



## GENERAL DESCRIPTION

The SM5162 is a RF remote control encoder paired with SM5172. It utilizes CMOS technology. The chip has 12 bits of 3-state address pins that provides 3<sup>12</sup> codes. SM5162/ SM5172 pair is suitable for use on remote controller.

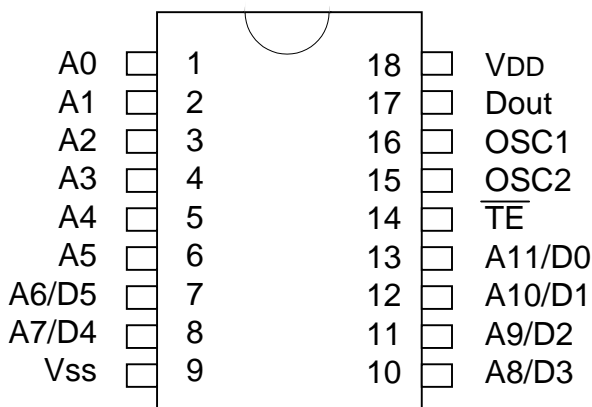
## FEATURES

- \* CMOS technology
- \* Low power consumption
- \* 12 tri-state pins
- \* Wide range operating voltage, V<sub>cc</sub> = 3- 12V
- \* Up to six data bits
- \* High noise immunity

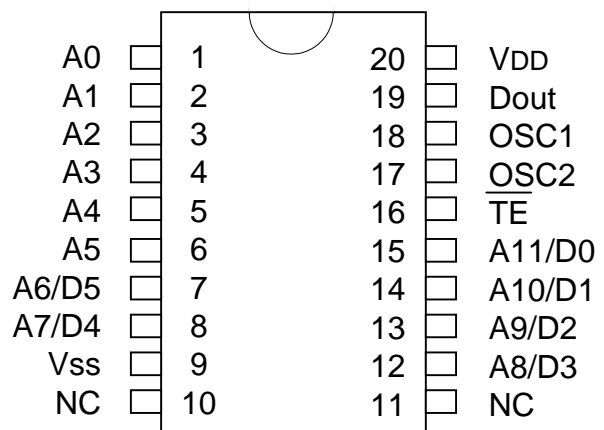
## APPLICATIONS

- \* Car Security
- \* Garage Door
- \* Ceiling Fan
- \* Home Security/Automatic
- \* Toys

