**Challenge Electronics**
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# PRODUCT INFORMATION

| PART # | CEPT220A070-12-125-40MR | Revision: 1-2012 |
|---|---|---|

RoHS COMPLIANCE

## SMD Piezoelectric Sound Transducer

### DESCRIPTION

**Challenge Electronics Piezoelectric Transducer, 22.0** mm Diameter. **A** Style case (Round, Top Sound Port), **7.0** mm High, **12** Vpp Rated Voltage, **1** to **25** Vpp Operating Voltage, **4,0**00 Hz. Resonant Frequency, Typical output of 100 dB(A) at 10 cm at Rated Voltage, **M** Type SMD Termination, **R**oHS Compliance

### FEATURES

- **RoHS**
- **ISO 9001**

### SPECIFICATIONS

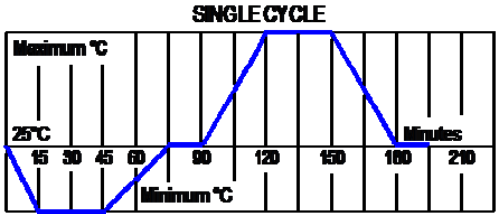
| | | | | | |
|---|---|---|---|---|---|
| **Operating Voltage** | **1-25 Vpp** | **Rated Voltage** | **12.0 Vpp** | **Resonant Frequency** | **4,000 ± 500 Hz.** |
| **Sound Pressure Level** | **Minimum 90 dB(A) Typical 100 dB(A), at: 10 cm, Rated Voltage, Resonant Frequency** | | | | |
| **Operating Current** | **3 mA, at: Rated Voltage, Resonant Frequency** | | | | |
| **Operating Temperature** | **-3 to + 85ºC** | **Storage Temperature** | **-40ºC to +90ºC** | **Capacitance** | **15,000 pFD ± 30% 100 Hz. 1 Vrms** |

| | | | | | |
|---|---|---|---|---|---|
| **Material** | **Case** | **Plastic, PPS A7-03A or equal** | | **Sound Port Direction** | **Top** |
| | **Diaphragm** | **Ni Alloy Disc N42 or equal** | **Termination** | **SMD, 2 soldering pads, Sn plated Brass** | |
| | **Encapsulation** | **Plastic Plate** | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Physical Dimensions** | **Length or Diameter (L /D)** | **22.0 mm** | **Width (W)** | **mm** | **Height (H)** | **7.0 mm** | **Pins Spacing** | **mm** |
| **Approximate Weight** | **2.8 grams** | **Removable Washing Label** | **No** | **Compliance** | **RoHS** | | | |
| **Options** | | | | | | | | |

### RELIABILITY

| | | |
|---|---|---|
| **Thermal Operating Temperature Test** | | 96 hours continuous operation **at Rated Voltage**, at Maximum Rated Operating Temperature * |
| | | 96 hours continuous operation **at Rated Voltage**, at Minimum Rated Operating Temperature * |
| **Thermal Storage Temperature Test** | | 96 hours storage at Maximum Rated Storage Temperatures * |
| | | 96 hours storage at Minimum Rated Storage Temperatures * |
| **Thermal Shock Test** | | 5 cycles of Minimum and Maximum Operating Temperature<br>Each cycle shell be set per diagram and is 3 hours long * |
| **Humidity Test** | | 240 Hours at +40°C±2°C. 90-95% RH * |
| **Insulation Test** | | A minimum of 10 MΩ, measured with 100 Vdc Insulation Resistance Meter, between the Electrical Terminals and the Transducer Case |
| **Vibration Test** | | 2 Hours of at 1.5 mm with 10 to 55 Hz. vibration frequency to each of 3 perpendicular directions * |
| **Termination Strength** | | Maximum of 9.8 N (1.0 Kg) load pull test, applied to each terminal in axial direction for 10 seconds |
| **Drop Test** | | Dropped naturally from 750 mm height onto the surface of 40 mm wooden board, 3 axes (X,Y,Z) directions, 3 times (6 times total) * |
| **Solderability** | | Terminal leads are immersed in rosin for 5 seconds and then immersed in solder-bath of +270°C for 3±1 seconds |
| **Soldering Heat Resistance** | | Terminal leads are immersed, up to 1.5 mm from part case, in rosin for 5 seconds and then immersed in solder-bath of +350±5°C for 3±0.5 seconds or +260±5°C for 10±1 seconds |
| **Reliability Test Performance** * | | **Parts should conform to original performance within ±3dB, after 3 hours of recovery period** |
| **Operation Life Test** | **Continuous** | Two hundred fifty (250) hours of continuous operation, at **Rated Voltage**, each **at Minimum & Maximum Rated Operating Temperatures** |
| | **Intermittent** | One thousand (1,000) hours of: 1 minute ON 4 minutes OFF cycle, **at Room Temperature**, and **Maximum Rated Voltage** |
| **Warranty** | For a period of one (1) year from date of shipping under normal operations conditions<br>This warranty does not apply to products damaged through misuse, abuse, improper installation, alteration, rework, or attempt to repair | |



