



soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

### Page 7

Soldering Condition  
Heat Sink

### Page 8

Packing

## Electrical Characteristics

### Sensitivity

Symbol: S Unit: dB

Condition: 0dB=1V/Pa at 1kHz

Limits: Min: -45 Center: -42 Max: -39

### Output impedance

Symbol: Z out Unit: KΩ

Condition: f=1kHz

Limits: Max: 5.5

### Current Consumption

Symbol: IDSS Unit: μA

Condition: VCC =2.0V,RL=2.2KΩ

Limits: Max: 500

### Signal to Noise Ratio

Symbol: S/N Unit: dB

Condition: at 1kHz S.P.L=1Pa (A-Weighted Curve)

Limits: Min: 50

### Decreasing Voltage

Symbol: ΔS Unit: dB

Condition: VCC=3.0V to 2.0V

Limits: Max: -3

### Operating Voltage

Unit: V

Limits: Min: 1.4 Max: 5

### Maximum input S.P.L

Unit: dB

Condition: THD<3%, at 1KHz

Limits: Max: 110

### Dimension

Ø 3.0x1.5mm

Wire 100mm (UL3302/AWG32#) + Connector: 11251H00-2P-HF (Pin: 1.25mm)

### IP Level

IP67



soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

### Page 7

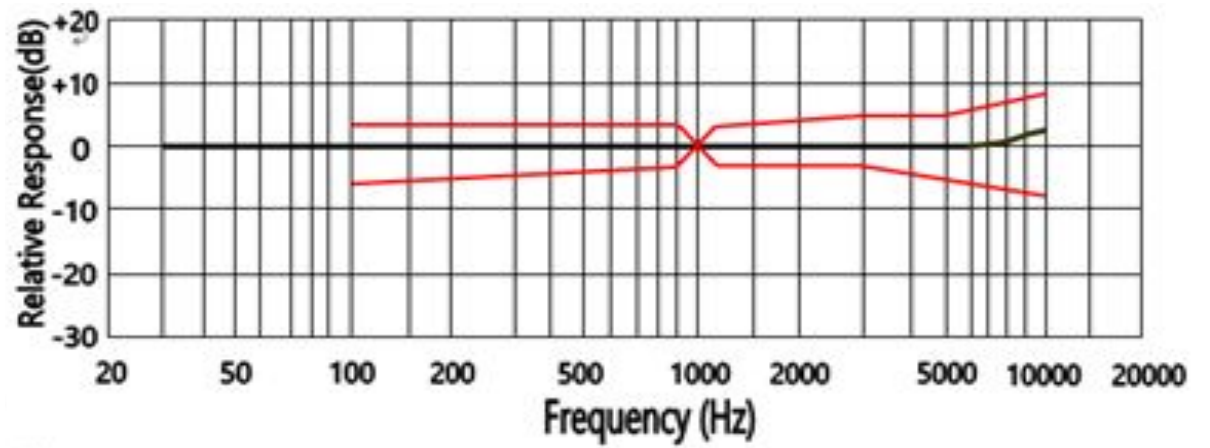
Soldering Condition  
Heat Sink

### Page 8

Packing

## Typical Frequency Response Curve

### Frequency Response

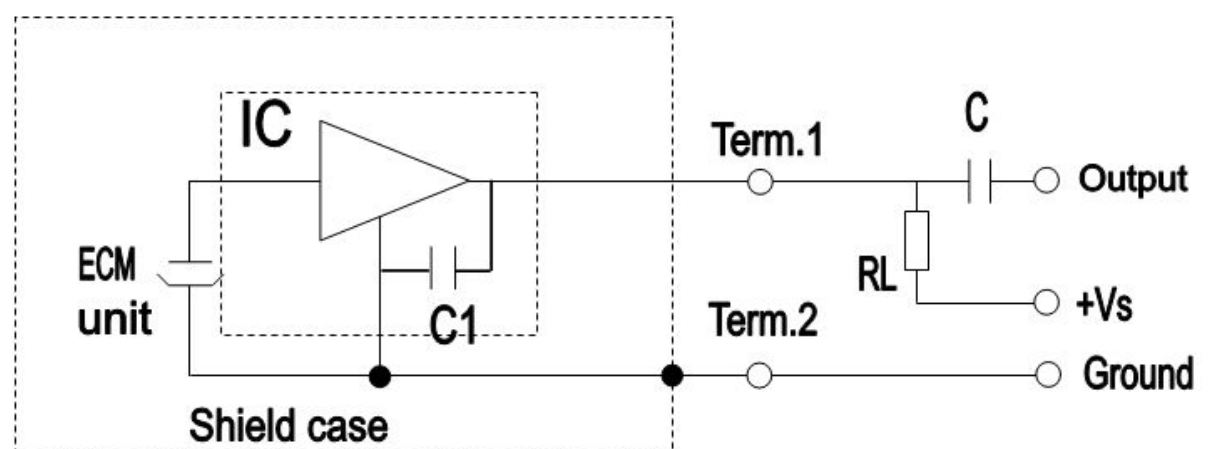


### Standard Test Fixture

Frequency(Hz)	Lower Limit(dB)	Upper Limit(dB)
100	-6	+3
800	-3	+3
1000	0	0
1200	-3	+3
3000	-3	+5
5000	-5	+5
10000	-8	+8

