FAN CONTROLLER

Features

- Wide operating voltage range: 3.5V - 5.5V
- Use 32768Hz quartz crystal as time base
- Three wind modes:
  - Constant-speed wind, Rhythmical wind & Sleep wind
- Three wind grades for each wind mode:
  - Soft, Medium & Strong wind
- Two types of selectable timing function
  - Summable, non-summable
- Special protections preventing key-in mistakes
- Power-ON Reset
- One key controlling “Fan Swinging” and “Lighting” functions
- Low power consumption
- Combined with RTS715-2, which functions an infrared remote controller for fan
- Supplying a select pin to enable or disable sleep mode

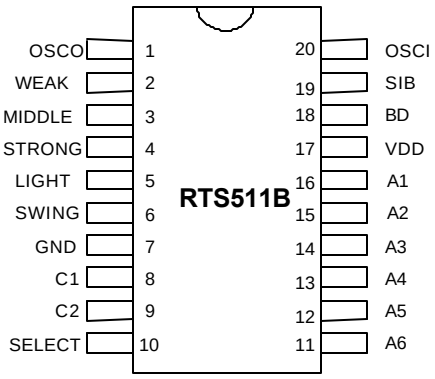
General Description

Similar to RTS510B, the fan controller RTS511B, embedded with a remote-control receiver, is a CMOS LSI designed for fan controller applications. It is a remote control system with three wind modes, three wind grades and six timing functions achieved by combining RTS511B with RTS715-2. In the Rhythmical wind mode, the wind speed is programmable. For example, it can be be soft→ medium→ strong→ soft etc., according to the program. In Sleep wind mode, the wind speed automatically decreases to help fall asleep. There are six types of fan controller as shown: (bonding option 1, option 2 and option 3)

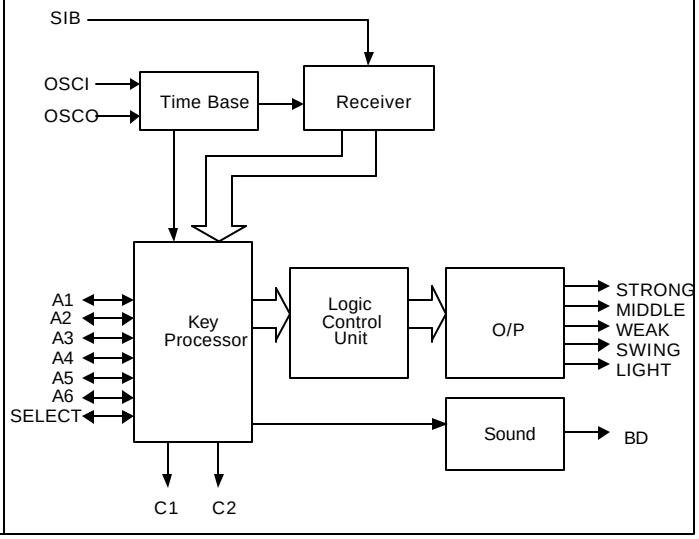
Function Type \	Timer	Bonding Option1	Bonding Option2	Bonding Option3	Light & Swing	Select	
						0	1
RTS511B-000	0.5→1→2→4 summable	F	F	GND	Light is Indepen-dent. Swing is depended on “A2”.	Enable sleep wind	Disable sleep wind
RTS511B-011	1→2→4→8 non-summable	F	VDD	F			
RTS511B-101	1→2→4 non-summable	VDD	F	F			

* Dependent: Only when fan controller is initiated by "A2" key, "Swing" is started by pressing "A5" key.
Independent: "Light" can be controlled by "A6" key, whether or not the fan controller is initiated by "A2" key.

Pin Assignment



Block Diagram



Absolute Maximum Ratings

DC Supply Voltage.....3.5V to 5.5V
Input/Output Voltage.....GND -0.2V to VDD + 0.2V
Operating temperature.....-10 C to 60 C
Storage Temperature.....-25 C to 125 C

Comments*

Never allow a stress to exceed the values listed under "Absolute Maximum Ratings", otherwise the device would suffer from a permanent damage. Nor is a stress at the listed values allowed to persist over a period, since an extended exposure to the absolute maximum rating condition may also affect the reliability of the device, if not causing a damage thereof.

