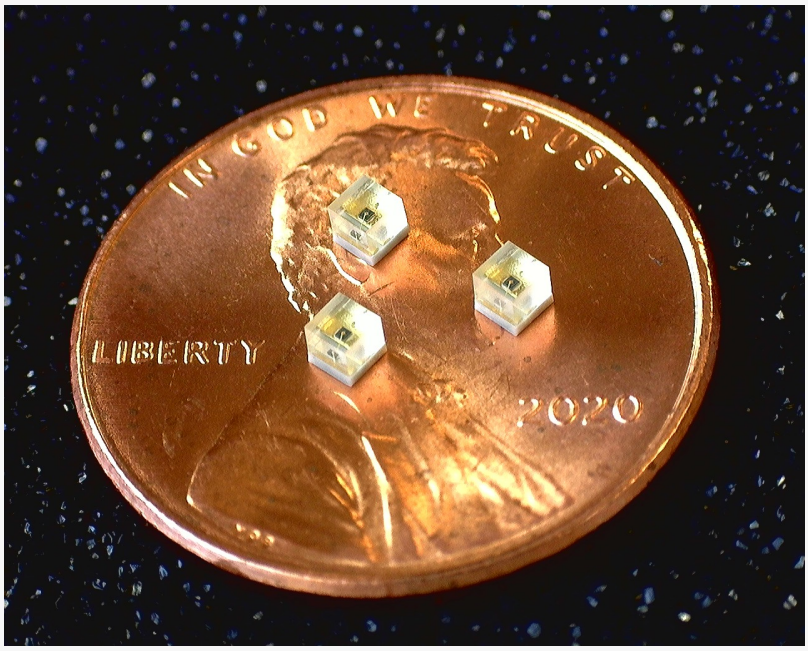
Marktech Expands Their Innovative Optoelectronics Packaging with Chip-scale SWIR LEDs, Multichips & ATLAS Hermetic SMD.

Our CSP SWIR LEDs have a wavelength range from 1040 to 1650 nm. Our ATLAS package combines TO-can hermeticity with surface mount manufacturability.



Short Wave Infrared Emitters in a Chip Scale Package (CSP) Introduced by Marktech Optoelectronics – An Industry First


Marktech Optoelectronics Multiwavelength and Multiple Chip Emitter and Detector Packaging

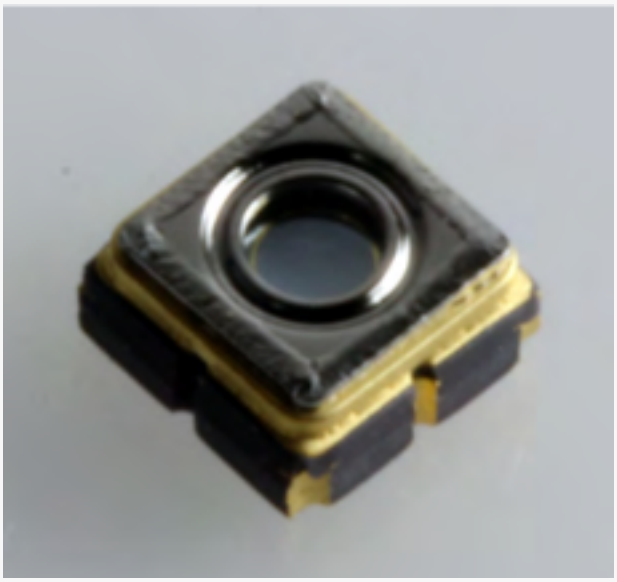
LATHAM, NY, US, October 22, 2021 /EINPresswire.com/ -- Marktech Optoelectronics, Inc. (www.marktechopto.com)(Marktech), a privately-held and veteran-owned leading designer and manufacturer of standard and custom optoelectronics, including UV, visible, near-infrared (NIR), and short-wavelength infrared (SWIR) emitters, detectors, InP epi wafers, and other compound semiconductors, today announced the introduction of chip-scale packaged (CSP) short wave infrared emitters (also known as CSP SWIR LEDs, CSP short wave IREDs, or CSP SWIR emitters).

The availability of SWIR LEDs or emitters in a chip-scale packaged form factor is an industry first. The compactness of the new CSP SWIR LEDs is impressive. In fact, a dozen or more of Marktech's CSP SWIR emitters would fit on the surface of a penny.

Chip Scale Packaged SWIR LED Emitters – An Industry First

These Next-Generation CSP short wave IR emitters have an extremely small footprint compared

to conventional short wave IR emitters in surface mount device (SMD) or transistor outline (TO) metal can packages. The new short wave IR emitters consist of a high-performance SWIR chip in an extremely compact 1.6mm x 1.6mm x 1.6 mm cube-shaped SMD package with two lead pads. The flat lens design produces a wide or Lambertian radiation pattern with beam angles of 130°. The high-performance CSP short wave infrared emitter products are available in wavelengths ranging from 1040 to 1650 nm.



