Welcome to E-XFL.COM
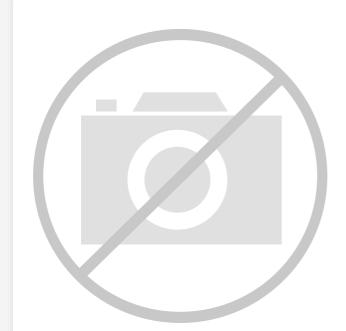
Understanding Embedded - Microprocessors

Embedded microprocessors are specialized computing chips designed to perform specific tasks within an embedded system. Unlike general-purpose microprocessors found in personal computers, embedded microprocessors are tailored for dedicated functions within larger systems, offering optimized performance, efficiency, and reliability. These microprocessors are integral to the operation of countless electronic devices, providing the computational power necessary for controlling processes, handling data, and managing communications.

Applications of Embedded - Microprocessors

Embedded microprocessors are utilized across a broad spectrum of applications, making them indispensable in

Details	
Product Status	Active
Core Processor	i5-2400
Number of Cores/Bus Width	4 Core, 64-Bit
Speed	3.1GHz
Co-Processors/DSP	-
RAM Controllers	-
Graphics Acceleration	Yes
Display & Interface Controllers	-
Ethernet	-
SATA	-
USB	-
Voltage - I/O	-
Operating Temperature	-
Security Features	-
Package / Case	1155-LGA Module
Supplier Device Package	1155-LGA (37.5x37.5)
Purchase URL	https://www.e-xfl.com/product-detail/advantech/96mpi5-3-1-6m11t

Intel® Core™ i5-2400 Processor
(6M Cache, 3.10 GHz)

SPECIFICATIONS

All
Essentials
Memory Specifications
Graphics Specifications
Expansion Options
Package Specifications
Advanced Technologies

COMPATIBLE PRODUCTS

BLOCK DIAGRAMS

ORDERING / SSPECS / STEPPINGS

SPECIFICATIONS

Essentials

Status	Launched
Launch Date	Q1'11
Processor Number	i5-2400
# of Cores	4
# of Threads	4
Clock Speed	3.1 GHz
Max Turbo Frequency	3.4 GHz
Intel® Smart Cache	6 MB
Bus/Core Ratio	31
Instruction Set	64-bit
Instruction Set Extensions	SSE4.1/4.2, AVX
Embedded Options Available	Yes
Lithography	32 nm
Max TDP	95 W
Tray 1ku Budgetary Price	$184.00

Memory Specifications

Max Memory Size (dependent on memory type)	32 GB
Memory Types	DDR3-1066/1333
# of Memory Channels	2
Max Memory Bandwidth	21 GB/s
ECC Memory Supported	No

Graphics Specifications

Integrated Graphics	Yes
Intel® HD Graphics	Yes
Intel® HD Graphics with Dynamic Frequency	Yes
Graphics Base Frequency	850 MHz
Graphics Max Dynamic Frequency	1.1 GHz
Intel® Quick Sync Video	Yes
Intel® InTRU™ 3D Technology,	Yes
Intel® Wireless Display	No
Intel® Flexible Display Interface (Intel® FDI)	Yes
Intel® Clear Video HD Technology	Yes
Dual Display Capable	Yes

Expansion Options

COMPARE PRODUCTS

- **Add to Compare**
- **Compare Now (0)**

- **Find Embedded Boards>**
- **Visit the Embedded Design Center >**

QUICK LINKS

- **Products formerly Sandy Bridge**
- **Download Datasheet**
- **Find Compatible Boards**

ADDITIONAL INFORMATION

SEARCH DISTRIBUTORS

BX80623I52400
Buy From: Arrow | Avnet

BXC80623I52400
Buy From: Arrow | Avnet

CM8062300834106
Buy From: Arrow | Avnet

PCN/MDDS INFORMATION

PCI Express Revision		2.0
# of PCI Express Ports		1

*Trademarks

Package Specifications

Max CPU Configuration		1
T$_{CASE}$		72.6°C
Package Size		37.5mm x 37.5mm
Sockets Supported		LGA1155
Halogen Free Options Available		Yes

