

8-Bit Microcontrollers

90 Series

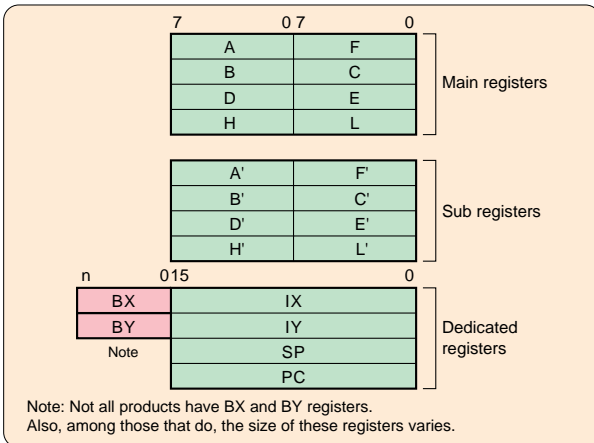


8-bit microcontrollers suitable for control of office equipment systems and for consumer and industrial electronics

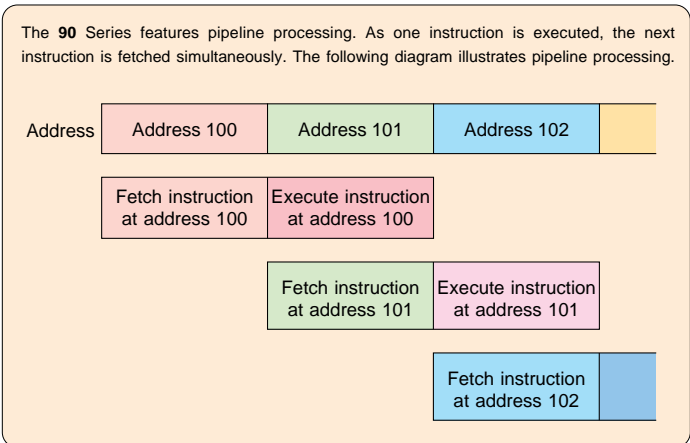
The **90** Series is made up of 8-bit microcontrollers suitable for use in various control applications.

- Microcontrollers with up to 60 Kbytes of ROM or no ROM are available.
- Microcontrollers with up to 4 Kbytes of RAM or no RAM are available.
- Minimum instruction execution time: 250 ns (at 16 MHz)
- Memory or I/O can be added externally: maximum of 8 Mbytes program/data area
- Enhanced instructions: multiplication and division instructions, 16-bit arithmetic instructions, bit-manipulation instructions
- Variety of interrupt types: vector to automatically handle internal and external interrupts, micro DMA function
- Standby modes

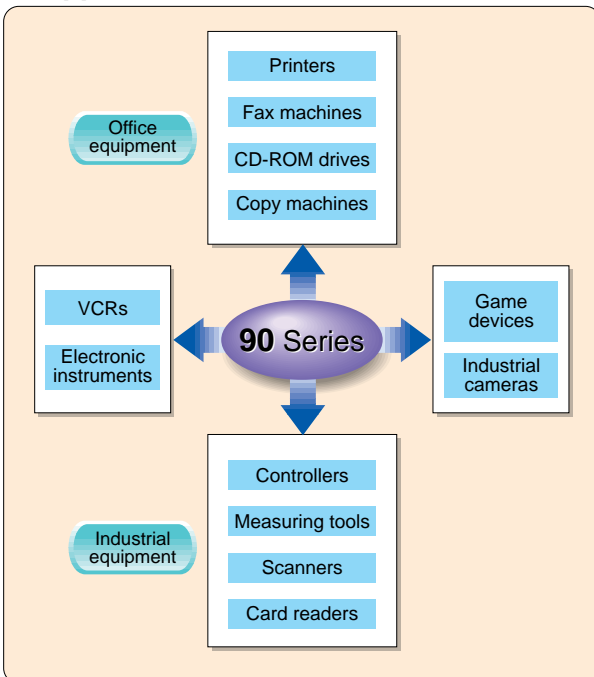
Register configuration



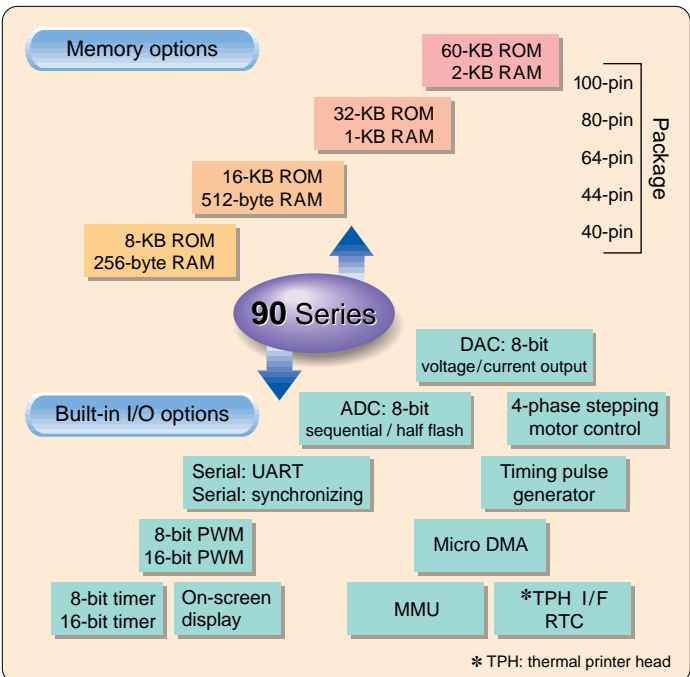
High-speed operation with pipeline processing



