PIEZO ULTRASONIC SENSOR SPECIFICATIONS

■MODEL: T/R40-14C279Z-L12-01

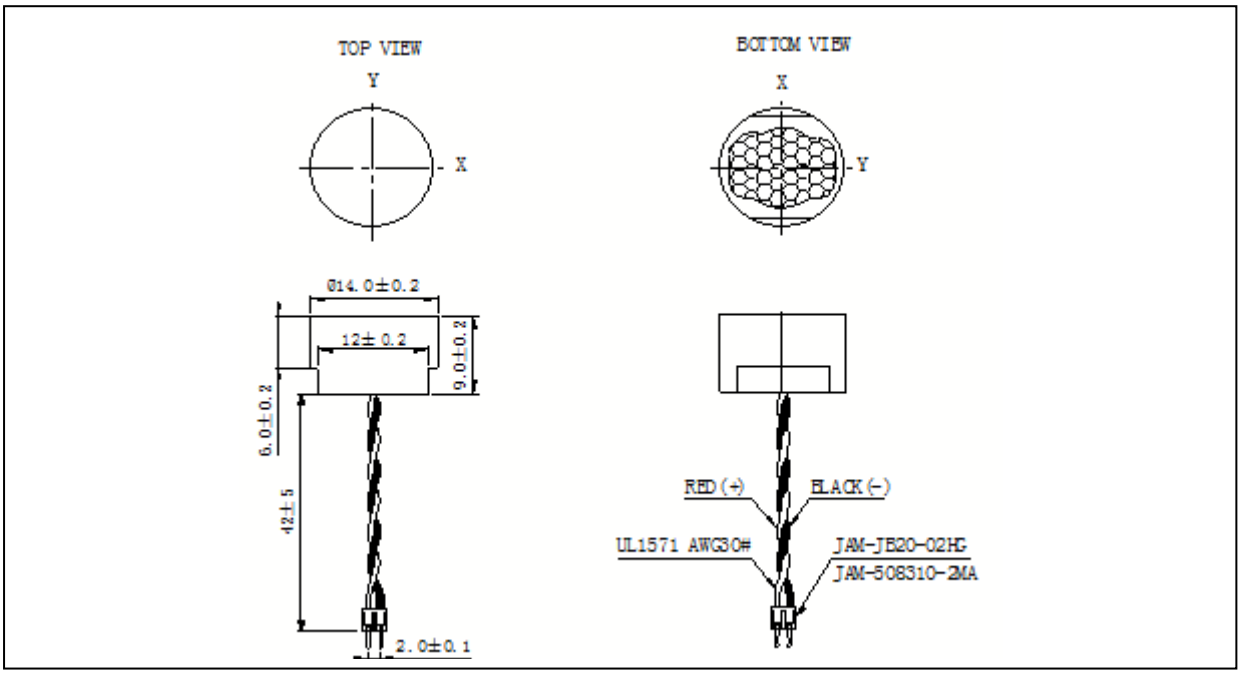
■ELECTRICAL SPECIFICATION:

1	Center frequency (KHz)	40±1
2	Echo Sensitivity (mVp-p)	≥90 (FIG1 SIMULATION TEST CIRCUIT)
3	Decay Time (mS)	≤1.3 (FIG1 SIMULATION TEST CIRCUIT)
4	Directivity (deg) X-axis	120±15 (-6dB angle of overall sensitivity)
5	Directivity (deg) Y-axis	60±10 (-6dB angle of overall sensitivity)
6	Capacitance (pF)	1800±15% (at 25℃,1KHz)
7	Allowable Maximum Input Voltage(Vp-p)	140 (40KHz) Pulse width 0.5ms, interval 20ms
8	Mean Time To Failure (h)	50000
9	Operating Temperature (℃)	-40～+85
10	Storage temperature (℃)	-40～+85

■MECHANICAL CHARACTERISTICS:

LEAD STRENGTH: To pull longitudinally 1.0kg min

■APPEARANCE AND DIMENSIONS



NOTE: I: All materials are ROHS,But Piezo is released.

