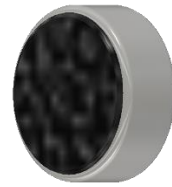




PUIaudio



Data Sheet

AUM-4538L

PUI Audio's 9.7mm diameter uni-directional AUM-4538L ECM microphone features a nominal -38dBV sensitivity and 60dB signal-to-noise ratio.

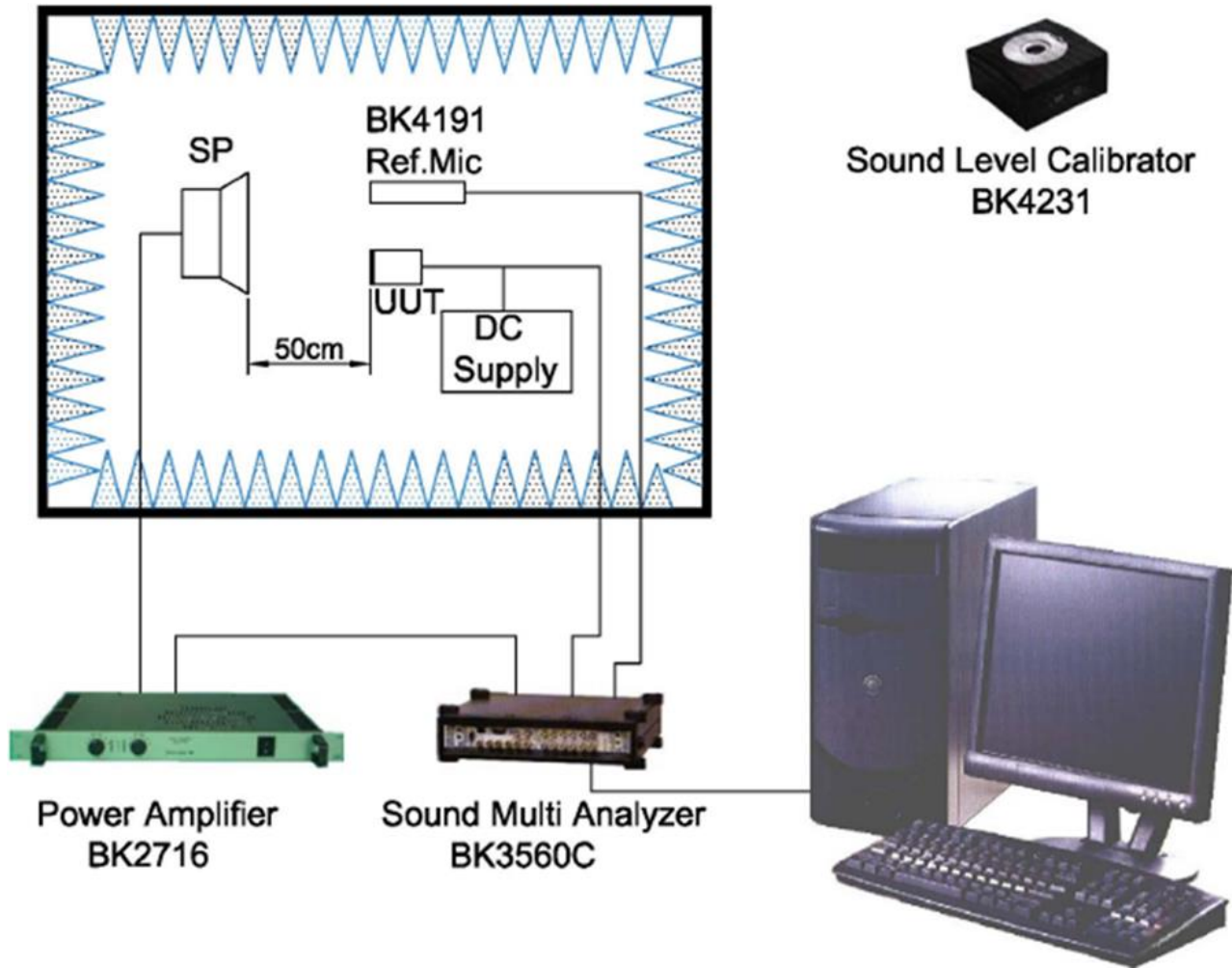
Features:

- 9.7mm diameter
- 4.5mm height
- -38dBV sensitivity
- 60dB (minimum) signal-to-noise ratio
- Uni-directional polar response