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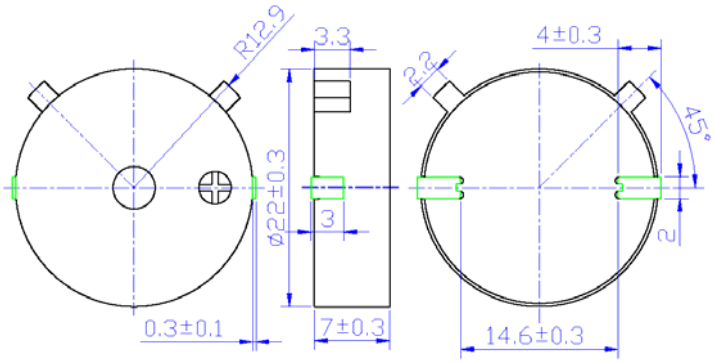
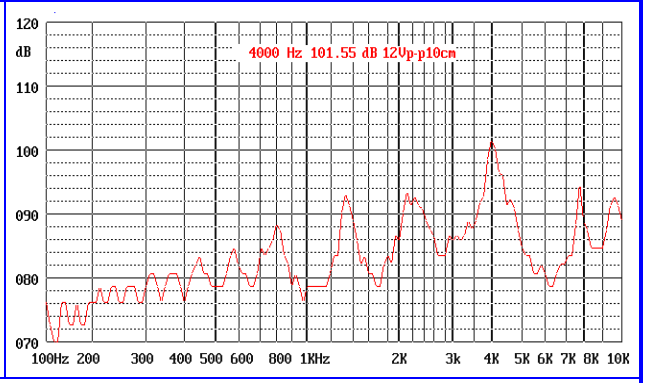
## DIMENSIONS

Units in: mm, Tolerance: ± 0.5mm unless specified otherwise.

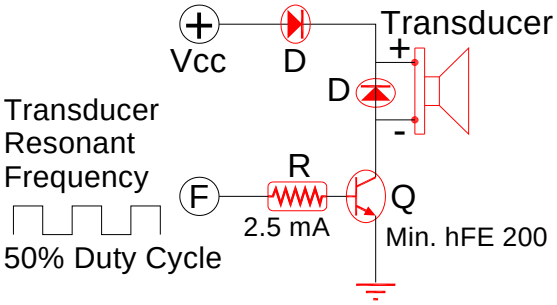



## SPL vs. FREQUENCY RESPONSE




## RECOMMENDED LAND PATTERN

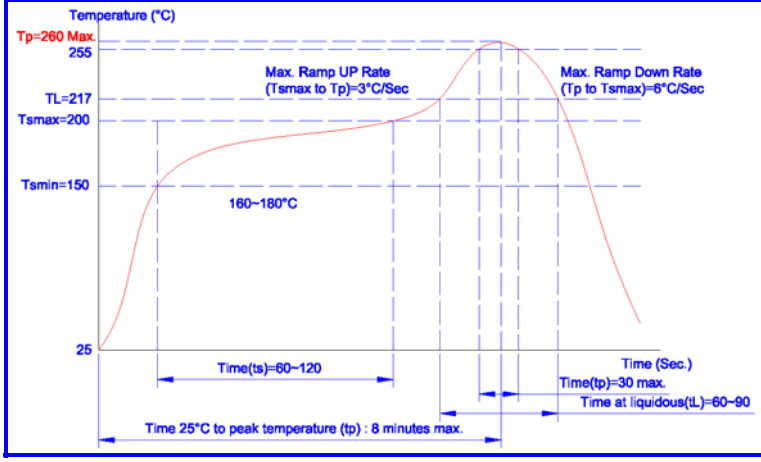
## RECOMMENDED DRIVING CIRCUIT




## Storage

1. **Shelf life:** Twelve (12) months when devices are to be stored in factory supplied unopened ESD moisture sensitive bag under maximum environmental conditions of 30°C, 70% R.H.
2. **Exposure:** Devices should not be exposed to high humidity high temperature environment. MSL (moisture sensitivity level) Class 2

## Solder Reflow Profile




| Stage | Temperature Profile | Maximum Time |
|---|---|---|
| Pre-heat | **170~230ºC** | **120 sec** |
| Solder Melt | **Above 230ºC** | **100 sec** |
| Peak | **260ºC Maximum** | |
| Cool Down | | **100 sec** |
| Total Duration Period | | **6 Minutes Maximum** |