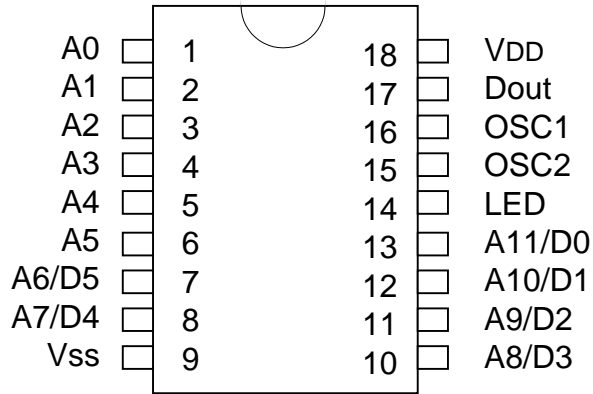
## PIN ASSIGNMENTS



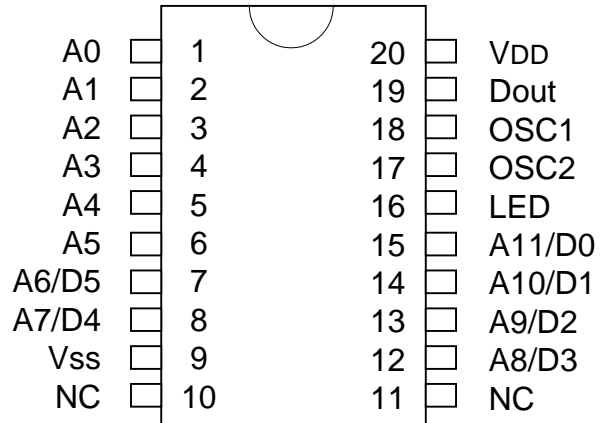
**SM5162**



**SM5162S**

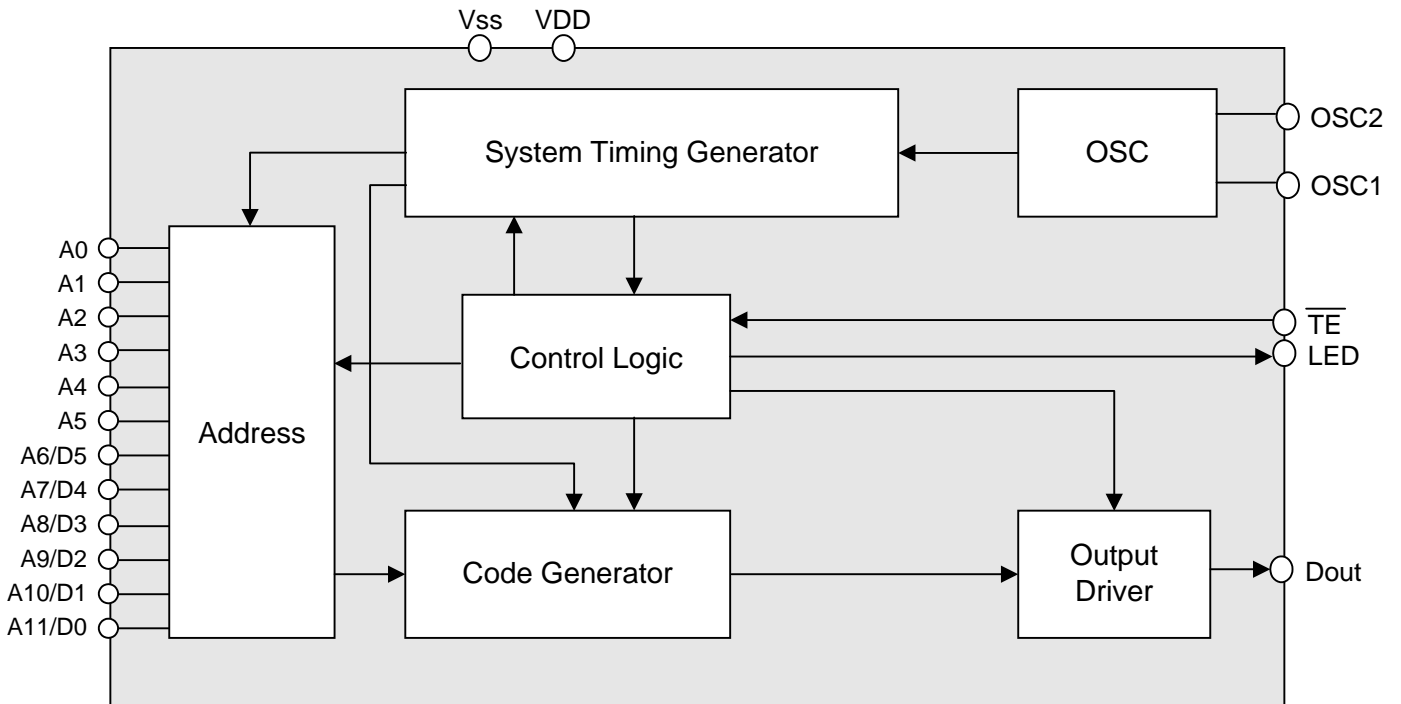


**SM5162-DX**



**SM5162S-DX**

**BLOCK DIAGRAM**





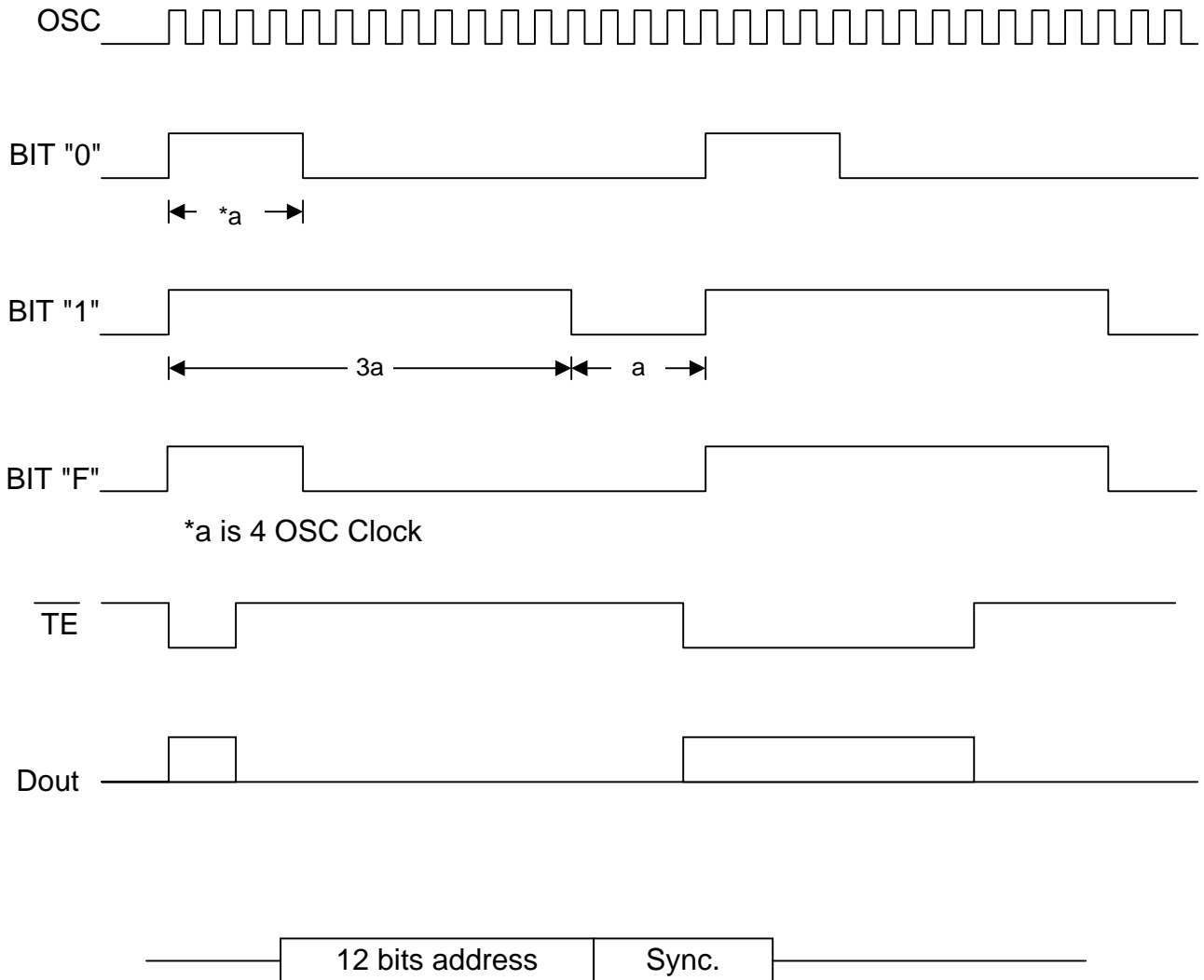
## PIN FUNCTION

No.	Pin Name	I/O	Function Operation
1	A0	I	Address input, each pin can be set to "0", "1" , or floating.
2	A1	I	
3	A2	I	
4	A3	I	
5	A4	I	
6	A5	I	
7	A6/D5	I/O	Address input or data output.
8	A7/D4	I/O	
9	VSS	POWER	Negative power supply.
10	A8/D3	I/O	Address input or data output.
11	A9/D2	I/O	
12	A10/D1	I/O	