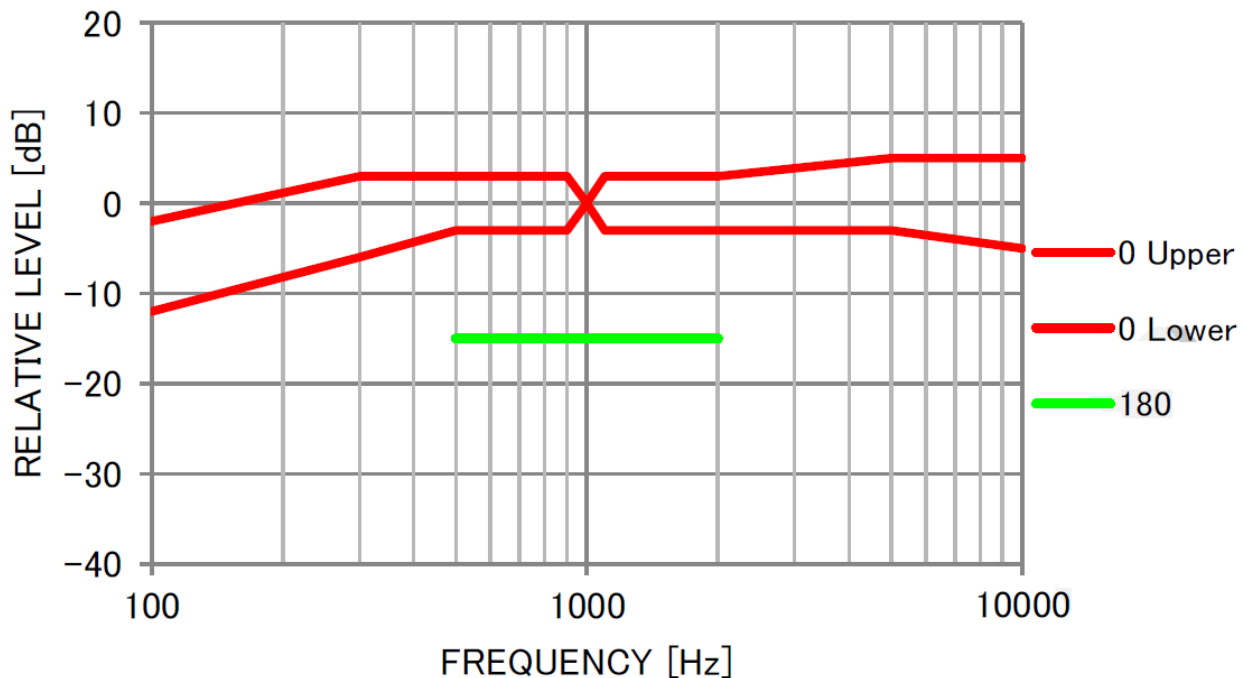
Specifications ($V_{SUPP} = 2.0V_{DC}$, $R_L = 2.2k\Omega$, $f = 1kHz$, Acoustic Input = 94dB SPL (1Pa), 0 dBV = 1V @ 1Pa, unless otherwise stated.)

Parameters	Values	Units
Sensitivity	-38 \pm 3	dBV
Typical Signal-to-Noise Ratio A-weighted	60	dB(A)
Frequency Range	$20 \leq f \leq 20,000$	Hz
Maximum Sensitivity Deviation with Respect to Supply Voltage $DV = 2V \leq V_S \leq 1.5V$	-3	dB
Maximum SPL Input THD = 10%	110	dB SPL
Operating Voltage Range	$1.0 \leq V_S \leq 10$	V_{DC}
Maximum Power Supply Current	450	μA
Maximum Output Impedance	2.2	$k\Omega$
Directivity	Uni-directional	-
Operating Temperature Range	$-40 \leq T_O \leq 85$	$^{\circ}C$
Storage Temperature Range	$-40 \leq T_S \leq 85$	$^{\circ}C$
Weight	< 3.2	gm

Measurement Method (in Anechoic Chamber)



