

16-bit Microcontrollers

KLCS-900/H Series

High-performance devices ideally suited to high-end office equipment

Features

- **Successive KLCS-900 architecture**
 - : Instruction compatible with KLCS-900, 900/L series
 - : General purpose 32-bit register
 - : Register bank format
- **Increased instruction execution speed**
 - : 2 times the speed of KLCS-900, 900/L series
- **Simple bus interface**
 - : Separate bus
 - : Access time : 100nS (at 25MHz, 0 wait)
- **Minimum instruction execution time**
 - : 160nS (at 25MHz)
- **Large linear address**
 - : Program : 16M bytes
 - : Data : 16M bytes

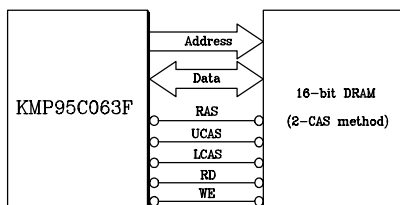
Additional functions

- DRAM controller (direct interface enabled)
- High-speed macro DMA
- 10-bit A/D converter
- Interrupt controller
- General purpose serial interface
- Since memory is refreshed asynchronously with cpu operation, access to other resources is not degraded

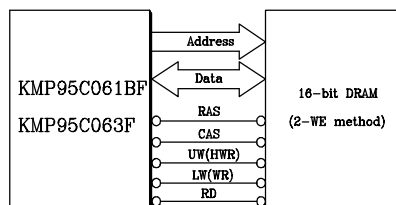
Additional functions

- Serial printers
- CD-ROMs
- Electronic musical instruments
- HDDs

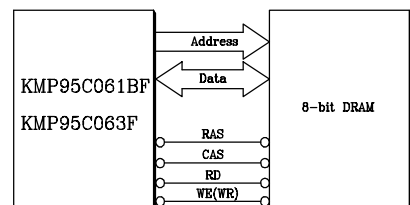
(a) 2-CAS method, 16-bit DRAM



(b) 2-WE method, 16-bit DRAM



(c) 8-bit DRAM



KLCS-900/H2 Series

High-performance microcontrollers incorporating a 32-bit CPU core

Full DRAM control functions

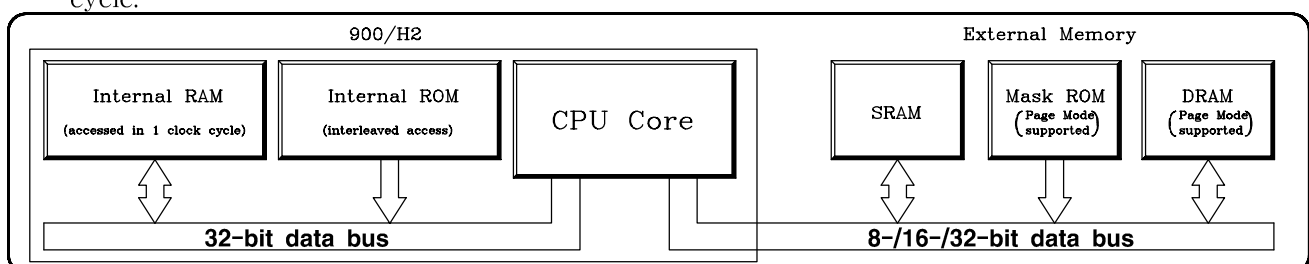
- Offers about 4times the processing performance of conventional products (900/H Series)
- Enhanced high-speed data transfer function (micro DMA)
 - : The 900/H2 Series microcontrollers com with a high-speed data transfer function, equivalent to that of a DMAC (direct memory access controller), as standard.

