



XE166xN Series – Value Line

Real-Time Signal Controller

The XE162xN (LQFP-64) and XE164xN (LQFP-100) microcontroller series are based on Infineon's popular and well-established C166SV2 architecture. The devices offer new safety features for safety integrity level (SIL) 2 and 3 applications such as an MPU (Memory Protection Unit), MCHK (Memory Checker) and ECC (Error Correction) for flash memory and SRAM.

Applications

- Servo drives
- Appliance motors
- HVAC compressors and blowers
- Stepper motors
- Industrial pumps
- Advanced sensing
- Power supplies
- Transportations

Main Features

- Suited for Safety applications with Memory Protection Unit (MPU), Memory Checker (MCHK), Error Correction (ECC) for Flash and SRAMs
- C166 Family opcode compatible
- High performance 16-bit C166SV2 CPU with 5 stage pipeline
- Single clock cycle instruction execution with 12.5ns instruction time
- 80 MIPS peak performance @ 80MHz CPU clock
- 12.5ns multiplication (16 x 16-bit), background division (32/16bit) and multiply-and-accumulate (MAC) instructions
- Fast context switching support with two additional local register banks
- 16Mbytes total linear address space for code and data
- 16-priority-level interrupt system with up to 96 sources
- 8-channel interrupt-driven data transfer facilities via peripheral event controller (PEC)
- Clock generation from internal or external clock sources
- 2Kbytes on-chip dual-port RAM (DPRAM)
- Up to 16Kbytes on-chip data SRAM (DSRAM)

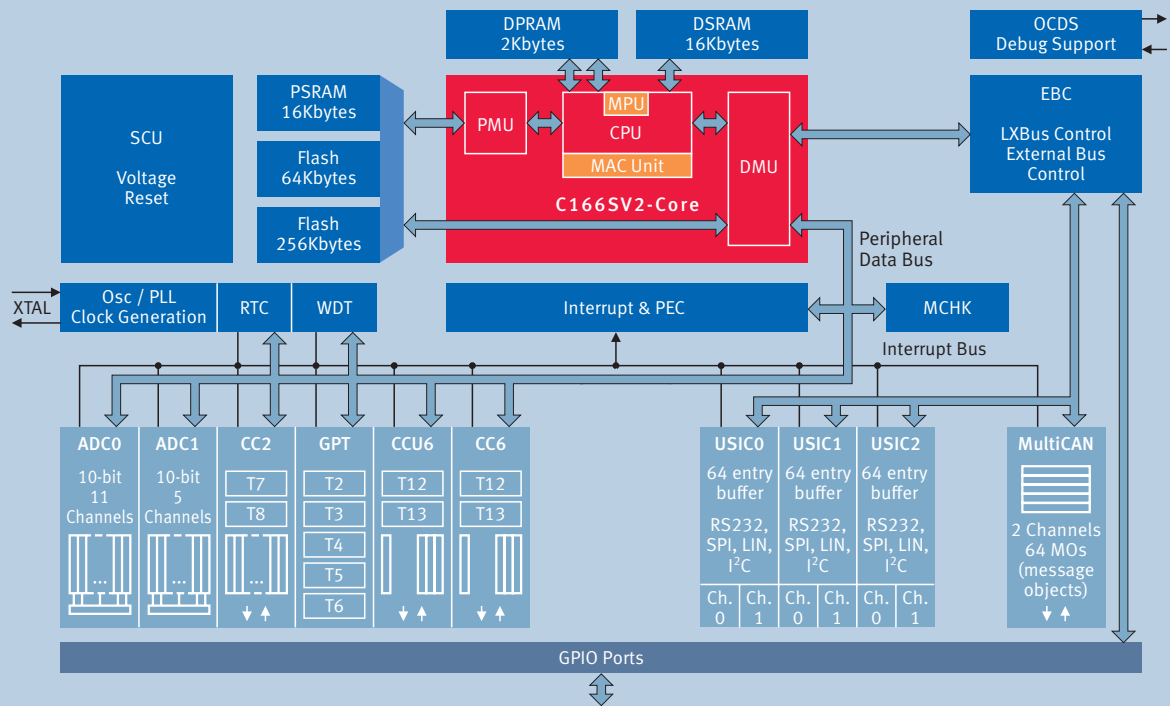
Main Features (cont'd)