## Measurement Circuit

RL = 2.2KΩ Vs = 2.0V C1 = 10pF C = 1μF





soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

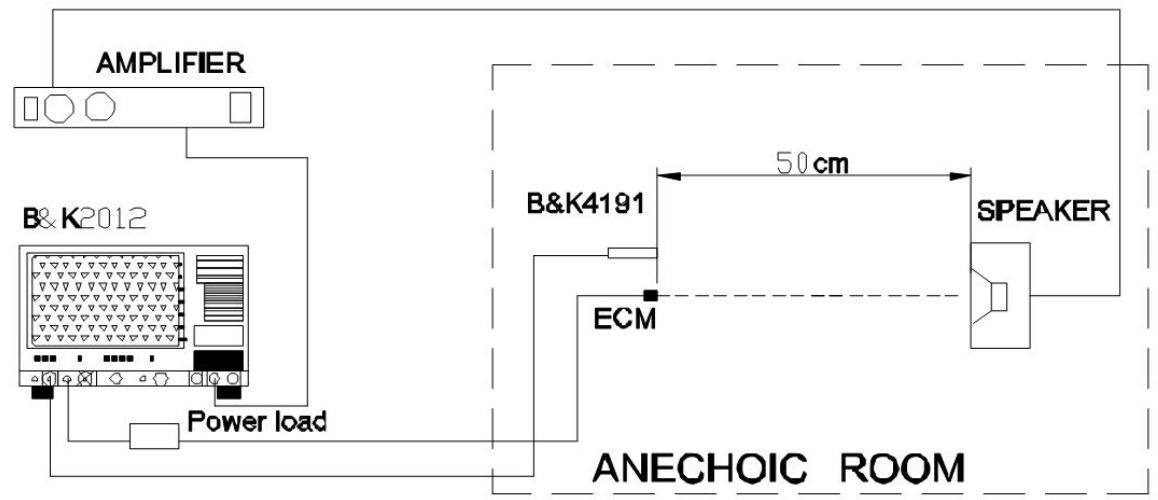
### Page 7

Soldering Condition  
Heat Sink

### Page 8

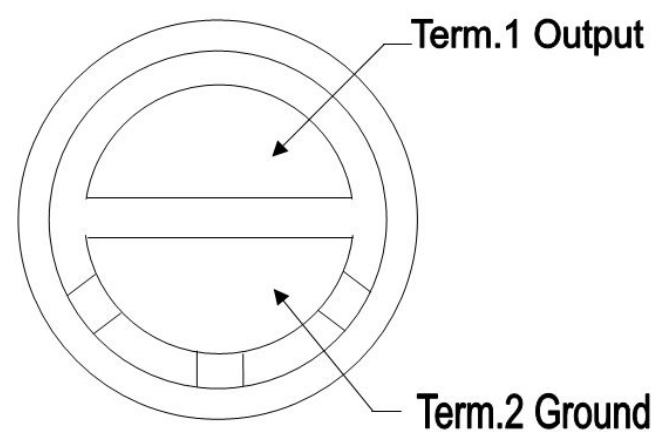
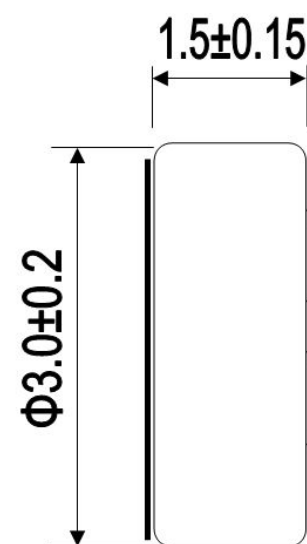
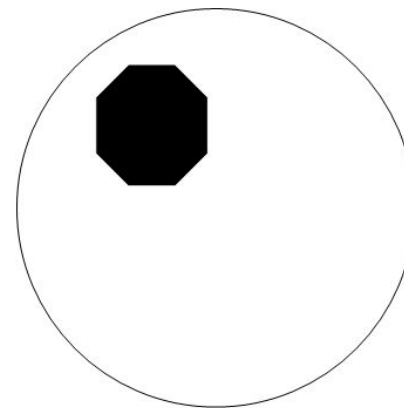
Packing

