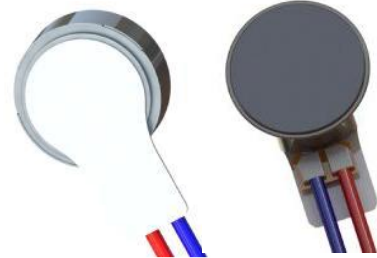


LRA 08235W A

LINEAR RESONANT ACTUATOR

CONTENT

1. Specifications
2. Drawing
3. Test Method
4. Acceleration Characteristics
5. Reliability Test
6. Packing
7. Notice
8. History Change Record



1. SPECIFICATIONS

Parameter	Unit	Conditions / Description	MIN	TYP	MAX
Rated Voltage	VrmsAC	Sine wave		1.8	
Operating Voltage	VrmsAC		0.1		1.9
Rated Frequency	Hz		188	235	282
Acceleration	Grms	At 1.8Vrms, 100g load	1.25		
Rise Time	ms	Driven at rated voltage and frequency (1.8VrmsAc, Sine wave, 235Hz) 0 → 50%			50
Falling Time	ms	Driven at rated voltage and frequency (1.8VrmsAc, Sine wave, 235Hz) 100 → 50%			80
Resistance	Ω	Under 25°C	20.7	23	25.3
Noise	dB	Driven at rated voltage and frequency (1.8VrmsAc, Sine wave, 235Hz) In 30cm distance			50
Direction of Vibration				Z-AXIS	
Contact				WIRE	
Packaging				TRAY	
Operating Temperature	°C		-40		+85
Storage Temperature	°C		-40		+95
Weight	g			0,9	

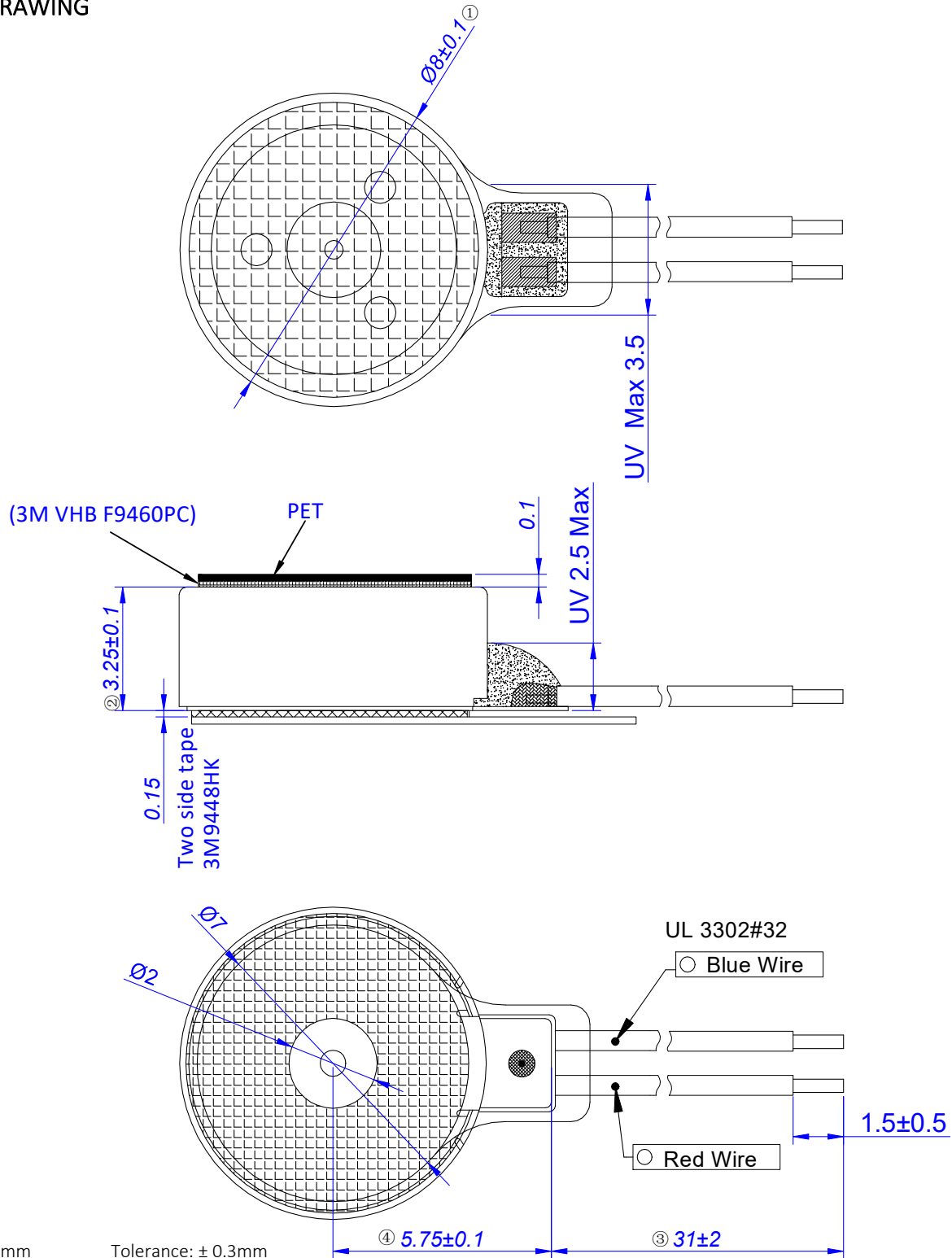
Remark:

Environmental Conditions

1. Standard conditions for inspection and measurement:
Temperature: +15...+35°C, Humidity: 45~85%RH (no condensation of moisture)
2. When a judgment under standard conditions raises doubt, the following conditions apply:
Temperature: +18...+22°C, Humidity: 50~60%RH (no condensation of moisture)

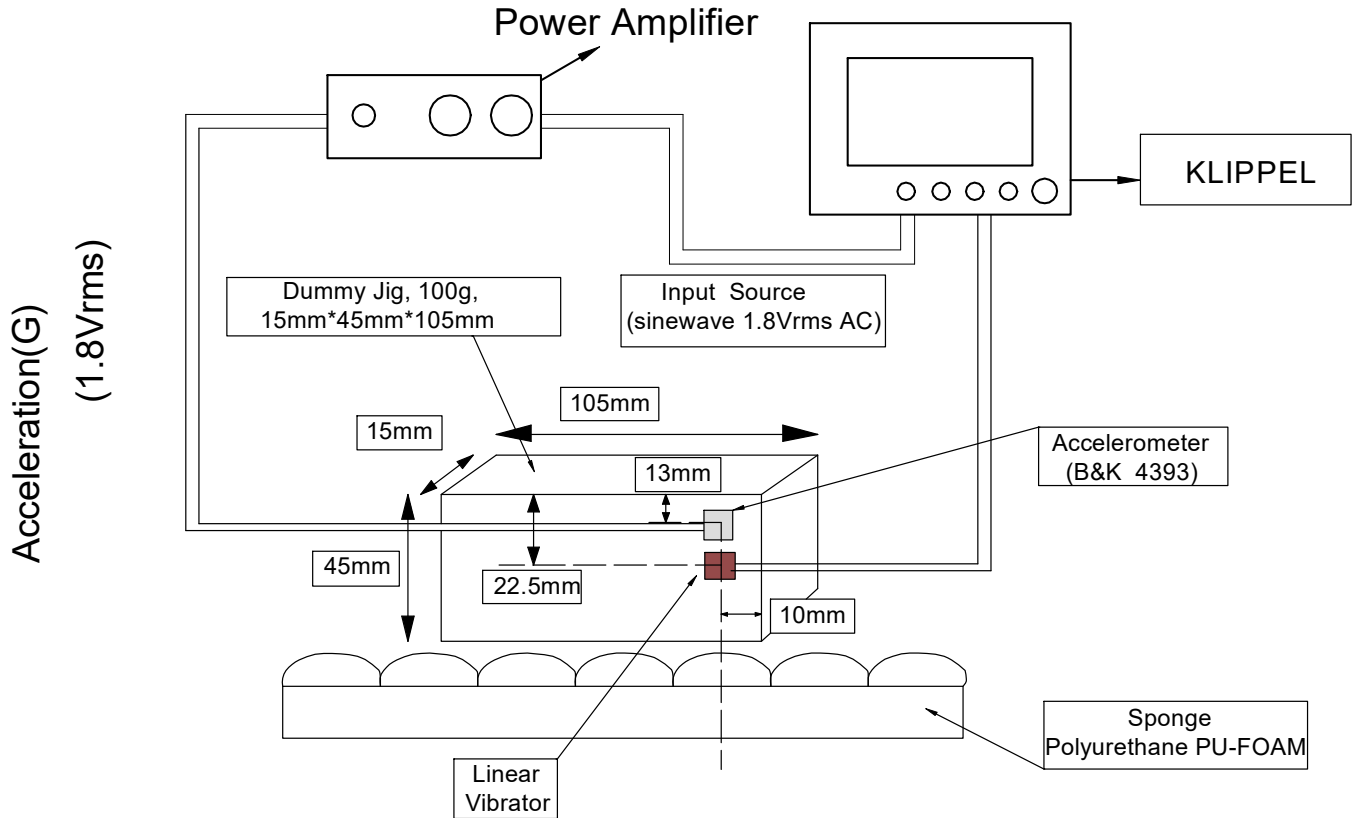
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RELEASED BY	Anouschka Esselun	DATE	2019.01.08				
CHANGED BY	Rabea Richter	DATE	2022.01.21				
DRAWING NO.	42886515						

