# SD307
# Fan Controller

## Features

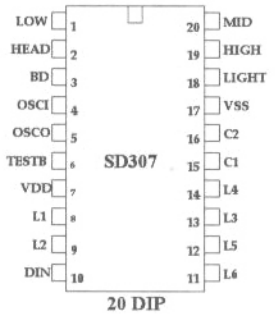
- Use 455 KHz crystal time base.
- Three wind modes : Constant wind, Rhythmical wind, Sleep wind.
- Three wind grades : Soft wind, Medium wind, Strong wind.
- Six types of timing function selection by bonding options.
- Key-in protection function.
- Power supply range : 4.0V ~5.5V.
- An independent lamp control.
- Low power consumption.
- Remote controllable with SD7017-455.

## General Description

SD307 is a new type of remote fan controller designed for wide applications. Three wind modes and three wind grades are available. In rhythmical wind mode, the wind speed is programmable. In sleep wind mode, the wind speed is automatically decreasing to help fall asleep. There are six types of fan controller provide more flexible timing selection for user (by bonding option BO1, BO2 and BO3).

| Type | Timer | BO1 | BO2 | BO3 |
|---|---|---|---|---|
| SD307-A | 0.5→1→2→4 , summable | F | F | VSS |
| SD307-B | 0.5→1→2→4 , non-summable | F | F | F |
| SD307-C | 1→2→4→8 , summable | F | VDD | VSS |
| SD307-D | 1→2→4→8 , non-summable | F | VDD | F |
| SD307-E | 1→2→4 , summable | VDD | F | VSS |
| SD307-F | 1→2→4 , non-summable | VDD | F | F |

## Pin Configuration



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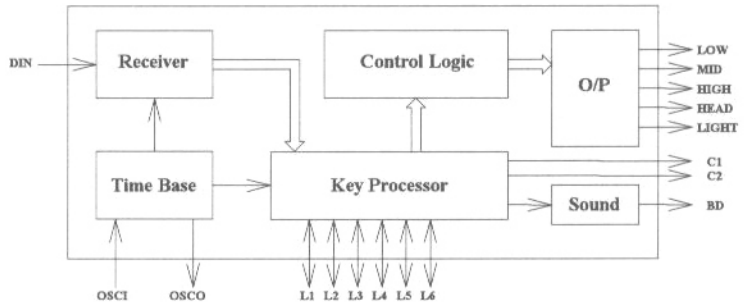
## SD 307 Block Diagram



**Pin Description**

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | LOW | Soft wind output (driving TRIAC). |
| 2 | HEAD | Swing head control output (driving TRIAC). |
| 3 | BD | Buzzer output. |
| 4 | OSCI | 455k Hz crystal oscillator input. |
| 5 | OSCO | 455k Hz crystal oscillator output. |
| 6 | TESTB | Test pin. |
| 7 | VDD | Positive power supply. |
| 8 | L1 | Wind speed selector and LED output. |
| 9 | L2 | Enable swing head and LED output. |
| 10 | DIN | Remote data input. |
| 11 | L6 | Enable lamp and LED output. |
| 12 | L5 | Chip disable and LED output. |
| 13 | L3 | Timer setting and LED output. |
| 14 | L4 | Wind mode selector and LED output. |
| 15 | C1 | LED pattern common pin 1. |
| 16 | C2 | LED pattern common pin 2. |
| 17 | VSS | Negative power supply. |
| 18 | LIGHT | Lamp control output (driving TRIAC). |
| 19 | HIGH | Strong wind output (driving TRIAC). |
| 20 | MID | Medium wind output (driving TRIAC). |

## Absolute Maximum Ratings

| RATING | VALUE |
|---|---|
| DC Supply Voltage | < 6.5V |
| Input/Output Voltage | VSS-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