Advanced Technologies

Intel® Turbo Boost Technology		2.0
Intel® Hyper-Threading Technology	🔎	No
Intel® Virtualization Technology (VT-x)	🔎	Yes
Intel® Virtualization Technology for Directed I/O (VT-d)	🔎	Yes
Intel® Trusted Execution Technology	🔎	Yes
AES New Instructions	🔎	Yes
Intel® 64	🔎	Yes
Idle States		Yes
Enhanced Intel SpeedStep® Technology	🔎	Yes
Thermal Monitoring Technologies		Yes
Intel® Fast Memory Access		Yes
Intel® Flex Memory Access		Yes
Execute Disable Bit		Yes

"Announced" SKUs are not yet available. Please refer to the Launch Date for market availability.

Enabling Execute Disable Bit functionality requires a PC with a processor with Execute Disable Bit capability and a supporting operating system. Check with your PC manufacturer on whether your system delivers Execute Disable Bit functionality.

64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.

Hyper-Threading Technology (HT Technology) requires a computer system with an Intel® processor supporting HT Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See www.intel.com/products/ht/hyperthreading_more.htm for more information including details on which processors support HT Technology.

Intel® Virtualization Technology requires a computer system with a processor, chipset, BIOS, virtual machine monitor (VMM) and for some uses, certain platform software, enabled for it. Functionality, performance or other benefit will vary depending on hardware and software configurations. Intel Virtualization Technology-enabled VMM applications are currently in development.

Note: Prices subject to change without notice. Prices are for direct Intel customers in 1000-unit bulk quantities and, unless specified, represent the latest technology versions of the products. Taxes and shipping, etc. not included. Prices may vary for other package types and shipment quantities, and special promotional arrangements may apply.

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See http://www.intel.com/products/processor_number for details.

System and Maximum TDP is based on worst case scenarios. Actual TDP may be lower if not all I/Os for chipsets are used.

All information provided is subject to change at any time, without notice. Intel may make changes to manufacturing life cycle, specifications, and product descriptions at any time, without notice. The information herein is provided "as-is" and Intel does not make any representations or warranties whatsoever regarding accuracy of the information, nor on the product features, availability, functionality, or compatibility of the products listed. Please contact system vendor for more information on specific products or systems.

Halogen Free implies the following:

Bromine and/or chlorine in materials that may be used during processing, but do not remain within the final product are not included in this definition. The halogens fluorine (F), iodine (I), and astatine (At) are not restricted by this standard.

"BFR/CFR and PVC-Free" Definition: :
All PCB laminates must meet Br and Cl requirements for low halogen as defined in IPC-4101B For components other than PCB laminates, all homogeneous materials must contain < 900 ppm (0.09%) of Bromine [if the Bromine (Br) source is from BFRs] and < 900 ppm (0.09%) of Chlorine [if the Chlorine (Cl) source is from CFRs or PVC. Higher concentrations of Br and Cl are allowed in homogenous materials of components other than PCB laminates as long as their sources are not BFRs, CFRs, PVC.

Although the elemental analysis for Br and Cl in homogeneous materials can be performed by any analytical method with sufficient sensitivity and selectivity, the presence or absence of BFRs, CFRs or PVC must be verified by any acceptable analytical techniques that allow for the unequivocal identification of the specific Br or Cl compounds, or by appropriate material declarations agreed to between customer and supplier.

Max Turbo Frequency refers to the maximum single-core frequency that can be achieved with Intel® Turbo Boost Technology, which requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See www.intel.com/technology/turboboost/ for more information.

©Intel
Corporation

Intel® Core™ i5-2400 Processor (6M Cache, 3.10 GHz)

SPECIFICATIONS

COMPATIBLE PRODUCTS

All
Desktop Boards
Chipsets

BLOCK DIAGRAMS

ORDERING / SSPECS / STEPPINGS

COMPATIBLE PRODUCTS

Compatible Desktop Boards

Find Compatible Desktop Boards >

Compatible Chipsets

Expand All

Intel® B65 Express Chipset (1 Configuration)
Intel® H67 Express Chipset (1 Configuration)
Intel® P67 Express Chipset (1 Configuration)
Intel® Q67 Express Chipset (1 Configuration)

COMPARE PRODUCTS

- **Add to Compare**
- **Compare Now (0)**

- **Find Embedded Boards>**
- **Visit the Embedded Design Center >**

QUICK LINKS

- **Products formerly Sandy Bridge**
- **Download Datasheet**
- **Find Compatible Boards**

ADDITIONAL INFORMATION

SEARCH DISTRIBUTORS

BX80623I52400
Buy From: Arrow | Avnet

BXC80623I52400
Buy From: Arrow | Avnet

CM8062300834106
Buy From: Arrow | Avnet

PCN/MDDS INFORMATION

/processor_number for details.

