Features

High performance with low power consumption options

Advanced RISC Architecture

131 Instructions over 80% execute in a single cycle

32 x 8 General purpose working registers

Up to 32MHz with 32 MIPS

Internal single cycle multiplier (8x8)

Non-Volitile program and data memory

32Kbytes On-chip programmable Flash Memory

2Kbytes SRAM

Programmable EEPROM supports byte access

Program encryption

Two independently prescaled 8 Bit timers

Input capture and output compare modes

Internal 32KHz oscillator for Real Time Clock function

Up to 9 PWM outputs, Programmable dead-band control

12 Bit High Speed ADC with up to 12 channels

- Optional internal or external voltage reference
- Programmable Gain Amplifier (X 1/8/16/32)
- Differential input channels
- Automatic threshold voltage monitoring mode

Internal 1.024V / 2.048V / 4.096V Reference +-1%

8 Bit programmable DAC

Watchdog timer

Synchronous and Asynchronous serial Interface

SPI with programmable master/slave TWI compatible

I2C with Master/Slave mode

16 Bit arithmetic accelerator unit (DSC)

SWD debug interface

POR built in power on reset circuit

LVD Low voltage detection circuit

LogicGreen Technologies Co., LTD

LogicGreen

8-bit LGT8XM

RISC Microcontroller with In-System Programmable FLASH Memory

LGT8F88P

LGT8F168P

LGT8F328P

Data book

Version 1.0.4

Applications

Motor-driven

automation and

control home appliances

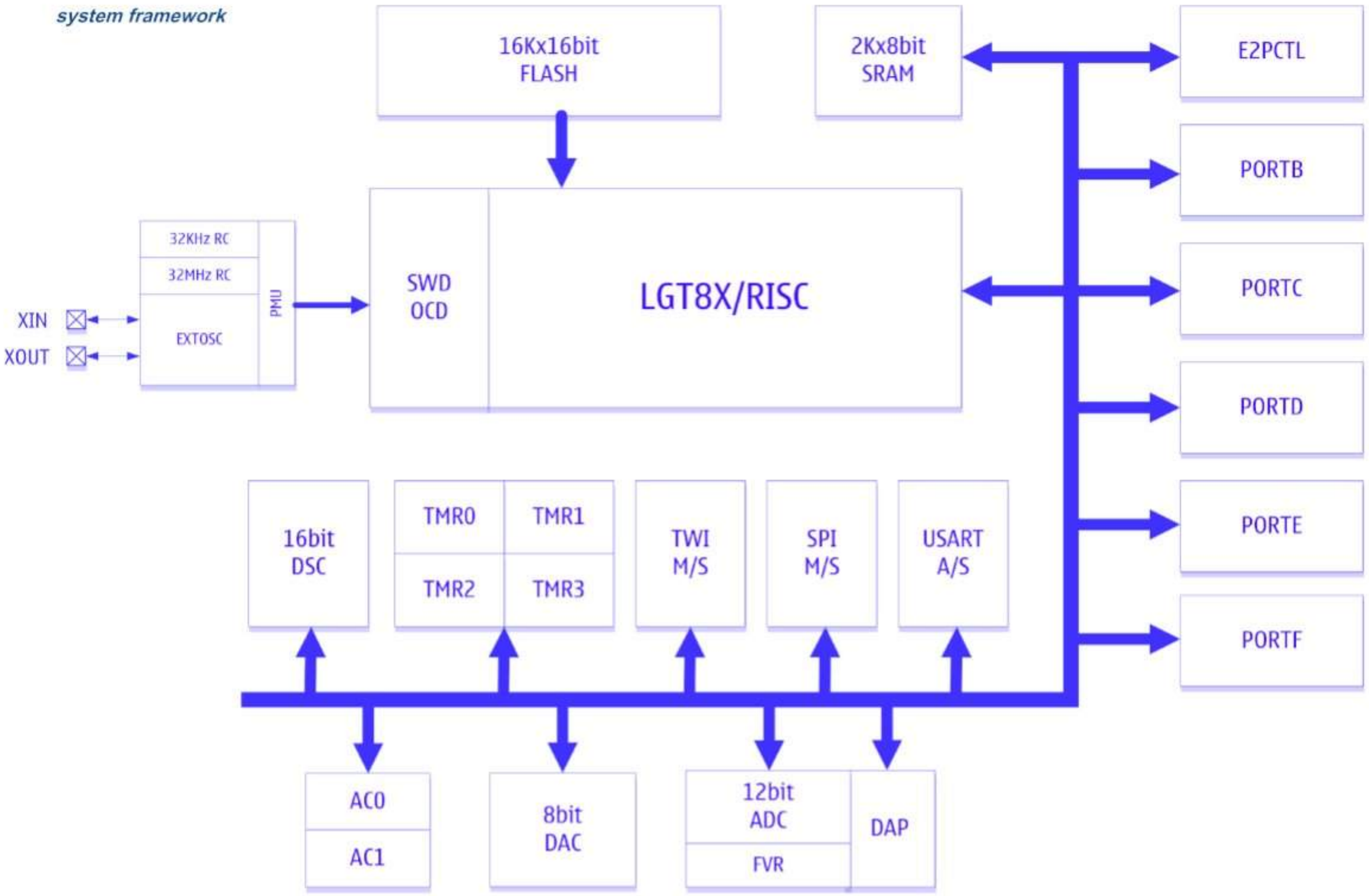
- **Packaging** QFP48/32L, SSOP20L
- **Power** 1uA@3.3V
- **Features**

