Elan 8-bit MCU Selection Guide(2010Q3~)

MCU Line:
EM78 Family

F640 series (Win™): Flash GPIO Type with EEPROM (Industrial Grade)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	IRC	EEPROM	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78F641N	Flash	2.2~5.5 (2.4~5.5)	IRC, ERC, HXT, XT, LXT1, LXT2	1K*13	48	8/14	5(3/2)	8*2	8*1(TC3)	1	Yes	128	0~70 (-40~85)	10 MSOP 16 DIP/SOP	LVR, TBRD, PDO/PWM	UIT660N + UICE
EM78F642N				2K*13	80	16/18	7(3/4)	8*3, 16*1	8*1(TC3)	1	Yes	128		18 DIP/SOP 20 DIP/SOP/SSOP	LVR, TBRD, Capture/PDO/PWM	
EM78F644N				4K*13	144	21/25	13(3/10)	8*3, 10*2, 16*1	8*1(TC3), 10*2	1	Yes	256		24/28 SKDIP/SOP	LVR, SPI/UART, TBRD, Capture/Window/PDO/PWM	
EM78F648N		2.4~5.5 (2.6~5.5)		8K*15	304	26/38/40	18(4/14)	8*3, 10*2, 16*1	8*1(TC3), 10*2	2	Yes	256		28 SKDIP/SOP 40 DIP 44 QFP	LVR/LVD, SPI/UART/I2C, TBRD, Capture/Window/PDO/PWM	
EM78F645N*		2.4~5.5 (2.6~5.5)	IRC	4K*15	304	26/30	10(2/8)	8*2, 10*2	8*1(TC3), 10*2	-	Yes	128		28 SKDIP/SOP 32 QFN	LVR, I2C TBRD, PDO/PWM	

F660 series (Win™): Flash ADC Type with EEPROM (Industrial Grade)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	ADC (Bit*Ch)	EEPROM	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78F661N	Flash	2.2~5.5 (2.4~5.5)	IRC, ERC, HXT, XT, LXT1, LXT2	1K*13	48	8/14	6(3/3)	8*2	8*1(TC3)	1	10*6	128	0~70 (-40~85)	10 MSOP 16 DIP/SOP	LVR, TBRD, PDO/PWM	UIT660N + UICE
EM78F662N				2K*13	144	14/16/18	7(3/4)	8*2, 16*1	8*1(TC3)	1	10*8	128		16/18/20 DIP/SOP	LVR, TBRD, Window/PDO/PWM	
EM78F664N		2.3~5.5 (2.5~5.5)		4K*13	144	21/25	14(3/11)	8*3, 10*2, 16*1	8*1(TC3), 10*2	1	10*8	256		24/28 SKDIP/SOP 32 QFN	LVR, SPI/UART, TBRD, Capture/Window/PDO/PWM	
EM78F668N		2.4~5.5 (2.6~5.5)		8K*15	304	26/38/40	19(4/15)	8*3, 10*2, 16*1	8*1(TC3), 10*2	2	12*8	256		28 SKDIP/SOP 40 DIP 44 QFP	LVR/LVD, SPI/UART/I2C, TBRD, Capture/Window/PDO/PWM	
EM78F665N*		2.4~5.5 (2.6~5.5)	IRC	4K*15	304	26/30	10(2/8)	8*2, 10*2	8*1(TC3), 10*2	-	12*8	128		28 SKDIP/SOP 32 QFN	LVR, I2C TBRD, PDO/PWM	