2. DRAWING

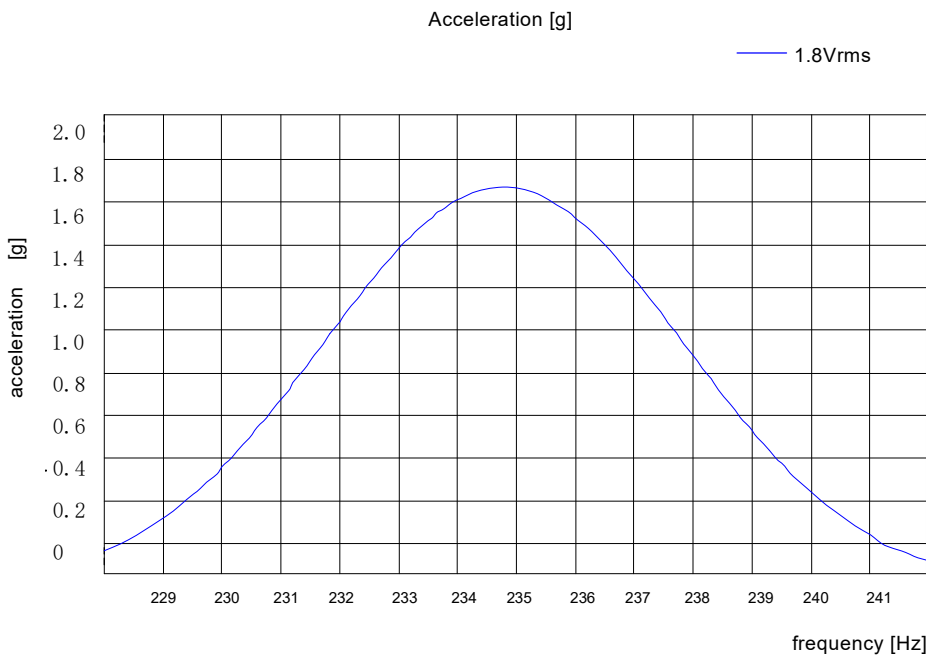


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3. TEST METHOD



4. ACCELERATION CHARACTERISTICS (only for reference)



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5. RELIABILITY TEST

5.1 Load Test

Power (Nom)	1.8Vrms
Cycle	30ms ON, 470ms OFF
Duration	1000 hours

5.2 High Temperature Storage Test

Temperature	+85 ±2°C
Duration	1000 hours

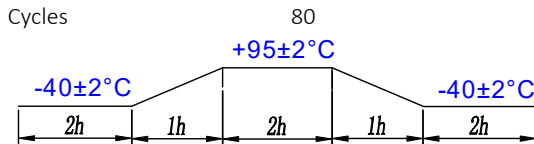
5.3 Low Temperature Storage Test

Temperature	-40 ±2°C
Duration	500 hours

5.4 Damp Heat Test

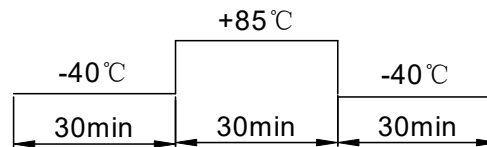
Temperature	+85 ±2°C
Relative Humidity	85 ±2% RH
Duration	1000 hours

5.5 Humidity Cycle Test



5.6 Thermal Shock Test

Temperature	-40°C ~ +85°C
Duration	1000 hours



5.7 Drop Test

