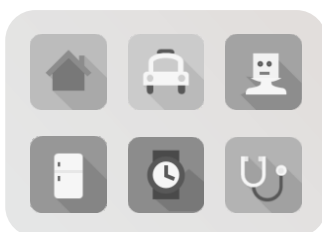
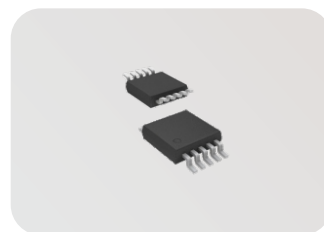
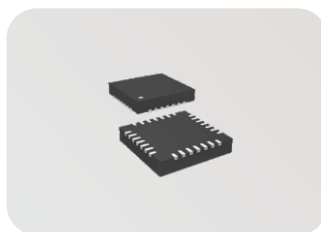
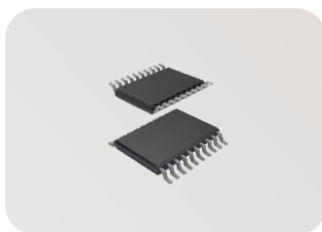
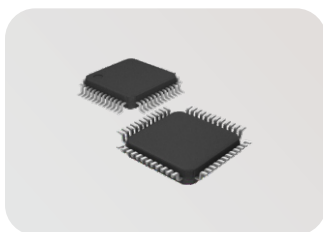
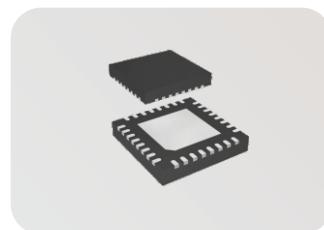
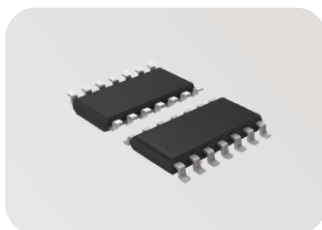
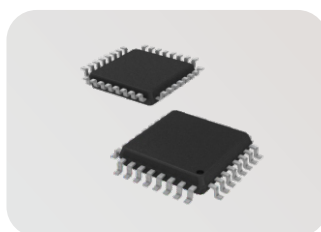
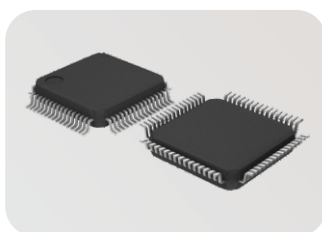




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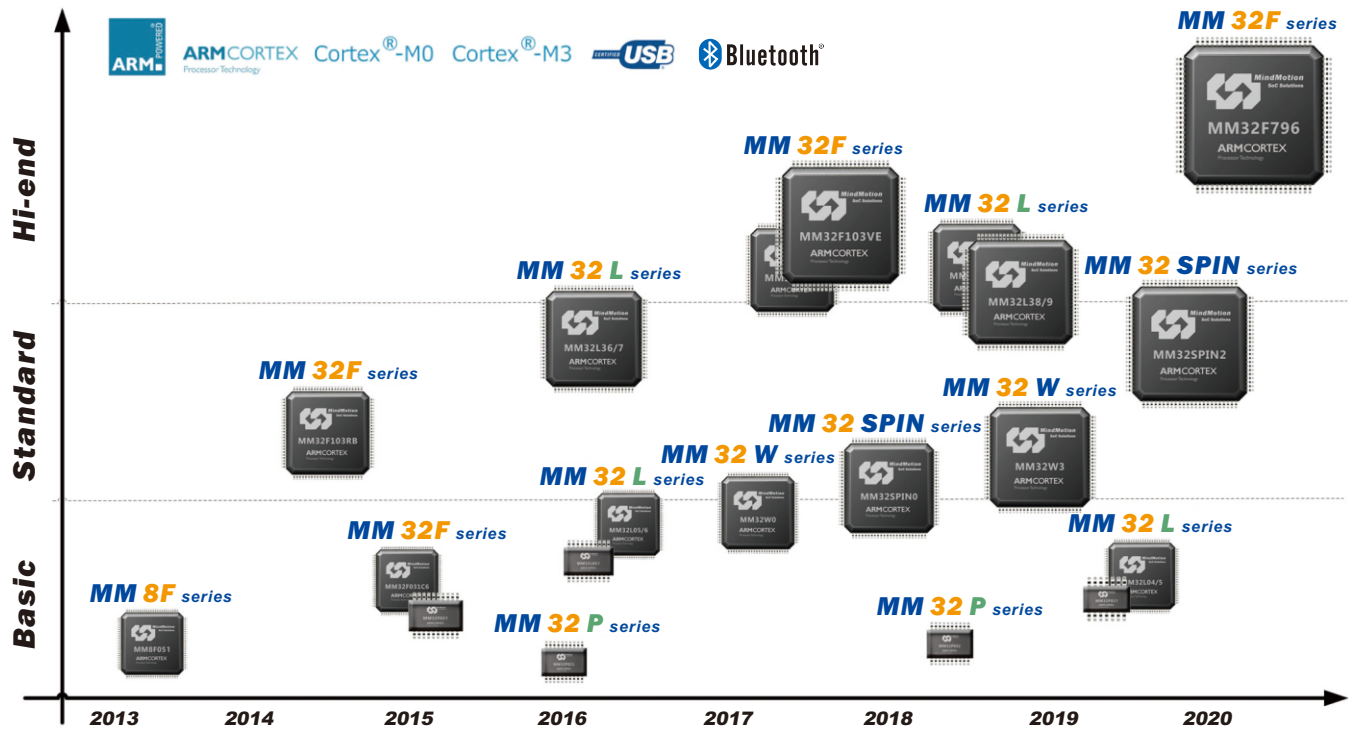


