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## **OR-ing controllers simplify redundant power**

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No. Smithfield, RI—Picor's Cool-ORing family of full-function active OR-ing controllers (PI2121, PI2122, PI2123, PI2125) and basic active OR-ing controllers (PI2001, PI2002, PI2003, external MOSFET required) simplify connection and power management in redundant power architectures for high-availability systems such as servers, high-end computing, and telecom and communications infrastructure systems. "The Cool-ORing solutions can substantially reduce power dissipation by up to ten times versus conventional diode OR-ing solutions, eliminating the need for unnecessary thermal management overhead, while reducing board real estate by over 50 percent and maintaining benchmark dynamic response," said Carl Smith, director of Strategic Marketing and Business Development.

The PI2121/PI2123/PI2125, which include a high-speed controller and very low on-state resistance MOSFET in a thermally enhanced 5-by-7 mm land grid array package, serve in a variety of redundant bus applications. They feature very low power dissipation and very fast (160 ns) dynamic response to system-level power source fault conditions. The PI2121 is an 8-volt, 24-amp solution suitable for 5-volt bus applications. The PI2123 is a 15-volt, 15-amp device for 9.6-volt buses, and the PI2125 is a 30-volt, 12-amp device for 12-volt buses.

The PI2121/PI2123/PI2125 maintain their full current ratings over a wide range of operating temperature. Typical on-state resistance of the devices' MOSFET is 1.5, 3, and 5.5 milliohms for the PI2121, PI2123, and PI2125, respectively. Each product can also be paralleled to address higher current requirements through a master/slave feature. The PI2121/PI2123/PI2125 detect normal forward, excessive forward, light load, and reverse current flow through their internal MOSFETs, and report fault conditions via an active low fault flag output. A temperature-sensing function indicates a fault if the maximum junction temperature exceeds 160°C. The under-voltage and over-voltage thresholds are programmable via external resistor dividers.

The PI2122 is a complete full-function active OR-ing solution with a circuit breaker feature, suitable for 5-volt bus applications where added protection against load fault conditions is required. Rated at 7 volts and 12 amps, it includes back-to-back MOSFETs (on-resistance is typically 6 milliohms) and acts as a true bidirectional switch with fast response (140-170 ns) to both input power source and output load fault conditions. When the PI2122 detects excessive forward current, over temperature, under and over-voltage

faults, it rapidly turns off the internal MOSFETs to disconnect the load. The PI2122 also provides a user programmable auto-retry off-time during excessive forward current fault conditions.

As for the basic controllers, the PI2001 has a similar functionality and feature set to the PI2121/PI2123/PI2125 for use with industry standard single or paralleled MOSFETs. The PI2002 has a load disconnect feature that functions similar to the PI2122, but is designed for use with industry standard back-to-back N-channel MOSFETs. The PI2003 controller is specifically optimized for use in -48 volt redundant power architectures, and is suitable for systems requiring operation during input voltage transients up to 100 volts for 100 ms. The device's low quiescent current allows simple low-loss biasing directly from the -48 volt rail.

*Datasheets:* Click [here](#).

*Pricing:* The full-function Cool-ORing solutions (PI2121/PI2123/PI2125 are available at \$1.98 each, and \$2.18 each for the PI2122, all in 10k pieces. The basic Cool-ORing controllers (PI2001/PI2002/PI2003) are each available in two packages. The 3-by-3 mm, 10-lead TDFN is available at 84 cents for the PI2001 and PI2003, and 92 cents for the PI2002, all in 10k pieces. The 8-lead SOIC package option is available at 76 cents for the PI2001 and PI2003, and at 83 cents for the PI2002. Production volumes will be available from Q4 '08.

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