

SD7062 / SD7072

3-state Encoder / Decoder

Features

- Power supply range : 3.5V ~ 13V
- High Voltage CMOS technology.
- Low power consumption.
- High noise immunity.
- 12 tri-state address bits.
- Up to 6 data bits.
- RF/IR type output waveform option for SD7062.
- Latch/Momentary data output for SD7072.

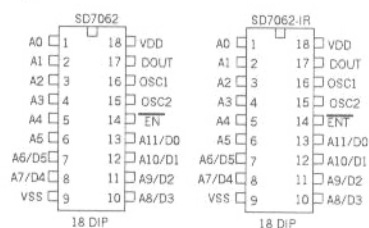
General Description

SD7062/SD7072 is a tri-state remote control encoder/decoder pair. SD7062 is the encoder and SD7072 is the decoder. Both SD7062 and SD7072 are fabricated with high voltage CMOS technology. The

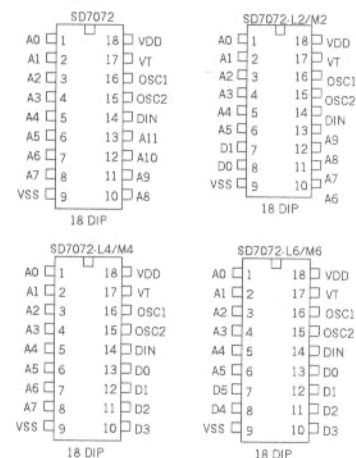
chips have 12 bits of tri-state address pins which can provide 3^{12} codes. They can be used in security, automation environment.

Pin Configuration

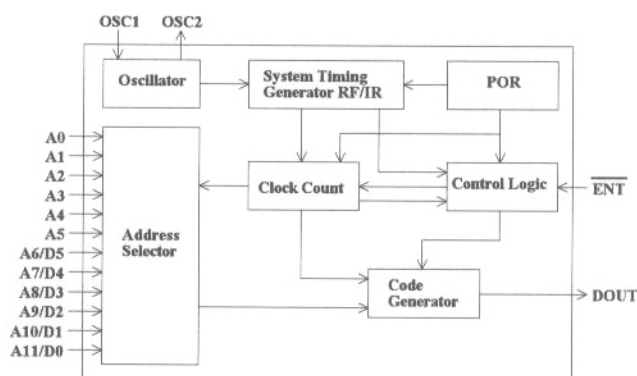
(A) SD7062



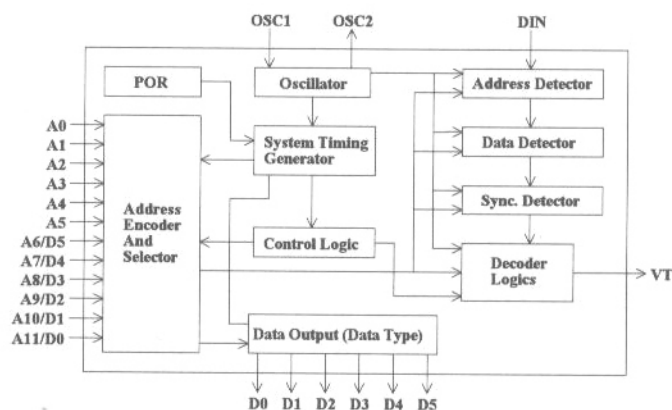
(B) SD7072



SD7062 Block Diagram



SD7072 Block Diagram



Pin Description

(1) SD7062

Pin No.	Symbol	Description
1 ~ 6	A0 ~ A5	Encoded address and data inputs.
7 ~ 13	A6/D5 ~ A11/D0	
9	VSS	Negative power supply.
14	/ENT	Transmission enable, low active.
15	OSC2	Oscillator pin.
16	OSC1	Oscillator pin.
17	DOUT	Encoded signal output pin.
18	VDD	Positive power supply.

