

CDP1872C, CDP1874C, CDP1875C

March 1997

High-Speed 8-Bit Input and Output Ports

Features

- Parallel 8-Bit Input/Output Register with Buffered Outputs
- High-Speed Data-In to Data-Out 85ns (Max) at V_{DD} = 5V
- Flexible Applications In Microprocessor Systems as Buffers and Latches
- High Order Address-Latch Capability in CDP1800-Series Microprocessor Systems
- Output Sink Current = 5mA (Min) at V_{DD} = 5V
- Three-State Output CDP1872C and CDP1874C

Ordering Information

PART NUMBER	TEMP. RANGE	PACKAGE	PKG. NO.
CDP1872CE	-40°C to +85°C	PDIP	E22.4
CDP1874CE	-40°C to +85°C	PDIP	E22.4
CDP1875CE	-40°C to +85°C	PDIP	E22.4

Description

The CDP1872C, CDP1874C and CDP1875C devices are high-speed 8-bit parallel input and output ports designed for use in the CDP1800 microprocessor system and for general use in other microprocessor systems. The CDP1872C and CDP1874C are 8-bit input ports; the CDP1875C is an 8-bit output port.

These devices have flexible capabilities as buffers and data latches and are reset by $\overline{\text{CLR}}$ input when the data strobe is not active.

The CDP1872C and CDP1874C are functionally identical except for device selects. The CDP1872C has one active low and one active high select; the CDP1874C has two active high device selects. These devices also feature Three-state outputs when deselected. Data is strobed into the register on the leading edge of the CLOCK and latched on the trailing edge of the CLOCK.

The CDP1875C is an output port with data latched into the registers when the device selects are active. There are two active high and one active low selects. The output buffers are enabled at all times.

Pinouts



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Absolute Maximum Ratings

(Voltage referenced to V_{SS} Terminal) Input Voltage Range, All Inputs -0.5V to V_{DD} +0

Thermal Information

DC Supply Voltage Range, (V _{DD})	Thermal Resistance (Typical)	θ_{JA} (°C/W)			
(Voltage referenced to V _{SS} Terminal)	PDIP Package	75			
Input Voltage Range, All Inputs0.5V to V _{DD} +0.5V	Device Dissipation Per Output Transistor				
DC Input Current, Any One Input±10mA	T _A = Full Package Temperature Range				
	(All Package Types)	100mW			
	Operating Temperature Range (T _A)				
	Package Type E40	^o C to +85 ^o C			
	Storage Temperature Range (T _{STG})65°C to +150°C				
	Lead Temperature (During Soldering)				
	At distance 1/16 \pm 1/32 In. (1.59 \pm 0.79mm)				
	from case for 10s max	+265 ^o C			
CALITION's Stresses above these listed in "Absolute Meximum Defines" may as	use normanant demans to the device. This is a stress only rating	and anaration			

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Recommended Operating Conditions At T_A = -40 to +85°C. For maximum reliability, operating conditions should be selected so that operation is always within the following ranges:

PARAMETER	LIMITS ALL TYPES	UNITS
DC Operating-Voltage Range	4 to 6.5	V
Input Voltage Range	V_{SS} to V_{DD}	V

Static Electrical Specifications At T_A = -40 to +85°C, $V_{DD} \pm 5\%$, Unless Otherwise Specified.

		TEST CONDITIONS		LIMITS ALL TYPES				
PARAMETER		V _o (V)	V _{IN} (V)	V _{DD} (V)	MIN	(NOTE 1) TYP	МАХ	UNITS
Quiescent Device Current	I _{DD}	-	0, 5	5	-	25	50	μΑ
Output Low Drive (Sink) Current	I _{OL}	0.4	0, 5	5	5	10	-	mA
Output High Drive (Source) Current	I _{ОН}	4.6	0, 5	5	-4	-7	-	mA
Output Voltage Low-Level (Note 2)	V _{OL}	-	0, 5	5	-	0	0.1	V
Output Voltage High-Level (Note 2)	V _{OH}	-	0, 5	5	4.9	5	-	V
Input Low Voltage	V _{IL}	0.5, 4.5	-	5	-	-	1.5	V
Input High Voltage	V _{IH}	0.5, 4.5	-	5	3.5	-	-	V
Input Leakage Current	I _{IN}	-	0, 5	5	-	-	±1	μΑ
Three-State Output Leakage Current (Note 3)	I _{OUT}	0, 5	0, 5	5	-	-	±5	μΑ
Input Capacitance	C _{IN}	-	-	-	-	15	-	pF
Output Capacitance (Note 3)	С _{ОUT}	-	-	-	-	15	-	pF