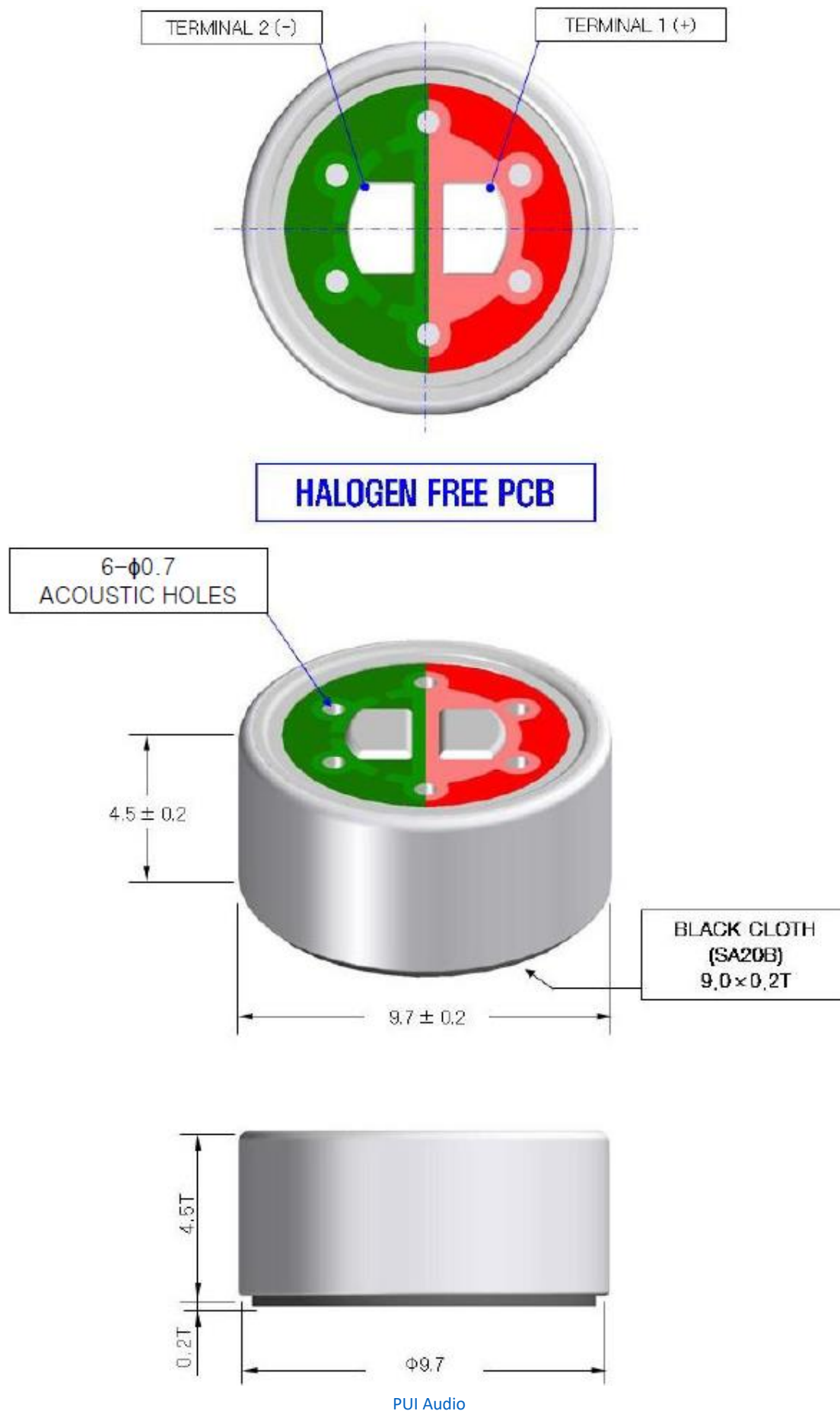
Typical Frequency Response (Acoustic input = 94dB SPL; $V_s = 2V_{DC}$)