Voltage	1.8V ~ 5.5V
Frequency	0 ~ 32MHz
Temperature	-40C ~ +85C
HMB ESD	> 4KV

Built-in 1% Can be calibrated 32MHz RC Oscillator frequency output Built-in support 1% Can be calibrated 32KHz RC Oscillator external support 32.768KHz as well as 400K ~ 32MHz Crystal Input

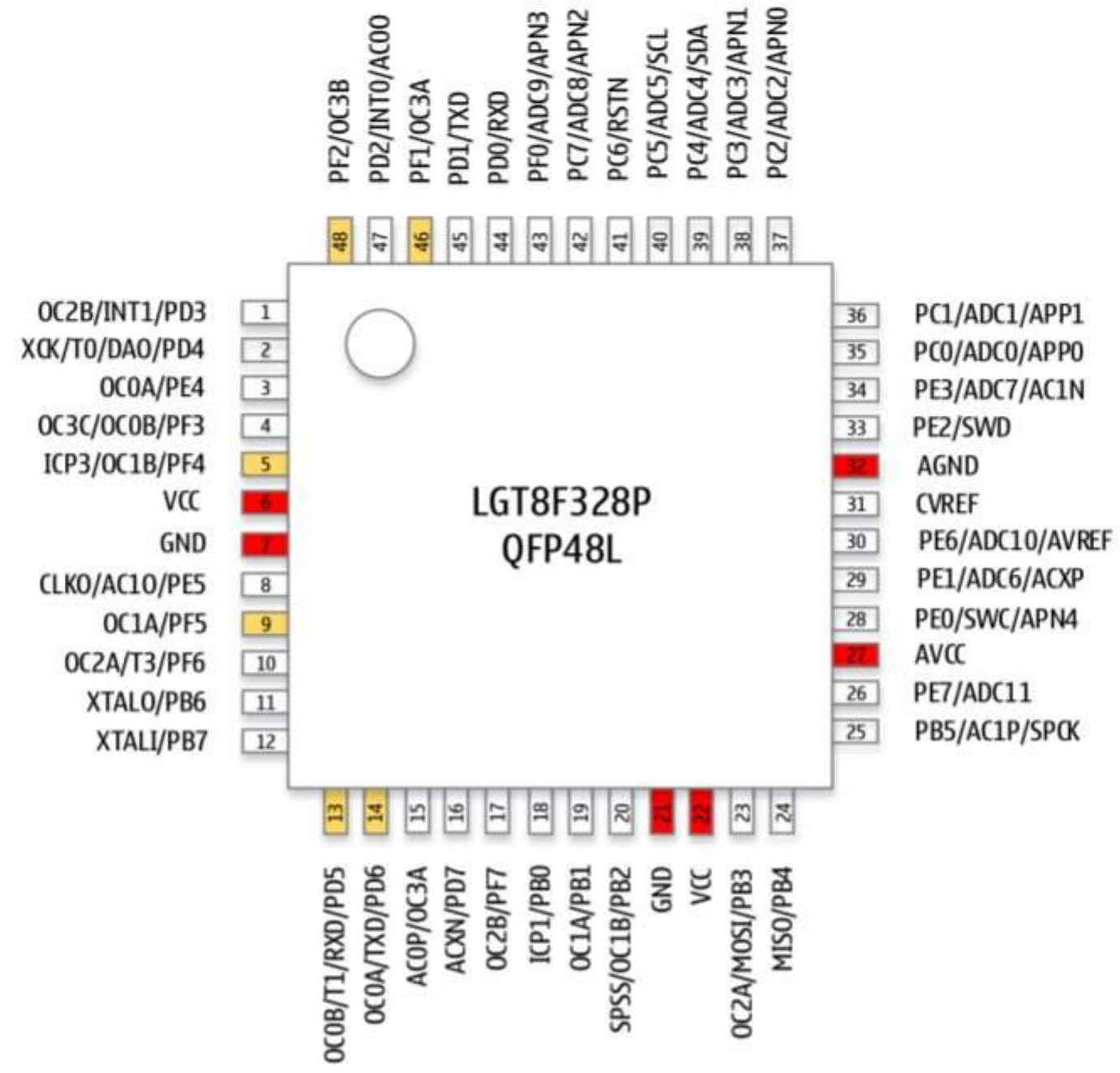
6x High current push-pull drive IO Support high-speed PWM application

