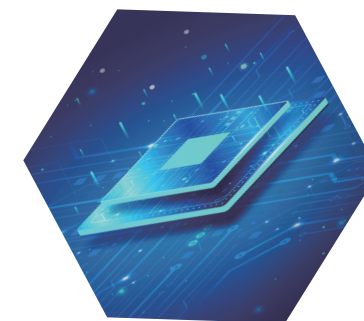
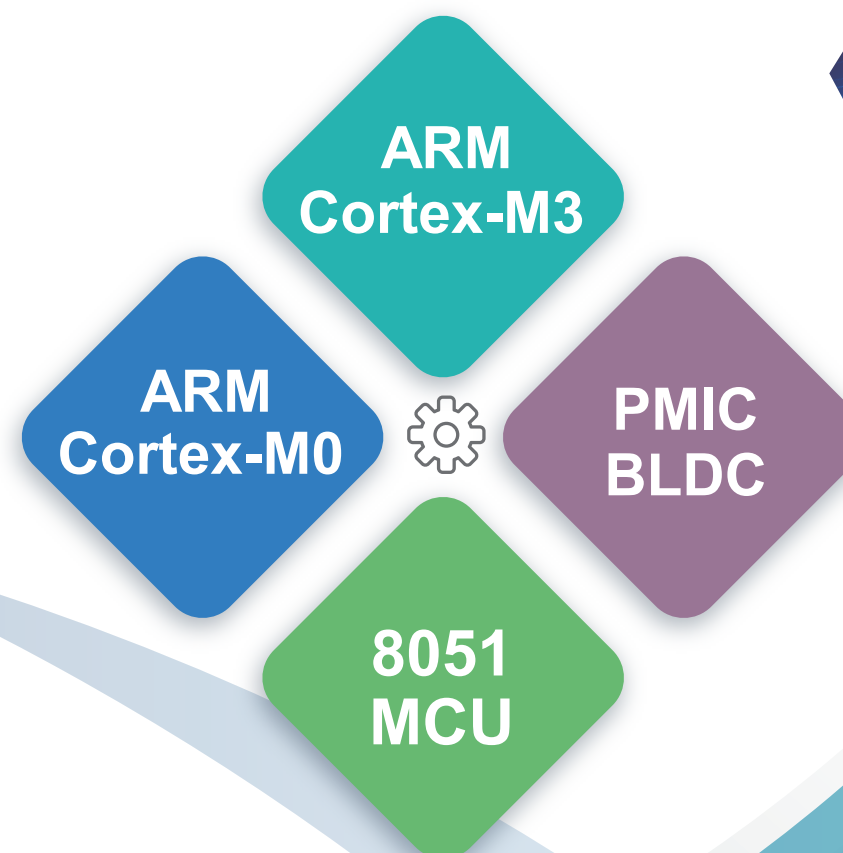




2023H2

Professional MCU Design House



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MG Website



LinkedIn

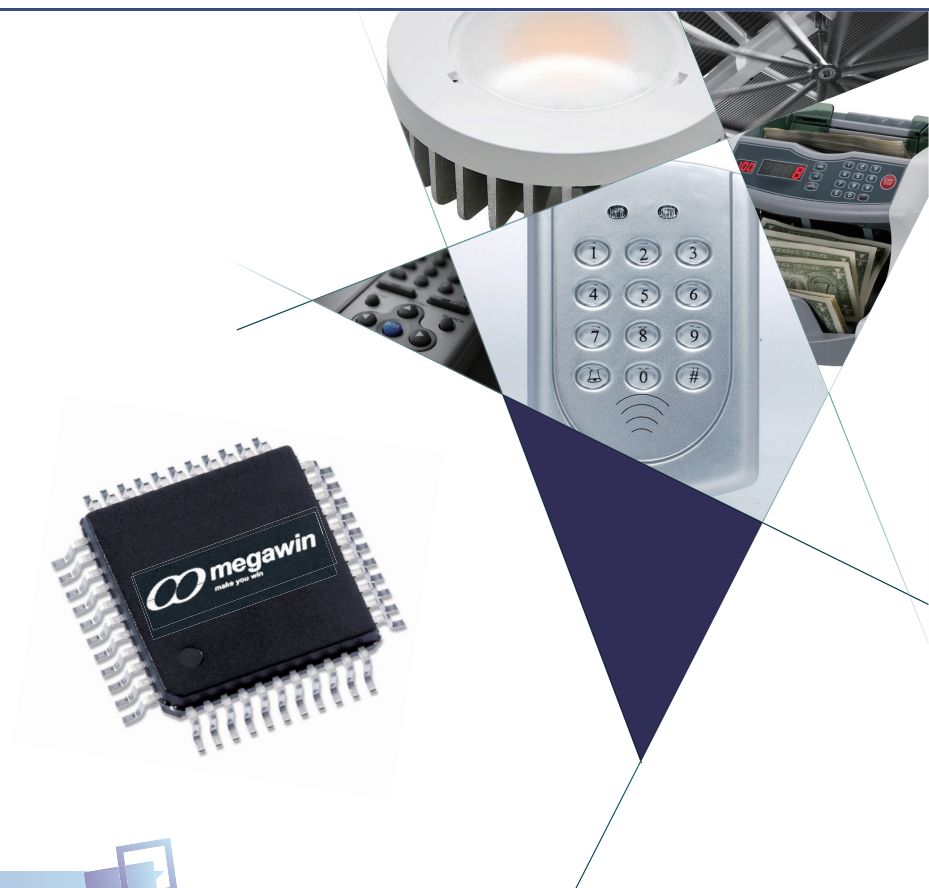


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Company Overview

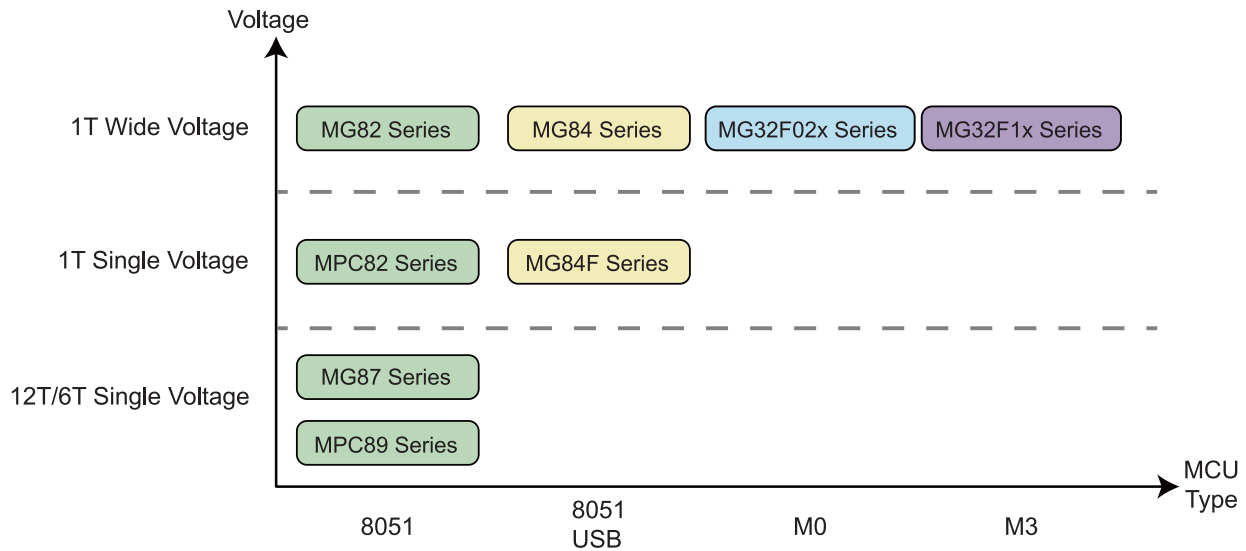
Megawin Technology Co., Ltd., a fabless IC design house, was formed by a group of intellectual IC design and sale specialists in 1999. Headquartered in Taiwan, the Company offers outstanding technical support along with dependable product delivery and quality.

Regarding IC operating conditions, Megawin targets better immunity, wider operation voltage and temperature range, as well as lower power consumption. In addition to the USB series MCU, based on the excellent noise immunity of the traditional 8051 MCU and great encryption technology, the Company launched 32-bit MG32F Series MCU with ARM Cortex-M0 as the core. The Company's easy-to-use development tool (such as ICE, Writer, and ISP Programmer) and comprehensive product manual also enable users to create optimum designs which reduce time to market.

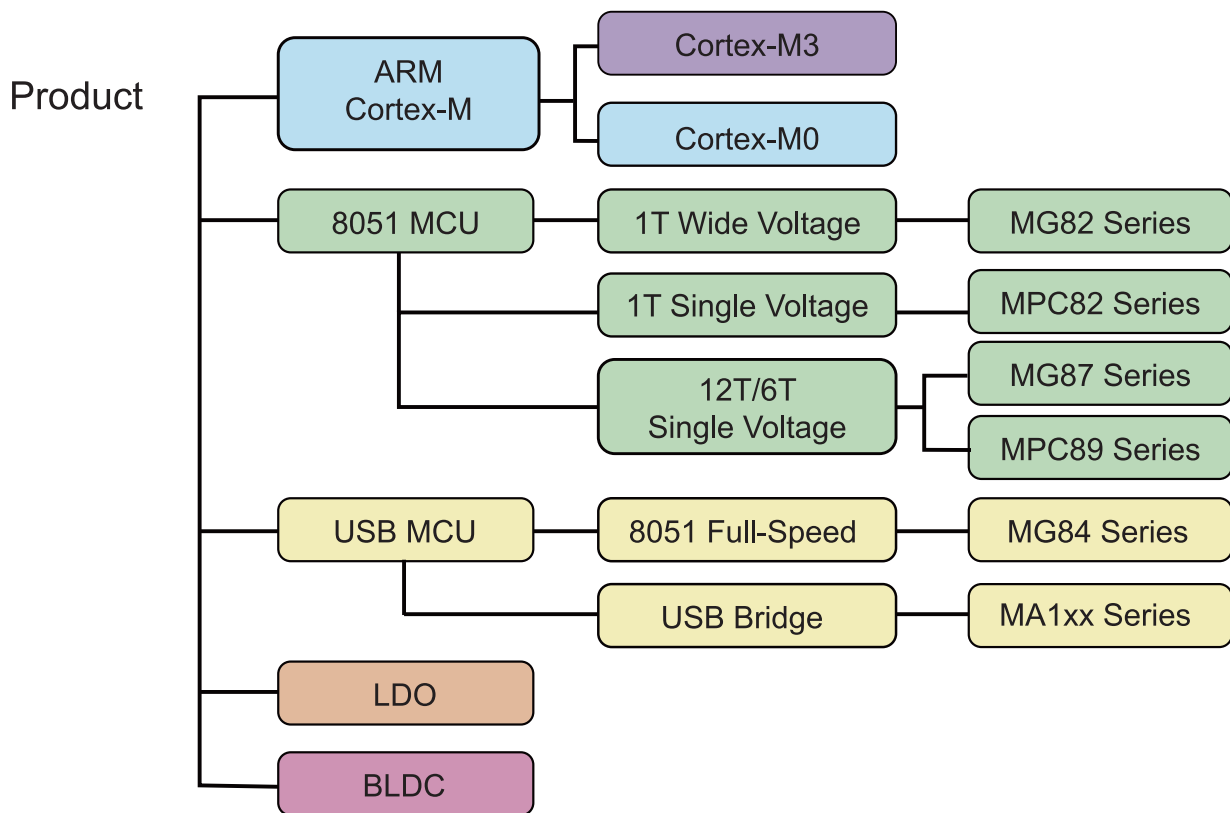
Megawin Technology has branded itself with the motto "be practical and be creative." In order to become a qualified worldwide MCU supplier, the Company would keep developing innovative products constantly and continuously.

2023 Product Selection Guide

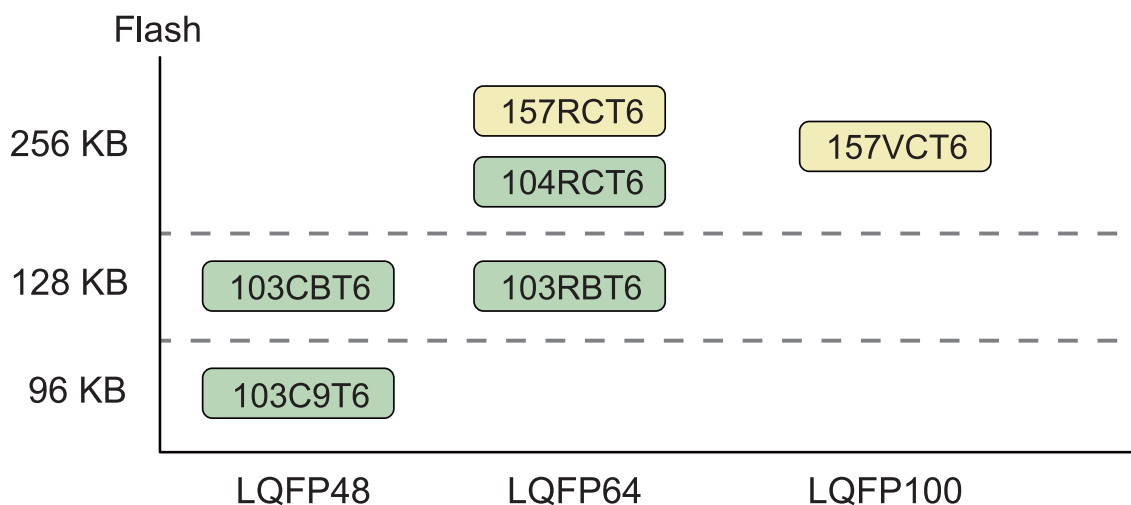
8 bit 8051/32 bit Cortex-M0/M3 Flash MCUs



Product Category:



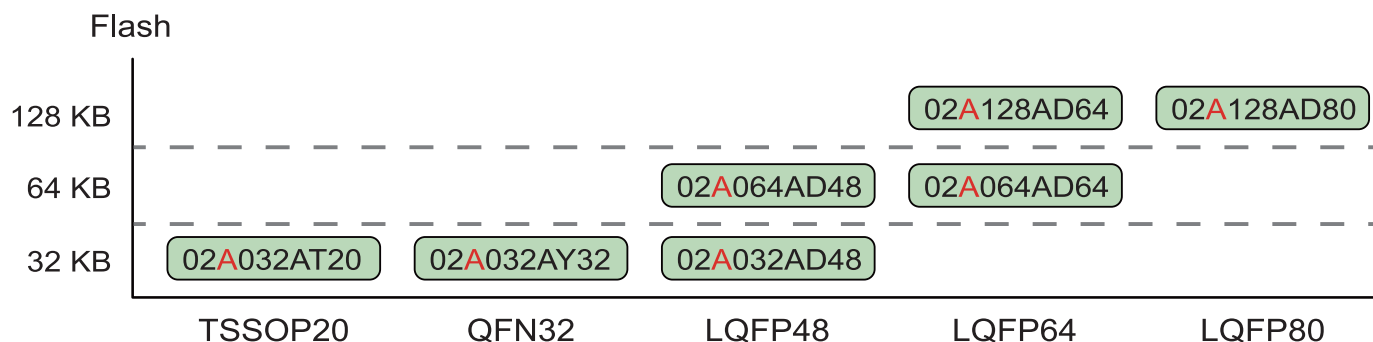
ARM Cortex-M3 Base Line : MG32F1x Series



Item	Vdd	Flash ROM	Data RAM	Max Freq.	20-Bit Timer	IO	12-Bit ADC	Comp.	Features	Package
MG32F103C9T6	2V~3.6V	96KB	28KB	72MHz	4+RTC	37	10-CH	2	UARTx3, I ² C x2, SPI Mx1, SPI S x2, QSPI, I ² S, USB, LED SEG x8	LQFP48
MG32F103CBT6	2V~3.6V	128KB	28KB	72MHz	4+RTC	37	10-CH	2	UARTx3, I ² C x2, SPI Mx1, SPI S x2, QSPI, I ² S, USB, LED SEG x8	LQFP48
MG32F103RBT6	2V~3.6V	128KB	28KB	72MHz	4+RTC	51	16-CH	2	UARTx3, I ² C x2, SPI Mx1, SPI S x2, QSPI, I ² S, USB, LED SEG x8	LQFP64
MG32F104RCT6	2V~3.6V	256KB	36KB	96MHz	4+RTC	51	16-CH	2	UARTx3, I ² C x2, SPI Mx1, SPI S x2, QSPI, I ² S, USB, LED SEG x8	LQFP64
MG32F157RCT6	2V~3.6V	256KB	64KB	96MHz	8+RTC	51	18-CH	3 ^{*1}	UARTx5, I ² C x2, SPIx3, QSPI, CAN, USB, SDIO, CRC, OPAX3, AES, DACx2, ADC x3	LQFP64
MG32F157VCT6	2V~3.6V	256KB	64KB	96MHz	8+RTC	80	18-CH	3 ^{*1}	UARTx5, I ² C x2, SPIx3, QSPI, CAN, USB, SDIO, CRC, OPAX3, AES, DACx2, ADC x3	LQFP100

^{*1} Comparator shared with OPA

ARM Cortex-M0 Base Line: MG32F02A Series



Item	Vdd	Flash ROM	Data RAM	Max. Freq.	Timer	IO	12-Bit ADC	Comp.	Features	CCP ⁴	ISP/IAP	Package
MG32F02A032 ^{*1}	1.8V~5.5V	32KB	4KB	48MHz	5+RTC	17/29/44	12-CH	2	UART ² x2, I ² C, SPI/QPI, PWM, CRC32, DMA	4-CH	YES ³	TSSOP20 QFN32 LQFP48
MG32F02A064 ^{*1}	1.8V~5.5V	64KB	8KB	48MHz	7+RTC	44/59	16-CH	2	UART ⁵ x7, I ² C x2, SPI ⁶ x4, CRC32, DMA, DAC	8-CH	YES ³	LQFP48 LQFP64
MG32F02A128 ^{*1}	1.8V~5.5V	128KB	16KB	48MHz	7+RTC	59/73	16-CH	2	UART ⁵ x7, I ² C x2, SPI ⁶ x4, CRC32, DMA, DAC	8-CH	YES ³	LQFP64 LQFP80

^{*1} Support M-LINK ICE;

^{*2} All UART support SPI Master;

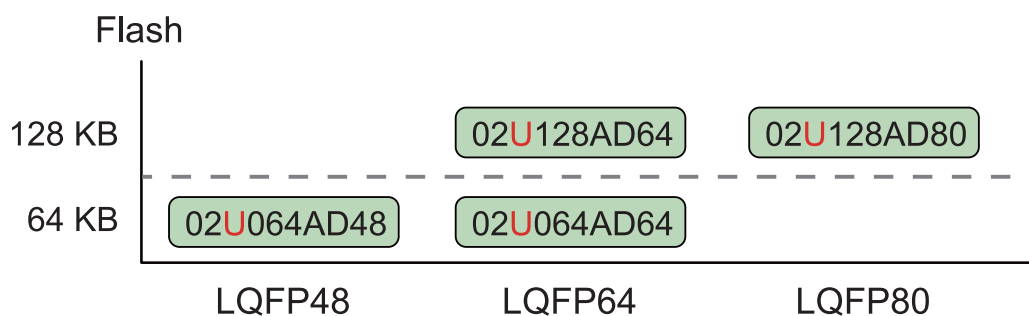
^{*3} Share with all Flash zone;

^{*4} CCP: Input Capture/Output Compare/PWM;

^{*5} Advanced UART x 3: Support SPI Master/Slave(UART 0/1/2 modules); Basic UART x 4: UART only(UART 4/5/6/7 modules).

