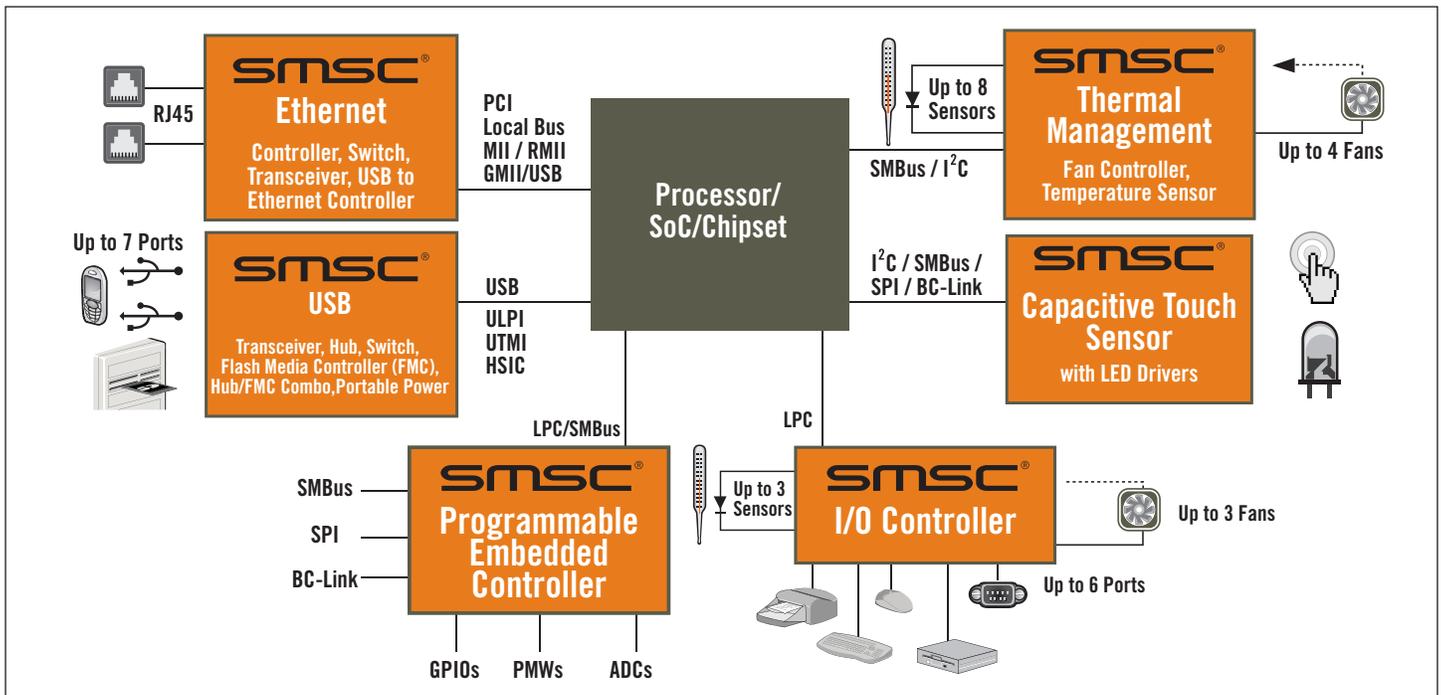


Embedded & Industrial Solutions

Flexible, Integrated Design Solutions to Meet the Power, Performance, Connectivity and System BOM Requirements of Embedded and Industrial Applications

Embedded and industrial applications have long product life cycles and often require multiple connectivity options. These designs are becoming increasingly smaller, more power-efficient and often require industrial temperature support. SMSC has been a proven semiconductor partner for over 40 years and is extremely knowledgeable and experienced in proactively supporting these unique requirements. Our Ethernet, USB, thermal management, capacitive touch sensor and I/O controller products are specifically designed to satisfy the longevity, reliability, high-performance and low-power requirements of embedded and industrial applications.

Application Diagram



SMSC's Complimentary Design Support Services



LANCheck® and USBCheck™ Online Design Review Services

Speed Your Designs to Market with Added Confidence

SMSC's complimentary and confidential LANCheck and USBCheck online design reviews are personalized, value-added services exclusive to SMSC and available at no charge to customers who have selected our Ethernet or USB offerings for their application design-in. We will support your design process by providing guidance through the complete design cycle – from initial schematic design to PCB design.

LANCheck and USBCheck online design review services require an SMSC e-Services account and are subject to the terms and conditions listed on SMSC's website.

For additional information on LANCheck and USBCheck, please contact your local sales representative or visit www.smSC.com/lancheck or www.smSC.com/usbcheck.