13	A11/D0	I/O	
14	$\overline{\text{TE}}$	I	Enables transmission.
	LED	O	LED Output.
15	OSC1	I	Resistor connected between these two pins determine the system clock.
16	OSC2	O	
17	Dout	O	Serial output of encoded signals.
18	VDD	POWER	Positive power supply.

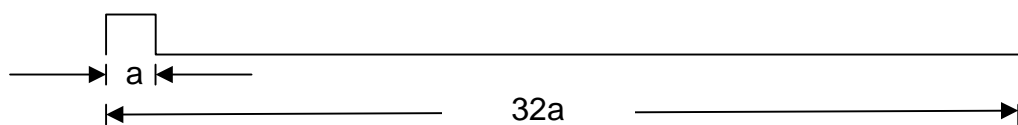


## FUNCTION DESCRIPTION

### 1. Data Format



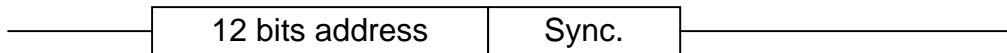
Synchronisation Bit waveform is :



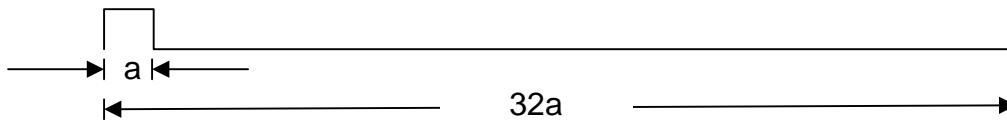


## 2. Frame Format

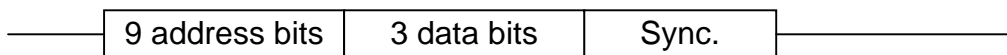
When SM5162 is used for no data, transmitting format is :



