

Hearing Aids MemS Mic

DESCRIPTION

The WBC6556 is a high quality, high performance, low power analog output bottom-ported omni-directional MEMS microphone. WBC6556 consists of a MEMS microphone element and an preamplifier. WBC6556 has a high SNR and flat wideband frequency response, resulting in natural sound with high intelligibility. Extra EMI filter for RF noise attenuation is built inside. Due to the built-in filter, WBC6556 shows high immunity to EMI. The WBC6556 is available in a thin 2.75mm x 1.85mm x 0.90mm surface-mount package. It is reflow solder compatible with no sensitivity degradation. The WBC6556 is Halide Halogen and Lead free.

APPLICATIONS

- Hearing Aids

ORDERING INFORMATION

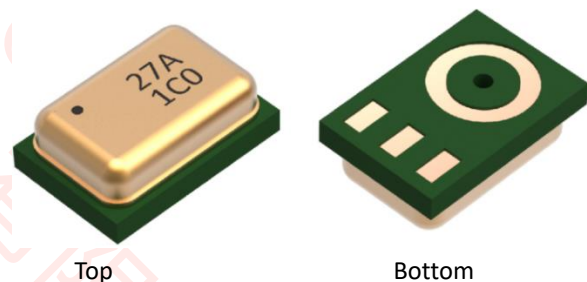
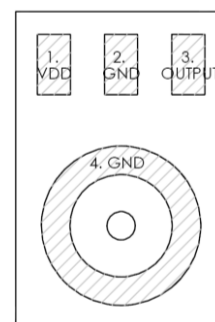
PART	RoHS	Ship, Quantity
WBC6556	Yes	Tape and Reel, 5.2K

FEATURES

- Small package
- Flat Frequency Response SNR of 64dBA
- Low Current
- Max RF protection
- Ultra-Stable Performance
- Standard SMD Reflow
- Omni-directional

Pins Configuration and Description

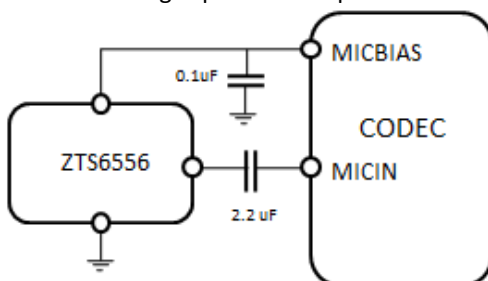
Bottom view



Isometric Views of WBC6556 Microphone Package
All Pictures shown are for illustration purpose only

Typical Applications

The WBC6556 output can be connected to a codec microphone input or to a high input impedance gain stage. A dc-blocking capacitor is required at the output of the microphone.



Connect to Audio OPAM

Note: All Ground pins must be connected to ground.

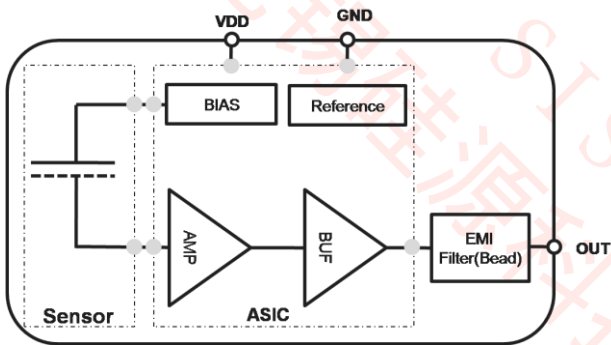
Capacitors near the microphone should not contain Class 2 dielectrics.

Absolute Maximum Ratings

V _{DD} to Ground	-0.5V to +5.0V
Out to Ground	-0.3V to V _{DD} +0.3V
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	GROUND	Ground
3	OUT	Analog output signal.
4	GROUND	Ground

Specifications

(TA = +23°C, VDD = +1.8V, R.H. = 60%~70%, no load, VDD Decoupling cap=0.1uF unless otherwise noted.)