^{*6} Advanced SPI x 1: Support SPI/QPI/OPI (SPI 0 modules); Basic SPI x 3: Standard SPI only (Configurable in UART 0/1/2 modules).

ARM Cortex-M0 USB Line : MG32F02U Series



Item	Vdd	Flash ROM	Data RAM	Max. Freq.	Timer	IO	12-Bit ADC	Comp.	Features	CCP ³	ISP/IAP	Package
MG32F02U064 ^{*1}	1.8V~5.5V	64KB	16KB	48MHz	7+RTC	41/56	16-CH	2	UART ⁴ x7, I ² C x2, SPI ⁵ x4, USB, CRC32, DMA, DAC	8-CH	YES ²	LQFP48 LQFP64
MG32F02U128 ^{*1}	1.8V~5.5V	128KB	16KB	48MHz	7+RTC	56/70	16-CH	2	UART ⁴ x7, I ² C x2, SPI ⁵ x4, USB, CRC32, DMA, DAC	8-CH	YES ²	LQFP64 LQFP80

^{*1} Support M-LINK ICE;

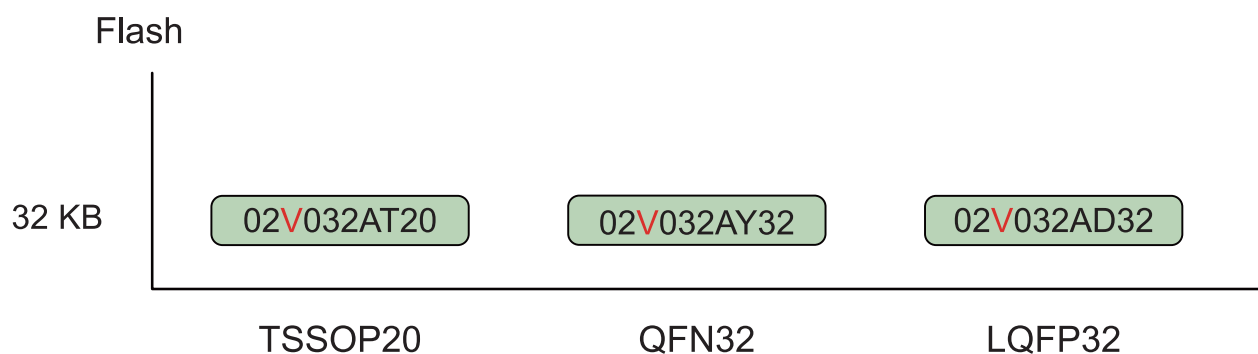
^{*2} Share with all Flash zone;

^{*3} CCP: Input Capture/Output Compare/PWM;

^{*4} Advanced UART x 3: Support SPI Master/Slave(UART 0/1/2 modules); Basic UART x 4: UART only(UART 4/5/6/7 modules);

^{*5} Advanced SPI x 1: Support SPI/QPI/OPI (SPI 0 modules); Basic SPI x 3: Standard SPI only (Configurable in UART 0/1/2 modules).

ARM Cortex-M0 Value Line: MG32F02V Series



Item	Vdd	Flash ROM	Data RAM	Max Freq.	Timer	IO	12-Bit ADC	Comp.	Features	CCP ⁴	ISP/IAP	Package
MG32F02V032^{*1}	1.8V~3.6V	32KB	4KB	48MHz	6+RTC	17/29	8-CH	NA	UART ^{*5} x3, I ² C x2 SPI/QPI,PWM CRC32, DMA	6-CH	YES ^{*3}	TSSOP20 LQFP32 QFN32

^{*1} Support M-LINK ICE;

^{*2} All UART support SPI Master;

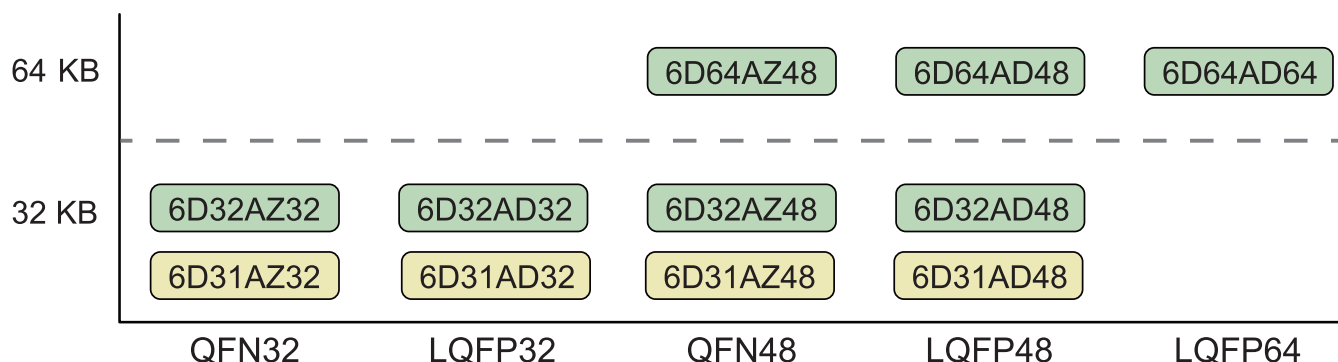
^{*3} Share with all Flash zone;

^{*4} CCP: Input Capture/Output Compare/PWM;

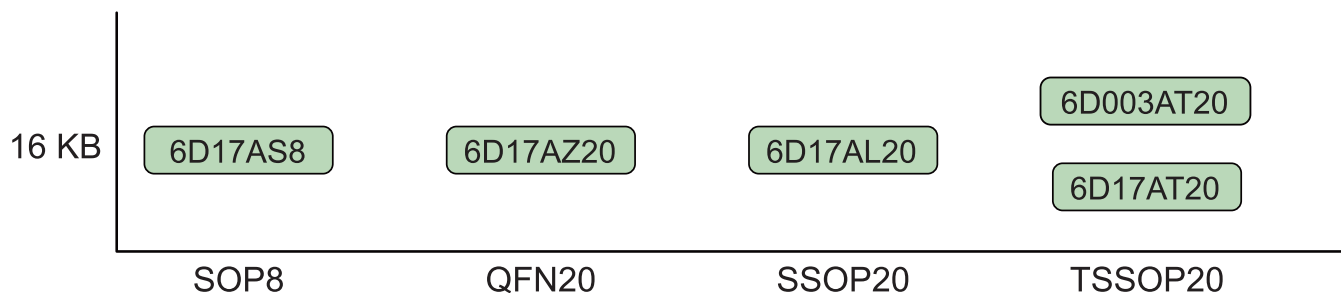
^{*5} Advanced UART x2 : Support SPI Master/Slave.(UART 0/1 modules)

1T 8051 Wide Voltage Base Line: MG82F6D Series with 12 Bit ADC

Flash



Flash



Item	Operating Voltage	Flash ROM	Max. Operation Freq.	Timer (16-Bit)	12-Bit ADC	Features	PCA	WDT	ISP	Package
		Data RAM		IO	ACMP		PWM		IAP	
MG82F6D003 ^{*1}	1.8V~5.5V	16KB	36MHz ^{*5}	4 + RTC	8-CH	UART ^{*2} x2, SPI, I ² C S/W I ² C, LIN,CRC16	1	YES ^{*3}	7.5KB Max.	TSSOP20
		1KB		17	NA		8-CH		15.5KB Max. ^{*4}	
MG82F6D17 ^{*1}	1.8V~5.5V	16KB	36MHz ^{*5}	4 + RTC	8-CH	UART ^{*2} x2, SPI, I ² C S/W I ² C, LIN,CRC16	1	YES ^{*3}	7.5KB Max.	SOP8 QFN20 SSOP20 TSSOP20
		1KB		17	NA		8-CH		15.5KB Max. ^{*4}	
MG82F6D31 ^{*1}	1.8V~5.5V	32KB	36MHz ^{*5}	4 + RTC	10-CH	UART ^{*2} x2, SPI, I ² Cx2 S/W I ² C, LIN,CRC16	1	YES ^{*3}	7.5KB Max.	QFN32 LQFP32 QFN48 LQFP48
		2KB		44	2		8-CH		31.5KB Max. ^{*4}	
MG82F6D32 ^{*1}	1.8V~5.5V	32KB	36MHz ^{*5}	4 + RTC	10-CH	UART ^{*2} x2, SPI, I ² Cx2 S/W I ² C, LIN,CRC16	1	YES ^{*3}	7.5KB Max.	QFN32 LQFP32 QFN48 LQFP48
		2KB		44	2		8-CH		31.5KB Max. ^{*4}	
MG82F6D64 ^{*1}	1.8V~5.5V	64KB	36MHz ^{*5}	5 + RTC	16-CH	UART ^{*2} x4, SPI, I ² Cx2 S/W I ² C, LIN,CRC16	1	YES ^{*3}	7.5KB Max.	QFN48 LQFP48 LQFP64
		4KB		59	3		8-CH		63.5KB Max. ^{*4}	

Support Code Protection

^{*1} Support OCD ICE, except SOP8;

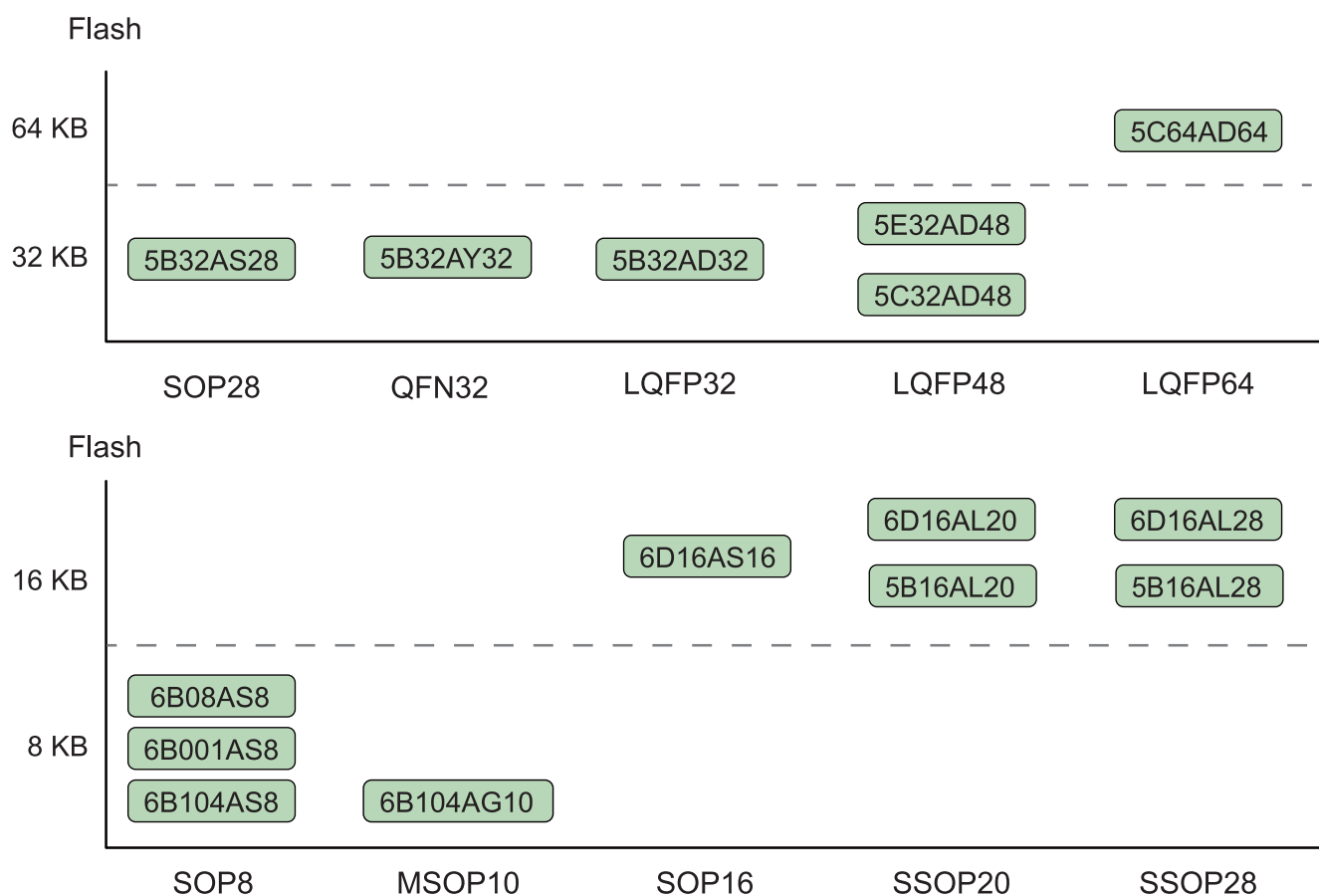
^{*2} Support SPI Master Mode;

^{*3} Support Watch Mode;

^{*4} Support S/W setting;

^{*5} 12MHz and 11.059MHz as internal RC oscillator, used 12MHz as default. Frequency deviation: at 25°C, under ±1% ; at -40°C~105°C, under ±2%.

1T 8051 Wide Voltage Base Line: MG2FG 5x/6x Series with 10 Bit ADC



Item	Operating Voltage	Flash ROM	Max. Operation Freq.	Timer (16-Bit)	10-Bit ADC	Features	PCA	WDT	ISP	Package
		Data RAM		IO	ACMP		PWM		IAP	
MG82F6B08 ^{*1} MG82F6B001 ^{*1} MG82F6B104 ^{*1}	2.4V~5.5V	8KB	16/22,12 MHz ^{*6}	3 + RTC	6-CH	UART ^{*2} ,SPI,LIN S/W I ² C,I ² C,CRC16	1	YES ^{*3}	3.5KB Max.	SOP8 MSOP10
		1KB		6/8	1		4-CH		EEPROM 512B IAP Default NA	
MG82FG5B16 ^{*1}	1.8V~5.5V	16KB	25MHz ^{*5}	3 + RTC	8-CH	UART ^{*2} x2,SPI,ISO-7816 LIN,S/W I ² C,I ² Cx2	1	YES ^{*3}	4KB Max.	SSOP20 SSOP28 LQFP32
		1KB		17/25/29	NA		8-CH		15.5KB Max. ^{*4}	
MG82FG6D16 ^{*1}	1.8V~5.5V	16KB	32MHz ^{*5}	3 + RTC	8-CH	UART ^{*2} ,SPI,LIN I ² C,S/W I ² C,CRC16	1	YES ^{*3}	7.5KB Max.	SOP16 SSOP20 SSOP28
		1KB		25	1		6-CH		15.5KB Max. ^{*4}	
MG82FG5B32 ^{*1}	1.8V~5.5V	32KB	25MHz ^{*5}	3 + RTC	8-CH	UART ^{*2} x2,SPI ISO-7816,LIN,I ² Cx2	1	YES ^{*3}	4KB Max.	QFN32 LQFP32
		2KB		17/25/29	NA		8-CH		31.5KB Max. ^{*4}	
MG82F5B32 ^{*1}	1.8V~5.5V	32KB	32MHz	3 + RTC	8-CH ^{*7}	UART ^{*2} x2,SPI ISO-7816,LIN,I ² C	1	YES ^{*3}	4KB Max.	SOP28 LQFP32
		2KB		17/25/29	NA		8-CH		31.5KB Max. ^{*4}	
MG82FG5C32 ^{*1}	1.8V~5.5V	32KB	32MHz ^{*5}	5 + RTC	16-CH	UART ^{*2} x4,SPI/QPI I ² Cx2,LIN,ISO-7816x3	2	YES ^{*3}	7.5KB Max.	LQFP48
		2KB		44/59	3		12-CH		31.5KB Max. ^{*4}	
MG82FG5C64 ^{*1}	1.8V~5.5V	64KB	32MHz ^{*5}	5 + RTC	16-CH	UART ^{*2} x4,SPI/QPI I ² Cx2,LIN,ISO-7816x3	2	YES ^{*3}	7.5KB Max.	LQFP64
		4KB		59	3		12-CH		63.5KB Max. ^{*4}	
MG82G5E32 ^{*1}	1.8V~5.5V	32KB	32MHz ^{*5}	4 + RTC	8-CH	UART ^{*2} x2,SPI,I ² C S/W I ² C,CRC16	1	YES ^{*3}	7.5KB Max.	LQFP48
		2KB		44	2		8-CH		31.5KB Max. ^{*4}	

Support Code Protection;^{*1} Support OCD ICE, except SOP8;^{*2} Support SPI Master Mode;

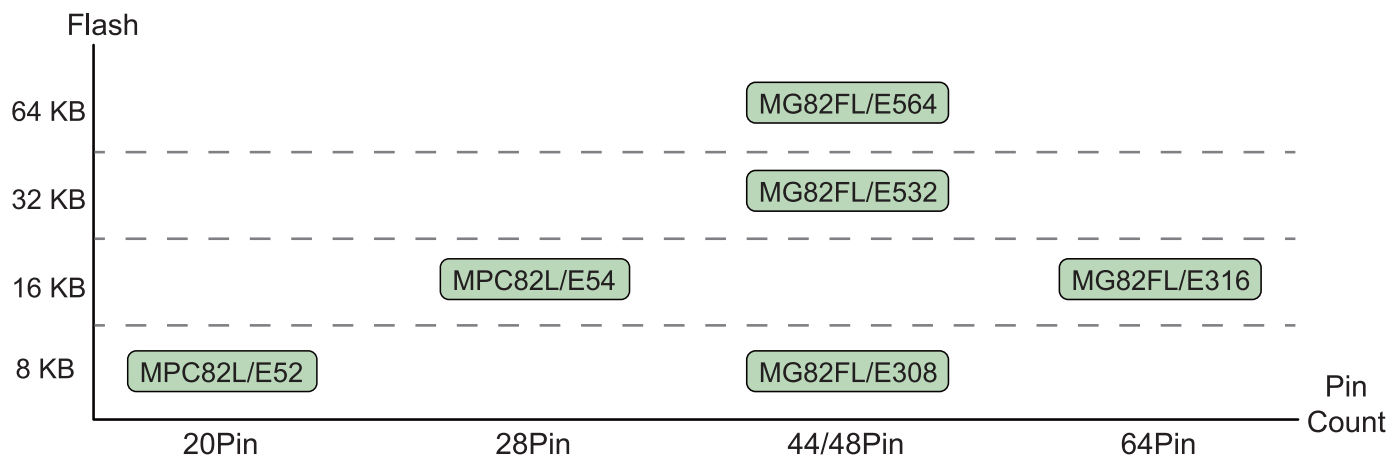
^{*3} Support Watch Mode;^{*4} Support S/W setting;

^{*5} 12MHz and 11.059MHz as internal RC oscillator, used 12MHz as default. Frequency deviation: at 25°C, under ±1% ; at -40°C~85°C, under ±2%;

^{*6} 16MHz and 22.12MHz as internal RC oscillator. Frequency deviation: at 25°C, under ±2% ; at -40°C~85°C, under ±3.8%;

^{*7} Factory default 10 Bit,200Ksps; Program adjustment 12 Bit,400Ksps.