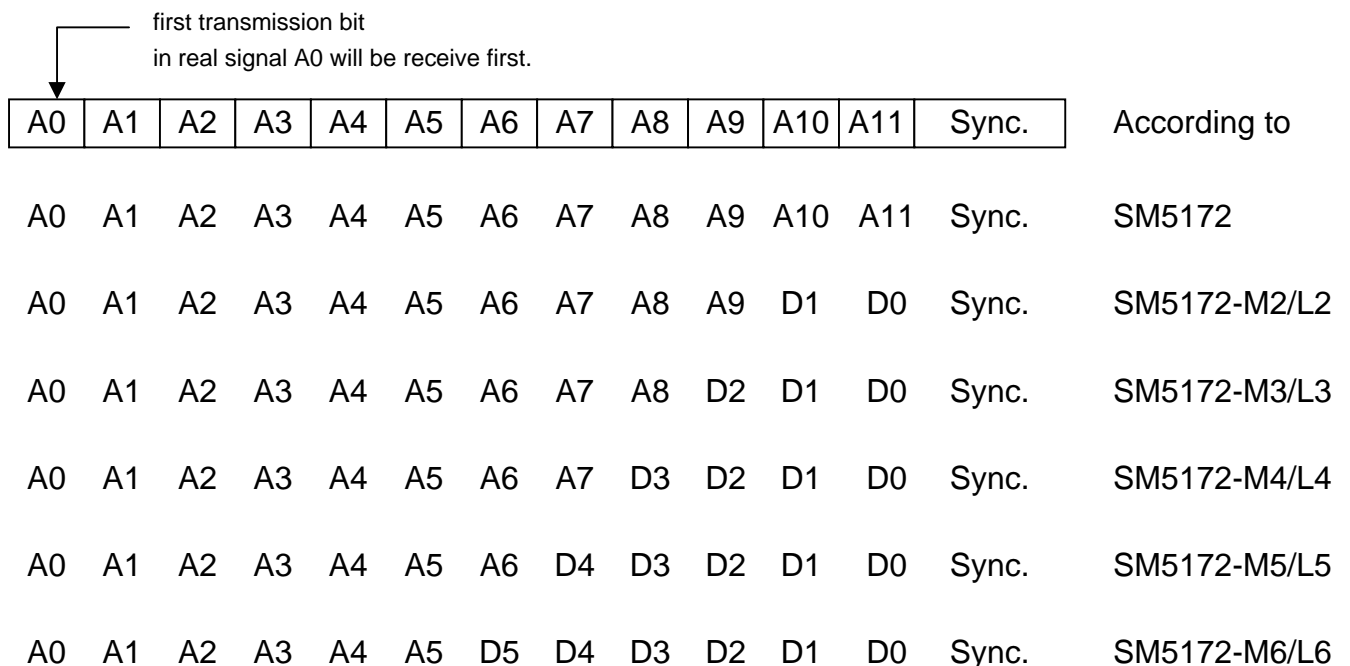
Synchronisation Bit waveform is :



When data type of SM5162 is used, address bits will decrease accordingly. For example, in 3 data type where address is 9 bits, transmitting format is :



SM5162/SM5172 has 12 bits including a maximum of 6 data bits.