II: 279 is The number of colour of the paint base. And the colour of a colorimetric board is used for standard.

SIMULATION TEST CIRCUIT

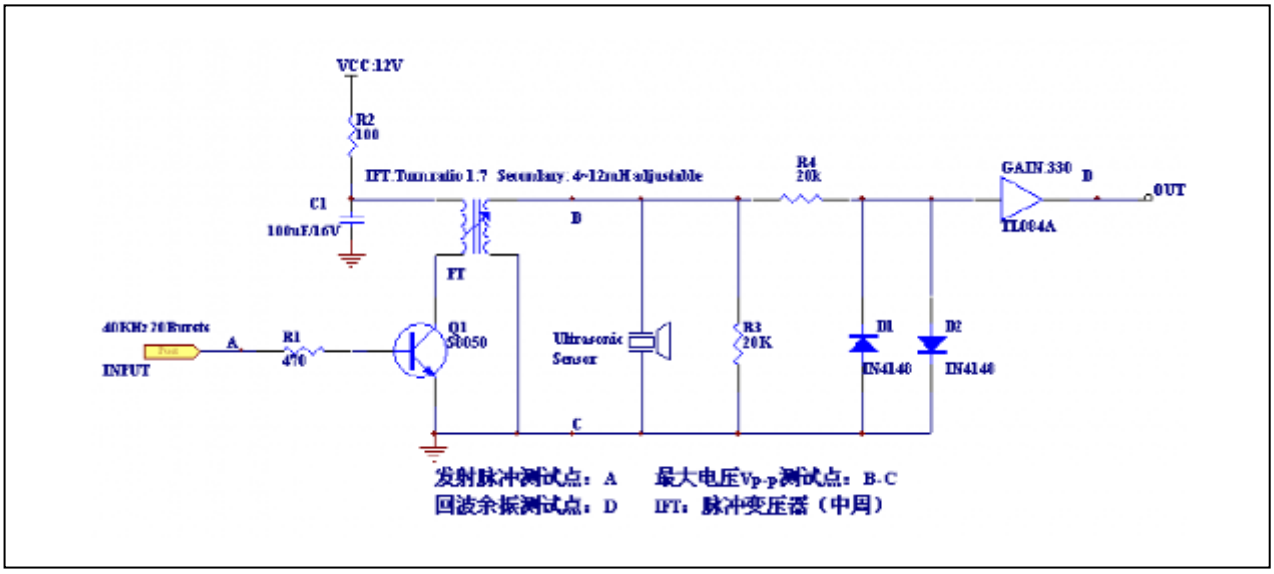
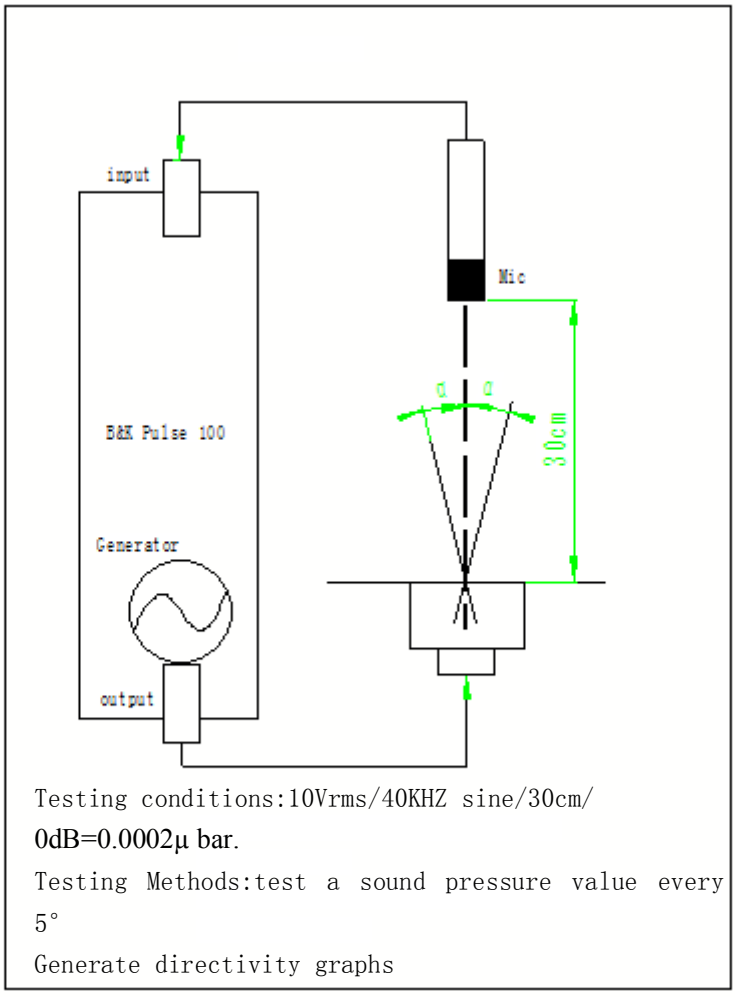


