

... embedding excellence

## MSC C6C-GX

AMD Embedded G-Series SOC  
Type 6 Pin-out




### Description

The MSC C6C-GX module is based on AMD's Embedded G-Series SOC platform, a high-performance, low-power System-on-Chip (SOC) solution with outstanding HD graphics and multimedia capabilities for embedded applications.

The G-Series SOC brings dual independent display support, DirectX 11.1, fast DDR3 memory and USB 3.0 on a compact, power saving and cost-efficient module.

Different G-Series SOC's with dual- and quad-core processors are supported by this design. Besides an extensive set of interfaces and features, the MSC C6C-GX offers hardware based security compliant to the requirements of TCG (Trusted Computing Group).

The new Type 6 pin-out allows direct access to the latest digital display interfaces like DisplayPort 1.2, HDMI 1.4a and DVI. USB 3.0 interfaces support the fastest peripheral devices currently available.

95x95   
12 / 30 W   
Medium 

### Highlights

- AMD GX-420CA quad-core 2.0GHz, 25W TDP, Radeon HD 8400E
- AMD GX-415GA quad-core 1.5GHz, 15W TDP, Radeon HD 8330E
- AMD GX-217GA dual-core 1.65GHz, 15W TDP, Radeon HD 8280E
- AMD GX-210HA dual-core 1.0GHz, 9W TDP, Radeon HD 8310E
- Integrated AMD HD 8000E graphics
- Up to 16GB DDR3 SDRAM, dual-channel
- Two SATA 3Gb/s mass storage interfaces
- MicroSD card socket
- DisplayPort/HDMI/DVI interface
- LVDS/Embedded DisplayPort interface
- VGA interface
- Two independent displays supported
- DirectX 11.1, OpenGL 4.2, OpenCL 1.2
- Two USB 3.0 and six USB 2.0 interfaces
- Trusted Platform Module (option)
- Extended temperature variants (on request)

## Technical Data – MSC C6C-GX

### Module Standard

#### PICMG COM Express™ Standard COM.0

Type 6 compliant interface, "compact" form factor

### Core Logic, Memory

#### CPU

AMD GX-420CA quad-core 2.0GHz, 2 MB L2, 25W TDP, Radeon HD 8400E  
AMD GX-415GA quad-core 1.5GHz, 2 MB L2, 15W TDP, Radeon HD 8330E  
AMD GX-217GA dual-core 1.65GHz, 1 MB L2, 15W TDP, Radeon HD 8280E  
AMD GX-210HA dual-core 1.0GHz, 1 MB L2, 9W TDP, Radeon HD 8310E

AMD Technologies: AMD64 64-bit ISA  
Instruction sets: SSE1,2,3, SSSE3 ISA, SSE4A, MMX™

#### Chipset

Integrated in SOC

#### Memory

2x 204-pin SO-DIMM socket for up to 16GB DDR3 SDRAM (DDR1333/1600)

### Storage Interfaces

#### SATA

2x SATA channels (up to 3 Gb/s)

#### SSD

MicroSD card socket, bootable

### Bus Interfaces

#### USB

6 x USB 2.0  
2 x USB 3.0

#### PCI Express™

Three x1 channels PCI Express Gen 2,  
one PCI Express Graphics (PEG) x4

#### LPC

Low Pin Count bus for legacy interfaces

### Display Interfaces

#### Graphics Controller

Integrated AMD HD 8000E Series graphics  
3D Acceleration (DirectX® 11.1, OpenGL 4.2, OpenCL 1.2)  
UVD 4.2 hardware video decoder (H.264, MPEG4 (DivX), VC-1 and WMV)  
VCE 2.0 Video Compression Engine (H.264, SVC)

Dual independent display support

#### Video Memory

UMA

#### LCD Interface

LVDS 24bit, dual-channel (shared with Embedded DisplayPort)  
1920 x 1200 @ 60Hz

#### VGA Interface

Resolution up to 2048 x 1536 @ 60Hz

#### Display Port and HDMI Interfaces

1x Digital Display Interface (DP 1.2, DVI, HDMI 1.4a)  
4096 x 2160 @ 30Hz, 2560 x 1600 @ 60Hz  
1x Embedded DisplayPort 1.3 (shared with LVDS)  
2560 x 1600 @ 60Hz

### Miscellaneous

#### Watchdog Timer

Initiates system reset, programmable

#### Fan Supply

4-pin header (12V) for CPU fan, PWM speed controlled and PWM speed control for system fan supported

#### Real-Time Clock

Integrated in SOC, battery external

#### System Monitoring

Voltage, temperature, CPU fan, system fan

### Network Interface

#### Ethernet

10/100/1000Base-TX (Intel® i210)