(2) SD7072

Pin No.	Symbol	Description
1 ~ 6	A0 ~ A5	Match encoder address for decoder to output data and OD signal.
7	A6/D5	Data output same as encoder data input.
8	A7/D4	Data output same as encoder data input.
10	A8/D3	Data output same as encoder data input.
11	A9/D2	Data output same as encoder data input.
12	A10/D1	Data output same as encoder data input.
13	A11/D0	Data output same as encoder data input.
9	VSS	Negative power supply.
14	DIN	Received signal input.
15	OSC2	Oscillator pin.
16	OSC1	Oscillator pin.
17	VT	Valid data transmission indication
18	VDD	Positive power supply.



Absolute Maximum Ratings

(1) SD7062

RATING	VALUE
DC Supply Voltage	< 14V
Input/Output Voltage	VSS-1.2V to VDD +1.2V
Operating Temperature	-10° C to 60° C
Storage Temperature	-25° C to 125° C

(2) SD7072

RATING	VALUE
DC Supply Voltage	<14 V
Input/Output Voltage	VSS-1.2V to VDD + 1.2V
Operating Temperature	-10° C to 60° C
Storage Temperature	-25° C to 125° C

Notice:

Stress greater than those listed under **Absolute Maximum Ratings** may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended period may affect reliability.

Electrical Characteristics

(1) SD7062

(VDD = 12V, VSS = 0V, Ta = 25°C, unless otherwise specified)

Parameter	Symbol	Min.	Type.	Max.	Condition
Operating Voltage	Vdd	3.5V	12V	13V	
Standby Current	Istb	---	---	5μA	Vdd=5V, All input open
Operating Current	Iop	---	1mA	---	Vdd=5V, OSC=14.2KHz
DOUT Output Current (sink)	Isink	14mA	---	---	Vol=6V
DOUT Output Current (drive)	Idrive	-12mA	---	---	Voh=6V

(2) SD7072

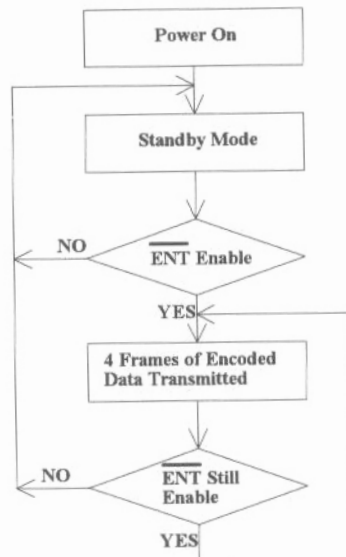
(VDD = 12V, VSS = 0V, Ta = 25°C, unless otherwise specified)

Parameter	Symbol	Min.	Type.	Max.	Condition
Operating Voltage	Vdd	3.5V	12V	13V	
Standby Current	Istb	---	---	12μA	Vdd=5V, All input open
Operating Current	Iop	---	1.7mA	---	Vdd=5V, OSC=67.6KHz input unload
D1 ~ D6 Output Current (Sink)	Isink1	8mA	---	---	Vol=6V
D1 ~ D6 Output Current (Drive)	Idrive1	-8mA	---	---	Voh=6V
VT Output Current (Sink)	Isink2	11mA	---	---	Vol=6V
VT Output Current (Drive)	Idrive2	-10mA	---	---	Voh=6V