MM32 MCU

靈動微電子 MindMotion Microelectronics

MCU Product and Solution Provider

MM32 MCU Roadmap 產品路線圖



MM32 MCU Family 產品家族

MM32 F series — General Purpose & High Performance 通用高性能微控制器產品

MM32 L series — Low Power & High Safety 低功耗高安全微控制器產品

MM32 SPIN series — Motor Control & Driver 電機及電源專用微控制器產品

MM32 W series — Wireless Connectivity 無線微控制器產品

MM32 P series — One Time Programmable OTP型微控制器產品

MM32F00系列 32位ARM® Cortex®-M0 精簡型微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions			Connectivity			Analog Interface	Package
			Flash	RAM		Advanced TM	GPTM	WDG	UART	I ² C	SPI	ADC	
MM32F003	MM32F003TW	48	16	2	16	1	5	2	1	1	1	8×12bit	TSSOP20
	MM32F003NW	48	16	2	16	1	5	2	1	1	1	8×12bit	QFN20

MM32F031系列 32位ARM® Cortex®-M0 標準型微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions			Connectivity			Analog Interface	Package
			Flash	RAM		Advanced TM	GPTM	WDG	UART	I ² C	SPI	ADC	
MM32F031	MM32F031F4P6	72	16	4	16	1	5	2	1	1	1	9×12bit	TSSOP20
	MM32F031F4U6	72	16	4	16	1	5	2	1	1	1	9×12bit	QFN20
	MM32F031K4U6	72	16	4	27	1	5	2	1	1	1	10×12bit	QFN32
	MM32F031K4T6	72	16	4	25	1	5	2	1	1	1	10×12bit	LQFP32
	MM32F031C4T6	72	16	4	39	1	5	2	1	1	1	10×12bit	LQFP48
	MM32F031F6P6	72	32	4	16	1	5	2	1	1	1	9×12bit	TSSOP20
	MM32F031F6U6	72	32	4	16	1	5	2	1	1	1	9×12bit	QFN20
	MM32F031K6U6	72	32	4	27	1	5	2	1	1	1	10×12bit	QFN32
	MM32F031K6T6	72	32	4	25	1	5	2	1	1	1	10×12bit	LQFP32
	MM32F031C6T6	72	32	4	39	1	5	2	1	1	1	10×12bit	LQFP48
	MM32F031K8U6	72	64	8	27	1	5	2	2	1	1	10×12bit	QFN32
	MM32F031K8T6	72	64	8	25	1	5	2	2	1	1	10×12bit	LQFP32
	MM32F031C8T6	72	64	8	39	1	5	2	2	1	2	10×12bit	LQFP48
	MM32F031KBU6	72	128	8	27	1	5	2	2	1	1	10×12bit	QFN32
	MM32F031KBT6	72	128	8	25	1	5	2	2	1	1	10×12bit	LQFP32
	MM32F031CBT6	72	128	8	39	1	5	2	2	1	2	10×12bit	LQFP48

