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Auto-Retry Controller Suits Telecom Applications

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Abstract: In Telecom systems such as Radio Link and Point to Point, the point-to-multipoint controller shuts the system off in the event of a fault. When the fault is brief (for instance, a momentary short circuit due to measurement and calibration actions), the auto-retry controller attempts to restart the system.

The MAX1637 (IC2 in **Figure 1**) is a popular device for telecom applications. It offers PWM operation, small size, high MOSFET-drive capability, wide V_{IN} and V_{OUT} ranges, and excellent protection against over- and under-voltage faults.

Undervoltage is related to a short circuit: V_{OUT} falls when a short circuit is present and the controller cannot regulate the supply voltage. If that voltage remains below 70% of its nominal value for 6144 clock cycles, IC2 latches and turns both devices off. To restart IC2, you must either switch off the power supply or toggle the active-low SHDN signal.
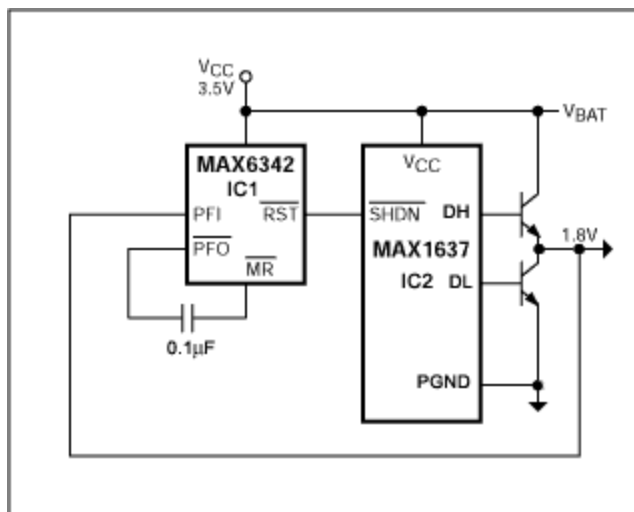

Figure 1. The circuit adds auto-retry capability to IC2, thereby enhancing its usefulness for telecom and other applications.

The microprocessor supervisor (IC1) includes an internal power-fail comparator and manual-reset circuitry (MR). IC1's PFI input detects whether V_{OUT} (1.8V) is above the internal reference voltage

(1.25V). If V_{OUT} falls below 1.25V (due to a short circuit, for instance), the active-low PFO output generates a pulse using the internal 60k pull-up resistor and external 0.1µF capacitor. The pulse drives active-low MR low, causing active-low RST to assert and pull active-low SHDN low. After a timeout delay of 140ms, active-low RESET and active-low SHDN go high, re-enabling IC2. This supervision is also in effect when the supply voltage is first switched on: the 3.5V rail stabilizes after 140ms, causing active-low RST to go high and activate IC2.

A similar version of this article appeared in the September 2, 2002 issue of *Electronica* magazine.

Related Parts		
MAX1637	Miniature, Low-Voltage, Precision Step-Down Controller	Free Samples
MAX6342	6-Pin µP Reset Circuit with Power-Fail Comparator	Free Samples

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