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Resistor manufacturer provides design recommendations to maximize device's power rating...

IRC'S OPEN AIR SMT METAL ELEMENT RESISTORS DEVELOPED FOR CURRENT SENSE CIRCUITS UP TO 5W

LAS VEGAS, NV (May 6, 2008) — Developed specifically to provide a current sense device with high current-carrying capability for power electronics circuits, the OARS-XP Series metal element resistors from TT electronics IRC deliver power ratings up to 5 watts in a unique, flameproof open-air surface mount form factor that offers the maximum heat dissipation for a PC board mounted component.

The OARS-XP Series resistors consist of a 0.25" wide metal element resistance alloy, welded to compliant copper terminals designed to handle TCE (thermal coefficient of expansion) mismatch between the device and the PC board. Unlike other resistor technologies, such as thin film, thick film or foil devices, the open air metal element will not experience degradation of performance at extreme temperatures, even up to 500°C (a conservative temperature rating for the alloy itself). However, since most PCB solder materials typically melt between 183°C and 230°C, the solder will reflow long before the device itself experiences any heat damage.

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IRC'S OPEN AIR METAL ELEMENT CURRENT SENSE RESISTORS RATED UP TO 5W, PG. 2

According to IRC application engineer Bryan Yarborough, the company provides specific recommendations to design engineers for maximizing the heat dissipation of the OARS-XP Series resistors when developing PCB layouts and traces for the devices. “As with any component, the practical power rating for the device is ultimately dependent upon the PCB design,” Yarborough explained. “These factors include allowing adequate width and thickness of the traces for the device, maintaining adequate airflow across the PCB, and avoiding the placement of the device in close proximity to other heat-generating components, such as transformers, power components or microprocessors.”

As an example, an OARS-XP Series device can achieve a 3W power rating if mounted on a standard FR-4 PCB with traces at least 0.25” wide with a minimum of 2 oz. of copper. With wider and/or thicker traces, or multilayer traces designed to efficiently draw heat away from the component, the device dissipates up to 5W of power, Yarborough continued.

Applications for the OARS-XP Series resistors include surge and pulse circuits, AC power applications, and current sensing and feedback circuits.

Resistance value for the resistor ranges from 1m Ω to 25m Ω (.001 Ω to .0025 Ω), with tolerances down to $\pm 1\%$. Inductance values are less than 10 nanohenries, with operating temperature ranging from -40°C to +125°C. IRC will also produce devices outside these specifications to meet customer requirements. Lead-free RoHS-compliant and zero ohm jumper versions are also available.

Typical pricing for OARS-XP Series resistors is \$0.53 each in quantities of 10,000 pieces. Lead time is from stock to 10 weeks.

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IRC'S OPEN AIR METAL ELEMENT CURRENT SENSE RESISTORS RATED UP TO 5W, PG. 3

For additional information on IRC's OAR-XP Series resistors or to discuss design options, please access the Web site at <http://www.irctt.com/products.aspx?frmCategory=22>. For additional information, please contact the TT electronics IRC Sales & Marketing Department at 361-992-7900; via mail at 4222 S. Staples St., Corpus Christi, TX 78411; or e-mail at afdsales@irctt.com.

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

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