- Up to 16Kbytes on-chip program/data SRAM (PSRAM)
- Up to 320Kbytes on-chip program memory on three banks
- EEPROM Emulation
- Up to 11+5-channel dual A/D converter with optional concurrent sampling and a conversion time down to 0.675µs
- 16-channel general purpose capture/compare units
- Up to 2 capture/compare units (CCU6) for flexible PWM signal generation for any kind of motor control
- Multi-functional general purpose timer unit with 5 timers
- Up to 6 serial interface channels to be used as UART, LIN, SPI, I²C Bus Interface, I²S Interface
- On-chip MultiCAN interface (Rev. 2.0B active) with 64 message objects, up to 2 CAN nodes and gateway functionality
- On-chip real time clock
- Programmable watchdog timer and oscillator watchdog
- Up to 76 general purpose I/O lines with flexible pin assignment
- On-chip bootstrap loader
- Supported by a large range of development tools
- On-chip debug support via 2-wire DAP interface
- 64/100-pin green LQFP package, 0.5mm (19.7mil) pitch
- Temperature range: -40 to +125°C
- Embedded voltage regulator for single power supply incl. brown-out detection
- Two I/O power domains for 5V analog inputs and 3.3V logic signals

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Block Diagram



Product Types

Series	Device	MIPS	Flash [KB]	RAM [KB]	I/O pins	ADC Channels	CapCom2 Channels	CapCom6 I/O Channels	USIC Channels (SSC, ASC, I²C, I²S, LIN)	CAN Nodes	EBC	Power Supply [V]	Ambiant ¹⁾ Temp. Range [°C]	Package
XE162xN	SAF/K-XE162HN-16F80L	80	128	18	40	7 + 2	16	3/7	6	0	N	3.0 ... 5.5	F, K	PG-LQFP-64
	SAF/K-XE162HN-24F80L	80	192	26	40	7 + 2	16	3/7	6	0	N	3.0 ... 5.5	F, K	PG-LQFP-64
	SAF/K-XE162HN-40F80L	80	320	34	40	7 + 2	16	3/7	6	0	N	3.0 ... 5.5	F, K	PG-LQFP-64
	SAF/K-XE162FN-16F80L	80	128	18	40	7 + 2	16	3/7	6	2	N	3.0 ... 5.5	F, K	PG-LQFP-64
	SAF/K-XE162FN-24F80L	80	192	26	40	7 + 2	16	3/7	6	2	N	3.0 ... 5.5	F, K	PG-LQFP-64
	SAF/K-XE162FN-40F80L	80	320	34	40	7 + 2	16	3/7	6	2	N	3.0 ... 5.5	F, K	PG-LQFP-64
XE164xN	SAF/K-XE164KN-16F80L	80	128	18	75	6 + 5	16	6/14	4	0	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164KN-24F80L	80	192	26	75	6 + 5	16	6/14	4	0	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164KN-40F80L	80	320	34	75	6 + 5	16	6/14	4	0	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164HN-16F80L	80	128	18	75	11 + 5	16	9/21	6	0	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164HN-24F80L	80	192	26	75	11 + 5	16	9/21	6	0	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164HN-40F80L	80	320	34	75	11 + 5	16	9/21	6	0	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164GN-16F80L	80	128	18	75	6 + 5	16	6/14	4	2	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164GN-24F80L	80	192	26	75	6 + 5	16	6/14	4	2	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164GN-40F80L	80	320	34	75	6 + 5	16	6/14	4	2	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164FN-16F80L	80	128	18	75	11 + 5	16	9/21	6	2	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164FN-24F80L	80	192	26	75	11 + 5	16	9/21	6	2	Y	3.0 ... 5.5	F, K	PG-LQFP-100
	SAF/K-XE164FN-40F80L	80	320	34	75	11 + 5	16	9/21	6	2	Y	3.0 ... 5.5	F, K	PG-LQFP-100

1) F: T_s = -40 – 85°C; K: T_s = -40 – 125°C

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