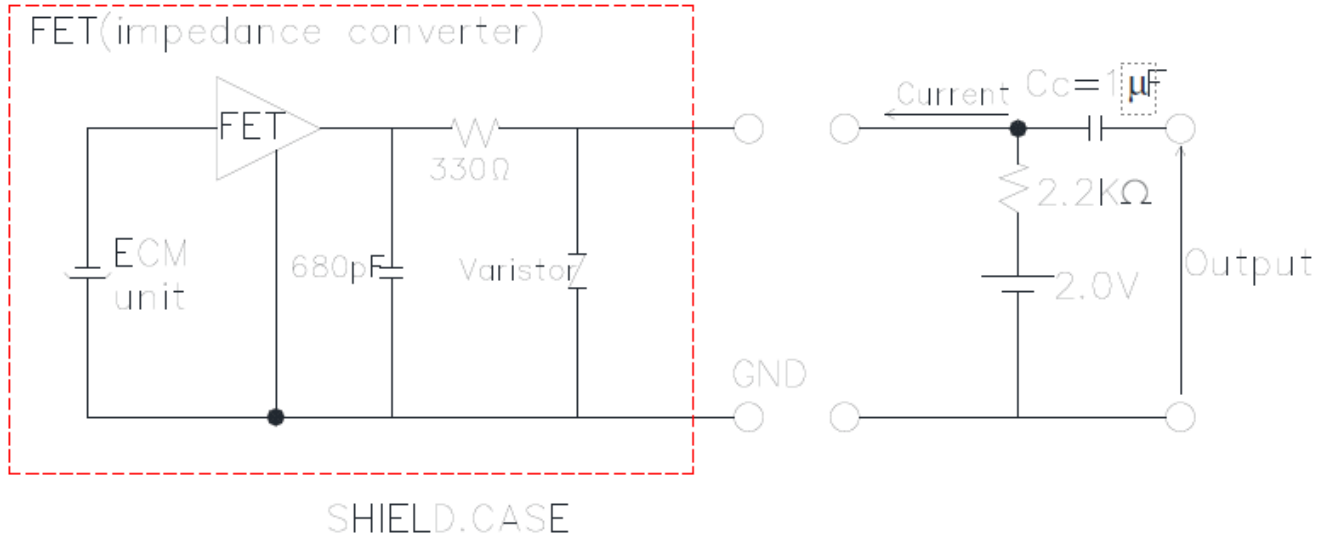
Reliability Testing ($V_s = 3V$; Acoustic input = 94dB SPL, unless otherwise indicated. After any of the following tests, a retested microphone's sensitivity shall not change by more than $\pm 3dBV$, maintaining its initial operation and appearance.)

Type of Test	Test Specifications
High Temperature Test	100 hours at $85^{\circ}C \pm 3^{\circ}C$ followed by two hours at $22^{\circ}C$. The measurement is preformed after two-hour conditioning at $22^{\circ}C \pm 5^{\circ}C$, $30\% \leq RH \leq 70\%$.
Low Temperature Test	100 hours at $-40^{\circ}C \pm 3^{\circ}C$ followed by two hours at $22^{\circ}C$. The measurement is preformed after two-hour conditioning at $22^{\circ}C \pm 5^{\circ}C$, $30\% \leq RH \leq 70\%$.
Humidity Test	200 hours at $+40^{\circ}C \pm 3^{\circ}C$, $90\% \leq RH \leq 95\%$ followed by two hours at normal room temperature. The measurement is preformed after two-hour conditioning at $22^{\circ}C \pm 5^{\circ}C$, $30\% \leq RH \leq 70\%$.
Temperature Cycle Testing	Consists of five cycles of the following temperatures and time: 30 minutes at $-40^{\circ}C$, 10 minutes at $20^{\circ}C$, 30 minutes at $+80^{\circ}C$, 10 minutes at $20^{\circ}C$. The measurement is preformed after two-hour conditioning at $22^{\circ}C \pm 5^{\circ}C$, $30\% \leq RH \leq 70\%$.
Vibration Test	For 60 seconds, the vibration frequency varies from 10Hz to 55Hz with a 1.52mm vibration magnitude. This is followed by a two-hour, three-axis test with the device-under-test placed in packaging material.
Drop Test	With a microphone contained by packaging material, the device is dropped onto a concrete floor from a 1m height. Performed on all three-axis.
ESD Test According to IEC 6100	<ol style="list-style-type: none"> 1. Contact discharge: Discharge $6000V_{DC}$ from 160pF capacitor into a microphone's output through 330Ω resistor ten times. 2. Air discharge: Discharge $8000V_{DC}$ into the microphone's sound port through 330Ω resistor ten times.

