2^{20} OTP ROLLING CODE ENCODER

GENERAL DESCRIPTION

The M520EB is a 2^{20} services of encoder pair with M520D utilizing CMOS LSI design for use in remote control system. The M520EB is design by a one-time programmable process. 4 customer codes be programmed into the encoder. They decide the transmission word of M520EB that compose of 16 rolling bits, 4 data bits, 20 address bits. A transmission word of the M520EB is transmitted on the DO pin via an RF transmission medium upon receipt of a trigger signal.

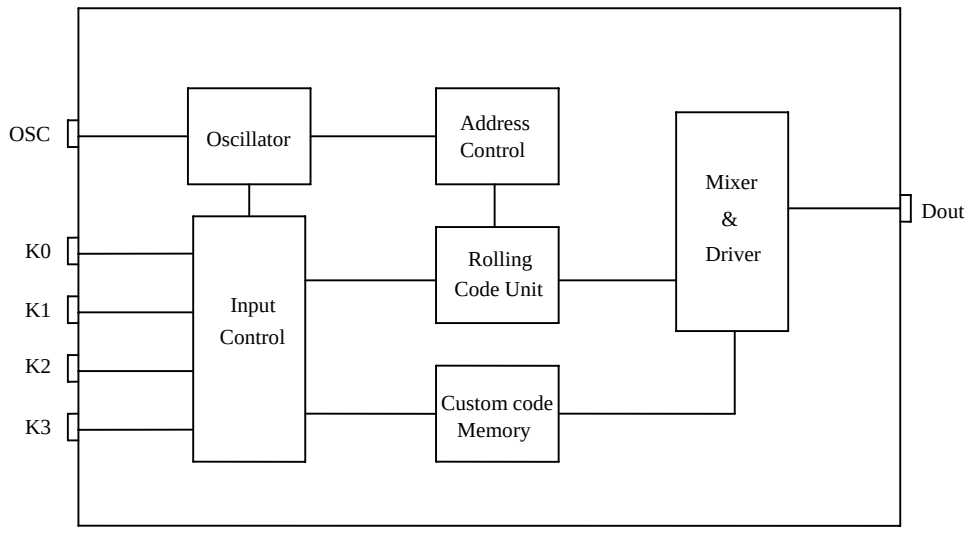
FEATURES

- 4 direct data input pins, Up to 15 data combination.
- 2 Cycles transmission each time.
- Programmable 4 bit customer code.
- Up to 2^{20} output code combinations.
- 42 second auto transmission out off to reduce power consumption.
- An external oscillation resister.
- 10 ms of key de-bounce time for K0~K3.
- Available in SOP or DIP package.

APPLICATIONS

- Burglar alarm system, car door controllers, car alarm system, home/office security system…etc.

BLOCK DIAGRAM



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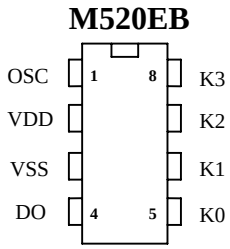
ABSOLUT MAXIMUM RATING

Parameter	Rating	Unit
Supply Voltage	2.4 to 12	V
Input Voltage	-0.7~V_{DD}+0.3	V
Operating Temperature	-20 to 70	℃
Storage Temperature	-55 to +125	℃

ELECTRICAL CHARACTERISTICS

Characteristics	Sym.	Min.	Typ.	Max.	Unit	REMARKS
Operating Voltage	V_{DD}	2.4	—	12	V	
Operating Current	I_{OP}	—	1.5	2	mA	No load , @V_{DD}=12V
Quiescent Current	I_{SB}	—	1	2	μA	
Input Voltage	V_{IH}	0.7V_{DD}	—	V_{DD}	V	
	V_{IL}	0	—	0.3V_{DD}		
Output Current	I_O	—	2	—	mA	@V_{DS}=1.2V , V_{GS}=3V
Oscillator Frequency	Fosc	—	80	—	KHz	External±20%, Rosc=360KΩ

