Output Dropout Alarm frees engineers' time

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When testing a power supply, looking for the output to dip a quarter of a volt, or running a thermal test , making sure it does not thermal cycle, you can either sit there and watch the output on an oscilloscope or monitor the output voltage to make sure it does not shut down for a short period of time. In our lab, we have hit upon another way that has saved us and our customers a lot of grief: a voltage monitor that can be attached to the output, or paralleled to a volt meter monitoring the output. If the voltage dips or shut off, it sounds a latching beeper that tells you the event happened even while you were gone. The buzzer can then be reset until the next event happens.

The circuit (figure below) consists of a LM393 comparator that has a 2.5 volts reference in the non-inverting input. The reference is compared to the output of a power supply that is divided down by R1 and R5. This voltage can be set by R1 from the unit shutting down, because of thermal shutdown, to perturbations of the output. The output of the LM393 triggers a SCR (2N5060) that latches the buzzer on until the momentary switch is depressed and the alarm is reset. R6 parallels the buzzer to guarantee the latching current through the SCR. This gives the engineer freedom to do something else and not miss the shutdown or other event. The whole circuit can run off a 9-volt battery or be connected to a power source. The other end can be inserted into a multimeter thus monitoring the event and latching the buzzer to let the person know that the event has happened.

One side provides power from a 9V source. The other side is paralleled to a digital multimeter. The potentiometer is set to trip the alarm to the desired voltage. If a thermal test is running, the pot is set so the alarm does not trip with the output up and running. If the output drops, even a little, than the alarm beeps to let the person know that it has happened even though the person was not there to watch it.