## Measurement Setup Drawing



## Product External and Dimension

Unit: mm





soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

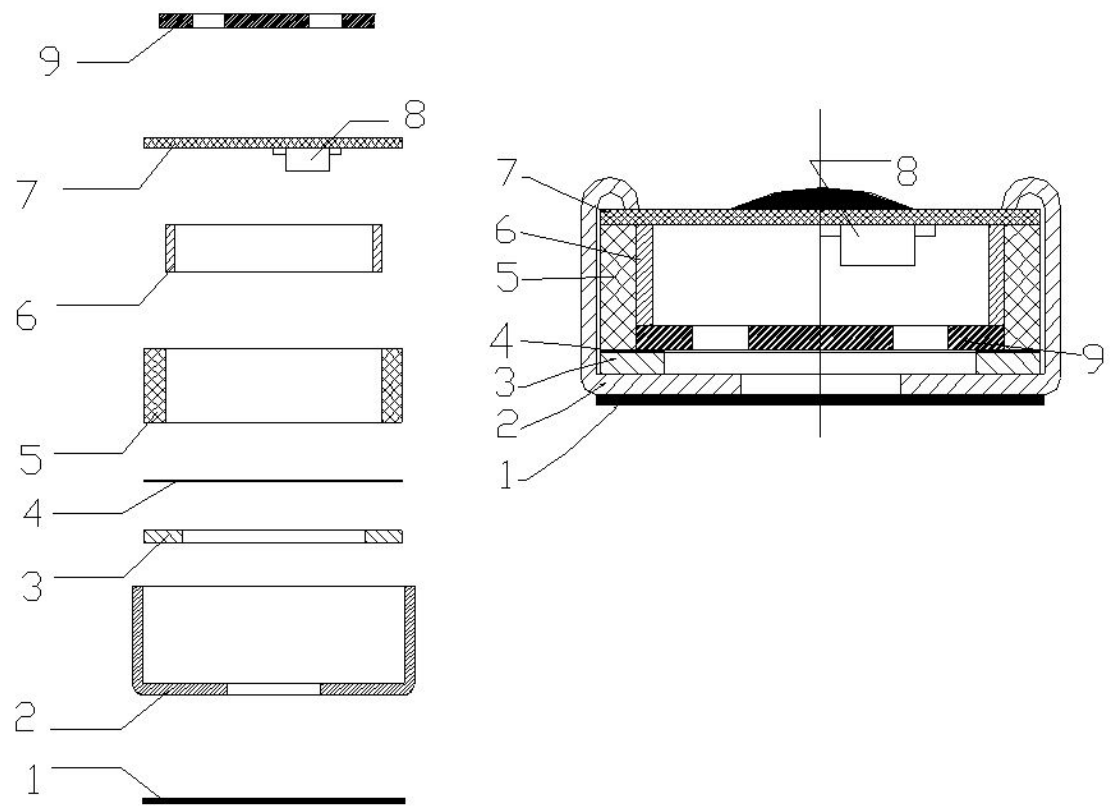
### Page 7

Soldering Condition  
Heat Sink

### Page 8

Packing

## Exploded Drawing and Material Table



No.	Part Name	Material	Quantity
1	Felt		1
2	Case	Copper	1
3	Polarized Diaphragm		1
4	Spacer		1
5	Housing Chamber		1
6	Copper Ring		1
7	PCB	FR-4	1
8	FET	Build in 10 pF	1
9	Electret Back		1



soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

### Page 7

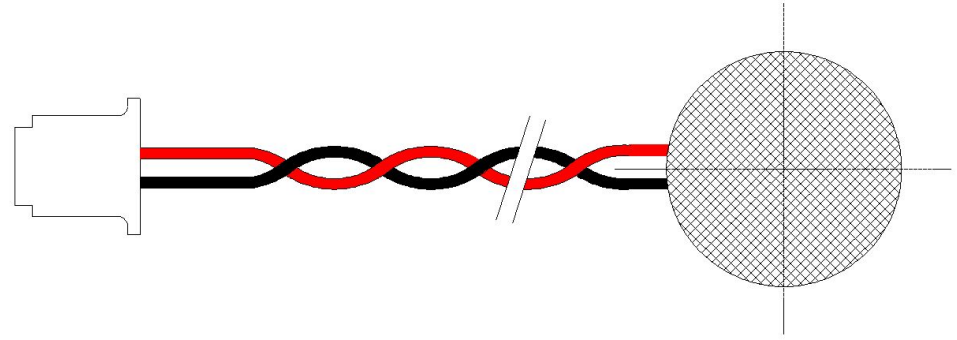
Soldering Condition  
Heat Sink

### Page 8

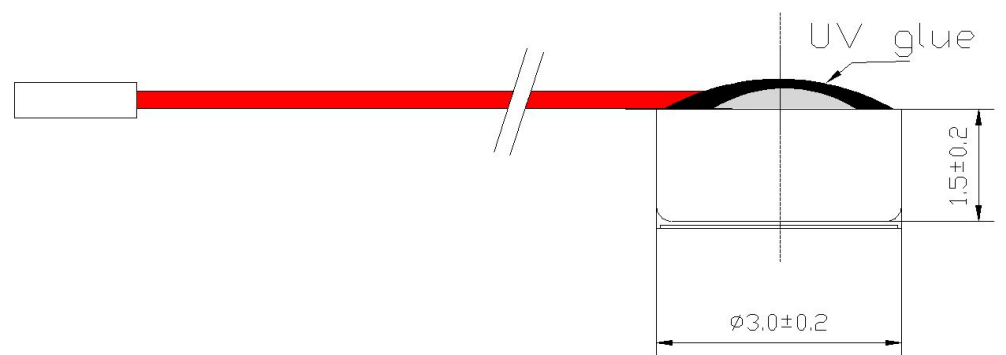
Packing

## Accessory Drawing

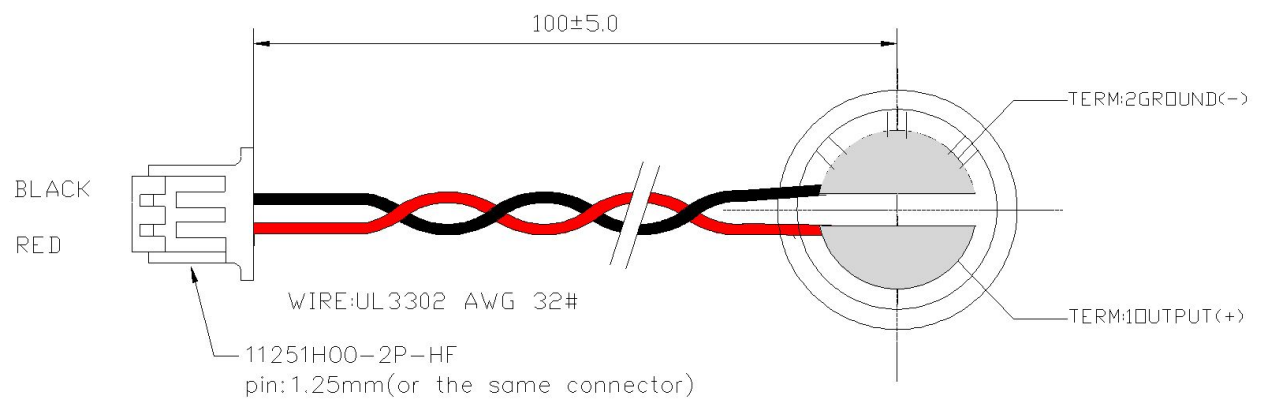
TOP VIEW



SIDE VIEW



BOTTOM VIEW







soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

### Page 7

Soldering Condition  
Heat Sink

### Page 8

Packing

## Temperature Conditions

### Operating Temperature Range

-40°C~+85°C

### Storage Temperature Range

-40°C~+85°C

## Reliability Test

After each of following test, the sensitivity of the microphone should be within  $\pm 3$ dB of initial sensitivity after 3 hours of conditioning at 20°C.

### Vibration Test

Frequency : 10Hz~55Hz

Amplitude: 1.52mm

Change of Frequency : 1 octave/min

2 hours in each of axis

### High Temperature Test

+85°C for 240 hours.

### Low Temperature Test

-40°C for 240 hours.

### Humidity Test

90%~95%RH,+60°C for 240 hours.

### Thermal Shock Test

-40°C, 30 minutes  $\leftrightarrow$  +80°C, 30 minutes, repeated 32 cycles  $\rightarrow$  room temperature, 3 hours.

