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Title:

MCT IR detection modules with 15 μ m pitch for high reliability applications

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Abstract:

Additional to the development of 3rd Gen IR modules like dual-band and dual-color devices AIM is focused on IR FPAs with reduced pitch. These FPAs allow to build up compact low cost IR modules with minimum power consumption for state-of-the-art high performance IR systems.

AIM has realized full TV format MCT 640x512 mid-wave and long-wave IR detection modules with a 15 μ m pitch to meet the requirements of critical military applications like thermal weapon sights or FLIRs in UAV applications. In typical configurations like a F/4.6 cold shield for the 640x512 MWIR module an NETD < 25 mK @ 5 ms integration time is achieved, while the LWIR module achieves an NETD < 30 mK @ F/2 and 110 μ s integration time. For the LWIR modules FPAs with an cut-off of 10 μ m have been realized. The modules are available either with different integral rotary cooler configurations for portable applications which require minimum cooling power or a split linear cooler with a flexure bearing compressor providing long lifetime with a MTTF >20,000h as required e.g. for warning sensors in 24/7 operation.

The modules are available with an optional image processing electronics providing non-uniformity correction and further image processing for a complete IR imaging solution. A dual field of view FLIR for an upgrade of the German Army UAV LUNA has been developed by AIM using the MCT 640x512 MWIR 15 μ m pitch engine.

The paper will present the latest results and performance of those modules and the applications using them.