Operation Function

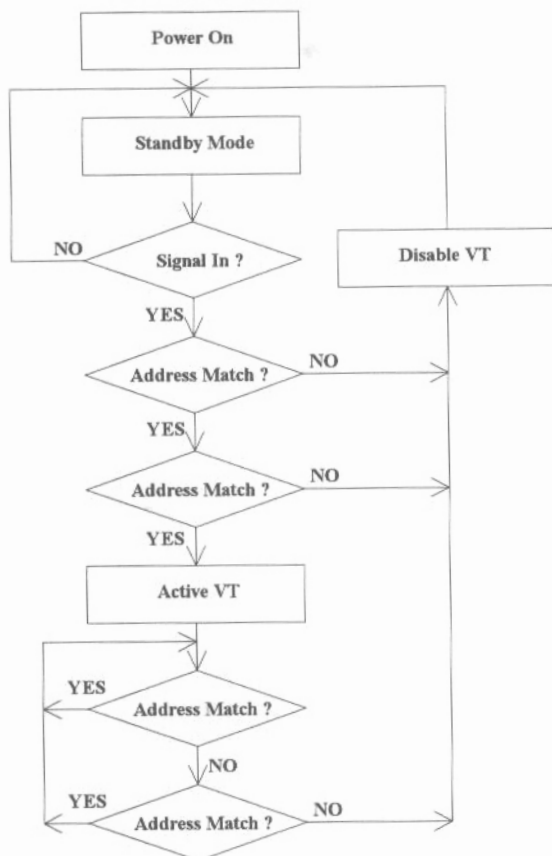
. Operation Flow Chart

SD7062

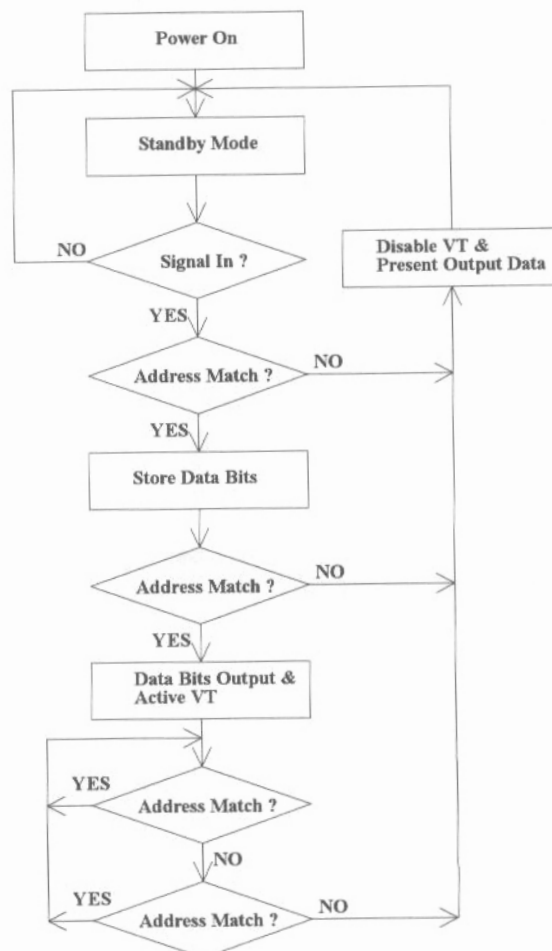


SD7072

(1) Address Type



(2) Data Type

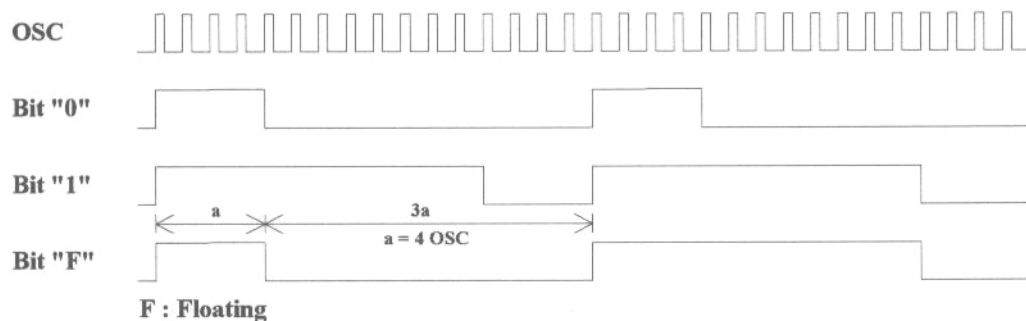


. Data Format

SD7062

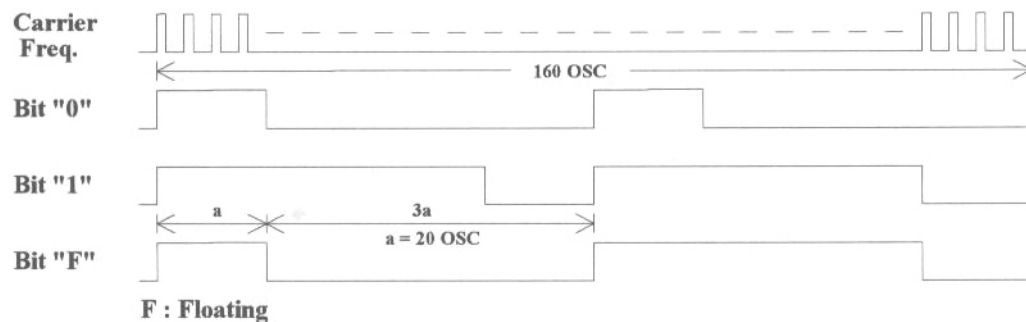
. Bit Data Format

(1) RF Type : Oscillator frequency divided by 32 is 1 bit format

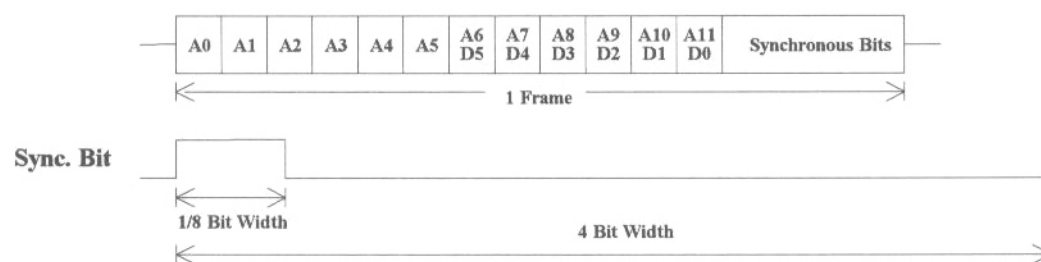


(2) IR Type : Oscillator frequency divided by 320 is 1 bit format

