Hearing Aids Mems Mic

DESCRIPTION

The WBC3526ES35is a high qUality, low voltage, low p ower analog output bottom-poRted omni-directional M6MSophone. WBC3526ES3Sonsists of a MEMSmicrop hone element and an preamplifier. WBC3526ES35has a high SNR and flat wideband frequency respo nse, res ulting in natural sound with high inteIiIiGibility. Extra EMI filter for RF noise attenuation is built inside. D ue to the built-in filteR, WBC3526ES35shows high immu nity to EMI.

The WBC3526ES35is available in a thin 3.35mm×2.50mm× 0.96mm surface-mount package. It is reflow solder co mpatible wth no sensitivity degradation.
The WBC3526ES35is Halogen and Lead fRee.

APPLICATIONS

ORDERING INFORMATION

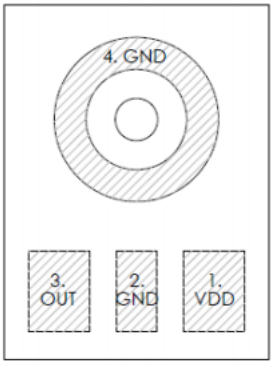
PART	RoHS	Ship, Quantity
WBC3526ES35	Yes	Tape and Reel,1K

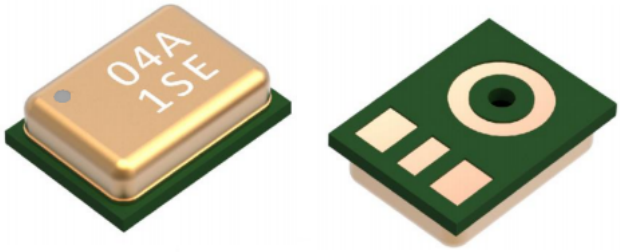
FEATURES

- Small package
- Flat Frequency Response SNR of 69dBA
- Low Current
- Ultra-Stable Performance
- Standard SMD Reflow
- Omni-directional

Pins Configuration and Description

Bottom View

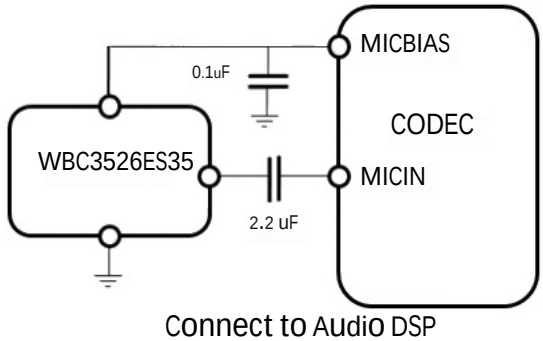




Top Bottom

Typical Applications

The WBC3526ES35output can be connected to a codec microphone input or to a hiGh input impedance ga in stage.A de-blocking capacitor is required at the output of the miCrophone.



Connect to Audio DSP

Note:

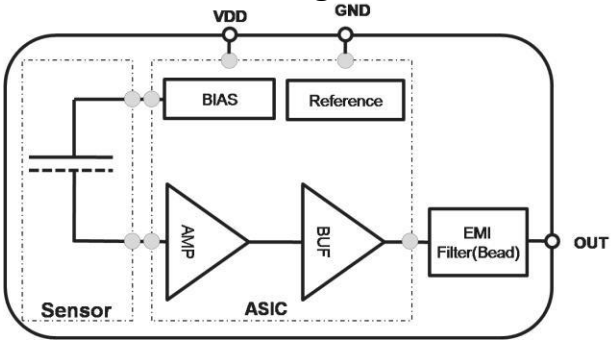
All Ground pins must be connected to ground.
Capacitors near the miCrophone should not contain Class 2 dielec trics.

Absolute Maximum Ratings

V_{DD} to Ground ..... –0.5V to +5.0V
Out to Ground ..... –0.3V to V_{DD} +0.3
Input Current ..... ±5mA
Operating Temperature Range ..... –40°C to +125°C
Storage Temperature Range ..... –40°C to +125°C

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Functional Block Diagram



Electro-Static Discharge Sensitivity

This integrated circuit can be damaged by ESD. It is recommended that all integrated circuits be handled with proper precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure.