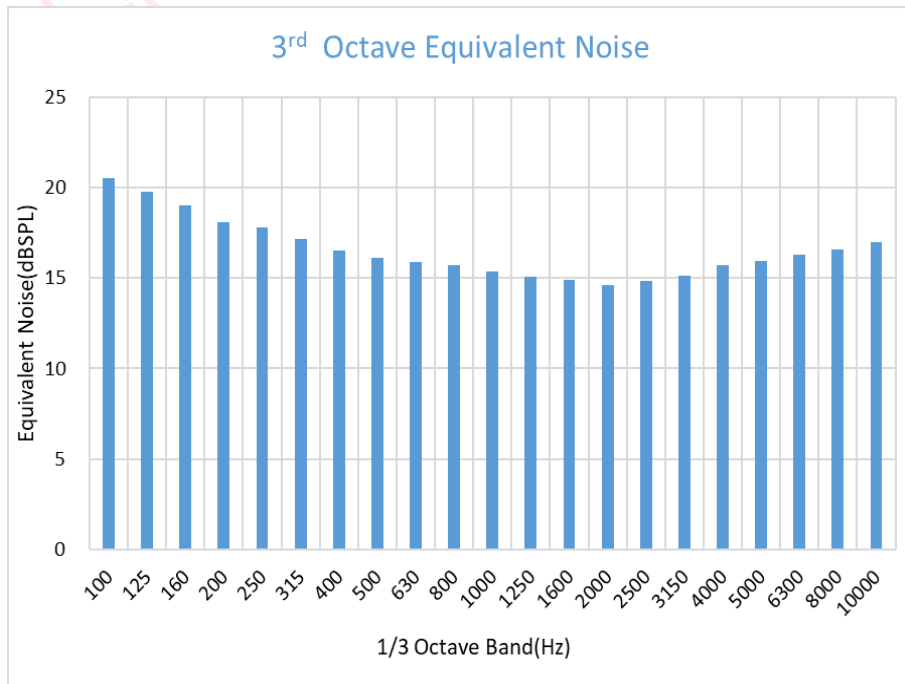
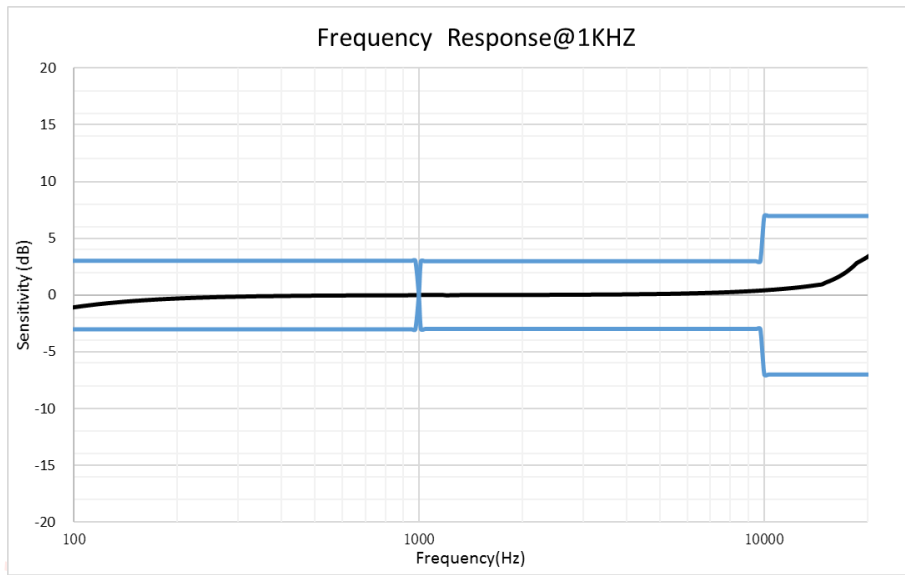
PARAMETER	Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage ¹	V _{DD}		0.9	-	3.6	V
Supply Current ^{1,2}	I _{DD}		-	26	-	μA
Sensitivity ¹	S	94 dB SPL @ 1 kHz	-38	-35	-32	dBV/Pa
Equivalent noise (A-weighted)	Noise	10HZ - 8kHz		27.5	28.5	dB SPL
		10HZ - 20kHz		30	31	dB SPL
Signal to Noise Ratio	SNR	94 dB SPL @ 1 kHz	-	64	-	dB(A)
1/3 Octave equivalent input noise		@1kHz		15.5	16.5	dB SPL
Total Harmonic Distortion	THD	94 dB SPL @ 1 kHz	-	0.1	1	%
Acoustic Over load Point	AOP	10% THD @ 1 kHz		120	-	dB SPL
Power Supply Rejection Ratio	PSRR	1 kHz, 200mVpp sine wave on V _{DD}	-	65	-	dB
Power Supply Rejection	PSR	217 Hz, 100mVpp square wave on V _{DD}	-	-90	-	dBV(A)
DC Output voltage	V _{out_dc}		0.45		0.65	V
Output Impedance	Z _{OUT}	@ 1 kHz	-	4000	-	Ω
Directivity			Omni-directional			
Polarity		Increasing sound pressure	Increasing output pressure			