Function and performance comparison

	900, 900/L Series	900/H, 900/L1 Series	900/H2 Series
Number of chennels	4 channels	4 channels	8 channels
Minimum transfer	1600ns/ 2byte	640ns/ 2bytes	250ns/ 4bytes
Initiated by	interrupt	interrupt and software trigger	interrupt and software trigger
Continuous Transfer Mode	NA	NA	Available

Diverse memory types fully utilized

: The 900/H2 Series allows various kinds of external memory chip to be directly connected to the CPU core, without the need for an external circuit. Furthermore, the internal memory is connected to the CPU core via a 32-bit data bus and the internal RAM can be accessed in a single clock cycle.



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900 series Selection Guide

ROM (byte)	RAM (byte)	Product No.	Minimum Instruction Execution Time (µs)		SIO/UART	Synchronous SIO	I ² C Bus/ SIO	DRAM Controller	A/D Converter		8-bit DA Converter	LCD Driver	VFL Driver	Timer/Counter	Clock Timer	Time Base Counter	Pattern Generator	Stepping Motor Controller	8-bit PWM Timer	14-bit PWM Timer	CS/Wait Controller	VCR Servo Controller	Watchdog Timer	Dual Clock	Clock Gear	I/O Port	Operating Temperature (°C)	Built-in OTP	Package
			5V±10%	3V±10%																									

900 Series

NA	NA	KMP96C041BF	Note2 200	-	2	-	-	-	-	4	-	-	-	2	2	-	-	2	-	2	-	3	-	●	-	-	47	-40~85	-	QFP80 (14×20mm)		
		KMP96C031ZF			2	-	1	4	-	-	-	-	-	-	4	1	-	-	2	-	-	-	4	-	●	-	-		37	-	QFP64 (14×20mm)	
	1K	KMP96C141BF			2	-	-	-	-	-	4	-	-	-	2	2	-	-	2	-	-	-	2	-	3	-	●		-	47	-	-
32K		KMP96CM40F			2	-	-	-	-	-	4	-	-	-	2	2	-	-	2	-	-	-	2	-	3	-	●		-	65	-	KMP96PM40F

900/L Series

NA	2K	*KMP93CS41F/DF	200	320	2	-	-	-	-	8	-	-	-	2	2	-	-	2	-	2	-	3	-	●	●	●	61	-40~85	-	QFP100 (14×14mm)		
		KMP93CS45F			2	-	1	-	-	-	8	-	-	-	4	2	-	-	-	-	-	-	-	-	●	●	●		44	-	QFP80 (12×12mm)	
	4K	KMP93CW41DF			2	-	-	-	-	-	8	-	-	-	2	2	-	-	2	-	-	-	2	-	3	-	●		●	61	-	QFP100 (14×14mm)
	8K	KMP93C071F			-	1	2	1	-	-	10	-	-	-	●	1	5	-	-	●	-	-	3	-	●	●	●		-	69	-10~70	-
8K	1K	*KMP93C852F	320	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	3	-	●	-	●	88	-	-	QFP160 (28×28mm)	
32K	2K	KMP93CM40F	200	400	2	-	-	-	-	8	-	-	-	2	2	-	-	2	-	2	-	2	-	3	-	●	●	79	-	KMP93PS40F/DF	QFP100 (14×14mm)	
		*KMP93CS20F			2	-	1	-	-	8	-	●	-	4	4	●	-	-	-	-	-	-	-	-	●	●	●	88	-40~85	*KMP93PW20F	QFP144 (16×16mm)	
		KMP93CS32F			2	1	-	-	-	6	-	-	-	4	2	-	-	-	-	-	-	-	-	-	●	-	●	49	-	KMP93PW32F	QFP64 (14×14mm)	
		KMP93CS40F/DF		320	2	-	-	-	-	8	-	-	-	2	2	-	-	2	-	2	-	2	-	3	-	●	●	79	-	KMP93PS40F/DF	QFP100 (14×14mm)	
		KMP93CS42AF			2	-	-	-	-	5	-	-	-	2	2	-	-	-	-	-	2	-	3	-	●	-	●	80	-	KMP93PS42AF	QFP100 (14×14mm)	
		KMP93CS44F			2	-	1	-	-	8	-	-	-	4	2	-	-	-	-	-	-	-	-	-	●	●	●	62	-	KMP93PS44F	QFP80 (12×12mm)	
72K	1.8K	KMP93CT75F	250	-	-	1	1	-	-	10	-	-	-	●	1	5	-	-	-	-	3	-	●	●	●	-	85	-10~70	KMP93PT75F	QFP100 (14×20mm)		
		KMP93CW40DF			2	1	-	1	-	8	-	-	-	2	2	-	-	2	-	2	-	2	-	3	-	●	●	79	-40~85	KMP93PW40DF	QFP100 (14×14mm)	
		KMP93CW46AF		200	5	-	-	-	-	8	-	-	-	2	2	-	-	-	-	-	2	-	3	-	●	●	79	-	KMP93PW46AF	QFP100 (14×14mm)		
		★KMP93CW44DF			2	-	1	-	-	8	-	-	-	4	2	-	-	-	-	-	-	-	-	-	●	●	62	-	★KMP93PW44DF	QFP80 (14×20mm)		