MM32F032^{新!}系列 32位ARM® Cortex®-M0 標準型微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions				Connectivity			Analog Interface	Package
			Flash	RAM		Advanced TM	GPTM	WDG	RTC	UART	I ² C	SPI	ADC	
MM32F032 ^{新!}	MM32F032K6U6	72	32	8	27	1	5	2	Y	2	1	1	10×12bit	QFN32
	MM32F032K6T6	72	32	8	25	1	5	2	Y	2	1	1	10×12bit	LQFP32
	MM32F032C6T6	72	32	8	39	1	5	2	Y	2	1	2	10×12bit	LQFP48
	MM32F032R6T6	72	32	8	56	1	5	2	Y	2	1	2	10×12bit	LQFP64
	MM32F032K8U6	72	64	16	27	1	5	2	Y	2	1	1	10×12bit	QFN32
	MM32F032K8T6	72	64	16	25	1	5	2	Y	2	1	1	10×12bit	LQFP32
	MM32F032C8T6	72	64	16	39	1	5	2	Y	2	1	2	10×12bit	LQFP48
	MM32F032R8T6	72	64	16	56	1	5	2	Y	2	1	2	10×12bit	LQFP64

MM32F103系列 32位ARM® Cortex®-M3 標準型微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions				Connectivity					Analog Interface	Package
			Flash	RAM		Advanced TM	GPTM	WDG	RTC	UART	I²C	SPI	USB 2.0FS	CAN 2.0B	ADC	
MM32F103	MM32F103K8U6	96	64	20	25	1	3	2	1	2	1	1	1	1	10×12bit	QFN32
	MM32F103K8T6	96	64	20	23	1	3	2	1	2	1	1	1	1	10×12bit	LQFP32
	MM32F103C8T6	96	64	20	37	1	3	2	1	3	2	2	1	1	10×12bit	LQFP48
	MM32F103R8T6	96	64	20	51	1	3	2	1	3	2	2	1	1	16×12bit	LQFP64
	MM32F103KBU6	96	128	20	25	1	3	2	1	2	1	1	1	1	10×12bit	QFN32
	MM32F103KBT6	96	128	20	23	1	3	2	1	2	1	1	1	1	10×12bit	LQFP32
	MM32F103CBT6	96	128	20	37	1	3	2	1	3	2	2	1	1	10×12bit	LQFP48
	MM32F103RBT6	96	128	20	51	1	3	2	1	3	2	2	1	1	16×12bit	LQFP64

MM32F103系列 32位ARM® Cortex®-M3 高性能微控制器

Series	Part No.	Typical Speed (MHz)	Memory (KBytes)		I/O	Timer Functions				Connectivity						Analog Interface		Package
			Flash	RAM		Advanced TM	GPTM	WDG	RTC	UART	I²C	SPI	USB 2.0FS	CAN 2.0B	SDIO	ADC	COMP	
MM32F103	MM32F103KCU6	144	256	64	25	2	2	2	1	5	1	2	1	1		7×12bit	2	QFN32
	MM32F103KCT6	144	256	64	23	2	2	2	1	5	1	2	1	1		7×12bit	2	LQFP32
	MM32F103CCT6	144	256	64	37	2	2	2	1	5	2	3	1	1		7×12bit	2	LQFP48
	MM32F103RCT6	144	256	64	51	2	2	2	1	8	2	3	1	1	1	7×12bit	2	LQFP64
	MM32F103VCT6	144	256	64	80	2	2	2	1	8	2	3	1	1	1	7×12bit	2	LQFP100
	MM32F103KEU6	144	512	128	25	2	2	2	1	5	1	2	1	1		7×12bit	2	QFN32
	MM32F103KET6	144	512	128	23	2	2	2	1	5	1	2	1	1		7×12bit	2	LQFP32
	MM32F103CET6	144	512	128	37	2	2	2	1	5	2	3	1	1		7×12bit	2	LQFP48
	MM32F103RET6	144	512	128	51	2	2	2	1	8	2	3	1	1	1	7×12bit	2	LQFP64
	MM32F103VET6	144	512	128	80	2	2	2	1	8	2	3	1	1	1	7×12bit	2	LQFP100