High Speed InGaAs PIN Photodiode in ATLAS Hermetic SMD Ceramic Packaging

1020nm and 1720nm CSP short wave IR emitters are available using conventional, lower power output SWIR chips. Marktech Optoelectronics can provide additional engineering and testing to deliver specific wavelengths and forward voltages as well as tighter power output bands through sorting or epi material customization. In machine vision and inspection, SWIR bandpass filters or longpass filters can be used in conjunction with SWIR light sources and SWIR cameras to adjust the bandwidth or pass only the SWIR light required for imaging – thereby increasing SWIR image contrast and resolution.

> Adoption of CSP SWIR LEDs, multiple wavelength-multichip devices, & hermetic SMD ATLAS packaging in optoelectronic projects will result in breakthrough designs in many industrial applications."
>
> *Vincent Forte, Chief Technology Officer*

The major performance attributes of Marktech's Chip Scale Packaged SWIR LED Emitters include:

- Up to double the power output - up to 2X the power output compared to older SWIR LED chips
- Compact CSP LED size enables high stacking density on a printed circuit board (PCB)
- Improved SWIR component reliability
- Increased SWIR component lifetime or mean time between failures (MTBF)
- Lower thermal resistance compared to plastic leaded chip frame (PLCC) SMD SWIR LEDs

Marktech Multi-wavelength and Multiple Chip Emitters and Detectors

In addition to advanced SWIR LED emitters, Marktech Optoelectronics has additional infrared emitters within the near IR (NIR) and mid-IR (MIR) bands. Marktech has multichip packaging

capabilities, which can combine various NIR and SWIR LEDs and detectors within the same package for multispectral applications such as LED LIDAR and optical ranging sensors. Marktech also provides complementary products such as short wave IR InGaAs detectors for applications requiring both a SWIR light source combined with a SWIR sensor. A series of UV to SWIR emitters in a multichip package can provide a light source with a wide range of wavelengths for spectrometry and hyperspectral imaging. Marktech can bond from 2 to 144 die within the same package.

In summary, Marktech's multichip packaging processes can provide within the same compact, surface mount, or hermetic package:

- Multiple wavelength emitters or LEDs with wavelengths from 255 nm to 1720 nm

- Multiple spectral range detectors

- Combinations of multiple emitters and detectors

Marktech Optoelectronics can also provide chip-on-board (COB) packaging where multiple chips populate a ceramic or aluminum cored metal clad printed circuit board (Al-cored MCPCB). Chip-on-board (COB) might be the best choice to maximize heat dissipation when a design requires a very dense packaging of multiple emitters or LEDs. Aluminum core COB boards are available in linear, ring, and starboard formats.

ATLAS Hermetic SMD Packaging

Marktech's CSP SWIR LED joins a growing family of advanced emitters and detectors in enhanced packaging such as Marktech's ATLAS packaged line of LEDs, photodetectors, and emitter-detectors. The Marktech revolutionary ATLAS package combines the hermetic characteristics of a TO metal can packaged optoelectronic device with the great manufacturability associated with surface mount devices (SMDs). ATLAS packaged optoelectronic components are available in 3mm x 3mm and 5 mm x 5mm size. The ATLAS hermetic SMD packaging is constructed using a glass to ceramic seam welded process to provide water vapor and oxygen ingress protection.

Multiple wavelength LEDs or emitters and photodetectors can be packaged in the larger ATLAS package. ATLAS is an ideal package for applications requiring extreme sensitivity and high reliability because the seam-welded metal-to-ceramic seal in the ATLAS package prevents the ingress of water vapor and oxygen into the cavity holding the LED chips and photodetectors.

Using the ATLAS package technology, Marktech can engineer hermetic surface mount device (SMD) packages to hold and protect a wide range of SWIR LEDs, SWIR sensors, and custom LED-sensor combinations to your specific SWIR design application requirements in wavelengths ranging from 310 nm to 2600 nm. The hermetically sealed weld on the ATLAS ceramic SMD package Marktech also has begun to offer standard or catalog products in the hermetic ATLAS

package, such as Marktech's MTSM1346SMF1-100 High-Speed InGaAs PIN Photodiode, which delivers IR to SWIR (600 nm to 1750 nm) photodetection.

Marktech's Advanced Optoelectronic Packaging Family

In summary, Marktech's advanced optoelectronic packaging family includes:

•Chip scale packaging - CSP LED or CSP emitters

•Hermetic TO can packaging

•ATLAS Hermetic SMD Packaging - ingress proof optoelectronics

•Chip-on-board (COB) packaging using ceramic or Al-cored metal-clad PCB (MCPCB)

•Multiple chip packaging – Multiple wavelength LED emitters, photodetectors, and emitter-photodetector combinations

The high compactness and high power output of Marktech's new CSP infrared LEDs, multichip packages, and ATLAS hermetic SMDs will enable engineers to shrink and enhance their optoelectronic design projects. Their adoption in product development projects will lead to breakthrough designs in many industrial applications.

If you have specific technical or application questions regarding your short wave infrared design project or are just interested in learning more about Marktech's CSP SWIR LEDs or emitters, then please contact our application engineers: info@marktechopto.com

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