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# Die Datasheet, Logic Gate Device

74ACT74

## DUAL D-TYPE POSITIVE EDGE-TRIGGERED FLIP-FLOP

### Die Source:

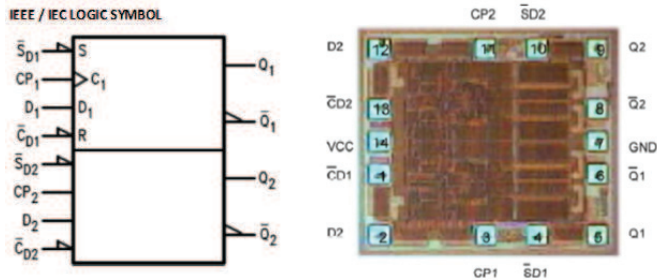


44 mils x 40 mils x 14 mils

Backside : Silicon  
Topside Metal: Aluminum

### General Description:

The 74ACT74 is a member of the Industries 74xxx series of Logic devices. The 74ACT74 is a device description which contains (2) D-Type positive edge-triggered Flip-Flops.



### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	CONDITIONS	LIMIT	UNITS
Supply Voltage	$V_{CC}$		-0.5 to +7.0	V
DC Input Diode Current	$I_{IK}$	$V_I = -0.5V$	-20.0	mA
		$V_I = V_{CC} + 0.5V$	20.0	mA
DC Input Voltage	$V_I$		-0.5 to $V_{CC} + 0.5$	V
DC Output Diode Current	$I_{OK}$	$V_O = -0.5V$	-20.0	mA
		$V_O = V_{CC} + 0.5V$	20.0	mA
DC Output Voltage	$V_O$		-0.5 to $V_{CC} + 0.5$	V
DC Output Source or Sink Current	$I_O$		$\pm 50.0$	mA
DC VCC Current	$I_{CC}$		$\pm 50.0$	mA
DC GND Current	$I_{DD}$		$\pm 50.0$	mA
Storage Temp	$T_{STG}$		-65.0 to +150	$^{\circ}C$
Max Junction Temp	$T_J$		150.0	$^{\circ}C$

### RECOMMENDED OPERATING CONDITIONS

PARAMETER	TECH	SYMBOL	LIMIT	UNITS
Supply Voltage	ACT	$V_{CC}$	4.5 to 5.5	V
Input Voltage		$V_I$	0 to $V_{CC}$	V
Output Voltage		$V_O$	0 to $V_{CC}$	V
Operating Temperature		$T_A$	-40 to +85	$^{\circ}C$
Minimum Input Edge Rate	ACT	$\Delta V/\Delta t$	125	mV/ns

### DC ELECTRICAL CHARACTERISTICS

PARAMETER	TECH	SYMBOL	VCC (V)	CONDITIONS	Guarenteed Limits		UNITS	NOTE
					Min@25C	Min@85C		
Minimum HIGH level Input Voltage	ACT	$V_{IH}$	4.5	$V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$	2.00	2.00	V	
			5.5		2.00	2.00		
Maximum LOW level Input Voltage	ACT	$V_{IL}$	4.5	$V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$	0.80	0.80	V	
			5.5		0.80	0.80		
Minimum HIGH level Output Voltage	ACT	$V_{OH}$	4.5	$I_{OUT} = -50\mu A$	4.40	4.40	V	
			5.5		5.40	5.40		
			4.5		$V_{IN} = V_{IL}$ or $V_{IH}$ , $I_{OL} = -24mA$	3.86		
5.5	$V_{IN} = V_{IL}$ or $V_{IH}$ , $I_{OL} = -24mA$	4.86	4.76					



## DUAL D-TYPE POSITIVE EDGE-TRIGGERED FLIP-FLOP

### DC ELECTRICAL CHARACTERISTICS - CONT'D

PARAMETER	TECH	SYMBOL	VCC (V)	CONDITIONS	Guareented Limits		UNITS	NOTE
					Min@25C	Min@85C		
Maximum LOW level Output Voltage								
	ACT	$V_{OL}$	4.5 5.5	$I_{OUT} = -50\mu A$	0.1 0.1	0.1 0.1	V	
	ACT	$V_{OL}$	4.5 5.5	$V_{IN} = V_{IL}$ or $V_{IH}$ , $I_{OL} = -24mA$ $V_{IN} = V_{IL}$ or $V_{IH}$ , $I_{OL} = -24mA$	0.36 0.36	0.44 0.44	V	1
Maximum Input Leakage Current	ACT	$I_{IN}$	5.5	$V_I = V_{CC}$ or GND	$\pm 0.1$	$\pm 1.0$	$\mu A$	2
Minimum Dynamic Output Current	ACT	$I_{OLD}$	5.5	$V_{OLD} = 1.65V$ Max	--	75	mA	
	ACT	$I_{OHD}$	5.5	$V_{OHD} = 3.85V$ Min	--	-75	mA	
Maximum Quiescent Supply Current	ACT	$I_{CC}$	5.5	$V_{IN} = V_{CC}$ or GND	4	40	$\mu A$	2

- Note(s):
1. All Outputs Loaded; thresholds on input associated with output under test
  2.  $I_{IN}$  and  $I_{CC}$  @ 3.0V are guaranteed to be less than or equal to the respective limit @ 5.5V VCC

### AC ELECTRICAL CHARACTERISTICS

PARAMETER	TECH	SYMBOL	VCC (V)	CONDITIONS	Guareented Limits		Guareented Limits		UNITS
					Min@25C	Max@25C	Min@85C	Max@85C	
Propagation Delay: $C_{Dn}$ or $S_{Dn}$ to $Q_n$ or $Q_n$ \	ACT	tPLH	5.0	$C_L = 50pF$	3.0	9.5	2.5	10.5	ns
	ACT	tPHL	5.0	$C_L = 50pF$	3.0	10.0	3.0	11.5	ns
Propagation Delay: $C_{Pn}$ to $Q_n$ or $Q_n$ \	ACT	tPLH	5.0	$C_L = 50pF$	4.0	11.0	4.0	13.0	ns
	ACT	tPHL	5.0	$C_L = 50pF$	3.5	10.0	3.0	11.5	ns