Pins Description

Pin	Symbol	Description
1	VDD	Power Supply.
2	GND	Ground
3	OUT	Analog output signal.
4	GND	Ground

Specifications

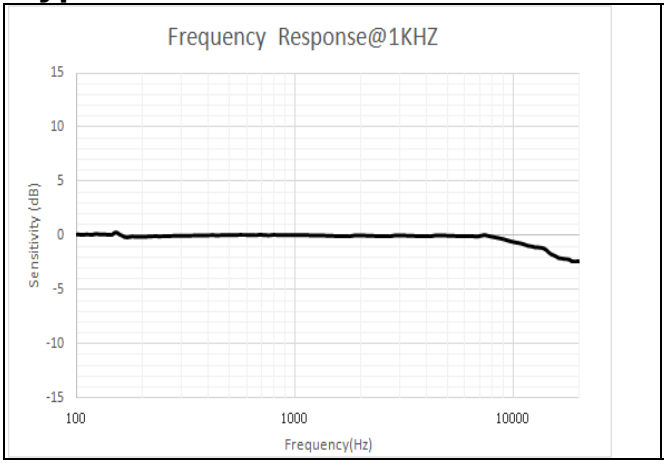
(TA = +23°C, VDD = +0.9V, R.H. = 60%~70%, no load, VDD Decoupling cap=0.1uF unless otherwise noted.)

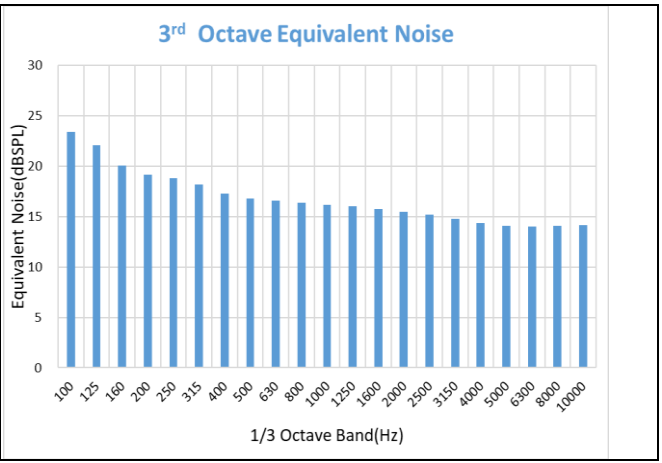
PARAMETER	Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage[1]	VDD		0.9	-	3.6	V
Supply Current[1,2]	IDD		-	19		μA
Sensitivity[1]	S	94 dB SPL @ 1 kHz	-36	-35	-34	dBV/Pa
Signal to Noise Ratio	SNR	94 dB SPL @ 1 kHz	-	69	-	dB(A)
Equivalent Input Noise	EIN			25		dBA SPL
Total Harmonic Distortion	THD	110 dB SPL @ 1 kHz,	-	-	0.5	%
Acoustic Overload Point	AOP	10% THD @ 1KHz		120		dBSPL
Power Supply Rejection Ratio	PSRR	200mVpp sinewave @ 1 kHz, VDD = 0.9V	-	75	-	dB
DC Output		VDD = 0.9V	-	0.65	-	V
Output Impedance	Z_{OUT}	@ 1 kHz	-	4000	-	Ω
Directivity			Omni-directional			
Polarity		Increasing sound pressure	Increasing output pressure			

[1] 100% tested

[2] Maximum specifications are measured at maximum V_{DD}. Typical specifications are measured at V_{DD} = 0.9V.