1T 8051 Single Voltage MCU: MPC82 / MG82F Series



MPC82/MG82F Series (1T)

Item	Operating Voltage	Flash ROM	Max Operation Freq.	Timer (16-Bit)	ADC	Comm.	PCA	WDT	Code Protection	ISP	Package
		Data RAM		IO	ACMP		PWM			IAP	
MPC82L/E52	L:2.4V~3.6V E:4.5V~5.5V	8KB	25MHz	2	8-Bit,8-CH	UART,SPI	1	YES	YES	3KB Max.	PDIP20 SOP20 TSSOP20
		256B		15	NA		2-CH			7.5KB Max.	
MPC82L/E54	L:2.4V~3.6V E:4.5V~5.5V	15.5KB	25MHz	2	10-Bit,8-CH	UART,SPI	1	YES	YES	3.5KB Max.	PDIP28 SOP28 SSOP28
		512B		23	NA		4-CH			15KB Max.	
MG82FL/E532 ^{*1}	L:2.4V~3.6V E:4.5V~5.5V	32KB	24MHz ^{*2}	3	10-Bit,8-CH	UARTx2,SPI	1	YES ^{*4}	YES	4KB Max.	LQFP44 LQFP48
		1280B		45	NA		6-CH			32KB Max. ^{*5}	
MG82FL/E564 ^{*1}	L:2.4V~3.6V E:4.5V~5.5V	64KB	24MHz ^{*2}	3	10-Bit,8-CH	UARTx2,SPI	1	YES ^{*4}	YES	4KB Max.	LQFP44 LQFP48
		1280B		45	NA		6-CH			63.5KB Max. ^{*5}	
MG82FL/E308	L:2.4V~3.6V E:4.5V~5.5V	8KB	24MHz ^{*3}	3	NA	UART	NA	YES	YES	4KB Max.	LQFP48
		512B		45	1		1-CH			8KB Max. ^{*5}	
MG82FL/E316	L:2.4V~3.6V E:4.5V~5.5V	16KB	24MHz ^{*3}	3	NA	UART	NA	YES	YES	4KB Max.	LQFP64
		512B		57	1		1-CH			15.5KB Max. ^{*5}	

^{*1} Support OCD ICE;

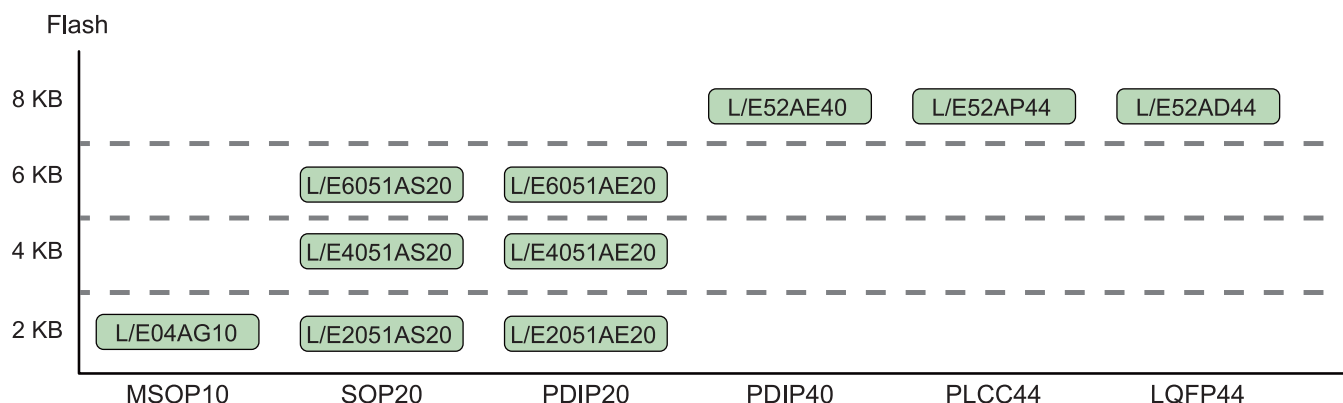
^{*2} Used internal RC oscillator 22.118MHz as default. Frequency deviation: at 25°C, under ±1%; at -20°C ~50°C, under ±2%; at -40°C ~85°C, under ±4%;

^{*3} Internal RC oscillator 12MHz as default. Frequency deviation: at 25°C, under ±1%; at -20°C ~50°C, under ±2%; at -40°C ~85°C, under ±4%;

^{*4} Support Watch Mode;

^{*5} Support S/W setting.

12T/6T 8051 Single Voltage **with internal RC oscillator** MCU: MG87 Series

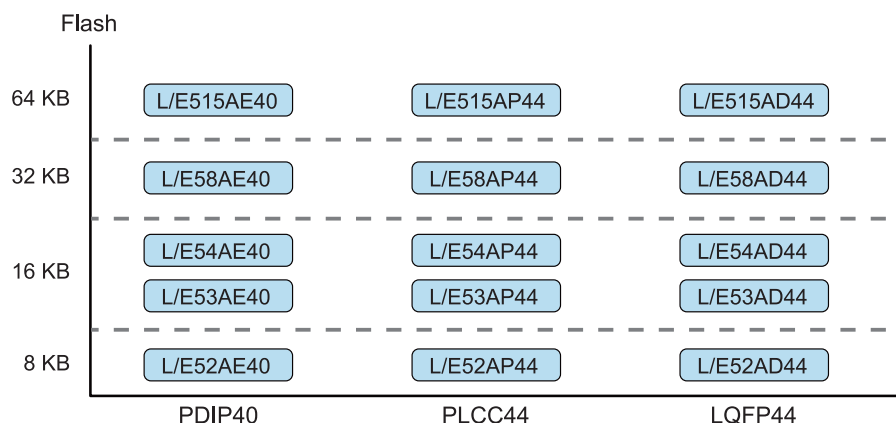


Item	Operating Voltage	Flash ROM	Max. Operation Freq.	Timer (16-Bit)	ACMP	Comm.	PCA	WDT	ISP IAP	Package
		Data RAM		IO			PWM			
MG87FL/E52*	L:2.4V~3.6V E:4.5V~5.5V	8KB	48MHz @ 12T 24MHz @ 6T	3	NA	UART	NA	YES	3.5KB Max.	PDIP40 PLCC44 LQFP44
		256B		32/36			NA		S/W setting	
MG87FL/E2051*	L:2.4V~3.6V E:4.5V~5.5V	2KB	48MHz @ 12T 24MHz @ 6T	2	1	UART	NA	YES	3.5KB Max.	PDIP20 SOP20
		256B		17			1-CH		S/W setting	
MG87FL/E4051*	L:2.4V~3.6V E:4.5V~5.5V	4KB	48MHz @ 12T 24MHz @ 6T	2	1	UART	NA	YES	3.5KB Max.	PDIP20 SOP20
		256B		17			1-CH		S/W setting	
MG87FL/E6051*	L:2.4V~3.6V E:4.5V~5.5V	6KB	48MHz @ 12T 24MHz @ 6T	2	1	UART	NA	YES	3.5KB Max.	PDIP20 SOP20
		256B		17			1-CH		S/W setting	
MG87FL/E04	L:2.4V~3.6V E:4.5V~5.5V	4KB	22.118MHz/Int RC	2	1	UART	NA	YES	1.5KB	MSOP10
		256B		7			1-CH		S/W setting	

Support Code Protection

* Built-in internal RC oscillator with $\pm 1\%$ frequency deviation at 25°C. And there are 6 kinds of frequency selectable: 6M/11.059M/12M/22.118M/24M/24.576MHz.

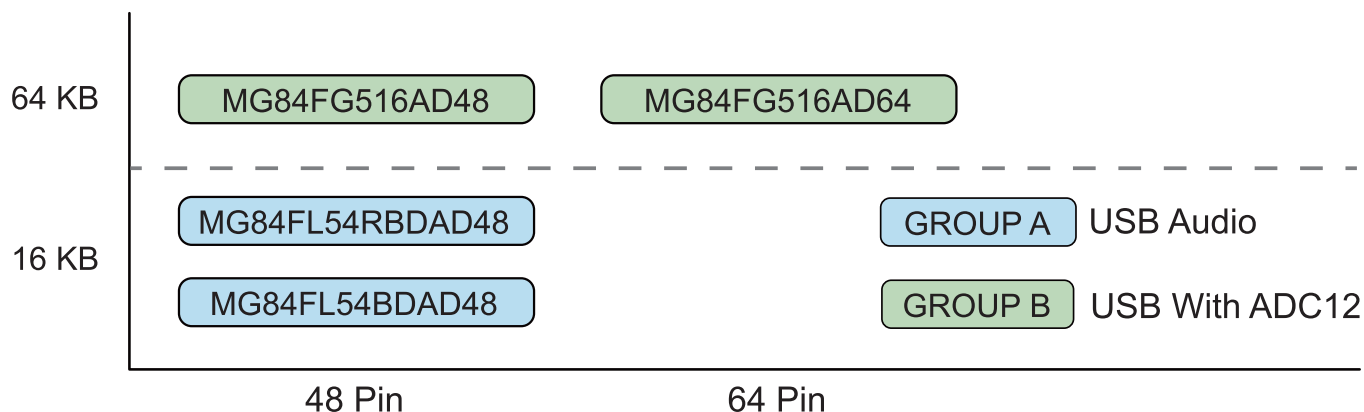
12T/6T 8051 Single Voltage **without internal RC oscillator** MCU : MPC89 Series



Item	Operating Voltage	Flash ROM	Max. Operation Freq.	Timer (16-Bit)	ACMP	Comm.	PCA	WDT	Code Protection	ISP IAP	Package
		Data RAM		IO			PWM				
MPC89L/E52	L:2.4V~3.6V E:4.5V~5.5V	8KB	48MHz @ 12T 24MHz @ 6T	3	NA	UART	NA	YES	YES	4KB Max.	PDIP40 PLCC44 LQFP44
		512B		32/36			NA			6KB Max.	
MPC89L/E53	L:2.4V~3.6V E:4.5V~5.5V	15KB	48MHz @ 12T 24MHz @ 6T	3	NA	UART	NA	YES	YES	4KB Max.	PDIP40 PLCC44 LQFP44
		512B		32/36			NA			NA	
MPC89L/E54	L:2.4V~3.6V E:4.5V~5.5V	16KB	48MHz @ 12T 24MHz @ 6T	3	NA	UART	NA	YES	YES	4KB Max.	PDIP40 PLCC44 LQFP44
		1280B		32/36			NA			46KB Max.	
MPC89L/E58	L:2.4V~3.6V E:4.5V~5.5V	32KB	48MHz @ 12T 24MHz @ 6T	3	NA	UART	NA	YES	YES	4KB Max.	PDIP40 PLCC44 LQFP44
		1280B		32/36			NA			30KB Max.	
MPC89L/E515	L:2.4V~3.6V E:4.5V~5.5V	63KB	48MHz @ 12T 24MHz @ 6T	3	NA	UART	NA	YES	YES	4KB Max.	PDIP40 PLCC44 LQFP44
		1280B		32/36			NA			NA	

8051 USB MCU

Memory



MG84 (USB FS)

Item	Operating Voltage	Flash RAM	Max. Operation Freq.	Timer (16-Bit)	ADC	Comm.	PCA	WDT	End Points	ISP	Package
		Data RAM		IO	ACMP		PWM			IAP	
MG84FL54BD	2.7V~3.6V	16KB	24MHz	3	NA	USB, UART, TWI(I ² C), SPI	NA	NA	4	4KB Max.	LQFP48
		832B		36	NA		NA			15KB Max.	
MG84FL54RBD	2.7V~3.6V	16KB	24MHz	3	NA	USB, UART, TWI(I ² C), SPI	NA	NA	6	4KB Max.	LQFP48
		256B		31	NA		NA			15KB Max.	
MG84FG516 ^{*1}	2.0V~5.5V	64KB	32MHz ^{*2}	4	12-Bit, 8-CH	USB, UARTx2, TWI(I ² C), SPI	1	YES ^{*4}	11	4KB Max.	LQFP48
		4352B		41/55	NA		6-CH			63.5KB Max. ^{*5}	

^{*1} Support OCD ICE;

^{*2} Used internal RC oscillator 12MHz as default. Frequency deviation: at 25°C, under ±1%; at -40°C~85°C, under ±2%; at USB activated, under ±0.25%;

^{*3} Support SPI Master Mode;

^{*4} Support Watch Mode;

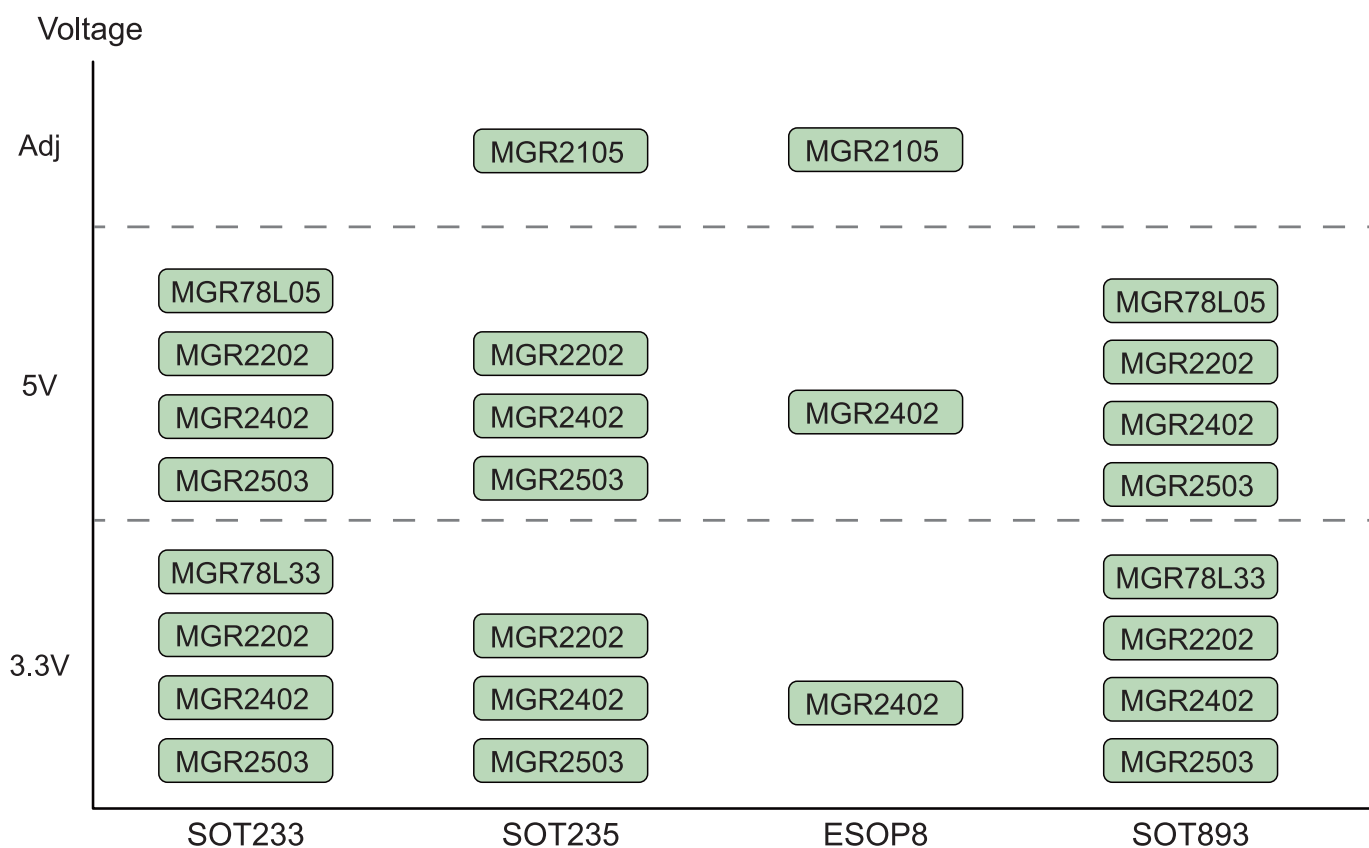
^{*5} Support S/W setting.

MA1xx Series USB Bridge

Item	Operating Voltage	USB Speed	Function	Features	Driver	Package
MA111	2.4V~5.5V	Full Speed ^{*1}	USB HID to Serial Bridge	UART, SPI Master, TWI(I ² C) Master, GPIO	FREE	SOP16, QFN16
MA112	3.0V~5.5V	Full Speed ^{*1}	USB to UART Data Bridge MS Windows Driver Supported	Virtual COM (TXD/RXD)	OS	SOP16, QFN16

^{*1} Built in internal RC oscillator 12MHz as default. Frequency deviation: at 25°C, under ±1%; at -40°C~85°C, under ±4%, USB online mode ±0.25%.

