



# Product Specification

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

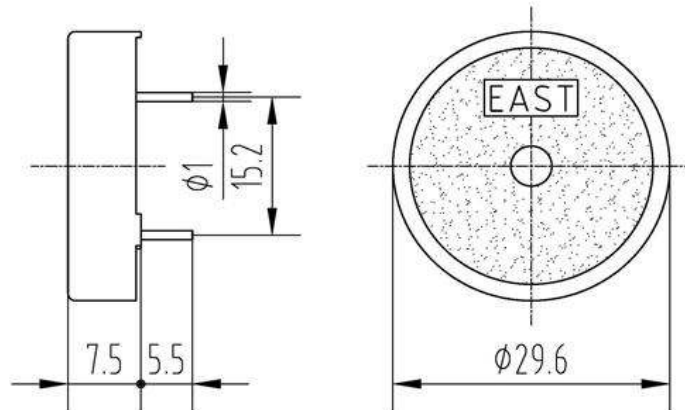
**East is an ISO 9001 , IATF16949 and ISO 14001 Certified Company**

## Revision History

<b>Rev.</b>	<b>Description</b>	<b>Author/Date</b>	<b>Checked By</b>	<b>Approver</b>
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)



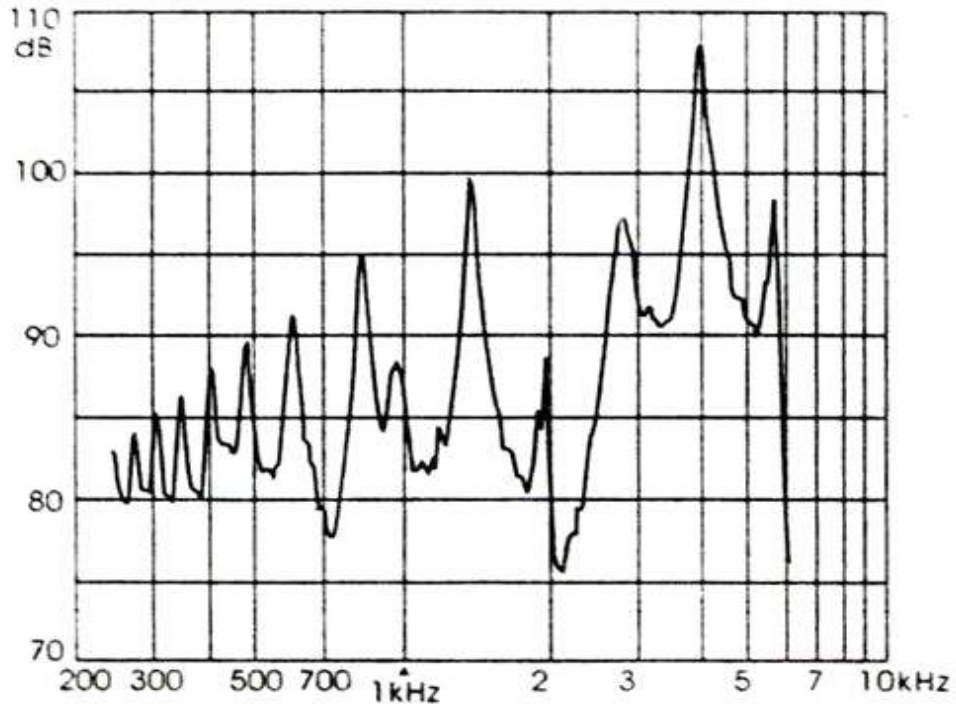
## 3. Specification

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 ( $20\pm 10^{\circ}\text{C}$ ), normal humidity ( $60\pm 20\%$ ) and normal atmospheric pressure. In this case, however, that the judgment is questionable, the test conditions are to be changed to room temperature  $20\pm 2^{\circ}\text{C}$ , relative humidity 60~70% and normal atmospheric pressure

