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ISO 9001:2008 Certified

PRODUCT INFORMATION

RoHS Lead Free REACH The new chemical legislation COMPLIANCE

PART #	CEPF286H127-130-12-30P30R	Revision	3-2016

Piezoelectric Self-Resonating Sound Transducer

DESCRIPTION

Challenge Electronics Piezoelectric Feedback Transducer; 28.6 mm Diameter**; H** style case (Round with PC Pins Standoffs); **12.7** mm High, **1-30** Vp-p; Nominal Voltage **12** Vp-p; **3,000** Hz. Operating Frequency; Sound Pressure Level Minimum **83 dB(A)** with test circuit (page # 2), 30 cm, 12 Vdc; PC **P**ins, **30** mm diameter

FEATURES

- **Extended Temperatures**
- **RoHS Compliant**
- **ISO 9001 Certified**

REACH COMPLIANCE DECLARATION

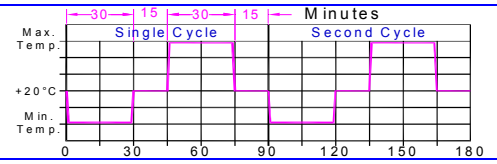
This Article contains Piezoelectric-Ceramic-Disc, which is more than 0.1% (w/w) of REACH Candidate List SVHC Lead-Zirconium-Titanium-Oxide (CAS 12626-81-2), a key ingredient of the Piezoelectric-Ceramic-Disc in the Alarm operation.
See section Substance Of Very High Concern and RoHS Lead Free Compliance, page # 3, for full details.

SPECIFICATIONS

Operating Voltage	**1 to 30 Vp-p**	Nominal Operating Voltage	**12 Vp-p**	Operating Frequency	**3,000 ± 500 Hz. mounted in case**		
Resonant Frequency (Fo)	**Piezo 3,700 ± 500 Hz.**	Capacitance	**20,000 ± 30% pF, at 120 Hz. 1 V_{RMS}**	Resonant Impedance	**Maximum 400 Ω**		
Sound Pressure Level	**Minimum 83 dB(A)**	**SPL is measured at: with test circuit (page # 2), 12 Vdc, 30 cm,** 25°C, Sound Level meter # 2240, Type 2, Fast Response, A-Weighted**; per SJ/T10382-1993**					
Maximum Current	**8 mA,** with test circuit (page # 2), 12 Vdc						
Operating Temperature	**-30ºC to +85ºC**	Storage Temperature	**-40ºC to +95ºC**				
Materials	**Housing**	**ABS, UL-94 1/16" HB, High Heat, Black**	Sound Port	**Top**			
	Diaphragm	**Brass**	Encapsulation	**None**			
	Termination	**Three (3) PC Pins, Brass, Au Plated, 3.5 ± 0.5 mm Long**					
Physical Dimensions	Diameter (D)	**28.6 mm Ø**	Height (H)	**12.7 mm**	PC Pins Spacing	**30.0 mm Ø, at 120º**	PC Pin Diameter	**1.0 mm Ø**
Approximate Weight	**3.8 grams**	Removable Washing Label	**No**	Compliance	**RoHS, SVHC, and REACH**		
Options							

RELIABILITY

	1. Reliability Tests done per Buzzer test method SJ-258-10382 **2. * Parts should conform to original performance within ±3dB, after 3 hours of recovery and dry period**
Thermal Operating Temperature Test	**96 hours** continuous operation **at Nominal Voltage,** at **Maximum Operating Temperature, per GB/T2423.2-1989** *
	96 hours continuous operation **at Nominal Voltage, at Minimum Operating Temperature; per GB/T2423.1-1989** *
Thermal Storage Temperature Test	**96 hours** storage at **Maximum Storage Temperatures, per GB/T2423.2-1989** *
	96 hours storage at **Minimum Storage Temperatures; per GB/T2423.1-1989** *
Thermal Shock Test	**5 cycles** of **Minimum and Maximum Operating Temperature** Each cycle shell be set per diagram below and is three (3) hours long. Make sure to limit temperature range to specifications listed above, **per GB/T2423.3-1993** *
Humidity Test	**120 Hours** at +60°C±2°C, 90-95% RH, **per EIA/JESD22 – A101 & GB2423.3-93** *
Vibration Test	**2 Hours** at 1.5 mm with 10 to 55 Hz. of vibration frequency to each of 3 perpendicular direction *
Drop Test	Dropped naturally from 1 meter height onto the surface of 10 mm wooden board, 2 directions upper and side of the part are applied, **per GB2423.8-81** *
Termination Strength	Maximum of 15 pounds (6.8 Kg) load pull test.
Solderability	Withstand Wave or Drag-Soldering at **maximum of 260ºC** or Manual Soldering at **maximum of 240ºC for 3 seconds**
Life Test – Intermittent	**1,000 hours** of a 1 minute on 4 minutes off cycle at room temperature and **maximum Voltage**
Life Test – Continuous	**250 hours** continuous operation at room temperature and **maximum Voltage**
Warranty	For a period of **One (1) year** from date of shipping under normal operations conditions This warranty does not apply to products damaged through misuse, abuse, improper installation, alteration, rework, or attempt to repair