### Temperature Cycles

-40°C  $\leftrightarrow$  +20°C  $\leftrightarrow$  +85°C  $\leftrightarrow$  +20°C  $\leftrightarrow$  -40°C  
(2h) (0.5h) (2h) (0.1h) (2h) (0.5h) (2h) (0.5h) (2h) for 5 cycles.

### Packing Drop Test

Height: 1.5m

Procedure: 5 times from each of axis

### Electrostatic discharge

Tested to IEC61000-4-2 level 3:

a) **Contact Discharge:** The microphone shall operate normally after 10 discharges to is 6KV DC and the discharge network is 150pF and 330Ω.

b) **Air Discharge:** The microphone shall operate normally after 10 discharges to is 8KV DC and the discharge network is 150pF and 330Ω

### IP67 Test

The unit is placed into the immersion tank, the bottom of the unit is at least 1m below the surface, the top of the unit is at least 0.15m below the surface.  
Test time : 30min



soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

### Page 7

Soldering Condition  
Heat Sink

### Page 8

Packing

## Soldering Condition

We suggest using anti-static welding machine which can control soldering temperature automatically.

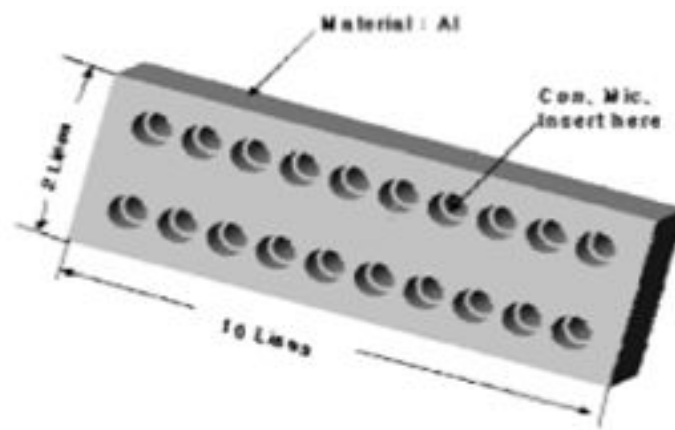
Soldering temperature should be controlled under 320°C and soldering time for each terminal should be 1~2 seconds.