System and Maximum TDP is based on worst case scenarios. Actual TDP may be lower if not all I/Os for chipsets are used.

All information provided is subject to change at any time, without notice. Intel may make changes to manufacturing life cycle, specifications, and product descriptions at any time, without notice. The information herein is provided "as-is" and Intel does not make any representations or warranties whatsoever regarding accuracy of the information, nor on the product features, availability, functionality, or compatibility of the products listed. Please contact system vendor for more information on specific products or systems.

Halogen Free implies the following:

Bromine and/or chlorine in materials that may be used during processing, but do not remain within the final product are not included in this definition. The halogens fluorine (F), iodine (I), and astatine (At) are not restricted by this standard.

"BFR/CFR and PVC-Free" Definition: :
All PCB laminates must meet Br and Cl requirements for low halogen as defined in IPC-4101B
For components other than PCB laminates, all homogeneous materials must contain < 900 ppm (0.09%) of Bromine [if the Bromine (Br) source is from BFRs] and < 900 ppm (0.09%) of Chlorine [if the Chlorine (Cl) source is from CFRs or PVC. Higher concentrations of Br and Cl are allowed in homogenous materials of components other than PCB laminates as long as their sources are not BFRs, CFRs, PVC. Although the elemental analysis for Br and Cl in homogeneous materials can be performed by any analytical method with sufficient sensitivity and selectivity, the presence or absence of BFRs, CFRs or PVC must be verified by any acceptable analytical techniques that allow for the unequivocal identification of the specific Br or Cl compounds, or by appropriate material declarations agreed to between customer and supplier.

Max Turbo Frequency refers to the maximum single-core frequency that can be achieved with Intel® Turbo Boost Technology, which requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See www.intel.com/technology/turboboost/ for more information.

Intel® Core™ i5-2400 Processor
(6M Cache, 3.10 GHz)

SPECIFICATIONS

COMPATIBLE PRODUCTS

BLOCK DIAGRAMS

ORDERING / SSPECS / STEPPINGS

BLOCK DIAGRAMS

COMPARE PRODUCTS

- **Add to Compare**
- **Compare Now (0)**

- **Find Embedded Boards>**
- **Visit the Embedded Design Center >**

QUICK LINKS

- **Products formerly Sandy Bridge**
- **Download Datasheet**
- **Find Compatible Boards**

ADDITIONAL INFORMATION

SEARCH DISTRIBUTORS

BX80623I52400
Buy From: Arrow | Avnet

BXC80623I52400
Buy From: Arrow | Avnet

CM8062300834106
Buy From: Arrow | Avnet

PCN/MDDS INFORMATION

*Trademarks

System and Maximum TDP is based on worst case scenarios. Actual TDP may be lower if not all I/Os for chipsets are used.

All information provided is subject to change at any time, without notice. Intel may make changes to manufacturing life cycle, specifications, and product descriptions at any time, without notice. The information herein is provided "as-is" and Intel does not make any representations or warranties whatsoever regarding accuracy of the information, nor on the product features, availability, functionality, or compatibility of the products listed. Please contact system vendor for more information on specific products or systems.

Halogen Free implies the following:

Bromine and/or chlorine in materials that may be used during processing, but do not remain within the final product are not included in this definition. The halogens fluorine (F), iodine (I), and astatine (At) are not restricted by this standard.

"BFR/CFR and PVC-Free" Definition: :
All PCB laminates must meet Br and Cl requirements for low halogen as defined in IPC-4101B
For components other than PCB laminates, all homogeneous materials must contain < 900 ppm (0.09%) of Bromine [if the Bromine (Br) source is from BFRs] and < 900 ppm (0.09%) of Chlorine [if the Chlorine (Cl) source is from CFRs or PVC. Higher concentrations of Br and Cl are allowed in homogenous materials of components other than PCB laminates as long as their sources are not BFRs, CFRs, PVC. Although the elemental analysis for Br and Cl in homogeneous materials can be performed by any analytical method with sufficient sensitivity and selectivity, the presence or absence of BFRs, CFRs or PVC must be verified by any acceptable analytical techniques that allow for the unequivocal identification of the specific Br or Cl compounds, or by appropriate material declarations agreed to between customer and supplier.

