

# APPROVAL SHEET



FHD ELECTRONICS CORPORATION

CUSTOMER NAME : \_\_\_\_\_  
COMMODITY : MAGNETIC TRANSDUCER  
FHD PART NO. : T050531-M4000E-S  
CUSTOMER PART NO. : \_\_\_\_\_

Approved by	Y. J.	Prepared by	HY Shen
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Customer Approval			
Approved		Rejected	

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## A. PART NO.: T050531-M4000E-S



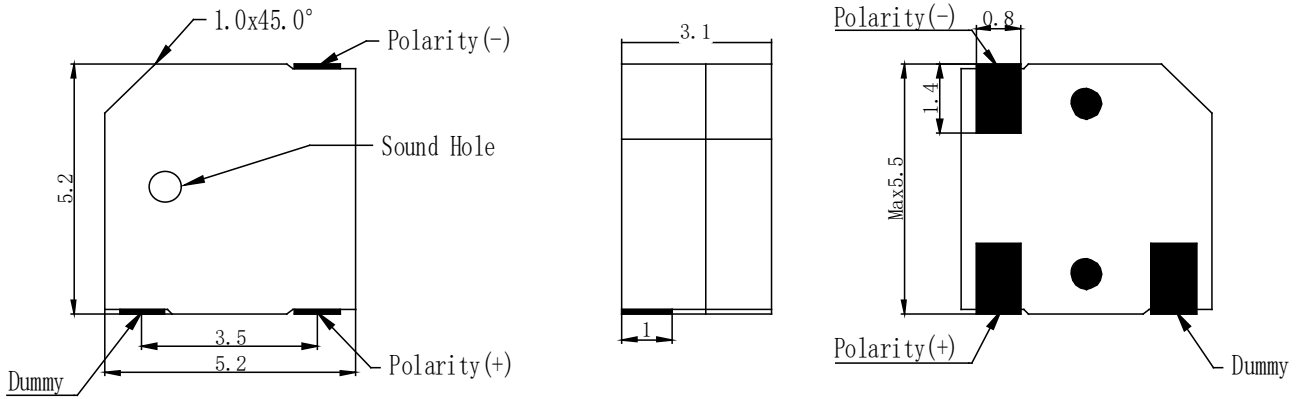
## B. SPECIFICATION

### Measuring condition

Part shall be measured under a condition (Temperature: 5~35°C, Humidity: 45%~85%R.H., Atmospheric pressure: 860 ~1060hPa) unless the standard condition (Temperature: 25±3°C, Humidity: 60±10%R.H. Atmospheric pressure: 860 ~1060hPa) is regulated to measure.

No.	Item	Unit	Specification	Condition
1	Oscillation Frequency	Hz	4000	square wave
2	Operating Voltage	Vo-p	2 ~ 5	
3	Rated Voltage	Vo-p	3.0	
4	Coil Resistance	Ω	12±3	
5	Current Consumption	mA	MAX. 100	At 4000Hz 50% duty Square Wave 3Vo-p
6	Sound Pressure Level	dB	MIN. 80 @10cm	At 4000Hz 50% duty Square Wave 3Vo-p
7	Sound Pressure Level	dB	MIN 65 @10cm	At 600Hz~1200Hz 50% duty Square Wave 3Vo-p
8	Operating Temperature	°C	-20 ~ +70	
9	Storage Temperature	°C	-40 ~ +85	
10	Dimension	mm	5.2 x 5.2 x 3.1	See appearance drawing
11	Weight (MAX)	gram	0.1	
12	Housing Material		LCP ( Black )	
13	Cover Material (Top)		Tin Plating Brass	
14	Connection		3 soldering pads SMD	See appearance drawing
15	Environmental Protection Regulation		RoHS	

