

承认书

SPECIFICATION FOR APPROVAL

客户 (CUSTOMER): _____

客户料号 (CUST P/N): _____

产品物料编号: (PART. NO): 135118000864

奥迪威产品名称 (DESCRIPTION): TC0096-037

奥迪威产品型号 (P/N): T/R48-14C279Z-L12-02

规格书编号 (SPECIFICATION. NO): K2-WSP-TC-00412

规格书版本 (VERSION): A1

■ 规格书状态 (Specs Type):

☐ 样件 (Sample Specs)

■ 量产 (Standard Specs)

样件规格书 (Sample Specs):

适用于产品的小批量试制. (Apply to trial order.)

量产规格书 (Standard Specs):

适用于产品的批量生产. (Apply to mass production.)

客户承认 CUSTOMER APPROVAL	签名 SIGNATURE.	承认章 COMPANY CHOP.

编制 DWN.	审核 CHK.	批准 APPD.

■ 产品规格书仅供参考, 在产品量产之前, 需要确认最新版本的量产规格书, 并得到客户的签名承认.
(Specifications are for reference only, and it is required to be approved by customers before mass production.)

注: 承认书一式两份, 请返回一份. (Note: Specs are in duplicate, please send one copy back.)



PIEZO ULTRASONIC SENSOR SPECIFICATIONS

■ MODEL

■ 产品型号: T/R48-14C279Z-L12-02

■ ELECTRICAL SPECIFICATIONS

■ 电性能参数

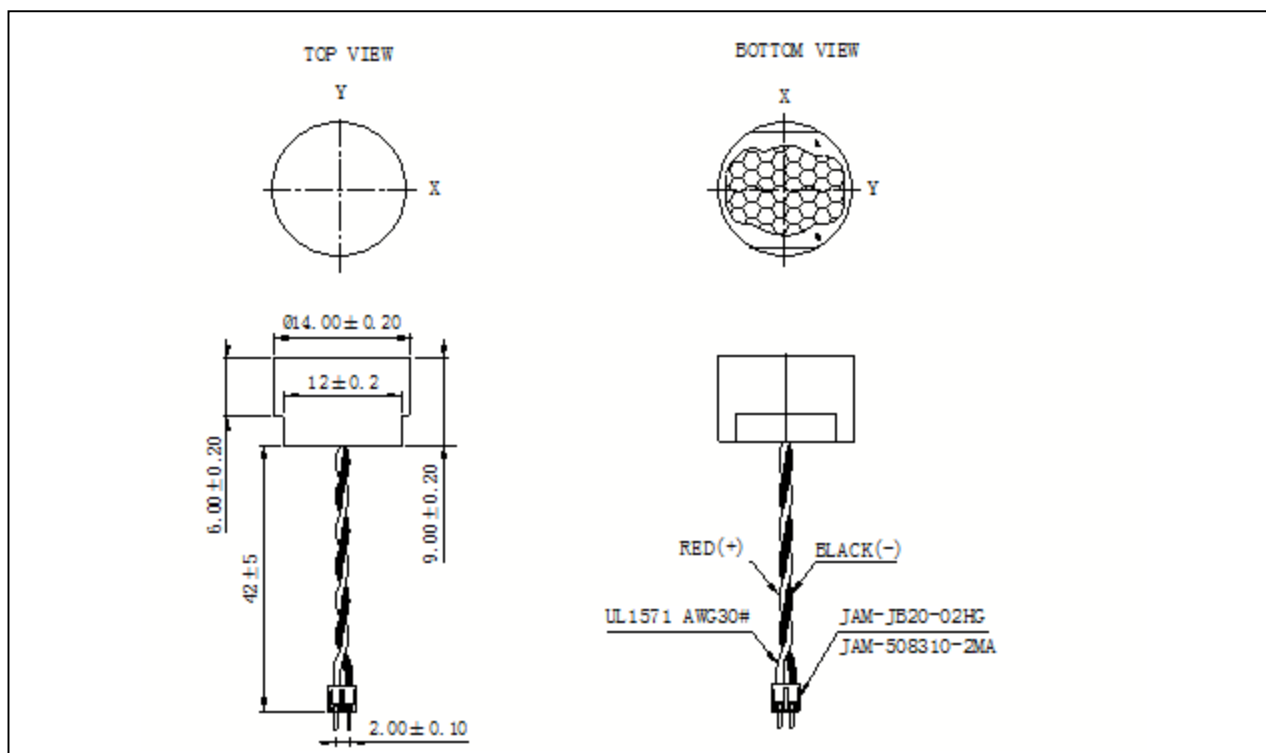
No.	Items	Specification	Note
1	Resonant Frequency 谐振频率	48 ± 1 kHz at $25 \pm 3^\circ\text{C}$	By impedance analyzer 4294 以 4294A 测量
2	Overall Sensitivity 灵敏度	3.0 ± 1.0 Vp-p at $25 \pm 3^\circ\text{C}$	With CY00523 tester (Fig.3) 以 CY00523 测具测量
3	Ring time 余振	≤ 1.8 mS at $25 \pm 3^\circ\text{C}$	With CY00523 tester Defined as output pulse width 以 CY00523 测具测量 从输出波型宽度定义
4	X-axle direction angle X 轴方向角	100 ± 15 (Typical)	With CY00523 tester (Fig 1 & Fig 2)
5	Y-axle direction angle Y 轴方向角	50 ± 10 (Typical)	With CY00523 tester (Fig 1 & Fig 2)
6	Capacitance (pF)	$1800 \pm 15\%$	At 1kHz, $25 \pm 3^\circ\text{C}$, 数字电桥
7	MAX. Input Voltage 最大输入电压	140 Vp-p	140 (48KHz) Pulse width 0.42ms, interval 20ms
8	Operating temperature 工作温度	$-40^\circ\text{C} \sim +85^\circ\text{C}$	
9	Storage temperature 贮存温度	$-40^\circ\text{C} \sim +85^\circ\text{C}$	
10	Mean Time To Failure 平均无故障时间	50000H	

