9+2-Bit Parity Generator/ Checker

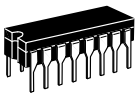
MC10170

The MC10170 is a 11–bit parity circuit, which is segmented into 9 data bits and 2 control bits.

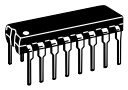
Output A generates odd parity on 9 bits; that is, Output A goes high for an odd number of high logic levels on the bit inputs in only 2 gate delays.

The Control Inputs can be used to expand parity to larger numbers of bits with minimal delay or can be used to generate even parity. To expand parity to larger words, the MC10170 can be used with the MC10160 or other MC10170's. The MC10170 can generate both even and odd parity.

P_D = 300 mW typ/pkg (No Load)
t_{pd} = 2.5 ns typ(Control Inputs to B Output)
4.0 ns typ (Data Inputs to A Output)
6.0 ns typ (Data Inputs to B Output)
t_r, t_f = 2.0 ns typ (20%–80%)

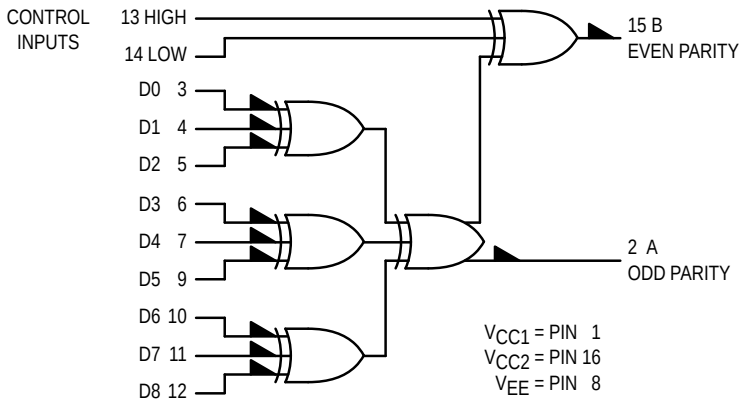


L SUFFIX
CERAMIC PACKAGE
CASE 620–10

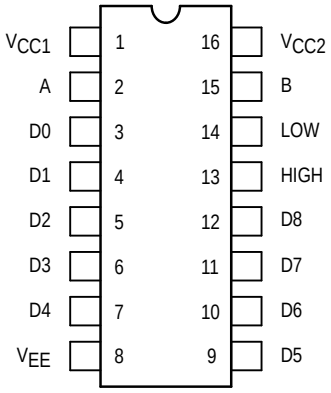


P SUFFIX
PLASTIC PACKAGE
CASE 648–08

LOGIC DIAGRAM



PIN ASSIGNMENT



INPUTS	OUTPUTS	
Sum of D Inputs at High Level	Odd Parity Output A	Even Parity Output B
Even	Low	High
Odd	High	Low

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Pin Under Test	Test Limits							Unit
			–30°C		+25°C			+85°C		
			Min	Max	Min	Typ	Max	Min	Max	
Power Supply Drain Current	I_E	8		78		57	71		78	mAdc
Input Current	I_{inH}	3 5		350 350			200 220		220 220	µAdc
	I_{inL}	3	0.5		0.5			0.3		µAdc
Output Voltage Logic 1	V_{OH}	2 15	–1.060 –1.060	–0.890 –0.890	–0.960 –0.960		–0.810 –0.810	–0.890 –0.890	–0.700 –0.700	Vdc
Output Voltage Logic 0	V_{OL}	2 15	–1.890 –1.890	–1.675 –1.675	–1.850 –1.850		–1.650 –1.650	–1.825 –1.825	–1.615 –1.615	Vdc
Threshold Voltage Logic 1	V_{OHA}	2 15	–1.080 –1.080		–0.980 –0.980			–0.910 –0.910		Vdc
Threshold Voltage Logic 0	V_{OLA}	2 15		–1.655 –1.655			–1.630 –1.630		–1.595 –1.595	Vdc
Switching Times (50Ω Load)										ns
Propagation Delay	t_{13+15+} t_{14-15-} t_{3+2-} t_{3-15+}	15 15 2 15	1.5 1.5 2.0 4.0	4.2 4.2 6.6 9.5	1.5 1.5 2.0 4.0	2.5 2.5 4.0 6.0	4.0 4.0 6.0 8.8	1.5 1.5 2.0 4.0	4.4 4.4 6.6 9.5	
Rise Time (20 to 80%)	t_{2+}	2	1.5	4.3	1.5	2.0	3.9	1.5	4.3	
Fall Time (20 to 80%)	t_{2-}	2	1.5	4.3	1.5	2.0	3.9	1.5	4.3	

