

MOBICON

Electronic Components

Data Sheet for Assembled Ultrasonic Sensor

Part No: 14U01-TK006L4

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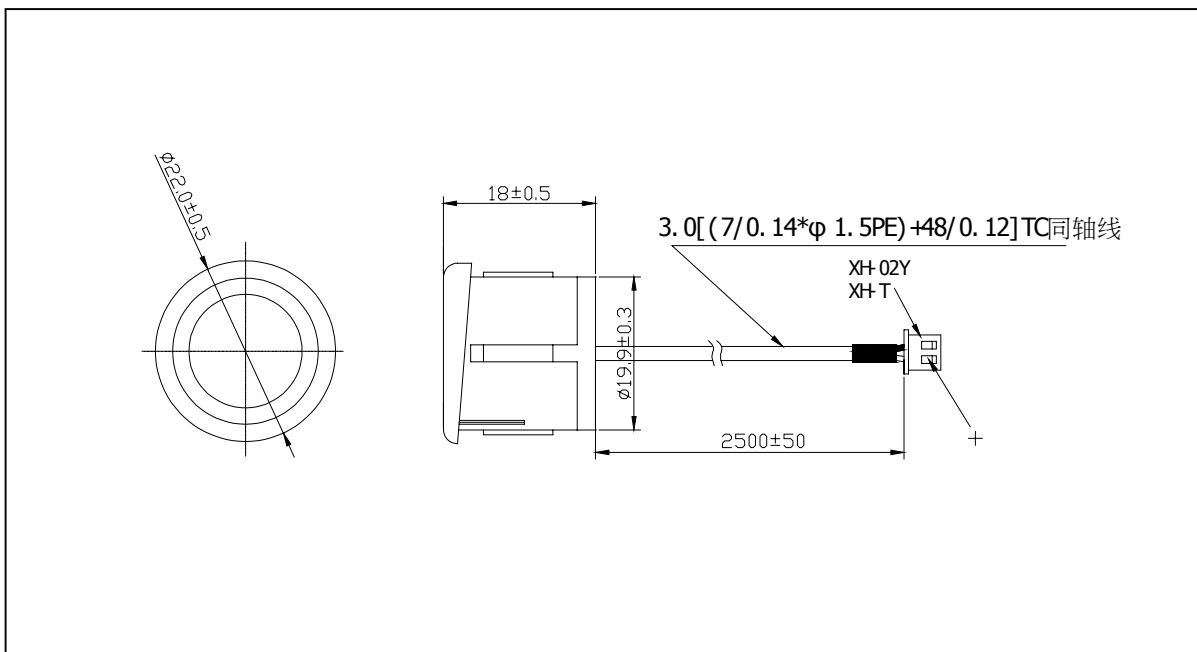
PIEZO ULTRASONIC SENSOR SPECIFICATIONS

MODEL: 14U01-TK006L4

ELECTRICAL SPECIFICATION:

1	Center frequency(KHz)	40 ± 1.0KHz
2	Echo Sensitivity	400mV
3	Decay Time	1.2ms
4	Directivity (deg) X-axis	115 ± 15
5	Directivity (deg) Y-axis	80 ± 10
6	Capacitance (pF)	2000 ± 15%
7	Allowable Maximum Input Voltage(Vp-p)	140(40KHz) Pulse width 0.5ms, interval 20ms
8	Mean Time To Failure	50000h
9	Operating Temperature()	-40 ~ +80
10	Storage temperature()	-40 ~ +85

APPEARANCE AND DIMENSIONS



ENVIRONMENT CHARACTERISTICS

CONDITIONS	STANDARDS
High and low temperature (from -40 to +85 at a relative humidity of 30%)	Sound pressure level and peak sensitivity shall not change by more than 15dB in the temperature range from the high temperature to the low temperature
Humidity of 10% to 90% at the temperature of 25	Sound pressure level and sensitivity shall not change by more than 6dB in the humidity range
Storage at +85 for 96 hours and at -40 for 96 hours followed by a normalization period at 25 . As shown in FIG1.	All sensitivity or sound pressure level shall be within 3 dB of the specified values after the device is subjected to any or all of the conditions.
Operation at 95% relative humidity and 40 for 100 hours, followed by a normalization period of 24 hours at 30% and 25 .As shown in FIG2.	
Vibration at 10Hz to 55Hz ,1.5mm amplitude. 1 minute sweep. X,Y,Z,3 each axis for 3 hours.	
Shock: After impact of 50G is applied as following X,Y,Z,3 axis/3 cycle/each direction.	

