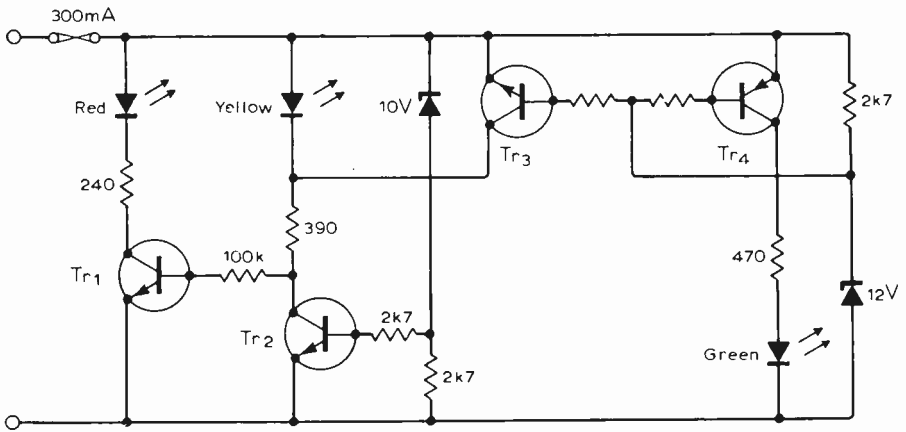

Automotive voltage indicator

An indication of battery voltage is useful to the motorist for monitoring the battery's capacity to delivery current, and as a check on the efficiency of the dynamo or alternator. This circuit is a solid-state alternative to a moving coil meter. The table shows the outputs obtained over the critical range of 10 to 14V.

When the input is below 10V, Tr_2, Tr_3, and Tr_4 are off and Tr_1 is turned on. As the voltage rises the 10V zener diode begins to conduct, Tr_2 receives base current and turns Tr_1 off.

At approximately 11V both Tr_1 and Tr_2 are on, but at 12V only Tr_2 is on. Similarly, Tr_4 is turned on as the voltage rises to 14V and the 12V zener conducts.

Transistor Tr_3 takes current from the yellow l.e.d. and turns it off while Tr_2 remains in conduction to keep the red l.e.d. off. The circuit can be easily modified for different voltages by changing the zener diodes.

Red	Yellow	Green	Voltage
1	0	0	$\leqslant$10V
1	1	0	11V
0	1	0	12V
0	1	1	13V
0	0	1	$\geqslant$14V

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