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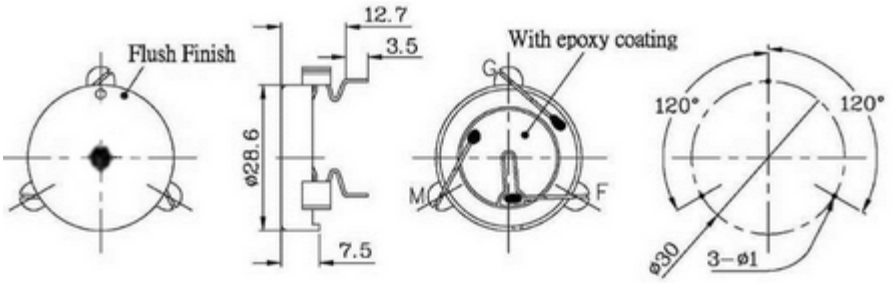
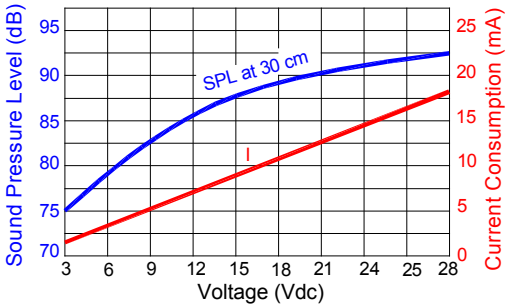
DIMENSIONS

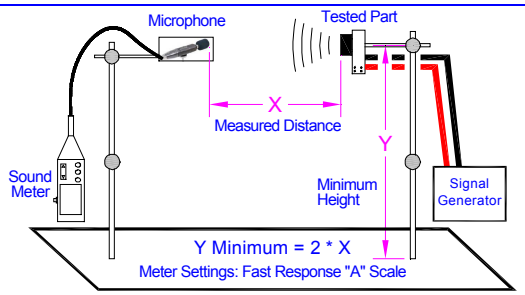
Units	Inches	Tolerance	0.030
	(mm)		(0.7)



PERFORMANE USING TEST CIRCUIT



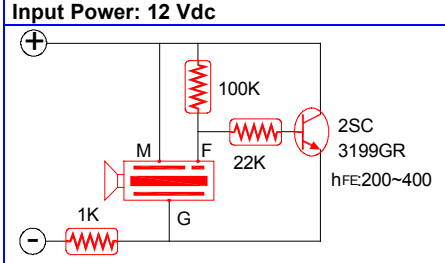
Standard SPL Measurement Process



X = 11.8" (30 cm)