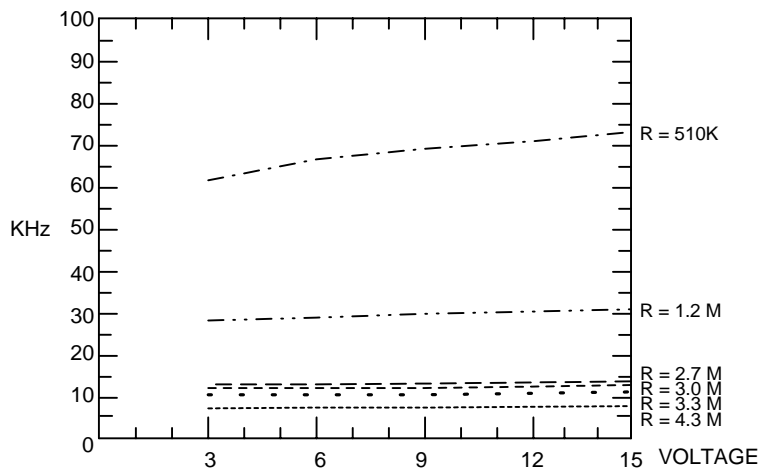




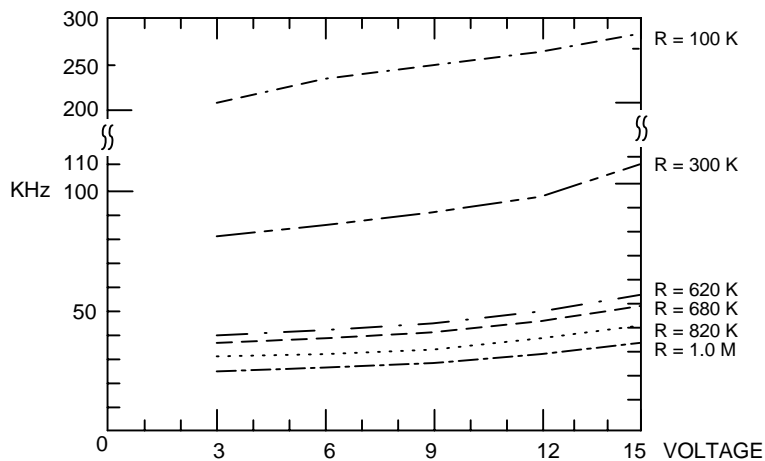
### Single Resistor Oscillator

SM5162's oscillator be constructed by connecting a resistor between OSC1 and OSC2 pin.  
SM5172's OSC frequency must be 1.8 to 5.8 times more than SM5162.

Encoder OSC Frequency



Dncoder OSC Frequency



Suggested oscillator resistor of SM5162/ SM5172:

SM5162	SM5172
4.7M OHM	820K OHM
3.0M OHM	620K OHM
2.2M OHM	300K OHM
1.2M OHM	180K OHM



### ABSOLUTE MAXIMUM RATINGS

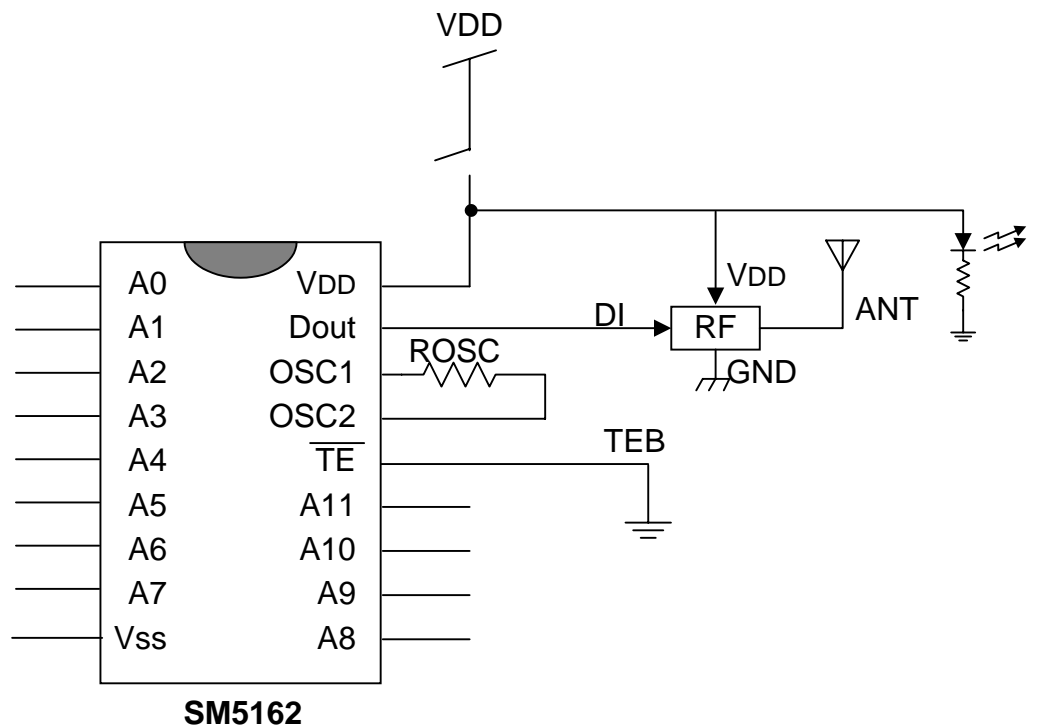
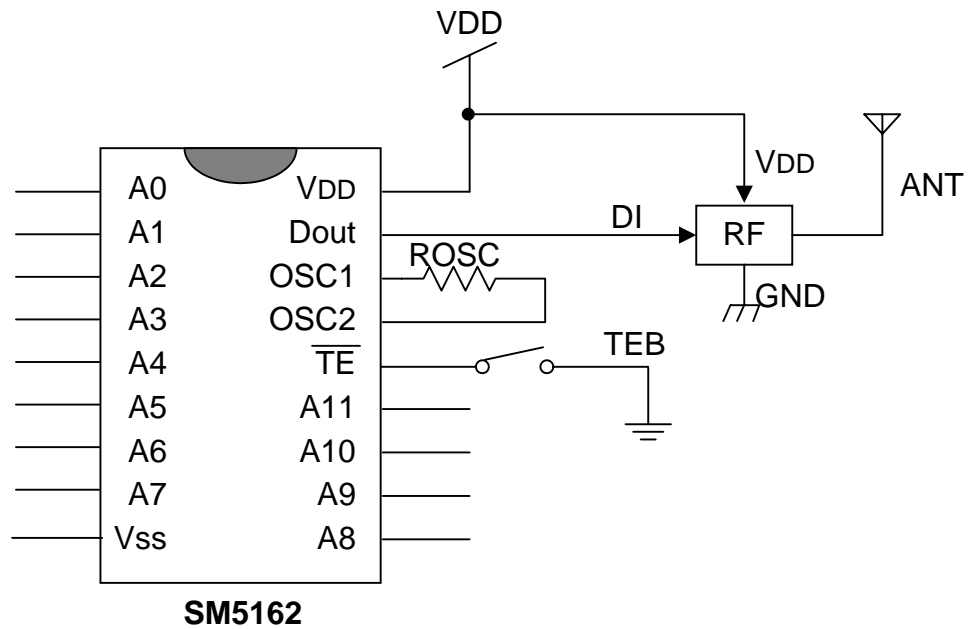
Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	VDD - Vss		-0.3 ~ 16	V
Input Voltage	VI - Vss		Vss - 0.3 ~ VDD +0.3	V
Output Voltage	VO - Vss		Vss - 0.3 ~ VDD +0.3	V
Maximum power dissipation	Pa	VDD - Vss = 12 V	500	mW
Operating Temperature	Topr		-20 ~ 70	
Storage Temperature	Tstg		-40 ~ 125	