Oscillator frequency should be 76KHz, Carrier frequency is 38KHz



. Frame Data Format



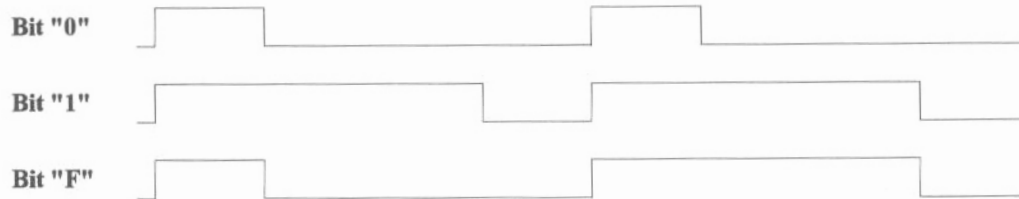
. Output Data Format



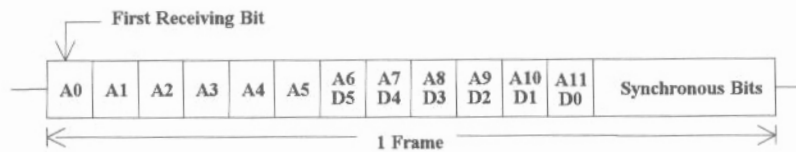


SD7072

. Received Data Format



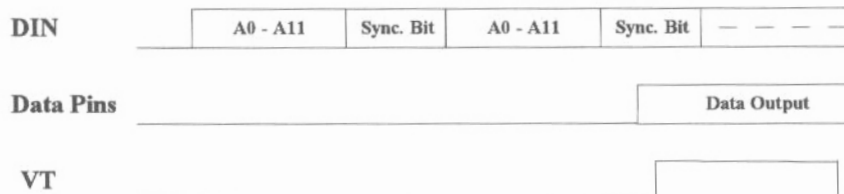
. Frame Data Format



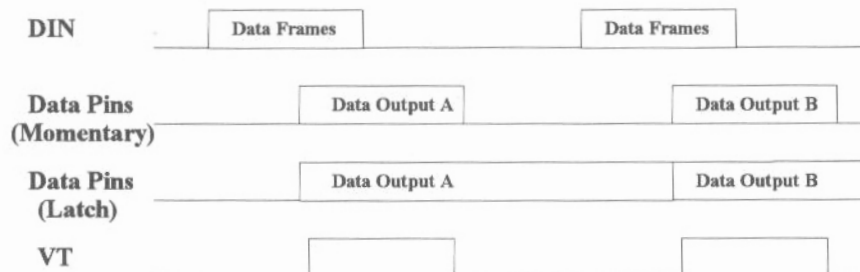
IC Type	Frame Data												
Address	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	Sync.Bit