■ MECHANICAL CHARACTERISTICS:

Tensile strength of lead: 10N of force.



■ 外观尺寸 (DIMENSIONS) :



NOTE: All materials are ROHS, but Piezo is releas.

■ SIMULATION TEST CIRCUIT

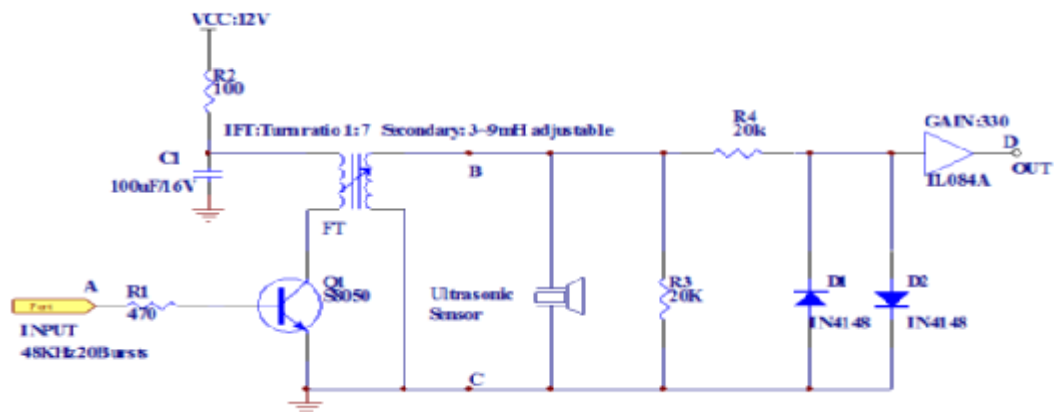


Fig.1

■ 指向性测试 (DIRECTIVITY TEST)