F540 series (Win™): Flash GPIO Type (Industrial Grade)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	IRC	EEPROM	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78F541N	Flash	2.2~5.5 (2.4~5.5)	IRC, ERC, HXT, XT, LXT1, LXT2	1K*13	**48**	**8/14**	5(3/2)	8*2	8*1(TC3)	1	Yes	-	0~70 (-40~85)	10 MSOP 16 DIP/SOP	LVR, TBRD, PDO/PWM	UIT660N + UICE
EM78F542N				2K*13	**80**	**16/18**	7(3/4)	8*3, 16*1	8*1(TC3)	1	Yes	-		18 DIP/SOP 20 DIP/SOP/SSOP	LVR, TBRD, Capture/PDO/PWM	
EM78F544N				4K*13	**144**	**21/25**	13(3/10)	8*3, 10*2, 16*1	8*1(TC3), 10*2	1	Yes	-		24/28 SKDIP/SOP	LVR, SPI/UART, TBRD, Capture/Window/PDO/PWM	
EM78F548N		2.4~5.5 (2.6~5.5)		8K*15	**304**	26/38/40	18(4/14)	8*3, 10*2, 16*1	8*1(TC3), 10*2	2	Yes	-		28 SKDIP/SOP 40 DIP 44 QFP	LVR/LVD, SPI/UART/I2C, TBRD, Capture/Window/PDO/PWM	
EM78F545N*		2.4~5.5 (2.6~5.5)	IRC	4K*15	304	26/30	10(2/8)	8*2, 10*2	8*1(TC3), 10*2	-	Yes	-		28 SKDIP/SOP 32 QFN	LVR, I2C TBRD, PDO/PWM	

F560 series (Win™): Flash ADC Type (Industrial Grade)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	ADC (Bit*Ch)	EEPROM	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78F561N	Flash	2.2~5.5 (2.4~5.5)	IRC, ERC, HXT, XT, LXT1, LXT2	1K*13	48	8/14	6(3/3)	8*2	8*1(TC3)	1	10*6	-	0~70 (-40~85)	10 MSOP 16 DIP/SOP	LVR, TBRD, PDO/PWM	UIT660N + UICE
EM78F562N				2K*13	144	14/16/18	7(3/4)	8*2, 16*1	8*1(TC3)	1	10*8	-		16/18/20 DIP/SOP	LVR, TBRD, Window/PDO/PWM	
EM78F564N		2.3~5.5 (2.5~5.5)		4K*13	144	21/25	14(3/11)	8*3, 10*2, 16*1	8*1(TC3), 10*2	1	10*8	-		24/28 SKDIP/SOP 32 QFN	LVR, SPI/UART, TBRD, Capture/Window/PDO/PWM	
EM78F568N		2.4~5.5 (2.6~5.5)		8K*15	304	26/38/40	19(4/15)	8*3, 10*2, 16*1	8*1(TC3), 10*2	2	12*8	-		28 SKDIP/SOP 40 DIP 44 QFP	LVR/LVD, SPI/UART/I2C, TBRD, Capture/Window/PDO/PWM	
EM78F565N*		2.4~5.5 (2.6~5.5)	IRC	4K*15	304	26/30	10(2/8)	8*2, 10*2	8*1(TC3), 10*2	-	12*8	-		28 SKDIP/SOP 32 QFN	LVR, I2C TBRD, PDO/PWM	

F100 series (Win™): Flash ADC Type (Industrial Grade)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	ADC (Bit*Ch)	EEPROM	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78F602N	Flash	2.2~5.5 (2.4~5.5)	IRC	2K*13	144	6	6(3/3)	8*2, 16*1	8*1(TC3)	1	-	256	0~70 (-40~85)	10 MSOP	1. High speed cool up (2ms) 2. LVR, TBRD, PDO/PWM	S/W Simulaor

ASSP series (Win™): Flash ADC Type (Industrial Grade)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	ADC (Bit*Ch)	EEPROM	Oper. Temp. (°C)	Package Type	Remark	ICE
A96F902N	Flash	2.2~5.5 (2.4~5.5)	IRC,ERC,HXT,XT,LXT1,LXT2	2K*13	144	14/16/18	7(3/4)	8*2,16*1	8*1(TC3)	3(2OP)	10*8	128	0~70 (-40~85)	16/18/20 DIP/SOP	1. Smoke alarm, 2 OPA signal amplify application 2 LVR, TBRD, Window/PDO/PWM	UIT660N+UICE
MTF110	Flash	2.1~5.5 (2.3~5.5)	IRC, ERC, HXT1, HXT2, LXT1, LXT2, XT	8K*13	272	26	26(11/15)	8*5, (16*1)	8*3	4 (1)	10 or 8*12	32		28 SOP	1. BLDC ,e-bike application 2. PWM*3, LVD/LVR, IRC, SPI, UART	ITMT110+UICE
						30								32 SOP/LQFP/QFN		