### DC ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Limit			Unit
			Min.	Typ.	Max.	
Supply Voltage	VCC		3		12	V
Standby Current	ISTB	VDD=12V OSC stop AO - A11 open		0.02	0.3	μA
Output Drive Current (Dout)	IOH	VDD = 5V VOH = 4V VDD = 8V VOH = 6.4V VDD = 12V VOH = 9.6V	- 2 - 6 -14			mA
Output Sinking Current (Dout)	IOL	VDD = 5V VOL = 1V VDD = 8V VOL = 1.6V VDD = 12V VOL = 2.4V	5 13 23			mA



**APPLICATION CIRCUIT**

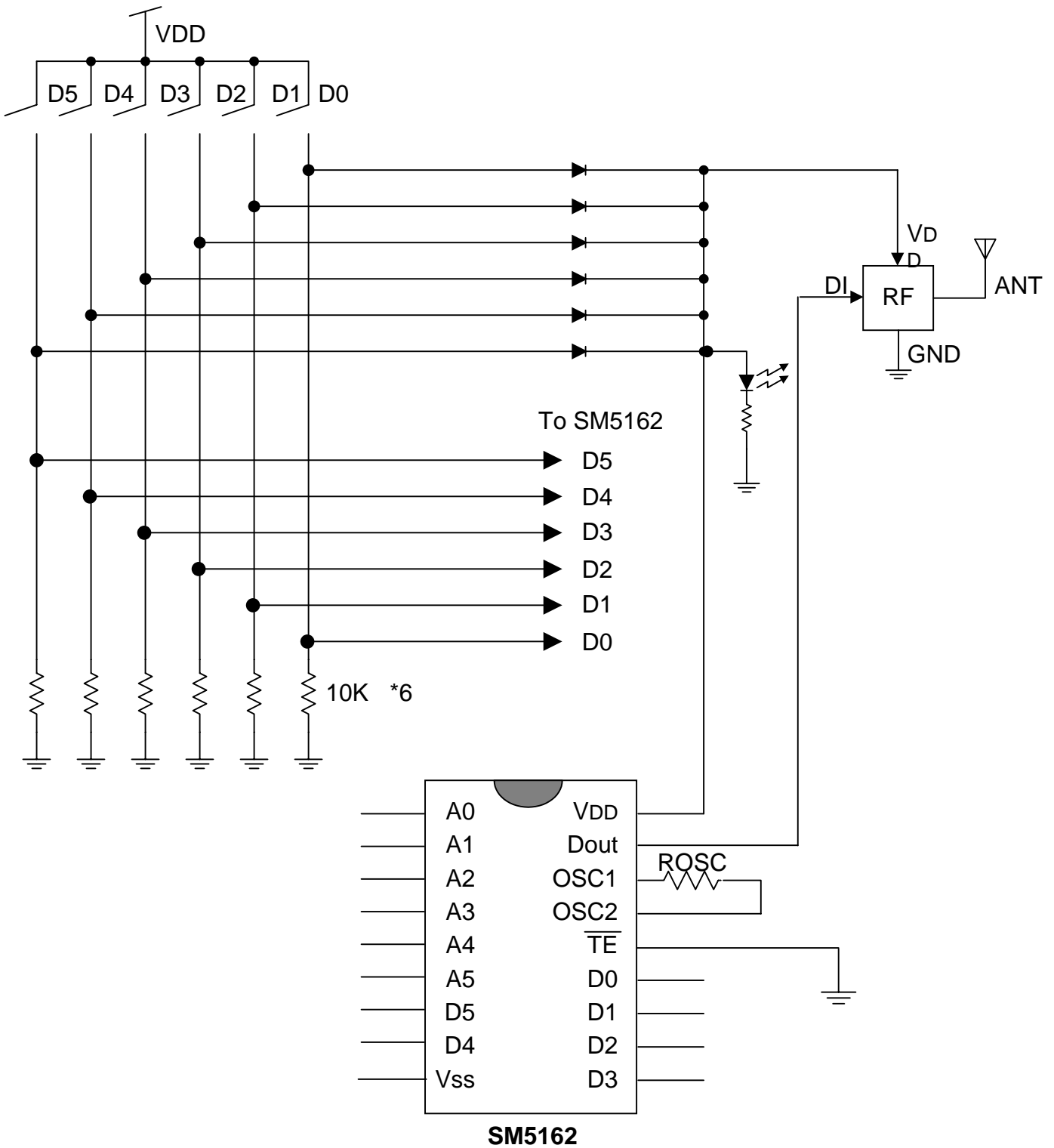


RF : Module reference to Page11



