三合微科股份有限公司
SAMHOP Microelectronics Corp.

SM5028RF

2^{12} RF ENCODER

REV. 1.20

DECEMBER 23, 2004

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2^{12} RF ENCODER

GENERAL DESCRIPTION

SM5028RF is a RF remote control encoder paired with SM5038RF. It utilizes CMOS technology. The chip has 12 bits of 2-state address pins that provides 2^{12} codes. SM5028RF/SM5038RF pair is suitable for use on remote controller.

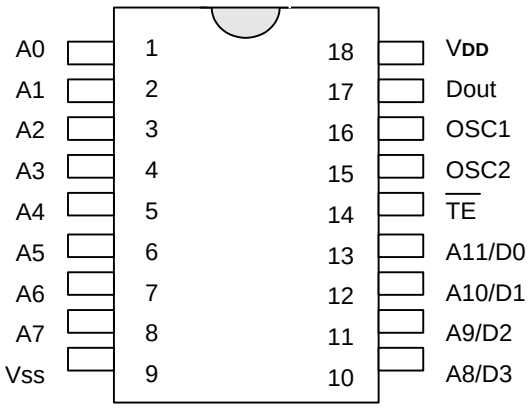
FEATURES

* CMOS technology
* Low power consumption
* Wide range operating voltage, Vcc = 2.4~12V
* Up to four data bits
* High noise immunity

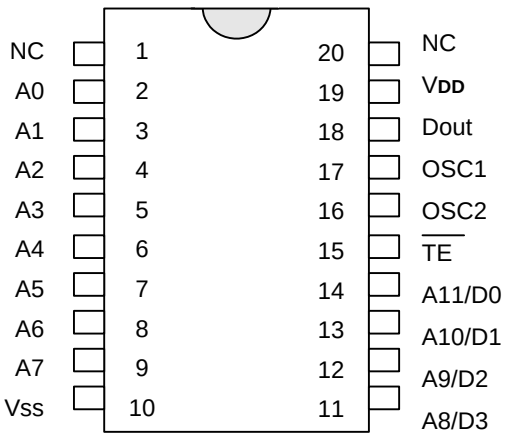
APPLICATION

* Car Security
* Garage Door
* Ceiling Fan
* Home Security/Automatic
* Toys
* Wireless doorbell

PIN ASSIGNMENTS (TOP VIEW)



