



Product Specification

Ningbo East Electronics Limited
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Product Name:	External -Driven Piezo Transducer
Part Number:	TFM-33
Version:	1.02
Date:	2019-10-9
Note:	

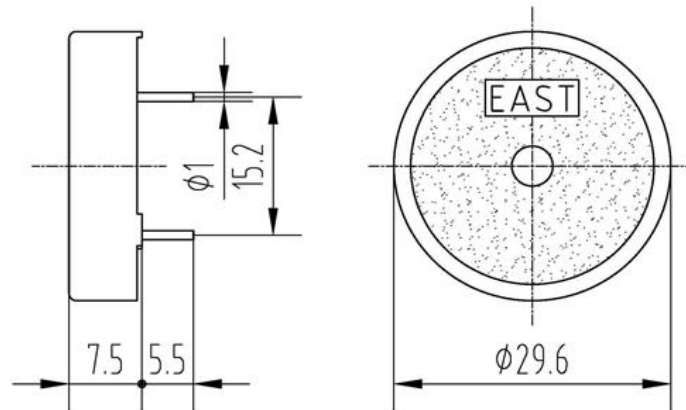
East is an ISO 9001 , IATF16949 and ISO 14001 Certified Company

Revision History

Rev.	Description	Author/Date	Checked By	Approver
1.02	Quality management system revised	汤礼东 2019-10-9	吕文斌	王建成
1.01	Quality Certificate Symbol revised	刘进 2015-5-11	汤礼东	王建成
1.0	Released	汤礼东 2011-7-30	张春雷	王建成

1. Part Number TFM-33

2. Dimension Drawing (Unit: mm)



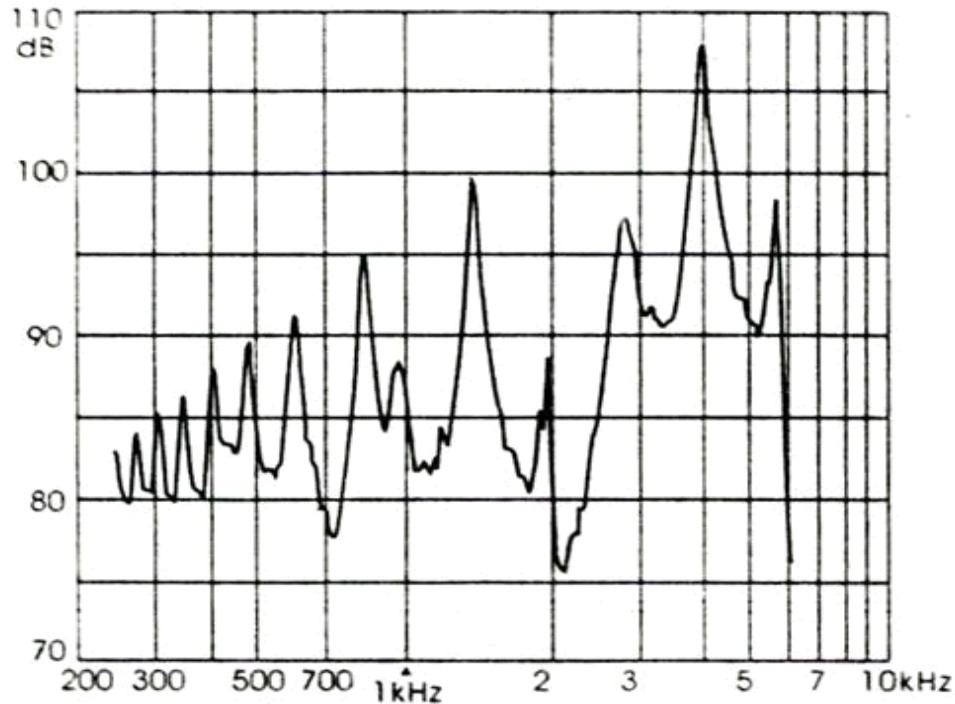
3. Specification

No.	Item	Specification
3-1	Min. Sound Pressure Level	90dB/3.0kHz/10Vp-p square wave /10cm
3-2	Allowed Input Voltage	30Vp-p
3-3	Capacitance	20±30% nF (At 120Hz)
3-4	Max. Consumption	3mA/3.0kHz/10Vp-p square wave
3-5	Resonant Frequency	3.0± 0.5kHz
3-6	Operating Temperature	-20~+70°C
3-7	Case Material /Color	ABS/Black
3-8	Weight	4.5g
3-9	Pin Strength	More than 10N

NOTES:

Test should be made under the conditions of room temperature (20±10°C), normal humidity (60±20%) and normal atmospheric pressure. In this case, however, that the judgment is questionable, the test conditions are to be changed to room temperature 20±2°C, relative humidity 60~70% and normal atmospheric pressure