Note:

¹ 100% tested

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

Typical Performance Characteristics

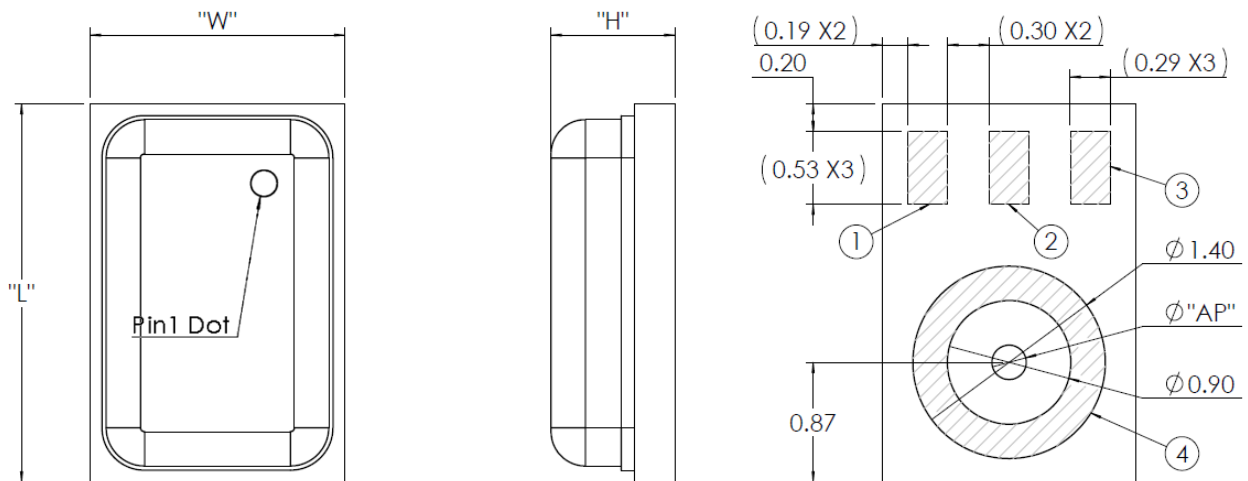


Reliability Specifications

The microphone sensitivity after stress must deviate by no more than $\pm 3\text{dB}$ from the initial value.

1. Heat Test, Operational	Temperature: $125\pm 3^{\circ}\text{C}$ Duration: 1000 hours Voltage: Applied
2. Cold Test, Operational	Temperature: $-40\pm 3^{\circ}\text{C}$ Duration: 1000 hours Voltage: Applied
3. Heat Test, Non-Operational	Temperature: $125\pm 3^{\circ}\text{C}$ Duration: 1000 hours Voltage: Not Applied
4. Cold Test, Non-Operational	Temperature: $-40\pm 3^{\circ}\text{C}$ Duration: 1000 hours Voltage: Not Applied
5. Thermal Shock Test, Non-Operational	Temperature: $-40\pm 3^{\circ}\text{C}$ and $125\pm 3^{\circ}\text{C}$ Duration: 30 minutes each, during 5 minutes ramp, 256 cycles Voltage: Not applied
6. Temperature humidity storage	Temperature: $85\pm 3^{\circ}\text{C}$ Humidity: $85\pm 3\% \text{RH}$ Duration: 1000 hours
	Temperature: $65\pm 3^{\circ}\text{C}$ Humidity: $95\pm 3\% \text{RH}$ 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 $\pm X$, $\pm Y$, and $\pm Z$ 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	$245 \pm 5^{\circ}\text{C}$, 5sec, 95% Tin on pad surface
15. Tumble test	300 tumbles from a height of 1m onto a steel base.
16. HAST	Temperature: $130\pm 3^{\circ}\text{C}$ Humidity: $85\pm 3\% \text{RH}$ Duration: 96 hours Voltage: Applied
17. Air Blow	0.45MPa, distance 3cm, time 10s