MM32L0系列 32位ARM® Cortex®-M0 低功耗微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions				Connectivity					Analog Interface		Security	Package
			Flash	RAM		Advanced TM	GPTM	WDG	RTC	UART	I²C	SPI	USB 2.0FS	CAN 2.0B	ADC	COMP	AES	
MM32L050	MM32L050TW	48	32	4	16	1	5	2		1	1	1				2	Y	TSSOP20
	MM32L050NT	48	32	4	27	1	5	2		2	1	1				2	Y	QFN32
	MM32L050PT	48	32	4	25	1	5	2		2	1	1				2	Y	LQFP32
	MM32L050PF	48	32	4	39	1	5	2		2	1	2				2	Y	LQFP48
MM32L051	MM32L051TW	48	32	4	16	1	5	2		1	1	1			9×12bit	2	Y	TSSOP20
	MM32L051NT	48	32	4	27	1	5	2		2	1	1			10×12bit	2	Y	QFN32
	MM32L051PT	48	32	4	25	1	5	2		2	1	1			10×12bit	2	Y	LQFP32
	MM32L051PF	48	32	4	39	1	5	2		2	1	2			10×12bit	2	Y	LQFP48
MM32L052	MM32L052NT	48	32	4	27	1	5	2		2	1	1	1		10×12bit	2	Y	QFN32
	MM32L052PT	48	32	4	25	1	5	2		2	1	1	1		10×12bit	2	Y	LQFP32
	MM32L052PF	48	32	4	39	1	5	2		2	1	2	1		10×12bit	2	Y	LQFP48
MM32L061	MM32L061TW	48	64	8	16	1	5	2		1	1	1			9×12bit	2	Y	TSSOP20
	MM32L061NT	48	64	8	27	1	5	2		2	1	1			10×12bit	2	Y	QFN32
	MM32L061PT	48	64	8	25	1	5	2		2	1	1			10×12bit	2	Y	LQFP32
	MM32L061PF	48	64	8	39	1	5	2		2	1	2			10×12bit	2	Y	LQFP48

MM32L0系列 32位ARM® Cortex®-M0 低功耗微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions				Connectivity					Analog Interface		Security	Package
			Flash	RAM		Advanced TM	GPTM	WDG	RTC	UART	I²C	SPI	USB 2.0FS	CAN 2.0B	ADC	COMP	AES	
MM32L062	MM32L062TW	48	64	8	16	1	5	2		1	1	1	1		9×12bit	2	Y	TSSOP20
	MM32L062NT	48	64	8	27	1	5	2		2	1	1	1		10×12bit	2	Y	QFN32
	MM32L062PT	48	64	8	25	1	5	2		2	1	1	1		10×12bit	2	Y	LQFP32
	MM32L062PF	48	64	8	39	1	5	2		2	1	2	1		10×12bit	2	Y	LQFP48
MM32L072	MM32L072TW	48	128	8	16	1	5	2		1	1	1	1		9×12bit	2	Y	TSSOP20
	MM32L072NT	48	128	8	27	1	5	2		2	1	1	1		10×12bit	2	Y	QFN32
	MM32L072PT	48	128	8	25	1	5	2		2	1	1	1		10×12bit	2	Y	LQFP32
	MM32L072PF	48	128	8	39	1	5	2		2	1	2	1		10×12bit	2	Y	LQFP48
MM32L073	MM32L073TW	48	128	8	16	1	5	2		1	1	1	1	1	9×12bit	2	Y	TSSOP20
	MM32L073NT	48	128	8	27	1	5	2		2	1	1	1	1	10×12bit	2	Y	QFN32
	MM32L073PT	48	128	8	25	1	5	2		2	1	1	1	1	10×12bit	2	Y	LQFP32
	MM32L073PF	48	128	8	39	1	5	2		2	1	2	1	1	10×12bit	2	Y	LQFP48

