Data Sheet	SMT-0440-T-R

Though extremely small, the SMT-0440 series transducers are constructed almost exactly the same as electro-mechanical transducers three times their size.

The 4mm square by 2mm high **SMT-0440-T-R** top-firing electro-mechanical transducer features a minimum SPL of 70 dBA at 10cm with only 3V (0-peak) input at 4 kHz. Glue is externally applied to the housing seams to prevent ingress of potting material.

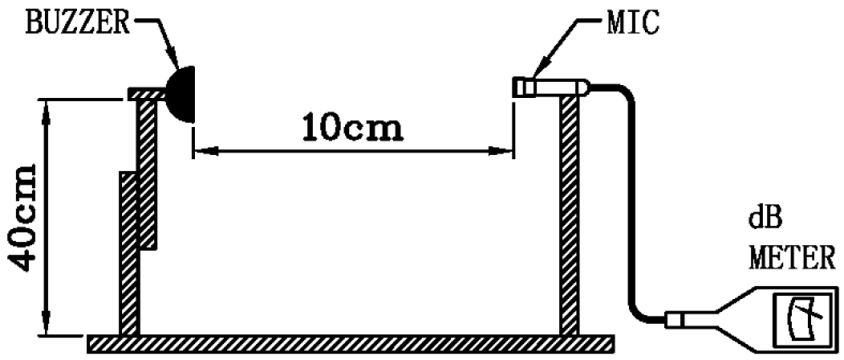
Features:

- Ultra-small design for wearable devices
- High output in a small, lightweight package
- Pick-and-place and reflow compatible

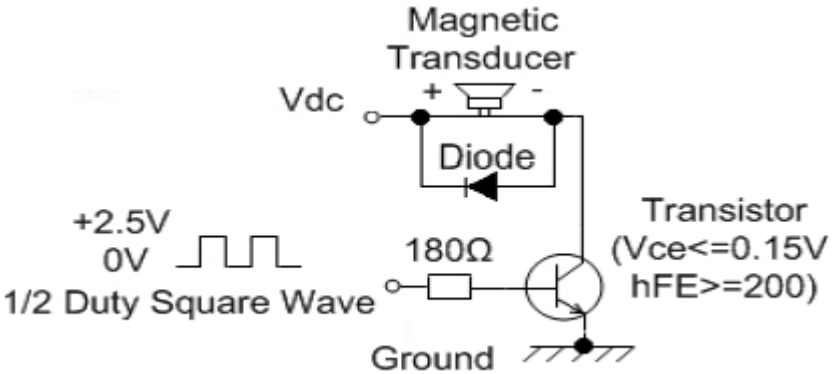
Specifications

Parameters	Values	Units
Rated Voltage	3	V0-p
Operating Voltage Range	2 ~ 4	V0-p
Impedance	17 ± 3	Ohms
Minimum SPL (Rated voltage @ 10cm)	70	dBA
Resonant Frequency	4,000 ±500	Hz
Max Current Draw (Rated voltage, 50% duty cycle, at resonant frequency)	90	mA
Housing Material	LCP	-
Terminal Material	Tin-plated Brass	-
Moisture Sensitivity Level (MSL)	2a	-
Environmental Compliance	RoHS/REACH	
Weight	0.1	Grams
Operating Temperature	-20 ~ +70	°C
Storage Temperature	-30 ~ +80	°C