Electrical Characteristics

(VDD=4.5V, GND=0V, T_A=25 C, unless otherwise specified.)

Parameter	Symbol	Min.	Typ.	Max.	Conditions
Operating Voltage	VDD	3.5V	4.5V	5.5V	
Current on TRIAC Sinking Pin	I_{TRIAC}	-	7mA	-	V_{OL} = 0.8V
Current on LED Driver Pin	$I_{DRIVING}$	-	9mA	-	V_{OH} = 2.0V
Current on C1, C2 pin	$I_{SINKING}$	-	13mA	-	V_{OL} = 0.8V
Current on BD pin	$I_{DRIVING}$ & $I_{SINKING}$	-	4mA	-	V_{OH} = 2.0V
Crystal Oscillator Frequency	$F_{REQ.}$	-	32768Hz	-	

Operation Function

There are two ways of sending control signals: from the keypad of the control panel and the infrared ray receiving module. There are six operations on these signal control: Turn off, Wind speed, Wind mode, Timer setting, Head swing, and Lighting. When control signals other than "Turn off" are received, the control system echos a "Beep" sound. If any two or more keys are simultaneously pressed, neither of the corresponding functions will be activated. If any key is pressed over 6 seconds, the fan controller will automatically echo four "Beep" sounds for warning and then power Off. The "Speed" function starts the fan, initiating the speed is at "Soft wind". When pushing the "Speed" key, the sequence of the wind speed follows “Soft→ Medium→ Strong…”. The sequence of the "Mode" is "Constant→ Rhythmical→ Sleep". In the later section, the detail "Speed" & "Mode" function graphs are shown.

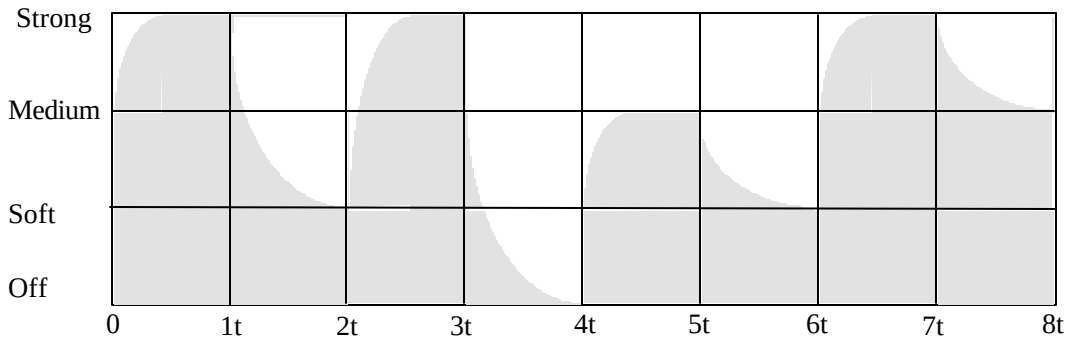
Note: Strong wind begins to move one second before soft wind starts.