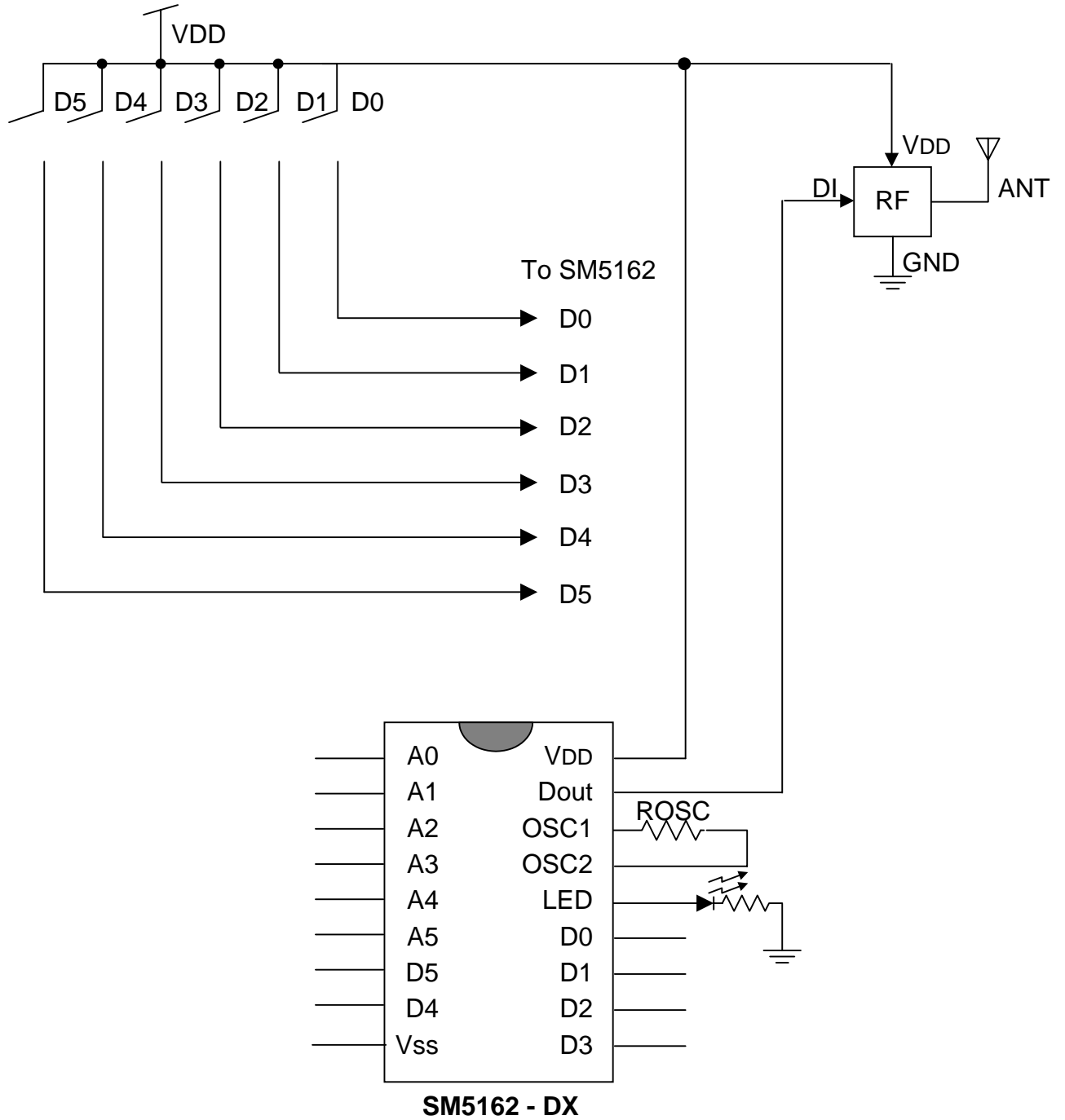


APPLICATION CIRCUIT



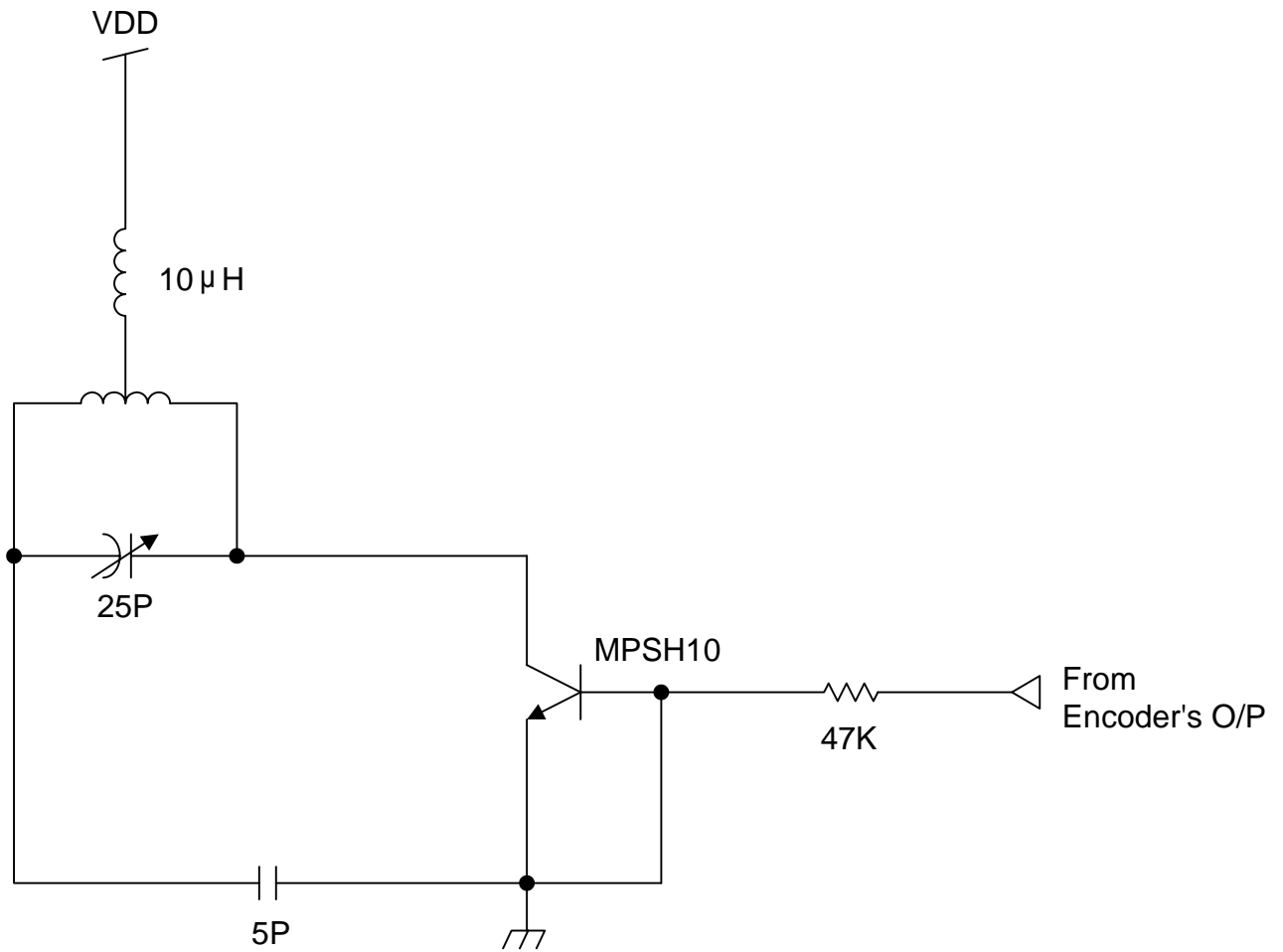


**APPLICATION CIRCUIT**





**APPLICATION CIRCUIT**





### ORDERING INFORMATION

Part No.	Package
SM5162	18 Pin DIP

Part No.	Package
SM5162S	20 Pin SOP