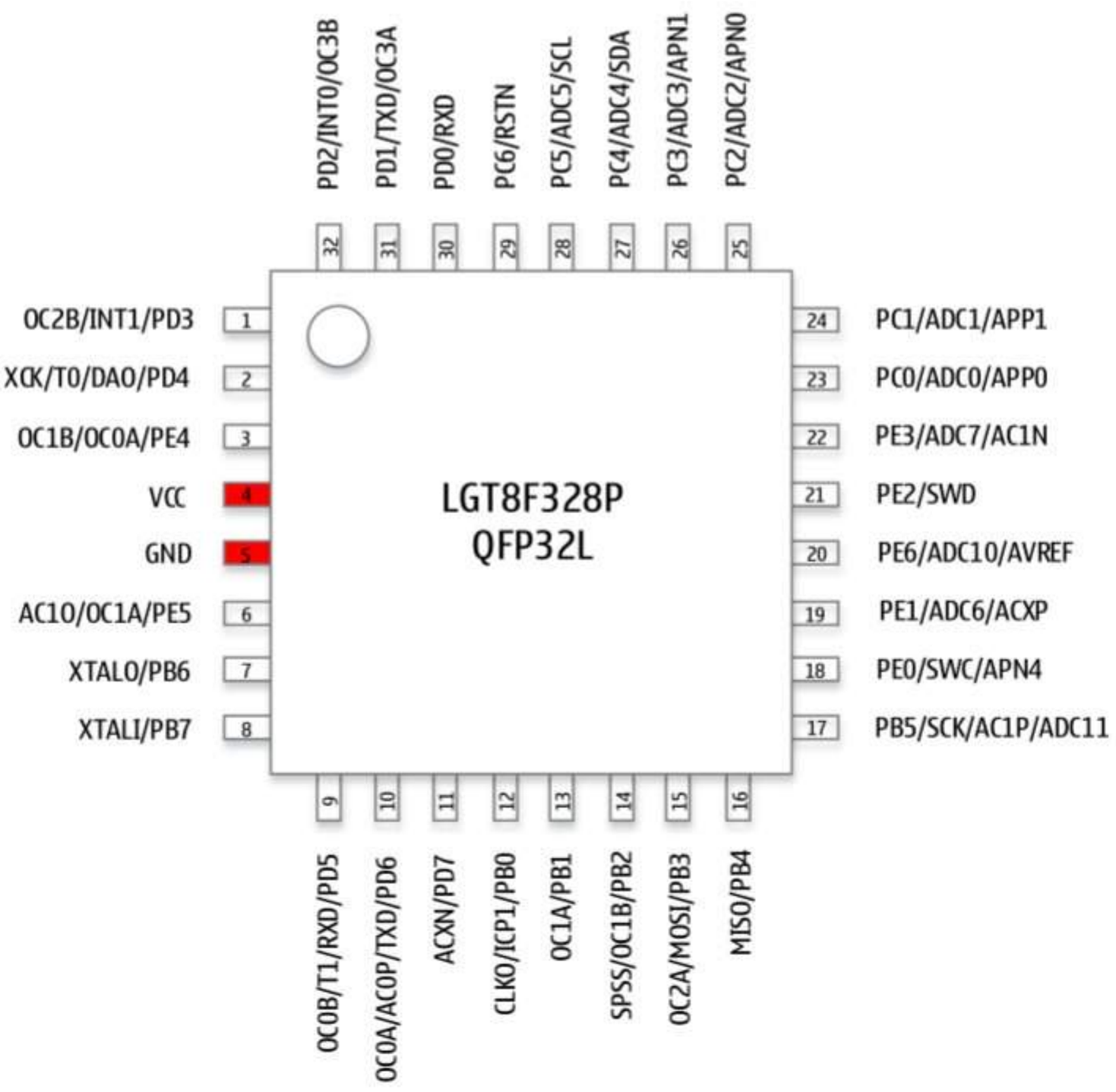
system framework

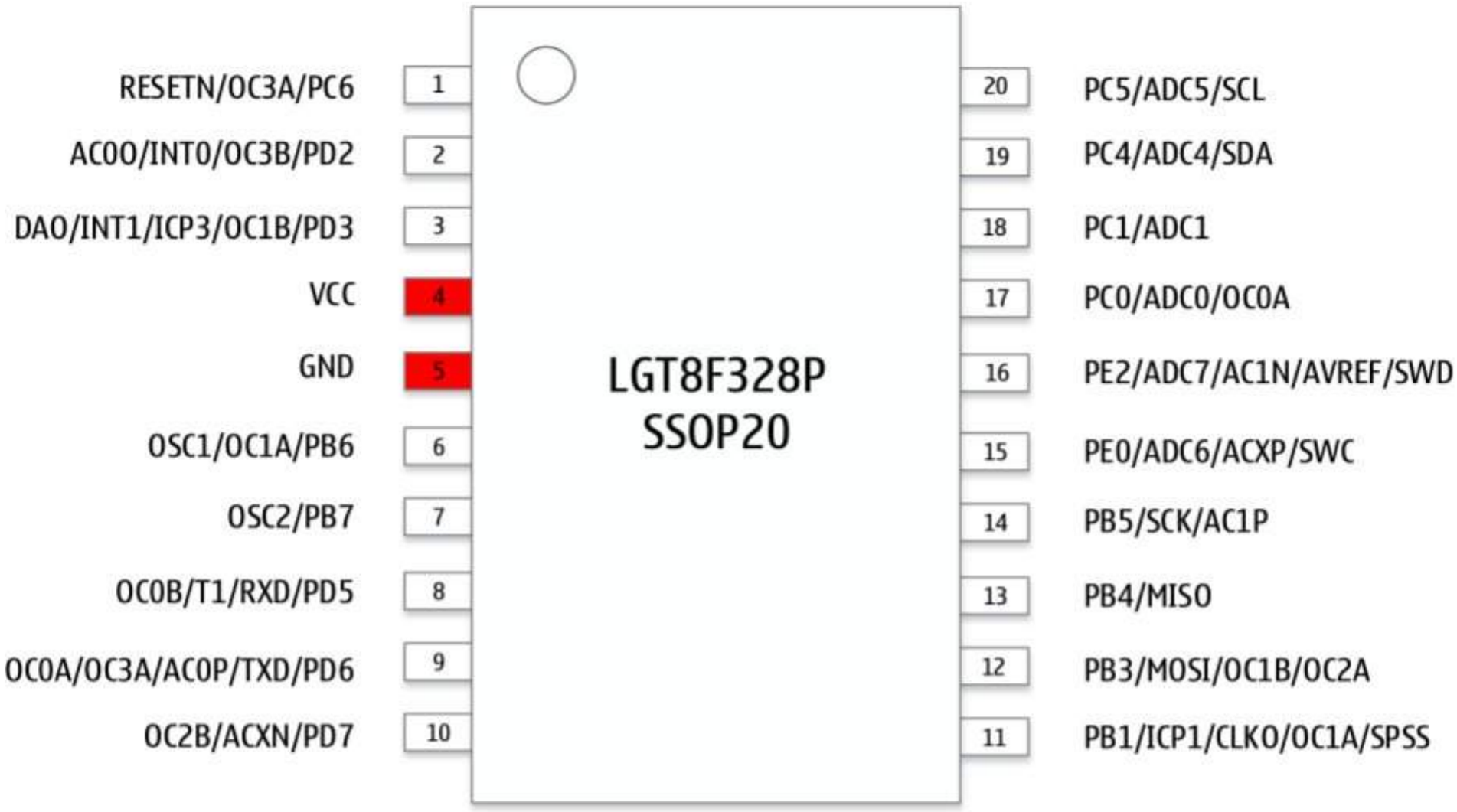


Module Name	Module features
SWD	Debug module, debugging and ISP Features
LGT8X	8Bit high performance RISC Kernel
E2PCTL	FLASH Data Access Interface Controller
PMU	Power management module
PORTB/C/D/E/F	General-purpose programmable input and output ports
DSC	16 Digit arithmetic acceleration unit
ADC	8 Channel 12 Bit ADC with programmable gain
DAP	Differential amplifier
IVREF	1.024V / 2.048V / 4.096V Internal Reference
ACO/1	Analog comparator
TMRO/ 1/2/3	8/16 Bit timer / counter, PWM Controller
WDT	Reset Watchdog module
SPIM/S	Master-slave SPI Controller
TWIM/S	Master-Slave two-wire interface controller, compatible I2C protocol
USART	Synchronous / Asynchronous Serial Transceiver
DAC	8 Bit DAC

Package defined






