Electro Optical Components, Inc.
5464 Skylane Boulevard, Suite D, Santa Rosa, CA 95403
Toll Free: 855-EOC-6300
www.eoc-inc.com | info@eoc-inc.com

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TECHNOLOGY INSIGHTS 24/01

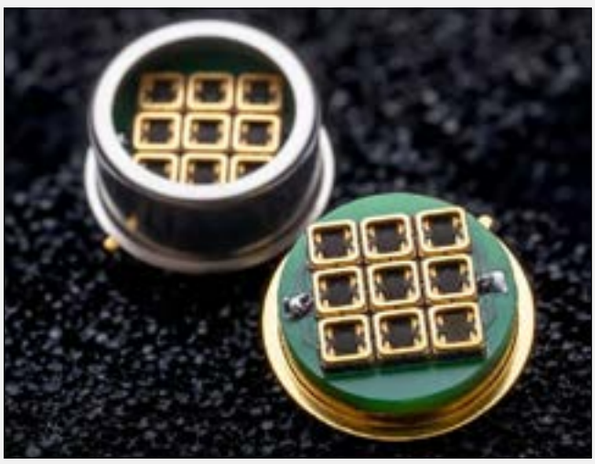

Fig. 1: Infrared emitter matrix with 3x3 individually controllable elements in a standard TO-8 housing for remote sensing applications.

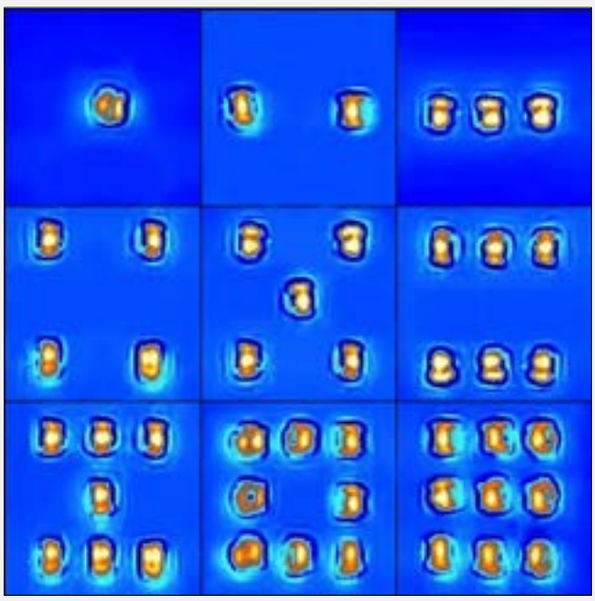

Fig. 2: The infrared dice – Infrared images of a 3x3 infrared emitter matrix showing some possible infrared characters.

HIGHLIGHTS

- SMD package enables efficient and fully-automatic assembly in high-volume applications.
- SMD-packaged IR emitters will pave the way to completely new applications.
- IR communication – generate infrared characters with a simple IR emitter matrix.

The infrared dice – remote sensing of infrared characters

SMD-packaged infrared emitters

SMD stands for Surface Mount Device and refers to electronic components that are mounted directly onto the surface of printed circuit boards (PCBs). These packages are designed to be smaller and more efficient than traditional through-hole packages, which are still the standard of infrared (IR) optical components. However, SMD packages are the dominant choice in modern electronics manufacturing due to their advantages in size, cost, performance, and ease of automation in assembly.

INFRASOLID's unique and patented infrared emitter technology allows the fabrication of highly efficient and miniaturized thermal IR emitters in different SMD packages. As shown in Fig. 1, the high degree of miniaturization enables a compact arrangement of IR emitter matrices with individually controllable elements. The SMD-packaged IR emitters feature a broadband radiation spectrum and can be equipped with different filter windows allowing to emit different wavelengths, i.e. to display different colors.

Automation and high-volume applications

SMD technology increases the efficiency and automation of PCB assembly, leading to higher production rates, fewer errors, less waste, and reduced costs. SMD components tend to be more robust to physical shock and vibration because of their small size and larger surface area in contact with the PCB. The small size enables a higher density of components on a PCB, leading to smaller, more compact electronic devices. SMD-packaged infrared emitters will therefore pave the way to completely new applications, like in hand-held, portable, and wireless devices for gas sensing, material analysis, and remote sensing.

Remote sensing applications

A SMD IR emitter array, e.g. with 3x3 elements, can generate different IR characters, as shown in Fig. 2, for the communication and identification in remote sensing applications as well as for precise alignment of optical systems. It enables also a detection in challenging visual conditions, harsh environments, and over long-distances.

Let's roll the infrared dice together and ask for our SMD IR emitters in your future applications!