

8-bit Microcontrollers

■ KLCS-90 Series

■ Memory capacity

- Selection of microcontrollers from one with no built-in ROM up to one with 60K bytes of ROM according to your program size.
- Selection of modes from one with no built-in RAM up to one with 2k bytes of RAM.
- Memory or I/O can be added externally
 - : Program area : Maximum 8M bytes
 - : Data area : Maximum 8M bytes

■ Basic processor functions

- Original architecture
- Minimum instruction execution time : 250nS (at 16MHz)
- Multiplication and division instructions, 16-bit arithmetic instruction, bit operation instructions
- Internal interrupt, external interrupt, micro DMA function, standby function

■ Additional Functions

- 8-bit converter
- General purpose serial interface
- Multifunction 16-bit timer/event counter
(PPG output mode, frequency measurement, pulse width measurement, time difference measurement)
- 8-bit timer (PWM output mode, PPG output mode)
- Stepping motor controller
- Watchdog timer
- MMU (8M byte space)
- Slave bus function
- 8-bit half flash A/D converter
- 8-bit D/A converter
- RTC (realtime clock)
- DRAM controller
- Dual clock system (high-speed/low-speed operation selectable)

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KLCS-90 Series Selection Guide

ROM (byte)	RAM (nibbles)	Product No	SIO		I/O extension	I ² C bus	A/D converter	Flash A/D	D/A converter	Timer/counter		Watchdog timer	High-speed PWM	Time base counter	Timing pulse generator	Stepping motor controller	VCR servo controller	OSD	MMU	DRAM controller	High-speed DMA	Slave bus interface	Thermal printer head controller	Realtime clock	Dual clock	Package				OTP type				
			UART	UART						8-bit	16-bit															QFP	QFP	DIP	SOP		MFP	PLCC		
4k	128	KMP90C400N/F	●	●						4														64	64						●			
8k	256	KMP90C800N/F	●	●						4															64	64					●			
		KMP90C802AP/AU	●	●						4	●																40	40				●		
		KMP90C840AN/AF	●	●		6				4	1	●				●										64	64					●		
		KMP90C844AN/AF	●	●		4				4	1	●				●							●			64	64					●		
	512	KMP90C848F	●				16		4	1	●	8													●	80						●		
16k	320	KMP91C642AN/AF	●	●		12			4		●	3	●	●	●										64	64					●			
	512	KMP90CH02P/M	●	●					4		●																40	40				●		
		KMP91C640N/F	●	●		6			4	1	●				●											64	64					●		
		KMP90CH44N/F	●	●		4			4	1	●				●								●			64	64					●		
		640	KMP90CH42DF		●		6			4		●	3	●	●	●												100					●	
24k	640	KMP90CK42DF		●		6			3		●	3	●	●	●												100					●		
		KMP90CK76DF	●			12			4		●			●	●									●	●	100						●		
32k	1k	KMP90CM36F/T	●	●		8		2	4	1	●				●							●									80	84	●	
		KMP90CM38F/T	●	●		8			4	1	●				●								●									80	84	●
		KMP90CM40AN/AF	●	●		6			4	1	●				●											64	64						●	
40k	768	KMP90CN72EDF		●		12			4		●	3	●	●	●	●	●							●	●	100						●		
60k	1k	KMP90CS74EDF		●	1	12			4		●	3	●	●	●	●	●							●	●	100						●		
	2k	KMP90CS36F/T	●	●		8		2	4	1	●			●	●																80	84	●	
		KMP90CS38F/T	●	●		8			4	1	●				●																	80	84	●
0		KMP90C051F	●	●					4									●	●	●			●	●	80									
		KMP90C041AN/AF	●	●		6			4	1	●				●											64	64							
	128	KMP90C401N/F	●	●					4																	64	64						●	
	256	KMP90C801N/F	●	●					4																		64	64						●
		KMP90C803AP/AM	●	●					4		●																	40	40					●
		KMP90C841AN/AF	●	●		6			4	1	●				●												64	64						●
	KMP90C845AN/AF	●	●		4			4	1	●				●				●								64	64						●	
	512	KMP90CH03P/M	●	●					4		●																	40	40					●
		KMP91C641N/F	●	●		6			4	1	●				●												64	64						●
		KMP90CH45N/F	●	●		4			4	1	●				●				●								64	64						●
	1k	KMP90C141N/F	●	●		8			4	1	●				●												64	64						●
		KMP90CM37F/T	●	●		8		2	4	1	●			●	●								●									80	84	●
		KMP90CM39F/T	●	●		8		2	4	1	●			●	●								●									80	84	●
	2k	KMP90CS37F/T	●	●		8			4	1	●			●	●								●									80	84	●
		KMP90CS39F/T	●	●		8		2	4	1	●			●	●								●									80	84	●
	4k		KMP90C441N/F	●	●		6			4	1	●			●											64	64							●

