

# QB63xx SOC Series

## Product Brief



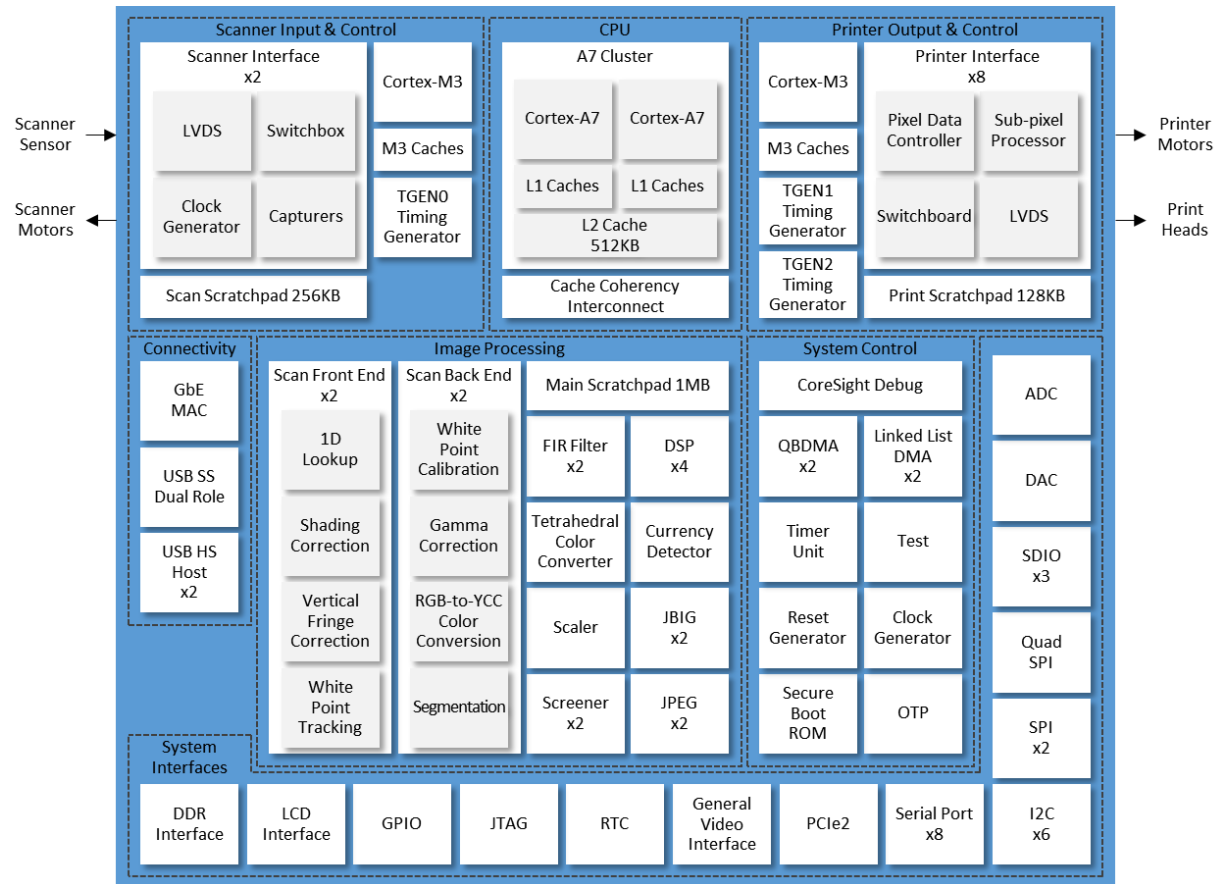
### Overview

Consumers want printers and scanners that are easy to use, conserve power, deliver outstanding image quality, remain secure, and are affordable. The QB63xx is a highly integrated system-on-chip (SOC) designed specifically to meet the demanding requirements of the next generation of print and scan devices.

