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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	Discontinued at Digi-Key
Core Processor	Celeron M
Number of Cores/Bus Width	2 Core, 64-Bit
Speed	2.2GHz
Co-Processors/DSP	-
RAM Controllers	DDR3, DDR3L
Graphics Acceleration	Yes
Display & Interface Controllers	-
Ethernet	-
SATA	-
USB	-
Voltage - I/O	-
Operating Temperature	-
Security Features	-
Package / Case	Module
Supplier Device Package	-
Purchase URL	https://www.e-xfl.com/product-detail/advantech/96mpcm-2-2-2m9t

Intel® Celeron® Processor 1020E (2M Cache, 2.20 GHz)

Essentials

Status	Launched
Launch Date	Q1'13
Processor Number	1020E
# of Cores	2
# of Threads	2
Clock Speed	2.2 GHz
Intel® Smart Cache	2 MB
DMI	5 GT/s
Instruction Set	64-bit
Instruction Set Extensions	SSE4.1, 4.2
Embedded Options Available	Yes
Lithography	22 nm
Max TDP	35 W
Description	ECC on BGA only

Memory Specifications

Max Memory Size (dependent on memory type)	16 GB
Memory Types	DDR3/L - 1333/1600
# of Memory Channels	2
Max Memory Bandwidth	25.6 GB/s
ECC Memory Supported	Yes

Graphics Specifications

Processor Graphics	Intel® HD Graphics
Graphics Base Frequency	650 MHz
Graphics Max Dynamic Frequency	1 GHz
Graphics Output	eDP/DP/HDMI/SDVO/CRT
Intel® Quick Sync Video	No
Intel® InTru™ 3D Technology	No
Intel® Insider™	No
Intel® Wireless Display	No
Intel® Clear Video HD Technology	No
# of Displays Supported	3

Expansion Options

PCI Express Revision	2.0
PCI Express Configurations	1x16, 2x8, 1x8 & 2x4
# of PCI Express Lanes	1

Package Specifications

Max CPU Configuration	1
T$_{JUNCTION}$	105C
Package Size	37.5mm x 37.5mm (rPGA988B); 31mm x 24mm (BGA1023)
Graphics and IMC Lithography	22 nm
Sockets Supported	FCBGA1023, FCPGA988
Low Halogen Options Available	See MDDS

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Advanced Technologies

Intel® vPro Technology	No
Intel® Hyper-Threading Technology	No
Intel® Virtualization Technology (VT-x)	Yes
Intel® Virtualization Technology for Directed I/O (VT-d)	No
Intel® Trusted Execution Technology	No
AES New Instructions	No
Intel® 64	Yes
Intel® Anti-Theft Technology	No
Intel® My WiFi Technology	No
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
Intel® VT-x with Extended Page Tables (EPT)	Yes

ORDERING AND SPEC INFORMATION

Intel® Celeron® Processor 1020E (2M Cache, 2.20 GHz) FC-BGA12F, Tray

Socket	Step	TDP	Ordering Code	Spec Code	VT-x
FCBGA1023	P0	35 W	AV8063801276200	SR0VR	

Intel® Celeron® Processor 1020E (2M Cache, 2.20 GHz) FC-PGA12F , Tray

Socket	Step	TDP	Ordering Code	Spec Code	VT-x
FCPGA988	P0	35 W	AW8063801117700	SR10D	