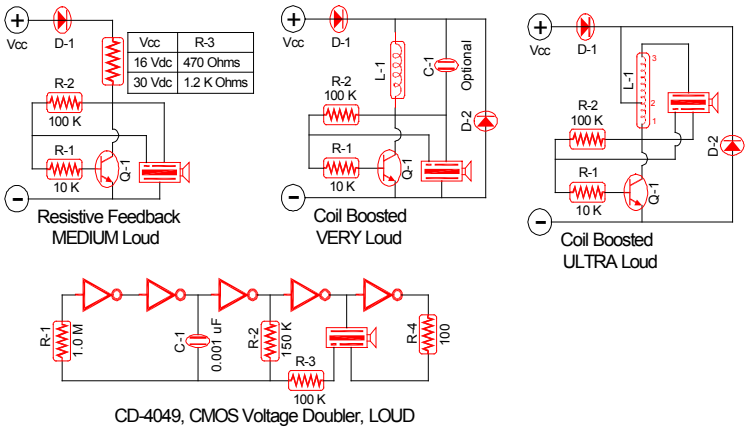
TEST CIRCUIT

Sound Type: Continuous Tone
Input Power: 12 Vdc



DRIVING CIRCUIT APPLICATIONS

FEEDBACK DRIVE CIRCUITS

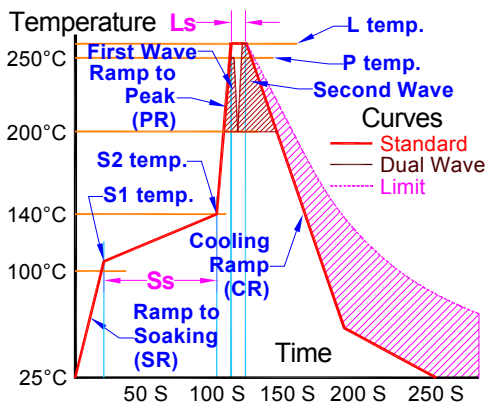


PIEZOELCTRIC PRECAUTION

1. Do not maintain Vdc (Direct Current) on the Piezoelectric Assembly. Direct Voltage may depolarize the Piezoelectric Ceramic Disc resulting in Lower Sound Pressure Levels
2. A non-polarize Capacitor can be used in series with the Piezoelectric Sound Transducer to block constant Vdc
3.

RECOMMENDED WAVE SOLDER TEMPERATURE PROFILE

Below is a standard temperature profile for Through Hole Devices according to JESD22-B106 and IEC668 2-20 (260°C, 10 s)



Profile Feature	Symbol	Recommended Setting
Ramp to Soaking	(SR)	3°C/S max
Preheat and Soaking Temperature	(S1 temp.)	110°C
Preheat and Soaking Temperature	(S2 temp.)	150°C
Preheat and Soaking Time	(Ss)	60 S to 120 S
Ramp to Peak Temperature	(PR)	1-2°C/S
Peak Temperature	(P temp.)	217°C
Limit Temperature	(L temp.)	260°C
Maximum Soldering Time	(Ls)	45 S to 75 S
Cooling Ramp	(CR)	2-4°C/S

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SUBSTANCE OF VERY HIGH CONCERN and RoHS COMPLIANCE DECLARATION

This product does NOT contain any of the REACH Substances of Very High Concern (SVHC), and complies with European Union REACH Regulation No.1907/2006 regarding chemical substances that must be registered and disclosed with one (1) Exemption

Lead (Pb) / Lead Compounds	≤1,000 ppm	≤ 10,000 ppm (1)	**Poly Brominated Diphenyl Ethers (PBDE)**	≤1,000 ppm	**In compliance**
Mercury (Hg) / Mercury Compounds	≤1,000 ppm	**In compliance**	**Bis (2-Ethylhexyl) Phthalate (DEHP)**	≤1,000 ppm	**In compliance**
Cadmium (Cd) / Cadmium Compounds	≤ 100 ppm	**In compliance**	**Butyl Benzyl Phthalate (BBP)**	≤1,000 ppm	**In compliance**
Hexavalent Chromium (Cr VI)	≤1,000 ppm	**In compliance**	**Dibutyl Phthalate (DBP)**	≤1,000 ppm	**In compliance**

(1) European Union Directive 2011/65/EU (RoHS Directive) of the European Parliament. And of the Council of 8 June 2011 and all subsequent amendments, The ANNEX III of the Directive Applications exempted from the restriction in Article 4(1): 7(c)-I, Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. Piezoelectric devices, or in a glass or ceramic matrix compound Piezoelectric is also known as Lead Zirconate Titanate (PZT) ceramics. Piezoelectric Ceramic disc, (PZT), lead as high covalent compound in the ceramic matrix to achieve good ferroelectric properties in a wide temperature range. The best-known performances can be reached with PZT ceramics, which are a mixture of PbTiO3 and PbZrO3. The lead content, homogeneous material compound is between 58% and 68% by weight depending on the proportion of zirconium (Zr) and titanium (Ti)

1) According to the REACH terminology, Challenge Electronics acknowledge being Producers, Importers and Marketer of Sound Devices Articles, which do not contain Substances of Very High Concern (SVHC's) to be intentionally released

2) Challenge Electronics hereby declares, to the best of our knowledge and based on our China Manufacturers and Fabricators information, that, all Challenge Electronics Sound Devices Articles are chemically safe, and should not harm any human, animals, or the environment