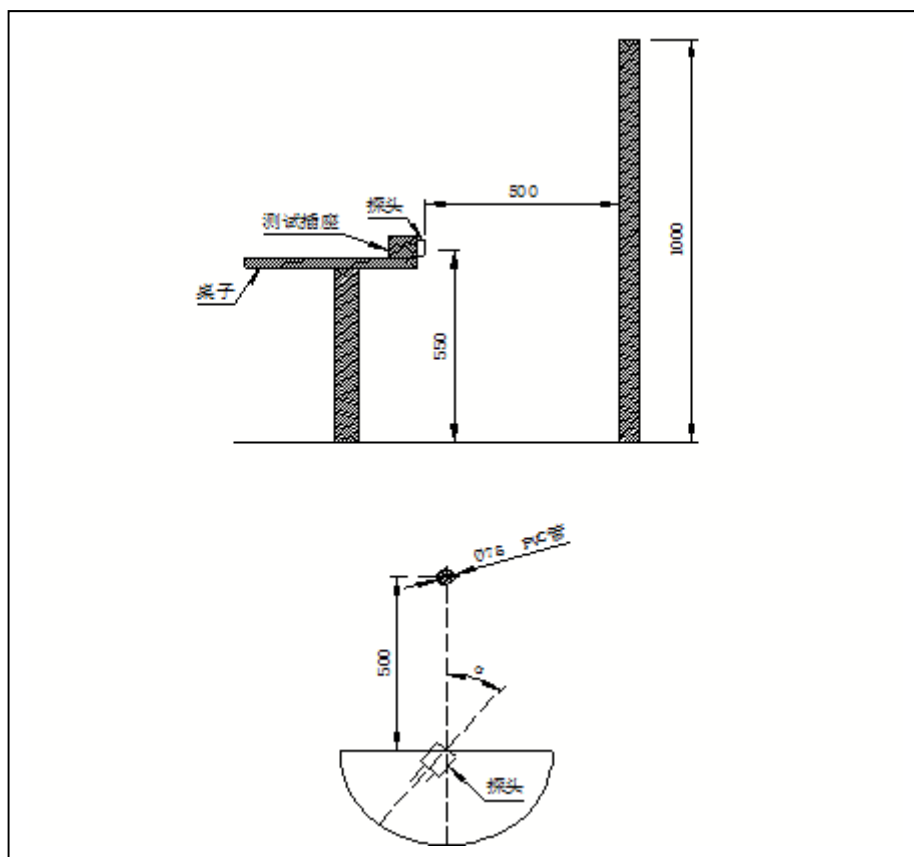


Fig.2

■ Ring time Test

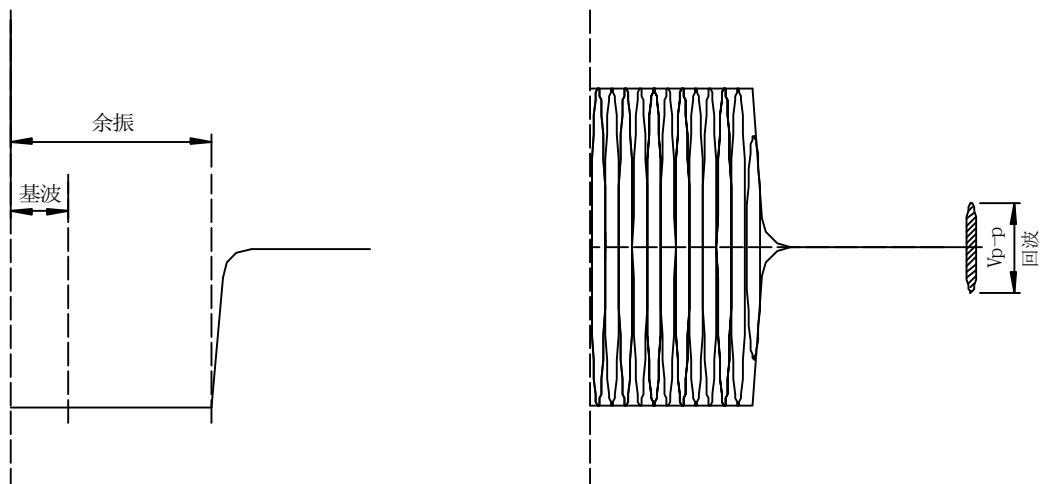
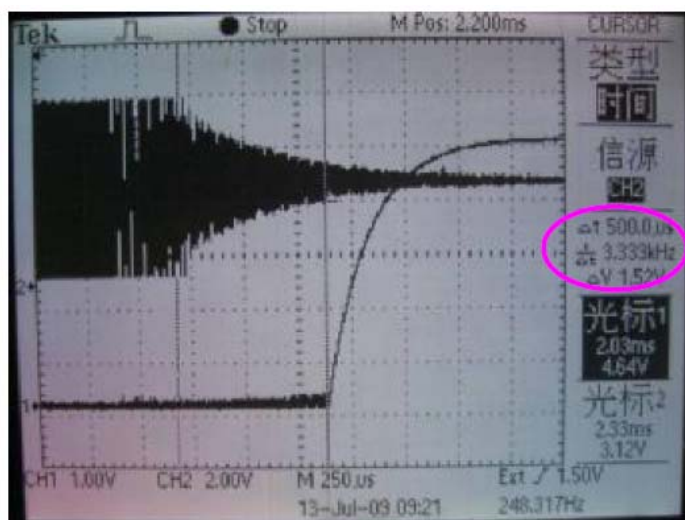