LDO Product



Item	Min. V _{IN} (V)	Max. V _{IN} (V)	I _{OUT} (mA)	V _{OUT} (V)	I _Q (uA)	R _{ON} (Ω)	ΔV _{LINE} (%/V)	ΔV _{LOAD} (mV)	PSRR @1KHz (dB)	C _{OUT} (uF)	EN	Package
MGR78L33 MGR78L05	V _{OUT} +2	30	100	3.3/5	300	~20	5	20	> 80	0.1	NA	SOT233 SOT893
MGR2105	7	100	50	Adj*	35	~50	3mV	20	65	10	YES	SOT235 ESOP8
MGR2202	2.7	24	150	3.3/5	1.52	< 5	0.01	45	> 80	1	NA	SOT233 SOT235 SOT893
MGR2402	2.7	40	250	3.3/5	1.2	4	0.01	15	> 80	1	YES	SOT233 SOT235 SOT893 ESOP8
MGR2503	2.5	5.5	300	3.3/5	0.5	1.33	0.1/0.3	12/30 (1 to 150mA)	55-60	1	YES	SOT233 SOT235 SOT893

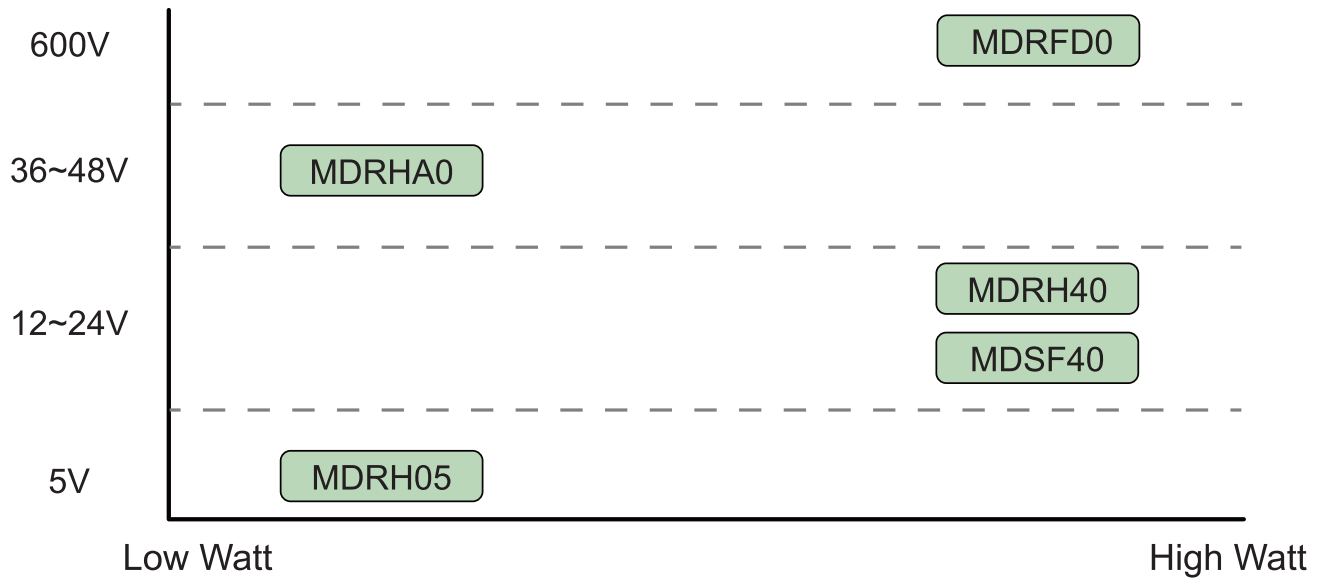
*Adj: means the voltage can be adjusted

Package Type-LDO

Code	Description	Code	Description
G	SOT	V	23-3
S	ESOP	B	23-5
		X	89-3
		8	8

BLDC Product

Application Voltage



Part No.	Description	Vdd	Gate driver	V _{IN}	Max Freq.	EEPROM	ADC 10Bit	Capture 16Bit	OPA	Junction Temp.	Package
MDRH05 ^{*1}	3 Phase BLDC Motor Controller	4.5~5.5V	NA	5V	48MHz	NA	8 CH	1 CH	NA	-40°C~125°C	SSOP28
MDRH40 ^{*1}	3 Phase BLDC Motor Controller, w/40V Gate driver, 5V LDO	4.5~5.5V	40V P/N	40/5V	48MHz	NA	4 CH	1 CH	NA	-40°C~125°C	SSOP28(W) QFN32
MDRHA0 ^{*1}	3 Phase BLDC Motor Controller, w/100V Gate driver, 5V LDO	4.5~5.5V	100V N/N	15/5V	48MHz	NA	8 CH	1 CH	NA	-40°C~125°C	LQFP48
MDSF40 ^{*1*2}	3 Phase PMSM/BLDC FOC sensorless Motor Controller, w/40V Gate driver, 5V LDO	4.5~5.5V	40V P/N	40/5V	48MHz	256Byte	8 CH ^{*3}	1 CH	3 ^{*4}	-40°C~125°C	LQFP48
MDRFD0 ^{*1*2}	3 Phase PMSM/BLDC FOC sensorless Motor Controller, w/600V Gate driver, 5V LDO	4.5~5.5V	600V N/N	15/5V	48MHz	NA	8 CH ^{*3}	1 CH	2 ^{*4}	-40°C~125°C	LQFP48

^{*1} Control method: Sine-wave; Support 16-Bit PWM; UART Interface; 32-Bit Divider

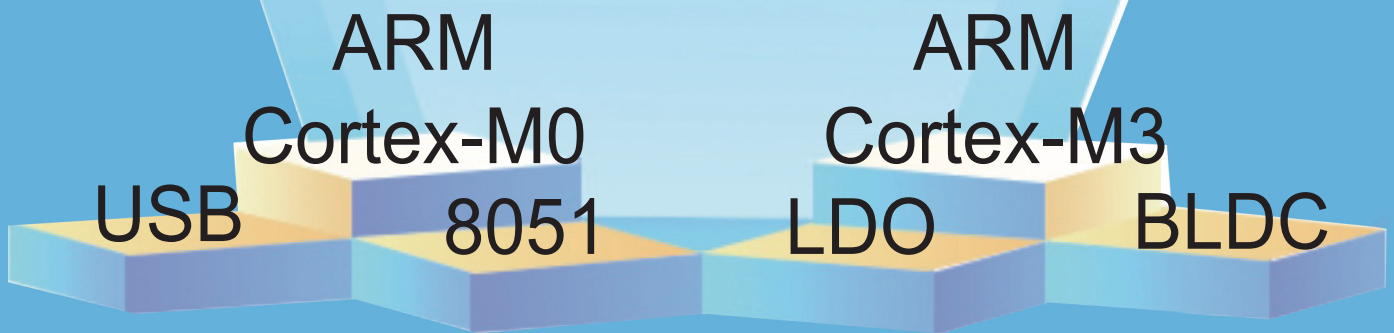
^{*2} Support I²Cx1; IR/RF x1 Interface

^{*3} CH0 and CH1: for FOC current measurement

^{*4} OPA: Has 2-CH for non-sensor feedback motor current , and MDSF40 has an extra 1-CH for peripheral use.

Multiple Product Lines

Multiple Applications



Wireless Charger Application



Battery Management System



Smart light control



Portable energy storage



Communication industry



Washing machine panel



Thermal printer



Meter



Smart bracelet



Massage chair



Smart water meter



Fan



Electronic locks



Monitoring system



Ventilation Mechanical Control system



Ceiling fan



Low pressure air conditioning drainage pump



Electronic drawing board



Hair Dryer



Pet feeder



Coffee machine

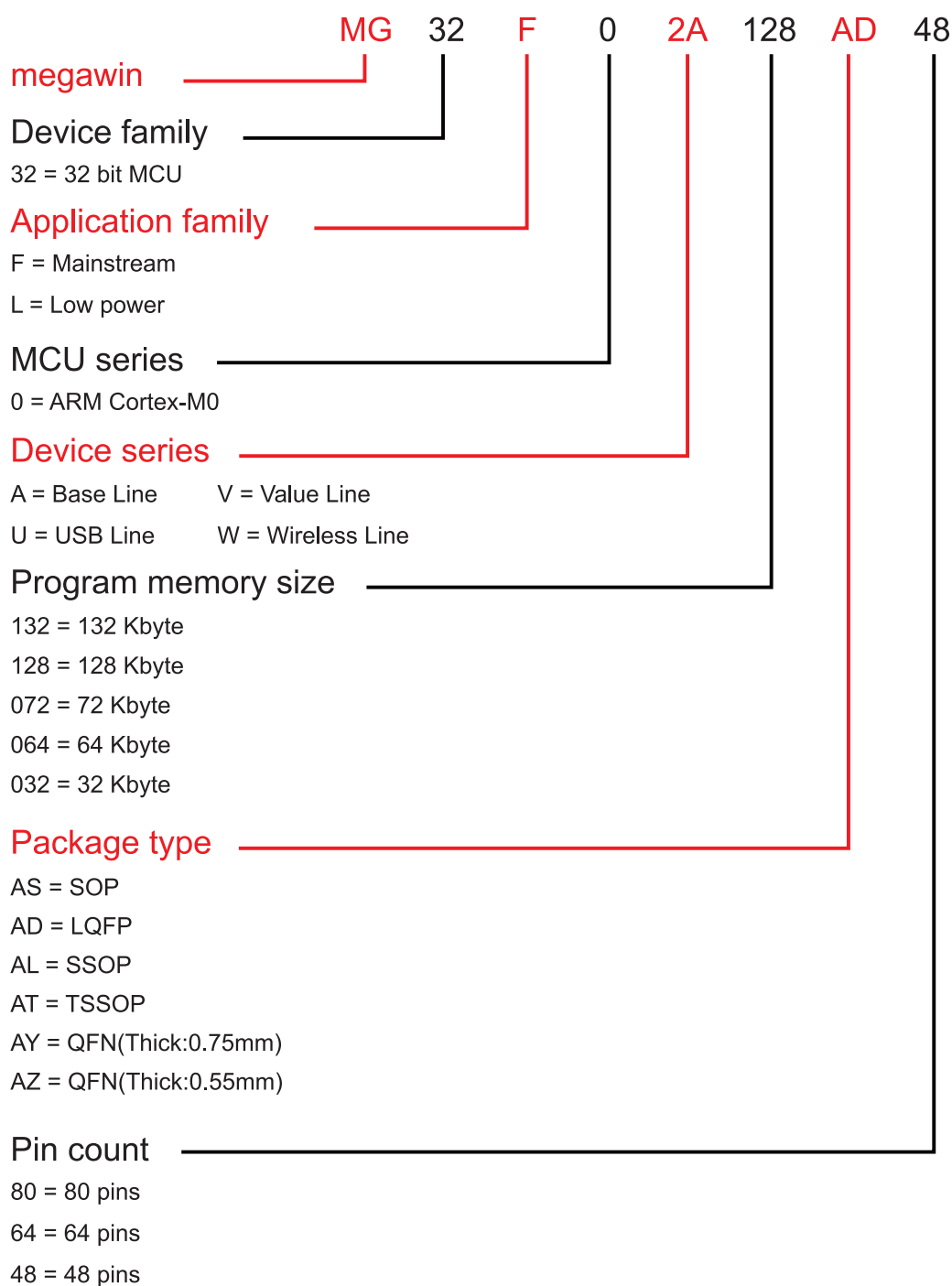


Smart Street Light

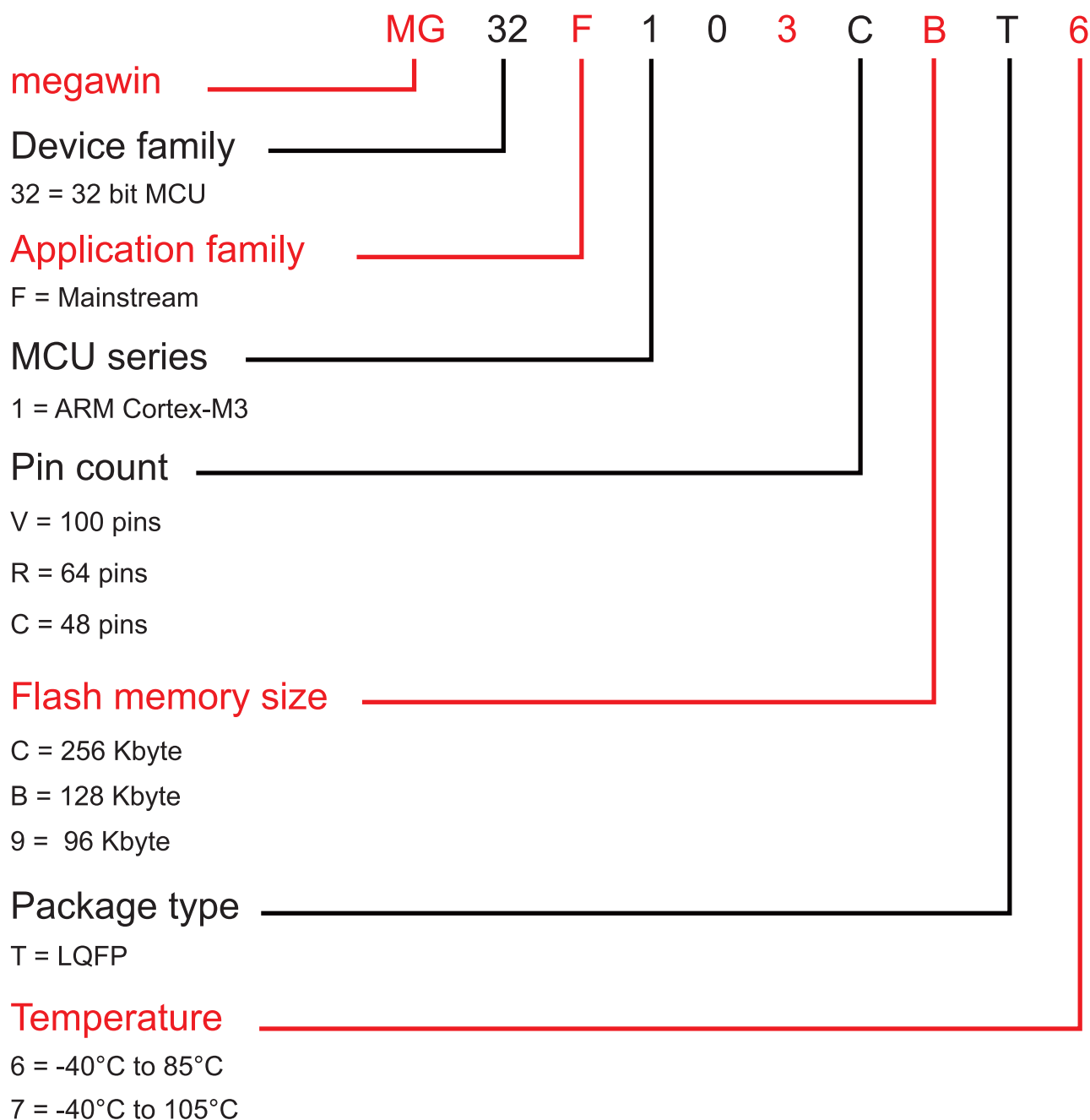
Package Type

Code	Description	Code	Description	Code	Description
AB	COB	AC	LQFP(10mm x 10mm)	AD	LQFP(7mm x 7mm)
AE	PDIP	AF	PQFP	AG	MSOP
AL	SSOP	AM	TQFP	AP	PLCC
AS	SOP	AT	TSSOP	AY	QFN(Thick:0.75mm)
HS	SOP (Heat Sink)	AK	TOxxx	AZ	QFN(Thick:0.55mm)
AR	SOT	AI	Ink die	AN	DFN
AW	Wafer	WL	SSOT(209mil Outline Dimensions)	AH	DICE

Ordering Information



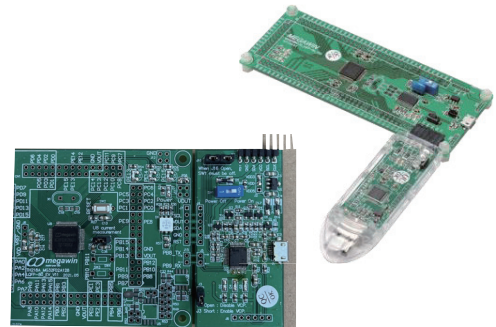
Ordering Information-M3



Development Tools(1)

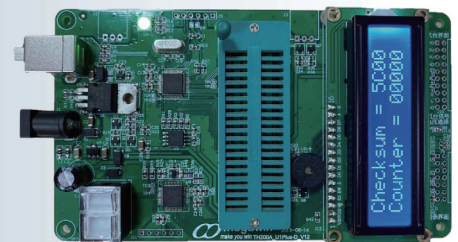
EVB + M-Link (TH185)

- USB Plug & Play
- Support Keil RVMDK development environment
- Support on-line debug
- Support on-line chip programming



U1 Plus-D Writer (TH200)

- USB Plug & Play
- Support online and offline programming modes
- Automatic serial number insertion
- Maximum programming counts limitation support
- Online software update
- User-defined IAP space
- User-defined ISP space for self ISP code insertion
- Support LCD Display
- Provide signals such as start,busy,pass and fail, which can be combined with automatic programmer



8051 ISP Programmer (TH079)

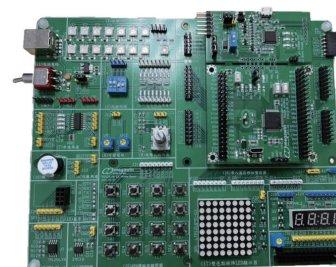
- USB Plug & Play
- Support online and offline programming modes
- Automatic serial number insertion
- Maximum programming counts limitation support
- Online software update
- Three-wire connection, simple and easy
- Support online programming mode



Development Tools(2)

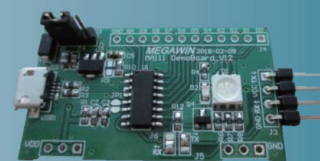
ARM Cortex-M0 Internship Group (TS101A)

- BLE
- RGB LED
- SPI Flash
- EEPROM
- Step Motor
- ARGB LED
- 4x7-SEG LED
- RC Servo Motor
- M-Link+EasyCOM
- MG32F02U128(USB Device)
- 2 Colors of LED Module(8x8)
- 16x2 LCM/TFT LCD Display



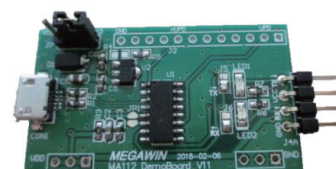
MA111 Bridge Develop Board (TH192)

- Driver free HID Bridge for Windows 7, Windows 8.1, Windows 10
- Support GPIO & Interface Bridge of UART, SPI master and I2C master
- UART Baud Rate: 600,1200,2400,4800,9600,19200,38400,51200,57600, 102400,115200 and 230400
- UART Parity:Odd, Even, Mark, Space and None-parity
- Support Line-Break/CTS/RTS and RS-485 DE control
- Provide UART multi-Processor communication(Master or Slave)
- Remote wakeup: WKP0 & WKP1



