

APPLIED IDEAS

p lines to 2^p lines decoder design with N74154

It is well known that an N74154 can be used as 4 lines to 16 lines decoder. We give below an idea to extend the use of N74154 for p lines to 2^p lines decoder, for $p > 4$. (For $p \leq 4$ only one N74154 can be used) In the normal 4 line to 16 line operation, N74154 is enabled when G_1 and G_2 are low and disabled when G_1 and/or

G_3 are high. This property of N74154 is made use of in this extension.

Consider for example a 6-line to 64 lines decoder as shown in Fig. 1. As the output of N74155 is low for the required pin, this output is used as the gating input for N74154 to enable the required chip, and the outputs obtained on N74154

at pins as low. This idea can be further extended to 7-line to $2^7 = 128$ lines decoder using the same N74155 as 3 lines to 8 lines decoder and gating the outputs to 8 nos. of N74154 to obtain the 128 line decoded outputs.

Further, if the input is of 8 lines ABCDEFGH, then the inputs EFGH can be given to one

more N74154, the outputs of which in turn are connected to gating pins of 16 nos. of N74154 to obtain the 256 line decoded outputs.

Hence the circuit using combinations of only N74154 and N74155 can be used as a multiline decoder.

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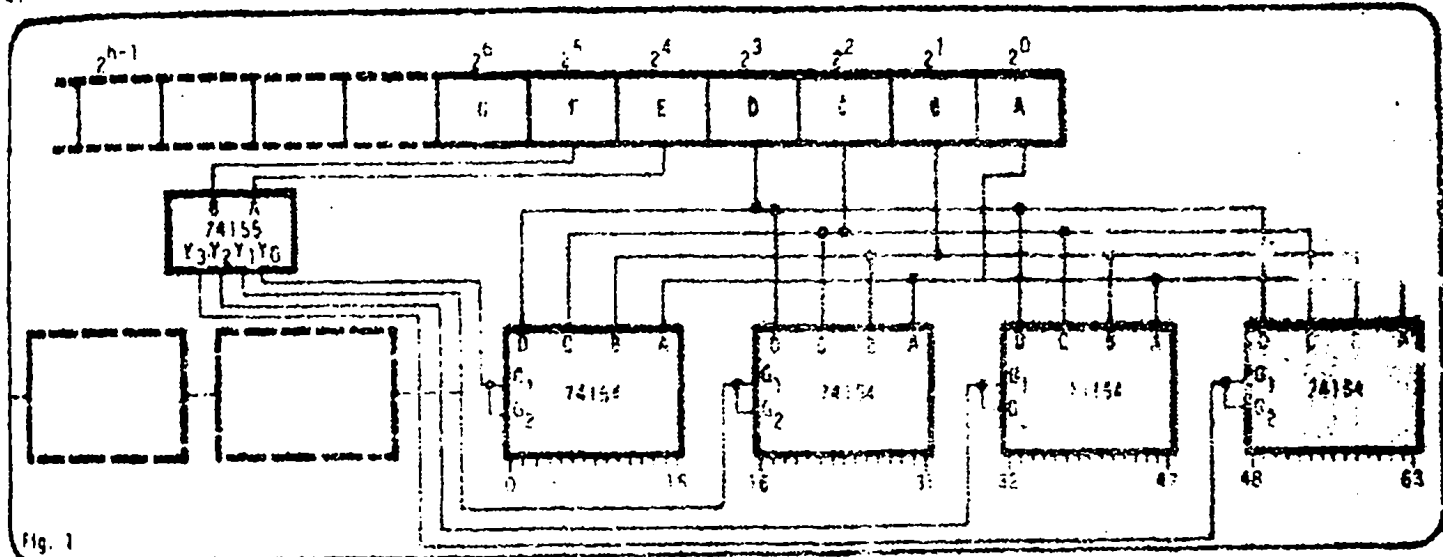


Fig. 1