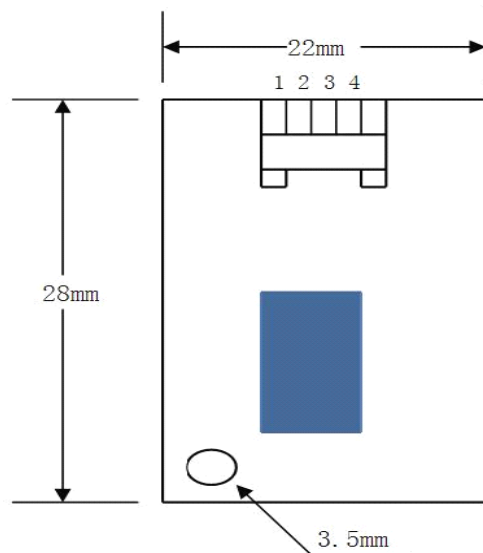


Single-row packaged with four pins, making the connection very convenient.

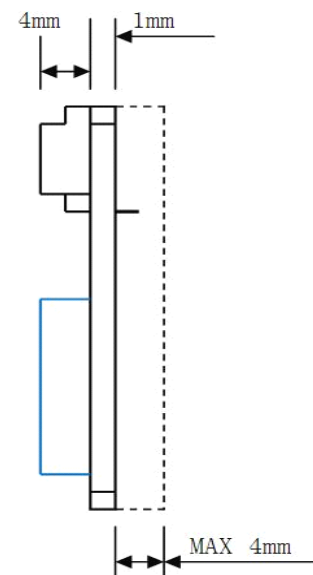
### 3. Technical Specification:

Model	AM2301	
Power supply	3.3-5V DC	
Output signal	digital signal via single-bus	
Sensing element	Polymer humidity capacitor	
Measuring range	humidity 0-100%RH;	temperature -40~80Celsius
Accuracy	humidity +3%RH(Max +5%RH);	temperature <+-1Celsius
Resolution or sensitivity	humidity 0.1%RH;	temperature 0.1Celsius
Repeatability	humidity +-1%RH;	temperature +-0.2Celsius
Humidity hysteresis	+-0.3%RH	
Long-term Stability	+-0.5%RH/year	
Sensing period	Average: 2s	
Interchangeability	fully interchangeable	
Dimensions	size 22*28*5mm	