WATER PROOF TYPE

NOTE:

1. DESIGN RESTRICTION/PRECAUTIONS

This sensor is designed for use in air environment. Do not use it in liquid.

In the case where secondary accidents due to operation failure or malfunctions can be anticipated, add a fail safe function to the design.

2. USAGE RESTRICTION/PRECAUTIONS:

To prevent sensor malfunctions, operational failure or any deterioration of its characteristics, do not use this sensor in the following, or similar conditions.

- a) In strong shock or vibration.
- b) In high temperature and humidity for a long time.
- c) In corrosive gases or sea breeze.
- d) In an atmosphere of organic solvents.
- e) In dirty and dusty environments that may contaminate the sensor front.
- f) Over specified allowable input voltage(Vp-p)

3. WARRANTY:

Period

Warranty period is one year after delivery.

Scope

Defective sensors attributable to manufacturer' responsibility shall be replaced for free during the warranty period.

However, following cases are out of the scope.

- a) Unsuitable handling or misuse by user.
- b) Modification or repair by user.
- c) Any other cases not due to manufacturer' responsibility such as natural calamity, accident .etc.

This scope covers only replacement.

Any loss derived from failure or malfunction of the sensor, or cost on replacing is excluded from this warranty scope.

MEASURING METHOD

FIG1 TEMP. TEST

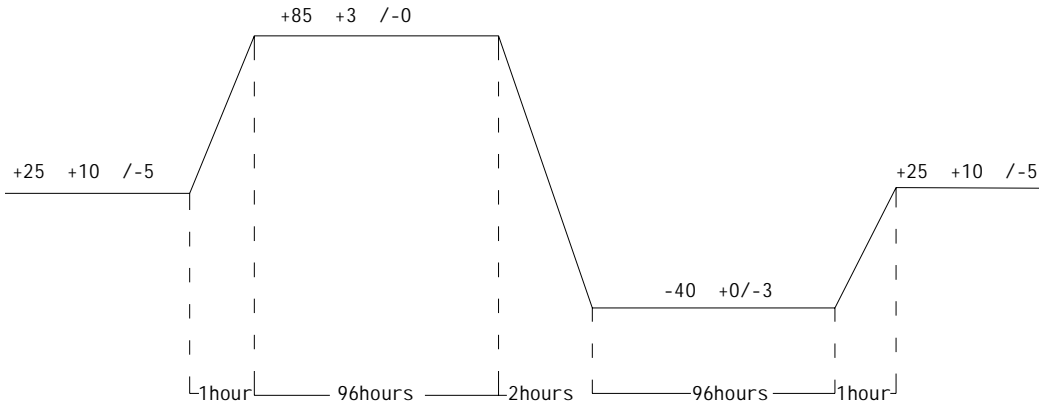


FIG 2 TEMP. /HUMIDITY TEST

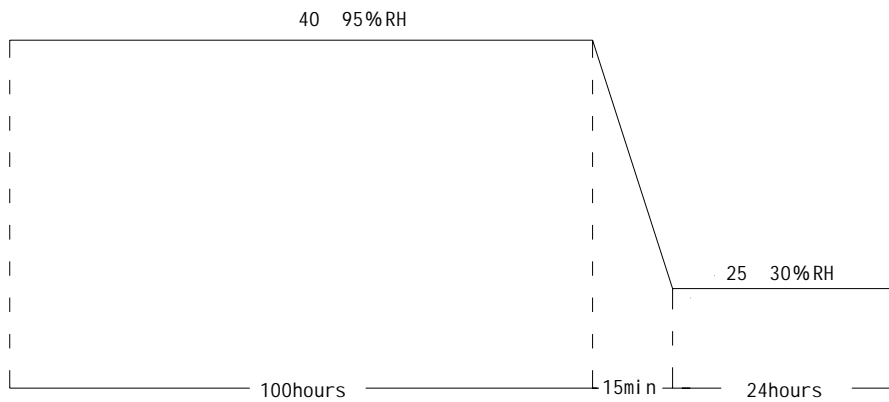


FIG3 VIBRATION TEST

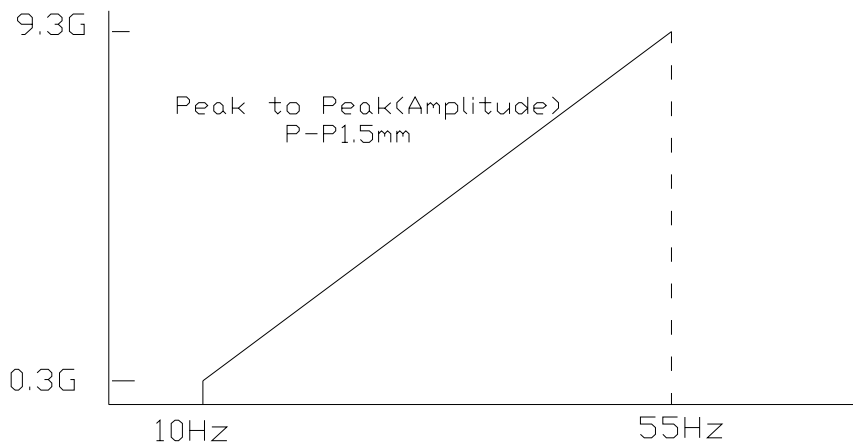


FIG4 SIMULATION TEST CIRCUIT

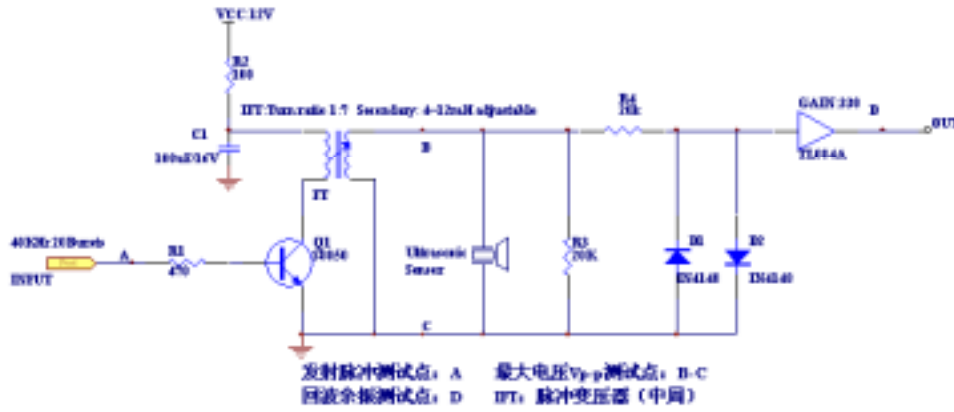
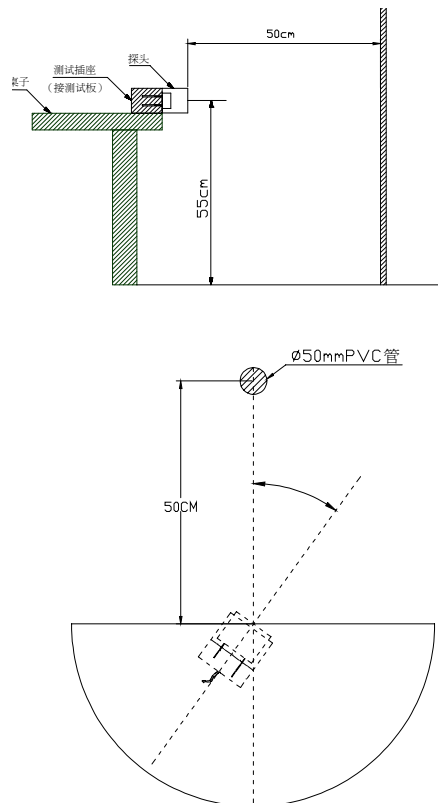