Fix the motor onto the 200G, 6000 series aluminum alloy carrier
 Height 1m (on 10mm thick wooden board)
 Times 1 time for each of three directions

Performance after Reliability Test:

- 1) Acceleration: ≥1.0G at 100g load, 1.8Vrms
- 2) RT (Rise Time): <60ms at 100g load, 1.8Vrms, 235HZ
- 3) BT (Break Time): <100ms at 100g load, 1.8Vrms, 235HZ
- 4) Noise: ≤60dB at 100g load, 1.8Vrms, 235Hz, 30cm

Notice: Before the test, it should work normally for 1 hour; after the test, it should be placed at room temperature for at least 4 hours to test its performance.

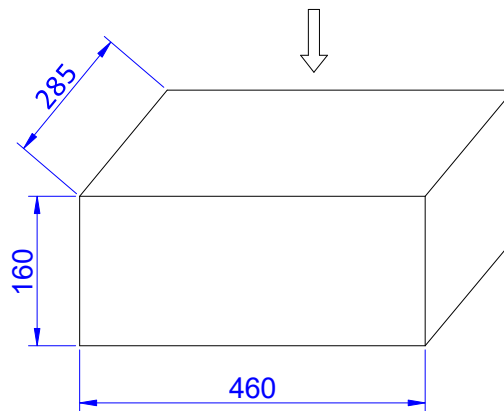
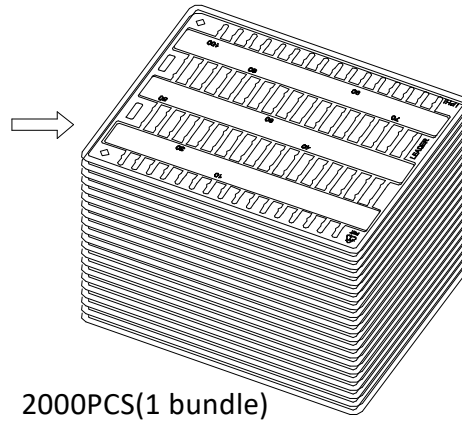
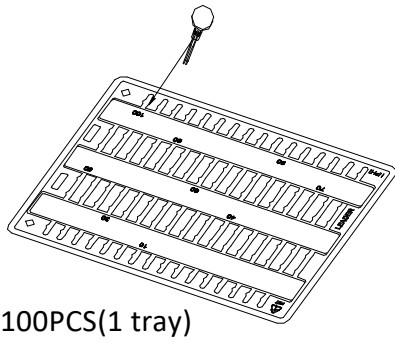
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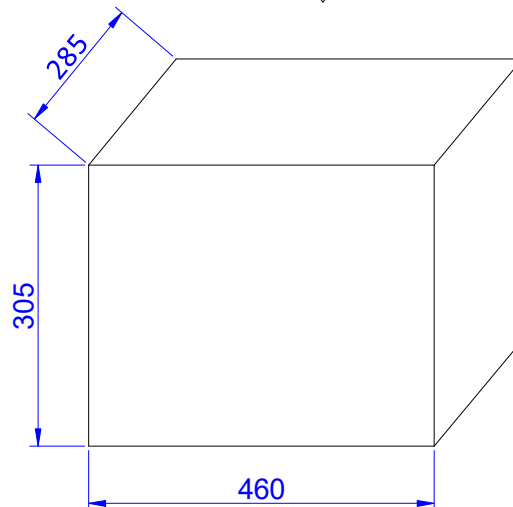
LINEAR RESONANT ACTUATOR