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Product No	Function	ROM (bytes)	RAM (bytes)	I/O port	Minimum instruction execution time (ns)	Operating temperature (°C)	package	One-time PROM product			
KMP90C840AN/AF	A/D converter : 8bits×6ch Timer/counter : 16bits×1ch (capture/PPG)	8k	256	54	320 (Note)	-20 to 70	SDIP64 QFP64	KMP91P640N/F			
KMP90C841AN/AF		-		28							
KMP91C640N/F	Timer : 8bits×4ch(PWM/PPG) Serial : 1ch (UART, I/O extension)	16k	512	54							
KMP91C641N/F		-		28							
KMP90CM40AN/AF	Stepping motor controller port Watchdog timer	32k	1k	54							
KMP90C041AN/AF		-		-				250			
KMP90C141N/F	Micro DMA function Program area : 64k bytes Data area : 1M bytes	-	1k	28							
KMP90C441N/F		-		4k				250			
KMP90C802AP/AM	Timer/counter : 8bits×4ch Serial : 1ch Program data area : 64k bytes	8k	256	32	320 (Note)	-20 to 70	DIP40 SOP40	KMP90P802AP/AM			
KMP90C803AP/AM		-		6							
KMP90CH02P/M		16k	512	32	250						
KMP90CH03P/M		-		6							
KMP90C400N/F	Timer/counter : 8 bits×4ch Serial : 1ch 22 programmable pull-up ports Program/data area : 64k bytes	4k	128	56	320 (Note)	-20 to 70	SDIP64 QFP64	KMP90P800N/F			
KMP90C401N/F		-		38							
KMP90C800N/F		8k	256	56							
KMP90C801N/F		-		38							
KMP90C844AN/AF	Slave bus function 90C840A's I/O function enhanced	8k	512	54	250	-20 to 70	SDIP64 QFP64	KMP90PH44N/F			
KMP90CH44N/F		16k									
KMP90C845AN/AF	Expanded external memory version, 90C840A's I/O enhanced	-	256	38							
KMP90CH45N/F		-						512			
KMP90CM36F/T	A/D converter : 8 bits×8ch 8-bit timer:4ch 16-bit timer:1ch H a r d w a r e standby Watchdog timer	D/A converter	32k	1k				64	-20 to 70	MFP80 PLCC84	KMP90PM36F/T
KMP90CM37F/T		: 8bits×2ch	-								
KMP90CS36F/T		Serial : 2ch	60k	2k							
KMP90CS37F/T		TBC/TPG	-								
KMP90CM38F/T		Serial : 2ch Pattern generator : 2ch	32k	1k	66						
KMP90CM39F/T			-								
KMP90CS38F/T			60k	2k							
KMP90CS39F/T			-								
KMP91C642AN/AF	VCR servo VCR dedicated circuit built-in	16k	320	54	400	-20 to 70	SDIP64 QFP64	KMP91P642N/F			
KMP90CH42DF		-	640	72	320						
KMP90CK42DF		24k	768	63	250						
KMP90CN72EDF		40k									
KMP90CK76DF		24k	640	63	250						
KMP90CR74EDF		56k	1k	63	250						
KMP90C051F	High-speed micro DMA, RTC, MIMU built-in DRAM controller, TPH controller	-	-	31	250	-20 to 70	-				
KMP90C848F	8 bits PWM : 8ch Flash A/D converter : 8bits×16ch Dual clock system	8k	512	62	400	-20 to 70	QFP80	KMP90PH48F			

* : Under development

★ : Sample available

Note) Operating temperature : Minimum instruction execution time
320ns at -20 to 70°C and 400ns at -40 to 85°C guaranteed

Type suffix N : Plastic shrink dual in-line package (SDIP)

T : Plastic leaded chip carrier (PLCC)

F : Plastic flat package (QFP)

E : Ceramic shrink dual in-line package (SDIC)

P : Plastic standard dual in-line package (DIP)

C : Ceramic standard dual in-line package (DIC)

M : Plastic small outline package (SOP)

G : Ceramic flat package (QFC)