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Welded copper leads minimize resistance shift caused by solder wicking...

PRECISION CURRENT SENSE POWER RESISTORS FROM IRC CARRY 5-WATT DISSIPATION RATING FOR AUTOMOTIVE APPLICATIONS

BOONE, N.C. (March 17, 2004) — Providing automotive electronics design engineers with a high current, flameproof alternative to conventional axial devices, TT electronics IRC Wirewound and Film Technologies Division offers an open air metal element current sense resistor with one of the highest power ratings available in a precision device – up to 5 watts at 85°C.

Designated the OAR Series, these open-air through-hole devices consist of a custom-engineered resistive element welded to copper leads with integral stand-offs from the PC board. Copper leads minimize the resistance shift caused by solder wicking, which often occurs with single alloy resistors when excess solder forms on the base of the resistor. Even a small amount of solder wicking on competing single alloy components can alter the resistance value of the device in the circuit by as much as 30%. In contrast, the welded copper leads in IRC's OAR Series are forgiving of the inherent uncertainty in actual post-solder wick connection points. As a result, IRC's OAR customers enjoy precision performance in a demanding environment.

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The unique form factor keeps the “hot spot” of the resistive element safely off the PC board and allows air to circulate under it, allowing increased heat dissipation and cooler operation.

“The OAR Series resistors are used extensively in automotive current-sense applications due to their rugged construction and high power ratings,” explained David Winkler, product manager at IRC’s Wirewound and Film Technologies Division. “As more automotive subsystems require current-sensing for small electric motor control, power regulation or safety circuits, design engineers are specifying the OAR Series resistors where competing technologies are unable to handle high current, or where a flameproof alternative to organically-molded axial devices is needed.”

Automotive applications for the OAR Series resistors include current sense, feedback and surge protection circuits in ABS systems, window lift and sunroof motors, wiper controls, body computers, power steering systems, seat belt pre-tensioners, fuel pumps, heated seats, flasher modules and solenoid controls. The component is uniquely situated to support the automotive industry’s increasing usage of small electric motors for motion control and energy monitoring.

The OAR Series resistors are rated for 1W, 3W or 5W at 85°C, with resistance values from 0.1Ω to 0.005Ω, with tolerances down to ±1%. They feature TCRs as low as ±20ppm/°C and inductance values in the single-digit nanoHenry range. Operating temperature range is –40°C to +125°C. IRC will also produce OAR Series resistors to customer requirements outside these standard specifications.

Typical pricing for OAR Series resistors ranges from \$0.16 to \$0.25 based on automotive industry volumes. Lead-times are from stock to 8 weeks.

For additional information about the IRC Wirewound and Film Technologies Division contact them at 828-264-8861, via mail at P.O. Box 1860 Boone, N.C. 28607, e-mail at waft.sales@irctt.com or visit IRC on the web at www.irctt.com.

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IRC Inc. is a leading international manufacturer of advanced film, metal glaze and wirewound resistive products with facilities in Boone, N.C.; Smithfield, N.C.; Barbados, West Indies; and Corpus Christi, Texas. IRC is part of TT electronics plc, a leading global electronics company manufacturing a range of specialist products, including electronic passive components, electromechanical and electronic assemblies and sensor modules for the automotive, telecommunications, computer, medical and aerospace markets. TT electronics' Web site can be found at: www.ttelectronics.com.

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