## C. APPEARANCE DRAWING



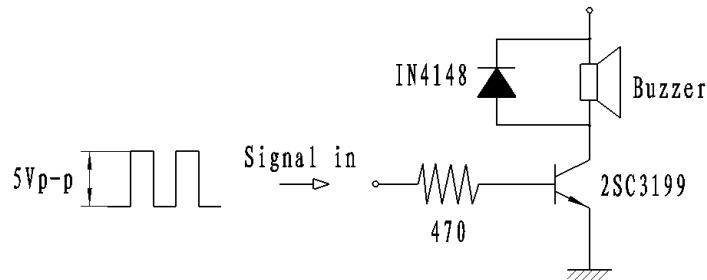
Tolerance:  $\pm 0.3\text{mm}$  Except Specified

## D. ELECTRICAL AND ACOUSTICAL MEASURING CONDITION

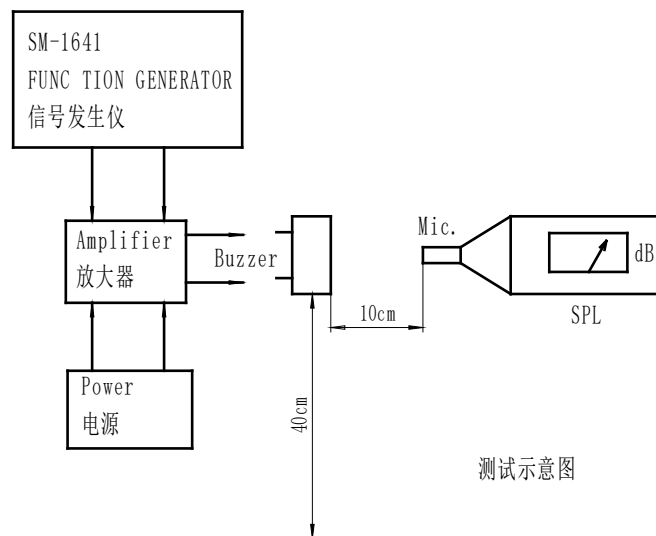
### Recommended Driving Circuit:

Resonant frequency, 1/2 duty cycle. Square Wave.

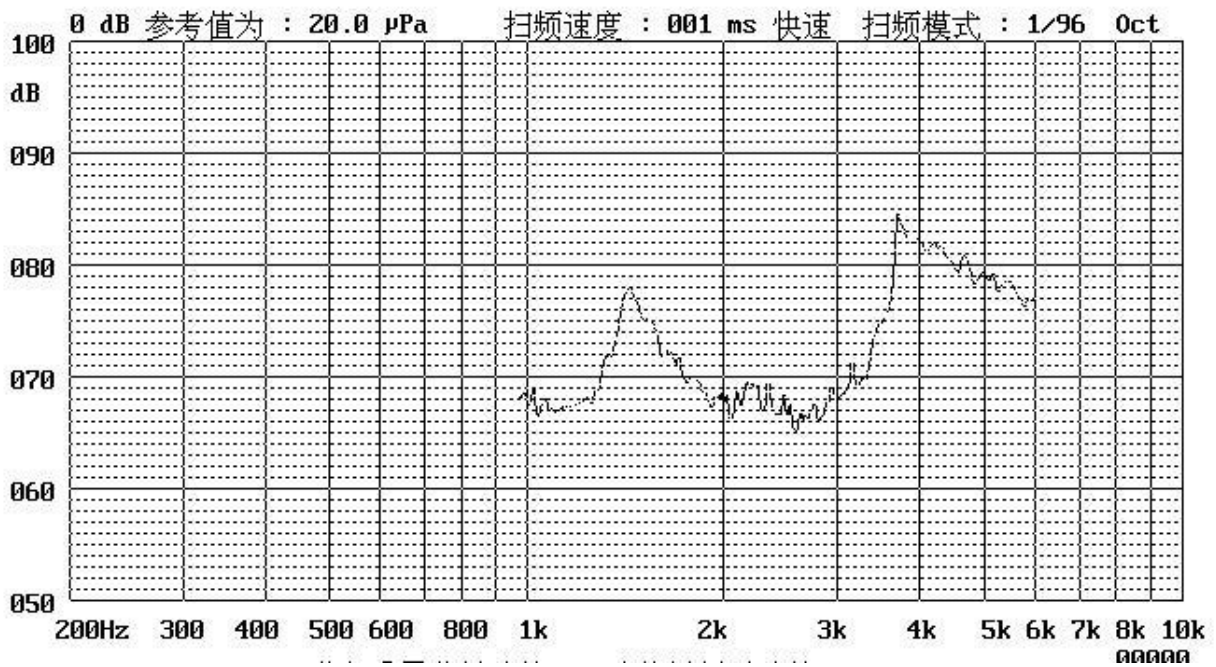
Signal amplitude should be large enough to saturate the transistor.