( VDD = 4.5V, VSS = 0V, Ta = 25℃, unless otherwise specified)

| Parameter | Symbol | Min. | Type | Max. | Condition |
|---|---|---|---|---|---|
| Operating Voltage | Vdd | 4.0V | 4.5V | 6.0V | |
| Current On TRIAC Driver Pin | $I_{TRIAC}$ | --- | 10mA | --- | Vout = 3V |
| Current On LED Driver Pin | $I_{driving}$ | --- | 6mA | --- | Vout = 3V |
| Current On C1, C2 Pin | $I_{sinking}$ | --- | 33mA | --- | Vout = 1.5V |
| Current On BD Pin | $I_{driving}$ & $I_{sinking}$ | --- | 2mA | --- | Vout = 3V(Drv.)/1.5V(Sink) |
| Crystal Oscillator Frequency | $F_{req.}$ | --- | 455KHz | --- | |

## Operation Function

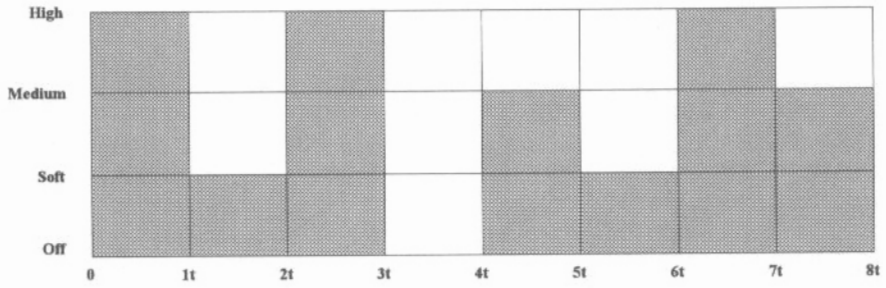
SD307 has six control inputs : Turn off, Wind speed, Wind mode, Timer setting, Head swing, Lightening. There are two ways to input these control signals: keypad of the control panel or infrared receiving module. When the control signals besides "Turn off" are received, the control system echoes an "Bi" voice. If any two keys or more are simultaneously pressed, neither of the corresponding functions will be activated. If any key is kept on depressing over 6 seconds, the fan controller will automatically echo four warning "Bi"s and power off.

The "Speed" starts the fan, then the speed is at "Soft wind". Pushing "Speed" key, the sequence of the wind speed is "Soft →Medium → Strong". The sequence of the "Mode" is "Constant → Rhythmical → Sleep". Detailed function graph is shown below.