MM32L3系列 32位ARM® Cortex®-M3 低功耗微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)			I/O	Timer Functions				Connectivity						Analog Interface		Security		Package
			Flash	RAM	EEPROM		Advanced TM	GPTM	WDG	RTC	UART	I²C	SPI	USB 2.0FS	CAN 2.0B	SDIO	ADC	DAC	AES	TRNG	
MM32L362	MM32L362NT	96	64	20		25	1	3	2	1	2	1	1	1			10×12bit	2×12bit	Y		QFN32
	MM32L362PT	96	64	20		23	1	3	2	1	2	1	1	1			10×12bit	2×12bit	Y		LQFP32
	MM32L362PF	96	64	20		37	1	3	2	1	3	2	2	1			10×12bit	2×12bit	Y		LQFP48
	MM32L362PS	96	64	20		51	1	3	2	1	3	2	2	1			16×12bit	2×12bit	Y		LQFP64
MM32L373	MM32L373NT	96	128	20		25	1	3	2	1	2	1	1	1	1		10×12bit	2×12bit	Y		QFN32
	MM32L373PT	96	128	20		23	1	3	2	1	2	1	1	1	1		10×12bit	2×12bit	Y		LQFP32
	MM32L373PF	96	128	20		37	1	3	2	1	3	2	2	1	1		10×12bit	2×12bit	Y		LQFP48
	MM32L373PS	96	128	20		51	1	3	2	1	3	2	2	1	1		16×12bit	2×12bit	Y		LQFP64
MM32L384	MM32L384NT	96	256	64	4	25	2	8	2	1	6	1	2	OTG	1		7×12bit		Y	Y	QFN32
	MM32L384PT	96	256	64	4	23	2	8	2	1	6	1	2	OTG	1		7×12bit		Y	Y	LQFP32
	MM32L384PF	96	256	64	4	37	2	8	2	1	8	2	3	OTG	1		7×12bit		Y	Y	LQFP48
	MM32L384PS	96	256	64	4	51	2	8	2	1	8	2	3	OTG	1	1	7×12bit		Y	Y	LQFP64
	MM32L384PH	96	256	64	4	80	2	8	2	1	8	2	3	OTG	1	1	7×12bit		Y	Y	LQFP100
MM32L395	MM32L395NT	96	512	128	4	25	2	8	2	1	6	1	2	OTG	1		7×12bit		Y	Y	QFN32
	MM32L395PT	96	512	128	4	23	2	8	2	1	6	1	2	OTG	1		7×12bit		Y	Y	LQFP32
	MM32L395PF	96	512	128	4	37	2	8	2	1	8	2	3	OTG	1		7×12bit		Y	Y	LQFP48
	MM32L395PS	96	512	128	4	51	2	8	2	1	8	2	3	OTG	1	1	7×12bit		Y	Y	LQFP64
	MM32L395PH	96	512	128	4	80	2	8	2	1	8	2	3	OTG	1	1	7×12bit		Y	Y	LQFP100

MM32W0系列 32位ARM® Cortex®-M0 無線微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions			Connectivity					Analog Interface		Security	Package
			Flash	RAM		Advanced TM	GPTM	WDG	UART	I²C	SPI	USB 2.0FS	CAN 2.0B	ADC	COMP	AES	
MM32W051	MM32W051NTB	48	32	4	22	1	5	2	2	1	1			7×12bit	1		QFN32
	MM32W051PFB	48	32	4	28	1	5	2	2	1	1			10×12bit	1		LQFP48
MM32W062	MM32W062NTB	48	64	8	22	1	5	2	2	1	1	1		7×12bit	2	Y	QFN32
	MM32W062PFB	48	64	8	28	1	5	2	2	1	1	1		10×12bit	2	Y	LQFP48
MM32W073	MM32W073NTB	48	128	8	22	1	5	2	2	1	1	1	1	7×12bit	2	Y	QFN32
	MM32W073PFB	48	128	8	28	1	5	2	2	1	1	1	1	10×12bit	2	Y	LQFP48