### Recommended Setting:

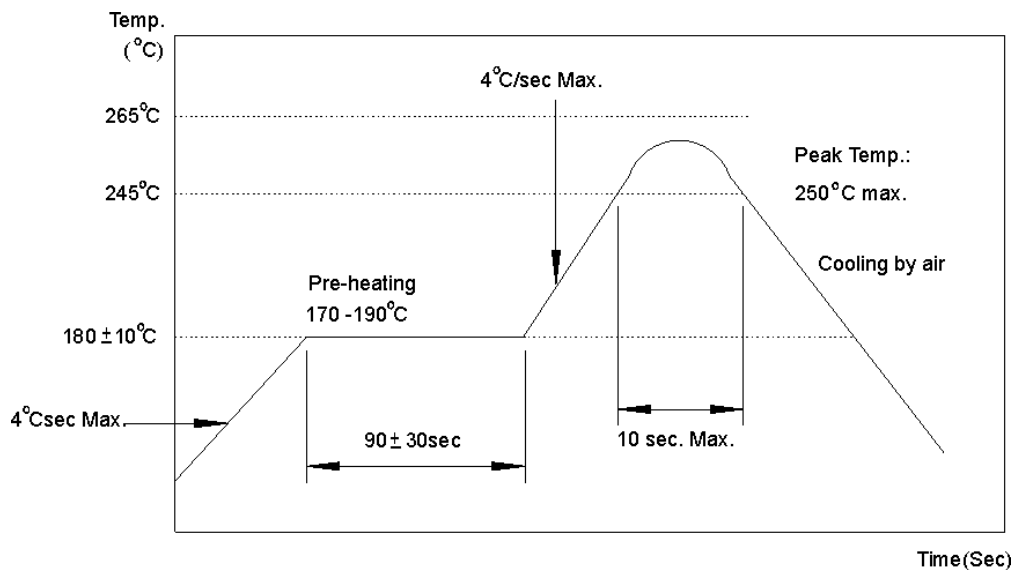


## E. TYPICAL FREQUENCY RESPONSE CURVE



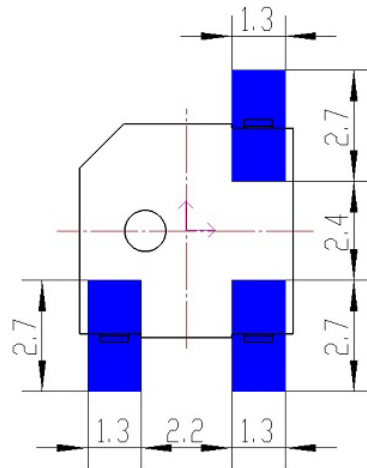
## F. SURFACE MOUNTING CONDITION

1. Recommendable reflow soldering condition is as follows



- Note:** (1) In automated mounting of the SMD sound transducers on PCB, any bending, expanding and pulling forces or shocks against the SMD sound transducers shall be kept minimum to prevent them from electrical failures and mechanical damages of the devices.
- (2) In the reflow soldering, too high soldering temperatures and too large temperature gradient such as rapid heating or cooling may cause electrical failures and mechanical damages of the devices.

## 2. Soldering Pattern



## G.RELIABILITY TEST

After any following tests the part shall meet specifications without any degradation in appearance and performance except SPL. SPL shall not deviate more than -10 Db from the initial value

### 1. Ordinary Temperature Life Test

The part shall be subjected to 96 hours at  $25\pm 10^{\circ}\text{C}$ . Input rated voltage Resonant frequency, 1/2 duty Square wave.