10/100 Ethernet Switches – LAN93xx Family

- Small-footprint (LAN9303/9303M), high-performance, 2/3-port MII/RMII/Turbo MII or non-PCI interfaces

	LAN9303	LAN9303M	LAN9311	LAN9312
Interface	Single MII/RMII/Turbo MII	Dual MII/RMII/Turbo MII	16-bit Local bus	32-bit Local bus
Serial Interface	I ² C/SMI	I ² C/SMI	I ² C/SMI	I ² C/SMI
IEEE1588			✓	✓
Pin & Package	56-pin QFN (8x8mm)	72-pin QFN (10x10mm)	128-pin VTQFP (16x16mm)	128-pin VTQFP (16x16mm)

10/100 and 10/100/1000 Ethernet Transceivers – flexPWR[®] LAN87xx and LAN88xx Family

- LAN87xx features flexPWR[®] technology which supports variable I/O voltage to optimize power consumption

	LAN8710	LAN8720	LAN8810i
Interface	MII/RMII	RMII	GMII
Ethernet	10/100	10/100	10/100/1000
Pin & Package	32-pin QFN	24-pin QFN	72-pin QFN

Hi-Speed Interchip (HSIC) USB 2.0 to 10/100 Ethernet Controller - LAN9730/LAN9730i

- Eliminate two USB PHY's in on-board USB chip-to-chip connection
- 2-pin interface, clock, data
- Software compatibility-transparent to USB software stack and device drivers
- Fully supports IEEE 802.3/802.3u standards
- Implements WoL support for reduced system power consumption
- Supports EEPROM-less operation for reduced BOM costs
- 56-pin QFN (8x8mm) lead-free RoHS-compliant package

Hi-Speed USB 2.0 to 10/100/1000 Ethernet Controllers – LAN95xx Family and LAN7500

- Integrated USB 2.0, Ethernet controller and PHY
- Integrated USB 2.0 hub with 2/3/4-port options (LAN951x only)
- Supports numerous power management features including WoL, Magic Packet™ and Link Status Change
- UniClock™ technology utilizing a single 25MHz crystal

	LAN9500A	LAN9512	LAN9513	LAN9514	LAN7500
Ethernet	10/100	10/100	10/100	10/100	USB to 10/100/1000
Downstream Ports		2	3	4	
Pin & Package	56-pin QFN	64-pin QFN	64-pin QFN	64-pin QFN	56-pin QFN

Local Bus/PCI 10/100 Ethernet Controllers – LAN922x/921x Family and LAN9420

- LAN922x Family – Small-footprint, advanced performance options and wide range of software drivers supported
- LAN921x Family – Includes external MII and high-throughput performance options
- LAN9420 PCI interface option available

	LAN9221	LAN9220	LAN9217	LAN9218	LAN9420
Bus Interface	16-bit, non-PCI	16-bit, non-PCI	16-bit, non-PCI	16-bit, non-PCI	32-bit/33MHz, PCI 3.0
I/O Voltage Supported	1.8V to 3.3V	1.8V to 3.3V	3.3V	3.3V	
Performance	High	Standard	High	High [†]	High
External MII			✓		
Mixed Endian	✓	✓			✓
Checksum Offload Engine	✓	✓			✓
Pin & Package	56-pin QFN	56-pin QFN	100-pin TQFP	100-pin TQFP	128-pin VTQFP

[†]SMSC's highest performing Ethernet controller with a 32-bit interface

Hi-Speed USB 2.0 Transceivers – USB333x/334x Family



- Integrated USB switch, ESD and over-voltage protection circuit, LDO regulators
- High levels of integration in extremely small package sizes

	USB333x Family	USB334x Family
ESD Protection	25kV	25kV
Over-voltage Protection	30V	30V
Link Power Management	✓	✓
USB-IF Battery Charging	v1.2	v1.2
Package Size	1.95x1.95mm	4x4mm/5x5mm
Package Type	WLCSP	QFN

Hi-Speed USB 2.0 Switch – USB3740[†]

- Hi-Speed USB 2.0 switch for portable applications
- Small-footprint, 10-pin QFN package
- Provides a high-bandwidth switch path with extremely low operating power and low on resistance

[†]Device available in summer 2011

Hi-Speed USB 2.0 Flash Media Controllers – USB224x/225x Family

- Ultra Hi-Speed, fully-integrated, cost-effective FMCs

	USB2240	USB2241	USB2242	USB2244	USB2250	USB2251
CF*					✓	✓
SD/MMC*	✓	✓		✓	✓	✓
MS*	✓	✓	✓		✓	✓
xD*	✓				✓	
# LUN	1	1	1	1	4	4
Pin & Package	36-pin QFN	36-pin QFN	36-pin QFN	36-pin QFN	128-pin VTQFP	128-pin VTQFP