P200 series: GPIO Type MCU (High EFT/ESD Level)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compar. (OP	High Sink	IRC	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78P202N	OTP	2.1~5.5 (2.3~5.5)	IRC, ERC, HXT1, HXT2, XT LXT1, LXT2	2K*13	80	18	5(4/1)	8*1	-	1 (1)	12	Yes	0~70 (-40~85)	18 DIP/SOP	12/10 high sink I/O	IT210N+UICE
						16	5(4/1)	8*1	-	1 (1)	10	Yes		20 DIP/SOP/SSOP		
EM78P210N			IRC, ERC, HXT1, HXT2, LXT1, LXT2	2K*13	80	18	5(4/1)	8*1	-	1 (1)	12	Yes		20 DIP/SOP/SSOP	12/16 high sink I/O	
				2K*13	80	22	5(4/1)	8*1	-	1 (1)	16	Yes		24 SKDIP/SOP/SSOP		
EM78P220N				4K*13	144	22	5(4/1)	8*1	-	1 (1)	16	Yes		24 SKDIP/SOP/SSOP	16 high sink I/O	
				4K*13	144	26	5(4/1)	8*1	-	1 (1)	16	Yes		28 SKDIP/SOP/SSOP		
EM78P224N*	OTP	2.1~5.5 (2.3~5.5)	IRC,HXT1,HXT2 ,XT, LXT1	4K*15	176	26/30	5(3/2)	8*2	8*1(TC1)	-	16	Yes		28 DIP/SKDIP/SOP/SSOP 32 DIP/SOP	16 high sink I/O, PDO/PWM/Capture/Buzzer	UIT370 + UICE

P300 series: ADC Type MCU (High EFT/ESD Level)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compar. (OP	ADC (Bit*Ch)	IRC	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78P349N	OTP	2.3~5.5	IRC, ERC, HXT, LXT	2K*13	176	21/25	9(4/5)	8*1, 10*3	10*3	-	12*11 12*15	Yes	0~70 (-40~85)	24/28 SKDIP/SOP	LVD/LVR	IT349N+UICE
EM78P342N		2.1~5.5 (2.3~5.5)	IRC, ERC, HXT1, HXT2, LXT1, LXT2	2K*13	80	12	10(3/7)	8*3, 16*1	9*1(TCCC)	-	12*7	Yes		14 DIP/SOP	2/4 high sink I/O, LVD/LVR, TCCC has IR/PWM function	IT341N+UICE
				2K*13	80	14	11(4/7)	8*3, 16*1	9*1(TCCC)	1 (1)	12*7	Yes		16 SOP		
				2K*13	80	16	11(4/7)	8*3, 16*1	9*1(TCCC)	1 (1)	12*7	Yes		18 DIP/SOP		
				2K*13	80	18	11(4/7)	8*3, 16*1	9*1(TCCC)	1 (1)	12*8	Yes		20 DIP/SOP/SSOP		
EM78P372N*			IRC, ERC, HXT1, HXT2, XT LXT1, LXT2	2K*13	80	18	10(4/6)	8*3	8*2	1 (1)	12*8+1	Yes		20 DIP/SOP/SSOP	14 high sink I/O LVD/LVR/TBRD/PWM	UIT300+UICE
				2K*13	80	16	10(4/6)	8*3	8*2	1 (1)	12*7+1	Yes		18 DIP/SOP		
				2K*13	80	14	10(4/6)	8*3	8*2	1 (1)	12*7+1	Yes		16 SOP		
				2K*13	80	12	9(3/6)	8*3	8*2	-	12*7	Yes		14 DIP/SOP		
				2K*13	80	8	9(3/6)	8*3	8*2	-	12*7	Yes		10 MSOP/SSOP		
EM78P346N			IRC, ERC, HXT1, HXT2, XT LXT1, LXT2	4K*13	144	16	8(4/4)	8*4	10*3	-	12*8	Yes		18 DIP/SOP	4 high sink I/O, LVD/LVR	IT345N+UICE
				4K*13	144	18	9(5/4)	8*4	10*3	1 (1)	12*8	Yes		20 DIP/SOP/SSOP		
				4K*13	144	22	9(5/4)	8*4	10*3	1 (1)	12*8	Yes		24 SKDIP/SOP/SSOP		
EM78P374N*			IRC, ERC, HXT1, HXT2, XT LXT1, LXT2	4K*13	304	16	8(4/4)	8*2	16*3,8*1	1 (1)	12*14	Yes		18 DIP/SOP	21 high sink I/O, LVD/LVR	UIT370+UICE
				4K*13	304	18	9(5/4)	8*2	16*3,8*1	1 (1)	12*14	Yes		20 DIP/SOP/SSOP		
				4K*13	304	22	9(5/4)	8*2	16*3,8*1	1 (1)	12*14	Yes		24 SKDIP/SOP/SSOP		
EM78P330N			IRC, ERC, Crystal	8K*13	144	25	12(5/7)	8*1, 10*3	10*3	1 (1)	12*8	Yes		28 SKDIP/DIP/SOP	LVD/LVR, SPI	IT330+UICE
						29	12(5/7)							32 SKDIP/SOP/LQFP		
EM78F360N*	Flash	2.1~5.5 (2.3~5.5)	IRC, ERC, HXT1, HXT2, LXT1, LXT2,	8K*13	272	26	26(11/15)	8*5, (16*1)	8*3	4 (1)	10 or 8*12	32		28 SOP/SSOP	PWM*3, LVD/LVR, IRC, SPI, UART	IT360+UICE
						30								32 DIP/SOP/QFN		