NOTES:

1. Typical values are for T_A = +25°C and nominal V_{DD} ±5%.

2. $I_{OL} = I_{OH} = 1 \mu A$

3. For CDP1872C and CDP1874C only.



Dynamic Electrical Specifications At $T_A = 25^{\circ}C$, V_{DD} 5V, t_R , $t_F = 10$ ns, $V_{IH} = 0.7V_{DD}$, $V_{IL} = 0.3V_{DD}$, $C_L = 150$ pF

			CDP1872C, CDP1874C			
PARAMETER		MIN	(NOTE 1) TYP	(NOTE 2) MAX	UNITS	
INPUT PORT (FIGURE 4)						
Output Enable	t _{EN}	-	45	90	ns	
Output Disable	t _{DIS}	-	45	90	ns	
Clock to Data Out	t _{CLO}	-	45	90	ns	
Clear to Output	t _{CRO}	-	80	160	ns	
Data In to Data Out	t _{DIO}	-	50	85	ns	
Minimum Data Setup Time	t _{DSU}	-	10	30	ns	
Data Hold Time	t _{DH}	-	10	30	ns	
Minimum Clock Pulse Width	t _{CL}	-	30	60	ns	
Minimum Clear Pulse Width	t _{CR}	-	30	60	ns	

NOTES:

1. Typical values are for T_A = +25°C and V_{DD} ±5%. 2. Maximum values are for T_A = +85°C and V_{DD} ±5%

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FIGURE 4. TIMING WAVEFORMS FOR CDP1872C AND CDP1874C (INPUT-PORT TYPES)

Dynamic Electrical Specifications At $T_A = 25^{\circ}$ C, V_{DD} 5V, t_R , $t_F = 10$ ns, $V_{IH} = 0.7 V_{DD}$, $V_{IL} = 0.3 V_{DD}$, $C_L = 150$ pF

			LIMITS			
			CDP1875C			
PARAMETER		MIN	(NOTE 1) TYP	(NOTE 2) MAX	UNITS	
OUTPUT PORT (FIGURE 5)						
Clock to Data Out	t _{CLO}	-	50	100	ns	
Clear to Output	t _{CRO}	-	80	160	ns	
Data In to Data Out	t _{DIO}	-	50	85	ns	
Minimum Data Setup Time	t _{DS}	-	10	30	ns	
Data Hold Time	t _{DH}	-	10	30	ns	
Minimum Clear Pulse Width	t _{CR}	-	30	60	ns	

NOTES:

1. Typical values are for T_A = +25 oC and V_{DD} $\pm5\%.$

2. Maximum values are for T_A = +85°C and V_{DD} $\pm5\%$





FIGURE 6. CDP1874C USED AS AN INPUT PORT AND ADDRESS LATCH WITH CDP1875C USED AS AN OUTPUT PORT



FIGURE 7. CDP1872C USED AS AN INPUT PORT AND SELECTED BY CD74HC138



Intersil Corporation 7585 Irvine Center Drive Suite 100 Irvine, CA 92618 TEL: (949) 341-7000 FAX: (949) 341-7123 Intersil Corporation 2401 Palm Bay Rd. Palm Bay, FL 32905 TEL: (321) 724-7000 FAX: (321) 724-7946 EUROPE Intersil Europe Sarl Ave. William Graisse, 3 1006 Lausanne Switzerland TEL: +41 21 6140560 FAX: +41 21 6140579 ASIA Intersil Corporation Unit 1804 18/F Guangdong Water Building 83 Austin Road TST, Kowloon Hong Kong TEL: +852 2723 6339 FAX: +852 2730 1433