Industrial temperature options (-40° to 85°C) are available for all parts above, except LAN9220, LAN9217, LAN9312 and USB3740

USB Portable Power – USB375x Family[†]

- USB3750: Over-voltage protection and USB-IF Battery Charging v1.2 detection plus USB 2.0 switch
- USB3751: Over-voltage protection and USB-IF Battery Charging v1.2 detection
- Enables the device side of the RapidChange Anywhere™ ecosystem in any mobile platform

[†]Device available in summer 2011

Hi-Speed USB 2.0 Portable Hubs – USB3803/3503

- Portable 3-port hubs with 1uA standby current in an ultra-small 1.95x1.95mm WLCSP package
- USB3803: USB 2.0 hub
- USB3503[†]: HSIC hub (HSIC upstream port only)
- Supports mobile product architecture expansion from the SoC/processor with small footprint impact

[†]Device available in fall 2011

Hi-Speed USB 2.0 Hubs – USB251xB Family, USB2412 and USB4534

- Hi-Speed USB 2.0, ultra low power, small-footprint hub family
- USB4534[†]: 4-port HSIC hub, with USB or HSIC connectivity options on upstream and all downstream ports

	USB2512B	USB2513B	USB2514B	USB2517	USB2412	USB4534
Ports	2	3	4	7	2	4
MultiTrak™ Technology		✓	✓	✓		✓
Battery Charging	1.1	1.1	1.1	1.1		1.2
Extended Commercial Temp. Option	✓	✓	✓			✓
Pin & Package	36-pin QFN	36-pin QFN	36-pin QFN 49-ball VFBGA	64-pin QFN	28-pin QFN	48-pin QFN

[†]Device available in winter 2012

Hi-Speed USB 2.0 Hub and Flash Media Controller Combo – USB26xx Family and USB4640

- USB4640 - USB HSIC interface combo, reduces power consumption by ~20% with HSIC upstream[†]

	USB2640	USB2641	USB2660	USB4640	USB2601	USB2602
SD/MMC*	✓	✓	✓	✓	✓	✓
xD*	✓		✓	✓		✓
MS*	✓	✓	✓	✓	✓	✓
# SD Ports	1	1	2	1	1	1
CF*					✓	✓
Internal Memory	✓	✓	✓	✓	✓	✓
Upstream Interface	USB	USB	USB	HSIC	USB	USB
# LUN	1	1	2	1	4	4
Pin & Package	48-pin QFN	48-pin QFN	64-pin QFN	48-pin QFN	128-pin TQFP	128-pin TQFP

[†]20% power reduction when compared to other SMSC USB upstream-based solutions.

USB Graphics Controllers – UFX6000/7000



- Remote graphics over USB 2.0 Hi-Speed or USB 3.0 SuperSpeed link
- High-performance adaptive compression technology
- Support Windows®, Linux® and Mac® OS

	UFX6000	UFX7000
USB Link	480 Mbps	5 Gbps
Display Resolution	Up to 2048 x 1152	Up to 2048 x 1152
Adaptive Compression	Yes	Yes
Pin & Package	225-pin LFBGA	225-pin LFBGA

Temperature Sensors – EMC14xx/10xx Family

- I²C interface temperature sensor with ±1°C accuracy
- Resistance Error Correction
- Single temperature with 2 interrupts: EMC1001
- Dual to quad temperature monitors with hardware shutdown: EMC1422/1423/1424 - 2/3/4 temperature monitors respectively
- Dual to quad temperature monitors with Beta Compensation: EMC1412/1413/1414 - 2/3/4 temperature monitors respectively
- Six or more temperature monitors: EMC1046/1047/1428
- Available in a variety of package options

Fan Controllers – EMC21xx/230x Family

- Programmable fan speed based on temperature reading or software control
- Supports standalone mode – loads content from an I²C EEPROM for auto-programming with no software required

	EMC2101	EMC2104	EMC2105	EMC2106	EMC2113
# Fans	1	2	1	2	1
PWM/Linear Control	PWM	PWM	Linear	PWM/Linear	PWM
Remote Temp. Monitors	1	4	4	4	3
System Shutdown	No	Yes	Yes	Yes	Yes
Voltage Monitors	No	Yes	Yes	Yes	No
Pin & Package	8-pin SOIC/ 8-pin MSOP	20-pin QFN	20-pin QFN	28-pin QFN	16-pin QFN