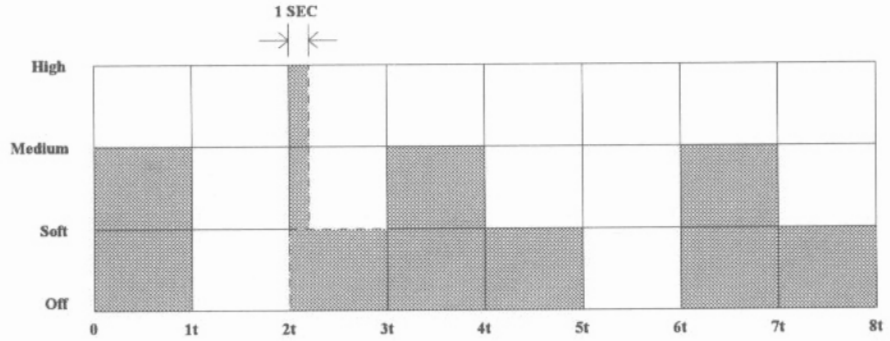
## Function Graph

- **Rhythmical Wind mode programmed with speed : ( t = 6sec )**

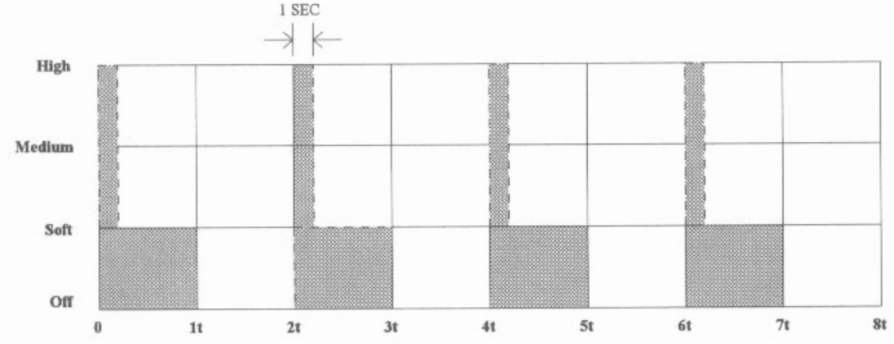
**Strong-Rhythmical Wind**




**Medium-Rhythmical Wind**

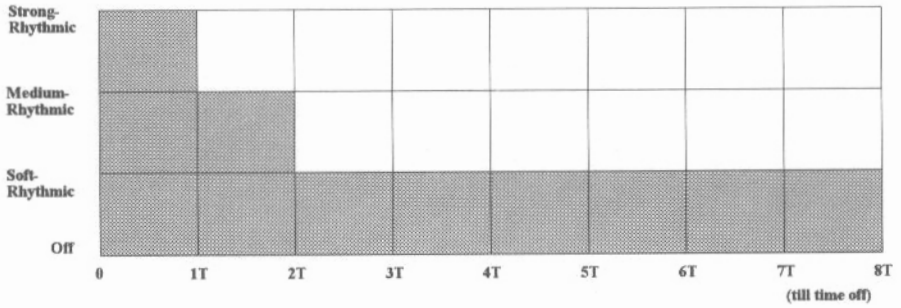



**Soft-Rhythmical Wind**

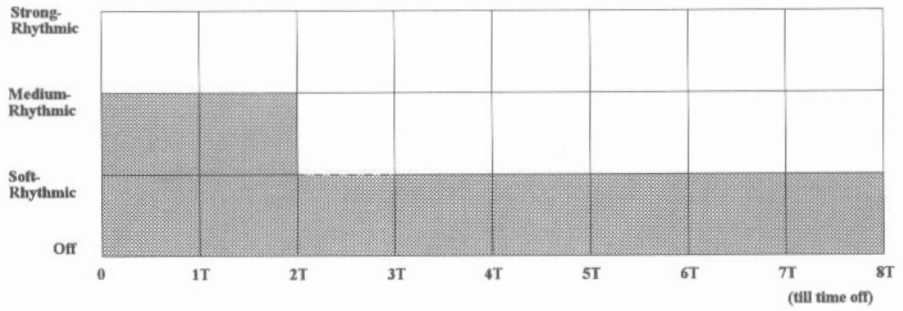


• **Sleep Wind: ( T = 0.5hr )**

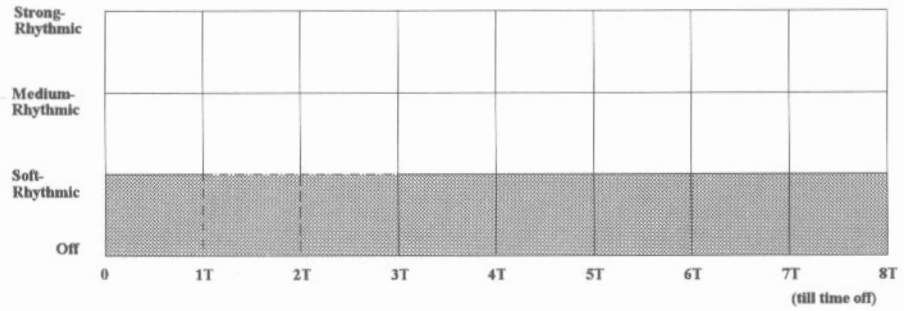
**Strong-Sleep Wind**




**Medium-Sleep Wind**




**Soft-Sleep Wind**



## Application Circuit

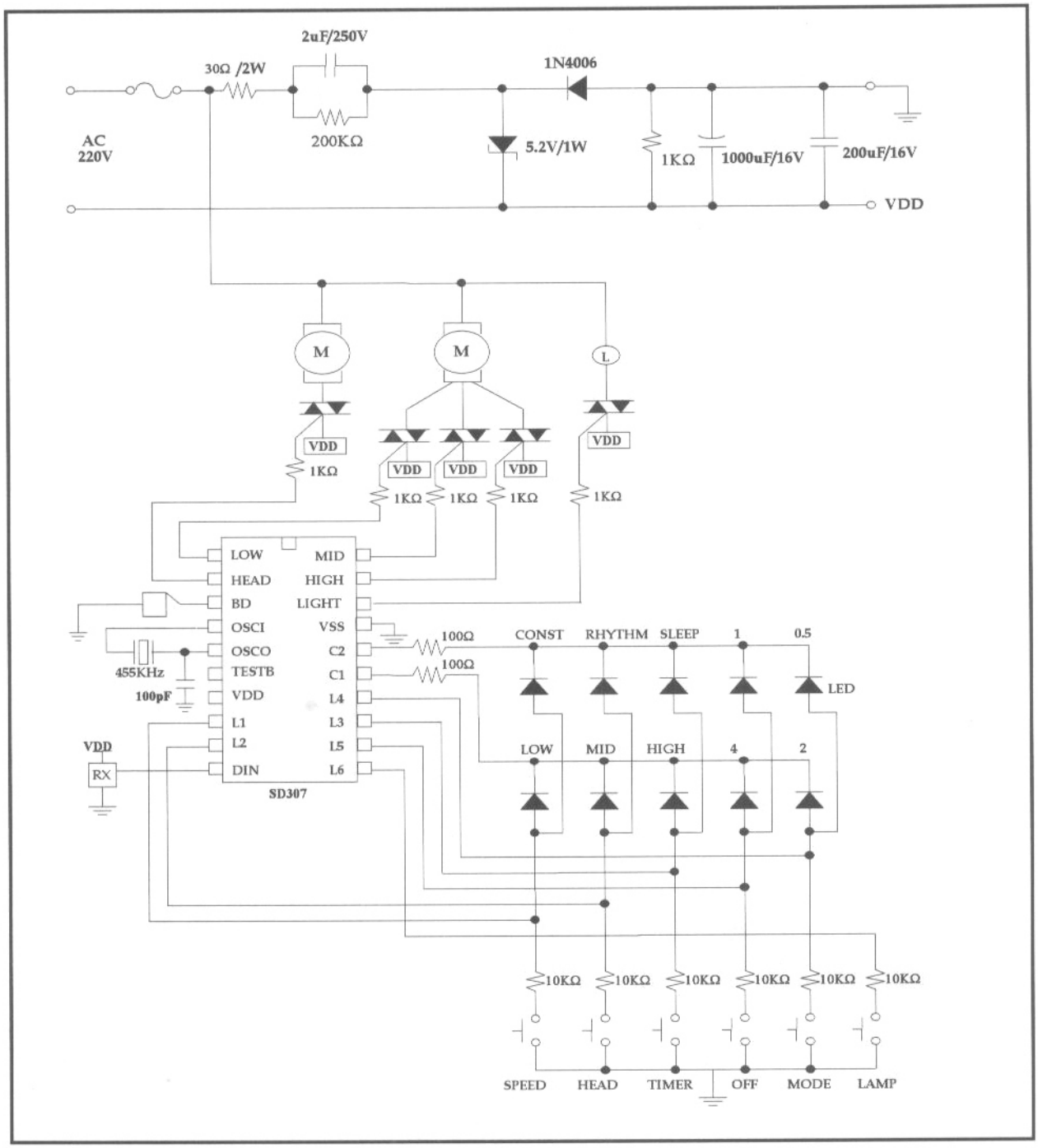



