

surround sound indicator

The proposed circuit indicates with the aid of two LEDs whether or not the input signal contains surround data. The criterion for this is the phase difference between the two channels: if this is zero, there is no surround data.

In the circuit diagram, if there is a phase difference between the two channels, the output levels of comparators IC_{1b} and IC_{1c} will differ. These outputs are constantly compared by XOR gate IC_{2c}, and, in case of a difference, the output of the gate will go high. Depending on the output state, the red or green half of D₁ will be actuated via gate IC_{2d}, which is here connected as an inverter. In case of a pure surround signal, the red half will light brightly; in case of a mono signal, the green half will. If the input is a standard stereo signal, the rapid changes in the output of IC_{2c} will cause the diode to appear yellow-orange.

The circuit is an improved version of the design published in our January 1995 issue. There are two worthwhile improvements. The first is that the comparators are now Type OP470. To make sure that the

comparators react satisfactorily with small input signals, the offset in the older version had to

resistor is determined by the requirement that the outputs of the comparators must be low

values.

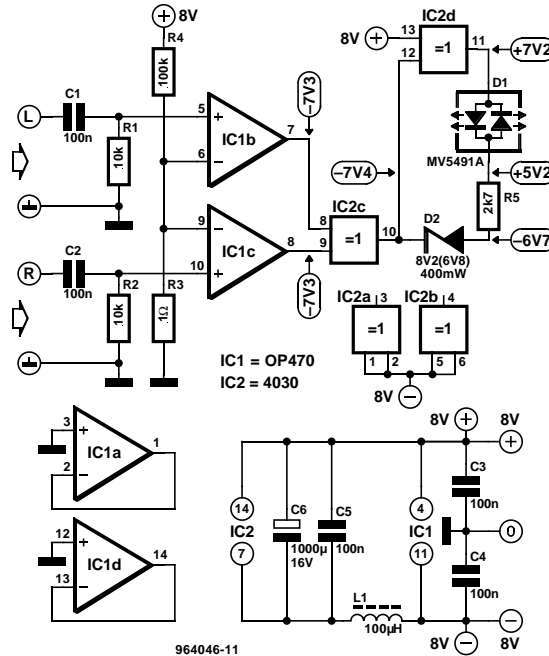
The second improvement is the addition of D₂. This is because brightness of the red and green halves of the LED used here differ from one another when the currents through them are equal. This results in the stereo indication being far too red. The additional diode acts as a zener for the red half and as a normal diode for the green half. The best rating for it appears to be 6.8 V or 8.2 V.

The circuit draws a current of about 15 mA.

Inductor L₁ and capacitors C₅ and C₆ have been added to prevent IC₂ affecting the operation of the comparators via the supply lines.

A final note. Internally, there is a diode limiter between the inputs of the comparators which clips input signals above about 1 V. If, therefore, input signals higher than, say, 700 mV are expected, it is advisable to connect a resistor of a few kilohms in series with C₁ and C₂.

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be greater than 15 mV. With the OP470, an offset of a few mV is sufficient, so that R₃ is now only 1 Ω. The value of this

(≈ -7.3 V) in the absence of a signal. If this does not happen with 1 Ω, the value of R₃ may be increased by a couple of E12