L2 / M2	A0	A1	A2	A3	A4	A5	D1	D0	A6	A7	A8	A9	Sync.Bit
L4 / M4	A0	A1	A2	A3	A4	A5	A6	A7	D3	D2	D1	D0	Sync.Bit
L6 / M6	A0	A1	A2	A3	A4	A5	D5	D4	D3	D2	D1	D0	Sync.Bit

. Output Data Waveform

When SD7072 receives correct data from DIN pin, VT active high and data pins output the corresponding logic states. (Same as SD7062 data output)

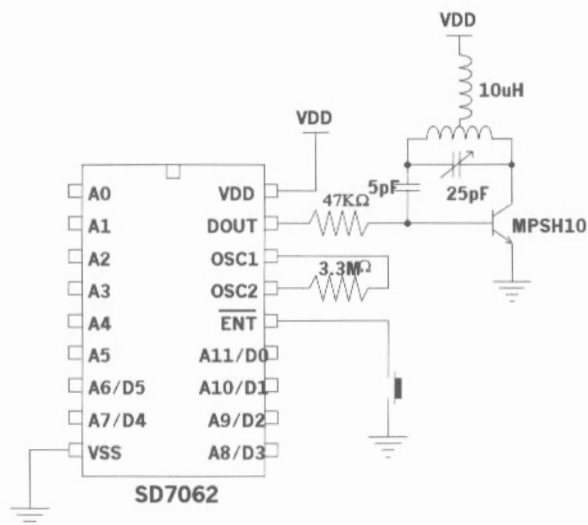


SD7072 has two output types : Latch and Momentary types.
The output waveform are shown as following :

