Digital Mark Space

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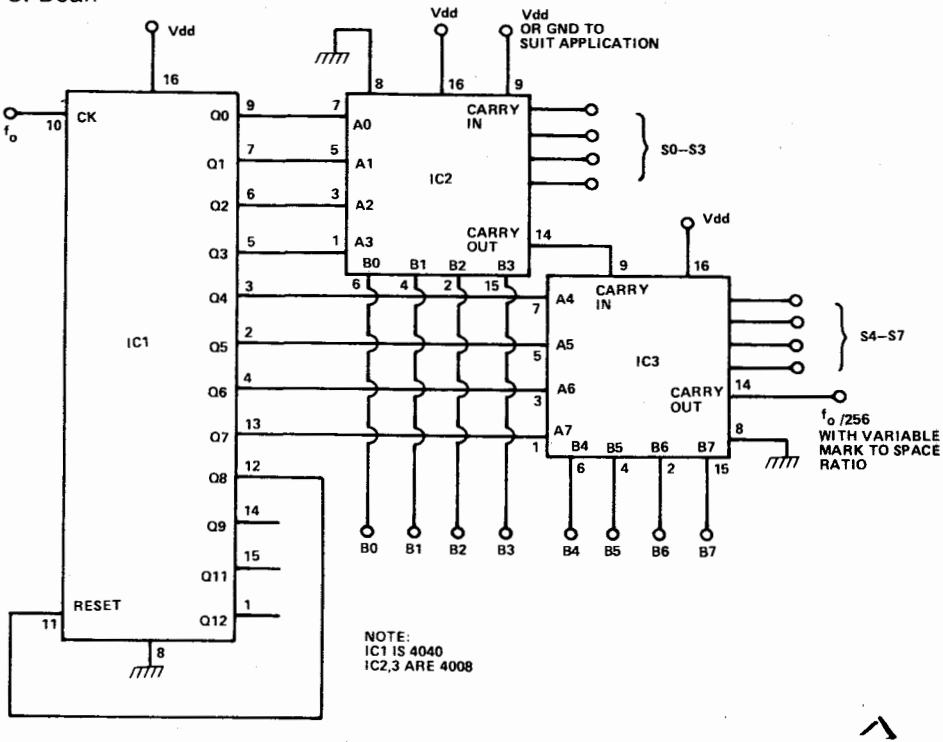

This circuit provides a mark/space ratio at the C_{out} pin which depends on the binary value set up on B0 and B7. As Q0 to Q7 gradually increases in value, due to incoming clock pulses, C_{out} = 0 if Q0. . .Q7 + B0. . .B7 X 11111111 and C_{out} = 1 if Q0. . .Q7 + B0. . .B7 X 11111111. The higher the value of B0. . .B7, the quicker C_{out} will become 1 after Q0. . .Q7 is automatically reset, and the higher the value of the mark space ratio. The proportion of time that C_{out} is 1 is given by:

$$\frac{(\text{Value of B0. . .B7}) + C_{in}\ (=0 \text{or} 1)}{256}$$

Note that for C_{out} to be permanently 0 C_{in} must be 0 (and B0. . .B7 = 00000000) and that the C_{out} to be permanently 1 C_{in} must be 1 (and B0. . . B7 = 11111111).

The circuit could have its clock input connected to a microprocessor clock, B0. . . B7 connected to the data bus and C_{out} to moving coil meter or a red/green LED (RS 587-080). Then the meter reading will be proportional to, or the colour of the LED will depend on, the value of B0. . .B7.