LGT8F328P
SSOP20
RESETN/OC3A/PC6
AC0O/INT0/OC3B/PD2
DAO/INT1/ICP3/OC1B/PD3
VCC
GND
OSC1/OC1A/PB6
OSC2/PB7
OC0B/T1/RXD/PD5
OC0A/OC3A/AC0P/TXD/PD6
OC2B/ACXN/PD7
1
2
3
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9
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19
18
17
16
15
14
13
12
11
PC5/ADC5/SCL
PC4/ADC4/SDA
PC1/ADC1
PC0/ADC0/OC0A
PE2/ADC7/AC1N/AVREF/SWD
PE0/ADC6/ACXP/SWC
PB5/SCK/AC1P
PB4/MISO
PB3/MOSI/OC1B/OC2A
PB1/ICP1/CLKO/OC1A/SPSS

QFP48	QFP32	SSOP20	
12	08	07	PB7/XTALI PB7: I/O Pin B7 XTALI: Crystal Oscillator Input
13	09	08	PD5/RXD*/T1/OC0B PD5: I/O Pin D5 RXD: USART Receive Data T1: Timer 1 External Clock Input OC0B: Timer/Counter 0 Output Compare Match B
14	10	09	PD6/TXD*/OC0A PD6: I/O Pin D6 TXD: USART Transmit Data OC0A: Timer/Counter 0 Output Compare Match A
