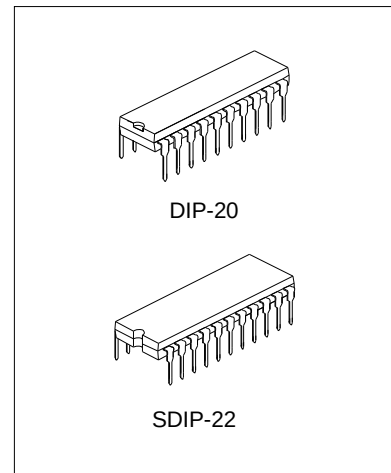


## FAN REMOTE CONTROL DECODER USED TOGETHER WITH SC5104

### DESCRIPTION

SC8207 is a high performance electronic fan controller LSI, Speed control, off-timer, nature wind, sleep mode are all built into a single chip. Light control, buzzer output, key control input, as well as remote control decoding circuitry are all provided to build a full function electronic fan with remote control capability having the highest performance with the least external components. Pin assignment and application circuit are optimized for easy PCB layout and cost saving for electronic fan application.

SC8207 adopted SDIP-22 or DIP-20 package.



### FEATURES

- \* Two groups swing function: level swing , cold-wind switch  
level swing , vertical swing
- \* Independent light controlling: extension “ L”
- \* Three operation modes: ordinary, nature and rhythm sleep.
- \* Three speed modes: strong, middle and low
- \* Memory start-up mode
- \* Middle wind start-up
- \* Buzzer indicator function operation
- \* Two bits consumer code
- \* Built-in 455kHz oscillator circuit
- \* Continued press key for 6 sec, send out “Bi-Bi”
- \* Cooperate with SC5104 coder can build a full function electronic
- \* "ON/OFF" key select: "ON/OFF" ——“K” version  
"ON/SPEED" —— other version
- \* Timer mode: A4: 0.5, 1, 2, 4 hours accumulated timer  
N3: 1, 2, 4 hours non-accumulated

### APPLICATIONS

- \* Fan remote controller
- \* Air cleaner
- \* Humidifier
- \* Heater

### ORDERING INFORMATION

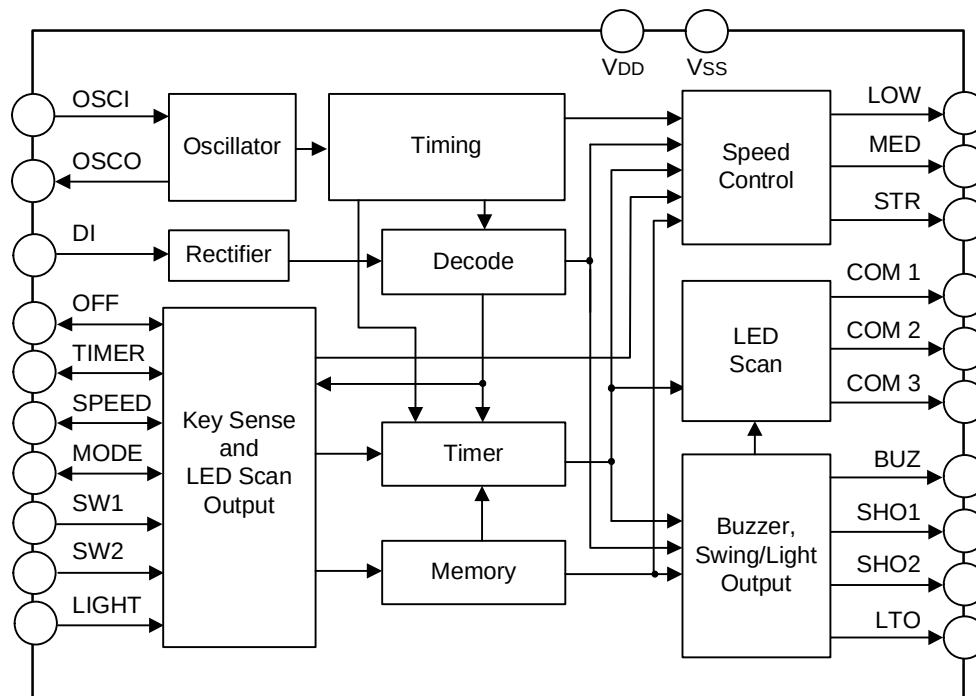
| Part        | Package | Accum-<br>ulated | Non-<br>accumulated | Light<br>control | Cold-wind<br>switch | Vertical<br>swing |
|-------------|---------|------------------|---------------------|------------------|---------------------|-------------------|
| SC8207N3    | DIP-20  | --               | √                   | --               | --                  | √                 |
| SC8207N3L   | SDIP-22 | --               | √                   | √                | --                  | √                 |
| SC8207A4K   | DIP-20  | √                | --                  | --               | --                  | √                 |
| SC8207A4KL  | SDIP-22 | √                | --                  | √                | --                  | √                 |
| SC8207A4KS  | DIP-20  | √                | --                  | --               | √                   | --                |
| SC8207A4KSL | SDIP-22 | √                | --                  | √                | √                   | --                |

