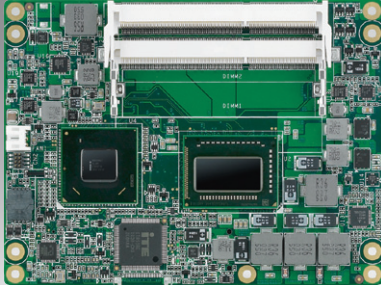


# SOM-5890

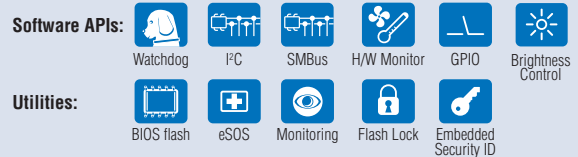
## Intel® Core™ i7/i5/i3/Celeron Processor COM-Express Basic Module

**NEW**



### Features

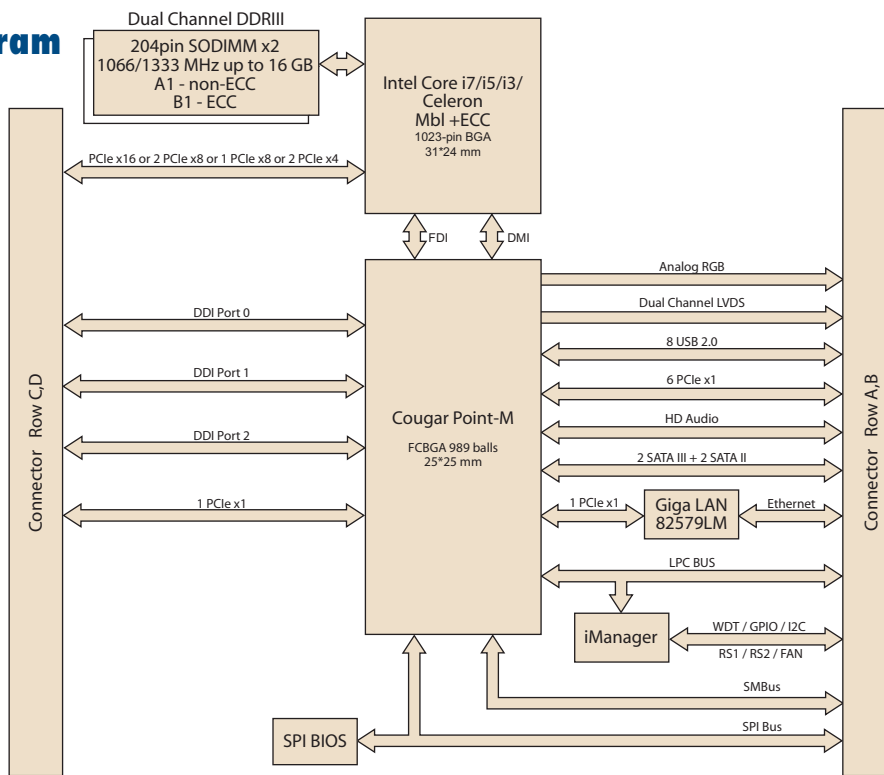
- Embedded Intel® Core™ i7/i5/i3/Celeron processor + QM67
- Intel Gfx supports VGA, 18/24-bit 2-CH LVDS, HDMI, DVI, DP
- Supports Dual Channel DDR3-1333 SO-DIMM sockets up to 16 GB
- Supports PCIe x16, 7 PCIe x1, 2 SATAIII, 2 SATAII, 8 USB 2.0, GbE
- Supports Advantech iManager and software APIs