900/H Series

NA	NA	KMP95C001F	160	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-20~70	-	QFP64 (14×14mm)		
		KMP95C061BF			2	-	1	-	-	-	4	-	-	-	4	2	-	-	2	-	-	-	4	-	●	-	-		56	-	-	QFP100 (14×14mm)
		KMP95C063F			2	-	2	-	-	-	8	2	-	-	8	2	-	-	2	-	-	-	4	-	●	-	-		91	-	-	QFP144 (20×20mm)
	2K	KMP95C265F			400	3	-	-	-	-	8	2	-	-	8	2	-	-	-	-	-	-	4	-	●	-	-		55	-	-	QFP100 (14×14mm)
64K		KMP95CS64F			3	-	-	-	-	8	2	-	-	8	2	-	-	-	-	-	4	-	●	-	-	81	-	KMP95PW64F	QFP100 (14×14mm)			
Note3 128K		★KMP95FW86F	200	-	3	-	-	-	-	12	-	-	-	3	-	-	-	-	-	-	3	-	3	-	●	-	77	-40~85	-	QFP100 (22×22mm)		
128K		★KMP95CW64F		160	400	3	-	-	-	8	2	-	-	8	2	-	-	-	-	-	4	-	●	-	-	81	-	KMP95PW64F	QFP100 (14×14mm)			
Note3 128K		*KMP95FW64F			-	3	-	-	-	8	2	-	-	8	2	-	-	-	-	-	4	-	●	-	-	81	-	-	QFP100 (14×14mm)			

900/L1 Series

96K	3K	KMP91CU10F	-	250	3	-	-	-	-	8	-	-	-	8	2	-	-	-	-	-	-	3	-	●	●	●	80	-40~85	KMP91PW10F	QFP100 (14×14mm)	
		KMP91CW11F	160	320	3	2	1	-	-	8	-	-	-	2	2	●	-	-	-	2	-	3	-	●	●	●	79		-		KMP91PW11F
		*KMP91CW12F	-	250	2	-	1	-	-	8	-	-	-	8	2	●	-	-	-	-	4	-	●	●	●	81	-		*KMP91CW12F		

900/H2 Series

NA	2K	KMP94C241F	50	-	2	-	-	-	-	8	2	-	-	4	4	-	-	-	-	-	-	-	-	6	-	●	-	64	-20~70	-	QFP160 (28×28mm)
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*: Under development ★: Samples available

Note 1: The suffix F in a product number denotes a quade flat package(QFP)

Note 2: Guaranteed minimum instruction execution time is 200ns when operating at temperatures of -20°C to 70°C, or 250ns when operating at temperatures of -40°C to 85°C.

Note 3: Flash E²PROM(USP 4,382,279 owned by BULL CP8)