Pin Description

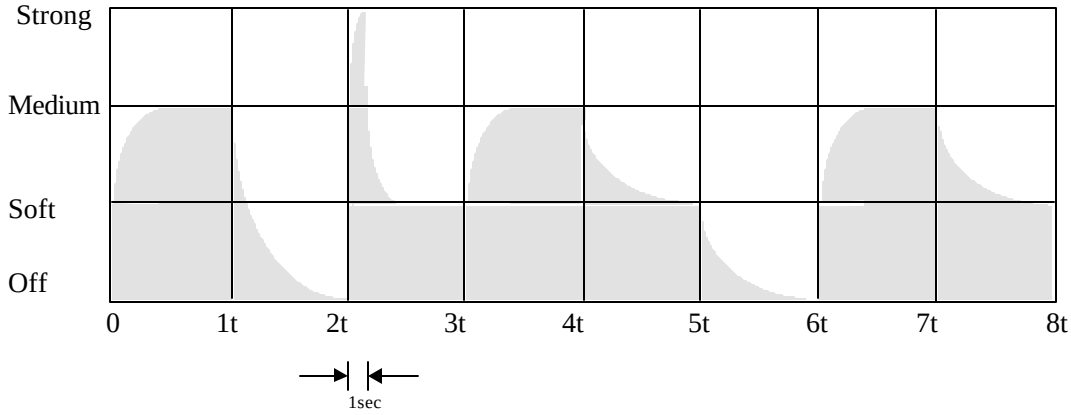
Pin No.	Designation	Description
1	OSCO	32768Hz crystal oscillator output pin
2	WEAK	Soft wind (driving TRIAC)
3	MIDDLE	Medium wind (driving TRIAC)
4	STORNG	Strong wind (driving TRIAC)
5	LIGHT	Lamp (driving TRIAC)
6	SWING	Swing head output (driving TRIAC)
7	GND	Negative power supply
8	C1	LED pattern common pin 1
9	C2	LED pattern common pin 2
10	SELECT	Pull low enable sleep wind mode, pull high disable sleep wind mode
11	A6	Enable lamp, toggle function (low active)
12	A5	Enable swing head, toggle function (low active) and LED output
13	A4	Time setting (low active) and LED output
14	A3	Wind mode selector (low active) and LED output
15	A2	Wind speed selector (low active) and LED output
16	A1	Low active, all function and LED output will be "OFF"
17	VDD	Positive power supply
18	BD	Sound output
19	SIB	Remote control signal input
20	OSCI	32768Hz crystal oscillator input pin

