



Approved Form of Code in EM78419N

U8419N- _____ (Filled in by ELAN Sales)

The Following Items Filled in by Customer

- Customer's name: _____.
- Name of Program File: _____ .CDS.
Checksum : _____.
- Code Option Checksum,
Code Option 0: _____, Code Option 1: _____, Code Option 2: _____.
- Code Option Register (Please mark with "√" in the adequate blank)

Code Option 0

Bit	12	11	10	9	8	7	6	5	4	3	2	1	0
Mnemonic	-	-	-	TYPE	CLKS	ENWDTB	OSC2	OSC1	OSC0	HLP	-	-	-
Function	High	High	High		4clocks	Disable	High	High	High	High Power			
1	√	√	√										
Function	Low	Low	Low	419N	2clocls	Enable	Low	Low	Low	Low Power			
0				√							√	√	√

Code Option 1

Bit	12	11	10	9	8	7	6	5	4	3	2	1	0
Mnemonic	-	-	-	-	NRHL	NRE	CYES	C3	C2	C1	C0	RCM1	RCM0
Function	High	High	High	High	32/fc	Enable	2 Cycles	High	High	High	High	High	High
1	√	√	√	√				√	√	√	√		
Function	Low	Low	Low	Low	8/fc	Disable	1 Cycle	Low	Low	Low	Low	Low	Low
0													

Code Option 2

Bit	12	11	10	9	8	7	6	5	4	3	2	1	0
Mnemonic	ID12	ID11	ID10	ID9	ID8	ID7	ID6	ID5	ID4	ID3	ID2	ID1	ID0
Function	High	High	High	High	High	High	High	High	High	High	High	High	High
1													
Function	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
0													

*The range of the operating voltage: _____ V.

- Package Type: () K-Skinny DIP24; () N-SOP24; () H-DIE24.
- Intellectual Property Rights:

The customer (hereinafter "Party A") warrants that the product/code cosigned for manufacturing by ELAN Microelectronics Corporation (hereinafter "ELAN") are self-developed or legally assigned from third parties.



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7. Delivery Schedule: Date _____, Q'TY _____ PCS
Signature Customer: _____ Date: _____ Tel : _____
 ELAN Sales: _____ Date: _____
 ELAN FAE _____ Date: _____



Appendix 1: The Description of the Code Option Word

EM78419N has two CODE option words and one Customer ID word that are not a part of the normal program memory.

Code Option 0	Code Option 1	Code Option 2
Bit12~Bit0	Bit12~Bit11	Bit12~Bit0

1. Code Option Register (Code Option 0)

Bit12	Bit11	Bit10	Bit9	Bit8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
-	-	-	TYPE	CLKS	ENWDTB	OSC2	OSC1	OSC0	HLP	-	-	-

- **Bit 12 ~ 10:** Not used (reserved).
These bits are set to “1” all the time
- **Bit 9 (TYPE):** Type selection.
0 = EM78419N
- **Bit 8 (CLKS):** Instruction time period option bit
0 = two oscillator time periods
1 = four oscillator time periods (default)
- **Bit 7 (ENWDTB):** Watchdog timer enable bit
0 = Enable
1 = Disable (default)
- **Bit 6, 5 & 4 (OSC2, OSC1 & OSC0):** Oscillator Modes Selection bits

Mode	OSC2	OSC1	OSC0
ERC ¹ (External RC oscillator mode); P54/OSCO acts as P54	0	0	0
ERC ¹ (External RC oscillator mode); P54/OSCO acts as OSC0	0	0	1
IRC ² (Internal RC oscillator mode); P54/OSCO acts as P54	0	1	0
IRC ² (Internal RC oscillator mode); P54/OSCO acts as OSC0	0	1	1
LXT ³ (Low XTAL oscillator mode)	1	1	0
HXT ³ (High XTAL oscillator mode) (default)	1	1	1

¹ Under ERC mode, OSC1 is used. P54 is defined by code option WORD0 Bit6 ~ Bit4.

² Under IRC mode, P55 is normal I/O pin. P54 is defined by code option WORD0 Bit6 ~ Bit4.

³ Under LXT, HXT, and ERC mode; OSC1 and OSC0 are used. These oscillator modes cannot use normal I/O pin.

NOTE

The transient point of system frequency between HXT and LXY is around 400 KHz.

- **Bit 3 (HLP):** Power consumption selection
0 = Low power consumption, applies to working frequency at 4MHz or below 4MHz.
1 = High power consumption, applies to working frequency above 4MHz.
- **Bit 2 ~ 0:** Reserved.
The bit 2 ~ 0 set to “0” all the time.

2. Code Option Register (Code Option 1)

Bit12	Bit11	Bit10	Bit9	Bit8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
-	-	-	-	NRHL	NRE	CYES	C3	C2	C1	C0	RCM1	RCM0

- **Bits 12 ~ 9:** Not used (reserved). These bits are set to “1” all the time



- **Bit 8 (NRHL):** Noise rejection high/low pulses define bit. INT pin is falling edge trigger
0 = Pulses equal to $8/f_c$ [s] is regarded as signal.
1 = Pulses equal to $32/f_c$ [s] is regarded as signal. (default)

NOTE

The noise rejection function is turned off under the LXT and sleep mode.

- **Bit 7 (NRE):** Noise rejection enable
0 = disable noise rejection
1 = enable noise rejection (default). However under Low XTAL oscillator (LXT) mode, the noise rejection circuit always disabled.
- **Bit 6 (CYES):** Instruction cycle selection bit
0 = one instruction cycle
1 = two instruction cycles (default)
- **Bits 5, 4, 3 & Bit2 (C3, C2, C1, & C0):** Calibrator of internal RC mode.
These bits must always be set to "1" only (auto calibration)

- **Bit 1 & Bit 0 (RCM1 & RCM0):** RC mode selection bits

RCM 1	RCM 0	Frequency(MHz)
1	1	4
1	0	8
0	1	1
0	0	455kHz

3. Customer ID Register (Code Option 2)

Bit 12~Bit 0
XXXXXXXXXXXXXX

- **Bits 12 ~ 0:** Customer's ID code