P500 series: ADC+LCD Type MCU (High EFT/ESD Level)

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	ADC (Bit*Ch)	LCD (C*S)	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78P520N	OTP	2.3~5.5	Dual Clock, ERIC, PLL, Crystal	8K*13	272	27	18(10/8)	8*3 or 8*1, 16*1	8*2 or 16*1	-	12*7	4*12	0~70 (-40~85)	32 SKDIP/SOP	SPI/UART, Buzzer, LVD/LVR	IT520N+UICE UIT520N+UICE
						39					12*12	8*19		44 QFP/LQFP		
						43					12*12	8*23		48 LQFP		
EM78P528N*	OTP	2.1~5.5	Dual Clock, IRC, Crystal	8K*15	560	39	25(12/13)	8*4 or 8*2, 16*1	8*3 or 8*1, 16*1	-	12*12	8*19		44 QFP/LQFP	SPI/UART/I2C, Buzzer/Watch timer, LVD/LVR	UIT400+UICE
						43					12*12	8*23		48 LQFP		

P460 series: LCD Type MCU

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	ADC (Bit*Ch)	LCD (C*S)	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78P468N	OTP	2.1~5.5 (2.3~5.5)	ERIC, Crystal, PLL	4K*13	272	28	8(3/5)	8*5	9*1	-	-	4*32	0~70 (-40~85)	44/64 QFP/LQFP	IR	IT468+UICE
EM78P468NB*		2.1~5.5 (2.3~5.5)		4K*13	272	28	8(3/5)	8*5	9*1			4*32		44/64 QFP/LQFP	IR, LVR, TBRD, LACLL/LJMP, XTAL RANGE CHOICE	IT468NB+UICE
EM78P469N		2.5~5.5		8K*13	656	33	8(3/5)	8*5 or 8*3, 16*1	8*1	-	-	4*40		44/64 QFP/LQFP	IR	PGB469+UICE