### 4. Dimensions: (unit---mm)

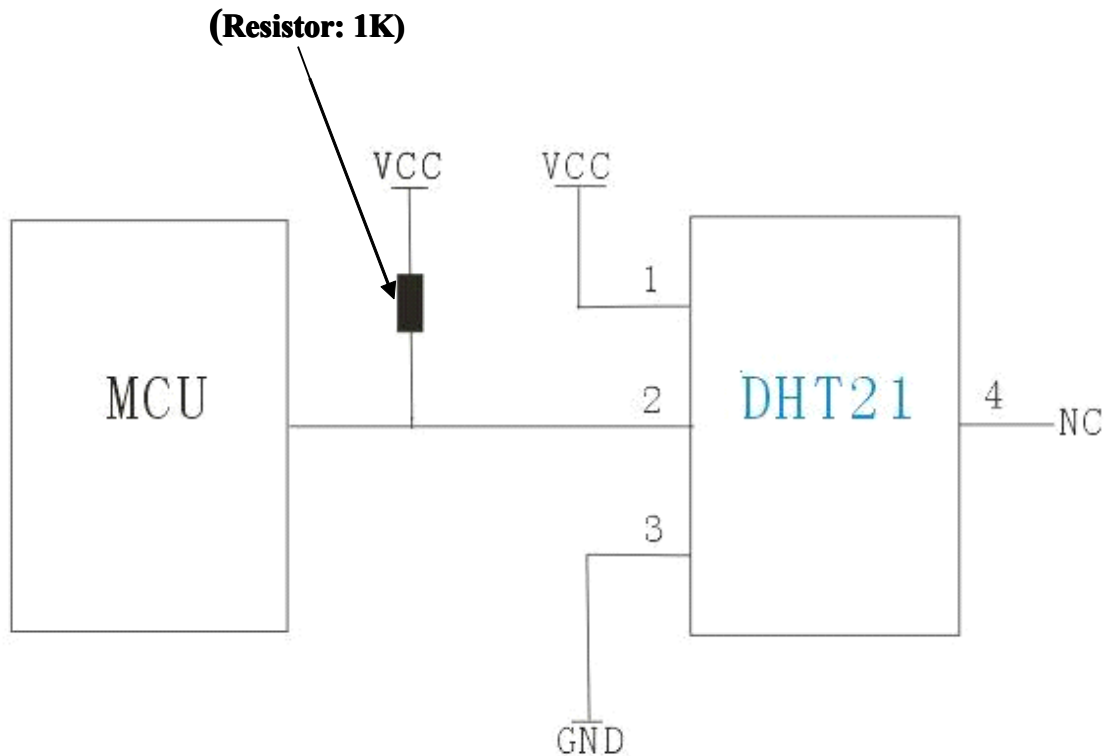


**Front view**



**Side elevation**

### 5. Electrical connection diagram:



### **DHT21 is another name for AM2301**

## **6. Operating specifications:**

### **(1) Power and Pins**

Power's voltage should be 3.3-5V DC. When power is supplied to sensor, don't send any instruction to the sensor within one second to pass unstable status. One capacitor valued 100nF can be added between VDD and GND for wave filtering.

### **(2) Communication and signal**

Single-bus data is used for communication between MCU and AM2301, it costs 5mS for single time communication.

Data is comprised of integral and decimal part, the following is the formula for data.

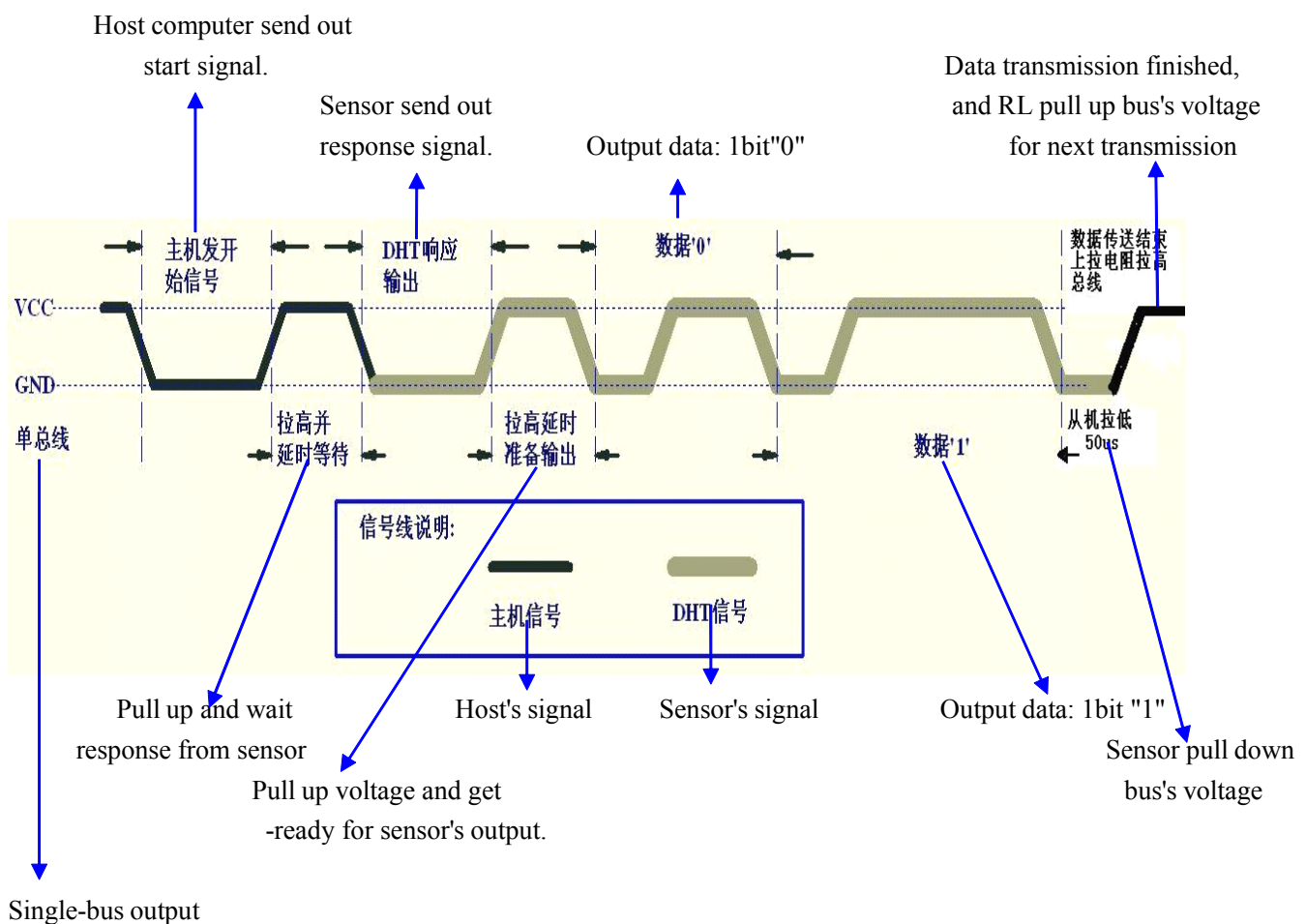
AM2301 send out higher data bit firstly!