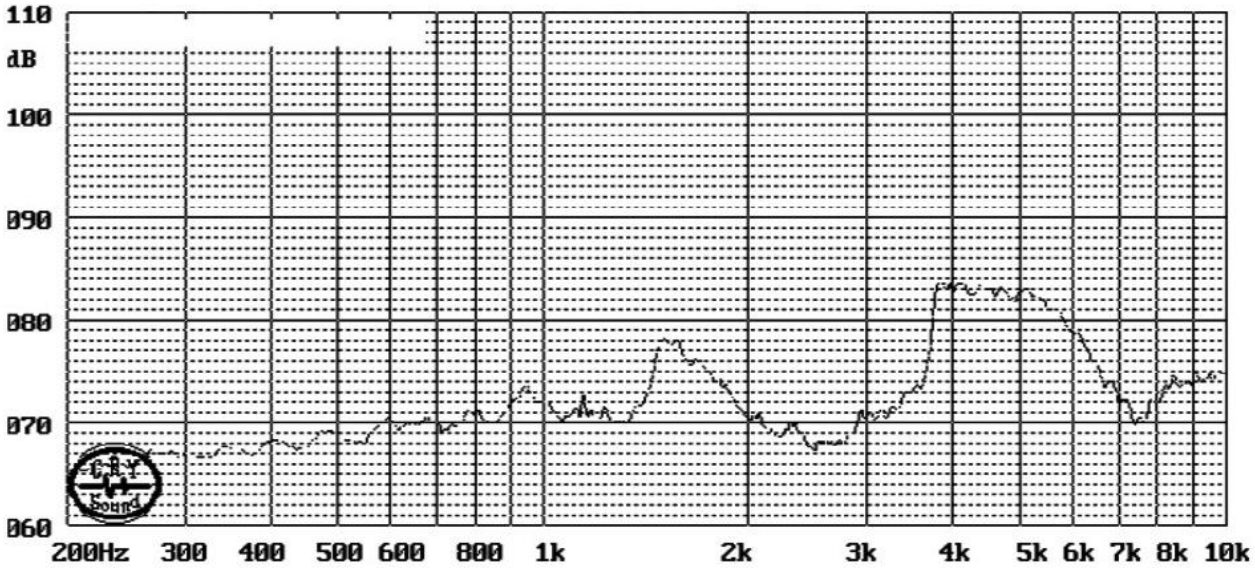
Measurement Method (3V0-p sine-sweep)



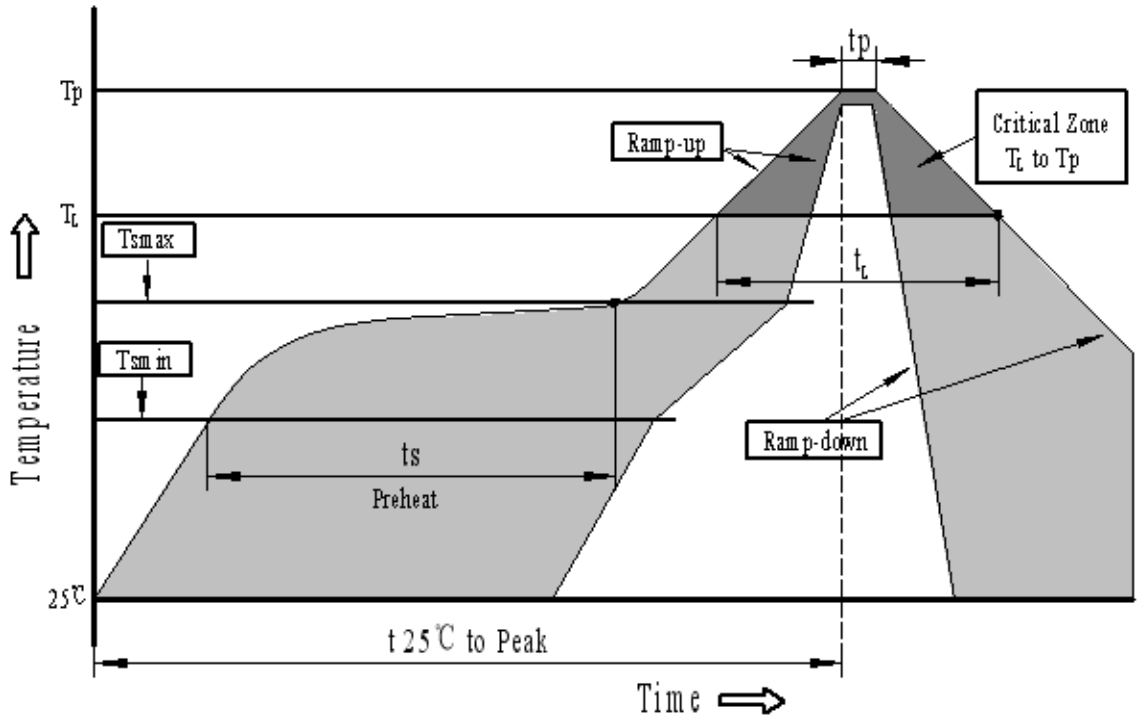
Recommended Drive Circuit



Frequency Response (measured with 3V0-p @ 10cm)