**Note:** “A4” indicated have four time output (0.5, 1, 2, 4 hour) accumulated timer mode.

“N3” indicated have three time output (1, 2, 4 hour) non-accumulated timer mode.

“L” indicated have light output mode.

## BLOCK DIAGRAM



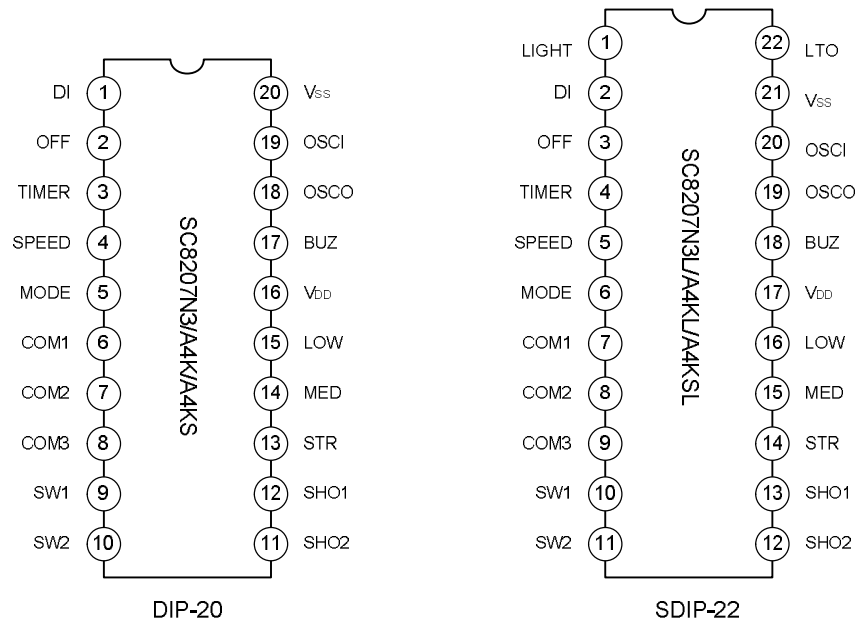
## ABSOLUTE MAXIMUM RATING (T<sub>amb</sub>=25°C)

| Characteristics       | Symbol           | Ratings                                       | Unit |
|-----------------------|------------------|-----------------------------------------------|------|
| Supply Voltage        | V <sub>DD</sub>  | -0.3~6                                        | V    |
| Input/Output Voltage  | V <sub>IN</sub>  | V <sub>SS</sub> -0.3V ~ V <sub>DD</sub> +0.3V | V    |
| Power Consumption     | P <sub>D</sub>   | 500                                           | mW   |
| Operating Temperature | T <sub>opr</sub> | -10 ~ +70                                     | °C   |
| Storage Temperature   | T <sub>stg</sub> | -40~+125                                      | °C   |