FIG. 3

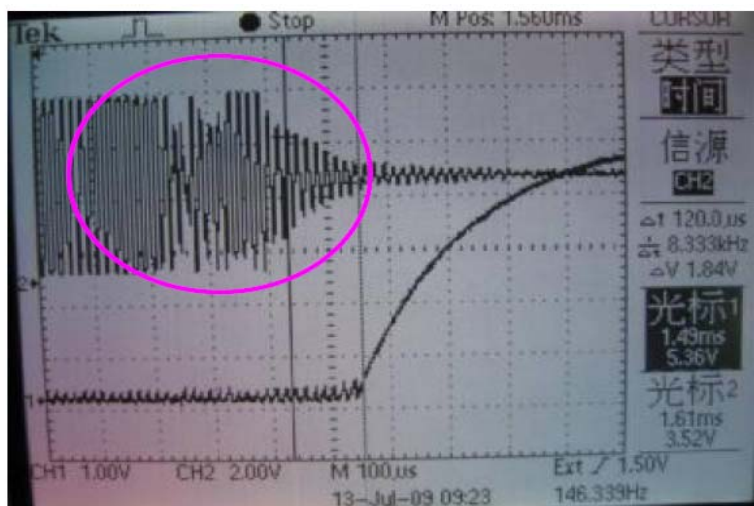


FIG. 4



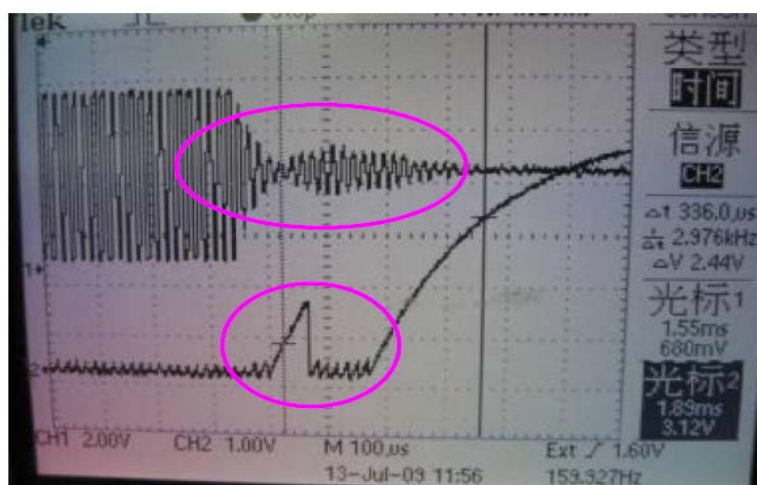
$\Delta t = 500\mu s > 300\mu s$
拖尾不良, 判 NG

