

General-purpose 8-bit Microprocessors

TLCS-90 Series Microcontrollers

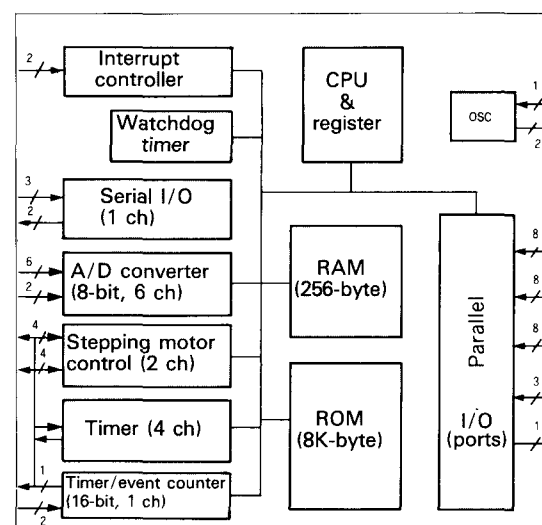
General Description

The TLCS-90 series are high-speed, high-performance 8-bit microcontrollers applicable to a variety of equipment. The TMP90C840A/841A, with its 8-bit CPU, ROM, A/D converter, multi-function timer/event counter and general-purpose serial interface integrated into a single chip, allows the expansion of external memories of programs (up to 56K-byte) and data (up to 1M-byte).

Features

- Powerful instructions: 163 basic instructions including multiplication, division, 16-bit arithmetic operations, bit manipulation instructions
- Minimum instruction execution time: 320ns (at 12.5MHz oscillation frequency)
- Internal RAM: 256-byte
- Internal ROM: 8K-byte
- Memory expansion (1M-byte for data area)
- High-accuracy 8-bit A/D converter (6 channels)
- General-purpose serial interface (1 channel)
- Multifunction 16-bit timer/event counter
- 2-channel stepping motor control port
- I/O ports (54 pins)
- Interrupt function: 10 internal, 4 external
- Watchdog timer
- Standby functions (4 HALT modes)

TMP90C840 Block Diagram



(The 90C841A is the version without a ROM)

Product List

• TLCS-90 Series (CMOS)

Type No.	Functions	ROM (byte)	RAM (byte)	I/O ports	Minimum instruction execution time (μs)	Operating temperature (°C)	Package	One-time ROM (piggyback)
TMP90C840AN/F	A/D converter: 8-bit x 6 ch Timer: 8-bit x 4 ch (PWM/PPG) Timer counter: 16-bit x 1 ch (Capture/PPG) Serial: 1 ch (UART/I/O expansion) Stepping motor control Port watchdog timer Micro DMA function Programming area: 64K-byte Data area: 1M-byte	8K	256	54	(Note 1) 320	-40~85°C	SDIP64 QFP64	TMP91P640E-I0 TMP91P640E-I0/N-I0/F-I0
TMP90C841AN/F		—		28				
TMP91C640N/F		16K	512	54				* TMP91P240E/N/F
* TMP91C641N/F		—		28				
* TMP91C240N/F	Timer/counter: 8-bit x 4 ch Serial: 1 ch Programming/data area: 64K-byte	32K	1K	54	320	-20~70°C	SDIP64 QFP64	—
TMP90C041N/F		—		28				
* TMP90C141N/F	Timer/counter: 8-bit x 4 ch Serial: 1 ch Programming/data area: 64K-byte	—	1K	28	320	-40~85°C	DIP40 SOP40	OTP: Planning; TMP90G802C, Piggyback
TMP90C802P/M	Timer/counter: 8-bit x 4 ch Serial: 1 ch Programming/data area: 64K-byte	8K	128	32	(Note 1) 320	-40~85°C	SDIP64 QFP64	* TMP90P800E/N/F (8K EPROM, 256RAM)
* TMP90C400N/F	Slave bus function 90C840A with advanced I/O functions	4K	128	56	(Note 1) 320	-40~85°C	SDIP64 QFP64	OTP: Planning
* TMP90C844N/F	External memory expanded version, 90C840A with advanced I/O Programming area: 4M-byte Data area: 8M-byte	8K	256	54	(Note 2) (250)	-40~85°C	SDIP64 QFP64	—
* TMP90C845N/F	VCR servo VCR dedicated circuit built in	—	256	38	(Note 2) (250)	-40~85°C	SDIP64 QFP64	TMP91G642E/G Piggyback
TMP91C642N/F	Flash A/D converter: 8-bit x 2 ch D/A converter: 8-bit x 2 ch Timer: 8-bit x 4 ch, 16-bit x 1 ch	16K	320	54	400	-20~70°C	SDIP64 QFP64	* TMP90P846E/N/F
* TMP90C846N/F		8K	256	28	400	-20~70°C	SDIP42 QFP44	

Package

N: Plastic Shrink Dual Inline Package (SDIP)

F: Plastic Flat Package (QFP)

P: Plastic Standard Dual Inline Package (DIP)

M: Plastic Small Outline Package (SOP)

E: Ceramic Shrink Dual Inline Package (SDIC)

C: Ceramic Standard Dual Inline Package (DIC)

G: Ceramic Flat Package

(Note 1): Guaranteed for minimum instruction execution time of 320ns at an operating temperature of -20 to 70°C; 400ns at -40 to 85°C.

(Note 2): Planning for minimum instruction execution time of 250ns at an operating temperature of -20 to 70°C.

*: Under development