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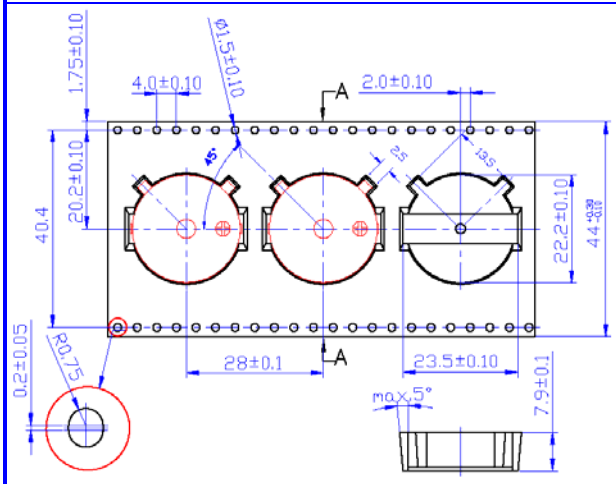
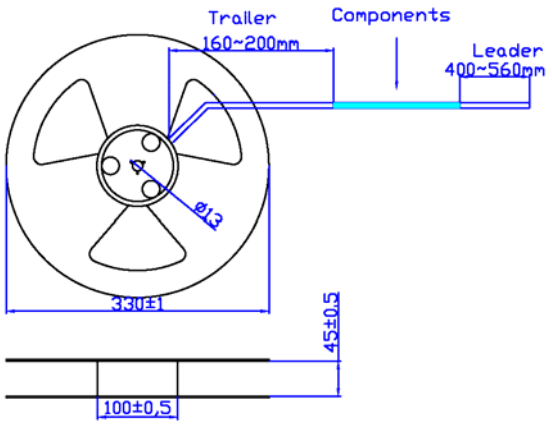
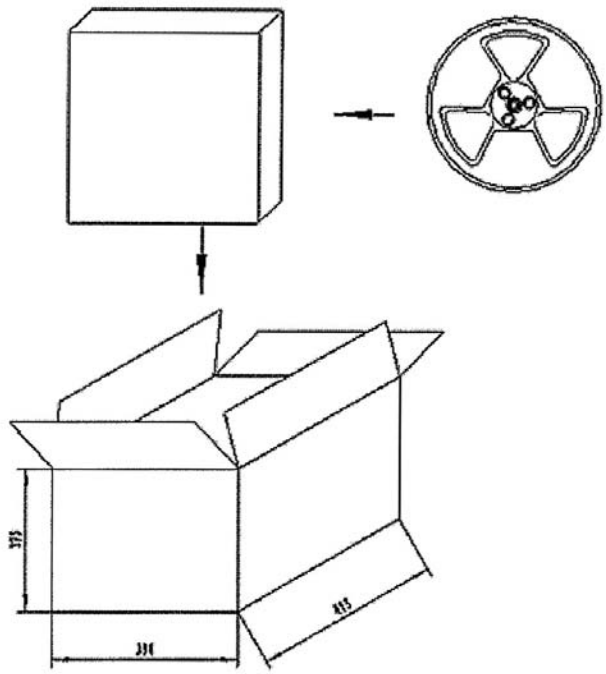
## TAPE and REEL INFORMATION




1. 10 sprocket holes pitch cumulative tolerance ± 0.20 mm
2. Carrier camber not to exceed 1 mm in 100 mm
3. Ao & Bo measured on a place 0.3 mm above the bottom of the pocket
4. Ko measured from a plane on the inside bottom of pocket to the top surface of the carrier
5. All dimensions meet EIA-481-2-A requirements
6. Component loaded 4.8meters per 13" reel: 3 00 parts

## PACKAGING



| MARKING | Reel | | |
|---|---|---|---|
| **Bundle** | Dimensions | X1 | |
| Customer PN | | Y1 | |
| Other PN if required | | Z1 | |
| Quantity | Quantity | | 300 |
| Lot and/or Date Code | Box | | |
| Bundle Number | Dimensions | X2 | |
| **Shipping Box** | | Y2 | |
| Customer Part Number | | Z2 | |
| Other PN (if required) | Quantity | | |
| Quantity | **SHIPPING BOX** | | |
| Lot and/or Date Code | Dimensions | X3 | 41.5 cm |
| PO Number | | Y3 | 39 cm |
| Net Weight | | Z3 | 37.5 cm |
| Gross Weighjt | Number of Box | | 10 |
| Box Number | Quantity | | 10,000 |
| of Number of Boxes | Approximate Weight | | |
| **Made in China** | | | |