Typical Performance Characteristics



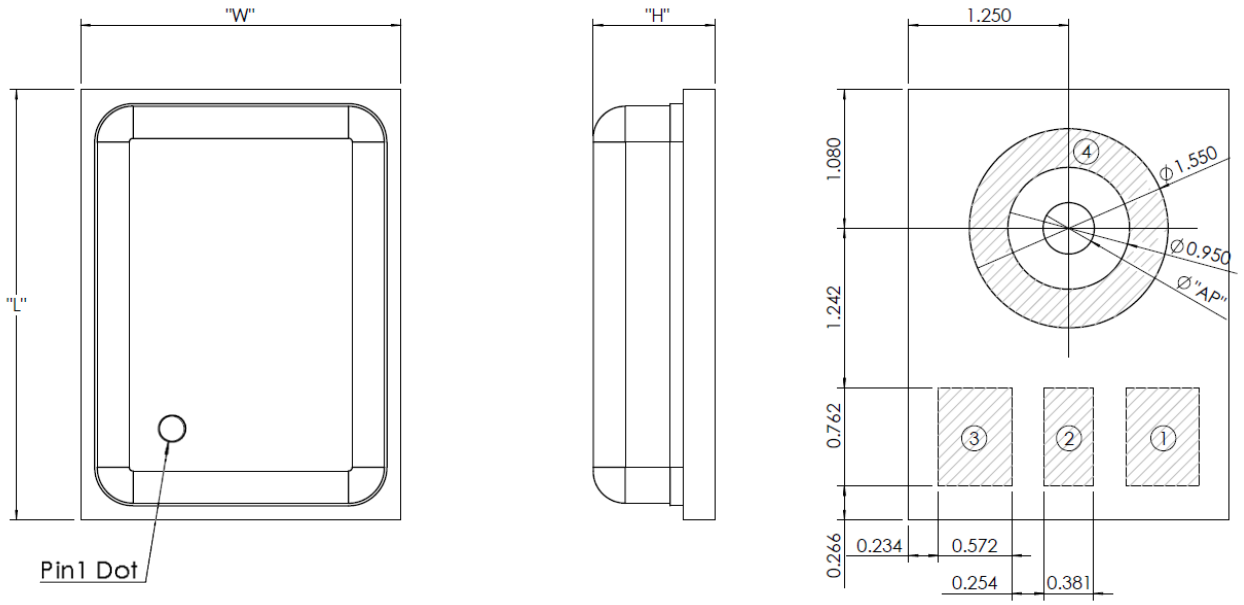


Reliability Specifications

The microphone sensitivity after stress must deviate by no more than ±3dB from the initial value.

1. Heat Test, Operational	Temperature: 125±3 °C Duration: 1000 hours Voltage: Applied
2. Cold Test, Operational	Temperature: -40±3°C Duration: 1000 hours Voltage: Applied
3. Heat Test, Non-Operational	Temperature: 125±3°C Duration: 1000 hours Voltage: Not Applied
4. Cold Test, Non-Operational	Temperature: -40±3°C Duration:1000 hours Voltage: Not Applied
5. Thermal Shock Test, Non-Operational	Temperature: -40±3°C and 125±3°C Duration: 30 minutes each, during 5 minutes ramp, 256 cycles Voltage: Not applied
6. Temperature humidity storage	Temperature: 85±3°C Humidity: 85±3%RH Duration: 1000 hours
	Temperature: 65±3°C Humidity: 95±3%RH Duration: 168 hours
7. Free Fall Test 1.5m	Placed inside test fixture and dropped on concrete from height 1.5m. 4 times by each surface and corner
8. Vibration	4 cycles of 20 to 2000 Hz sinusoidal sweep with 20G peak acceleration lasting 12 minutes in X, Y, and Z directions
9. Mechanical Shock	5 pulses of 10000g in each of the ±X, ±Y, and ±Z directions
10. Electrostatic Discharge Test	Capacitance: 150pF Resistance: 330Ω Duration: 10 times Air Discharge: Level 4(+/-15kV) Direct contact discharge: Level 4 (+/-8kV)
11. Human Body Mode	±5000 Volt
12. Charged-Device Model	±500 Volt
13. Reflow	5 reflow cycles with peak temperature of 260°C
14. Solderability	245 ± 5 °C ,5sec, 95% Tin on pad surface
15. Tumble test	300 tumbles from a height of 1m onto a steel base.
16. HAST	Temperature: 130±3°C Humidity: 85±3%RH Duration: 96 hours Voltage: Applied
17. Air Blow	0.45MPa, distance 3cm, time 10s