FIG.1

DIRECTIVITY TEST



Testing conditions:10Vrms/40KHZ sine/30cm/

0dB=0.0002μ bar.

Testing Methods:test a sound pressure value every 5°

Generate directivity graphs

FIG. 2

ENVIRONMENT CHARACTERISTICS

Testing items	Testing Equipment/Methods/Conditions	Criteria
Shock Test	Acceleration:980m/s²(100G);Direction:3directions; Shock time:3times/directions	The variation of the echo sensitivity at 40kHz within 30% compared with initial figures at 25degC
Drop Test	Height:1meter onto concrete floor;Times:10times	
Vibration Test	Vibration frequency: 10Hz to 55Hz;Amplitude1.5mm ; SweepPeriod: 1 minute; Direction:3directions;Time:3hous/direction	
High-temp. storage	Temperature:+85±3℃;time: 96h & followed normalization period at 25 for 24h	
Low-temp. storage	Temperature: -40±3℃;time: 96h, & followed by a normalization period at 25℃for 24h	
Humidity resistance	Temperature: +85±3℃, Humidity:85% R.H;time:96h, & followed by a normalization period at 25℃for 24h	
Temp. shock	Temperature: -40℃±3℃ for 0.5h,within 5 min up to +85℃±3 for 0.5h, cycles:200 cycless & followed by a normalization period at 25℃for 24h	
Pull strength	Force 10N	There should be no substantial damage
NOTES: Standard Test Condition:T=25±3℃, H=45~65%R.H. And every test must be more than 5 pcs for test.		

TESTING INSTRUMENT AND CONDITION LIST

No.	Testing item	Testing Equipment/Methods	Testing conditions
1	Resonant Frequency	Piezoelectric Transducer Resistance Testing System II	Testing Environment temperature
2	Echo Sensitivity	According to Fig. 1 Test Circuit	Distance to obstacle: 1 meter , Obstacle: Φ63 *1000 PVC pipe
3	Decay Time	According to Fig. 1 Test Circuit	According to Fig. 1 Test Circuit
4	Directivity	B&KPLUSE100	-6dB angle of overall sensitivity
5	Capacitance	Digital LC ZL5	Testing temperature :25±3° C
6	Maximum Input Voltage (Vp-p)	According to Fig.1 Test Circuit Oscillograph: Tektronix TDS1002	Pulse Width: 0.5mS, Interval :20mS
7	Mean Time to Failure	Aging Equipment AWHY001	Normal room temperature
8	Operating Temperature(° C)	High-Low alternating temperature Cabinet	In normal room temperature
9	Storage Temperature(° C)	High-Low alternating temperature Cabinet	In normal room temperature

■ 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.
- ■ In the case where this sensor is to be hold in housing, use soft buffer between sensor and housing. The front convex part of this sensor vibrates in large extension. If this part is hold, its characteristics will vary. The top must be free to vibrate.

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)
- ■ Do not solder adding stress on outer lead, also do not apply stress like spin or pressure just after soldering.

  In case you form the leads, support the root firmly.