

承认书

Specification For Approval

客 户

Customer: _____

客户料号:

CUST PN:

产品名称:

Product Name: Ultrasonic Sensor

产品型号

Part No. : JYAT-T/R14-40-023D

产品规格

产品编号:

Descriptions: Φ14mm/40Khz/1800pF

Serial No. 14400500D

样品数量:

日期

Samples Qty: _____

Date: Sep.14,2023

Ultrasonic Sensor Specs List

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客户批准 Customer Approval	承认签字 (Approval signature)	承认盖章 (Approval Stamp)

Marks: 规格书编号 (File No.): **JYEG-SPA003062**

Please send back to us with your signature and stamp on it when it is approved.

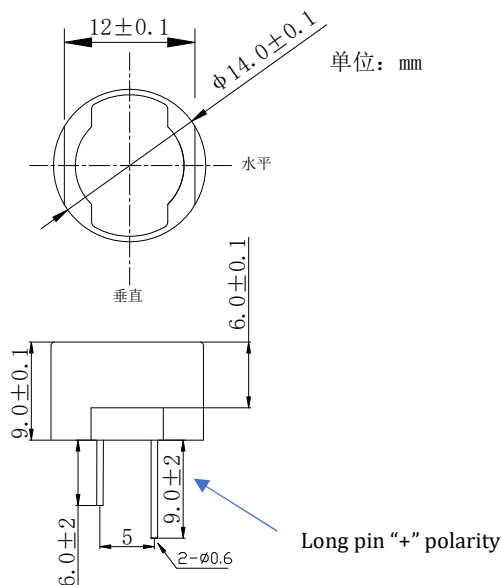
Ultrasonic Sensor Specifications

1. 规格型号(Part No.): JYAT-T/R14-40-023D

2. 基本性能参数(Electronic Performance)

Resonant Frequency (Khz)	40±1.0
Capacitance(pF)	1800±15% (At 25°C 1Khz)
Sensitivity(mv)	190~350 (AST- Test Board,Distance:1.0m, Square PVC board:250X200mm)
Decay time (ms)	≤1.3 (No including the transmitted wave)
Directivity(deg)	Horizontal Directivity:120±15°
	Vertical Directivity:70±15°
Operation Mode	T and R in single one
Allowable Max Input Voltage (Vp-p)	150(Working Fr:40Khz, Pulse width 0.5ms, Interval 20ms)
Operating Temp. (°C)	-40~+80
Storage Temp. (°C)	-40~+85
Continuous operation without failure time	≥5000h
Weight(g)	3.0±0.6
Priming Paint Requirements	Color: Matte Black

3. 外观及尺寸(Appearance and Dimensions)



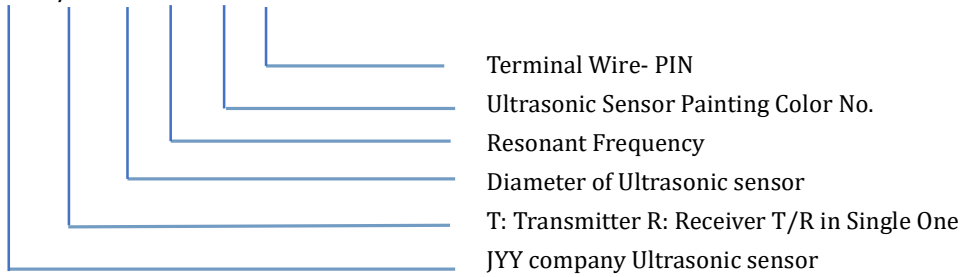
4. 环境试验(Environmental Experiments)

No.	Item	Test Conditions	Standard
1	High Temp Storage	Place sensor in the temp of 85±3°C for 1000hours	Place sensors in the normal room temp for 4Hours after experiment, then test and compare the test data with the original data, the sensitivity change is not more than 30%. Decay time ≤2.2ms.
2	Low Temp Storage	Place sensor in the temp of -40°C±3°C for 1000hours	
3	Storage in High temp and high humidity	Place sensor in +85°C and R.H 85±5% for 1000Hours	
4	Thermal shock	Resistance of 3.9KΩ is connected with sensor in parallel, and place it -40±3°C for 0.5hour and increase to 85±3°C in 5 mins, keep it in this status in 0.5hours, this cycle repeats 500 times (Temp conversion is finished in 5mins)	Place sensors in the normal room temp for 24hours after experiments, then test and compare the test data with the original data, the sensitivity change is not more than 30%. Decay time ≤2.2ms
5	Shocking experiments	Vibration Fr: 10—55HZ, Amplitude: 1.5mm Sweep rate:1oct/min X/Y/Z, 3hrs in each direction	Place sensors in the normal room temp for 4hours after experiments, then test and compare the test data with the original data, the sensitivity change is not more than 30%. Decay time ≤2.2ms
6	Single dropping experiments	Drop the sensor free-falling form 100±10CM to the wood-board which thickness is 50mm, the cycle is 15times	After experiments, test and compare the test data with the original data, the sensitivity change is not more than 30%. Decay time ≤2.2ms
7	Pin-End strength test	Apply a pulling force 9.8N between the sensor and its PIN in 30secs.	The PIN is not off, the sensor can work normally and the PIN undamaged.
8	IP Level	Place the sensor under the water of 15cm for 24hours	Take out of sensor from the water and assemble it into the mother board to test the distance. The sensor can work normally
9	High/Low Temp Special feature experiments	Place the sensor under the temp of -40°C for 2hours, then increase the temp to 25°C for 2hours, continue to increase the temp to 85°C for 2hurs	After experiment of each temp spot, test immediately in the normal room temp and compare the test data with the original data, the sensitivity change is not more than 30%. The decay time should be not more than 2.5ms within three temps.
10	Aging experiments (power on)	Working in the normal room temp, Fr: 40Khz, Voltage: 150Vp-p Pulse Number: 20, interval: 100ms continuous working for 24hours	After experiments, place them in the normal room temp for 4hours and then test them, the sensitivity and the decay time are within the normal limits marked on the spec, sensor can work normally.