PIN DESCRIPTION



N0.	Name	I/O	Description
1	OSC	I	Oscillator input pin
2	VDD	—	Positive power supply
3	VSS	—	Negative power supply (GND)
4	DO	O	Encoder data serial transmission output
5	K0	I	Input pin D0 setting and transmission output
6	K1	I	Input pin D1 setting and transmission output
7	K2	I	Input pin D2 setting and transmission output
8	K3	I	Input pin D3 setting and transmission output

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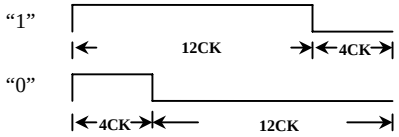
CODE FORMAT

(1) Bit Format

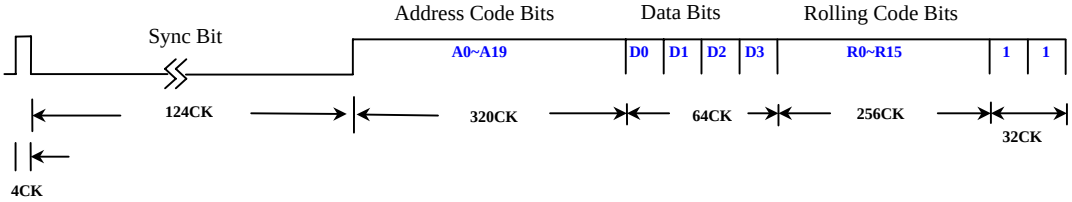


DEFINITE：1CK = 8 OSC CLKS WIDTH

(2) Output Data Frame

The Output Data Frame consist of a Sync Bit, Rolling Code Bits(R0~R15), Address Bits(A0~A19) and Key code Bits(D0~D3).

Please refer to the diagrams below.



The Sync Bit is always set to "0".

The Address Bits, namely：A0 to A19 may be programmed to either "0" or "1".

The Data Bits, namely D0 to D3 are controlled by 4 Data Pins. Please refer to the Combination Table below：

The Rolling Code Bits, namely：R0 to R15 are programmable.

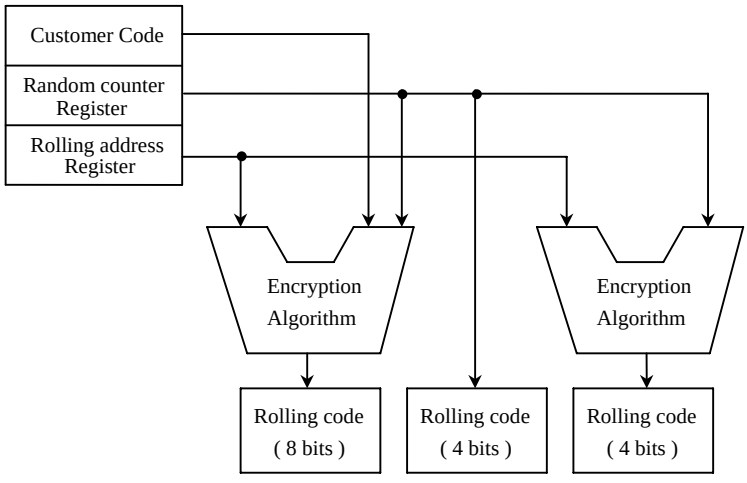
(3) K0~K3 Combination Table

KEY				DATA			
K3	K2	K1	K0	D3	D2	D1	D0
0	0	0	1	0	0	0	1
0	0	1	0	0	0	1	0
0	0	1	1	0	0	1	1
0	1	0	0	0	1	0	0
0	1	0	1	0	1	0	1
0	1	1	0	0	1	1	0
0	1	1	1	0	1	1	1
1	0	0	0	1	0	0	0
1	0	0	1	1	0	0	1
1	0	1	0	1	0	1	0
1	0	1	1	1	0	1	1
1	1	0	0	1	1	0	0
1	1	0	1	1	1	0	1
1	1	1	0	1	1	1	0
1	1	1	1	1	1	1	1