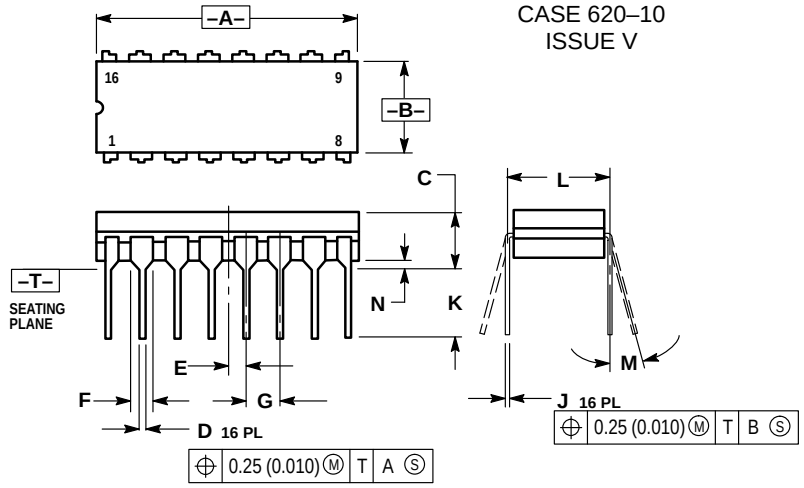
ELECTRICAL CHARACTERISTICS (continued)

				TEST VOLTAGE VALUES (Volts)					
			@ Test Temperature	V_{IHmax}	V_{ILmin}	V_{IHAmin}	V_{ILAmax}	V_{EE}	
			–30°C	–0.890	–1.890	–1.205	–1.500	–5.2	
			+25°C	–0.810	–1.850	–1.105	–1.475	–5.2	
			+85°C	–0.700	–1.825	–1.035	–1.440	–5.2	
Characteristic		**Symbol**	**Pin Under Test**	**TEST VOLTAGE APPLIED TO PINS LISTED BELOW**					**(V_{CC}) Gnd**
				V_{IHmax}	V_{ILmin}	V_{IHAmin}	V_{ILAmax}	V_{EE}	
Power Supply Drain Current		I_E	8						1, 16
Input Current		I_{inH}	3 5	3 5				8 8	1, 16 1, 16
		I_{inL}	3		3			8	1, 16
Output Voltage	Logic 1	V_{OH}	2 15	3, 4, 5 14				8 8	1, 16 1, 16
Output Voltage	Logic 0	V_{OL}	2 15	4, 5 13, 14				8 8	1, 16 1, 16
Threshold Voltage	Logic 1	V_{OHA}	2 15			5 13		8 8	1, 16 1, 16
Threshold Voltage	Logic 0	V_{OLA}	2 15				5 13	8 8	1, 16 1, 16
Switching Times	(50Ω Load)					**Pulse In**	**Pulse Out**	**–3.2 V**	**+2.0**
Propagation Delay		t_{13+15+} t_{14-15-} t_{3+2-} t_{3-15+}	15 15 2 15			13 14 3 3	15 15 2 15	8 8 8 8	1, 16 1, 16 1, 16 1, 16
Rise Time	(20 to 80%)	t_{2+}	2			3	2	8	1, 16
Fall Time	(20 to 80%)	t_{2-}	2			3	2	8	1, 16

Each MECL 10,000 series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 50–ohm resistor to –2.0 volts. Test procedures are shown for only one gate. The other gates are tested in the same manner.

OUTLINE DIMENSIONS

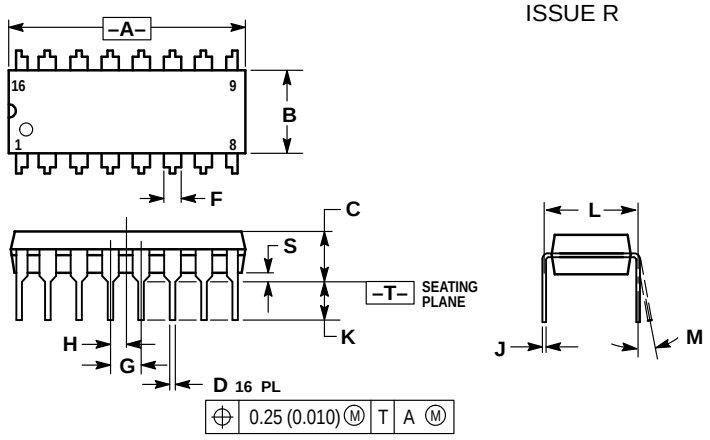
L SUFFIX
CERAMIC DIP PACKAGE
CASE 620–10
ISSUE V



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
4. DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.750	0.785	19.05	19.93
B	0.240	0.295	6.10	7.49
C	—	0.200	—	5.08
D	0.015	0.020	0.39	0.50
E	0.050 BSC		1.27 BSC	
F	0.055	0.065	1.40	1.65
G	0.100 BSC		2.54 BSC	
H	0.008	0.015	0.21	0.38
K	0.125	0.170	3.18	4.31
L	0.300 BSC		7.62 BSC	
M	0 °	15 °	0 °	15 °
N	0.020	0.040	0.51	1.01

P SUFFIX
PLASTIC DIP PACKAGE
CASE 648–08
ISSUE R



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0 °	10 °	0 °	10 °
S	0.020	0.040	0.51	1.01

How to reach us:
USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 303–675–2140 or 1–800–441–2447

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 602–244–6609
INTERNET: http://Design–NET.com

JAPAN: Nippon Motorola Ltd.; Tatsumi–SPD–JLDC, 6F Seibu–Butsuryu–Center, 3–14–2 Tatsumi Koto–Ku, Tokyo 135, Japan. 81–3–3521–8315

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park, 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852–26629298