



SD7017 / SD7018

2-state Encoder / Decoder

Features

- Built-in leading code and trailing code for high noise immunity.
- Maximum 14 bits transmission.
- LED indication during transmission.
- Low power consumption.
- Latch/Momentary data output available.
- SD7017 power supply range : 2.0V ~ 5.0V.
- SD7018 power supply range : 3.5V ~ 9.0V.
- 32768Hz/455KHz crystal oscillator for SD7017.
- 32768Hz crystal oscillator only for SD7018.

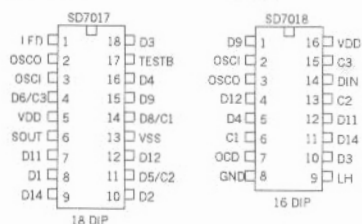
General Description

SD7017/SD7018 is a pair of encoder/decoder (transmitter/receiver) ICs, both fabricated with low power CMOS technology. The SD7017 is the encoder (transmitter) and the SD7018 is the decoder (receiver). The SD7017 accepts 14 bits of input data, upon a triggering signal, serially sends out 14 bits of data in

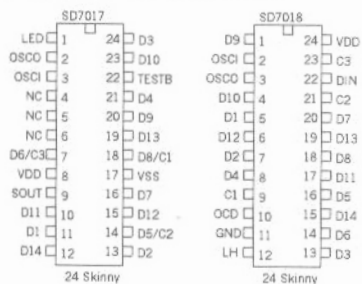
encoded format. The SD7018 receives data from the SD7017. A wide range of applications, such as home security, smoke and fire detection, remote door control, cordless telephone system, etc., can be found for this pair of ICs. Either infrared, ultrasonic or radio wave can be used as transmission medium.

Pin Configuration

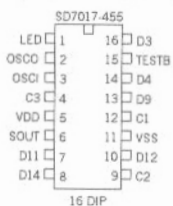
(A) Crystal Oscillator : 32768 Hz / 6 bit



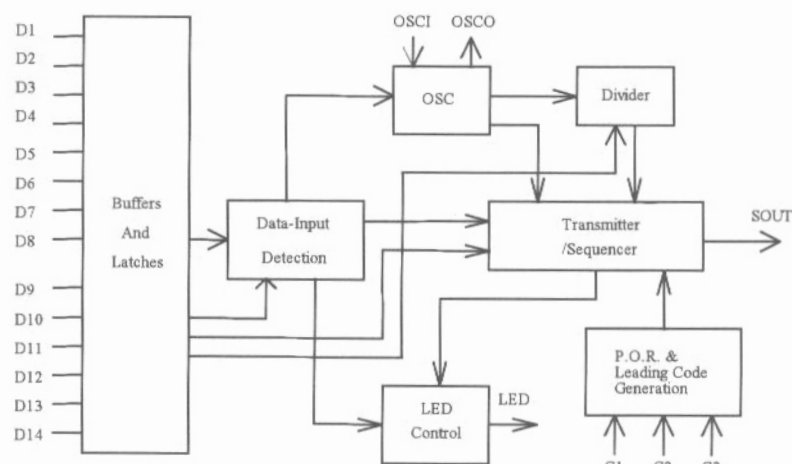
(B) Crystal Oscillator : 32768 Hz / 14 bit



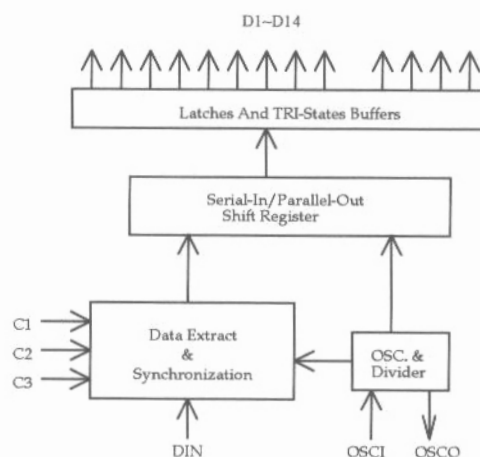
(C) Crystal Oscillator : 455 KHz / 6 bit



SD7017 Block Diagram



SD7018 Block Diagram



Pin Description
(1) SD7017

Pin No.	Symbol	Description
1	LED	LED indication output.
2	OSCO	Crystal oscillator output.
3	OSCI	Crystal oscillator input.
4~6	NC	No connection.
8	VDD	Positive power supply.
17	VSS	Negative power supply.
9	SOUT	Serial data output.
7, 10 ~ 16 18 ~ 21 23 ~ 24	D1 ~ D14	Transmitted data input.
22	TESTB	Test pin.