## DC ELECTRICAL CHARACTERISTICS (unless otherwise specified, T<sub>amb</sub>=25°C, V<sub>DD</sub>=5.0V)

| Characteristics                                | Symbol          | Test conditions                                            | Min.               | Typ. | Max.               | Unit |
|------------------------------------------------|-----------------|------------------------------------------------------------|--------------------|------|--------------------|------|
| Supply Voltage                                 | V <sub>DD</sub> | --                                                         | 3.0                | 5.0  | 6.0                | V    |
| Static Consumption Current                     | I <sub>SB</sub> | V <sub>DD</sub> -V <sub>SS</sub> =5V,<br>OSC stop, no load | --                 | --   | 500                | μA   |
| Input High Level Voltage                       | V <sub>IH</sub> | --                                                         | 0.7V <sub>DD</sub> |      | V <sub>DD</sub>    | V    |
| Input Low Level Voltage                        | V <sub>IL</sub> | --                                                         | 0                  | --   | 0.3V <sub>DD</sub> | V    |
| OFF, MODE, SPEED, TIMER<br>Scan Output Current | I <sub>OH</sub> | V <sub>DD</sub> =5.0V                                      | --                 | 10   | --                 | mA   |
| COM1~COM3 Scan Output<br>Sink Current          | I <sub>OL</sub> | V <sub>DD</sub> =5.0V, V <sub>O</sub> =0.7V                | --                 | 40   | --                 | mA   |
| Driver Output Current                          | I <sub>OL</sub> | V <sub>DD</sub> =5.0V, V <sub>O</sub> =0.7V                | --                 | 10   | --                 | mA   |
| Buzzer Output Current                          | I <sub>OH</sub> | V <sub>DD</sub> =5.0V, V <sub>O</sub> =4.3V                | --                 | 5    | --                 | mA   |

## PIN CONFIGURATION



## PIN DESCRIPTION

| DIP-20<br>pin no. | SDIP-22<br>pin no. | Symbol          | Description                                                             |
|-------------------|--------------------|-----------------|-------------------------------------------------------------------------|
| --                | 1                  | LIGHT           | Light control key input.                                                |
| 1                 | 2                  | DI              | Remote control sensor input.                                            |
| 2                 | 3                  | OFF             | OFF control key input, shared with LED scan output.                     |
| 3                 | 4                  | TIMER           | TIMER control key input and LED scan output.                            |
| 4                 | 5                  | SPEED           | SPEED key control input and LED scan output.                            |
| 5                 | 6                  | MODE            | MODE key control input and LED scan output.                             |
| 6                 | 7                  | COM1            | Consumer code C2 select and LED scan common port.                       |
| 7                 | 8                  | COM2            | Consumer code C1 select and LED scan common port.                       |
| 8                 | 9                  | COM3            | LED scan common port.                                                   |
| 9                 | 10                 | SW1             | LEVEL SWING key control and consumer code select diode connect port.    |
| 10                | 11                 | SW2             | COLD key control (SC8207A4KS) /VERTICAL SWING key control port(N3, A4K) |
| 11                | 12                 | SHO2            | Cold wind motor /vertical swing drive port                              |
| 12                | 13                 | SHO1            | Level swing output port                                                 |
| 13                | 14                 | STR             | Strong wind drive output                                                |
| 14                | 15                 | MED             | Middle wind drive output                                                |
| 15                | 16                 | LOW             | Low wind drive output                                                   |
| 16                | 17                 | V <sub>DD</sub> | Positive power                                                          |
| 17                | 18                 | BUZ             | Buzzer drive output                                                     |
| 18                | 19                 | OSCO            | 455kHz oscillator input/output port                                     |
| 19                | 20                 | OSCI            |                                                                         |
| 20                | 21                 | V <sub>SS</sub> | Negative power                                                          |
| --                | 22                 | LTO             | Light drive output                                                      |

## FUNCTION DESCRIPTIONS

SC8207 is an electronic fan control IC, it use electronic touch switch and timer replace the traditional switch and timer. SC8207 improved nature wind and sleep wind mode except hold the traditional fan functions, and improved two groups of swing control and light control function. SC8206 cooperate with SC5104 encode IC, implement the remote control of the fan.

### “OFF” key:

It used to shut down the power of motor, fan stop operating. And the control circuit resume static state, and stored the operate mode of power on. When started next time, it is activated into the operation mode stored in the operation memory (Timer and sleep wind mode will not be stored).