Max Turbo Frequency refers to the maximum single-core frequency that can be achieved with Intel® Turbo Boost Technology, which requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See www.intel.com/technology/turboboost/ for more information.

Intel® Core™ i5-2400 Processor
(6M Cache, 3.10 GHz)

SPECIFICATIONS

COMPATIBLE PRODUCTS

BLOCK DIAGRAMS

ORDERING / SSPECS / STEPPINGS

All
Ordering / sSpecs / Steppings
Retired and Discontinued

ORDERING AND SPEC INFORMATION

Ordering and Spec Information
Boxed Intel® Core™ i5-2400 Processor (6M Cache, 3.10 GHz) FC-LGA10, for China

Socket	Step	Step TDP	Ordering Code	Spec Code	Halogen Free	VT-x
LGA1155	D2	95 Watts	BXC80623I52400	SR00Q	Yes	Yes

Boxed Intel® Core™ i5-2400 Processor (6M Cache, 3.10 GHz) FC-LGA10

Socket	Step	Step TDP	Ordering Code	Spec Code	Halogen Free	VT-x
LGA1155	D2	95 Watts	BX80623I52400	SR00Q	Yes	Yes

Intel® Core™ i5-2400 Processor (6M Cache, 3.10 GHz) FC-LGA10, Tray

Socket	Step	Step TDP	Ordering Code	Spec Code	Halogen Free	VT-x
LGA1155	D2	95 Watts	CM8062300834106	SR00Q	Yes	Yes

COMPARE PRODUCTS

- **Add to Compare**
- **Compare Now (0)**

- **Find Embedded Boards>**
- **Visit the Embedded Design Center >**

QUICK LINKS

- **Products formerly Sandy Bridge**
- **Download Datasheet**
- **Find Compatible Boards**

ADDITIONAL INFORMATION

SEARCH DISTRIBUTORS

BX80623I52400
Buy From: Arrow | Avnet

BXC80623I52400
Buy From: Arrow | Avnet

CM8062300834106
Buy From: Arrow | Avnet

PCN/MDDS INFORMATION

*Trademarks
System and Maximum TDP is based on worst case scenarios. Actual TDP may be lower if not all I/Os for chipsets are used.

All information provided is subject to change at any time, without notice. Intel may make changes to manufacturing life cycle, specifications, and product descriptions at any time, without notice. The information herein is provided "as-is" and Intel does not make any representations or warranties whatsoever regarding accuracy of the information, nor on the product features, availability, functionality, or compatibility of the products listed. Please contact system vendor for more information on specific products or systems.

Halogen Free implies the following:

Bromine and/or chlorine in materials that may be used during processing, but do not remain within the final product are not included in this definition. The halogens fluorine (F), iodine (I), and astatine (At) are not restricted by this standard.

"BFR/CFR and PVC-Free" Definition: :
All PCB laminates must meet Br and Cl requirements for low halogen as defined in IPC-4101B
For components other than PCB laminates, all homogeneous materials must contain < 900 ppm (0.09%) of Bromine [if the Bromine (Br) source is from BFRs] and < 900 ppm (0.09%) of Chlorine [if the Chlorine (Cl) source is from CFRs or PVC. Higher concentrations of Br and Cl are allowed in homogenous materials of components other than PCB laminates as long as their sources are not BFRs, CFRs, PVC. Although the elemental analysis for Br and Cl in homogeneous materials can be performed by any analytical method with sufficient sensitivity and selectivity, the presence or absence of BFRs, CFRs or PVC must be verified by any acceptable analytical techniques that allow for the unequivocal identification of the specific Br or Cl compounds, or by appropriate material declarations agreed to between customer and supplier.

Max Turbo Frequency refers to the maximum single-core frequency that can be achieved with Intel® Turbo Boost Technology, which requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See www.intel.com/technology/turboboost/ for more information.