

74ACT16373

16-Bit Transparent Latch with 3-STATE Outputs

General Description

The ACT16373 contains sixteen non-inverting latches with 3-STATE outputs and is intended for bus oriented applications. The device is byte controlled. The flip-flops appear transparent to the data when the Latch Enable (LE) is HIGH. When LE is low, the data that meets the setup time is latched. Data appears on the bus when the Output Enable (OE) is LOW. When OE is HIGH, the outputs are in high Z state.

Features

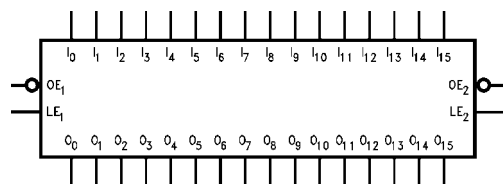
- Separate control logic for each byte
- 16-bit version of the ACT373
- Outputs source/sink 24 mA
- TTL-compatible inputs

Ordering Code:

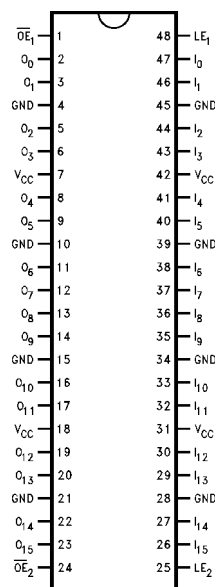
Order Number	Package Number	Package Description
74ACT16373SSC	MS48A	48-Lead Small Shrink Outline Package (SSOP), JEDEC MO-118, 0.300" Wide
74ACT16373MTD	MTD48	48-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 6.1mm Wide

Device also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering code.

Logic Symbol



Connection Diagram



Pin Descriptions

Pin Names	Description
$\overline{OE}_n$	Output Enable Input (Active Low)
LE_n	Latch Enable Input
I_0-I_{15}	Inputs
O_0-O_{15}	Outputs

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Absolute Maximum Ratings(Note 1)

Supply Voltage (V_{CC})	-0.5V to +7.0V
DC Input Diode Current (I_{IK})	
$V_I = -0.5V$	-20 mA
$V_I = V_{CC} + 0.5V$	+20 mA
DC Output Diode Current (I_{OK})	
$V_O = -0.5V$	-20 mA
$V_O = V_{CC} + 0.5V$	+20 mA
DC Output Voltage (V_O)	-0.5V to $V_{CC} + 0.5V$
DC Output Source/Sink Current (I_O)	+50 mA
DC V_{CC} or Ground Current per Output Pin	+50 mA
Junction Temperature	+140°C
Storage Temperature	-65°C to +150°C

Recommended Operating Conditions

Supply Voltage (V_{CC})	4.5V to 5.5V
Input Voltage (V_I)	0V to V_{CC}
Output Voltage (V_O)	0V to V_{CC}
Operating Temperature (T_A)	-40°C to +85°C
Minimum Input Edge Rate ($\Delta V/\Delta t$)	125 mV/ns
V_{IN} from 0.8V to 2.0V	
V_{CC} @ 4.5V, 5.5V	

Note 1: Absolute maximum ratings are those values beyond which damage to the device may occur. The databook specifications should be met, without exception to ensure that the system design is reliable over its power supply, temperature, and output/input loading variables. Fairchild does not recommend operation of FACT™ circuits outside databook specifications.