MECHANICAL SPECIFICATIONNS

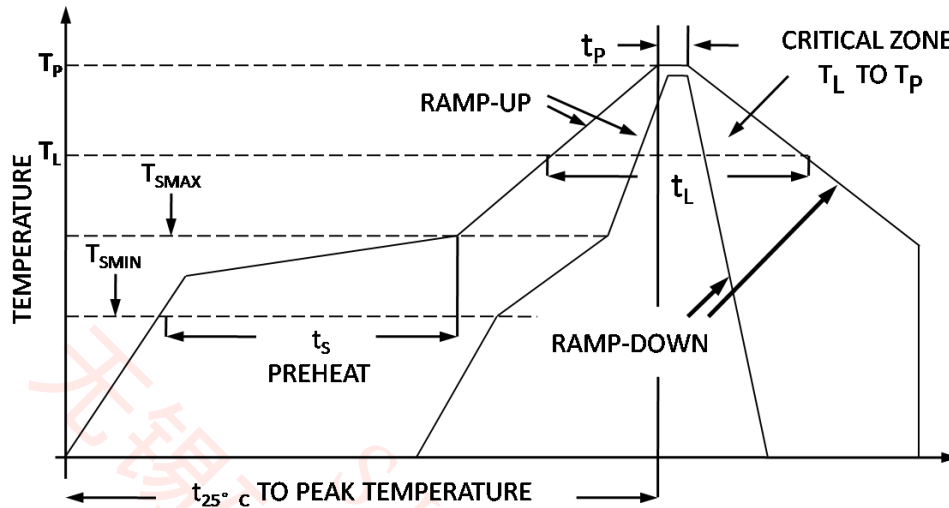


Item	Dimension	Tolerance
Length (L)	2.75	±0.10
Width (W)	1.85	±0.10
Height (H)	0.90	±0.10
Acoustic Port (AP)	∅0.25	±0.050

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

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.

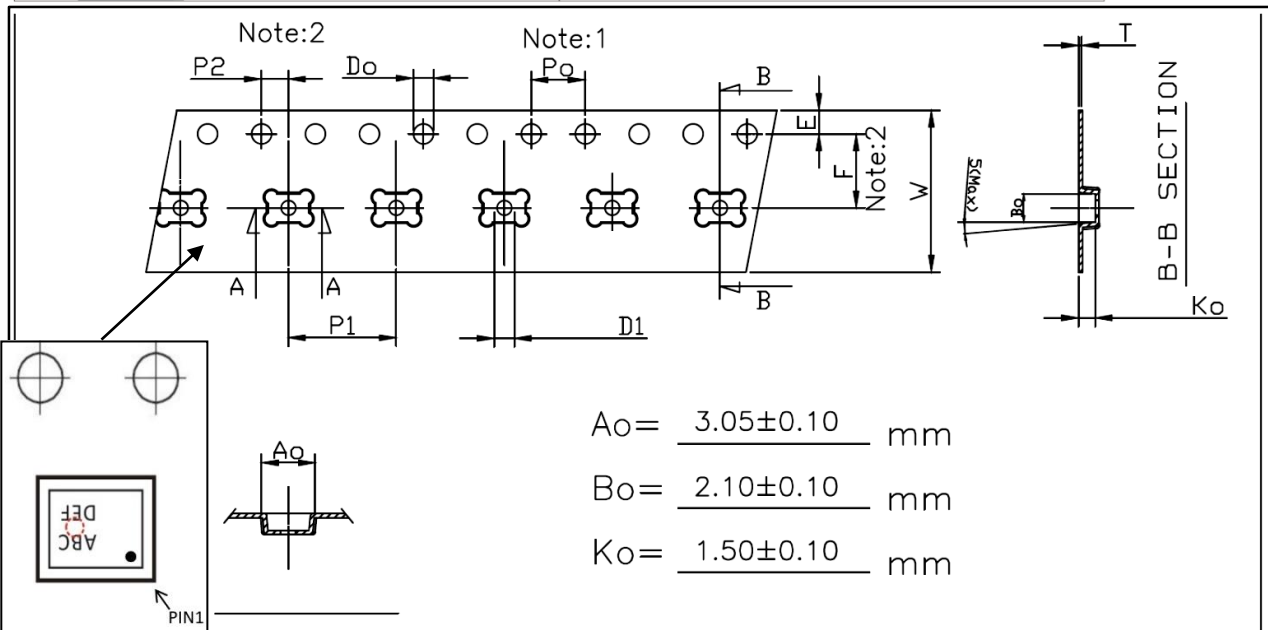
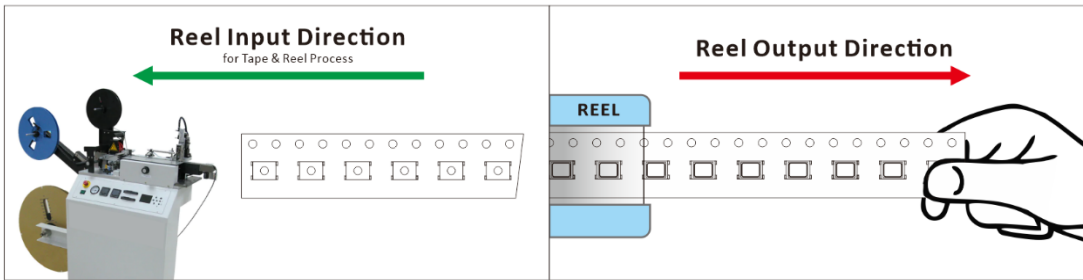