**Fig 1. SD307 Typical Application Circuit.**

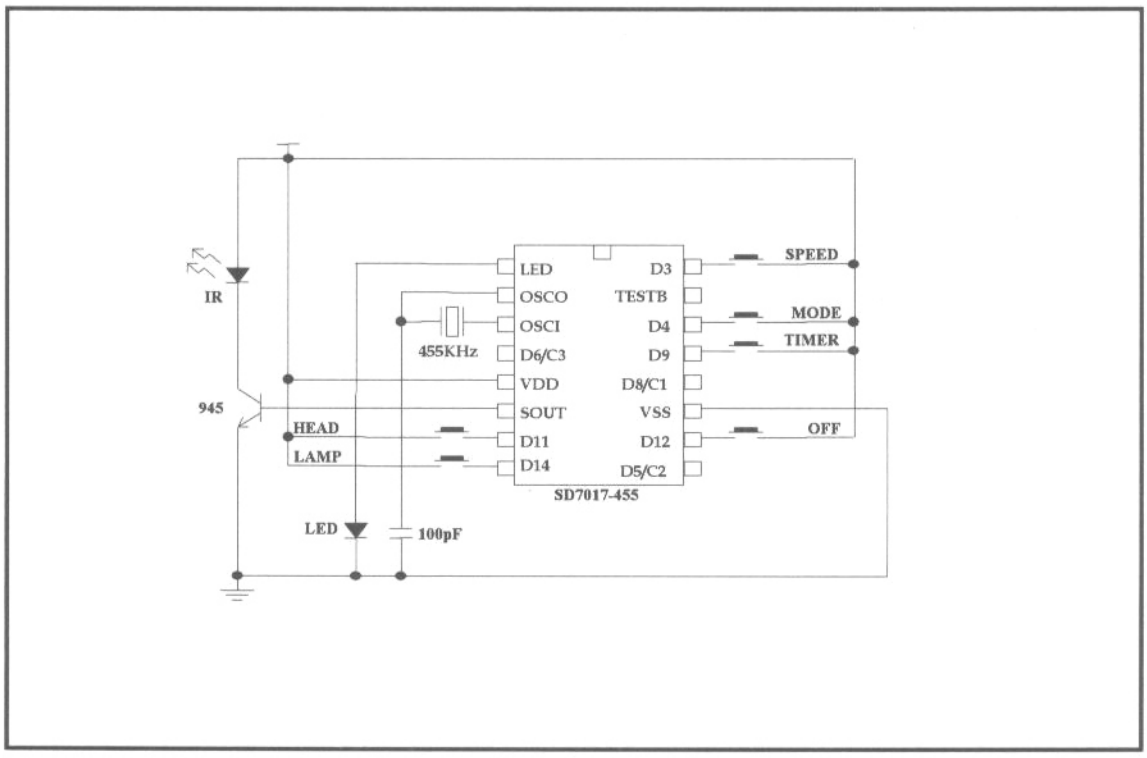
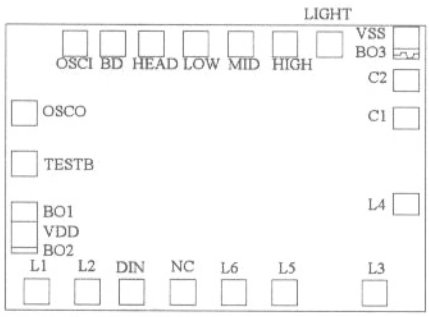



**Fig 2. Transmitter Application Circuit.**

## Bonding Diagram




| Pad No. | Pad Name | X | Y | Pad No. | Pad Name | X | Y |
|---|---|---|---|---|---|---|---|
| 1 | LOW | 901.8 | 1243.5 | 13 | NC | 843.0 | 55.0 |
| 2 | HEAD | 751.8 | 1243.5 | 14 | L6 | 1082.2 | 55.0 |
| 3 | BD | 534.2 | 1243.5 | 15 | L5 | 1322.0 | 55.0 |
| 4 | OSCI | 343.9 | 1243.5 | 16 | L3 | 1561.2 | 55.0 |
| 5 | OSCO | 55.0 | 919.1 | 17 | L4 | 1667.0 | 244.2 |
| 6 | TESTB | 55.0 | 701.5 | 18 | C1 | 1667.0 | 895.4 |
| 7 | BO1 | 55.0 | 420.8 | 19 | C2 | 1667.0 | 1045.4 |
| 8 | VDD | 55.0 | 346.3 | 20 | BO3 | 1667.0 | 1198.5 |
| 9 | BO2 | 55.0 | 271.8 | 21 | VSS | 1667.0 | 1243.5 |
| 10 | L1 | 169.8 | 55.0 | 22 | LIGHT | 1487.0 | 1243.5 |
| 11 | L2 | 409.6 | 55.0 | 23 | HIGH | 1269.4 | 1243.5 |
| 12 | DIN | 614.3 | 55.0 | 24 | MID | 1119.4 | 1243.5 |

Unit: u m

Note: Substrate is connected to VSS