MM32W3系列 32位ARM® Cortex®-M3 無線微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	Timer Functions				Connectivity					Analog Interface		Security	Package
			Flash	RAM		Advanced TM	GPTM	WDG	RTC	UART	I ² C	SPI	USB 2.0FS	CAN 2.0B	ADC	DAC	AES	
MM32W362	MM32W362PFB	96	64	20	27	1	3	2	Y	3	2	1	1		7×12bit	2×12bit	Y	LQFP48
	MM32W362PSB	96	64	20	40	1	3	2	Y	3	2	1	1		13×12bit	2×12bit	Y	LQFP64
MM32W373	MM32W373PFB	96	128	20	27	1	3	2	Y	3	2	1	1	1	7×12bit	2×12bit	Y	LQFP48
	MM32W373PSB	96	128	20	40	1	3	2	Y	3	2	1	1	1	13×12bit	2×12bit	Y	LQFP64
MM32W384	MM32W384PFB	96	256	64	40	2	6	2	Y	7	2	1	OTG	1	7×12bit		Y	LQFP64
MM32W395	MM32W395PSB	96	512	128	40	2	6	2	Y	7	2	1	OTG	1	7×12bit		Y	LQFP64

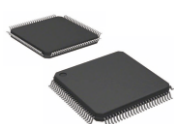
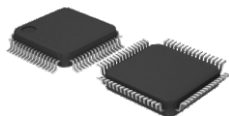
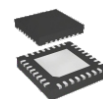
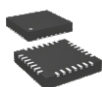
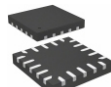
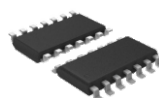
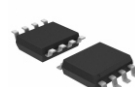
MM32SPIN系列 32位ARM® Cortex®-M 電機控制專用微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	DIV (32bit)	Timer Functions			Connectivity				Analog Interface				Package
			Flash	RAM			Advanced TM	GPTM	WDG	UART	I ² C	SPI	CAN 2.0B	ADC 12bit	DAC 12bit	OPA	COMP	
MM32SPIN Controller MCU	MM32SPIN05TW	72	32	4	16	1	1	5	2	2	1	1		9×12bit			1	TSSOP20
	MM32SPIN05NW	72	32	4	16	1	1	5	2	2	1	1		9×12bit			1	QFN20
	MM32SPIN05NT	72	32	4	27	1	1	5	2	2	1	1		10×12bit			1	QFN32
	MM32SPIN05PT	72	32	4	25	1	1	5	2	2	1	1		10×12bit			1	LQFP32
	MM32SPIN05PF	72	32	4	39	1	1	5	2	2	1	2		10×12bit			1	LQFP48
	MM32SPIN06NT	96	64	8	27	1	1	5	2	2	1	1	1	10×12bit			2	QFN32
	MM32SPIN06PF	96	64	8	39	1	1	5	2	2	1	2	1	10×12bit			2	LQFP48
	MM32SPIN06PS	96	64	8	56	1	1	5	2	2	1	2	1	10×12bit			2	LQFP64
	MM32SPIN25TW	96	32	8	15	1	2	5	2	2	1	1		10×12bit		1	2	TSSOP20
	MM32SPIN25PT	96	32	8	25	1	2	5	2	2	1	1		11×12bit		2	2	LQFP32
	MM32SPIN25PF	96	32	8	40	1	2	5	2	2	1	2		16×12bit		4	5	LQFP48
	MM32SPIN25NF	96	128	8	40	1	2	5	2	2	1	2		16×12bit		4	5	QFN48
	MM32SPIN27PT	96	128	12	25	1	2	5	2	2	1	1		11×12bit		2	2	LQFP32
	MM32SPIN27PF	96	128	12	40	1	2	5	2	2	1	2		16×12bit		4	5	LQFP48
	MM32SPIN27NF	96	128	12	40	1	2	5	2	2	1	2		16×12bit		4	5	QFN48
	MM32SPIN27PS	96	128	12	56	1	2	5	2	2	1	2		16×12bit		4	5	LQFP64
	MM32SPIN46PF	96	64	20	37	1	1	3	2	3	2	2	1	10×12bit	2			LQFP48
	MM32SPIN47PF	96	128	20	37	1	1	3	2	3	2	2	1	10×12bit	2			LQFP48
	MM32SPIN48PS	120	256	64	51	1	2	6	2	3	2	2	1	7×12bit			2	LQFP64