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

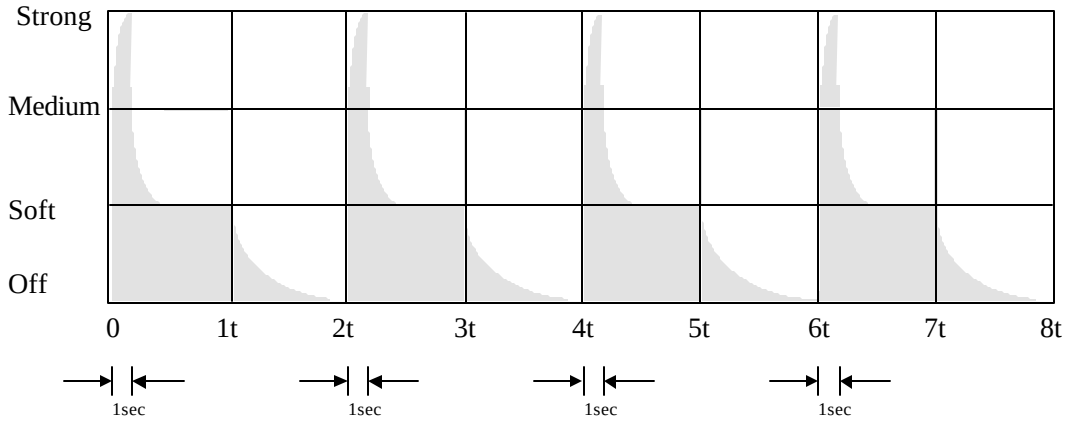
Strong-Rhythmical Wind



Medium-Rhythmical Wind

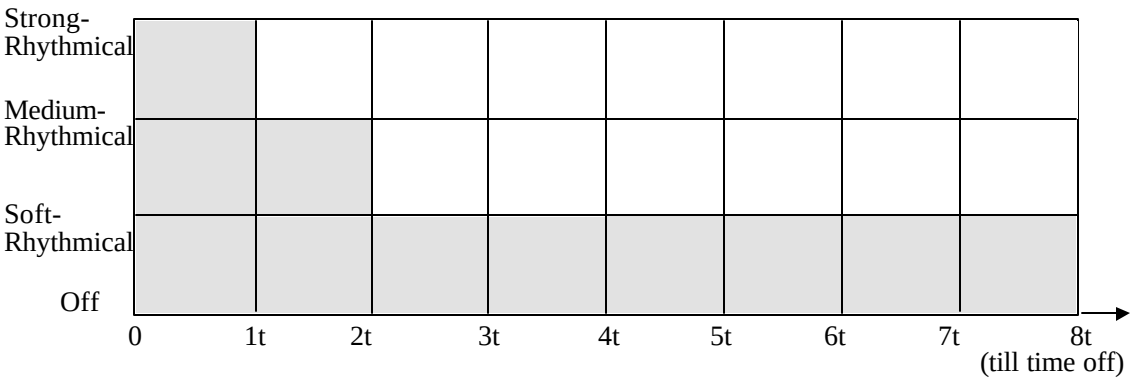


Soft-Rhythmical Wind

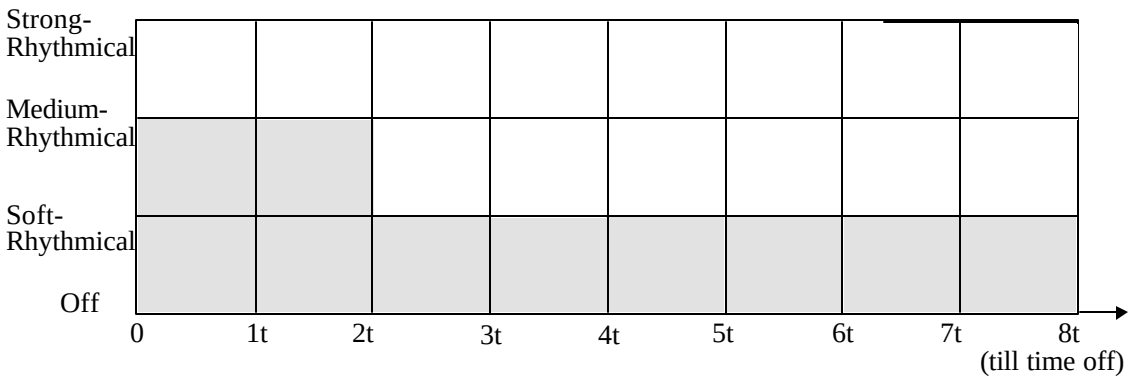


Sleep Mode Wind (T = 0.5hr)