### “ON/SPEED” key:

It start fan if pressed when fan is off. It turn on the fan with middle wind for increase start moment. After three second, it resume low wind mode, or the operation mode stored in the operating memory.

This key set the operate mode when fan is on, if successive pressing of ON/SPEED key, it will operate as low wind, middle wind, strong wind, low wind, middle wind .....go along with cycle.

### “ON/OFF” key (extension K)

It start fan if pressed when fan is off. It turn on the fan with middle wind for increase start moment. After three second, it resume low wind mode, or the operation mode stored in the operating memory.

It turn off the power when fan is on, fan stopped, control circuit resume static state, and stored the operate mode into memory. When the fan turn on next time, it start in the operate mode in the memory (timer and sleep mode will not be stored).

### “SPEED” key (extension K)

SPEED key is used to turn on the fan change speed of the fan. When successive pressing of SPEED key, fan will operate as follows: low wind, middle wind, strong wind, low wind.....go along with cycle.

### “MODE” key:

It used to select the operating mode. If pressed successively when fan is on, it will operate as follows: normally wind, nature wind, sleep wind, normally, nature wind .....go along with cycle.

- Ordinary wind: the he wind speed is set by SPEED key and does not change as time passes.
- Nature wind: it is set in program, and operate with “SPEED” key, can produce strong nature wind, middle nature wind, low nature wind, simulate the really nature wind.
- Sleep wind: In sleep wind mode, the wind speed steps down automatically one level every interval, until it reaches low wind level.

Where is the rule of down:

- If fan set in strong wind mode at first, it operate in strong nature wind for half an hour, then switch into middle nature wind, after half an hour switch into low nature wind, until the preset time end or turn off fan.
- If fan set in middle wind mode at first, it operates in middle nature wind for half an hour, then switch into low nature wind, until the preset time end or turn off fan.
- If fan set in low nature wind at first, it operates in low nature wind, until the preset time end or turn off.

**“TIMER” key:**

This key used to set the preset off time.

Type mark with “A4” mean have four section time output (0.5, 1, 2, 4hour) accumulated.

Type mark with “N3” means have three section time output (1, 2, 4 hour) non-accumulated.

When fan is in the time mode, LED will indicate the remain time, means the fan will stop after the display time.

**“LEVEL SWING” key:**

If pressed when fan is in the operate mode, it can control the fan swing, it is invalid when fan stopped.

**“VERTICAL SWING” key:**

N3: If pressed when fan is in the operate mode, it can control the fan vertical swing, it is invalid when fan stopped.

A4: If pressed when fan is in the operate mode, it can control the fan vertical swing. If continue pressed, fan up to down swing. When release the key, swing stopped.

**“COLD WIND” key:**

If pressed when fan is in the operate mode, it can control the fan cold-wind switch, it is invalid when fan stopped.

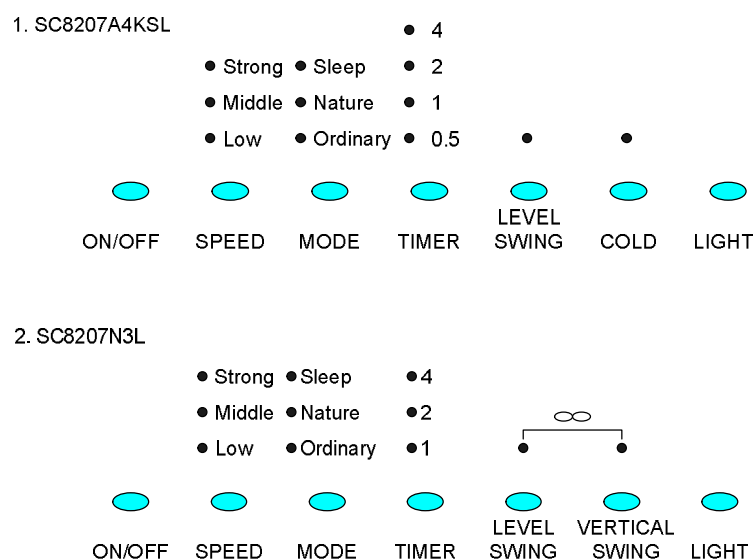
**“LIGHT” key:**

It is used to control light, is independent of the operate mode.