MM32SPIN系列 32位ARM® Cortex®-M 電機驅動專用微控制器

Series	Part No.	Max Speed (MHz)	Memory (KBytes)		I/O	DIV (32bit)	Timer Functions			Connectivity				Analog Interface			Driver	MOSFET	Package
			Flash	RAM			Advanced TM	GPTM	WDG	UART	SPI	I ² C	CAN 2.0B	ADC 12bit	COMP	OPA			
MM32SPIN Driver MCU	MM32SPIN120B	72	32	4	16	1	1	5	2	1	2	1		8×12bit	1	0	2phase		QFN32
	MM32SPIN320B	96	128	12	16	1	2	5	2	1	0	1		8×12bit	2	1	2phase		QFN32
	MM32SPIN360C	96	128	12	28	1	2	5	2	2	1	1		13×12bit	3	3	3phase		QFN48
	MM32SPIN222C	72	32	4	13	1	1	5	2	1	0	1		9×12bit	1	0	3phase	2A	QFN32
	MM32SPIN422C	96	128	12	13	1	1	5	2	2	0	1		8×12bit	3	2	3phase	2A	QFN32

MM32 MCU Package 封裝形式

LQFP100
14×14mmLQFP64
10×10mmLQFP48
7×7mmLQFP32
7×7mmQFN32
5×5mmQFN28
4×4mmQFN20
3×3mmTSSOP20
6.5×4.4mmSOP14
8.65×3.9mmSOP8
4.8×3.9mm

Technical Platform 技術平臺

MindSafe™

MindSPIN™

MindPower™

MindSafe-MM32 MCU 專有安全技術

Code Protection 代碼保護

UID + UCID
唯一身份編碼+唯一客戶編碼

Flash Code Protection
閃存代碼保護機制

- Read Protection 讀保護
- Region Protection 分區保護
- Security Space 安全空間

Physical Flash Data Scrambling
閃存數據物理加擾

Debug Port Protection
調試接口保護



Encryption 傳輸加密

CRC 循環冗余校驗

AES Encryption 高級加密標準加密

- AES-128
- AES-192
- AES-256

True Random Number Generation
真亂數發生器

Safe Downloading 安全下載

Mm32 - LINK 專有調試燒錄器

- Cloud Download 雲下載
- Burning Count Control 燒錄次數控制
- Encrypted Code Transfer 代碼加密傳輸

Support 3rd Party Downloader Development
支持定制燒錄器開發

MM32-LINK 調試器



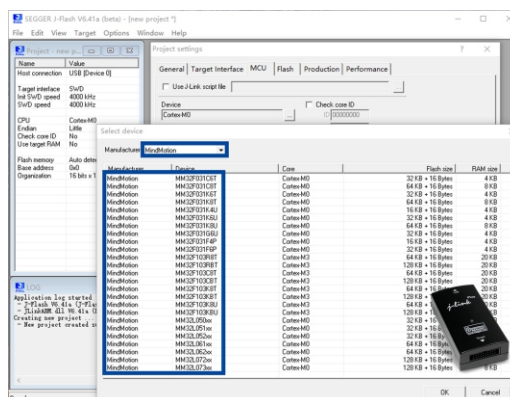
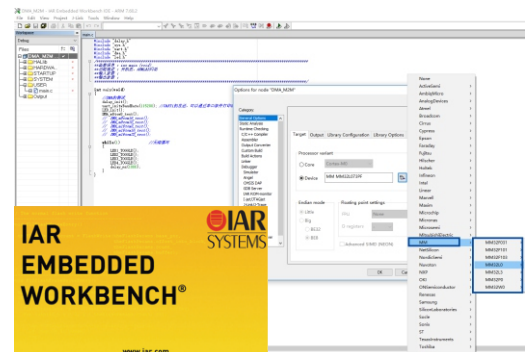
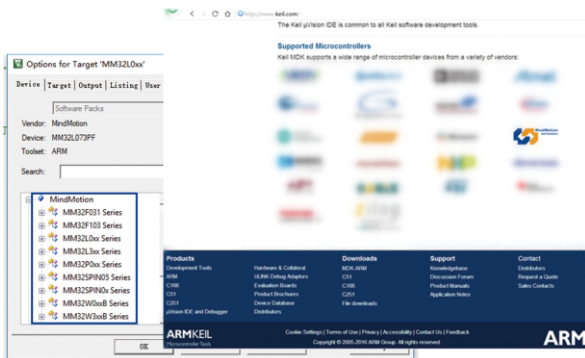
- MindMotion MM32 Full Series MCU Emulation & Debugging Supported
- Downloading Debugging (In KEIL / IAR Environment) Supported
- SWD Downloading/Debugging Supported, 2.54mm Standard 20 pin Socket
- 支持靈動MM32全系列MCU仿真調試
- 支持KEIL、IAR環境下進行下載調試
- 支持 SWD 下載調試，2.54mm 標準 20 芯 JTAG 插座