Note：1 = VDD

0 = VSS

(4) Rolling Code Format



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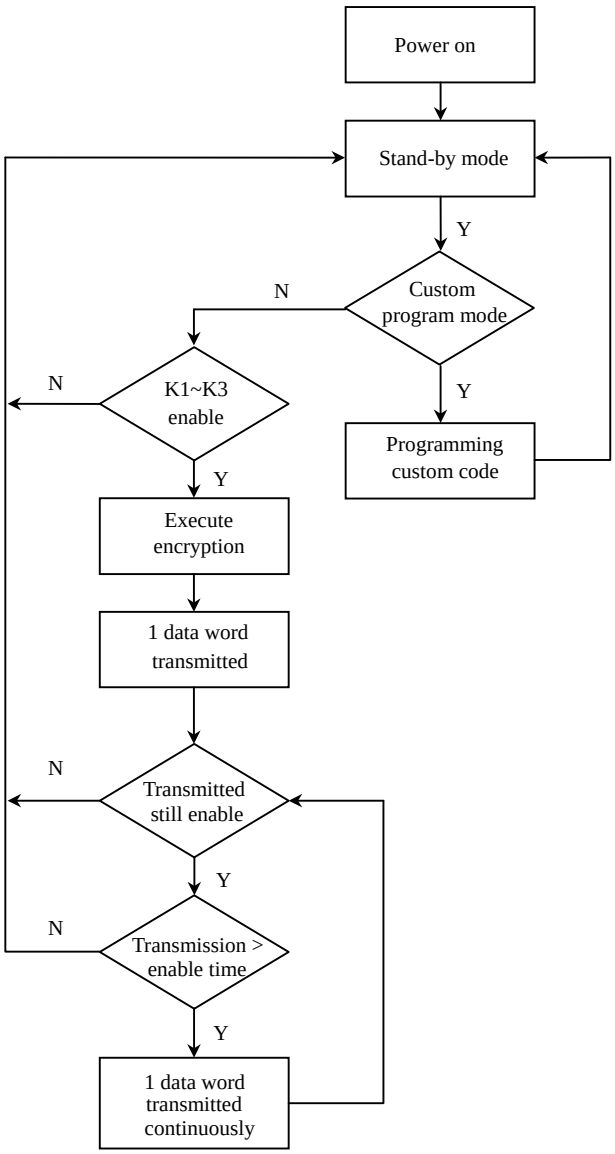
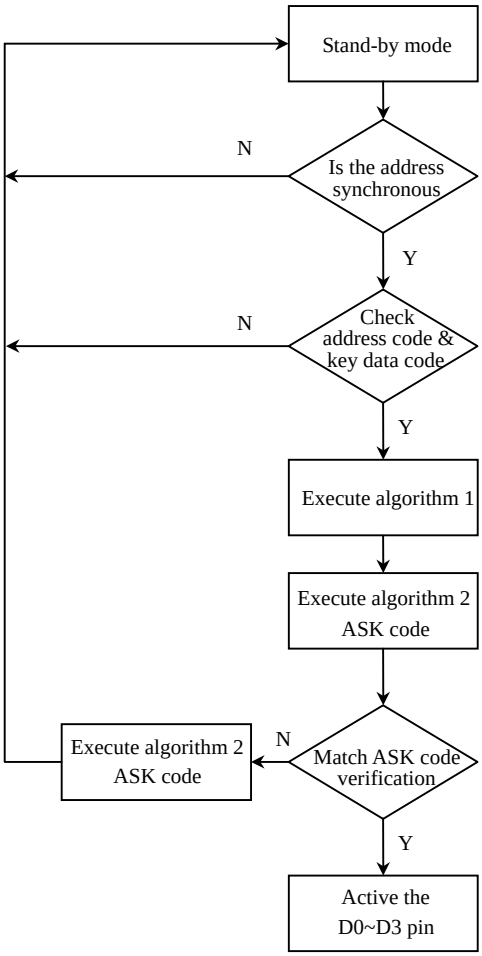
FLOW CHART