Pb-free and Sn63/Pb37 reflow profile requirements for soldering heat resistance:

Parameter	Reference	Pb-Free	
Average Ramp Rate	T_L to T_P	3°C/sec max	
Preheat	Minimum Temperature	150°C	
	Maximum Temperature	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_{250c}) to Peak Temperature		8 min max	

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

PACKAGING

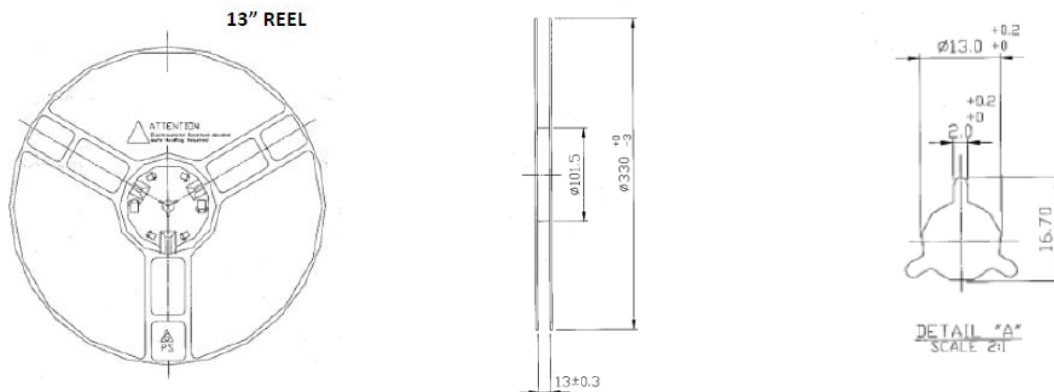


Unit: mm

Symbol	Spec.
Po	4.0±0.10
P1	8.0±0.10
P2	2.0±0.05
Do	1.50 ^{+0.10} / _{-0.}
D1	1.10±0.10
E	1.75±0.10
F	5.50±0.05
10Po	40.0±0.10
W	12.0±0.10
T	0.30±0.05

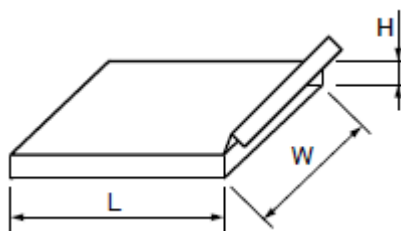
Notice:

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. Ao & Bo measured on a place 0.3mm above the bottom of the pocket to top surface of the carrier.
4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5. Carrier camber shall be not than 1mm per 100mm through a length of 250mm.



Part NO.	Reel Diameter	Quantity Per Reel	Quantity Per Inner Box	Quantity Per Outer Box
WBC6556	13"	5200	5200	46800

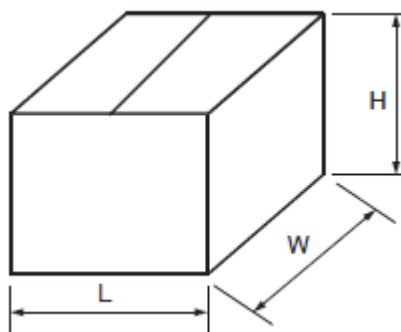
Dimensions for Inner Box



Unit : mm

L	W	H
335	339	45

Dimensions for Outer Box



Unit : mm

L	W	H
445	360	372