DC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	T _A = +25°C		T _A = −40°C to +85°C	Units	Conditions		
			Typ	Guaranteed Limits					
V _{IH}	Minimum HIGH Input Voltage	4.5	1.5	2.0	2.0	V	V _{OUT} = 0.1V or V _{CC} − 0.1V		
		5.5	1.5	2.0	2.0				
V _{IL}	Maximum LOW Input Voltage	4.5	1.5	0.8	0.8	V	V _{OUT} = 0.1V or V _{CC} − 0.1V		
		5.5	1.5	0.8	0.8				
V _{OH}	Minimum HIGH Output Voltage	4.5	4.49	4.4	4.4	V	I _{OUT} = −50 μA		
		5.5	5.49	5.4	5.4				
		4.5		3.86	3.76	V	V _{IN} = V _{IL} or V _{IH} I _{OH} = −24 mA I _{OH} = −24 mA (Note 2)		
		5.5		4.86	4.76				
		4.5		0.36	0.44			V	V _{IN} = V _{IL} or V _{IH} I _{OL} = 24 mA I _{OL} = 24 mA (Note 2)
		5.5		0.36	0.44				
V _{OL}	Maximum LOW Output Voltage	4.5	0.001	0.1	0.1	V	I _{OUT} = 50 μA		
		5.5	0.001	0.1	0.1				
		4.5		0.36	0.44	V	V _{IN} = V _{IL} or V _{IH} I _{OL} = 24 mA I _{OL} = 24 mA (Note 2)		
5.5		0.36	0.44						
I _{OZ}	Maximum 3-STATE Leakage Current	5.5		± 0.5	± 5.0	μA	V _I = V _{IL} , V _{IH} V _O = V _{CC} , GND		
I _{IN}	Maximum Input Leakage Current	5.5		± 0.1	± 1.0	μA	V _I = V _{CC} , GND		
I _{CCT}	Maximum I _{CC} /Input	5.5	0.6		1.5	mA	V _I = V _{CC} − 2.1V		
I _{CC}	Max Quiescent Supply Current	5.5		8.0	80.0	μA	V _{IN} = V _{CC} or GND		
I _{OLD}	Minimum Dynamic	5.5			75	mA	V _{OLD} = 1.65V Max		
I _{OHD}	Output Current (Note 3)				−75	mA	V _{OHD} = 3.85V Min		

Note 2: All outputs loaded; thresholds associated with output under test.

Note 3: Maximum test duration 2.0 ms; one output loaded at a time.

AC Electrical Characteristics

Symbol	Parameter	V _{CC} (V) (Note 4)	T _A = +25°C C _L = 50 pF			T _A = -40°C to +85°C C _L = 50 pF		Units
			Min	Typ	Max	Min	Max	
t _{PLH}	Propagation Delay	5.0	3.1	5.3	7.9	3.1	8.4	ns
t _{PHL}	D _n to O _n		2.6	4.6	7.3	2.6	7.8	
t _{PLH}	Propagation Delay	5.0	3.1	5.4	7.9	3.2	8.4	ns
t _{PHL}	LE to O _n		2.8	4.9	7.3	2.8	7.8	
t _{PZH}	Output Enable	5.0	2.5	4.7	7.4	2.5	7.9	ns
t _{PZL}	Delay		2.7	4.8	7.5	2.7	8.0	
t _{PHZ}	Output Disable	5.0	2.1	5.1	7.9	2.1	8.2	ns
t _{PLZ}	Delay		2.0	4.5	7.4	2.0	7.9	

Note 4: Voltage Range 5.0 is 5.0V ± 0.5V.

AC Operating Requirements

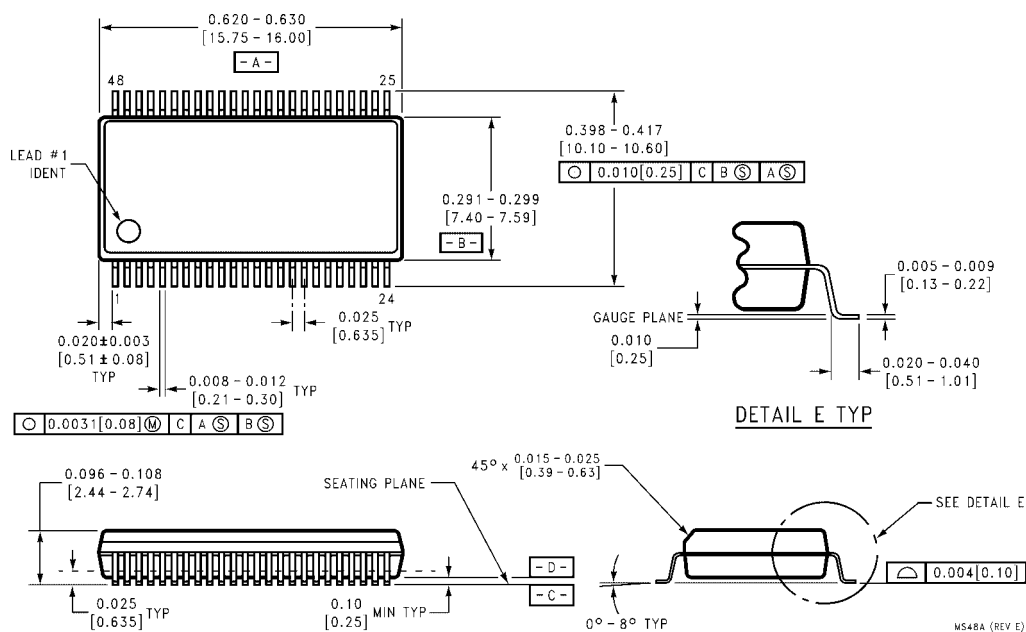
Symbol	Parameter	V _{CC} (V) (Note 5)	T _A = +25°C C _L = 50 pF	T _A = -40°C to +85°C C _L = 50 pF	Units
			Guaranteed Minimum		
t _S	Setup Time, HIGH or LOW, Input to Clock	5.0	3.0	3.0	ns
t _H	Hold time, HIGH or LOW, Input to Clock	5.0	1.5	1.5	ns
t _W	CS Pulse Width, HIGH or LOW	5.0	4.0	4.0	ns