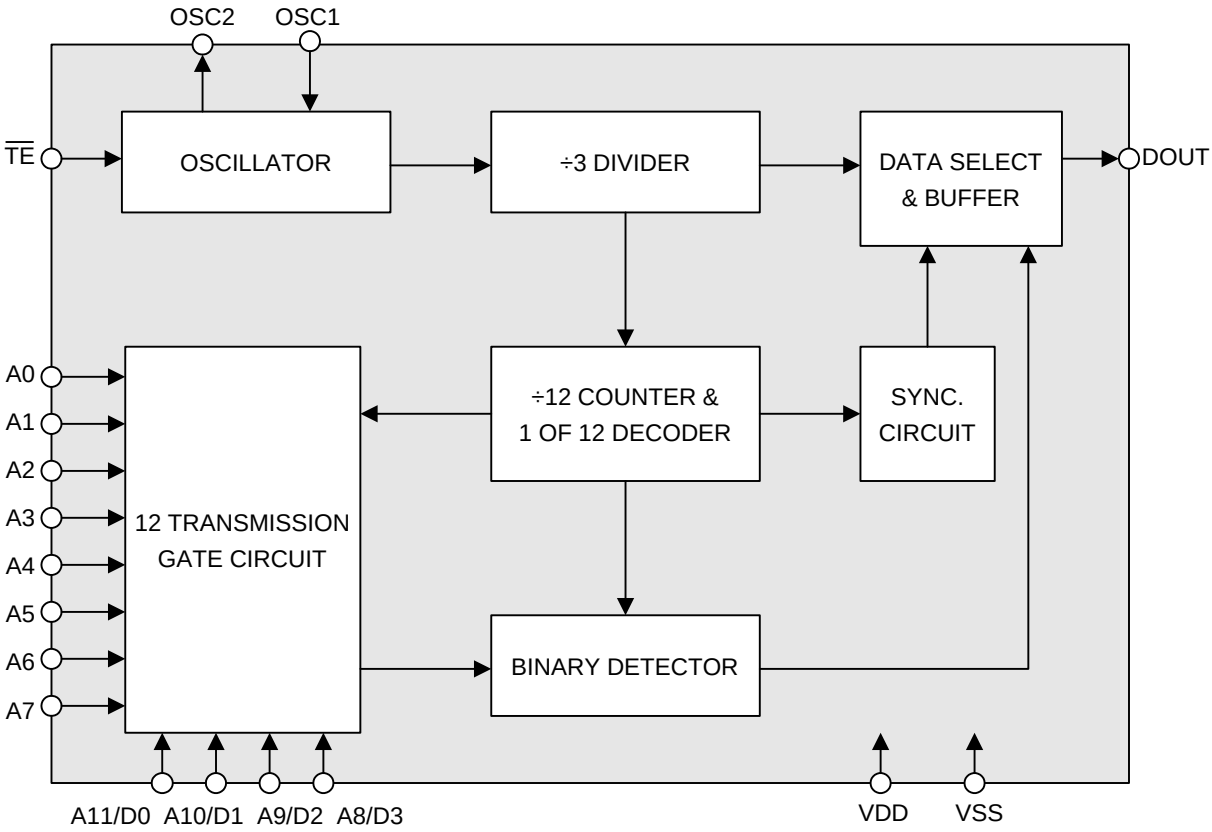
SM5028RF



SM5028S

2^{12} RF ENCODER

BLOCK DIAGRAM

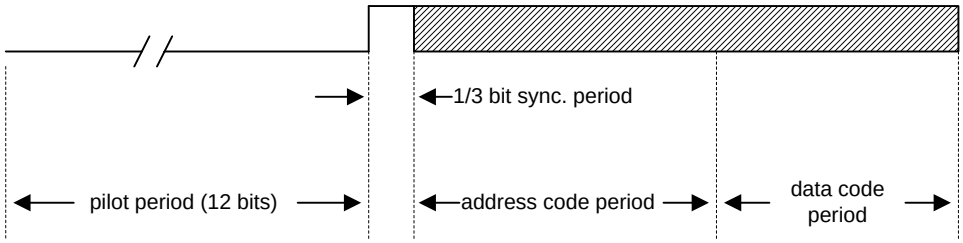


PIN DESCRIPTION

NO.	PIN NAME	I / O	FUNCTION
1	A0	I	Address input , each pin can be set to "0' , "1".
2	A1	I	
3	A2	I	
4	A3	I	
5	A4	I	
6	A5	I	
7	A6	I	
8	A7	I	
9	V_{SS}	POWER	Negative power supply.
10	A8/D3	I	Address/data input.
11	A9/D2	I	
12	A10/D1	I	
13	A11/D0	I	
14	$\overline{TE}$	I	Enables transmission.
15	OSC2	O	Resistor connected between these two pins determine the system clock.
16	OSC1	I	
17	Dout	O	Serial output of encoded signals.
18	V_{DD}	POWER	Positive power supply.

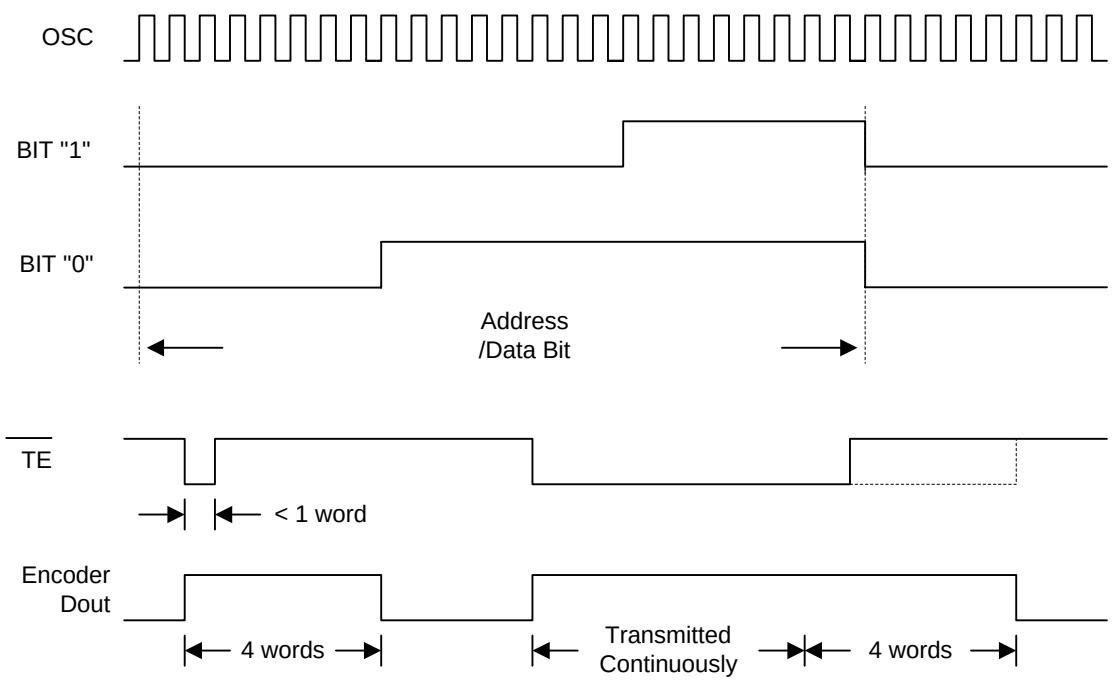
FUNCTION DESCRIPTION

An information word consists of 4 periods as illustrated below.