P100 series: GPIO/ADC MCU

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compa-rator	ADC (Bit*Ch)	IRC	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78P173N	OTP	2.1~5.5 (2.3~5.5)	IRC, ERC, HXT1, HXT2, XT, LXT1, LXT2	1K*13	48	12	4(3/1)	8*1	-	-	-	Yes	0~70 (-40~85)	14 DIP/SOP 10MSOP	IRC, LVD, LVR, TBRD High EFT/ESD Level	UIT300+UICE
EM78P176N						18								20SSOP/SOP 18DIP/SOP 10 SSOP/MSOP		
EM78P131A		2.3~5.5	IRC, ERC, HXT, LXT	1K*13	32	8	3(2/1)	8*1	-	-	-	Yes	0~70	10 MSOP	IRC, LVD	IT153+UICE
EM78P134N		2.1~5.5 (2.3~5.5)	IRC, ERC, HXT1, HXT2, XT, LXT1, LXT2	1K*13	48	8	5(3/2)	8*1	10*1	1 (3-Ch)	-	Yes	0~70 (-40~85)	10 MSOP/SSOP	LVR, 3-Ch Comp, TBRD, High EFT/ESD Level	IT163N+UICE
EM78P141		2.1~5.5		1K*13	48	8	8(4/4)	8*3 (PWM Timer x 2)	8*2	1	10*7	Yes	0~70	10 MSOP	LVR/LVD, IRC, Comp, TBRD	IT143+UICE
EM78P143		2.1~5.5		2K*13	80	8	8(4/4)	8*3 (PWM Timer x 2)	8*2	1	10*7	Yes		10 MSOP	LVR/LVD, IRC, Comp, TBRD	
EM78P153A		2.3~5.5	IRC, ERC, HXT, LXT	1K*13	32	12	3(2/1)	8*1	-	-	-	Yes		14 DIP/SOP	IRC, LVD	IT153+UICE
EM78P163N		2.1~5.5 (2.3~5.5)	IRC, ERC, HXT1, HXT2, XT, LXT1, LXT2	1K*13	48	12/14	5(3/2)	8*1	10*1	1 (4-Ch)	-	Yes	0~70 (-40~85)	14/16 DIP/SOP	LVR, 4-Ch Comparator, TBRD, High EFT/ESD Level, 4-I/O pin with high voltage,	IT163N+UICE
EM78P164N		2.1~5.5 (2.3~5.5)		1K*13	48	12/14	5(3/2)	8*1	10*1	1 (4-Ch)	-	Yes	0~70 (-40~85)	14/16 DIP/SOP	LVR, 4-Ch Comparator, TBRD, High EFT/ESD Level, 4-I/O pin with high voltage, (12V) open-drain (P164N only)	IT163N+UICE

Other series: ADC MCU

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compar. (OP	ADC (Bit*Ch)	IRC	Oper. Temp. (°C)	Package Type	Remark	ICE
EM78P259N	OTP	2.3~5.5 (2.5~5.5)	IRC, ERC, HXT, LXT	2K*13	80	11/13/15/17	10(3/7)	8*3, 16*1	9*1	1 (1)	12*4	Yes	0~70 (-40~85)	14 DIP/SOP 16 SOP 18 DIP/SOP 20 DIP/SOP/SSOP	IR, IRC	IT259N+UICE
EM78P418N				4K*13	144	15/17/21	8(3/5)	8*4	10*3	1 (1)	12*8	Yes		18 DIP/SOP 20 DIP/SOP 24 SKDIP/SOP/SSOP	IRC	IT418N+UICE
EM78P507N		2.2~3.6	IRC, ERC, LXT, XT, HXT1, HXT2	6K*13	272	41(I/O), 1(I) / 45(I/O), 1(I)	22(10/12)	8*4, 16*1	8*2	-	12*24	Yes	0~70 (-40~85)	44 LQFP/QFP 48 LQFP	DA (10 Bits / 1-Ch), SPI/UART/I2C, LVD	UIT507N+UICE

MCU Line:
EM77 Family

24MIPS High Speed MCU

Part No.	Memory Type	Operating Voltage	Oscillation Mode	PROM (Bit)	SRAM (Byte)	I/O (Pins)	Interrupt (Ex/In)	Timer Modules	PWM (Bit*Ch)	Compar. (OP	ADC (Bit*Ch)	Serial Interface	Oper. Temp. (°C)	Package Type	Remark	ICE
EM77950	Mask	2.2~3.6	48 MIPS	12K*16	896	40	15(2/13)	8*1, 16*1	16*2	-	8*16	SPI	0~70	52 QFP 44 LQFP	OSC out	ICE900
EM77P950	OTP		24 MIPS	12K*16	896	40	9(2/7)	8*1, 16*1	16*2	-	8*16	SPI		44/64 LQFP	OSC out	

Remark:

ADC=Analog to Digital Converter
PWM=Pulse Width Modulation
WDT=Watchdog Timer
*** = Under Development**
OP=Operational Amplifier
LVD=Low Voltage Detector
LVR=Low Voltage Reset
TBT=Time Base Timer
ERIC=External R Internal C
DED=Differential Energy Detector
CDA=Current D/A
DTMF=Dual Tone Multi Frequency
PLL=Phase Locked Loop