#### 4. Typical Frequency Response Curve



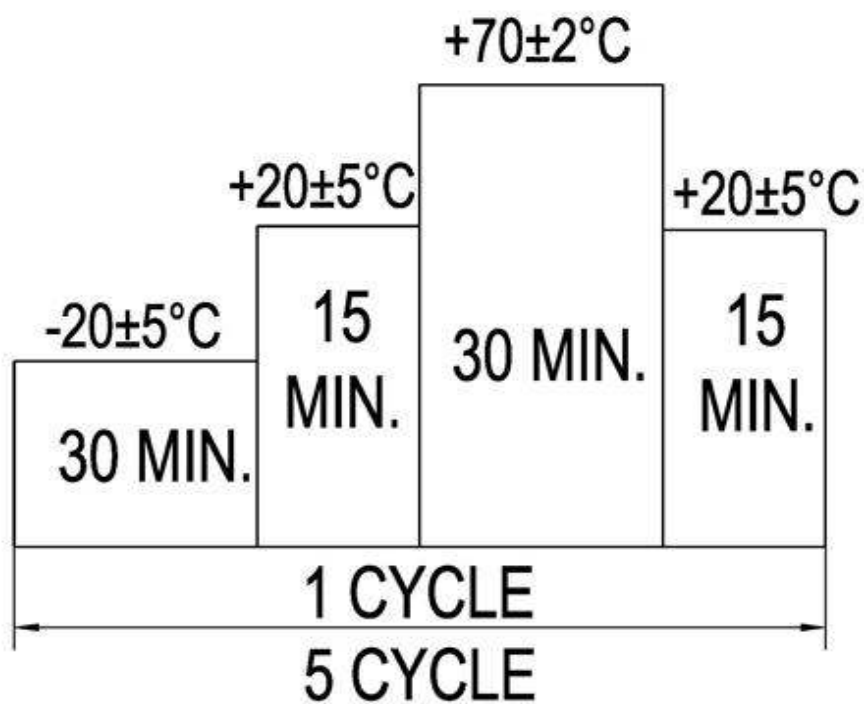
**Note:** Input Voltage 10Vp-p square wave  
Distance 10 cm

#### 5. Reliability Test

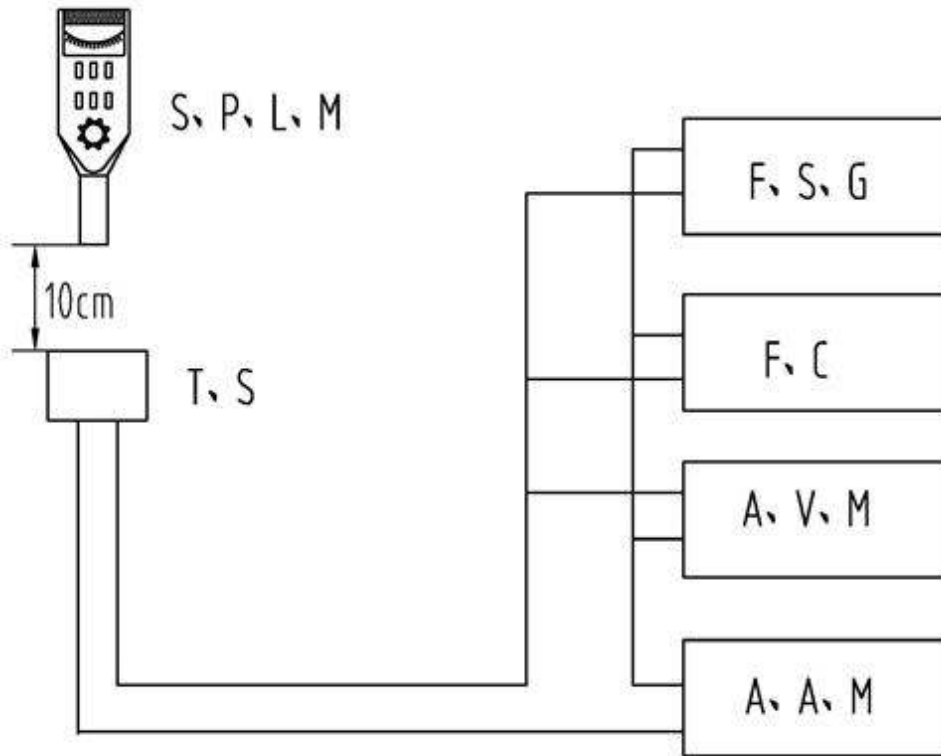
No.	Item	Method of Test	Tolerance after Testing
5-1	Operating Temperature	-20~70°C	Sound pressure level initial value $\pm 10$ dB Max. consumption value $\pm 20\%$ Capacitance value $\pm 20\%$
5-2	Storage in high temperature	Storage in +70°C test box 96 hours then exposed to the room temperature for 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 $10\pm 1$ seconds	
5-10	Test of soldering	Dip the connecting pins in soldering at $230\pm 5^{\circ}\text{C}$ for $3\pm 0.5$ seconds	Solder shall be attached around over 95% of the dipped portion
<b>NOTE:</b> 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