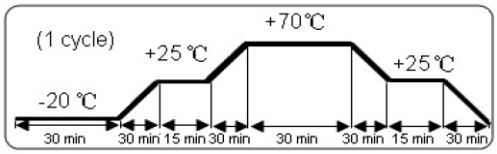


Recommended Reflow Profile



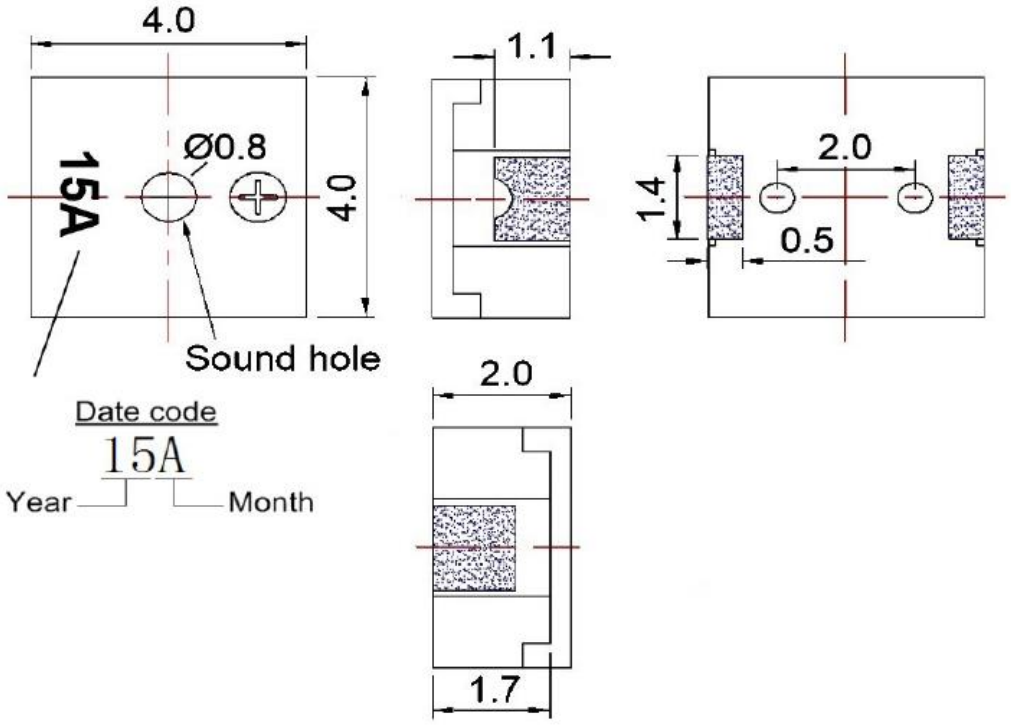
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to Tp)	3□/second max.
Preheat	
-Temperature Min. (Ts_{min})	150□
-Temperature Min. (Ts_{max})	200□
-Temperature Min. (Ts)	60～180 seconds
Ts_{max} to T_L	
-Ramp-up Rate	3□/second max.
Reflow	
- Temperature (T_L)	217□
-Time (T_L)	60～150 seconds
Peak temperature (Tp)	250□+0/-5□
Time within 5□of actual Peak temperature (Tp)	6 seconds max.
Ramp-down Rate	6□/second max.
Time 25□ to Peak Temperature	8 minutes max.

Reliability Testing

Type of Test	Test Specifications
High Temperature Test	96 hours at +70°C ± 2°C followed by two hours in normal room temperature
Low Temperature Test	96 hours at -20°C ± 2°C followed by two hours in normal room temperature
Humidity Test	25 ± 2 °C at 90-95% RH for 5 hr, then to 55 ± 2°C at 90-95% RH for 5hr, then to 25°C ± 2°C at 90-95% RH for 0.5hr, 10 cycles
Temperature Cycle Testing	The part shall be subjected to 5 cycles using the following procedure followed by two hours at room temperature: 
Vibration Test	10 to 50 to 10 Hz in three perpendicular directions for two hours each.
Drop Test	Drop transducer from a 70cm height onto a 10mm thick wooden board in three directions.

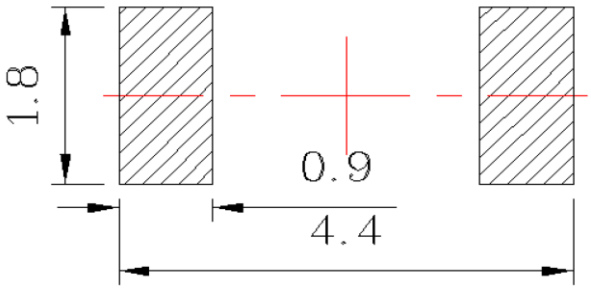
After each test, the part's SPL, frequency response, and current draw shall meet specifications.