ENCODER (M520EB)



DECODER (M520D)



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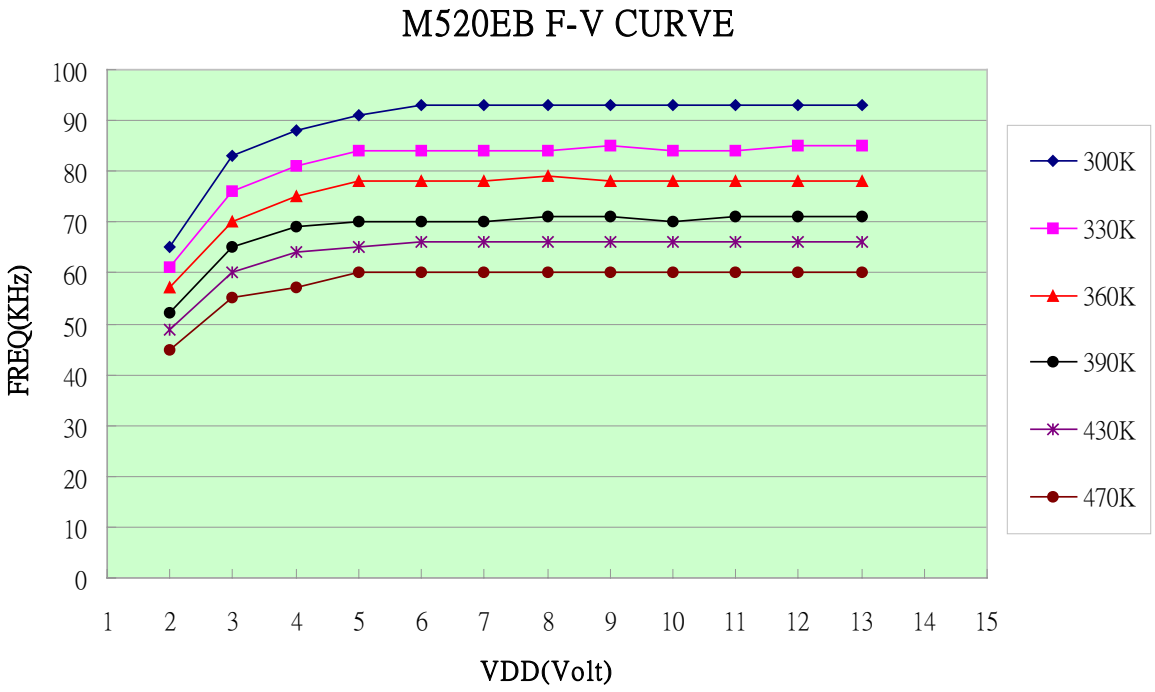
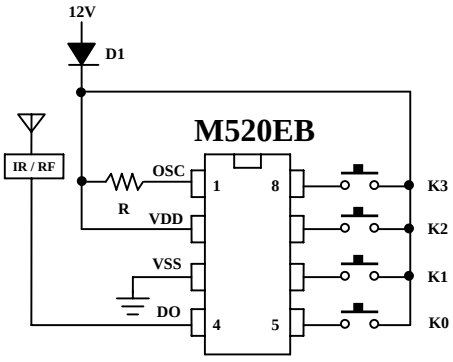
SINGLE RESISTOR OSCILLATOR

The typical oscillator frequency with various resistor values for M520EB is given below：

Encoder (M520EB) Oscillator Frequency



APPLICATION DIAGRAM



*All specs and applications shown above subject to change without prior notice.
（ 以上電路及規格僅供參考,本公司得逕行修正 ）