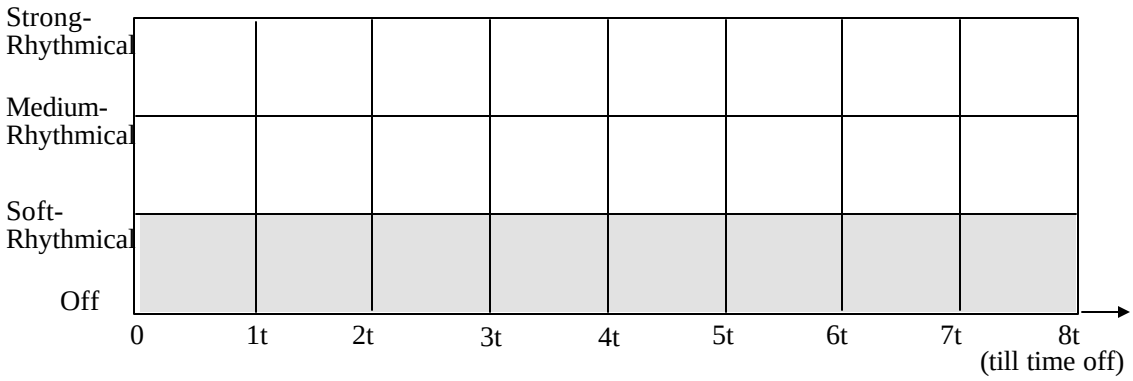
Strong-Sleep Wind



Medium-Sleep Wind

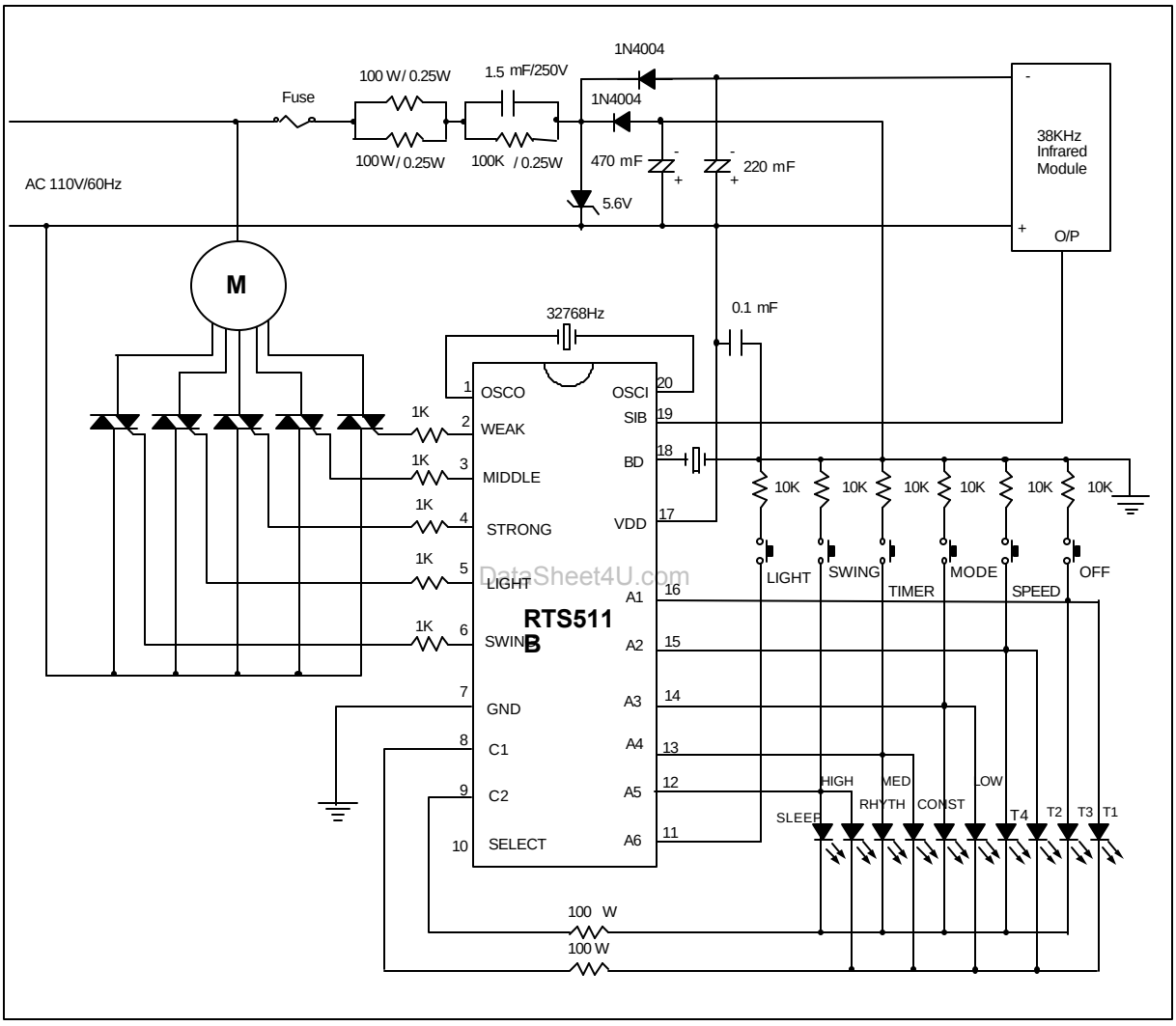


Soft-Sleep Wind

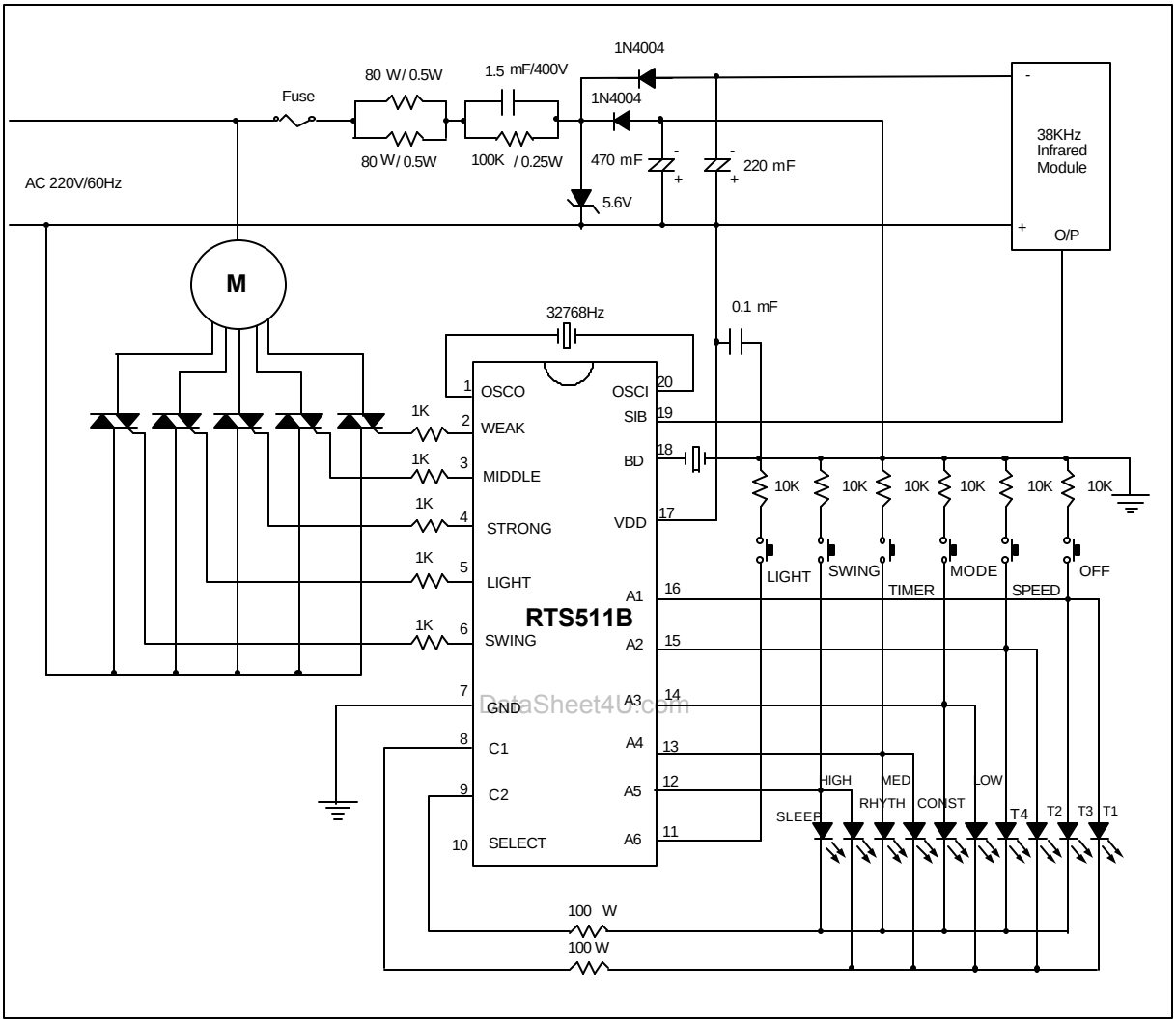


Application Circuit

1.



2.



M-Square Technologies Corporation

A Subsidiary of Realtek Group

HEAD QUARTER

Floor 4, No. 2, Industry E. RD. IX, Science-Based Industrial Park, Hsinchu, 300 Taiwan, R.O.C.
Tel: 886-3-6661028 Fax: 886-3-6661928

HONGKONG OFFICE

Room 1403, Charm Centre 700 Castle Peak Rd., Lai Chi Kok Kowloon, Hong Kong
Tel: 852-29593235
Fax:852-27425267

SHENZHEN OFFICE

Room 1508, Block A, Union Square, No.-5022 Caitian Rd..Futian,Shenzhen
Tel:6-755-2900672
Fax:86-755-2900681