(2) SD7018

Pin No.	Symbol	Description
2	OSCI	Crystal oscillator input.
3	OSCO	Crystal oscillator output.
9, 21, 23	C1, C2, C3	Leading code setting.
10	OCD	(Momentary, NMOS open drain)/(Latch, PMOS open drain) selection. OCD = Low/Floating ; Momentary mode & NMOS open drain. OCD = High ; Latch mode & PMOS open drain.
24	VDD	Positive power supply.
11	GND	Negative power supply.
12	LH	For testing.
22	DIN	Serial data input pad.
1, 4 ~ 8 13 ~ 20	D1 ~ D14	14 bits parallel data output.

Absolute Maximum Ratings

(1) SD7017

RATING	VALUE
DC Supply Voltage	<6.5V
Input/Output Voltage	VSS-0.3V to VDD+ 0.3V
Operating Temperature	-10° C to 60° C
Storage Temperature	-25° C to 125° C

(2) SD7018

RATING	VALUE
DC Supply Voltage	< 9V
Input/Output Voltage	GND-0.5V to VDD + 0.5V
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) SD7017

(VDD = 3.3V, VSS = 0V, Ta = 25°C, unless otherwise specified)

Parameter	Symbol	Min.	Type.	Max.	Condition
Operating Voltage	Vdd	2.0V	3.3V	5.0V	
Standby Current	Istb	---	5 μ A	12 μ A	No load
Operating Current	Iop	---	200 μ A	3mA	No load
Crystal Oscillator Frequency	F _{req.}	---	*	---	