	EMC2301	EMC2302	EMC2303	EMC2305
# Fans	1	2	3	5
PWM/Linear Control	PWM	PWM	PWM	PWM
System Shutdown	No	No	No	No
Pin & Package	8-pin MSOP	10-pin MSOP	12-pin QFN	16-pin QFN

Industrial temperature options (-40° to 85°C) are available for all parts above, except USB375x, UFX6000/7000, USB2601/2602 and USB2412

Capacitive Touch Sensors – CAP11xx Family

- 8kV HBM ESD protection
- Extensive noise filtering for wireless, DC-DC converter and backlight inverter frequencies
- Flexible LED Drivers

	CAP1188	CAP1166	CAP1128	CAP1126	CAP1106	CAP1105	CAP1133
Sensor Inputs	8	6	8	6	6	5	3
LED Drivers	8	6	2	2			3
Alert	✓	✓	✓	✓	✓		✓
Wake	✓	✓	✓	✓			
Reset	✓	✓	✓	✓			
Interface	I ² C/SPI/BC-Link	SPI	I ² C/SMBus				
Pin & Package	4x4mm, 24-pin QFN	4x4mm, 20-pin QFN	4x4mm, 20-pin QFN	4x4mm, 16-pin QFN	3x3mm, 10-pin DFN	3x3mm, 10-pin DFN	3x3mm, 10-pin DFN
Proximity	✓	✓	✓	✓	✓	✓	✓

GPIO Expanders – ECE1088, ECE1099 and ECE1105

- SMBus or SMSC BC-Link™ interface

	ECE1088	ECE1099	ECE1105
I/O Ports	20 GPIOs	32 GPIOs, 23:8 Keyscan	32 GPIOs, 23:8 Keyscan, 2 x PS/2
System Interface	SMBus or BC-Link	SMBus or BC-Link	SMBus or BC-Link
Pin & Package	28-pin QFN	40-pin QFN	48-pin QFN

I/O Controllers – SCH311x Family

- Highly-integrated I/O controller in a 128-pin VTQFP package
- Legacy I/O features include 2 to 6 UARTs, parallel port, PS/2 keyboard, mouse, floppy disk controller and 40 GPIOs
- PWM outputs, 3 tachometer inputs and temperature measurement
- Monitoring of 7 voltages and 6 voltage ID inputs
- SCH3112/3114/3116: 2/4/6 UARTs respectively

Industrial temperature options (-40° to 85°C) are available for all parts above, except MEC1310 and MEC1318

Embedded & Industrial Sales and Support:

- To request samples, a quote or to ask product-related questions, please email: chipinfo@smc.com.
- For local sales office contact information, please visit www.smc.com or click this live link (PDF version only).



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Programmable General Purpose Embedded Controllers

- SMSC's expanding family of flexible, feature-rich embedded controllers consists of:
 - MEC13xx economical, 8-bit SRAM-based devices which use an external SPI-flash for code storage
 - MEC16xx powerful, 32-bit devices with embedded flash memory

	MEC1310	MEC1318	MEC1609	MEC1618	MEC1619
EC Core	8-bit 8051	8-bit 8051	32-bit ARC	32-bit ARC	32-bit ARC
Flash Memory			192KB	192KB	192KB
SRAM	64KB	96KB	16KB	16KB	16KB
EEPROM				1KB	1KB
LPC	✓	✓	✓	✓	✓
SMBus Controllers	3	3	3	3	3
SPI Controller	1	1	1	2	2
BC-Link	1	1	3	2	2
PECI	2.0	3.0	2.0	3.0	3.0
AMD TSI	✓	✓	✓	✓	✓
ADC	10 bit/5 ch	10 bit/5 ch	10 bit/16 ch	10 bit/16 ch	10 bit/16 ch
PWMs	4	4	8	8	8
Temp Sensor		✓			✓
Fan Tachs	2	2	4	6	6
Fan Control	Set & Forget	Set & Forget	FW	FW	FW
Keyscan & PS/2	✓	✓	✓	✓	✓
JTAG			✓	✓	✓
Package	128-pin VTQFP	132-pin DQFN	144-pin LFBGA	156-pin LFBGA	156-pin LFBGA
iTemp available			✓	✓	✓

*CompactFlash® (CF) / Secure Digital (SD™) / MultiMediaCard™ (MMC) / Memory Stick® (MS) / xD-Picture Card™ (xD) are registered trademarks or trademarks of their respective holders. xD licensing information is available on our website: www.smc.com/licensing.