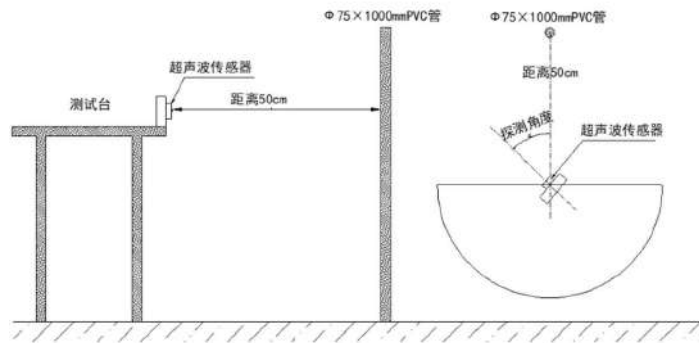
Marks: every experiment is separate one, sample qty is not less than 5pcs, Normal Room Condition : T:25+/-3°C, H:45~65%R.H.

5. 产品命名方法(Name method):

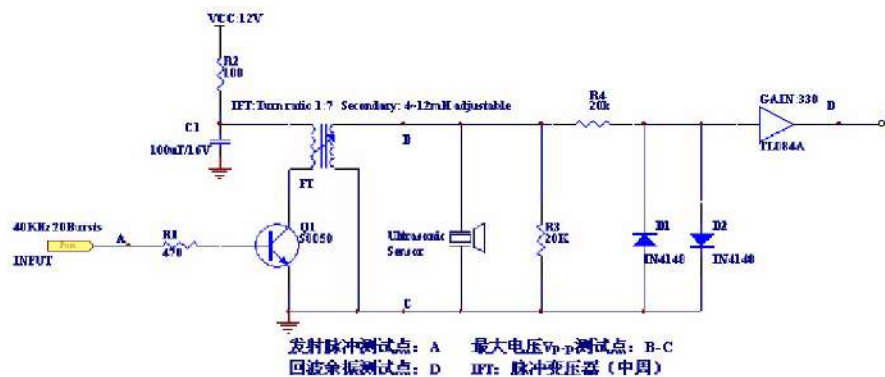
JYAT-T/R -14-40-023-D



6. 探测角度测试(Directivity Test Sketch):



7. 模拟测试线路 (Simulation Test Circuit)



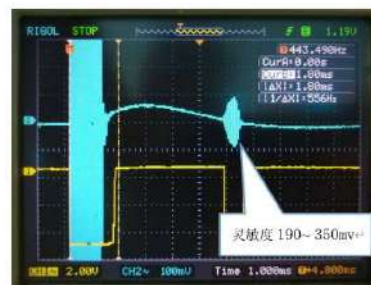
8. 产品测试方法及仪器设备(Test Method and Equipment):

- 1) Capacitance test: LCR (or Digital Electric Bridge),
- 2) Frequency test: PV70(80) Impedance Analyzer
- 3) Echo Sensitivity: 40K-Test Jig connected with Oscilloscope (OSC), Power Supply Voltage:12VDC,

Sensitivity test Shelf



Wave Form



4) Decay Time Test: 40K-Test Jig connected with Oscilloscope (OSC),
Power Supply Voltage:12VDC, Wave Form as below:



5) Test Environments

Normal Condition: T:25+/-3°C, H:45 ~ 65%R.H.

9.注意事项(Notes):

1. In order to prevent the product failure, please consider to anti-failure function during the design.
2. Please note that there should be the Silicon rubber between the ultrasonic sensor and Plastic case, which guarantees the ultrasonic sensor vibrate normally. At the same time, please keep the ultrasonic sensor working surface unobstructed
3. This product applies in the air, it can't be used in the environment of high temp and high humidity or corrosive gases for a long time, it can't be used in the water or organic solvent. It will be failure under the dust atmosphere.
4. Don't exceed the Max permissible input voltage.
5. The ultrasonic sensor's outer case is the Aluminum alloy, so it can't have the strong impact on the front of it, or else, which causes sensor case distorted or sensor failed.
6. We suggest that painting thickness is about 60-100um, the baking temp is not more than 85°C in two hours; Repainting is not more than 2times, and after repainting, the product should be checked all parameters.
7. Improper use or rework of products cause them original status, which can't be returned & exchanged.

10.环保承诺(ROHS Commitment):

The Pb in ceramic is exempted, other ingredients are all with ROHS compliance

Spec Version Control History

Version	Date	History and Change Status	Drawing
A0	2023.9.12	Submitted to client for the first time	
A1	2023.10.09	Add polarity mark on drawing	