* : 32768Hz / 455KHz by option

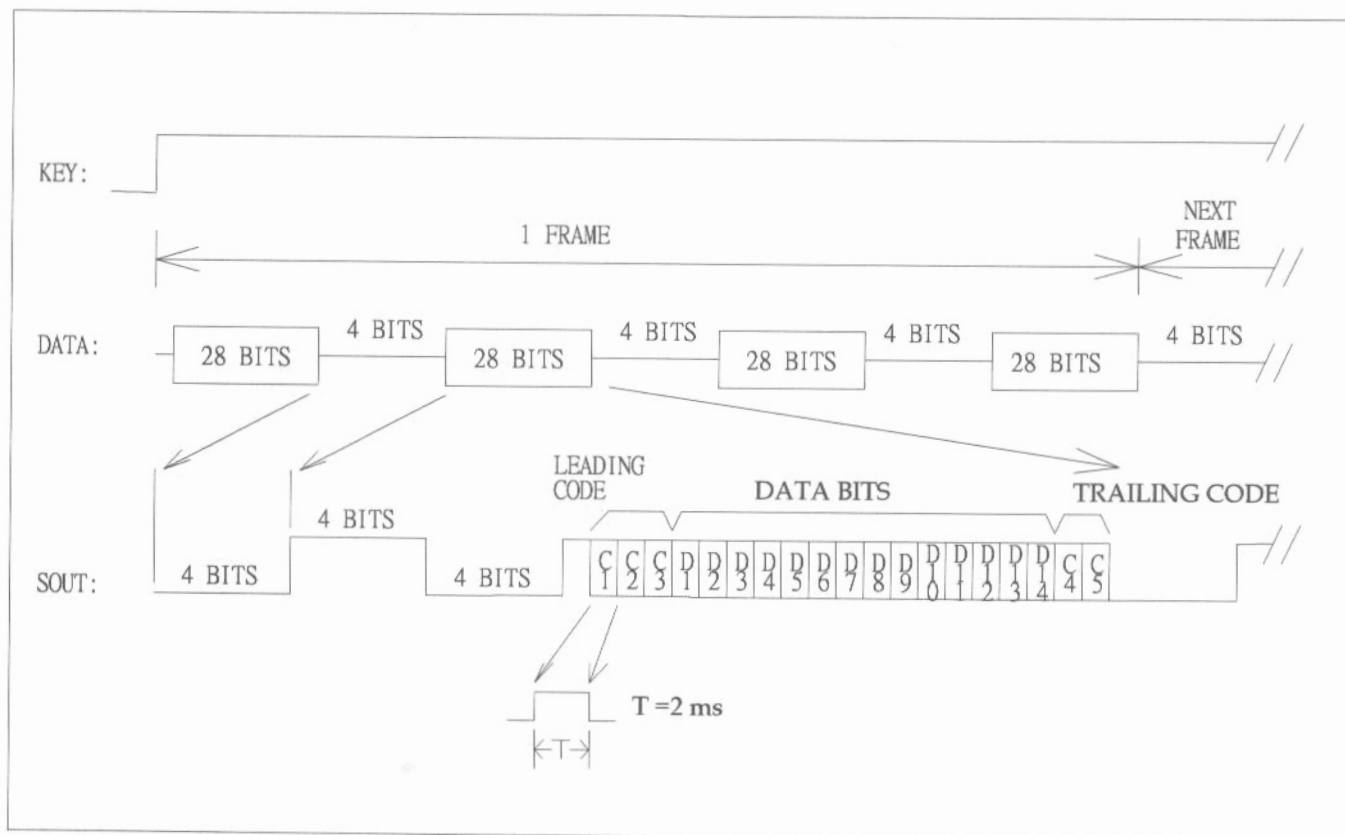
(2) SD7018

(VDD = 5V, GND = 0V, Ta = 25°C, unless otherwise specified)

Parameter	Symbol	Min.	Type.	Max.	Condition
Operating Voltage	Vdd	3.5V	5.0V	9.0V	
Standby Current	Istb	---	5 μ A	12 μ A	No load
Operating Current	Iop	---	1mA	3mA	No load
Crystal Oscillator Frequency	F _{req.}	---	32768 Hz	---	

Operation Function

. Transmitter Output Data Frame



. Mode Table

(1) SD7017

Momentary/Latch Mode

Pin	Power On State	Operation Mode
D1	Floating/ Low	Momentary
	High	Latch

Leading Code

Pin	Power On Mode	Leading Code
D8	Floating/Low	C1 = 0
	High	C1 = 1
D5	Floating/Low	C2 = 1
	High	C2 = 0
D6	Floating/Low	C3 = 0
	High	C3 = 1

