SPECIFICATION OF ELECTRET CONDENSER MICROPHONE

( TO:       )

MODEL NO. : ASMO-C110T42-3P H/F
DIRECTIVITY : OMNI-DIRECTIONAL

<table>
<thead>
<tr>
<th>USER</th>
<th>Prepared</th>
<th>Checked</th>
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<td>Name</td>
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<th>BSE</th>
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<tbody>
<tr>
<td>Name</td>
<td>HJ Kim</td>
<td>SH Lee</td>
<td>CW Kim</td>
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<td>Sign.</td>
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BSE CO., LTD
# 626-3 58B-4L, Gozan-dong, Namdong-Ku
INCHEON-City. KOREA
TEL: (8232) 500-1965
FAX: (8232) 500-1898

※ All Parts are Halogen Free Material.

Microphone Technology Leadership
### SPECIFICATION HISTORY

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<th>History Change</th>
<th>Date</th>
<th>Item</th>
<th>Contents</th>
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<tr>
<td>ISSUE From BSE To</td>
<td>2015.</td>
<td>ASMO-C110T42-3P</td>
<td>1st Submission of Microphone spec.</td>
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1. INTRODUCTION
This specification is for the SMD possible Electret Condenser Microphone (ECM) which has endurable reflow temperature of up to 250℃ for under 30 seconds.

2. MODEL NO.
ASMO-C110T42-3P H/F

3. ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>NO.</th>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Limits</th>
<th>Unit</th>
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<tbody>
<tr>
<td>1</td>
<td>Sensitivity</td>
<td>S</td>
<td>f=1kHz, S.P.L =1Pa, 0dB=1V/Pa</td>
<td>-45 -42 -39</td>
<td>dB</td>
</tr>
<tr>
<td>2</td>
<td>Current Consumption</td>
<td>I_DSS</td>
<td>V_CC=2.0V</td>
<td>- 70 110</td>
<td>µA</td>
</tr>
<tr>
<td>3</td>
<td>Signal to Noise Ratio</td>
<td>S/N</td>
<td>f=1kHz, S.P.L =1Pa (A-Weighted Curve)</td>
<td>58 62 -</td>
<td>dB</td>
</tr>
<tr>
<td>4</td>
<td>Decreasing Voltage</td>
<td>ΔS-VS</td>
<td>V_CC=2.0V to 1.5V</td>
<td>- - -3</td>
<td>dB</td>
</tr>
<tr>
<td>5</td>
<td>Operating Voltage</td>
<td></td>
<td></td>
<td>1.6 2.0 3.6</td>
<td>V</td>
</tr>
<tr>
<td>6</td>
<td>Total Harmonic Distortion</td>
<td>THD</td>
<td></td>
<td>- - 1</td>
<td>%</td>
</tr>
<tr>
<td>7</td>
<td>Acoustic Overload Point</td>
<td>AOP</td>
<td>THD&gt;10% at 1kHz</td>
<td>130 - -</td>
<td>dB SPL</td>
</tr>
</tbody>
</table>

Temp. = 23 ± 2 ℃ \nRoom Humidity = 65 ± 5 %

4. MEASUREMENT CIRCUIT

![Measurement Circuit Diagram]

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5. TYPICAL FREQUENCY RESPONSE CURVE ( FAR FIELD )

Far Field Measurement Condition
Temperature : 23 ± 2 ℃
Bias Voltage : 2.0V ( with 2.2kΩ series resistor )
Acoustic stimulus : 1Pa ( 94dB SPL at 1kHz ) at 50 cm from the loud-speaker.
   The loud-speaker must be calibrated to make a flat frequency response input signal
Position : The frequency response of microphone unit measured at 50cm from the loud-speaker

6. MECHANICAL CHARACTERISTICS

6-1. Dimension
6-2. Structure

7. RELIABILITY TEST

7.1 HIGH TEMPERATURE TEST

After exposure at +85±2°C for 72 hours, sensitivity should be within ±3dB from initial sensitivity.
(The measurement is done after 2 hours of conditioning at room temperature)

7.2 LOW TEMPERATURE TEST

After exposure at -40±2°C for 72 hours, sensitivity should be within ±3dB from initial sensitivity.
(The measurement is done after 2 hours of conditioning at room temperature)