FIG5 DIRECTIVITY TEST



TESTING INSTRUMENT CONDITION AND LIST

No.	Testing item	Testing Equipment/Methods	Testing conditions
1	Resonant Frequency	Piezoelectric Transducer Resistance Testing System II	Testing Environment temperature :25±2°C
2	Echo Sensitivity	According to Fig. 4 Test Circuit	Distance to obstacle: 1 meter. Obstacle: organic glass board with 20CM*20CM*1.0CM. 1.The inductance :8mH, Qm Value: 60-80, Max Pulse ≤20 2.The Minimum detect distance≥35cm 3.The acoustic system without coupling
3	Ring Time	According to Fig. 4 Test Circuit	The sensor surface is covered by 100mm thickness of sponge 1.The inductance :8mH, Qm Value: 60-80, Max Pulse ≤20 2.The Minimum detect distance≥35cm 3.The acoustic system without coupling
4	Directivity (X-axis &Y-axis)	According to Fig. 4 & Fig. 5 Test Circuit	In normal room temperature, the distance to the ground: 55cm the distance to the obstacle: 50cm the obstacle: diameter of 50mm PVC pipe, the obstacle height: 1 meter Note: there is no other obstacle in a circumference of 1 meter.
5	Capacitance	Digital LC ZL5	Testing temperature :25±2°C
6	Maximum Input Voltage	According to Fig. 4 Test Circuit Oscillograph : Fektronix TDS1002	Pulse Width: 0.5mS, Interval :20mS
7	Mean Time to Failure	Aging Equipment AWHY001	Normal room temperature
8	Operating Temperature(°C)	According to Fig. 4 Test Circuit , High-Low alternating temperature Cabinet	In normal room temperature, according to the Fig. 4 test circuit
9	Storage Temperature(°C)	High-Low alternating temperature Cabinet	In normal room temperature, according to the Fig. 4 test circuit

Installation key Notes

1	size of fixing hole	φ20.0
2	height	≥50cm
3	direction	according to the UP sign

MEC

REVIEW OF SPECIFICATIONS

- 1) When something get doubtful with this specifications, we shall jointly work to get an agreement.
- 2) This specification limits the quality of the components as a single unit. Please insure the component is thoroughly evaluated in your application circuit.
- 3) Please do not use this component in any application that deviates from its intended use as noted within the specification. It may cause any mishaps.
- 4) Please return one of this specification after your signature of acceptance. In case of no return within 3 months from submission date. This specification should be treated as accepted.

When using our products, the following precautions should be taken.

- (1) Safety designing of apparatus or a system allowing for failures of electronic components used in the system
In general, failures will occur in electronic components at a certain probability. MOBICON HOLDINGS LTD makes every effort to improve the quality and reliability of electronic component products. However, it is impossible to completely eliminate the probability of failures. Therefore, when using MOBICON HOLDINGS LTD electronic component products, systems should be carefully designed to ensure redundancy in the event of an accident which would result in injury or death, fire, or social damage, to ensure the prevention of the spread of fire, and the prevention of faulty operation.
- (2) Quality Level of various kinds of parts, and equipment in which the parts can be utilized
Electronic components have a standard quality level unless otherwise specified.
- (3) This specifications is subject to change without notice.
The contents of this specifications are based on data which is correct as of 2002, and they may be changed without notice. If our products are used for mass-production design, please enquire consult with a member of our company's sales staff by way of precaution.
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- (5) Industrial Property Problems
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