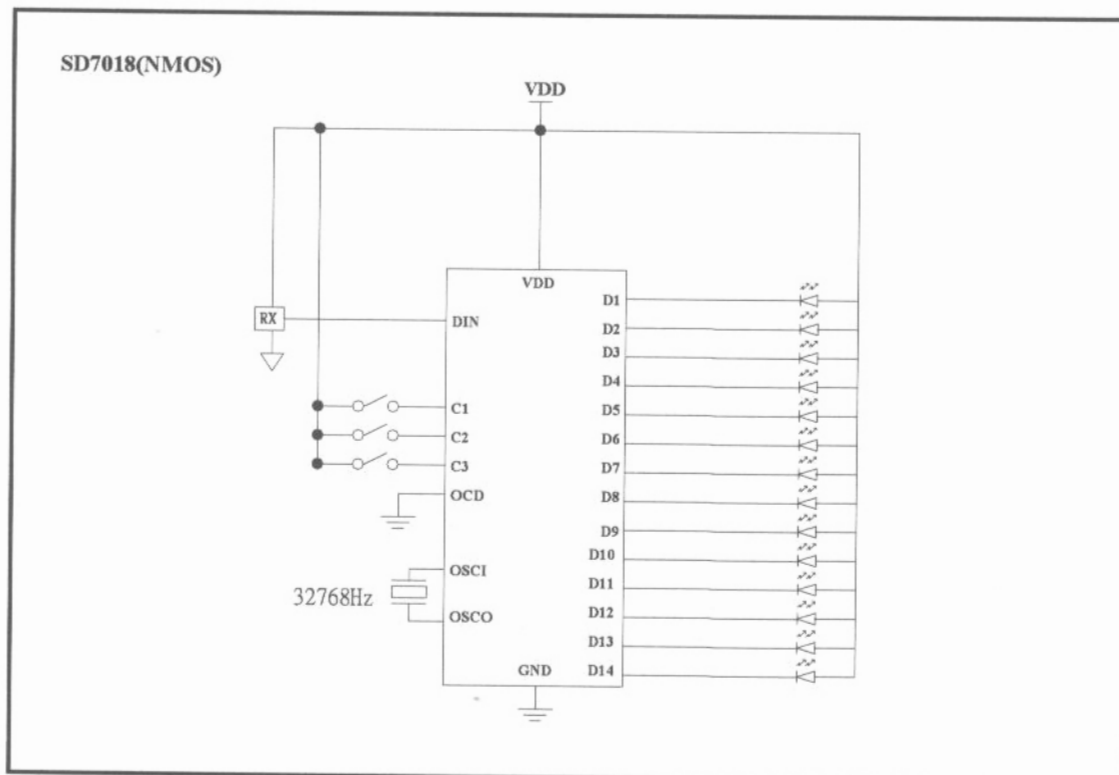
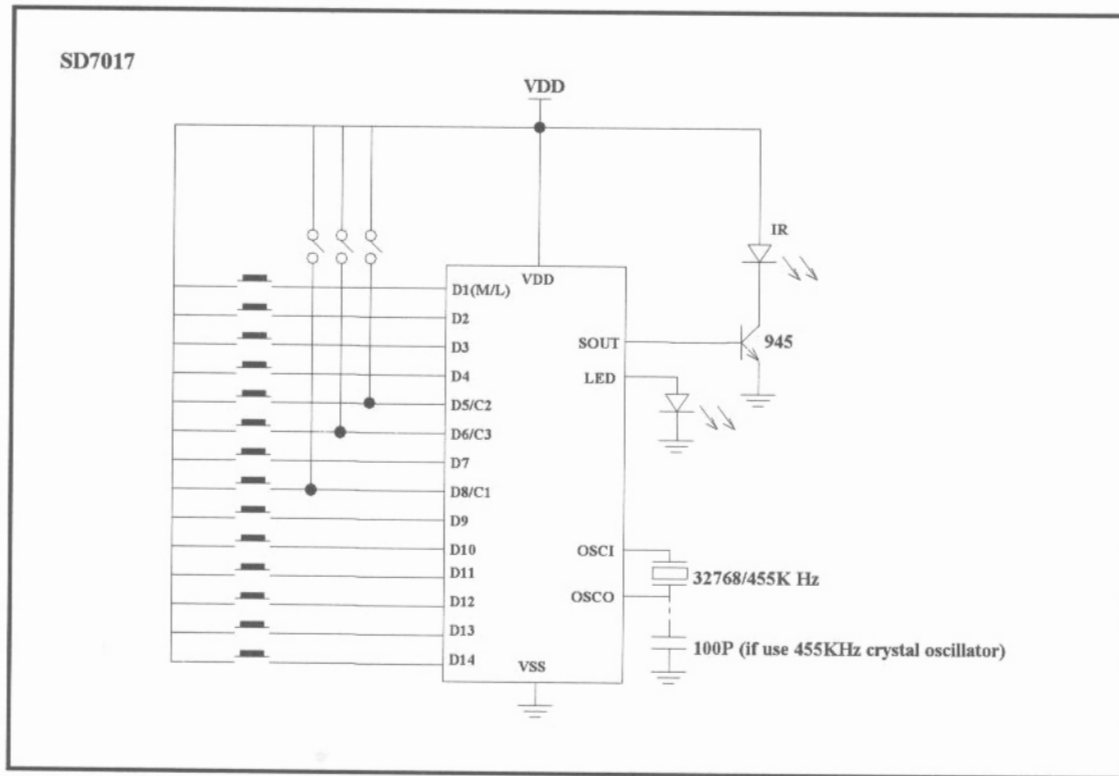
.Trailing Code

Metal mask option for trailing code (C4 & C5), default value for C4,C5 = 0,1.



Application Circuit

(1) Momentary Mode





Bonding Diagram