DATA=8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data+8 bit check-sum

If the data transmission is right, check-sum should be the last 8 bit of "8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data".

When MCU send start signal, AM2301 change from low-power-consumption-mode to running-mode. When MCU finishes sending the start signal, AM2301 will send response signal of 40-bit data that reflect the relative humidity and temperature information to MCU. Without start signal from MCU, AM2301 will not give response signal to MCU. One start signal for one time's response data that reflect the relative humidity and temperature information from AM2301. AM2301 will change to low-power-consumption-mode when data collecting finish if it don't receive start signal from MCU again.

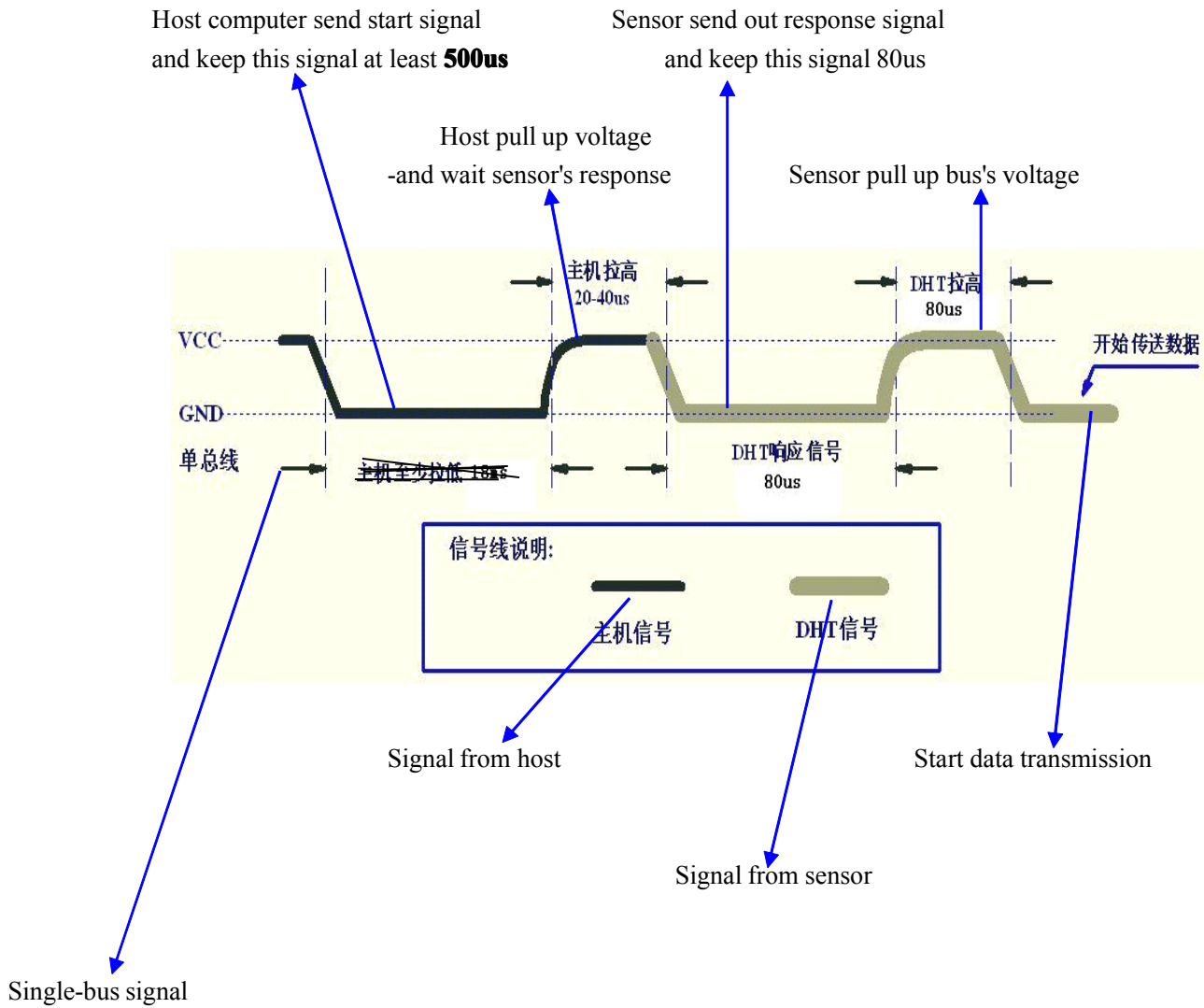
1) Check bellow picture for overall communication process:



2) Step 1: MCU send out start signal to AM2301

Data-bus's free status is high voltage level. When communication between MCU and AM2301 begin, program of MCU will transform data-bus's voltage level from high to low level and this process must beyond at least 18ms to ensure AM2301 could detect MCU's signal, then MCU will wait 20-40us for AM2301's response.

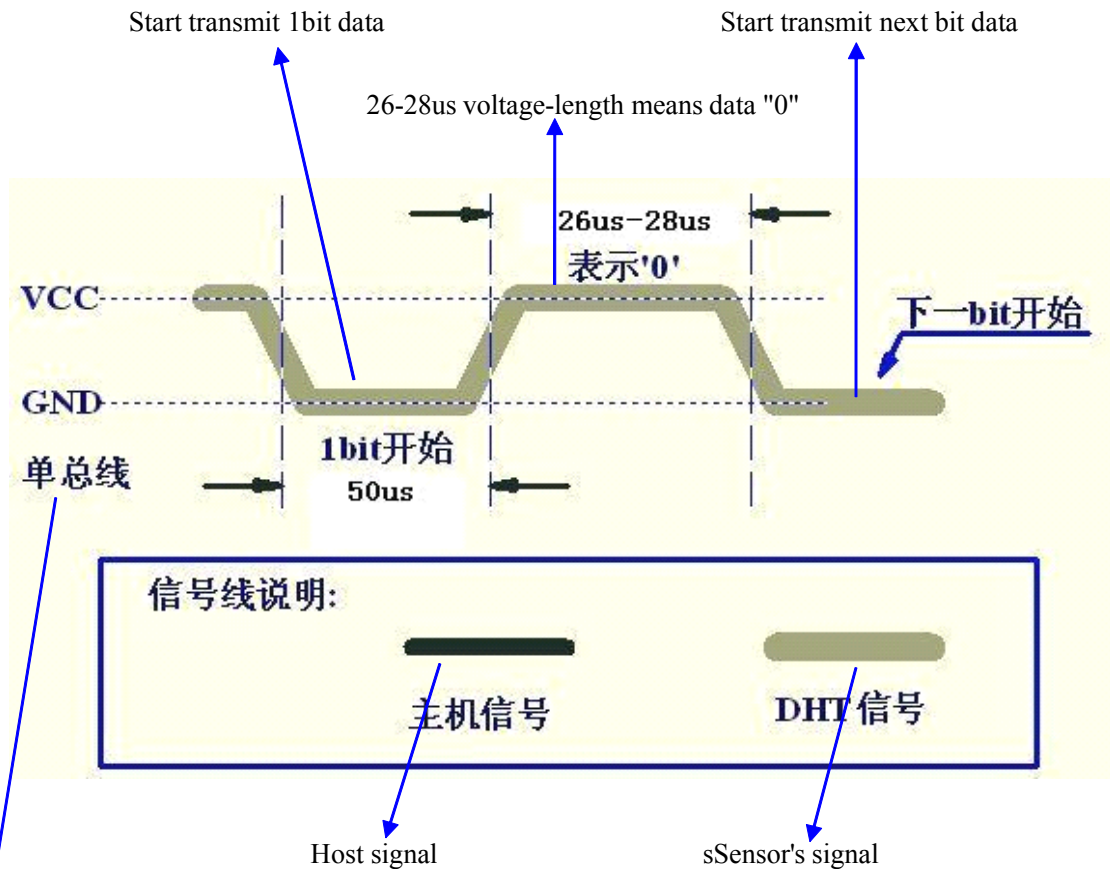
Check bellow picture for step 1:



Step 2: AM2301 send response signal to MCU

When AM2301 detect the start signal, AM2301 will send out low-voltage-level signal and this signal last 80us as response signal, then program of AM2301 transform data-bus's voltage level from low to high level and last 80us for AM2301's preparation to send data.