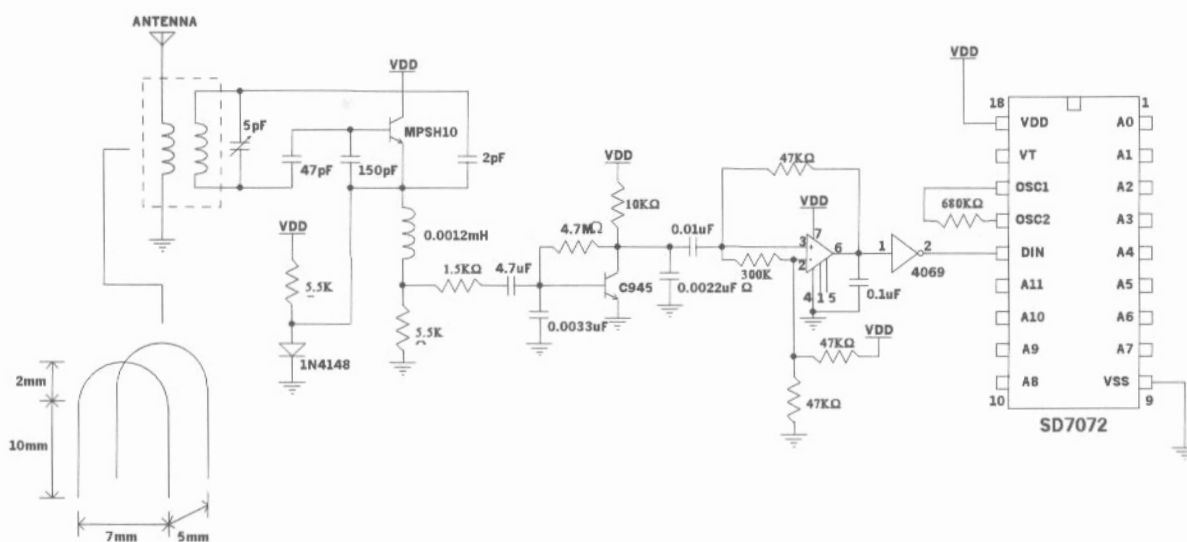


Application Circuit

SD7062



SD7072



*. SD7072's oscillator frequency must be 3 to 6 times more than SD7062. (Typically 4 times)

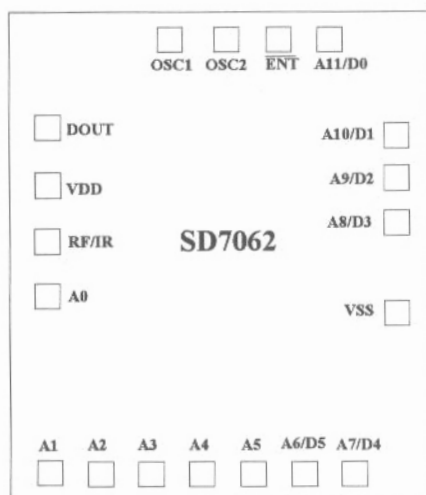
*. The recommend oscillator resistor of SD7062/SD7072 are :

RF Type :

SD7062	4.7M	↔	820K	SD7072
SD7062	3.3M	↔	680K	SD7072
SD7062	1.0M	↔	200K	SD7072



Bonding Diagram



Pad No.	Pad Name	X	Y
1	A0	60.9	356.2
2	A1	60.9	61.1
3	A2	266.8	61.1
4	A3	246.5	61.1
5	A4	588.4	61.1
6	A5	749.3	61.1
7	A6/D5	910.2	61.1
8	A7/D4	1125.5	61.1
9	VSS	1317.9	276.2
10	A8/D3	1317.9	766.9
11	A9/D2	1317.9	933.8
12	A10/D1	1317.9	1113.7
13	A11/D0	1031.0	1126.3
14	ENT	864.9	1126.3
15	OSC2	698.0	1126.3
16	OSC1	528.0	1126.3
17	DOUT	60.9	874.8
18	VDD	60.9	659.6
19	RF/IR	60.9	504.1

Unit: μm

Note: Substrate is connected to VDD



Pad No.	Pad Name	X	Y
1	A0	1402.6	56.0
2	A1	1562.7	56.0
3	A2	1720.8	56.0
4	A3	1920.6	396.7
5	A4	1920.6	554.1
6	A5	1920.6	719.5
7	A6/D5	1813.3	2083.0
8	A7/D4	1540.6	2083.0
9	VSS	1324.1	2083.0
10	P10	1174.3	2083.0
11	A8/D3	944.3	2083.0
12	A9/D2	676.3	2083.0
13	A10/D1	405.8	2083.0
14	A11/D0	128.7	2083.0
15	DIN	128.7	571.4
16	OSC2	128.7	408.3
17	OSC1	501.2	56.0
18	VT	728.7	56.0
19	P19	943.4	56.0
20	VDD	1093.5	56.0
21	P21	1243.5	56.0

Unit: μm

Note: Substrate is connected to VDD

**Package Information****(1) SD7062 Option**

Part No.	Transmitting Medium	RF/IR Pin
SD7062	RF	F
SD7062-IR	IR	VDD

(2) SD7072 Bonding Option

Part No.	Data Bits	Output Type	P10	P19	P21
SD7072	0	Address Mode	F	VDD	F
SD7072-L2	2	Latch	F	VDD	VDD
SD7072-M2	2	Momentary	VSS	VDD	VDD
SD7072-L4	4	Latch	F	F	F
SD7072-M4	4	Momentary	VSS	F	F
SD7072-L6	6	Latch	F	F	VDD
SD7072-M6	6	Momentary	VSS	F	VDD