MA112 Bridge Develop Board (TH193)

- Virtual COM Bridge for Windows 7, Windows 8.1, Windows 10
- Support UART data bridge on TXD/RXD
- UART Baud Rate: 600,1200,2400,4800,9600,19200,38400,51200,57600, 102400,115200 and 230400
- UART Parity:Odd, Even, Mark, Space and None-parity
- Stop bit:1 bit, 2 bits
- Line Break detection and transmission
- Support multi-processor communication(Master or Slave)



M3 Series

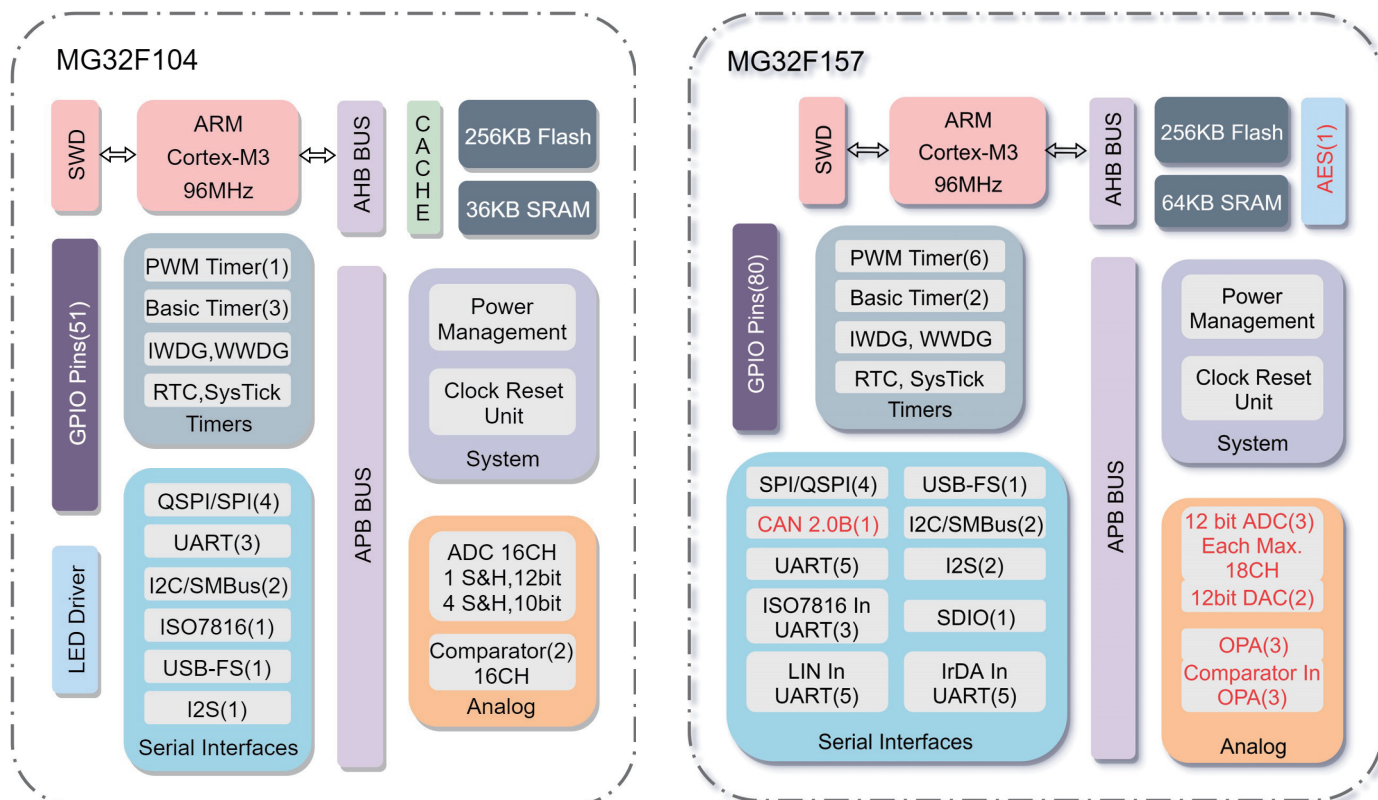
M3 Series (MG32F103/104) are based on ARM Cortex-M3 as the core, with the excellent computing performance of the existing ARM Cortex-M0 MCU to strengthen technology development, improve Core computing performance, Flash supports Cache fast access to greatly reduce read latency.

Part No.	Vdd	Flash ROM	Data RAM	Max Freq.	12-Bit ADC	Features	Applications
MG32F103	2V~3.6V	96~128KB	28KB	72MHz	10/16 CH	UARTx3, I ² C x2, SPI M x1, SPI S x2, QSPI, I ² S, USB, LED SEG x8	Sweeping robot / Smart Lock / Aerial Camera/ Thermal printer / POS ...
MG32F104	2V~3.6V	256KB	36KB	96MHz	16 CH		
MG32F157	2V~3.6V	256KB	64KB	96MHz	18 CH		

M3 Features:

- Except the core in M3, other peripherals are no different from M0
- Core efficiency improvement
- Flash equipped Cache to enhance efficiency
- All series support USB 2.0 Device
- Support 1 CAN2.0B, communications interface increased to 15
- Support hardware AES encryption algorithm

Function Diagram



Typical Applications:

- Sweeping Robot
- High-end Smart Lock
- Aerial Camera
- Thermal Printer / POS
- Brushless Motor Control



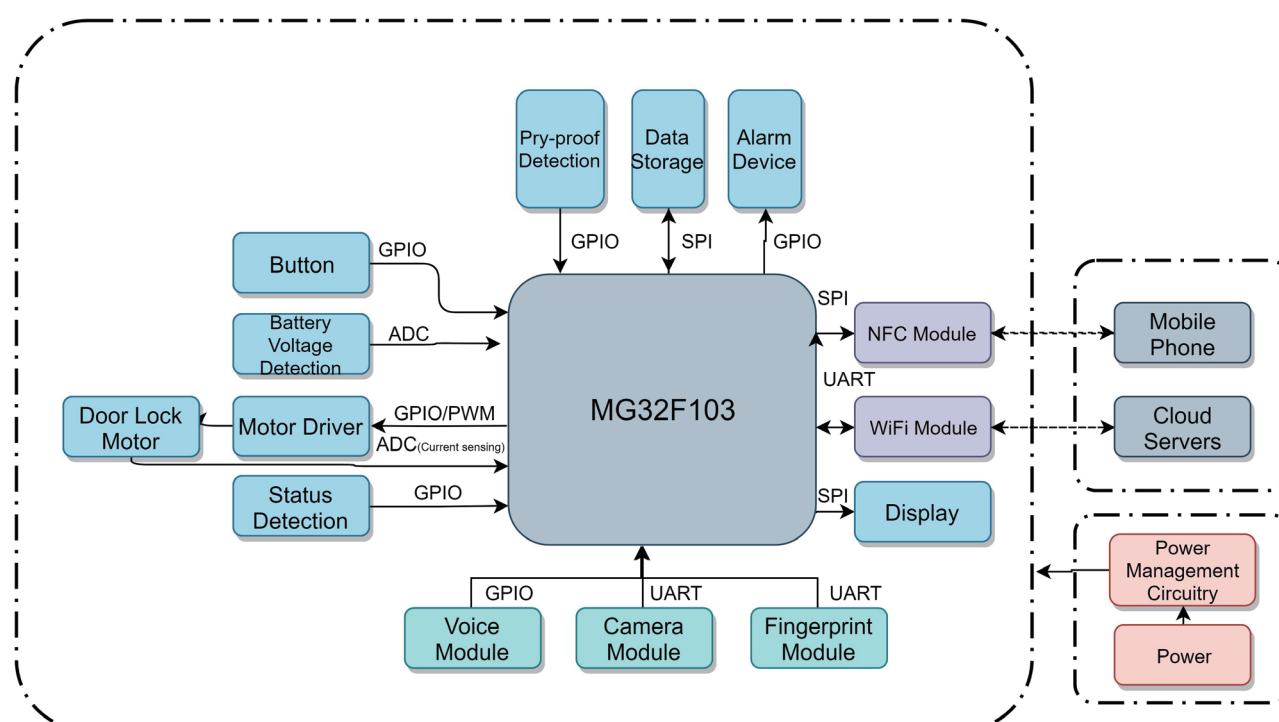
Recommended App.(1): Smart Lock

● Electronic Lock MCU Control

- ▲ Keyboard(I/O)
- ▲ Touch(I2C)
- ▲ Fingerprint(SPI/UART)
- ▲ NFC(UART)
- ▲ Motor(PWM)
- ▲ Voice(DAC/Flash)
- ▲ RF(SPI)
- ▲ Data record(EEPROM/Flash)



Function Diagram



Recommended App.(2): Thermal printer

● Thermal printer application usually use M3

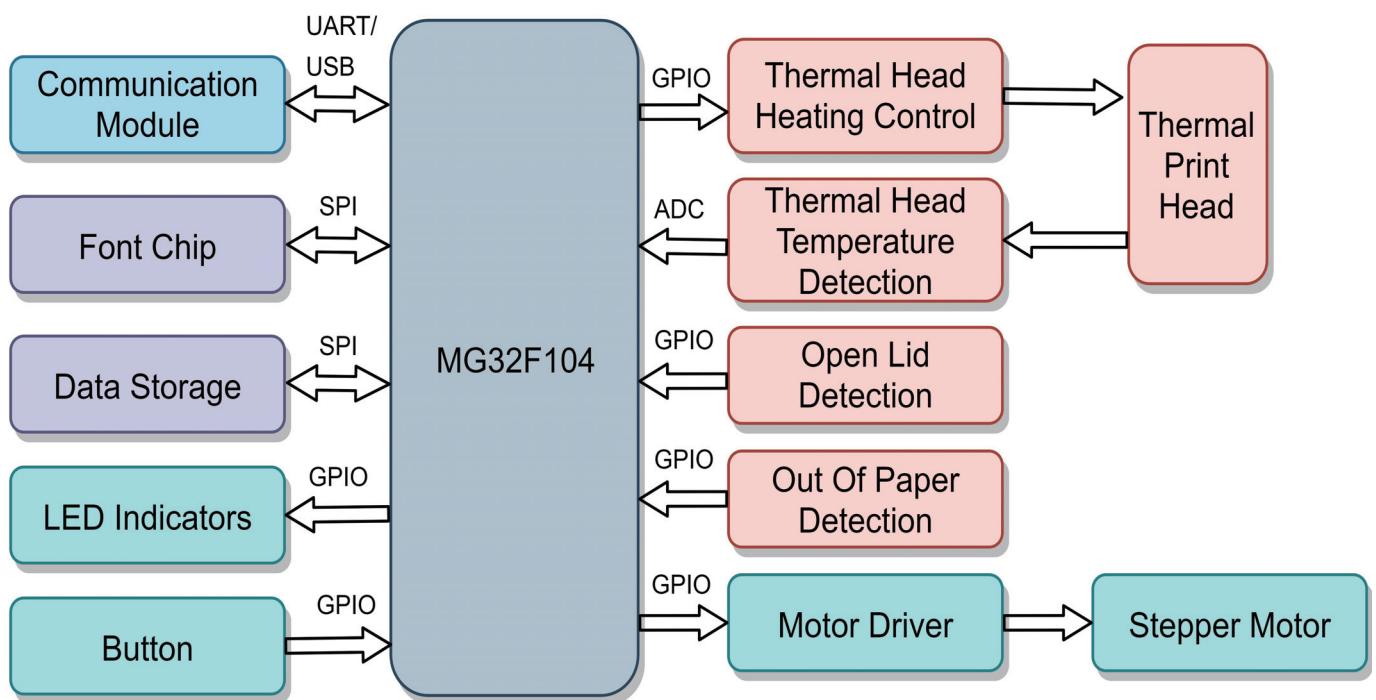
- ▲ 128K ~256K Flash
- ▲ At least 20K RAM
- ▲ Generate QR code: 72MHz~120MHz

● Print width of printer

- ▲ 58~72mm
- ▲ Taxi, store



Function Diagram

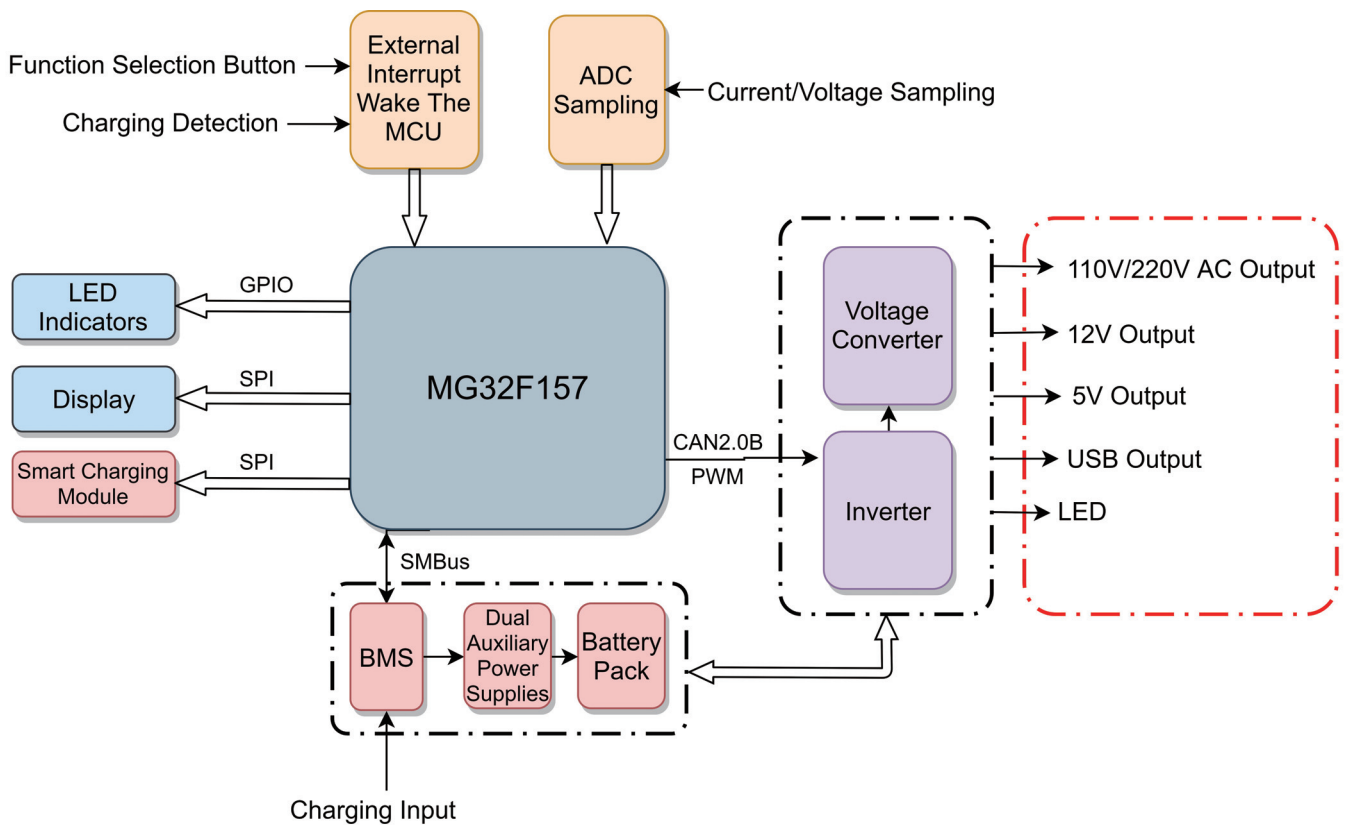


Recommended App.(3): Energy Storage Power Supply

- 3 x 12-Bit ADC (charge detection / current and voltage sampling)
- 1 x CAN2.0B bus (as communication)
- Support SMBus (as BMS communication)
- 96MHz High-speed main frequency (energy saving)
- Sine wave PWM (for inverter)



Function Diagram



M0 Series

Base on ARM®Cortex™-M0 32-bit core, it is developed with excellent noise immunity capability and excellent encryption technology of traditional 8051 MCU. Built-in PWM function with center/edge-align and dead time control, flexible pin alternate function selection, multiple reset resources, high speed I/O modules and fast comparators (ACMP) can be quickly imported and applied to complex electrical engineering control systems with multiple sets of high-speed peripheral hardware such as UART, SPI, I2C and CRC.

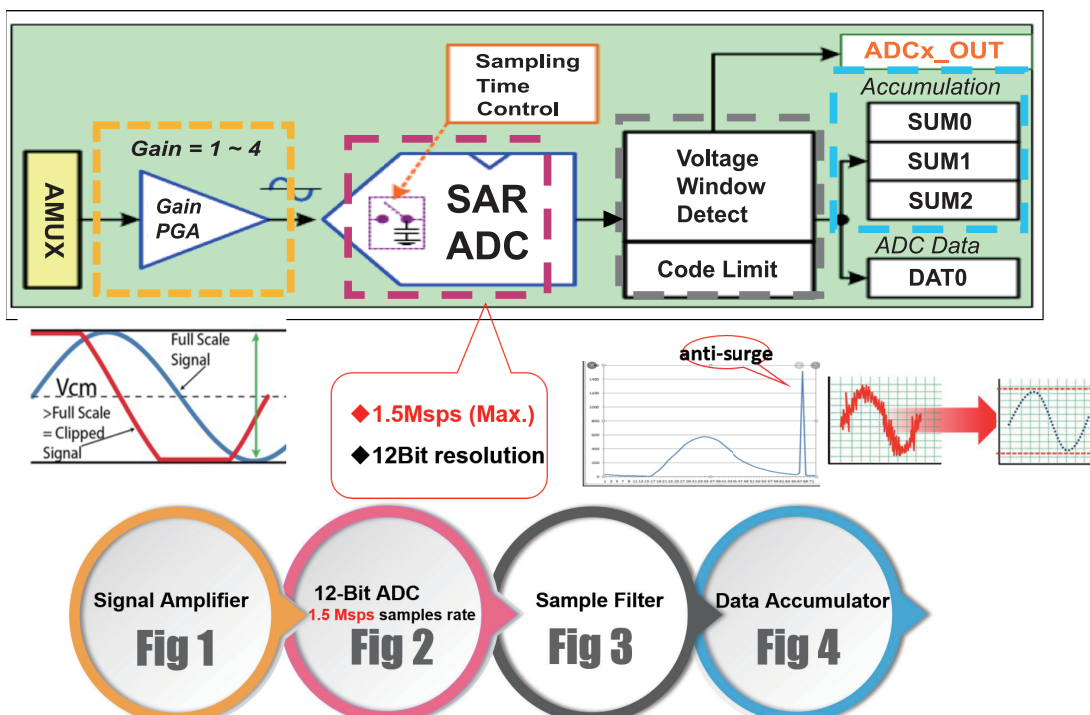
The M0 series has Base Line, USB Line and Value Line.

