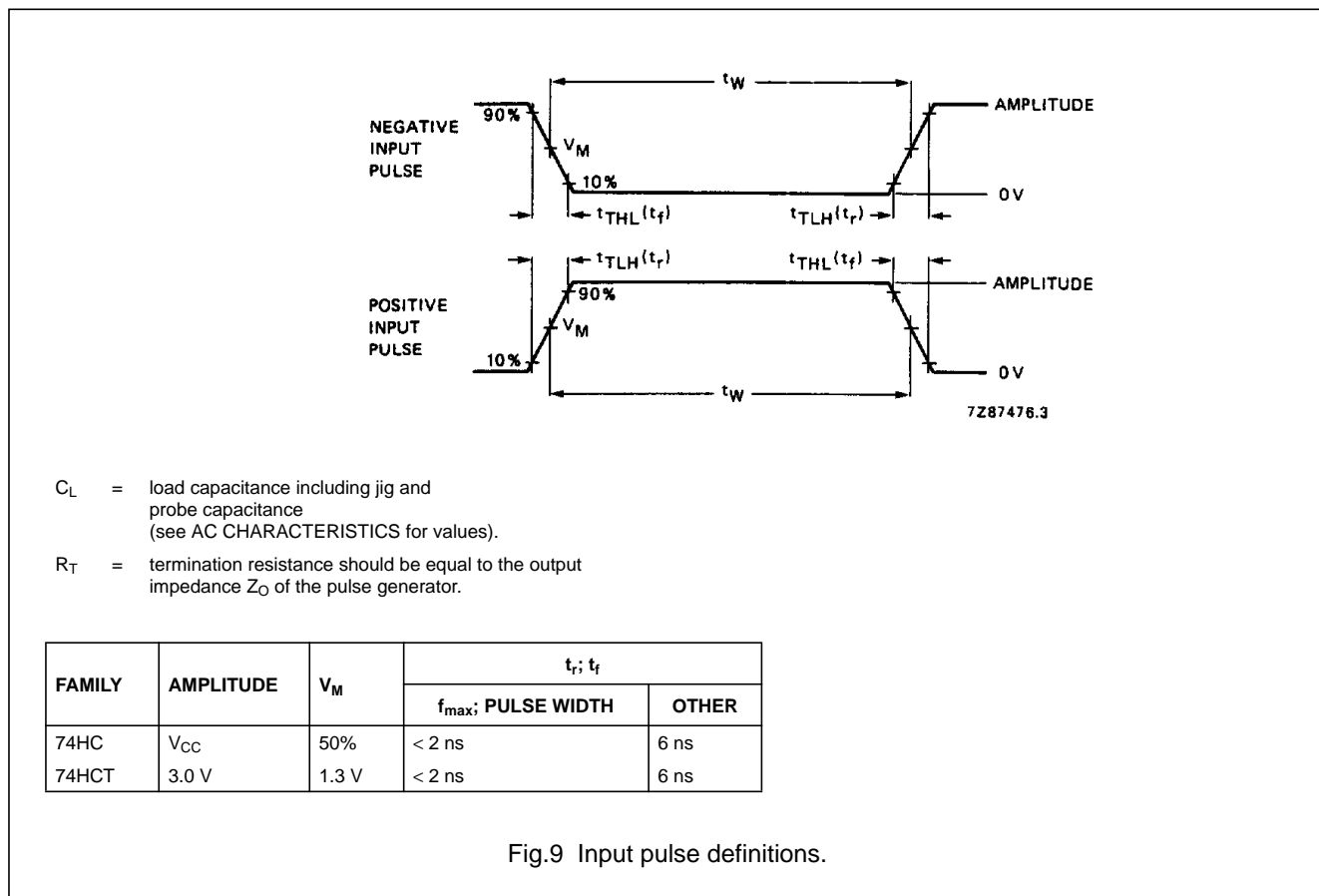
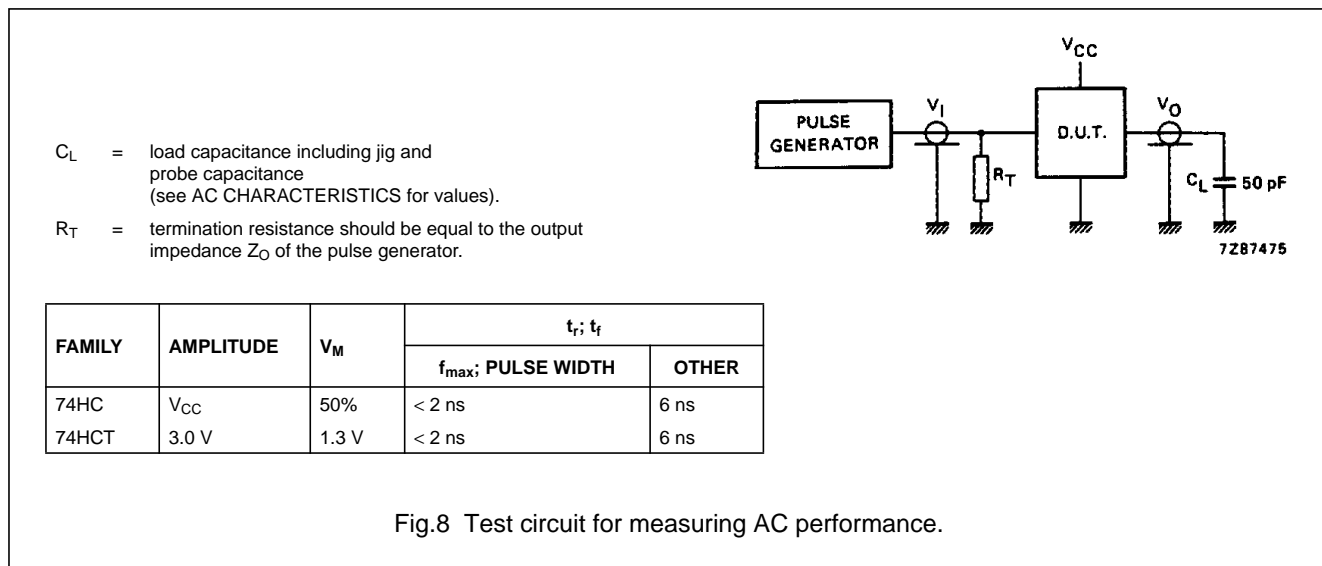
AC WAVEFORMS



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## TEST CIRCUIT AND WAVEFORMS



## PACKAGE OUTLINES

See "74HC/HCT/HCU/HCMOS Logic Package Outlines".