MECHANICAL SPECIFICATIONS



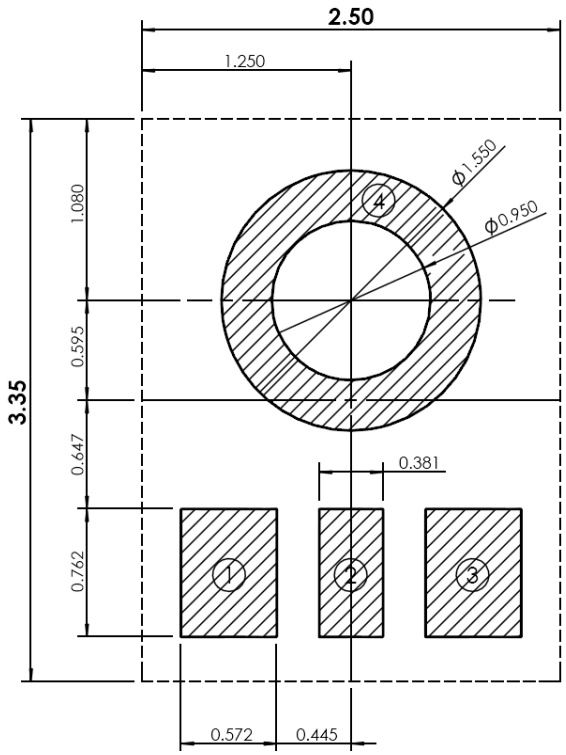
Item	Dimension	Tolerance
Length (L)	3.35	±0.10
Width (W)	2.50	±0.10
Height (H)	0.96	±0.10
Acoustic Port (AP)	Ø0.40	±0.05

Pin#	Pin Name	Type	Description
1	VDD	Power	Power Supply
2	GROUND	Ground	Ground
3	OUT	Output	Analog output signal.
4	GROUND	Ground	Ground

RECOMMENDED CUSTOMER LAND PATTERN

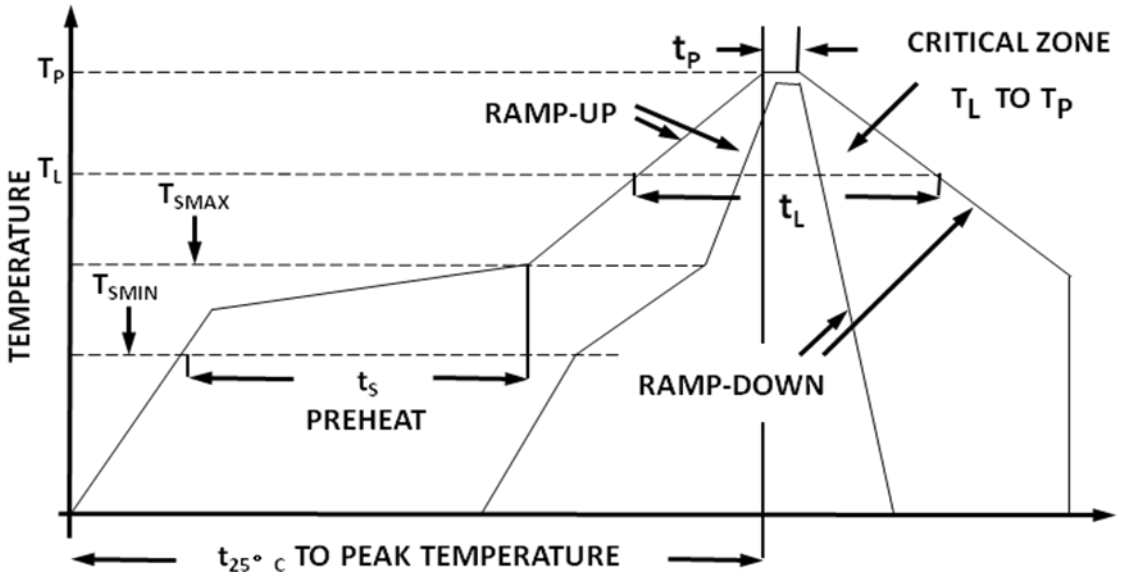
The recommended PCB land pattern for the WBC3526ES35should have a 1:1 ratio to the solder pads on the microph one package. Care should be taken to avoid applying solder paste to the sound hole in PCB. The dimensions of sugge sted solder paste pattern refer to the land pattern.