MM32-LINK 下載器

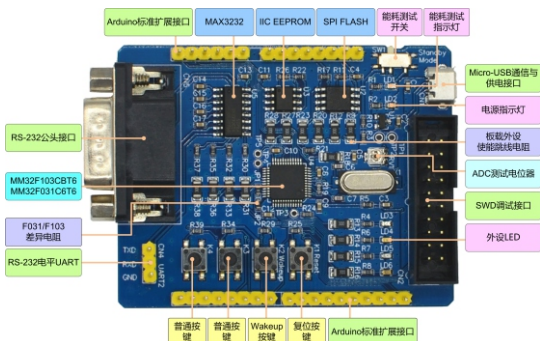


- Program Downloading with SWD Interface and Chip Communication Inside
- Support Online & Offline Burning
- Data Error Checking Function Inside
- 采用SWD接口與芯片通信實現程序下載
- 支持脫機燒錄和在線燒錄
- 數據正誤校驗功能

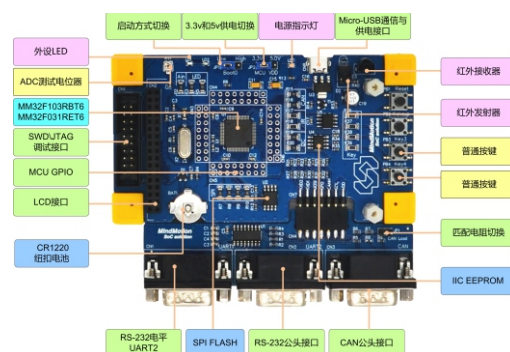
3-rd Party Tool Chain 第三方工具鏈



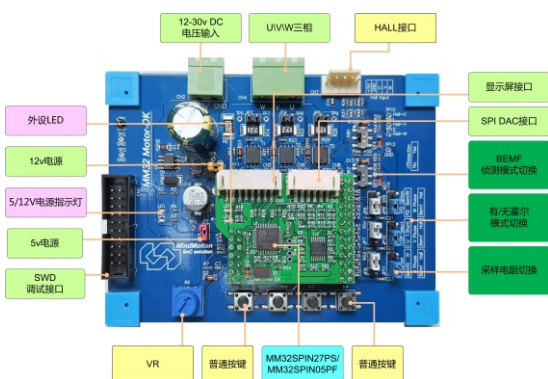
Evaluation Board 評估開發板



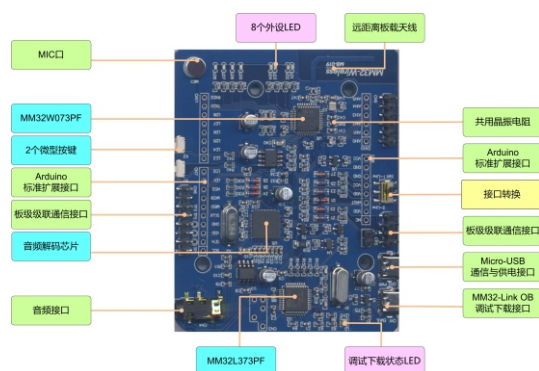
MM32 MiniBoard



MM32 EVBoard



MM32 Motor-DK



MM32 Wireless-DK

OS Support 操作系統支持



Online Support 在線技術支持

靈動MM32MCU技術論壇：bbs.21ic.com



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