Composition of information

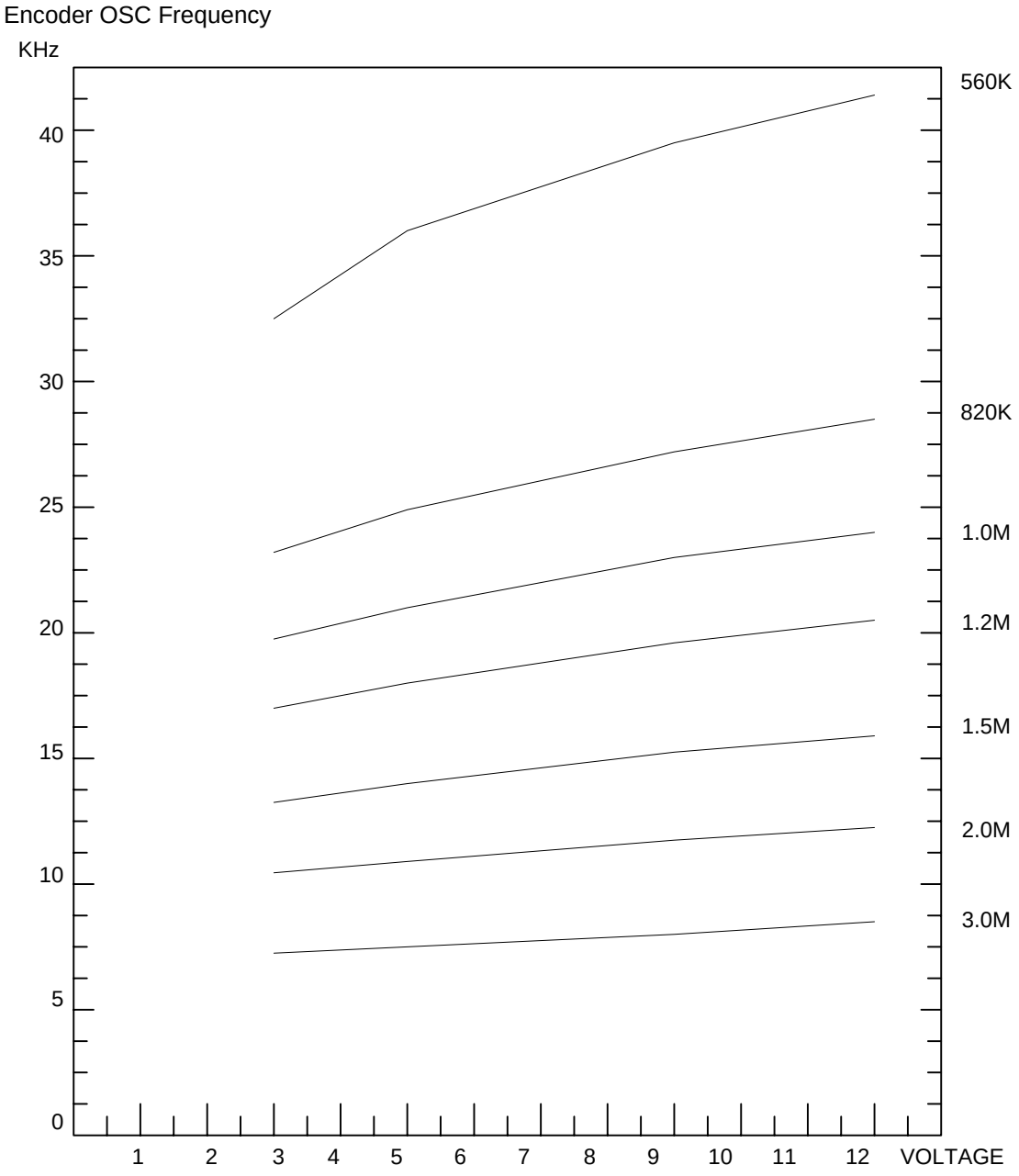
Address/Data waveform



SM5028RF begin a 4-word transmission cycle upon receipt of a transmission enable (TE active low). This cycle will repeat itself as long as the transmission enable (TE is held low). Once the transmission enable returns high the encoder output completes its final cycle and then stops as shown below.