3) It should be noted that SVHC items are not banned from inclusion, but are Reportable per current REACH regulations

a) With the exception of The Piezoelectric-Ceramic-Disc article that CONTAINS more than 0.1% (w/w) of REACH Candidate List SVHC Lead-Zirconium-Titanium-Oxide (CAS 12626-81-2), which is a key ingredient of the Piezoelectric-Ceramic-Disc in the Alarm operation. See also the RoHS Compliance ANNEX III of the Directive Applications exempted from the restriction in Article 4(1)

b) Some SMD and Dip type Capacitors CONTAINS one of the following Lead Oxides published in the ECHA SVHC Candidate List at or greater than 0.1% of total weight: Lead monoxide (CAS 1317-36-8), Lead titanium zirconium oxide (CAS 12626-81-2)

IMDS Guide for Piezoelectric
Automotive Industry Interpretation Guide for ELV Annex II (2016/774/EU) with IMDS Information added by the IMDS Steering Committee

- **Interpretation Guide for ELV Annex II (2016/774/EC) Version 3.0**
- **Definition/interpretation of -Exemption (10a)**

Examples for components covered by (10a)

a) Piezoceramics

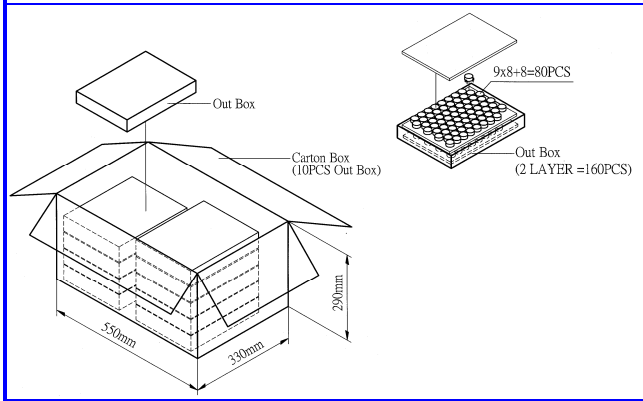
Piezoceramics are characterized through their ability to transform mechanical energy in electrical energy and reciprocal. They fulfil technical functions as actuators, sensors, generators and motors. They are used for instance in Actuators for diesel and gasoline injection valves, knock sensors, resonator and filter, actuators, bending actuators for pneumatic valves, tire Pressure Sensors, ceramic sensors (like ABS, air bag, pressure, car navigation sensors), **Piezoelectric Alarms, Piezoelectric buzzers, Piezoelectric Sound Transducers, Ultrasonic Sensor and Transmitter**. The lead content in the Piezoceramics ceramics is around 50 to 70% by weight, depending on the content of dopants, required functional properties and on the proportion of Zirconium (Zr) and Titanium (Ti)

Lead Zirconium Titanium Oxide Information Basic information

Density:	**7.7 g/cm³**	CAS #:	**12626-81-2**	EC #:	**235-727-4**	Inclusion Date:	**12/19/2012**	DN:	**ED/169/2012**	Product Categories:	**Inorganics**
Safety Information:		RIDADR:	**UN1993**	TSCA:	**Yes**	Hazard Class:		**3**		Packing Group:	**III**

In Challenge Electronics role as Supplier, we have taken the necessary steps towards our China Manufacturing in order to get a written confirmation about their knowledge of the Regulation and their analysis of the impact on their company

PACKAGING



MARKING Shipping Box	**TRAY**		
Part Number	Dimensions	**X1**	**9 cm**
Customer PN (if required)		**Y1**	**8 cm**
Quantity		**Z1**	**8 cm**
Lot and / or Date Code	Quantity		**160**
PO Number	**SHIPPING BOX**		
Net Weight	Dimensions	**X3**	**55 cm**
Gross Weighjt		**Y3**	**33 cm**
Box Number _ of _ Boxes		**Z3**	**29 cm**
RoHS	Quantity		**1,600**
	Approximate Weight		
	Volume		**0.053 m³**
	Made in		**China**

Revision	Description	By	Date
1-2013	**Updated Specifications**	**E. Zofan**	**12/19/2013**
2-2016	**Added Capacitance Data and REACH Declaration**	**E. Zofan**	**8/24/2016**
3-2016	**Clarified the information of SUBSTANCE OF VERY HIGH CONCERN and RoHS COMPLIANCE DECLARATION**	**E. Zofan**	**11/8/2016**