Top View
(Units: mm)



SOLDER FLOW PROFILE

The reflow profile specified in this section describes expected maximum heat exposure of components during the reflow process of NMP product PWBs. Temperature is measured on top of component. All components have to tolerate at least this profile five times (5x) without affecting electrical performance, mechanical performance or reliability.

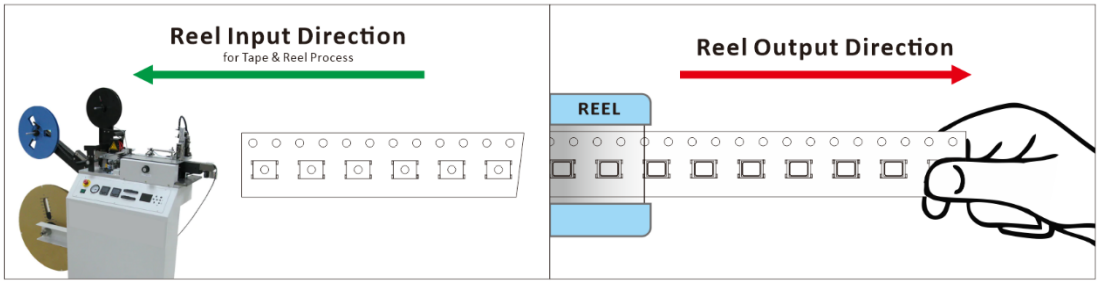


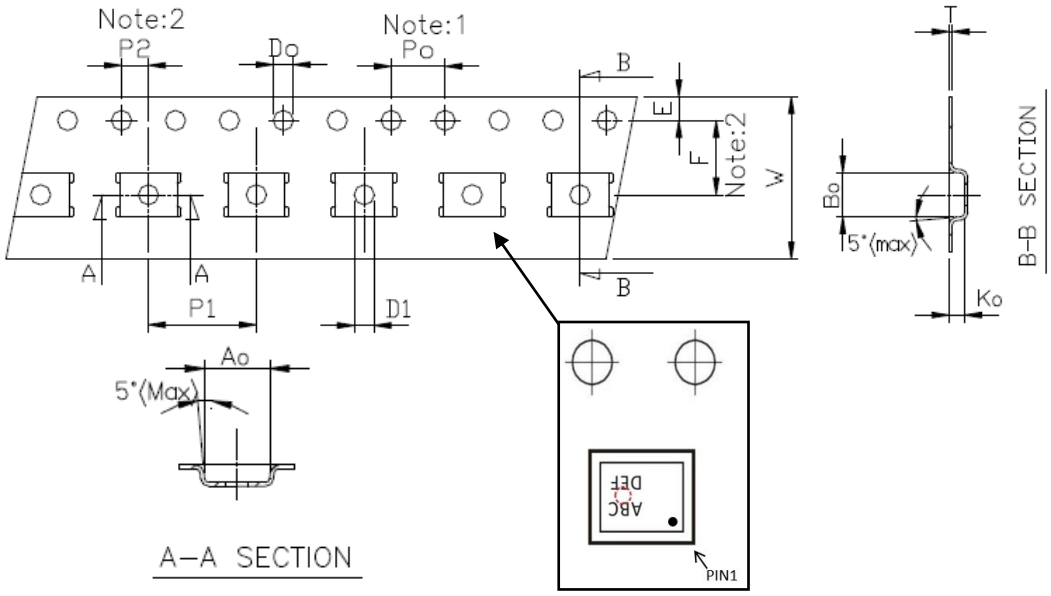
Pb-free reflow profile requirements for soldering heat resistance:

Parameter		**Reference**	**Pb-Free**
Average Ramp Rate		T_L to T_P	3°C/sec max
Preheat	Minimum Temperature	T_{SMIN}	150°C
	Maximum Temperature	T_{SMAX}	200°C
	Time	T_{SMIN} to T_{SMAX}	60sec to 180sec
Time Maintained Above	Temperature	T_L	217°C
	Time	t_L	60sec to 150sec
Peak Temperature		T_P	260°C
Time Within +5°C of Actual Peak Temperature		t_P	20 sec to 40 sec
Ramp-Down Rate		T_{peak}	6°C/sec max
Time +25°C ($t_{25°C}$) to Peak Temperature			8 min max

ADDIOTIONAL NOTES: MSL(moisture sensitivity level) Class 1.