Series	Vdd	Flash ROM	Data RAM	Max. Freq.	12-Bit ADC	Features	Applications
Base Line	1.8V~5.5V	32~128KB	4KB~16KB	48MHz	12/16 CH	DMA, TFT-LCD CRC32, DAC, PWM	Vehicle / Education / Industrial control / Medical / Small and medium display panels
USB Line	1.8V~5.5V	64~128KB	16KB	48MHz	16 CH	NCO, CCL, CRC32, DAC PWM, DMA, UARTx7	Computer Peripherals / Medical and Nursing / Industrial Control...
Value Line	1.8V~3.6V	32KB	4KB	48MHz	8 CH	ARGB, CRC32, PWM, DMA	LED light bar control / Wireless charging...

M0 Features:

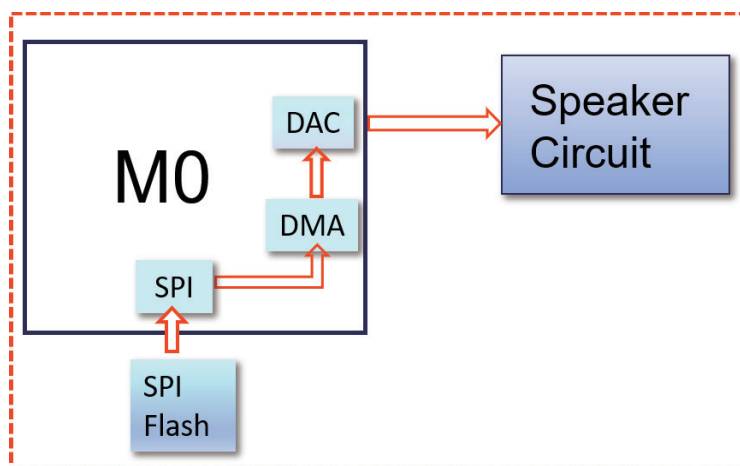
- ADC (Analog-to-digital converter)
- DAC (Digital-to-analog converter)
- NCO (Numerically Controlled Oscillator)
- CCL (Configurable Custom Logic)
- EMB + 8080 LCD/OLED interface
- Signal Capture W/ DMA
- Hardware Divider
- Support USB 2.0 (total 15 end-points)
- Low power consumption: power down to 1.25uA
- ASB(ARGB Serial Bus)
- PWM: up to 96MHz (output 2 different frequency)
- Built-in a temperature sensor in ADC macro
- Easily initialize various peripherals (Keil Wizard, MG32CoGen)

Feature (1): ADC module



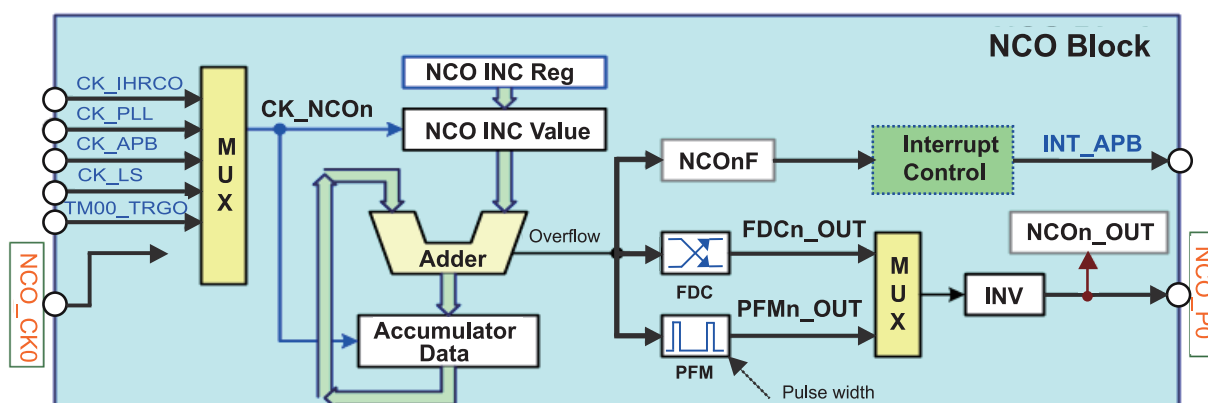
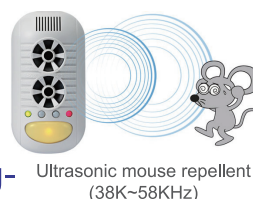
Feature (2): DAC

- A 12-Bit voltage DAC (digital-to-analog conversion)
 - ▲ Maximum Conversion Rate: 1MHz
 - ▲ It can be output to ADC and ACMP as reference voltage
- The input data can be left/right aligned
 - ▲ Configurable data width: 12/10/8 bits
- Support DMA P2P mode



Feature (3): NCO

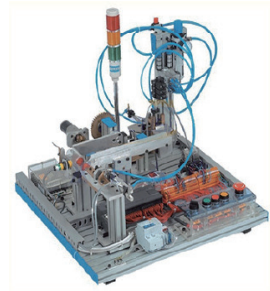
- Generate wave square by any given frequency (Up to 24MHz)
- Output for external control
- It can be regarded as the Fine-Frequency-Setting-Function of M0
- NCO(Numerically Controlled Oscillator) Mode
 - ▲ 20-bit Increment Function mode
 - ▲ Fixed Duty Cycle (FDC)
 - ▲ Pulse Frequency (PFM)
 - ▲ Output Polarity Control
- Fine-tuning the PWM frequency without affecting other peripheral clocks



M0 Series

Feature (4): CCL

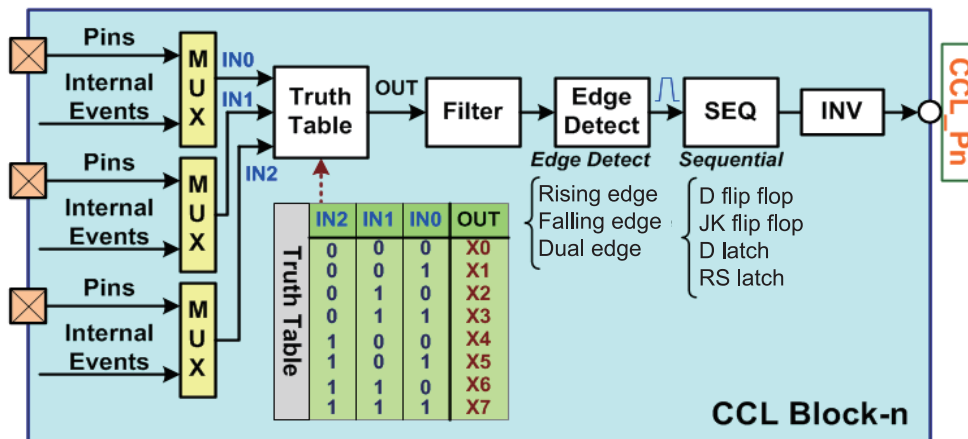
- CCL(Configurable Custom Logic) is a very useful function
 - ▲ Logic components simplify circuit design
 - ▲ Facilitate product circuit redesign
- Support 2 sets of CCL
 - ▲ Three-in-one truth table
 - ▲ Clock synchronized or filtered filter
 - ▲ Input rising, falling or dual edge detector
 - ▲ Sequential logic as - D flip flop, JK flip flop, D latch and RS latch
 - ▲ Output inverse
- 5 sets of complementary output PWM to meet applications such as motors
- Add duty capture function



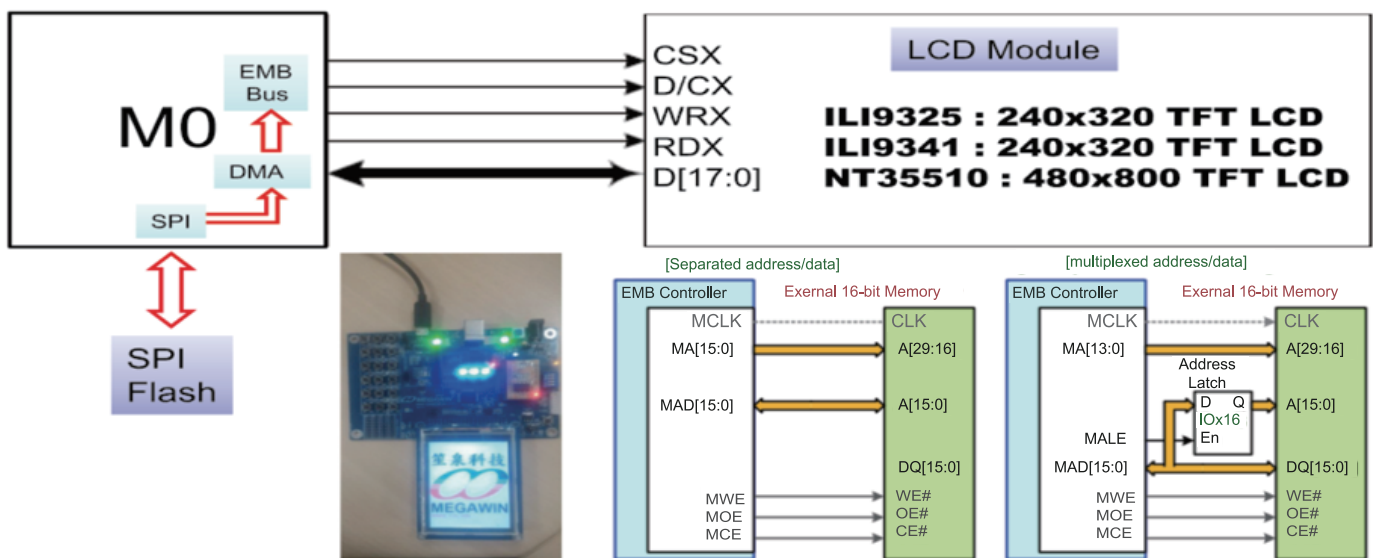
Optical electromechanical control



Car HID light control

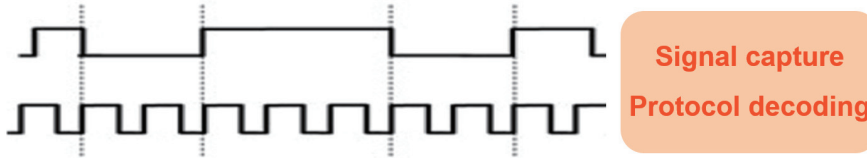


Feature (5): EMB+8080 LCD Interface



Feature (6): Capture W/ DMA

- Combined by high-speed capture and DMA
- Supports the measurement function of digital protocol
 - ▲ Signal width, frequency, cycle time, signal transmission time, etc.
 - ▲ Can be used for custom digital protocol decoding
 - Ex :PD protocol for USB CC pin

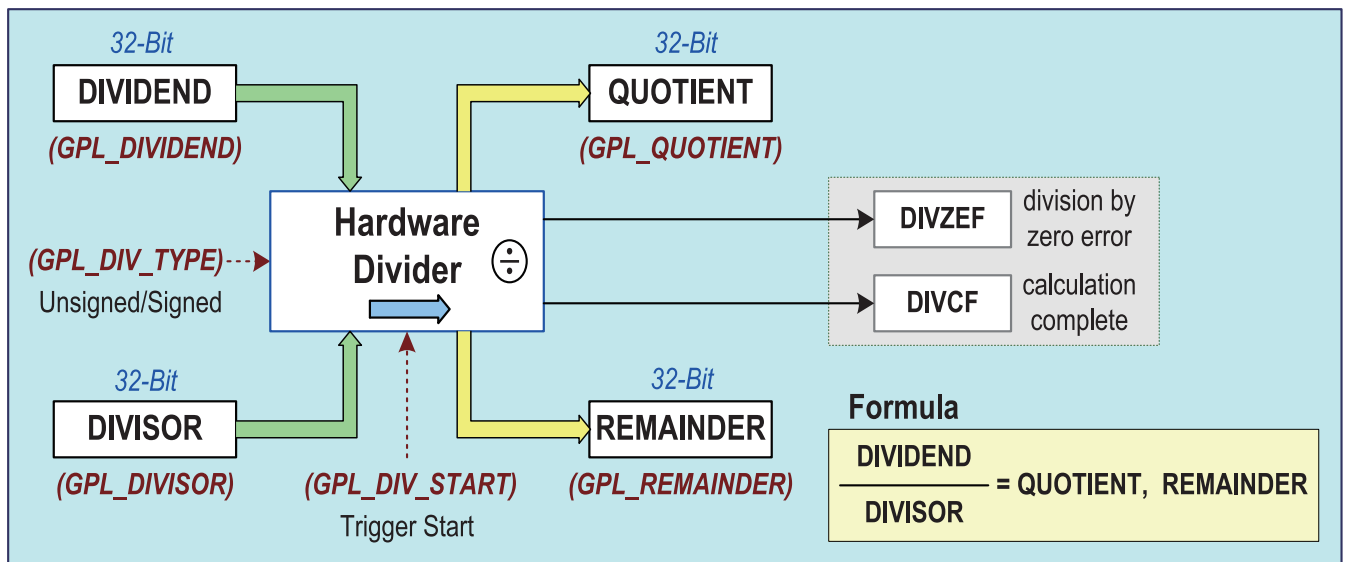


Feature (7): Hardware Divider

- Supports signed/unsigned 32-Bit arithmetic divider
 - ▲ Operation in 8 AHB clock cycles
 - ▲ 32-Bit Dividend, Divisor, Quotient and Remainder
- Simple divider calculation start bit and complete flag
- Provides division by zero error flag



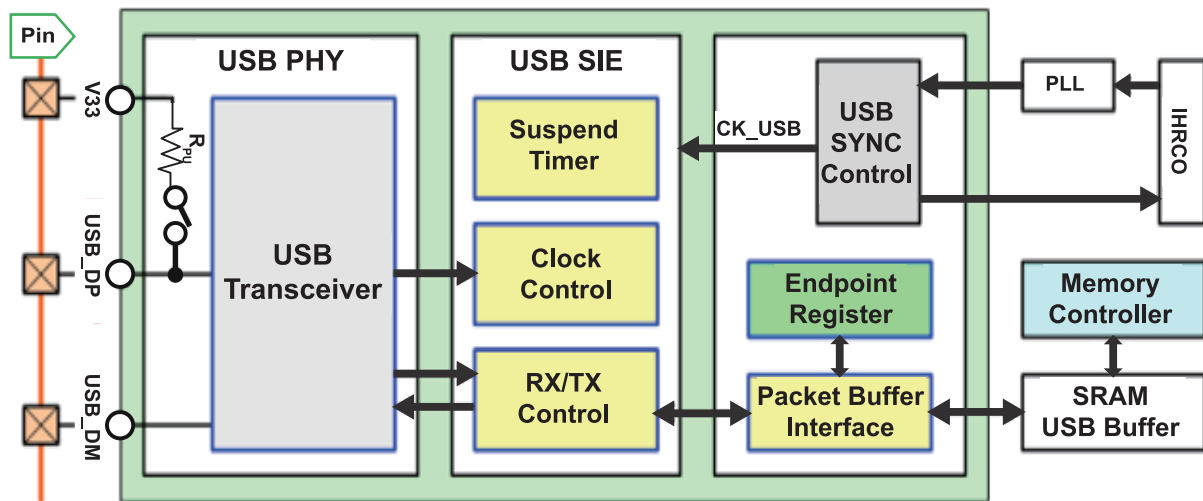
Hardware Divider allows the breathing light calculation faster



M0 Series

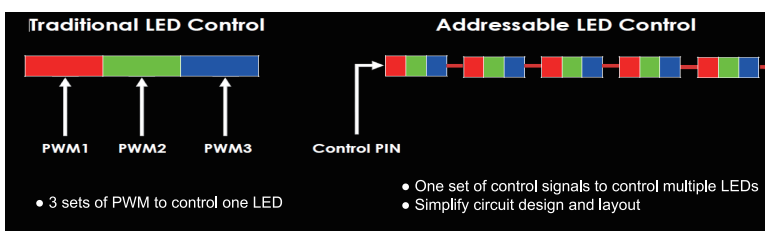
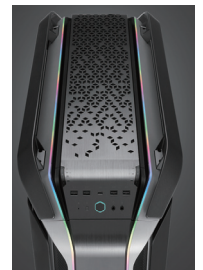
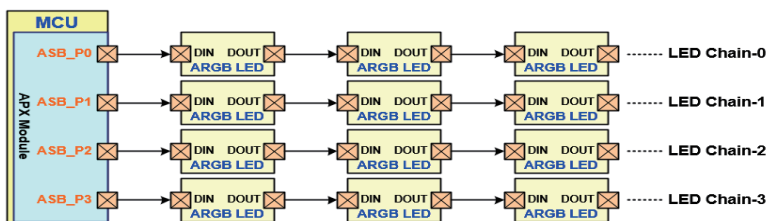
Feature (8): USB 2.0

- Support USB 2.0: Full-speed with 12Mbps compliants with USB spec v1.1/v2.0.
- Support 8 endpoints addresses with In and Out directions
 - ▲ Each endpoint supports flexibly In, Out, In/Out operations simultaneously
 - ▲ Support 7 relocated address endpoints except endpoint-0
 - 5 endpoints in total
 - ▲ Support control transfer for endpoint 0
 - ▲ Support interrupt, bulk and isochronous transfer for all endpoints except endpoint-0
- Support USB suspend/resume and remote wakeup



Feature (9): ASB (ARGB Serial Bus)

- Hardware control ARGB bus
 - ▲ Support 4 strings of ARGB lights
 - ▲ Support DMA control, liberate CPU
- Support asynchronous/synchronous ARGB shift mode

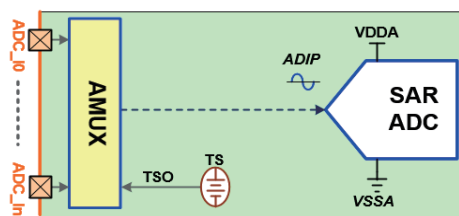


Feature (10): 96 MHz PWM

- Add a set of timers, which can output PWM with 2 different frequencies (Used in various LED applications).
- Upgrade the PWM frequency to 96MHz, continuing the ultra-high PWM clock frequency of 8051
- 5 sets of complementary output PWM, to meet the applications of motors
- Added duty capture function