### 2. High Temperature Test

The part shall be capable of withstanding a storage temperature of  $+85^{\circ}\text{C}$  for 96 hours.

### 3. Low Temperature Test

The part shall be capable of withstanding a storage temperature of  $-40^{\circ}\text{C}$  for 96 hours.

### 4. Humidity Test

Temperature:  $+40^{\circ}\text{C}\pm 3^{\circ}\text{C}$  Relative Humidity: 90%~95% Duration: 48 hours and expose to room temperature for 6 hours

### 5. Temperature Shock Test

Temperature:  $60^{\circ}\text{C}$  /1hour  $\rightarrow$   $25^{\circ}\text{C}$ /3hours  $\rightarrow$   $-20^{\circ}\text{C}$ /1hour  $\rightarrow$   $25^{\circ}\text{C}$ /3hours (1 cycle)

Total cycle: 10 cycles

### 6. Drop Test

Standard Packaging From 75cm(Drop on hard wood or board of 5cm thick, three sides, six plain.)

### 7. Vibration Test

Vibration: 1000cycles /min. Amplitude: 1.5mm, Duration: 1 hour in each 3 axes

### 8. Reflow Test

Use recommendable reflow soldering condition (as shown in F.1)

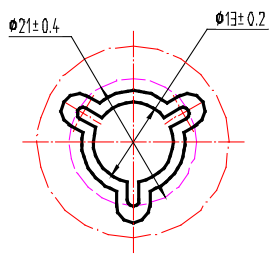
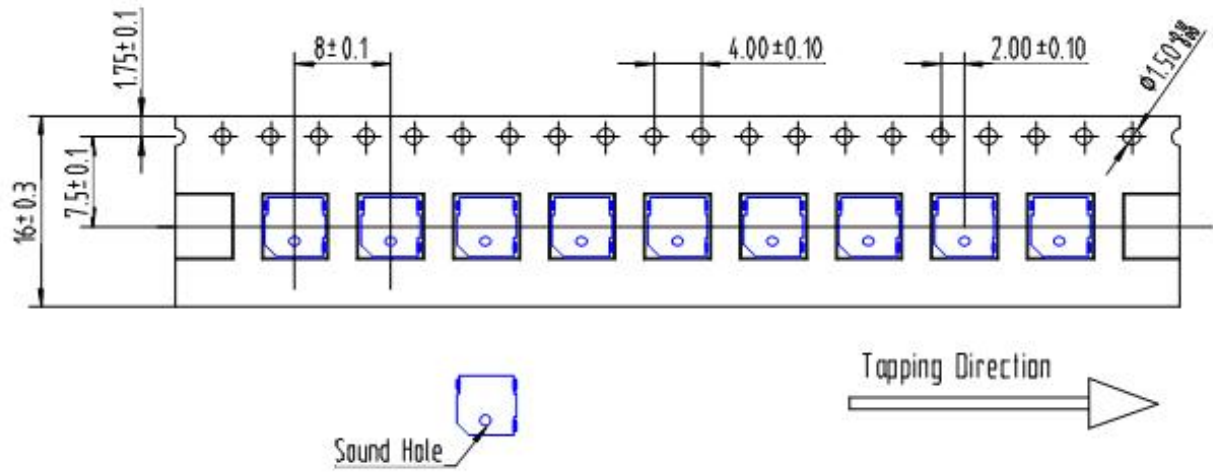
(1) No abnormality should be found after reflow

(2) Good soldering to meet soldering requirements

### Note:

As this product is not protected from foreign material entering, please make sure that any foreign materials (e.g. magnetic powder, washing solvent, flux, corrosive gas) do not enter this product in your production processes. The functional degradation (e.g. SPL down) may occur if foreign materials enter it.

# H. PACKING INFORMATION



DETAIL: A  
SCALE: 8:1