Check bellow picture for step 2:



Single-bus signal

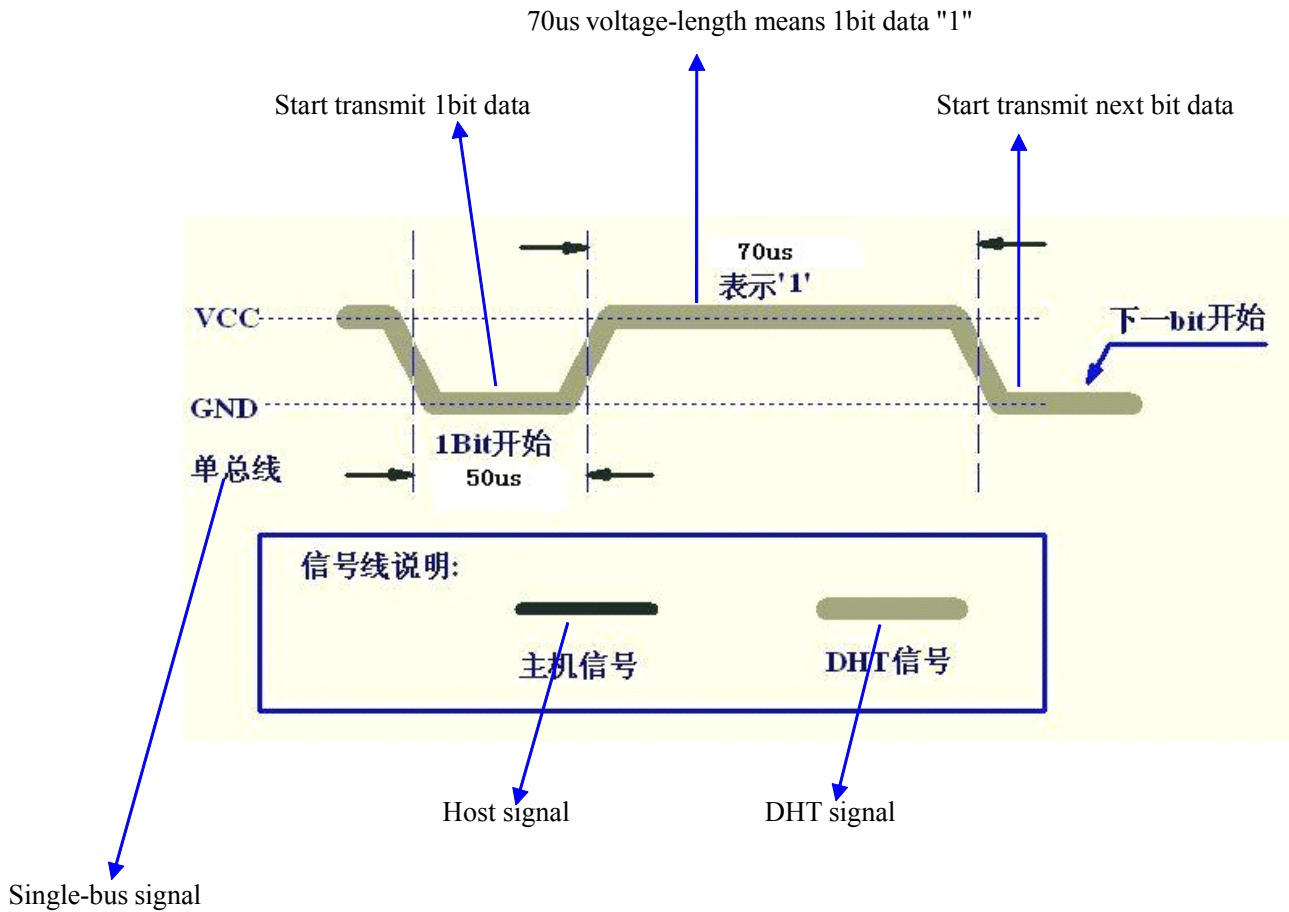
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Step 3: AM2301 send data to MCU

When AM2301 is sending data to MCU, every bit's transmission begin with low-voltage-level that last 50us, the following high-voltage-level signal's length decide the bit is "1" or "0".

Check bellow picture for step 3:

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If signal from AM2301 is always high-voltage-level, it means AM2301 is not working properly, please check the electrical connection status.

## 7. Electrical Characteristics:

Item	Condition	Min	Typical	Max	Unit
Power supply	DC	3.3	5	5.5	V
Current supply	Measuring	1.3	1.5	2.1	mA
	Average	0.5	0.8	1.1	mA
Collecting period	Second	1.7		2	Second

\*Collecting period should be : >1.7 second.

## 8. Attentions of application:

### (1) Operating and storage conditions

We don't recommend the applying RH-range beyond the range stated in this specification. The DHT11 sensor can recover after working in non-normal operating condition to calibrated status, but will accelerate sensors'