### Applications

Laser/LED single- and multi-function printers	Thermal printers	3D printers
Inkjet single- and multi-function printers	Label printers	Document scanners
Dye-sub printers	POS receipt printers	Check scanners

### Block Diagram



### Key Features

- 28nm silicon process for reduced power and increase performance, without giving up 3.3V IO
- Ultra low power 65 mW sleep operation to help meet the Energy Star and China Energy Label (CEL) standards
- Enhanced image segmentation for outstanding image quality
- Boot security and run-time security
- Flexible pin function overlay
- Programmable printer and scanner interfaces to directly control virtually any printer (laser, LED, inkjet, thermal) or scanner (CIS, multi-segment CIS, CCD) mechanism
- Based on the same architecture as the Quatro 53xx and 55xx, for straightforward firmware migration

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Category	Feature	Specification	Units	
CPU	Processor	Cortex-A7 up to 1.125 GHz	1-2	
	L1 I/D Caches	32KB/32KB	1-2	
	L2 Cache	512KB	1	
	Cache Coherency	CCI-400	1	
	Floating Point	VFPv4	1-2	
	SIMD Extensions	NEON	1-2	
Image Processing	Scan Front End	Shading Correction / 1D Lookup Vertical Fringe Correction / White Point Tracking	2	
	Scan Back End	White Point Calibration / Gamma Correction RGB-to-YCC Color Conversion / Segmentation	2	
	Other Image Processing Units	FIR Filter		2
		Tetrahedral Color Converter		1
		Scaler		1
		Screener		2
	Currency Detector		1	
Imaging DSP	Up to 480 MHz	4		
Memory	DDR	8-bit DDR3L-2133 1GBx2 or DDR4-2133 2GBx2	1	
	On-Chip SRAM	1MB main scratchpad	1	
		256KB scan scratchpad	1	
		128KB print scratchpad	1	
	Serial Flash (Boot Option)	1/2/4-bit SPI NOR/NAND	1	
eMMC Flash (Boot Option)	1/4/8-bit, up to HS200 (ports shared with SDIO)	2		
Display	LCD Interface	18/24-bit LCD LVDS 3/4 ch, Vx1 1 ch, 8-bit SRGB	1	
Printer Output & Control	Processor	Cortex-M3 up to 400 MHz	1	
	Processor L1 I/D Caches	16KB/16KB caches with locking	1	
	Output Channels	LVDS 1 ch, LVCMOS 1/2/4/8 pins (32 pins total)	8	
	Subpixel PLL	Up to 2.56 GHz	1	
	VSYNC Synchronization		1	
	HSYNC Synchronization		8	
	Laser Modulation	8 to 32 bits	8	
	Laser Angle Compensation	0-7 stretch subpixels per pixel at 1200 dpi	8	
	Laser Dot Counter		8	
	Inkjet Formatter		1	
	Thermal Profile Generator		1	
Scanner Input & Control	Processor	Cortex-M3 up to 400 MHz	1	
	Processor L1 I/D Caches	16KB/16KB caches with locking	1	
	External AFE Interface	LVDS 3/4/5 ch, LVCMOS 4/5/6/7/8/10 pins	2	
	DataPort Interface	LVCMOS 4/5/6/7/8/10 pins	2	
	Data Rearrangement	Multi-segment deinterleaving, up to 9 segments	2	
Timing Generators	Signal Inputs & Generators	Multi-purpose TGEN units PWM outputs: timer, clock, PWM, modulated PWM I/Os with buffer: ring buffer, FIFO Event inputs: single input, dual input, speed monitor, phase comparator	96	
USB	USB Dual Role	USB 3.2 Gen 1x1 SS (5 Gbps) Dual Role	1	
	USB Host	USB 2.0 HS Host	2	
Ethernet	Ethernet MAC	10/100/1000	1	
PCIe	PCIe	Gen 2, dual mode, 1 lane	1	
Serial Interfaces	SPI		2	
	Serial Port (UART)		8	
	I2C		6	
	SDIO/eMMC	SDSC/SDHC/SDXC, 1/4/8-bit, DS/HS/UHS-I	3	
ADC/DAC	ADC	15 ch, 12 bits, A0: 6.65 MSPS, B0: 13.3 MSPS, 3.6V	1	
	DAC	4 ch, 8 bits, 0.5 MSPS, 3.3V	1	
Real Time Clock	RTC	32.768 kHz, <=2uA standby current	1	
GPIO	GPIO	Pins selectable as GPIO (including TGEN IO)	168	
Boot	OTP	2 kbits	1	
	Boot ROM	Secure boot: RSA, AES	1	
Debug	Debug Trace	CoreSight with ETM	1	
Power	Max Power	See QB63xx Power Modes Table document		
	Sleep Power	65 mW with Ethernet connection		
Package	Package Options	FBGA 289 14x14 0.8, FBGA 432 19x19 0.8		