

Cooling Solutions for CXB-GM45/-GL40 Modules

COM Express™ Family



Description

COM Express™, an open specification of the PICMG (PCI Industrial Computer Manufacturer Group), is a module concept to bring PCI Express and other latest technologies like SATA, USB 2.0 and LVDS on a COM (Computer On Module).

Depending on the computing performance, the processor and chipset technology and the system environment COM Express modules require different cooling measures.

MSC has developed various solutions that help the system designer to quickly solve the heat dissipation problems and ensure optimal environmental conditions for the module.

Passive cooling

Optimized heat sinks for best cooling performance even in industrial environment.



Active cooling

Heat sinks combined with a dedicated speed controlled fan. An off-the-shelf solution for demanding ambient conditions.



Heat spreaders

Due to the relatively high power dissipation of the processor technology used on CXB-GM45/-GL40 modules MSC has developed cooling solutions that have better cooling efficiency than heat spreader based solutions.

Currently no heat spreaders are offered.

Passive cooling

For systems with sufficient air flow around the module, either passive through convection or forced by a system internal fan, MSC's passive cooling solution may be used.

Passive cooling solutions consist of an extruded aluminum heat sink with heat conducting stacks on the bottom side.



Highlights

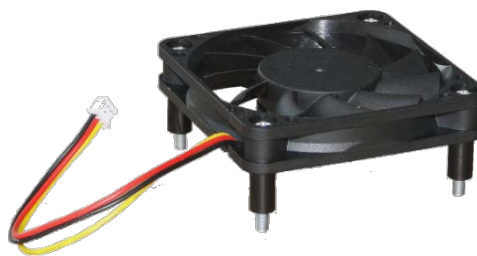
- Self-aligning floating element for processor cooling
- Heat conducting stacks on bottom side
- Threaded (M2.5) or through-hole version available
- Prepared for optional fan
- Screws for mounting included
- Two different profile heights available

Dimensions	Note
<p>Height: 32 mm (high profile heat sink for soldered BGA processor) 35 mm (high profile heat sink for socketed PGA processor) 27 mm (low profile heat sink for soldered BGA processor) 29 mm (low profile heat sink for socketed PGA processor) Maximum heights measured from top of PCB to top of heat sink. May vary when transportation locks are removed.</p> <p>Outline: 125 x 95 mm</p>	<p>The high-profile heat sink has been developed for demanding environmental conditions. With the dedicated fan kit mounted on top it allows ambient temperatures up to 60° C. The low-profile heat sink may be used for lower ambient temperatures or for processors with low thermal power dissipation.</p>
Material	
<p>Fix part: Black anodized aluminum Floating part: Blank aluminum</p>	

Order Number	Description	Reference
1019293	High-profile heat sink for CXB-GM45/-GL40 (socketed PGA processor) with through-hole standoffs (optional fan kit is not included)	MSC CXB-GM45-01 HSI-001
on request	High-profile heat sink for CXB-GM45 (soldered BGA processor) with through-hole standoffs (optional fan kit is not included)	MSC CXB-GM45-02 HSI-001
36040	Low-profile heat sink for CXB-GM45/-GL40 (socketed PGA processor) with through-hole standoffs (optional fan kit is not included)	MSC CXB-GM45-03 HSI-001
36044	Low-profile heat sink for CXB-GM45 (soldered BGA processor) with through-hole standoffs (optional fan kit is not included)	MSC CXB-GM45-04 HSI-001

Active cooling

In cases where an active cooling is required MSC offers a fan kit for mounting on top of the heat sink.



Highlights

- 80 mm x 80 mm fan with tacho signal and special connector for MSC COM Express modules
- Spacers and screws included

Dimensions	Excerpt of fan data sheet
<p>Height: 49 mm (low profile heat sink with fan) 53 mm (high profile heat sink with fan) Maximum height of heat sink with fan mounted. Measured from top side of module PCB to top side of fan.</p>	<p>Operating Temperature: -10° C~70° C (normal humidity) Storage Temperature: -20° C~75° C (normal humidity) Rated Speed: 3 600rpm±10% In free air at rated voltage; testing speed after continuous 3 minute operation at ambient temperature of 25° C Airflow: 51.65CFM; 1.46m³/min At rated voltage; at zero static pressure Life expectancy (L10): More than 90% shall keep running after continuous operation of 50.000 hours at rated voltage in 40° C ambient temperature and 65% relative humidity condition. Fan life should be redefined when above conditions are changed.</p>
Note	
<p>a) Free air circulation above the fan is necessary to assure proper air flow! b) Locking the rotor when it's running may damage the fan as well as the control circuit on the COM Express module!</p>	

Order Number	Description	Reference
36052	Fan kit for high-profile heat sinks	MSC CXB-GM45-01 FKT-001
36054	Fan kit for low-profile heat sinks	MSC CXB-GM45-02 FKT-001

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