15			AC0P/OC3A AC0P: Analog Comparator 0 Positive Input OC3A: Timer/Counter 3 Output Compare Match A
16	11	10	PD7/ACXN PD7: I/O Pin D7 ACXN: Analog Comparator 0/1 Inverting Input
17	-		PF7/OC2B PF7: I/O Pin F7 OC2B: Timer/Counter 2 Output Compare Match B
18	12	11	PB0/ICP1 PB0: I/O Pin B0 ICP1: Timer 1 Capture Input
19	13		PB1/OC1A PB1: I/O Pin B1 OC1A: Timer/Counter 1 Output Compare Match A
20	14	12	PB2/OC1B/SPSS PB2: I/O Pin B2 OC1B: Timer/Counter 1 Output Compare Match B SPSS: SPI Slave Select
21	-	-	GND
22	-	-	VCC
23	15	12	PB3/MOSI/OC2A PB3: I/O Pin B3 MOSI: SPI Master Output Slave Input OC2A: Timer/Counter 2 Output Compare Match A
24	16	13	PB4/MISO PB4: I/O Pin B4 MISO: SPI Master Input Slave Output
25	17	14	PB5/SPCK/AC1P PB5: I/O Pin B5 SPCK: SPI Clock AC1P: Analog Comparator 1 Noninverting Input
QFP48	QFP32	SSOP20	