Dimensions



Typical Applications Circuit



Microphone Handling Precautions

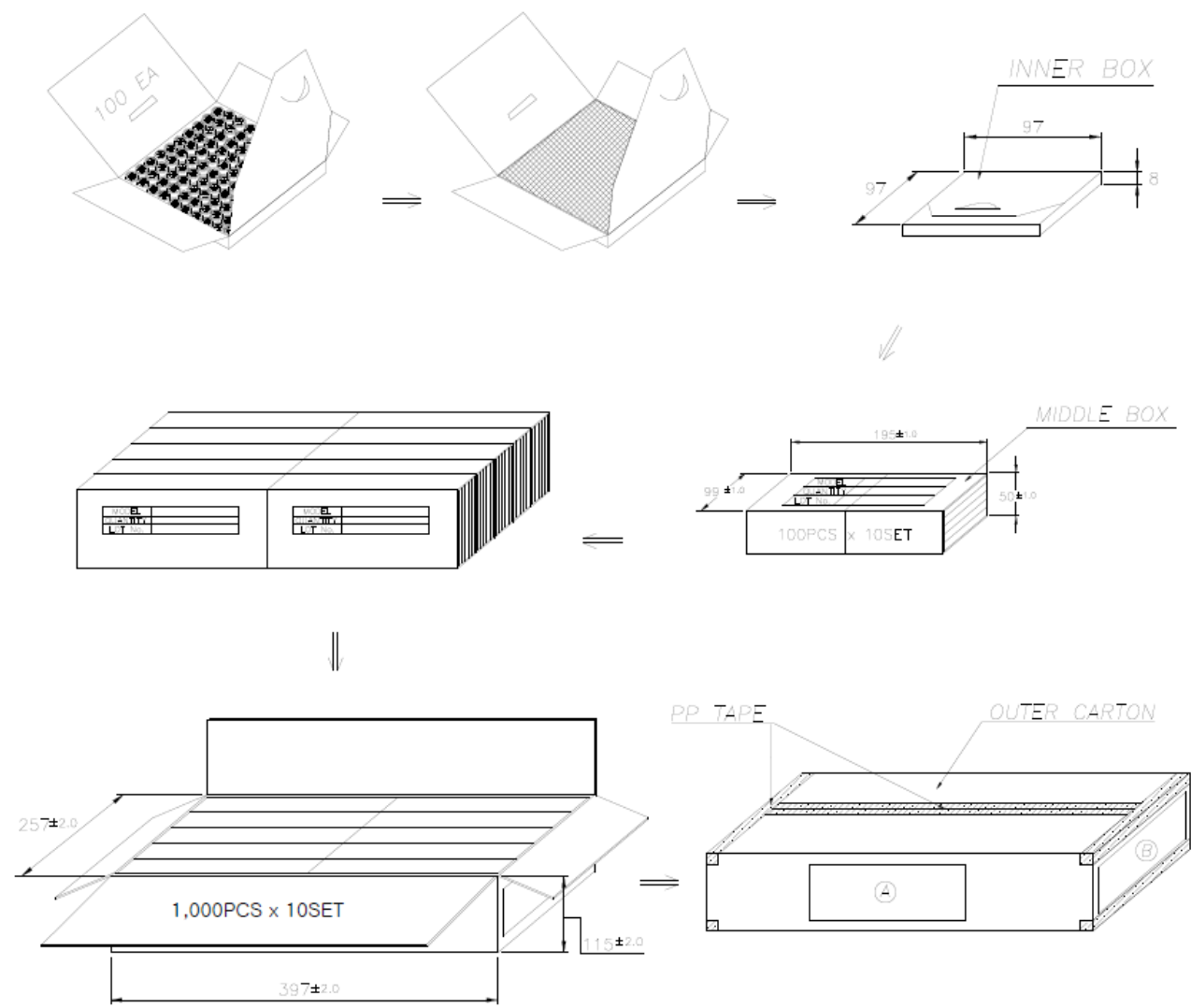
High temperature and/or static electricity may damage microphones. To ensure careful handling, we suggest following these precautions:

- Ensure the power rating of the soldering iron is below 90 watts
- The temperature of the soldering iron must be limited to $360^{\circ}\text{C} \pm 10^{\circ}\text{C}$ ($680^{\circ}\text{F} \pm 50^{\circ}\text{F}$)
- Soldering duration for each terminal shall be at or under 2 seconds
- If practical, use a metal fixture to hold the microphone in-place and to act as a heatsink. A fixture should have appropriate diameter holes drilled through the entire fixture to prevent pressure from being placed on the diaphragm (as below)



Packaging

Inner Box: 100pcs
Middle Box: 1000pcs
Carton Box: 10,000 pcs



Specifications Revisions

Revision	Description	Date	Approval
A	Datasheet Released from Engineering	04/21/2025	KH

Note:

- 1. Unless otherwise specified:
 - A. All dimensions are in millimeters.
 - B. Default tolerances are ±0.5mm and angles are ±3°.
- 2. Specifications subject to change or withdrawal without notice.
- 3. This part is RoHS 2011/65/EU Compliant.