



MILITARY DATA SHEET

MNCD40174BM-X REV 0AL

Original Creation Date: 10/06/95
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HEX D FLIP-FLOP

Industry Part Number

CD40174BM

NS Part Numbers

CD40174BMJ/883
CD40174BMW/883

Prime Die

CD40174BM

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp Description

Temp (°C)

1	Static tests at	+25
2	Static tests at	+125
3	Static tests at	-55
4	Dynamic tests at	+25
5	Dynamic tests at	+125
6	Dynamic tests at	-55
7	Functional tests at	+25
8A	Functional tests at	+125
8B	Functional tests at	-55
9	Switching tests at	+25
10	Switching tests at	+125
11	Switching tests at	-55

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
 DC: Vss = 0V

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Iss	Power Supply Current	Vdd = 5V			1		uA	1, 3
					30		uA	2
		Vdd = 10V			2		uA	1, 3
					60		uA	2
		Vdd = 15V	3		4		uA	1, 3
	3		120		uA	2		
Vol	Logical "0" Output Voltage	Vdd = 5V, Iout < 1uA			.05		V	1, 2, 3
		Vdd = 10V, Iout < 1uA			.05		V	1, 2, 3
		Vdd = 15V, Iout < 1uA			.05		V	1, 2, 3
Voh	Logical "1" Output Voltage	Vdd = 5V, Iout < 1uA			4.95		V	1, 2, 3
		Vdd = 10V, Iout < 1uA			9.95		V	1, 2, 3
		Vdd = 15V, Iout < 1uA			14.95		V	1, 2, 3
Vil	Logical "0" Input Voltage	Vdd = 5V, Vout = .5V or 4.5V	1			1.5	V	1, 2, 3
		Vdd = 10V, Vout = 1V or 9V	1			3	V	1, 2, 3
		Vdd = 15V, Vout = 1.5V or 13.5V	1			4	V	1, 2, 3
Vih	Logical "1" Input Voltage	Vdd = 5V, Vout = .5V or 4.5V	1		3.5		V	1, 2, 3
		Vdd = 10V, Vout = 1V or 9V	1		7		V	1, 2, 3
		Vdd = 15V, Vout = 1.5V or 13.5V	1		11		V	1, 2, 3

Electrical Characteristics

DC PARAMETERS (Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
 DC: Vss = 0V

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Iol	Logical "0" Output Current	Vdd = 5V, Vout = .4V	3		.51		mA	1
			3		.36		mA	2
			3		.64		mA	3
		Vdd = 10V, Vout = .5V			1.3		mA	1
					.9		mA	2
					1.6		mA	3
		Vdd = 15V, Vout = 1.5V			3.4		mA	1
					2.4		mA	2
					4.2		mA	3
Ioh	Logical "1" Output Current	Vdd = 5V, Vout = 4.6V	3		-.51		mA	1
			3		-.36		mA	2
			3		-.64		mA	3
		Vdd = 10V, Vout = 9.5V			-1.3		mA	1
					-.9		mA	2
					-1.6		mA	3
		Vdd = 15V, Vout = 13.5V			-3.4		mA	1
					-2.4		mA	2
					-4.2		mA	3
Iil	Logical "0" Input Current	Vdd = 15V, Vin = 0V				-100	nA	1, 3
						-1000	nA	2
Iih	Logical "1" Input Current	Vdd = 15V, Vin = 15V				100	nA	1, 3
						1000	nA	2

Electrical Characteristics

AC PARAMETERS

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tPHL	Propagation Delay Time: Clock to Q	Vdd = 5V	4		1	300	nS	9
			4			420	nS	10
			4			240	nS	11
		Vdd = 10V	2			110	nS	9
			2			155	nS	10
			2			90	nS	11
		Vdd = 15V	2			90	nS	9
			2			130	nS	10
			2			70	nS	11
tPLH	Propagation Delay Time: Clock to Q	Vdd = 5V	4		1	300	nS	9
			4			420	nS	10
			4			240	nS	11
		Vdd = 10V	2			110	nS	9
			2			155	nS	10
			2			90	nS	11
		Vdd = 15V	2			90	nS	9
			2			130	nS	10
			2			70	nS	11
tPHL	Propagation Delay Time: Clear to Q	Vdd = 5V	4		1	300	nS	9
			4			420	nS	10
			4			240	nS	11
		Vdd = 10V	2			110	nS	9
			2			155	nS	10
			2			90	nS	11
		Vdd = 15V	2			90	nS	9
			2			130	nS	10
			2			70	nS	11
tSU	Time Prior to Clock Pulse that Data Must be Present	Vdd = 5V	1		100		nS	9
		Vdd = 10V	2		40		nS	9
		Vdd = 15V	2		35		nS	9

Electrical Characteristics

AC PARAMETERS (Continued)

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tH	Time After Clock Pulse that Data Must be held	Vdd = 5V	1			0	nS	9
		Vdd = 10V	2			0	nS	9
		Vdd = 15V	2			0	nS	9
tTHL	Transition Time	Vdd = 5V			1	200	nS	9
		Vdd = 10V	2			100	nS	9
		Vdd = 15V	2			80	nS	9
tTLH	Transition Time	Vdd = 5V			1	200	nS	9
		Vdd = 10V	2			100	nS	9
		Vdd = 15V	2			80	nS	9
tWH	Maximum Clock Pulse Width	Vdd = 5V	1		250		nS	9
		Vdd = 10V	2		100		nS	9
		Vdd = 15V	2		80		nS	9
tWL	Maximum Clock Pulse Width	Vdd = 5V	1		250		nS	9
		Vdd = 10V	2		100		nS	9
		Vdd = 15V	2		80		nS	9
tWL	Maximum Clear Pulse Width	Vdd = 5V	1		250		nS	9
		Vdd = 10V	2		100		nS	9
		Vdd = 15V	2		80		nS	9
Cin	Input Capacitance	Clear Input	2			15	pF	9
		Other Input	2			7.5	pF	9
tRCL	Maximum Clock Rise Time	Vdd = 5V	2			15	uS	9
		Vdd = 10V	2			5	uS	9
		Vdd = 15V	2			5	uS	9
tFCL	Maximum Clock Fall Time	Vdd = 5V	2			15	uS	9
		Vdd = 10V	2			5	uS	9
		Vdd = 15V	2			5	uS	9
fMAX	Maximum Clock Frequency	Vdd = 5V	2		2		MHz	9
		Vdd = 10V	2		5		MHz	9
		Vdd = 15V	2		6		MHz	9

Note 1: Parameter tested go-no-go only.

Note 2: Guaranteed parameter not tested.

Note 3: Applies to Class "S" only, except 38510. Drift Limits at 25 C for Iss = ±1uA, Iol = ±15%, Ioh = ±15%. "THIS NOTE IS INVALID AND CURRENTLY BEING UPDATED. CONTACT FACTORY."

(Continued)

Note 4: Tested at 25 C; guaranteed but not tested at +125 C & -55 C.