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*Visible LEDs operate at full power in displays with economical aluminum substrates...*

## **IRC'S ANOTHERM™ PC BOARDS TAKE THE HEAT OFF LEDs IN DISPLAY APPLICATIONS**

CORPUS CHRISTI, TX (May 24, 2005) — Giving display system design engineers a lighter, cooler and less expensive method of mounting multiple visible LEDs, TT electronics IRC Advanced Film Division recently developed an economical anodized aluminum substrate material with superior thermal conductivity that addresses the problem of heat dissipation in direct-mounted LED arrays.

Designated as AnotherM™ substrate, the thermally-conductive aluminum alloy material enables design engineers to mount visible LEDs and other components directly to it, thus eliminating the need for attached heatsinks, mounting hardware and the associated assembly costs. Economical solderable thick film conductors can be screen-printed directly to the AnotherM substrate to connect surface mount packaged components as well as wire-bonded die.

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## **IRC'S ANOTHERM™ ELIMINATES HEATSINKS FOR DISPLAY APPLICATIONS, PG. 2**

“As the brightness of visible LEDs has improved, design engineers have started to specify them for interior lighting, indoor/outdoor signage, scoreboards, and large-format static and dynamic display applications. Compared to conventional lighting technology, LEDs have significantly longer life and use far less energy; but even though they run cooler than incandescent bulbs, they typically require a bulky external heatsink or messy thermal grease to dissipate heat,” explained Tom Morris, applications engineering manager for the TT electronics IRC Advanced Film Division.

“Our Anotherm aluminum PC boards enable the design engineer to mount these high power LEDs directly to a heat-conducting substrate, so that the heat produced by the LED is conducted away from the circuitry,” Morris continued. “In effect, the PC board becomes the heatsink, which lowers assembly and material costs by eliminating external heatsinks, mounting clips and other hardware.”

In addition to displays and signage applications, the Anotherm substrates are being designed into other power electronics circuits, motor controls and power amplifiers, Morris said.

The Anotherm substrates are made from 3003 or 6061 aluminum alloy, which exhibits a thermal expansion coefficient similar to FR4 PC board (23.4ppm/K vs. 16-20ppm/K, respectively); yet, the material's thermal conductivity (the ability to dissipate heat) is characterized at 173W/m-K — far superior to other types of traditional substrates (0.8W/m-K for FR4 PC board; 17.3W/m-K for 304 stainless steel; or 21W/m-K for 96% alumina ceramic).

An insulation system consisting of a thin layer of anodized aluminum oxide is chemically grown on the aluminum core, producing a dielectric layer approximately 0.0014 inches thick (0.035mm), which provides an inorganic insulation that is not affected by temperature or chemical exposure.

This rugged construction gives Anotherm technology the ability to operate in extreme temperatures – up to 400°C (without soldered components); or up to 175°C using high-temperature solder. Maximum operating voltage is 250VAC, and thermal impedance is characterized at 0.2°C/W. The Anotherm material can be made in any size up to 8 inches by 10 inches (203mm x 254mm) and in any thickness up to 0.75 inches (19mm).

### **IRC'S ANOTHERM™ ELIMINATES HEATSINKS FOR DISPLAY APPLICATIONS, PG. 3**

Another therm substrates can be designed specifically to customer applications. Typical pricing for the Another therm substrate material starts at \$0.15/square inch, with lead times from 3 to 4 weeks for prototypes, depending on board configuration and size.

For more information on IRC's Another therm technology or to discuss design options, contact the TT electronics IRC Advanced Film Division Sales & Marketing Department at 361-992-7900; via mail at 4222 S. Staples St., Corpus Christi, TX 78411; e-mail at [www.afdsales@irctt.com](mailto:www.afdsales@irctt.com), or visit the IRC Web site at [www.irctt.com](http://www.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.

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