**Buzzer output:**

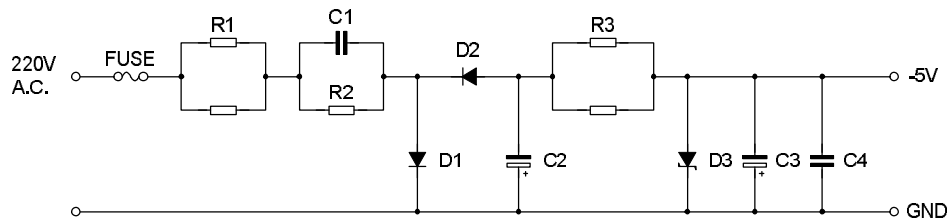
- Turn on send out “Bi-Bi”
- Turn off send out “Bi-”
- Other available operate (include key press and remote controller receive) send out “Bi”

**CONTROL PANEL**

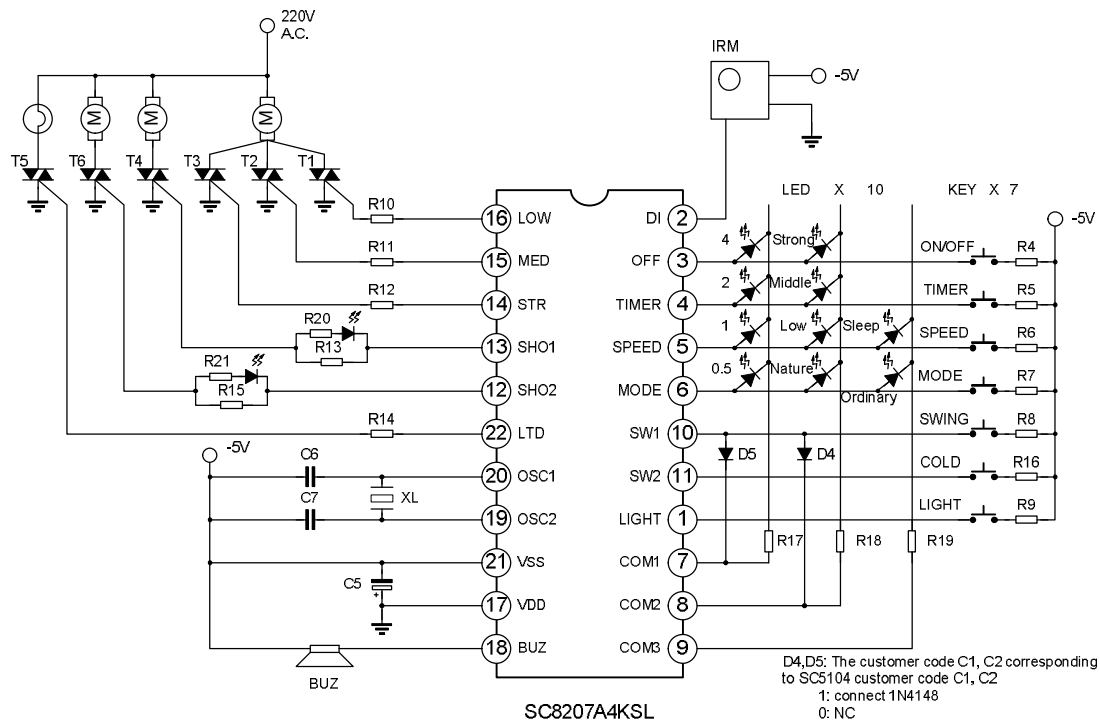


## TYPICAL APPLICATION CIRCUIT

### Power circuit



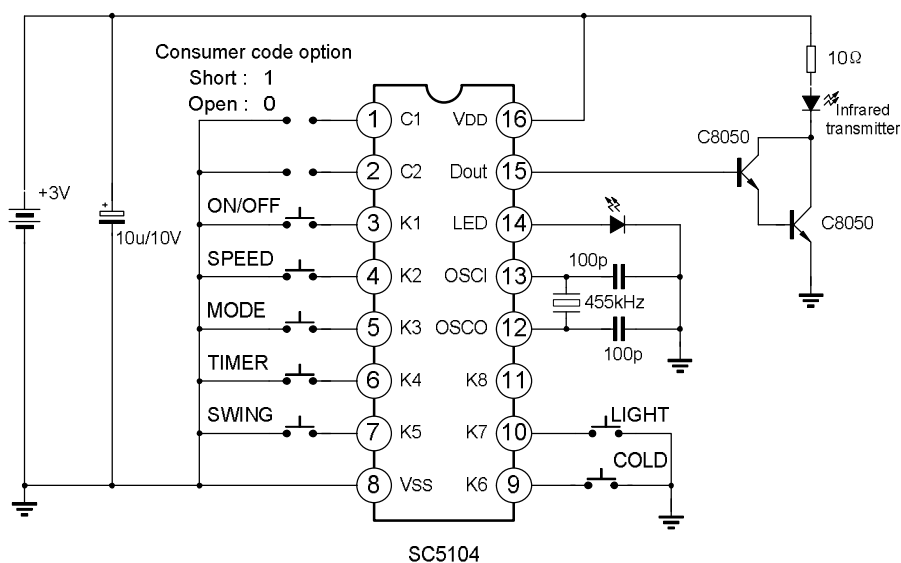
### Controller unit



## COMPONENTS LIST

| Symbol     | value         | Symbol | value             |
|------------|---------------|--------|-------------------|
| FUSE       | 1A, 250V      | C4     | 0.1μF,            |
| R1         | 2x180Ω/2W     | C5     | 47μF, 10V         |
| R2         | 200kΩ/0.5W    | C6, C7 | 100pF             |
| R3         | 2x47Ω/0.25W   | D1, D2 | 1N4007            |
| R4~R9, R16 | 10KΩ, 0.25W   | D3     | 5.1V, 1W          |
| R10~R15    | 470Ω, 0.25W   | XL     | 455KHz            |
| R17~R19    | 120Ω, 0.25W   | BUZ    | φ27               |
| R20, R21   | 560Ω, 0.25W   | LED    | φ3x12             |
| C1         | 1.2μF, 400VAC | D4, D5 | 1N4148            |
| C2         | 470μF, 16V    | KEY    | 6mmX7             |
| C3         | 470μF, 10V    | T1~T6  | Z00607MA, MAC97A6 |