2. OSC Frequency

SM5028RF's oscillator can be constructed by connecting a resistor between OSC1 and OSC2 pin.



The recommended oscillator frequency is FOSCD (SM5038RF decoder)≅ 8 - 10 FOSCD (SM5028RF encoder)

ABSOLUTE MAXIMUM RATINGS

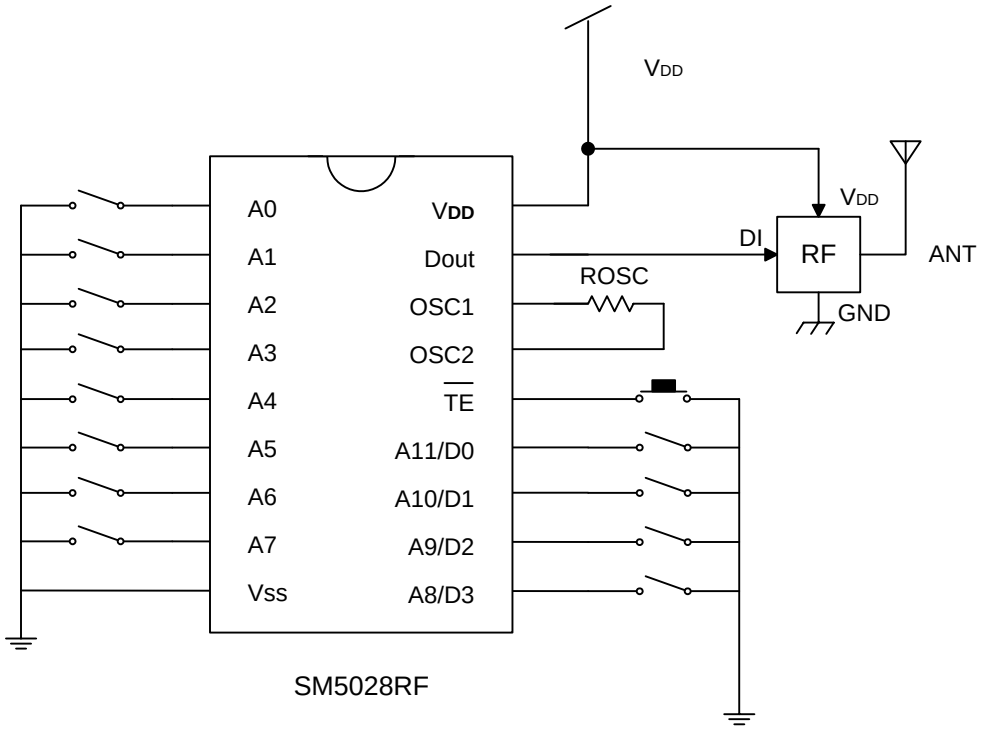
Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	V_{DD} - Vss		-0.3~13	V
Input Voltage	V_I - Vss		Vss-0.3~V_{DD}+0.3	V
Output Voltage	V_O - Vss		Vss-0.3~V_{DD}+0.3	V
Maximum power disspation	Pa	V_{DD} - Vss = 12V	500	mW
Operating Temperature	Topr		-20~70	°C
Storage Temperature	Tstg		-40~125	°C

DC ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition		Limits			Unit
		V_{DD}	Conditions	Min.	Typ.	Max.	
Operating Voltage	V_{DD}		———	2.4	5	12	V
Operating Current	I_{DD}	3V 12V	No load F_{OSC} = 24KHZ	- -	10 150	20 300	μA
Standby Current	I_{STB}	3V 12V	Oscillator stops	- -	0.1 2	1 4	μA
Output Drive Current	I_{DOUT}	5V	VDH = 0.9VDD (SOURCE) VOL = 0.1VDD (Sink)	-1 1	- 1.6 1.6	- -	mA
"H" Input Voltage	V_{IH}	——	——	0.8V_{DD}		VDD	V
"L" Input Voltage	V_{IL}	——	——	0		0.2V_{DD}	V
Oscillator Frequency	F_{OSC}	5V	ROSC = 1MΩ	——	24	——	kHz
$\overline{TE}$ Pull-High Resistance	$R_{\overline{TE}}$	3V 5V 9V 12V	$V_{\overline{TE}}$ = 0V	—— —— —— ——	1.25 600 350 260	—— —— —— ——	MΩ KΩ KΩ KΩ
ADDRESS Pull-High Resistance	$R_{ADDRESS}$	3V 5V 9V 12V		—— —— —— ——	680 340 180 140	—— —— —— ——	KΩ KΩ KΩ KΩ

(Ta=25°C)

APPLICATION CIRCUIT



ORDERING INFORMATION

Part NO.	Package
SM5028RF	18Pin DIP

Part NO.	Package
SM5028S	20Pin SOP