### Audio Interface

HD audio

### Security Device

Infineon Trusted Platform Module (Option)

### Firmware, Software

#### UEFI Firmware

AMI Aptio®

#### Security

TPM 1.2 support, TCG compliant

#### Power Management

ACPI  
Active fan control

#### USB

USB legacy support (keyboard, mouse, storage)

#### Video

AMD Video BIOS

#### HW Programming I/F

EAPI

#### Board Support Package (BSP)

Microsoft Windows® Embedded Standard 7, Linux (on request)

### Power Supply

#### Power Supply Voltage

+12V +/-10%, 5V Stby optional

#### Power Consumption

12W (typ.) up to 30W (typ.)

### Environment

#### Ambient Temperature

0° ... 60° C (operating)  
-25° ... 85° C (storage)

#### Humidity

5 ... 95% (operating, non-condensing)  
5 ... 95% (storage, non-condensing)

### Mechanical

#### Dimensions

95mm x 95mm x13mm

## Order Reference – MSC C6C-GX

Order Number	Description	Reference	Cat. <sup>1)</sup>
45971	AMD GX-420CA quad-core 2.0GHz, 25W TDP, Radeon HD 8400E, 10/100/1000Base-TX, Type 6	MSC C6C-GX-004	PV
45969	AMD GX-415GA quad-core 1.5GHz, 15W TDP, Radeon HD 8330E, 10/100/1000Base-TX, Type 6	MSC C6C-GX-003	PV
45967	AMD GX-217GA dual-core 1.65GHz, 15W TDP, Radeon HD 8280E, 10/100/1000Base-TX, Type 6	MSC C6C-GX-002	OR
45965	AMD GX-210HA dual-core 1.0GHz, 9W TDP, Radeon HD 8310E, 10/100/1000Base-TX, Type 6	MSC C6C-GX-001	PV
	<sup>1)</sup> PV = Preferred variant; OR = on Request (in OEM quantities only)		

## Accessories

Order Number	Description	Reference
	<b>Starter Kits</b>	
tbid	COM Express Type 6 starter kit consisting of a Type 6 baseboard, the active heatsink with fan for the COM-Express Type 6 module, and two DDR3 SO-DIMM memory modules. Please order separately the COM-Express C6C-GX module of your choice.	MSC C6-SK-GX-T6T2-KIT001
	<b>Carrier Boards</b>	
41886	COM Express Type 6 Small Test and Evaluation Board with one PCI Express socket, USB 3.0, GbE, SATA, DisplayPort, HDMI, VGA and HD audio interfaces; ATX power connector. Also usable as Type 6 to Type 2 converter on MSC CX-MB-EVA2. Dimensions: 140 x 184 mm	MSC C6-AD-T6T2
41857	COM Express Type 6 Evaluation board with various PCI Express interfaces, SATA and mSATA, USB 2.0/3.0, Display Port and eDP, HDMI/DVI, HD-Audio, POST code display. ATX form factor	MSC C6-MB-EVA
	<b>Cooling</b>	
1116263	Passive Heatsink for C6C-GX, consisting of a single-piece aluminum profile with fins, pressed in standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to SOC.	MSC C6C-GX-01 HSI-001
1116262	Active Heatsink for C6C-GX, consisting of a single-piece aluminum profile with fins, pressed in standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to SOC. PWM fan 80x80x15mm.	MSC C6C-GX-01 HSF-001
1116261	Heatspreader for C6C-GX. Single-piece aluminum profile, pressed in standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to SOC.	MSC C6C-GX-01 HSP-001
1122652	Heatspreader for C6C-GX. Single-piece aluminum profile, pressed in threaded standoffs (M2.5), screws and thermopad for the thermal contact to SOC.	MSC C6C-GX-02 HSP-001
	<b>Memory Modules<sup>2)</sup></b>	
1077754	DDR3 SODIMM, 2GB/1333, 256Mx64, CL7, 256Mx8 based, 1rank, 1.5V	HMT325S6BFR8C-H9N0
1081140	DDR3 SODIMM, 2GB, 256Mx64, PC1333	M471B5773DH0-CH9
1087922	DDR3 SODIMM 4GB PC1333 512Mx64, based on 256Mx8 2rank, 1,5V	HMT351S6CFR8C-H9N0
1080971	DDR3 SODIMM 4GB PC1333, 512Mx64, 204pin, 1.5V, 256Mx8 based, 2rank	NT4GC64B8HB0NS-CG
	<sup>2)</sup> Pre-qualified memory modules for the CPU product above	

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