7.3 TEMPERATURE & HUMIDITY TEST

After exposure at 60±2°C and 95% relative humidity for 200 hours, sensitivity to should within ±3dB from initial sensitivity.
(The measurement is done after 2 hours of conditioning at room temperature)
7.4 TEMPERATURE SHOCK

Temperature change from -40±2°C to +85±2°C for 1 hour. After 15 cycles, sensitivity should be within ±3dB from initial sensitivity. (The measurement is done after 2 hours of conditioning at room temperature)

7.5 DROP TEST

After dropped to concrete floor each 6 times from 1 meter height at three directions, sensitivity should be within ±3dB from initial sensitivity.

7.6 VIBRATION TEST

10Hz to 500Hz for 30 minutes & 3.1g at three axes (x, y, z) (Sensitivity should be within ±3dB from initial sensitivity)

8. TEMPERATURE CONDITIONS

8.1 STORAGE TEMPERATURE : -40°C ~ +85°C
8.2 OPERATING TEMPERATURE : -25°C ~ +70°C

9. MEASUREMENT SYSTEM
### 10. REFLOW PROFILE (Guaranteed Maximum Reflow Condition)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Average temp. gradient in preheating</td>
<td>2.5℃/s</td>
<td>Time above 240℃</td>
<td>Max. 10 s</td>
</tr>
<tr>
<td>Soak time</td>
<td>2 ~ 3 minutes</td>
<td>Peak temp.</td>
<td>240℃(-0/+10℃)</td>
</tr>
<tr>
<td>Time above 217℃</td>
<td>Max. 60 s</td>
<td>Temp. gradient in cooling</td>
<td>Max. -5℃/s</td>
</tr>
<tr>
<td>Time above 230℃</td>
<td>Max. 50 s</td>
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### 11. RECOMMENDED STENCIL PATTERN

Thickness of metal mask : 0.1T
12. CAUTIONS WITH USING SMD MICROPHONE

12-1 X-ray inspection
- X-ray inspection is possible only under the setting conditions with Voltage: 60~80kV, Current: 60~100μA, Time: within 1 min
- Don’t do the REFLOW or REWORK process after X-ray inspection
- BUT, post-baking (at 105°C for 2hrs) after X-ray inspection is recommended for stabilizing SMD microphone

12-2 Cleaning process
- Don’t do the cleaning process with any kind of volatile solvent (Acetone, TCE, alcohol, etc.), water, or detergent
→ Possible only for the purpose of removing any dust or particle only with tissue or cotton tip without direct contact to the microphone

12-3 Router process on Printed Circuit Board after reflow
- It’s possible to affect the acoustic properties of SMD microphone, when any particle gets into the SMD microphone inside through sound holes
13. PACKAGE
13.1 REEL DIMENSION

- 13" reel will be provided for the mass production stage
13. 2 TAPING SPECIFICATION

[ Note ]
1. Direction of parts : See above pictures
2. Microphone total quantity(13” Reel) : 5,700pcs
3. ESD : 10²~10 Ω
4. Thermo-compression method

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<tbody>
<tr>
<td>A0</td>
<td>4.06±0.10</td>
<td>E</td>
<td>2.5±0.10</td>
</tr>
<tr>
<td>B0</td>
<td>3.30±0.10</td>
<td>F</td>
<td>5.50±0.05</td>
</tr>
<tr>
<td>K0</td>
<td>1.30±0.10</td>
<td>T</td>
<td>0.30±0.05</td>
</tr>
<tr>
<td>D0</td>
<td>1.50±0.10</td>
<td>W</td>
<td>12.00±0.30</td>
</tr>
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</table>

Unit : mm
13. 3 INNER & OUTER BOX SPEC

**Inner Box spec.**

**Outer Box Spec.**
14. Recommended Pick-up nozzle

14.1 When a nozzle has no locate at the center of MIC.
- Nozzle material: Metal
- Nozzle position: 0.63mm from the center of MIC. (opposite sound port)
- Nozzle inner diameter: Max. Ø1.5

14.2 When a nozzle locate at the center of MIC.
- Nozzle material: Metal
- Nozzle inner diameter: Max. Ø1.0