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26	-	-	PE7/ADC11 PE7: I/O Pin E7 ADC11: ADC Input Channel 11
27	-	-	AVCC: Internal Analog Circuit Positive Power Supply
28	18	15	PE0/SWC/APN4 PE0: I/O Pin E0 SWC: SWD Debug Interface Clock APN4: Differential Amplifier Inverting Input Channel 4
29	19		PE1/ADC6/ACXP PE1: I/O Pin E1 ADC6: ADC Input Channel 6 ACXP: Analog Comparator 0/1 Noninverting Input
30	20	16	PE6/ADC10/AVREF PE6: I/O Pin E6 ADC10: ADC Input Channel 10 AVREF: ADC External Reference Voltage Input
31	-	-	CVREF: ADC Reference Voltage External Filter Capacitor (0.1uF)
32	-	-	AGND: Internal Analog Circuit Power Supply Ground
33	21	16	PE2/SWD PE2: I/O Pin E2 SWD: SWD Debug Interface Data
34	22		PE3/ADC7/AC1N PE3: I/O Pin E3 ADC7: ADC Input Channel 7 AC1N: Analog Comparator 1 Inverting Input
35	23	17	PC0/ADC0/APP0 PC0: I/O Pin C0 ADC0: ADC Input Channel 0 APP0: Differential Amplifier Channel 0 Positive Input
36	24	18	PC1/ADC1/APP1 PC1: I/O Pin C1 ADC1: ADC Input Channel 1 APP1: Differential Amplifier Channel 1 Positive Input
37	25	-	PC2/ADC2/APN0 PC2: I/O Pin C2 ADC2: ADC Input Channel 2 APN0: Differential Amplifier Channel 0 Inverting Input
38	26	-	PC3/ADC3/APN1 PC3: I/O Pin C3 ADC3: ADC Input Channel 3 APN1: Differential Amplifier Channel 1 Inverting Input
QFP48	QFP32	SSOP20	

QFP48	QFP32	SSOP20	
39	27	19	PC4/ADC4/SDA PC4: I/O Pin C4 ADC4: ADC Input Channel 4 SDA: I2C Data
40	28	20	PC5/ADC5/SCL PC5: I/O Pin C5 ADC5: ADC Input Channel 5 SCL: I2C Clock
41	29	1	PC6/RESETN PC6: I/O Pin C6 RESETN: External Reset Input
42	-	-	PC7/ADC8/APN2 PC7: I/O Pin C7 ADC8: ADC Input Channel 8 APN2: Differential Amplifier Channel 2 Inverting Input
43	-	-	PF0/ADC9/APN3 PF0: I/O Pin F0 ADC9: ADC Input Channel 9 APN3: Differential Amplifier Channel 3 Inverting Input
44	30	-	PD0/RXD PD0: I/O Pin D0 RXD: USART Receive
45	31	-	PD1/TXD PD1: I/O Pin D1 TXD: USART Transmit
46		1	PF1/OC3A PF1: I/O Pin F1 OC3A: Timer/Counter 3 Output Compare Match A
47	32	2	PD2/INT0/AC0O PD2: I/O Pin D2 INT0: External Interupt 0 Input AC0O: Analog Comparator 0 Output
48			PF2/OC3B PF2: I/O Pin F2 OC3B: Timer/Counter 3 Output Compare Match B
QFP48	QFP32	SSOP20	