4. Typical Frequency Response Curve



Note: Input Voltage 10Vp-p square wave
Distance 10 cm

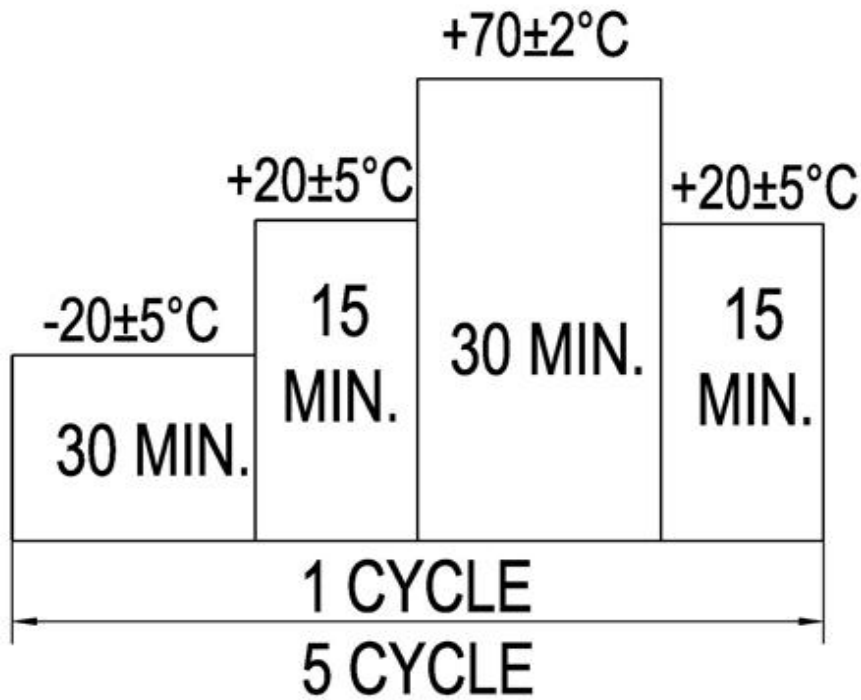
5. Reliability Test

No.	Item	Method of Test	Tolerance after Testing
5-1	Operating Temperature	-20~70°C	Sound pressure level initial value ± 10 dB Max. consumption value $\pm 20\%$ Capacitance value $\pm 20\%$
5-2	Storage in high temperature	Storage in +70°C test box 96 hours then exposed to the room temperature for 2 hours	
5-3	Storage in low temperature	Storage in -20°C test box 96 hours then exposed to the room temperature for 2 hours	
5-4	Life test in the room temperature	Operate the product continuously 5 seconds on 5 seconds off 300 hours at rated voltage	
5-5	Temperature / humidity cycle test	Storage in +40°C, 93 \pm 3%RH test box 96 hours then exposed to the room temperature for 2 hours	
5-6	Temperature (high and low) cycle test	Conduct the test for 5 cycles without applying power then expose to the room temperature for 2 hours.(See Figure 5-6)	
5-7	Vibration test	Conduct the test for the directions of X Y and Z for 0.5 hour each (total 1.5 hours). To-and Fri sweep time(from 10 to 55Hz and then 55 to 10) under single amplitude of 0.75mm is 3 minute, then expose to the room temperature for 2 hours	

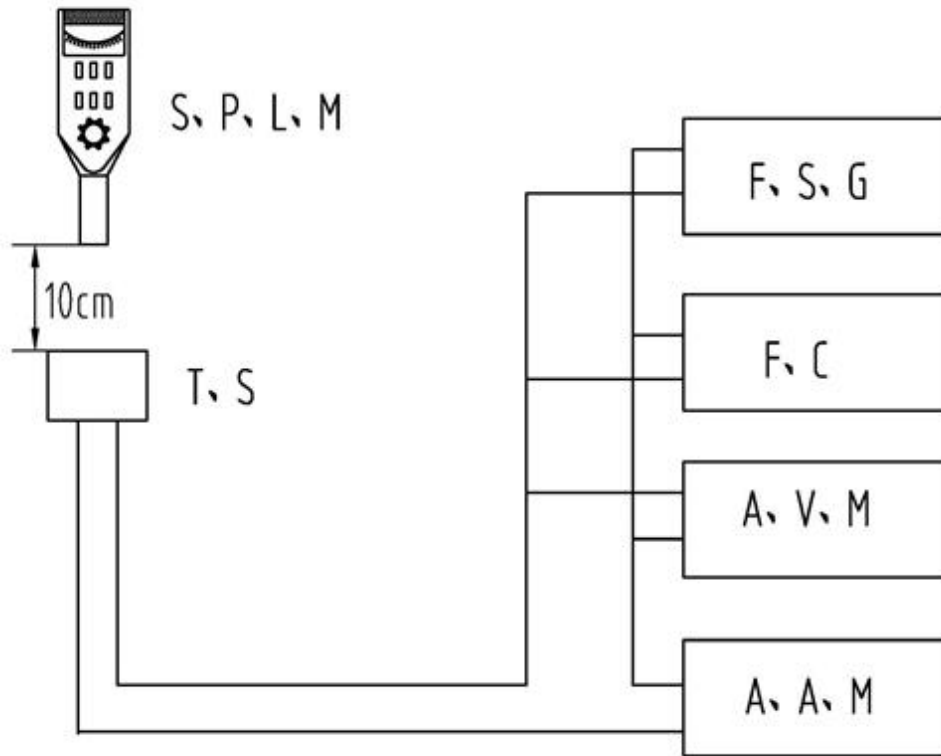
5-8	Drop test	surface of 100mm thick wooden board. Two directions: upper and side of the product are to be applied for this drop test once respectively	
5-9	Soldering heat resistance test	Dip the connecting pins in soldering at $260\pm 5^{\circ}\text{C}$ for 10 ± 1 seconds	
5-10	Test of soldering	Dip the connecting pins in soldering at $230\pm 5^{\circ}\text{C}$ for 3 ± 0.5 seconds	Solder shall be attached around over 95% of the dipped portion

NOTE: The pins are allowed to deform after drop test.

Figure 5-6



6. Electrical Testing Method



S.P.L.M	Sound Pressure Level Meter
T.S	Testing Sample
F.C	Frequency Counter
F.S.G	Frequency Signal Generator
A.V.M	AC Voltage Meter
A.A.M	AC Ampere Meter

7. Packing Information

Packing: 1800pcs per export carton

Carton Size: 47× 30.5× 31 cm

G. Weight: 11.8 kgs **N. Weight:** 8.1 kgs