6. PACKING

6.1 PACKING DRAWING



1 box × 2



6.2 PACKING QUANTITY

100pcs per tray
 20 trays per bundle
 2000pcs per bundle in total
 2 bundles per box
 2 boxes per carton
 8000pcs per carton in total
 Carton Size 46x28.5x30.5cm

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7. NOTICE

7.1 The products must not be washed

7.2 Structural and component changes

The structure and components of the product can be modified to improve the quality of the product without changing the size and performance requirements

7.3 Storage Condition

The products should be stored in a room, where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products at the following conditions:

Temperature: -10 to +40°C Humidity:15 to 85% R.H.

7.4 Expire Date on Storage

Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a longer time (more than six months), then use them carefully because the products may be degraded in the solderability and/or rusty. Please confirm solderability and characteristics for the products regularly.

7.5 Notice on Product Storage

- 1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solderability due to the storage in a chemical atmosphere.
- 2) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to the storage under the poor condition.

7.6 Rated and Max-input power

Rated input power

Rated input power is the maximum (limit) value which can be input to the component intentionally. If the actual input power to component keeps exceeding the Rated Input power, it will damage the component acoustic performances and reliability. In the worst case, the component will get broken and no sound.

Max-input power

Max-input power is the maximum (limit) value for unexpected input power which is caused in the customer's circuit like surge voltage. If the actual input power to the component keeps exceeding the maximum input power, it will break the component and cause no sound in a short time. Please note that the components will have a risk to get broken if the unexpected input power continues.

The value of input power is set based on the sinusoidal power in the normal speaker use. If the special signal is input to component, the values of Rated and Max-input power will be different. Please make a well-investigation at your laboratory in the case of the special signal input.

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8. HISTORY CHANGE RECORD

REV	CHANGE ITEMS		DATE
	BEFORE CHANGE	AFTER CHANGE	
1		Add lead	2018.12.18
2		Add wire	2019.01.08
3	Old layout	New layout	2019.08.23
4	Part name: LRA08235CA	Part Name: LRA08235LA	2020.01.13
5	Resistance: 24 Ω ±10%	Resistance: 25.5 Ω ±10%	2020.01.13
6	Packing quantity: 5000pcs per carton	Packing quantity: 8000pcs per carton	2020.01.13
7		Update drawing: Add Printing	2020.01.13
8		Add Test Setup	2021.05.05
9	Part Name: LRA 08235LA	Part Name: LRA 08235WA	2022.02.21
10	Operating Voltage: 0.1~1.8 VrmsAC, Acceleration: 1.0~1.5 Grms Resistance at 25 ±3°C: 25.5Ohm±10% Weight: ~0,76g Operating Temperature: -20...+60°C Storage Temperature: -30...+70°C	Operating Voltage: 0.1~1.9 VrmsAC Acceleration: ≥1.2Grms Resistance at under 25°C: 230hm±10% Weight: ~0.9g Operating Temperature: -40...+85°C Storage Temperature: -40...+95°C Add wire, Update drawing, acceleration curve, reliability test	2022.02.21

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