Dimensions

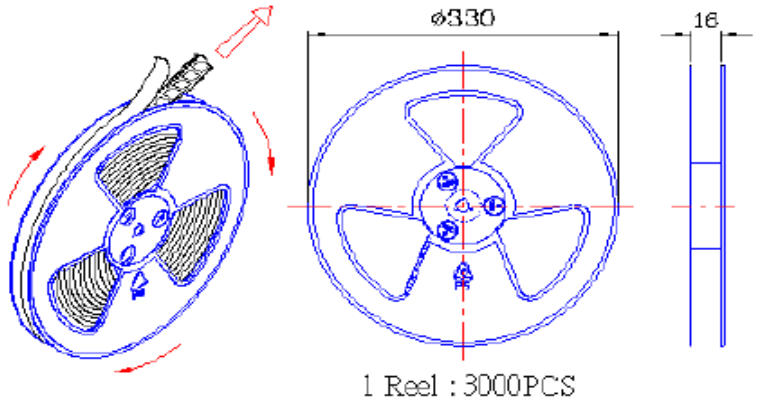


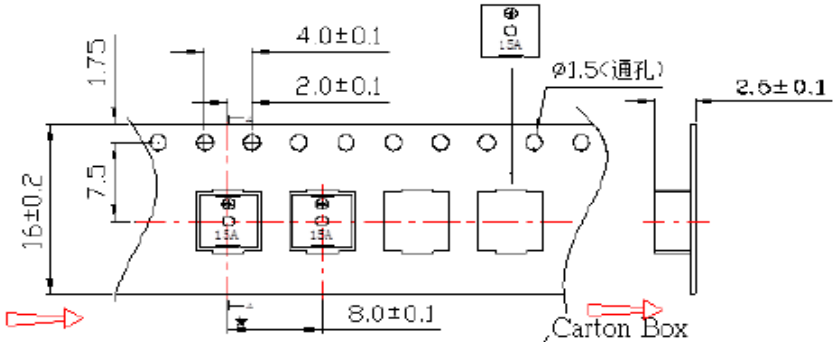
Tolerances ±0.3mm unless otherwise noted.

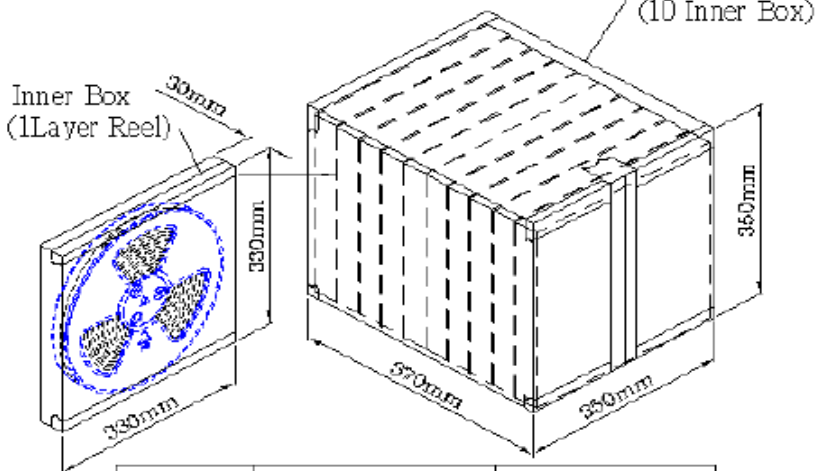
Recommended PCB Land Pattern



Packaging







Inner Box	330mm×330mm×30mm	1×3000PCS=3000PCS
Carton Box	350mm×350mm×370mm	10×3000PCS=30,000PCS

Specifications Revisions

Revision	Description	Date	Approved
A	Released from Engineering	11/06/2014	-
B	Add Dimension Tolerances for ±0.3mm, Add MSL 2a Detail	12/02/2024	ML

Notes:

1. Unless otherwise specified:
   A. All dimensions are in millimeters.
   B. Default tolerances are ±0.5mm and angles are ±3°.
2. Specifications subject to change or withdrawal without notice.