FIG. 5



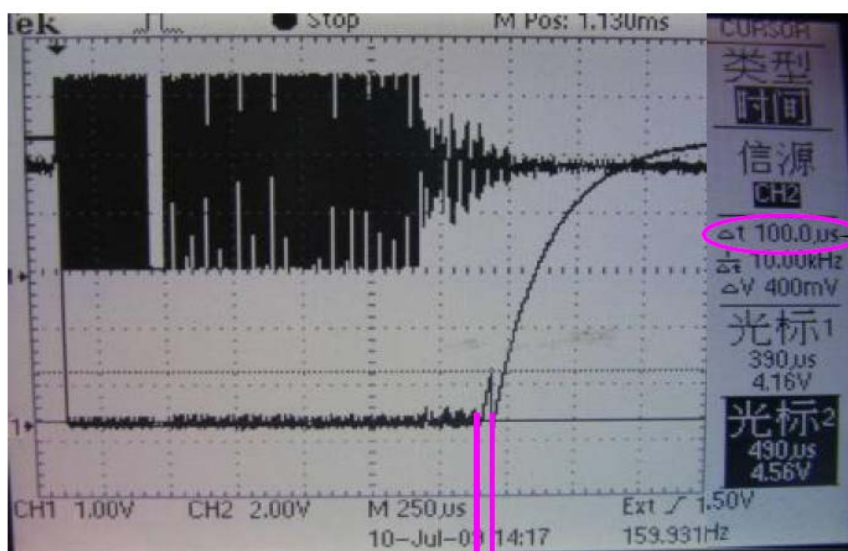
收敛后回波幅度又变大, 但余振不会拉尖, 判 OK

FIG. 6



收敛后回波幅度又变大, 导致余振拉尖, 判 NG

FIG. 7

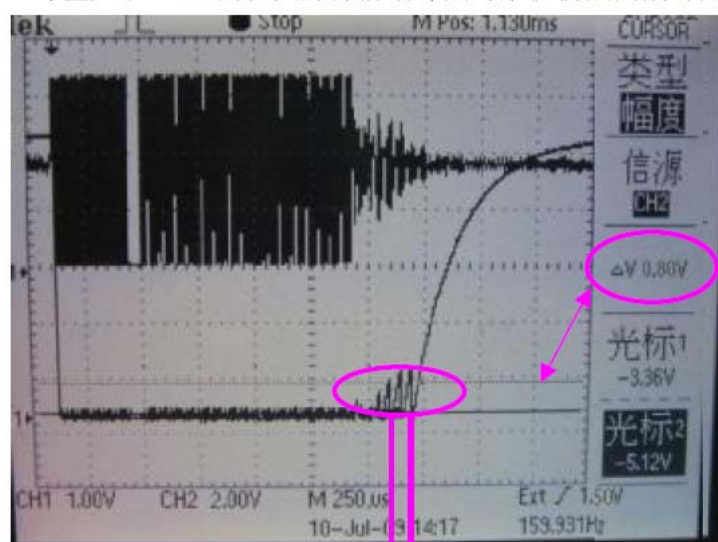


$\Delta T=100\mu s$

拉尖脉冲前沿零点与拐点间隔

余振拉尖宽度 $\leq 100\mu s$, 判 OK, 反之 NG

FIG. 8



余振连续拉尖峰值大于 0.8V

拉尖脉冲前沿零点与拐点间隔

余振拉尖宽度 $\leq 100\mu s$, 判 OK, 反之 NG

FIG. 9

■ 测试条件及仪器 (TEST CONDITIONS AND INSTRUMENTS)

No.	Testing item	Testing Equipment/Methods	Testing conditions
1	Resonant Frequency	Piezoelectric Transducer Resistance Testing System II	Testing Environment temperature
2	Echo Sensitivity	With CY00523 tester	Distance to obstacle: 1 meter , Obstacle: Φ63 *1000 PVC pipe ,
3	Decay Time	With CY00523 tester	With CY00523 tester
4	Directivity	According to Fig.1 & Fig. 2 Test Circuit	In normal room temperature, the distance to the ground: 55cm the distance to the obstacle: 50cm the obstacle: diameter of 75mm 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 : $25\pm 3^{\circ}\text{C}$
6	Maximum Input Voltage (Vp-p)	According to Fig.1 Test Circuit Oscillograph: Tektronix TDS1002	Pulse Width: 0.42mS, Interval :20mS
7	Mean Time to Failure	Aging Equipment AWHY001	Normal room temperature
8	Operating Temperature($^{\circ}\text{C}$)	High-Low alternating temperature Cabinet	$-40\sim +85^{\circ}\text{C}$
9	Storage Temperature($^{\circ}\text{C}$)	High-Low alternating temperature Cabinet	$-40\sim +85^{\circ}\text{C}$

■ 环境测试 (ENVIRONMENTAL TEST)

Testing items	Testing Equipment/Methods/Conditions	Criteria
Shock Test	Acceleration:980m/s ² (100G);Direction:3directions; Shock time:3times/directions	The variation of the echo sensitivity at 48kHz 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:500 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.		

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(V_{p-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.

■ 修订记录 (Revision history)

文件修订记录 File revision history			
修订时间 Revision time	修订版本 Version of revision	内部 ECR 编号 The number of ECR	修订内容 Contents of revision
2017/09/08	A1	/	The first revision