Note 5: Voltage Range 5.0 is 5.0V ± 0.5V

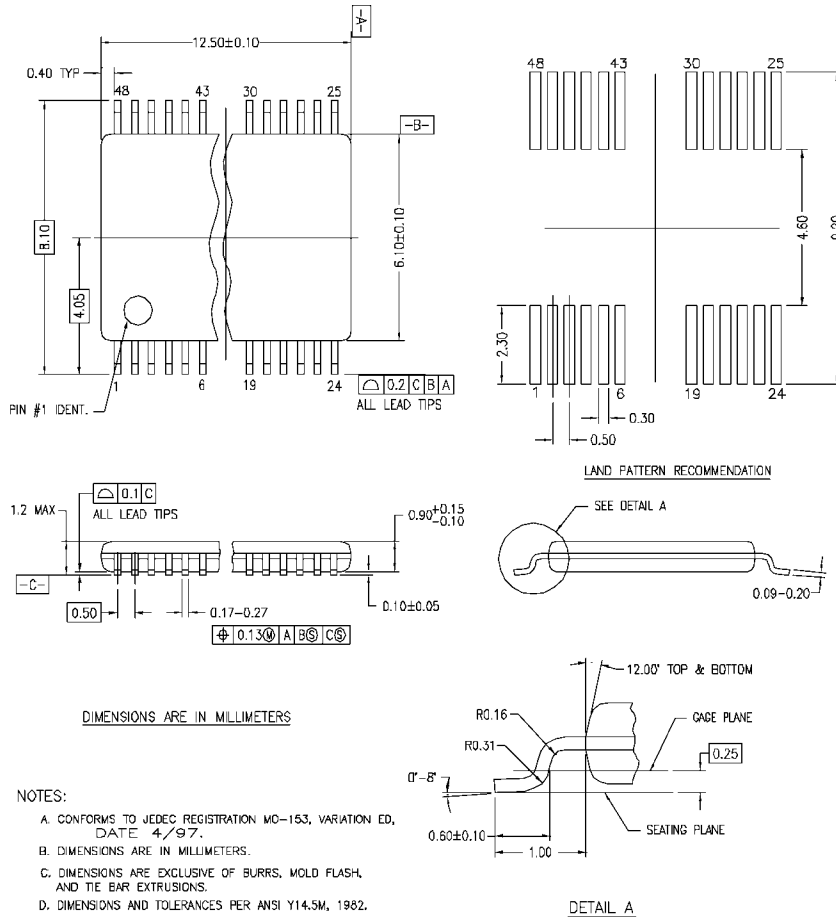
Capacitance

Symbol	Parameter	Typ	Units	Conditions
C _{IN}	Input Capacitance	4.5	pF	V _{CC} = 5.0V
C _{PD}	Power Dissipation Capacitance	30	pF	V _{CC} = 5.0V

Physical Dimensions inches (millimeters) unless otherwise noted



Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



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