### Specifications

Form Factor		COM-Express 2.0 Basic Module, Type 6 Pin-out
Processor System	CPU	Intel Core i7-2715QE Processor (4C, 6M Cache, 2.1 GHz) Intel Core i7-2655LE Processor (2C, 4M Cache, 2.2 GHz) Intel Core i7-2610UE Processor (2C, 4M Cache, 1.5 GHz) Intel Core i5-2515E Processor (2C, 3M Cache, 2.5 GHz) Intel Core i3-2310E Processor (2C, 3M Cache, 2.1 GHz) Intel Core i3-2340UE Processor (2C, 3M Cache, 1.3 GHz) Intel Celeron B810E Processor (2C, 2M Cache, 1.6 GHz) Intel Celeron 847E Processor (2C, 2M Cache, 1.1 GHz) Intel Celeron 827E Processor (1C, 1.5M Cache, 1.4 GHz)
	System Chipset	Intel QM67
	BIOS	AMI 64 Mbit Flash BIOS
	Technology	DDR3 1066/1333 MHz
Memory	ECC Support	A1 Series - not supported, B1 Series - supported
	Max. Capacity	16 GB
	Socket	2 x 204-pin SODIMM sockets
	Chipset	Intel Gfx integrated in Core i7, Core i5, or Core i3
Display	LVDS	Single and dual channel 18/24-bit LVDS
	VGA	up to 2048 x 1536
	HDMI / DVI / DP	3 ports shared
	SDVO	1 port shared with HDMI/DVI/Displayport
	TV-out	N/A
Ethernet	Chipset	Intel 82579LM Gigabit Ethernet
	Speed	10/100/1000 Mbps
WatchDog Timer		65536 level timer interval, from 0-65535 sec, multi-level, multi-option watchdog timer
Expansion		1 PEGx16, 7 PCIe x1, LPC, SPI, SMBus, I2C
I/O	SATA	2 x SATAIII (6.0 Gb/s), 2 x SATAII (3.0 Gb/s)
	USB	8 x USB 2.0
	Audio	High definition audio interface
	GPIO	8-bit GPIO
	Serial port	2 x UARTs up to 115.2K bps
Power	Power Type	ATX, AT
	Power Supply Voltage	+12 V and +5 VSB for ATX, +12V for AT
Environment	Operating Temperature	0 - 60° C (32 - 140° F)
	Operating Humidity	0% - 90% relative humidity, non-condensing
Mechanical	Dimension	125 x 95 mm (4.92" x 3.74")

## Board Diagram



## Ordering Information

Part No.	CPU	LLC	Chipset	DDR3 SO-DIMM	LVDS	VGA	HDMI / DVI / DP	SDVO	Giga LAN	HDA	PEG x16	PCIe x1	USB 2.0	SATA	LPC	ATX Power	AT Power	Thermal Solution	Operating Temp.
SOM-5890FG-U1A1E	Core i7-2715QE 2.1 GHz	6 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-U2A1E	Core i7-2655LE 2.2 GHz	4 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-S5A1E	Core i7-2610UE 1.5 GHz	4 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-U5A1E	Core i5-2515E 2.5 GHz	3 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-U0A1E	Core i3-2310E 2.1 GHz	3 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-S3A1E	Core i3-2340UE 1.3 GHz	3 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-S6A1E	Celeron B810E 1.6 GHz	2 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-S1A1E	Celeron B847E 1.1 GHz	2 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-S4A1E	Celeron B827E 1.4 GHz	1.5 MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-U1B1E	Core i7-2715QE 2.1 GHz	6 MB	QM67	ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-U2B1E	Core i7-2655LE 2.2 GHz	4 MB	QM67	ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-S5B1E	Core i7-2610UE 1.5 GHz	4 MB	QM67	ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890FG-U5B1E	Core i5-2515E 2.5 GHz	3 MB	QM67	ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATA III 2 x SATA II	Yes	Yes	Yes	Active	0 - 60° C
SOM-5890Z-S5A1E	Core i7-2610UE 1.5 GHz	4MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATAIII 2 x SATAII	Yes	Yes	Yes	Active	-20 - 80° C
SOM-5890Z2-S5A1E	Core i7-2610UE 1.5 GHz	4MB	QM67	non-ECC	18/24-bit	Yes	3	1	1	Yes	1	7	8	2 x SATAIII 2 x SATAII	Yes	Yes	Yes	Active	-40 - 85° C

## Development Board

Part No.	Description
SOM-DB5800-00A1E	Development Board for COM-Express Type 6

## Optional Accessories

Part No.	Description
1960048820N001	Semi-Cooler 125x95x33.5mm with 12V Fan

## Packing List

Part No.	Description	Quantity
-	SOM-5890 CPU Module	1
1960052233N001	Heatspreader	1

# Value-Added Software Services

**Software API:** An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

## Software APIs

### Control



**GPIO**

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.



**SMBus**

SMBus is the System Management Bus defined by Intel® Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.



**I2C**

I2C is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1980s. The I2C API allows a developer to interface with an embedded system environment and transfer serial messages using the I2C protocols, allowing multiple simultaneous device control.

### Display



**Brightness Control**

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.



**Backlight**

The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

### Monitor



**Watchdog**

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.



**Hardware Monitor**

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.



**Hardware Control**

The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

### Power Saving



**CPU Speed**

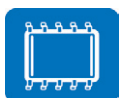
Make use of Intel SpeedStep technology to reduce power consumption. The system will automatically adjust the CPU Speed depending on system loading.



**System Throttling**

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.

## Software Utilities



**BIOS Flash**

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and API for fast implementation into customized applications.



**Embedded Security ID**

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.



**Monitoring**

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.



**eSOS**

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.



**Flash Lock**

Flash Lock is a mechanism that binds the board and CF card (SQFlash) together. The user can "Lock" SQFlash via the Flash Lock function and "Unlock" it via BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with the "Unlock" feature.