Feature (11): Temperature Sensor

- Built-in a temperature sensor in ADC macro (be calibrated by clients)
- Temperature Accuracy: +/- 2 °C (Typical)
- Temperature measurement range: -40°C ~ 125°C



$$\text{Temperature (}^{\circ}\text{C)} = \frac{(T1 - T0) * (\text{ADCx_DAT0} - \text{CFG_TEMP_CAL0})}{(\text{CFG_TEMP_CAL1} - \text{CFG_TEMP_CAL0})} + T0$$

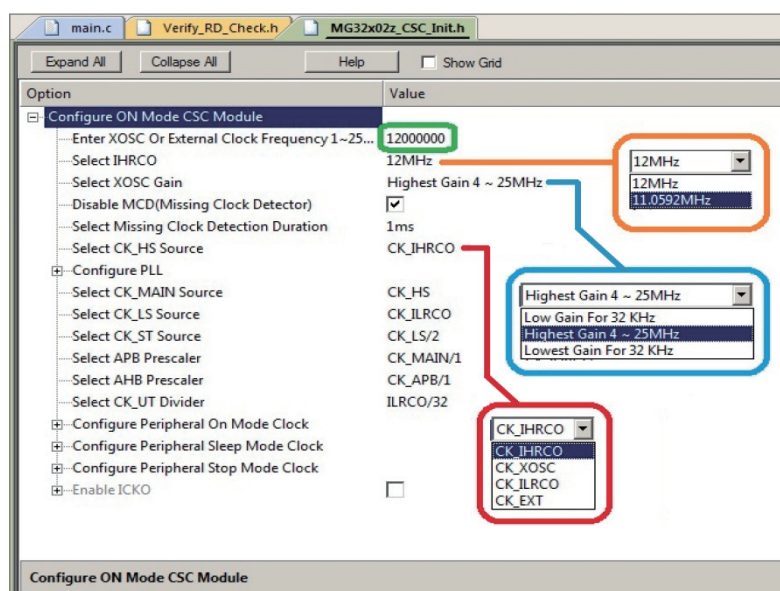
T0 / T1 : Temperature Value-0 / Value-1 recording during chip manufacture

ADCx_DAT0 : ADC code value of current temperature

CFG_TEMP_CAL0 / CFG_TEMP_CAL1 : ADC code value of T0 / T1

Development tool: Keil Wizard

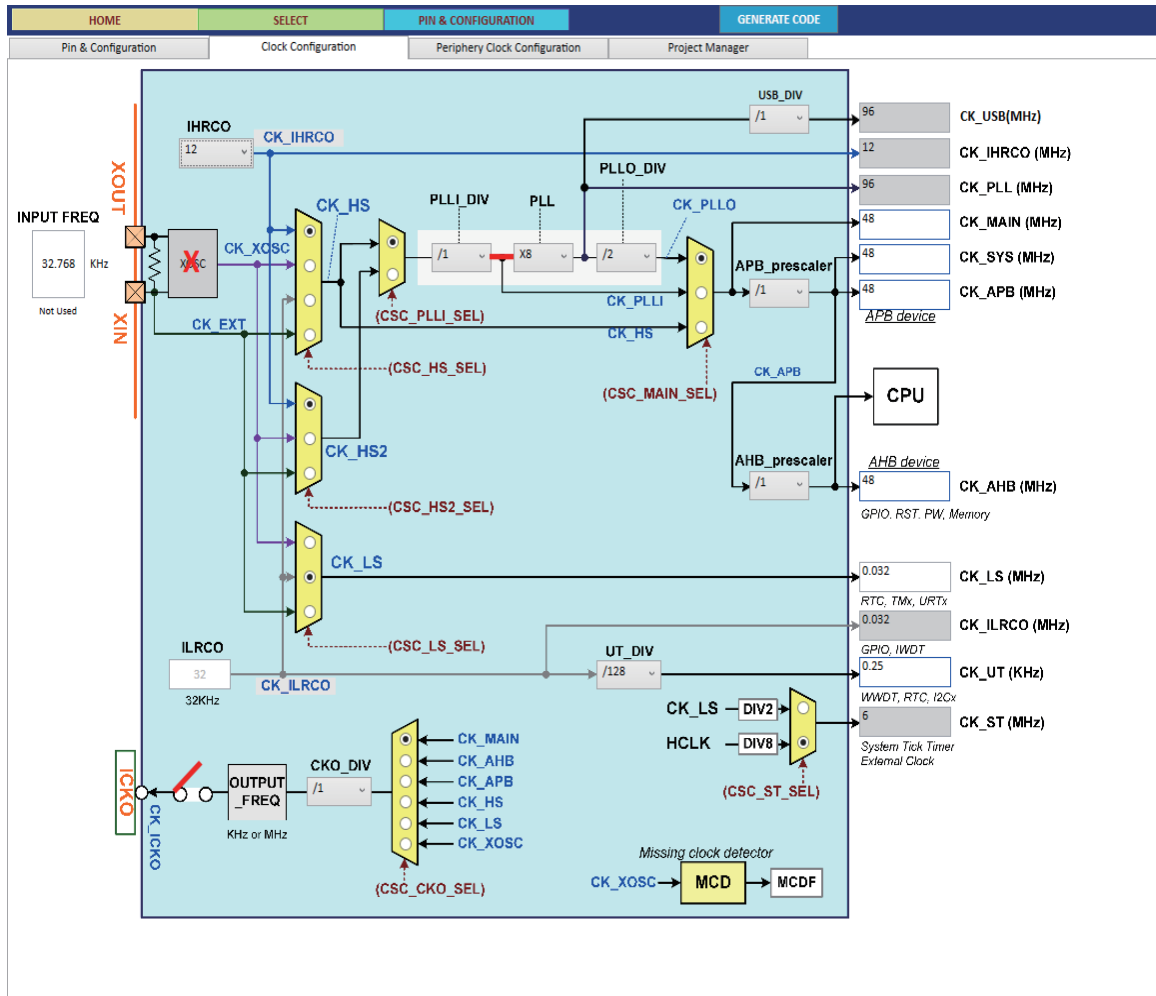
- Easy-to-use Keil Wizard supports all M0 series
- Code generated quickly by combo box and check box
- Support rich peripherals



M0 Series

Development tool: MG32CoGen

- Megawin GUI Code Generator(MG32CoGen)
- Graphic interface help developer quickly complete I/O pin configuration and Clock system planning
- Intuitive use interface reduce development period effectively



Name	Function	Output Level	Mode	Pull-up Resistance	Output Drive Strength	Output High Speed Mode	Input Inverse	Input Filter Divider	User Label
PA7	GRA7	High	open drain out	ENABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB0	TM16_ETR	High	push pull out	ENABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB1	TM10_CXO	High	push pull out	ENABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB3	NCO_P0	High	open drain out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB0	URT0_TX	High	push pull out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PE1	DMA_TRG1	High	Digital input	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PE2	TM20_OC02	High	push pull out	ENABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PE3	MCE	High	push pull out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB4	MAD8	High	push pull out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB5	MAD9	High	push pull out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PA8	DMA_TRG0	High	push pull out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB6	MAD10	High	push pull out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB7	TM20_TRG0	High	push pull out	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB8	CMP0_P0	High	open drain out	ENABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB9	CMP1_P0	High	open drain out	ENABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB10	URT2_DE	High	open drain out	ENABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB11	URT1_RX	High	Digital input	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB12	URT1_CLK	High	Digital input	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	
PB13	URT0_CLK	High	analog IO	DISABLE	Drive strength-Full	DISABLE	DISABLE	Bypass filter	

Function Switching

Output Level: High

Mode: Digital input

Pull-up Resistance: DISABLE

Output Drive Strength: Drive strength-Full

Output High Speed Mode: DISABLE

Input Inverse: DISABLE

Input Filter Divider: Bypass filter

User Label:

Development Platform:

● Megawin Cortex M0 Easy-to-use Development Platform

Feature 01(HW)

*M-Link simulator supporting Keil C

*U1 Plus-D for download

Feature 02(SDK)

*More than 700 Driver API

*Detailed code comments and high readability

Feature 03(TOOL)

*Keil Wizard assists in quick project setup

*Support fast platform switching

Feature 04(DOC)

*Software and hardware documents

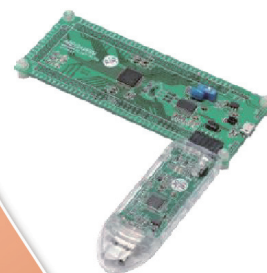
*U1 Plus-D for download

Development hardware

Lots of reference codes

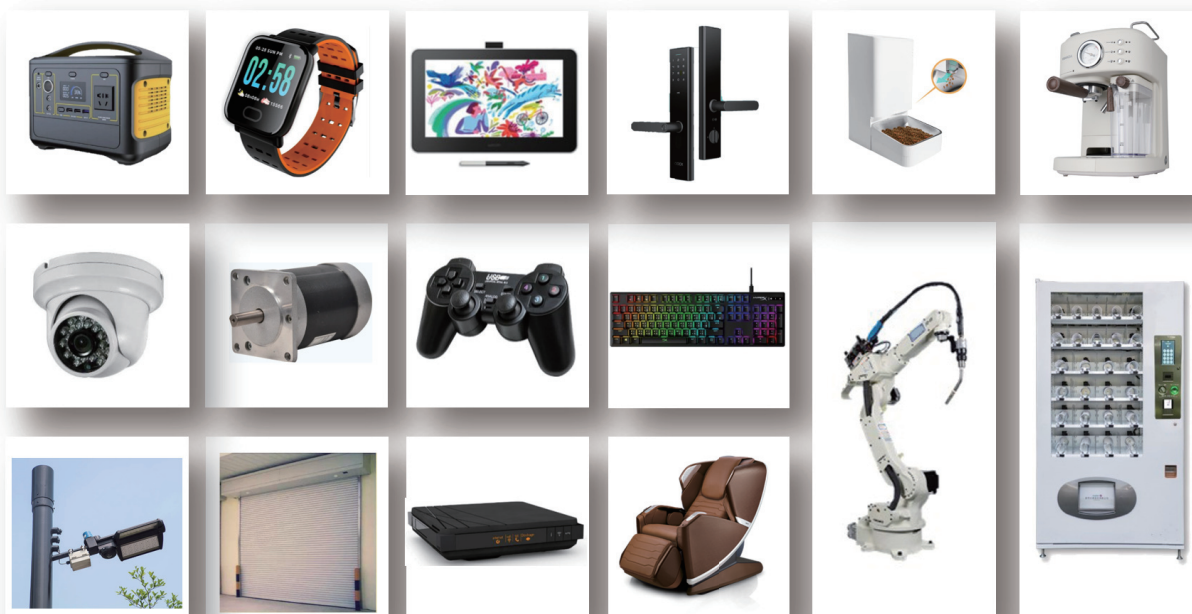
Easy to use wizard

Detailed documentation



Typical Applications:

- Motor Applications
- Robot Arm
- Industrial Control Instrument
- Electric Metering / BMS / PES
- Modem / Router
- Rolling Shutter Door
- Monitoring system
- Smart bracelet
- Electronic drawing board
- Smart Electronic locks
- Pet feeder
- Coffee machine



M0 Series Spec Comparison:

Part No.		MG32F02U064	MG32F02U128	Description
Basic Feature	CPU Core	ARM Cortex M0		
	Flash ROM	64KB	128KB	
	SRAM	16KB	16KB	
	Operation Voltage	1.8V ~ 5.5V		
	Max. CPU Frequency	48MHz		
System Clock	Internal Clock Source	ILRCO + IHRCO		32KHz for ILRCO, 12 / 11.059MHz for IHRCO
	XTAL Frequency	32KHz, 4 to 25MHz		
	EXTCK Frequency	36MHz		
	WDT	IWDT + WWDT		
	RTC	32-Bit		
Analog/Digital	Voltage Detector	LVR+BOD0/1/2		
	ADC	16-CH		12-Bit , 1.5MHz sps
	DAC	12-Bit , 1-CH		Voltage DAC, 12Bit, 1 Msps
	Analog Comparator	2-CH		
	Timers	16-Bit*2 + 32-Bit*5		
Communication	PWM	8-CH		8CH * 16-Bit, 16CH * 8-Bit
	USART	2 sets	3 sets	6Mbit/s for UART Additional 3 SPI Master/Slave with 12MHz
	2 nd UART	4 sets	4 sets	6Mbit/s
	Primary SPI	1 set		Master with 22MHz; Slave with 18MHz
	I ² C	2 sets		1MHz bps
	ISO-7816-3	2 sets	3 sets	HW Supports
	LIN	2 sets	3 sets	
	CRC	CRC8+16+32		
	DMA	5-CH		M2M/P2P/M2P/P2M
	EMB	16/8-Bit		Supports SRAM/NADD/NOR/8080 LCM
Other Feature	USB	8-CH		15 Endpoints, 512 Bytes FIFO
	Divider	Device		32 Bits Signed/Unsigned DIV in 8 Cycles
	Temperature sensor	Yes		
	Package	LQFP48/64	LQFP64/80	
	IO Number	41/56	56/70	Supports I/O deglitch filter
Other Feature	Operating Temp.	-40~105°C		

Megawin Tools Guide

Writer(ICP)

M-Link (TH185)

Software:ICP32 Programmer

Prupose:Debug 、 Writing

Platform:8051 、 M0 、 M3

Characteristic:Debug 、 Writing online or offline

Target board power:Need external power

Whether it can be run directly after the writing
is completed:Run directly

U1 Plus-D (TH200)

Software:Writer32_U1Plus

Prupose:Mass production Writing

Platform:8051 、 M0 、 M3

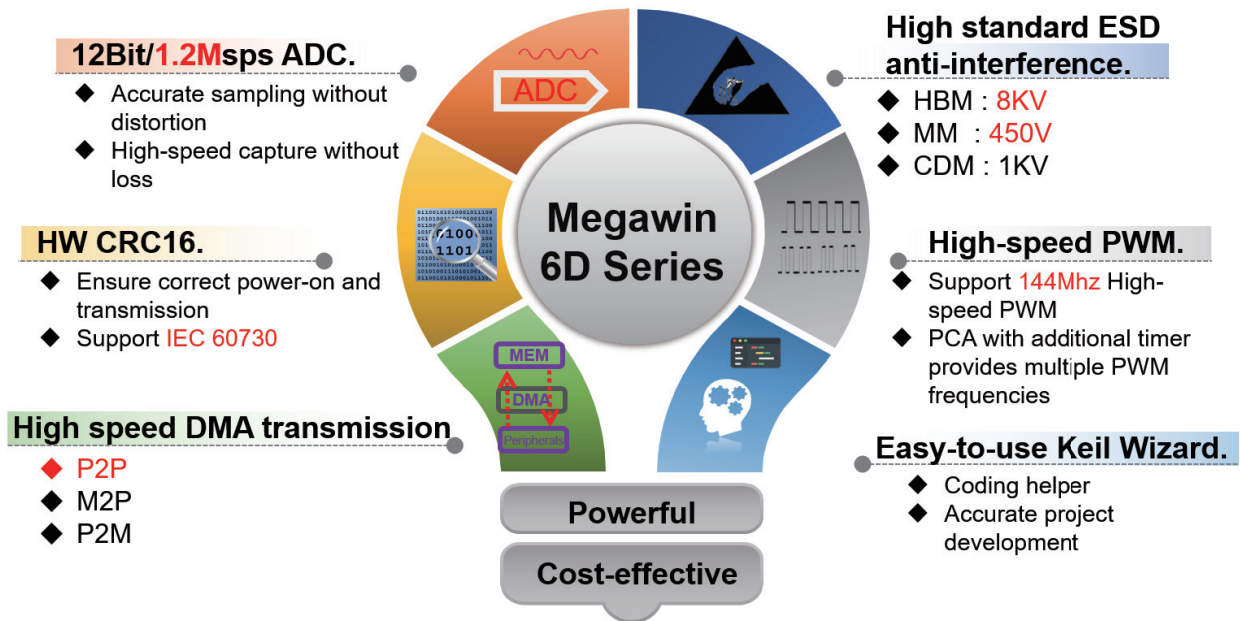
Characteristic:Use adapter board to write MCU.
Suport semi-automatic machine writing

Target board power:**Can't use** external power

Whether it can be run directly after the writing
is completed:Need power-on reset

MG82F6D Series Features:

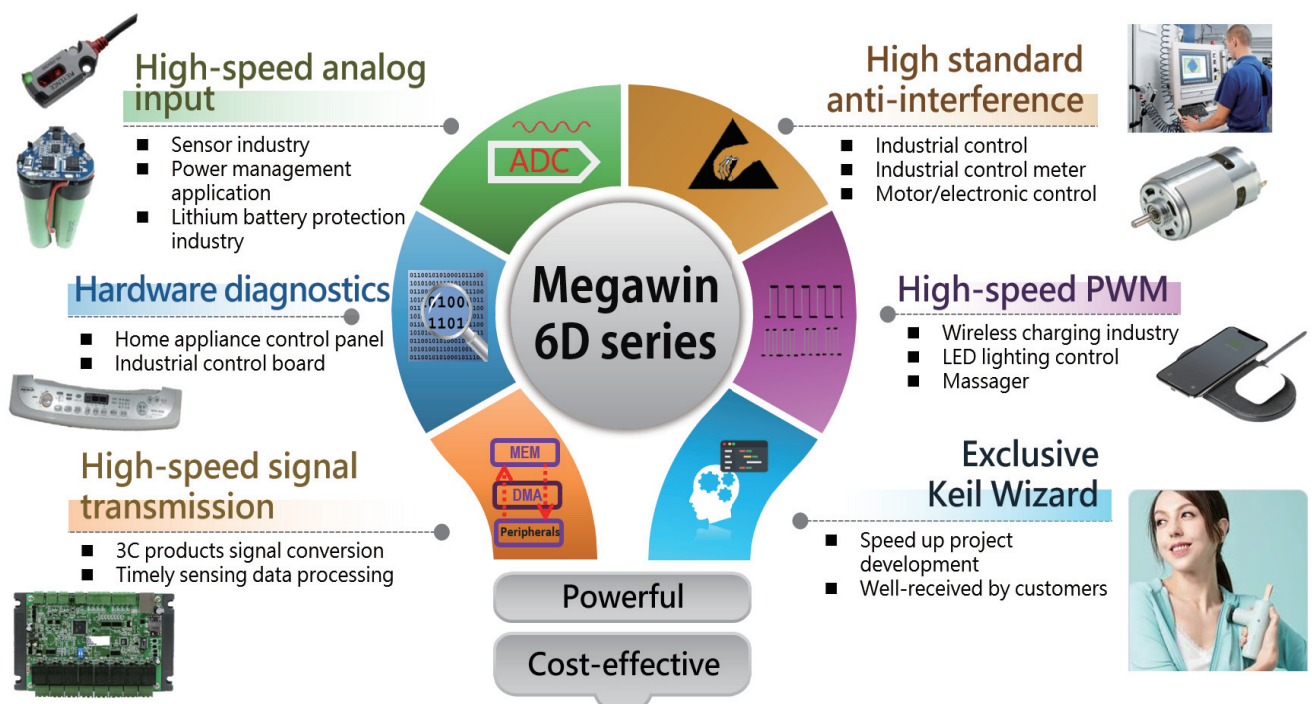
6D Series excellent features



Other features:

- Up to 4 sets of UARTs, which can be connected to various sensors
- Exclusive hardware Duty Capture to capture pulse and high-speed PWM signal
- Provides EMB (External Memory Bus) to expand NAND/8080LCM

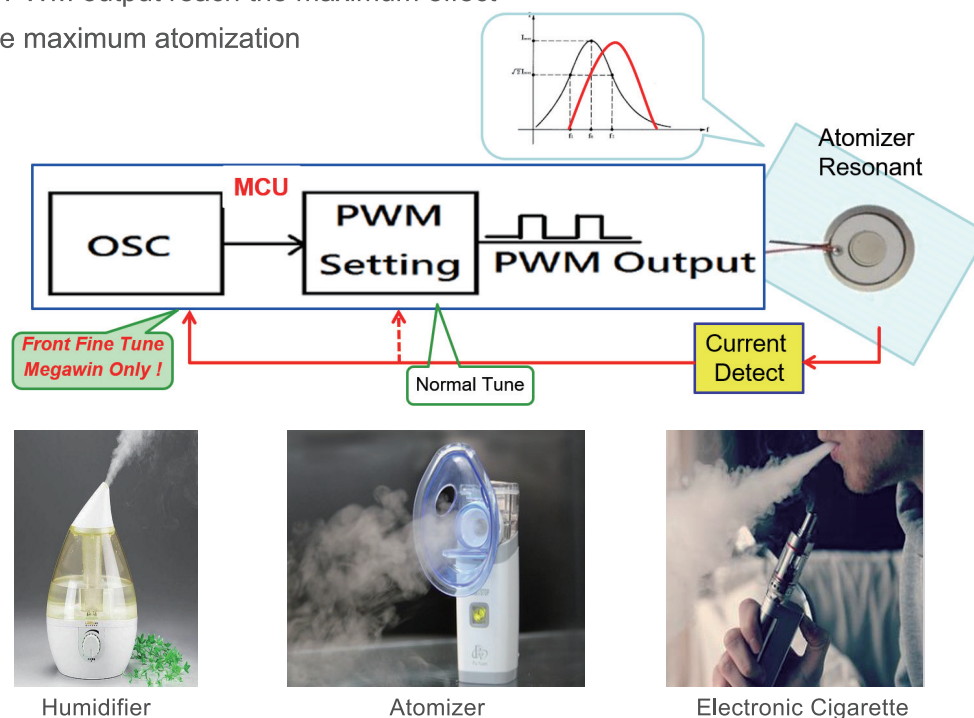
Typical Application:



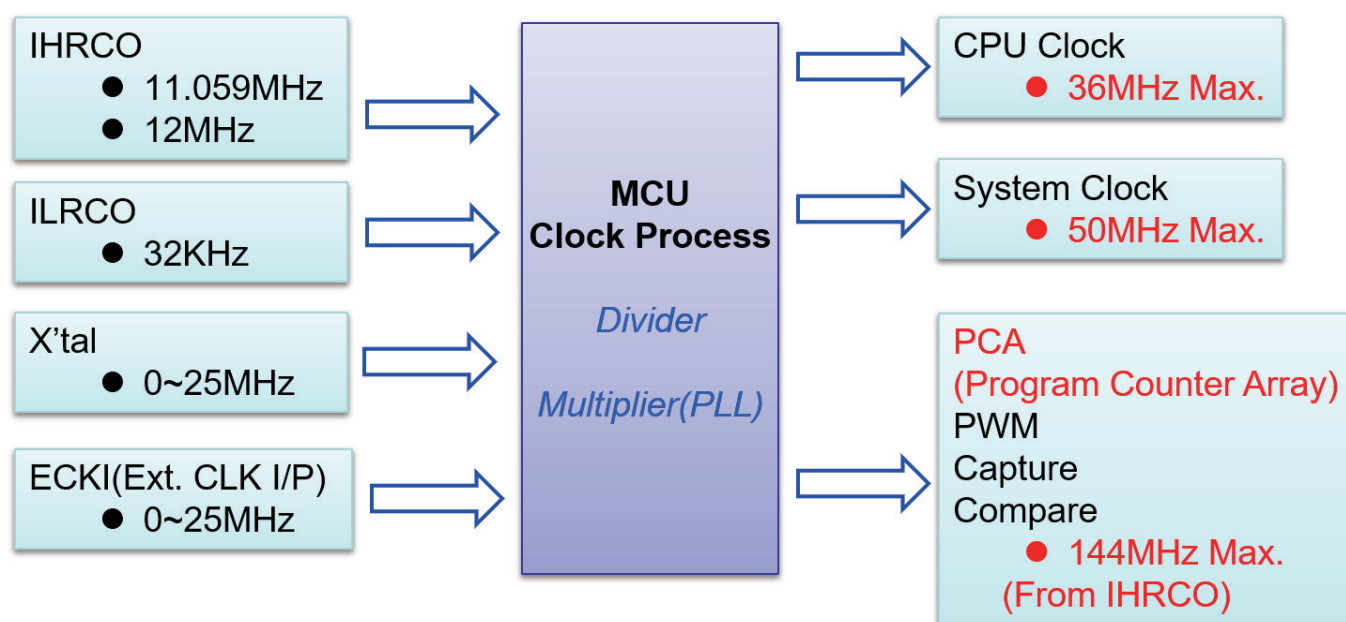
Feature (1): Exclusive Fine-Frequency-Setting-Function

● The functions of ultrasonic high-precision Frequency-Drift Tracking:

- ▲ Accurate and efficient automatic fine-tuning frequency
- ▲ Let the PWM output reach the maximum effect
- ▲ Produce maximum atomization



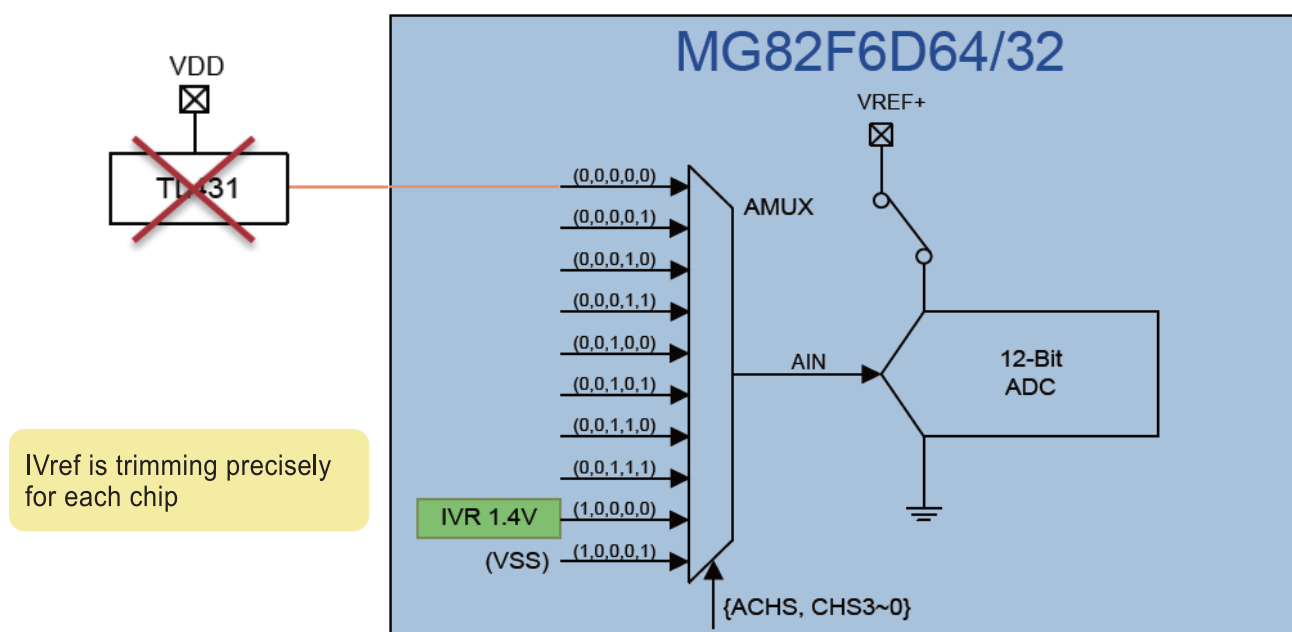
Feature (2): PWM Source 144MHz



- High PWM Freq. can reduce Inductor and Capacitor size (Cost) and Ripple
- Higher PWM Freq. needs higher PWM source to improve accuracy
- PWM source 144MHz: Gives more resolutions for in one period

Feature (3): Pre-trimmed IVR1.4

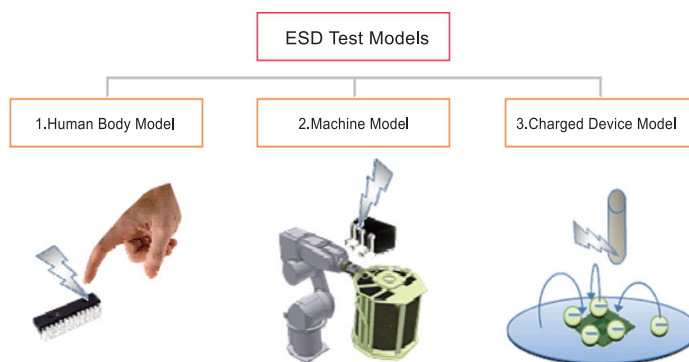
- Internal 1.4V ADC reference voltage with high precision
- Use with ADC and AC0 (comparator)
- Suitable for Li-on applications, no need to add external reference voltage
- Trimmed @ VDD 3.3V and store the IVR ADC value in ROM to reduce production flow and provide higher accuracy



Feature (4): Strong ESD Immunity

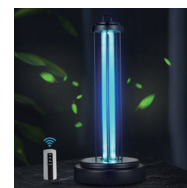
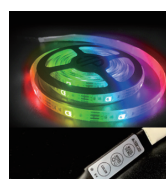
- ESD(Electro-Static Discharge)
 - ▲ One of the main causes of device failures in the semiconductor
- High standard ESD protection and high quality EMI

ESD	HBM	MM	CDM
Pass	8KV	450V	1KV



6D Series Typical Applications:

- Industrial Instruments
- Industrial Control and Automation
- Home Appliance Display Panel
- Wireless Charging
- Mahjong Machine
- Sensor Applications
- Power Converter
- Electronic Cigarette
- LED Display Equipment/Light Control
- Battery Management System (BMS)
 - ▲ Power Tools
 - ▲ Electric Vehicles
 - ▲ UPS
 - ▲ Charging Pile
- Electronic Lock
- Sensor Alarm
- UV Disinfection Lamp
- Medical Device Control



Product List/Specifications:

Part No.	Vdd	Flash ROM Data ROM	Max. Freq.	Timers (16-Bit) IO	12 Bit ADC Comp.	Features	PCA PWM	WDT	ISP IAP	Package
MG82F6D003	1.8V~5.5V	16KB	36MHz	4 + RTC	8-CH	UARTx2,SPI,I ² C, S/W I ² C,LIN,CRC16	1	YES	7.5KB Max.	TSSOP20
		1KB		17	NA		8-CH		15.5KB Max.	
MG82F6D17	1.8V~5.5V	16KB	36MHz	4 + RTC	8-CH	UARTx2,SPI,I ² C, S/W I ² C,LIN,CRC16	1	YES	7.5KB Max.	SOP8 QFN20 SSOP20 TSSOP20
		1KB		17	NA		8-CH		15.5KB Max.	
MG82F6D31	1.8V~5.5V	32KB	36MHz	4 + RTC	10-CH	UARTx2,SPI,I ² Cx2, S/W I ² C,LIN,CRC16	1	YES	7.5KB Max.	QFN32 LQFP32 QFN48 LQFP48
		2KB		44	2		8-CH		31.5KB Max.	
MG82F6D32	1.8V~5.5V	32KB	36MHz	4 + RTC	10-CH	UARTx4,SPI,I ² Cx2, S/W I ² C,LIN,CRC16	1	YES	7.5KB Max.	QFN32 LQFP32 QFN48 LQFP48
		2KB		44	2		8-CH		63.5KB Max.	
MG82F6D64	1.8V~5.5V	64KB	36MHz	5 + RTC	16-CH	UARTx4,SPI,I ² Cx2, S/W I ² C,LIN,CRC16	1	YES	7.5KB Max.	QFN48 LQFP48 LQFP64
		4KB		59	3		8-CH		63.5KB Max.	

LDO Series

Features:

Megawin's linear low dropout regulator (LDO) solution can convert higher input voltage into a stable output voltage in a variety of applications, which has the following characteristics:

- EN turns off LDO to save power

(notes: If there is an EN Pin requirement, the EN pin function must be selected, and it is a SOT 235 package.)

- Superior Line Regulation, high PSRR anti-ripple interference
- Ultra-low I_Q value, improve voltage conversion efficiency

Voltage/current/power selection:

- Choose the right LDO according to the application

- Input voltage : 100V (max)
- Output voltage : 5V/3.3V (MGR2105: V_{out} is adjustable)
- Input current : 0.3A (max)

- Power is related to package limitations, resulting in temperature rise

$$\text{Formula } P_{LDO} = (V_{in} - V_{out}) \times I_{out}$$

$$\text{Condition : } V_{out} = 3.3 \text{ V}, I_{out} = 50\text{mA}$$

When $V_{in} = 9 \text{ V}$, LDO power 0.285W

When $V_{in} = 15 \text{ V}$, LDO power 0.585W

Due to the power, the latter can only choose SOT893 and ESOP packages.

Package	Power (Max)
SOT233	0.48W
SOT235	0.48W
SOT893	1.26W
ESOP8	2.4W

Typical Applications:

- Motor, Fan, Servo Motor Applications
- Charger application
- Intelligent detection
- Smart Meter/ Smart Water Meter
- Mouse, Power Bank
- Telcom and Servo Power
- Battery Management (BMS)



Product List/Specifications:

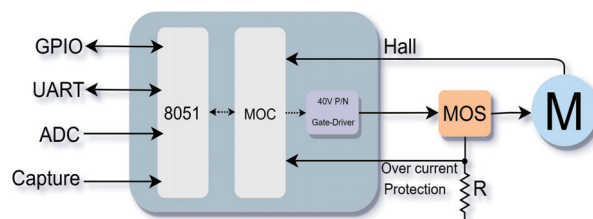
Part No.	Min. V_{IN} (V)	Max. V_{IN} (V)	I_{OUT} (mA)	V_{OUT} (V)	I_Q (uA)	R_{ON} (Ω)	ΔV_{LINE} (%/V)	ΔV_{LOAD} (mV)	PSRR (dB) @1KHz	C_{OUT} (uF)	EN	Package
MGR78L33 MGR78L05	$V_{OUT}+2$	30	100	3.3/5	300	~20	5	20	>80	0.1	NA	SOT233 SOT893
MGR2105	7	100	50	Adj*	35	~50	3mV	20	65	10	YES	SOT235 ESOP8
MGR2202	2.7	24	150	3.3/5	1.52	<5	0.01	45	>80	1	NA	SOT233 SOT235 SOT893
MGR2402	2.7	40	250	3.3/5	1.2	4	0.01	15	>80	1	YES	SOT233 SOT235 SOT893 ESOP8
MGR2503	2.5	5.5	300	3.3/5	0.5	1.33	0.1/0.3	12/30 (1 to 150mA)	55-60	1	YES	SOT233 SOT235 SOT893

*Adj: means the voltage can be adjusted

Features:

- 40V / 100V Gate Driver built-in
 - ▲MDRH05 without built-in Gate Driver
- Can be used with various gate drivers according to the applications
- MOSFET elements P+N / N+N
- With external Hall element or Hall IC

Function Diagram



Typical Applications:

- Sweeping Robot
- Electric Machine Tool
- Single Hall Crossflow Fan (MDRH40)
- Servo Fan, Centrifugal Fan (MDRHA0)
- Standing fan, Wall fan, Air purifier (MDRH40)
- Drainage pump for Air-Conditioner (MDRH40)
- Water heater exhaust (MDRHA0)
- Fresh Air System (MDSF40)
- Low Voltage Ceiling Fan (MDSF40)
- Hair dryer(MDRFD0)



Product List/Specifications:

Part No.	Description	Vdd	Gate driver	V _{IN}	Max Freq.	EEPROM	ADC 10Bit	Capture 16Bit	OPA	Junction Temp.	Package
MDRH05 ^{*1}	3 Phase BLDC Motor Controller	4.5~5.5V	NA	5V	48MHz	NA	8 CH	1 CH	NA	-40°C~125°C	SSOP28
MDRH40 ^{*1}	3 Phase BLDC Motor Controller, w/40V Gate driver, 5V LDO	4.5~5.5V	40V P/N	40/5V	48MHz	NA	4 CH	1 CH	NA	-40°C~125°C	SSOP28(W) QFN32
MDRHA0 ^{*1}	3 Phase BLDC Motor Controller, w/100V Gate driver, 5V LDO	4.5~5.5V	100V N/N	15/5V	48MHz	NA	8 CH	1 CH	NA	-40°C~125°C	LQFP48
MDSF40 ^{*1*2}	3 Phase PMSM/BLDC FOC sensorless Motor Controller, w/40V Gate driver, 5V LDO	4.5~5.5V	40V P/N	40/5V	48MHz	256Byte	8 CH ^{*3}	1 CH	3 ^{*4}	-40°C~125°C	LQFP48
MDRFD0 ^{*1*2}	3 Phase PMSM/BLDC FOC sensorless Motor Controller, w/600V Gate driver, 5V LDO	4.5~5.5V	600V N/N	15/5V	48MHz	NA	8 CH ^{*3}	1 CH	2 ^{*4}	-40°C~125°C	LQFP48

^{*1} Control method: Sine-wave; Support 16-Bit PWM; UART Interface; 32-Bit Divider

^{*2} Support I²Cx1; IR/RF x1 Interface

^{*3} CH0 and CH1: for FOC current measurement

^{*4} OPA: Has 2-CH for non-sensor feedback motor current , and MDSF40 has an extra 1-CH for peripheral use.