Applications



Product line



90 Series Selection Guide

ROM (bytes)	RAM (bytes)	Product No.	Minimum Instruction Execution Time (ns)	Serial Interface Synchronous Asynchronous Synchronous/Asynchronous	I ² C Bus Channels	8-Bit AD Converter Channels	8-Bit DA Converter Channels	Timer/Counter 8-bit channels 16-bit channels	Watchdog Timer	High-speed PWM	Timebase Counter	Stepping Motor Controller Timing Pulse Generator	VCR Servo Controller	OSD	MMU	DRAW Controller	Slave Bus Interface High-Speed DMA	Thermal Print Head Controller	Real-Time Clock	Dual Clock	Power Supply Voltage (V)	Operating Temperature (°C)	Version with Built-in OTP	Packages												
NA		TMP90C051F			2			4	●			●			●	●	●			●	●	4.5 to 5.5	-20 to 70	-	QFP80											
		TMP90C041AN/AF			1	6			4	1	●		●														-	SDIP64, QFP64								
0K	128	TMP90C401N/F			1			4														4.5 to 5.5	-20 to 70	-	SDIP64, QFP64											
		TMP90C801N/F		Note 320	1				4																		-	DIP40, SOP40								
	256	TMP90C803AP/AM			1				4	●														4.5 to 5.5	-20 to 70	-	DIP40, SOP40									
		TMP90C841AN/AF			1	6			4	1	●		●																-	SDIP64, QFP64						
	512	TMP90C845AN/AF		250	1	4			4	1	●		●			●										4.5 to 5.5	-20 to 70	-	DIP40, SOP40							
		TMP90CH03P/M			1				4		●																				-	DIP40, SOP40				
	512	TMP91C641N/F		Note 320	1	6			4	1	●		●															4.5 to 5.5	-20 to 70	-	SDIP64, QFP64					
		TMP90CH45N/F		250	1	4			4	1	●				●																		-	SDIP64, QFP64		
	1K	128	TMP90C141N/F		320	1	8			4	1	●		●																	4.5 to 5.5	-20 to 70	-	SDIP64, QFP64		
			TMP90CM37F/T			1	1	1	8	2	4	1	●	●	●				●																	-
2K	128	TMP90CM39F/T			1	1	8		4	1	●		●									4.5 to 5.5	-20 to 70							-			MFP80, PLCC84			
		TMP90CS37F/T		250	1	1	1	8	2	4	1	●	●	●				●																	-	MFP80, PLCC84
4K	128	TMP90CS39F/T			1	1	8		4	1	●		●											4.5 to 5.5	-20 to 70					-			MFP80, PLCC84			
		TMP90C441N/F			1	6			4	1	●		●																						-	SDIP64, QFP64
4K	128	TMP90C400N/F			1			4													4.5 to 5.5					-20 to 70	-			SDIP64, QFP64						
8K	256	TMP90C800N/F		Note 320	1			4																						4.5 to 5.5			-20 to 70	-	SDIP64, QFP64	
		TMP90C802AP/AM			1				4		●																								-	DIP40, SOP40
	512	TMP90C840AN/AF			1	6			4	1	●		●															4.5 to 5.5	-20 to 70					-	SDIP64, QFP64	
		TMP90C844AN/AF		250	1	4			4	1	●		●					●																	-	SDIP64, QFP64
16K	320	TMP90C848F		400	1		16	4	1	●	8																				4.5 to 5.5	-20 to 70		-	QFP80	
		TMP91C642AN/AF		400	2		12		4		●	3	●	●	●																				-	SDIP64, QFP64
	512	TMP90CH02P/M		250		1			4		●												4.5 to 5.5				-20 to 70							-	DIP40, SOP40	
		TMP91C640N/F		Note 320	1	6			4	1	●		●																						-	SDIP64, QFP64
		TMP90CH44N/F		250	1	4			4	1	●		●							●																-
640	TMP90CH42DF		320	2		6		3		●	3	●	●	●								4.5 to 5.5		-20 to 70	-	QFP100										
	TMP90CK42DF		320	2		6		3		●	3	●	●	●																-			QFP100			
24K	640	TMP90CK76DF			2		12		4		●	3	●	●	●						●				●	4.5 to 5.5				-20 to 70			-	QFP100		
		TMP90CM36F/T		250	1	1	1	8	2	4	1	●	●	●				●															-	MFP80, PLCC84		
	1K	TMP90CM38F/T			1	1	8		4	1	●		●															4.5 to 5.5	-20 to 70				-	MFP80, PLCC84		
TMP90CM40AN/AF		Note 320		1	6			4	1	●		●																				-	SDIP64, QFP64			
40K	768	TMP90CN72EDF			2		12		4		●	3	●	●	●						●				●						4.5 to 5.5	-20 to 70	-	QFP100		
		TMP90CS74EDF		250	2		1	12		4		●	3	●	●	●							●		●								-	QFP100		
	1K	TMP90CS36F/T		250	1	1	1	8	2	4	1	●	●	●											4.5 to 5.5		-20 to 70						-	MFP80, PLCC84		
		TMP90CS38F/T			1	1	8		4	1	●		●																						-	MFP80, PLCC84

Note: Guaranteed minimum instruction execution time is 320 ns when device is operating at temperatures of -20° to 70°C, and 400 ns when device is operating at temperatures of -40° to 85°C.

Product number suffixes N: Plastic shrink dual in-line package (SDIP) F: Plastic quad flat package (QFP) P: Plastic standard dual in-line package (DIP)
 M: Plastic small-outline package (SOP) T: Plastic leaded chip carrier (PLCC)