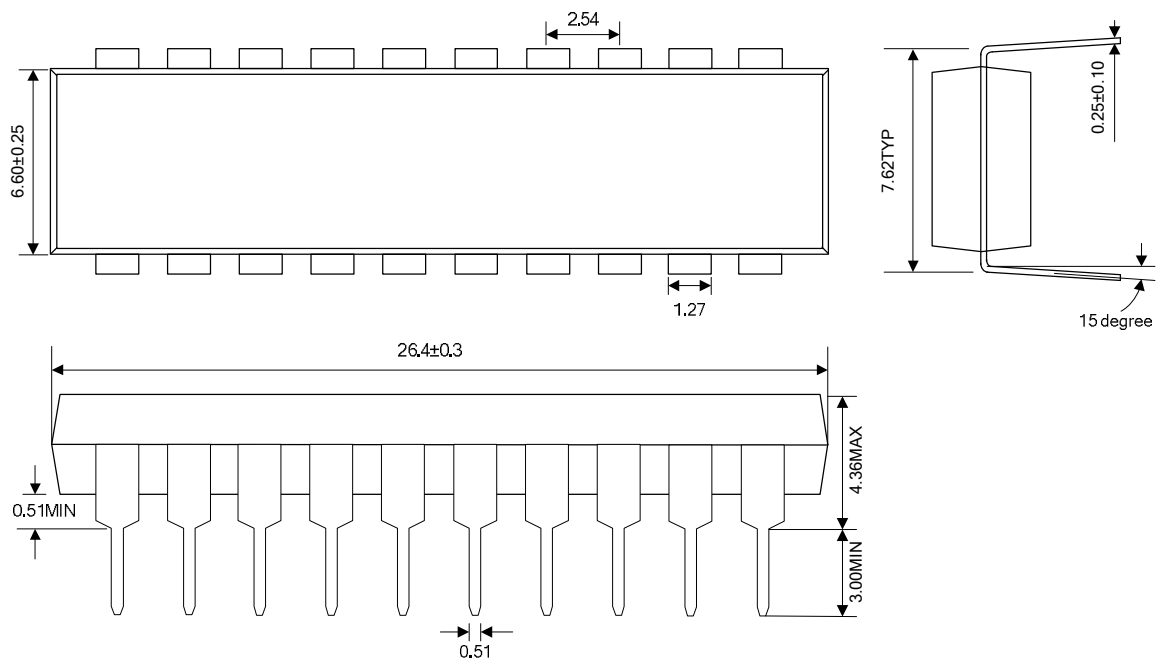
**SC5104 transmitter controller unit**



PACKAGE OUTLINE

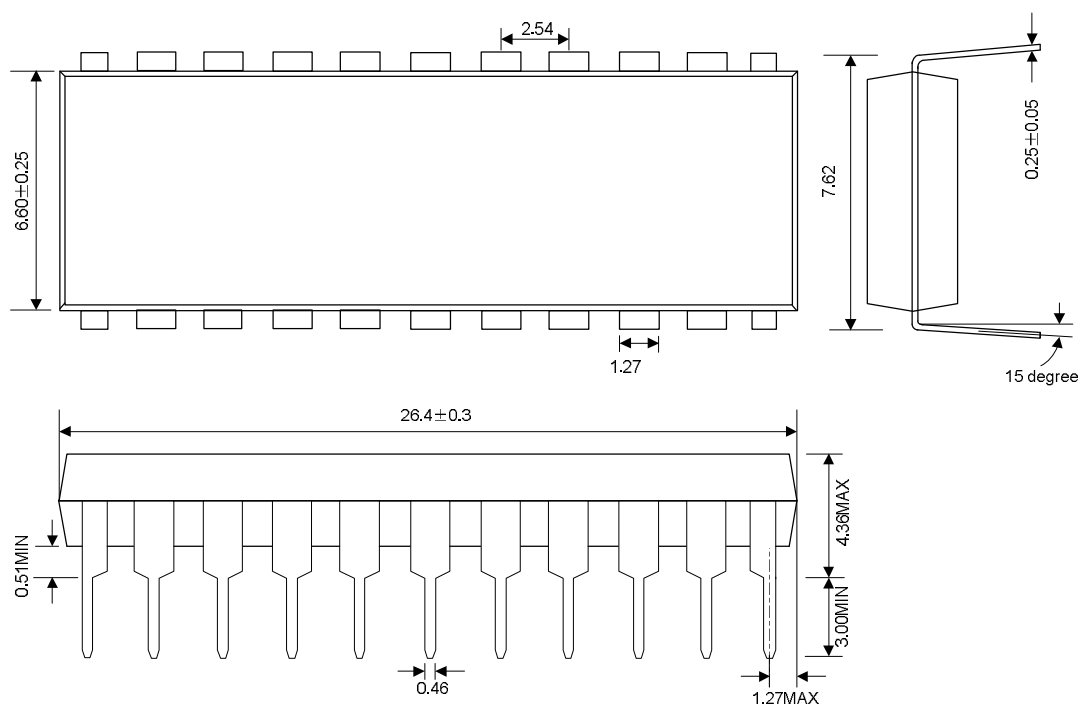
DIP-20-300-2.54

UNIT: mm



SDIP-22-300-2.54

UNIT: mm





**HANDLING MOS DEVICES:**

Electrostatic charges can exist in many things. All of our MOS devices are internally protected against electrostatic discharge but they can be damaged if the following precautions are not taken:

- Persons at a work bench should be earthed via a wrist strap.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed for dispatch in antistatic/conductive containers.