Die Datasheet, Logic Gate Device

74AC86

Quad 2-Input XOR GATE

Die Source:

FAIRCHILD

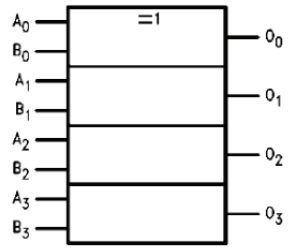
27 mils x 31 mils x 14 mils

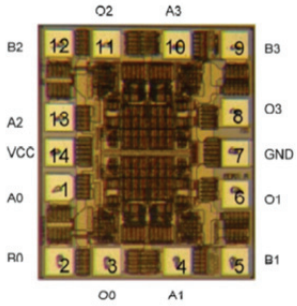
Backside : Silicon
Topside Metal: Aluminum

General Description:

The 74AC86 is a member of the Industries 74xxx series of Logic devices. The 74AC86 is a device description which contains (4) 2-Input XOR Gates.

IEEE / IEC LOGIC SYMBOL





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		±50.0	mA
DC VCC Current	I_{CC}		±50.0	mA
DC GND Current	I_{DD}		±50.0	mA
Storage Temp	T_{STG}		-65.0 to +150	°C
Max Junction Temp	T_J		150.0	°C

RECOMMENDED OPERATING CONDITIONS

PARAMETER	TECH	SYMBOL	LIMIT	UNITS
Supply Voltage	AC	V_{CC}	2.0 to 6.0	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	°C
Minimum Input Edge Rate	AC	$\Delta V/\Delta t$	125	mV/ns

DC ELECTRICAL CHARACTERISTICS

PARAMETER	TECH	SYMBOL	VCC (V)	CONDITIONS	Guarenteed Limits Min@25C	Guarenteed Limits Min@85C	UNITS	NOTE
Minimum HIGH level Input Voltage	AC	V_{IH}	3.0	V_{OUT} = 0.1V or V_{CC} - 0.1V	2.10	2.10	V	
			4.5		3.15	3.15		
			5.5		3.85	3.85		
Maximum LOW level Input Voltage	AC	V_{IL}	3.0	V_{OUT} = 0.1V or V_{CC} - 0.1V	0.90	0.90	V	
			4.5		1.35	1.35		
			5.5		1.65	1.65		
Minimum HIGH level Output Voltage	AC	V_{OH}	3.0	I_{OUT} = -50uA	2.90	2.90	V	
			4.5		4.40	4.40		
			5.5		5.40	5.40		
	AC	V_{OH}	3.0	V_{IN} = V_{IL} or V_{IH}, I_{OL}=-12mA	2.56	2.46	V	
			4.5	V_{IN} = V_{IL} or V_{IH}, I_{OL}=-12mA	3.86	3.76		
			5.5	V_{IN} = V_{IL} or V_{IH}, I_{OL}=-24mA	4.86	4.76		1

DC ELECTRICAL CHARACTERISTICS - CONT'D

PARAMETER	TECH	SYMBOL	VCC (V)	CONDITIONS	Guarenteed Limits		UNITS	NOTE
					Min@25C	Min@85C		
Maximum LOW level Output Voltage	AC	V_{OL}	3.0	I_{OUT} = -50uA	0.1	0.1	V	
			4.5		0.1	0.1		
			5.5		0.1	0.1		
	AC	V_{OL}	3.0	$V_{IN} = V_{IL}$ or V_{IH}, I_{OL}=-12mA	0.36	0.44	V	
			4.5	$V_{IN} = V_{IL}$ or V_{IH}, I_{OL}=-24mA	0.36	0.44		
			5.5	$V_{IN} = V_{IL}$ or V_{IH}, I_{OL}=-24mA	0.36	0.44		1
Maximum Input Leakage Current	AC	I_{IN}	5.5	$V_I = V_{CC}$ or GND	±0.1	±1.0	uA	2
Minimum Dynamic Output Current	AC	I_{OLD}	5.5	V_{OLD} = 1.65V Max	- -	75	mA	
	AC	I_{OHD}	5.5	V_{OHD} = 3.85V Min	- -	-75	mA	
Maximum Quiescent Supply Current	AC	I_{CC}	5.5	$V_{IN} = V_{CC}$ or GND	4	40	uA	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	Guarenteed Limits		Guarenteed Limits		UNITS
					Min@25C	Max@25C	Min@85C	Max@85C	
Propagation Delay	AC	tPLH	5.0		1.5	8.5	1.0	9.5	ns
	AC	tPHL	5.0		1.5	8.5	1.0	9.0	ns