Microphone should be fixed on the metal block (heat sink), which has high radiation effects, and heat sink shall contact with MIC tightly.

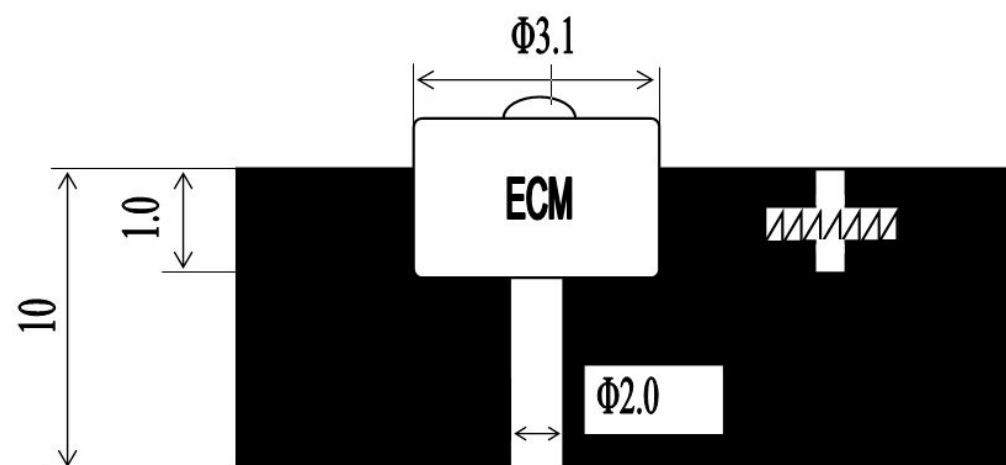
Microphone may easily be destroyed by the static electricity. The countermeasure for eliminating the static electricity shall be by grounding the worktable and operator.

## Heat Sink

Shape of heat sink



Shape of hole at fixed part





soberton inc.

# EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product No: EM-3015LRNW



Release | Revision: A/2018

## CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

### Page 1

Electrical Characteristics

### Page 2

Typical Frequency Response Curve  
Measurement Circuit

### Page 3

Measurement Setup Drawing  
Product External and Dimensions

### Page 4

Exploded Drawing and Material Table

### Page 5

Accessory Drawing

### Page 6

Temperature Conditions  
Reliability Test

### Page 7

Soldering Condition  
Heat Sink

### Page 8

Packing

## Packing

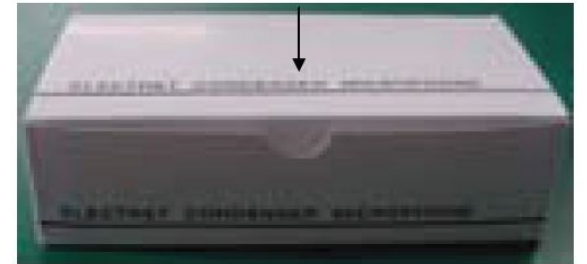


X1

100PCS



1000PCS



X30

30000PCS



## Details

### Dimension: (length x width x height)

#### Anti-Static Bag:

80mm x 80mm x 3mm

#### Small Packet:

85mm x 85mm x 10mm

#### Middle Box:

170mm x 85mm x 50mm

#### Carton Size:

550mm x 230mm x 235mm

### Quantity and Weight

Small Box: 100 pcs

Middle Box: 1000 pcs

Carton: 30,000 pcs

1PC: 0.1g

Net Weight: 3.0kg

Gross Weight: 6.0kg