PACKAGING





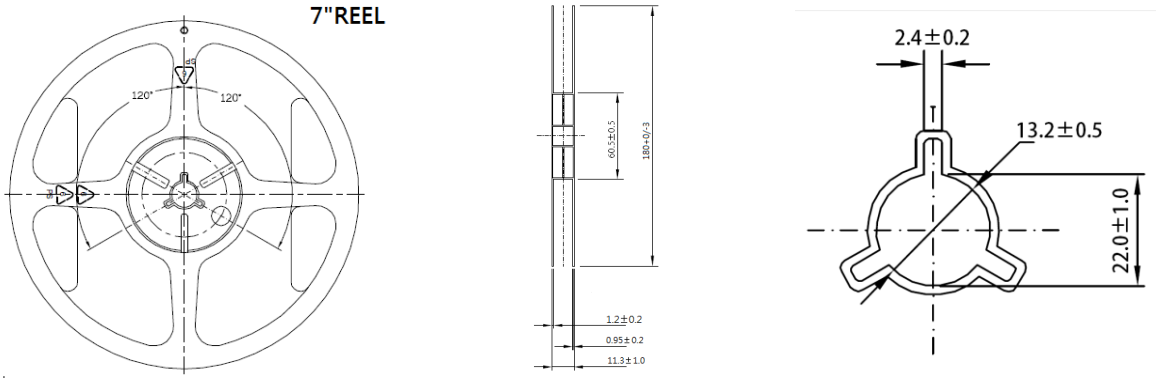
$$Ao = 3.65 \pm 0.10 \quad mm$$
$$Bo = 2.75 \pm 0.10 \quad mm$$
$$Ko = 1.25 \pm 0.10 \quad mm$$

Unit：mm

Symbol	Spec.
K1	-
P_O	4.0 ± 0.10
P1	8.0 ± 0.10
P2	2.0 ± 0.05
D_O	1.55 ± 0.05
D1	1.50 (MIN)
E	1.75 ± 0.10
F	5.50 ± 0.05
$10P_O$	40.0 ± 0.10
W	12.0 ± 0.20
T	0.30 ± 0.05

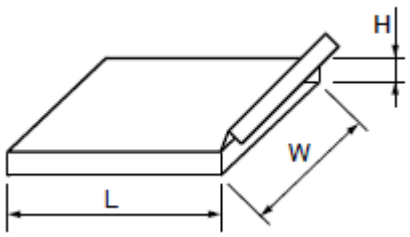
Notice：

1．10 Sprocket hole pitch cumulative tolerance is ± 0.1mm.
2．Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
3．A_O & B_O measured on a place 0.3mm above the bottom of the pocket to top surface of the carrier.
4．K_O measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5．Carrier camber shall be not that 1mm per 100mm through a length of 250mm.



Part NO.	Reel Diameter	Quantity Per Reel	Quantity Per Inner Box	Quantity Per Outer Box
WBC3526ES35	7”	1K	1K	10K

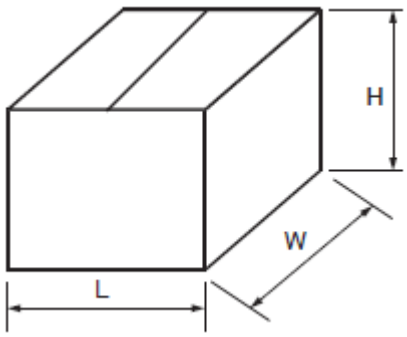
Dimensions for Inner Box



Unit：mm

L	W	H
190	190	30

Dimensions for Outer Box



Unit：mm

L	W	H
445	360	372