89 | hexadecimal display decoder

Decoders for converting a four bit binary code into a hexadecimal display are often few and far between. With the aid of the PROM programmer featured elsewhere in this issue it is possible to solve the problem by programming a PROM to function as a hexadecimal display decoder.

There is exactly enough memory space in the 82S23 PROM, which is a 32 x 8 bit device, for such a decoder program. The eight outputs of the PROM control the seven segments of the display and the decimal point. When a logic '1' is present at the 'blank' input the display will be turned off.

The display in the circuit diagram is a MAN 4610A type. Other common anode types are of course also suitable, but pin connections may be different.

Before the PROM can fulfill its task it will have to be programmed. A suitable program is given in the table. If the data to be entered is inverted then, of course, common cathode displays can be used.

In principle, the 74S188 (also a 32 x 8 bit PROM) is equally suitable. The only problem is that it cannot be programmed with the programmer in this issue. The same connections, and the program, can however, still be used . . .

Table

DP E	D	C	B	A	DP Y8	a Y7	b Y6	c Y5	d Y4	e Y3	f Y2	g Y1	display
0	0	0	0	0	1	0	0	0	0	0	0	1	0
0	0	0	0	1	1	1	0	0	1	1	1	1	1
0	0	0	1	0	1	0	0	1	0	0	1	0	2
0	0	0	1	1	1	0	0	0	0	1	1	0	3
0	0	1	0	0	1	1	0	0	1	1	0	0	4
0	0	1	0	1	1	0	1	0	0	1	0	0	5
0	0	1	1	0	1	0	1	0	0	0	0	0	6
0	0	1	1	1	1	0	0	0	1	1	1	1	7
0	1	0	0	0	1	0	0	0	0	0	0	0	8
0	1	0	0	1	1	0	0	0	0	1	0	0	9
0	1	0	1	0	1	0	0	0	1	0	0	0	A
0	1	0	1	1	1	1	1	0	0	0	0	0	b
0	1	1	0	0	1	0	1	1	0	0	0	1	C
0	1	1	0	1	1	1	0	0	0	0	1	0	d
0	1	1	1	0	1	0	1	1	0	0	0	0	E
0	1	1	1	1	1	0	1	1	1	0	0	0	F
1	0	0	0	0	0	0	0	0	0	0	0	1	0.
1	0	0	0	1	0	1	0	0	1	1	1	1	1.
1	0	0	1	0	0	0	0	1	0	0	1	0	2.
1	0	0	1	1	0	0	0	0	0	1	1	0	3.
1	0	1	0	0	0	1	0	0	1	1	0	0	4.
1	0	1	0	1	0	0	1	0	0	1	0	0	5.
1	0	1	1	0	0	0	1	0	0	0	0	0	6.
1	0	1	1	1	0	0	0	0	1	1	1	1	7.
1	1	0	0	0	0	0	0	0	0	0	0	0	8.
1	1	0	0	1	0	0	0	0	0	1	0	0	9.
1	1	0	1	0	0	0	0	0	1	0	0	0	A.
1	1	0	1	1	0	1	1	0	0	0	0	0	b.
1	1	1	0	0	0	0	1	1	0	0	0	1	C.
1	1	1	0	1	0	1	0	0	0	0	1	0	d.
1	1	1	1	0	0	0	1	1	0	0	0	0	E.
1	1	1	1	1	0	0	1	1	1	0	0	0	F.

LD1 MAN 4610A

R1 330Ω R2 330Ω R3 330Ω R4 330Ω R5 330Ω R6 330Ω R7 330Ω R8 330Ω

IC1 82S23

BINARY

DEC. POINT

BLANK

5 V

80549