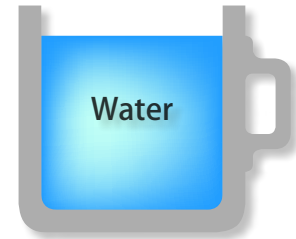


technical information

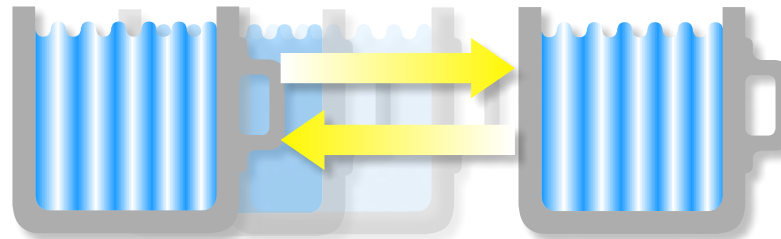
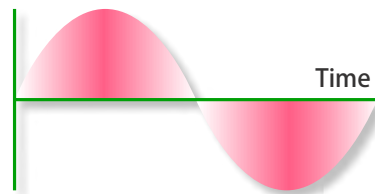
<Internal damage of IC chip by Inertia>

Two type of mechanical vibration mode which can be seen by shaking the cups with water in it from side to side.



■ This shaking provides beautiful sine wave.

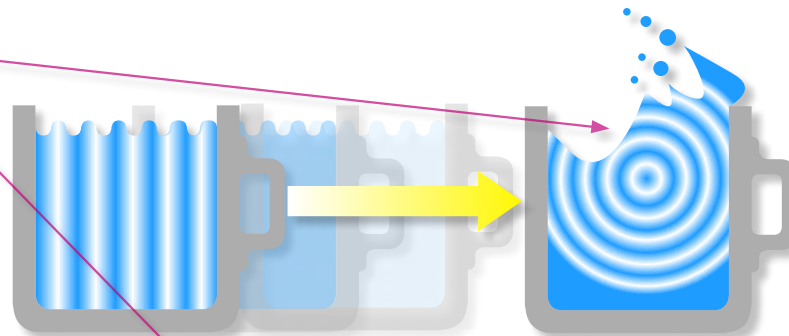
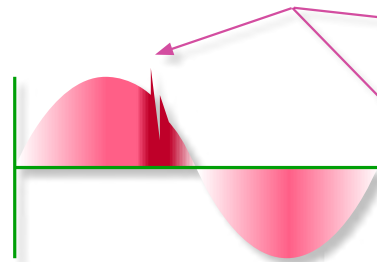
Amplitude



When water and a cup are in resonance state, water is not spilled.

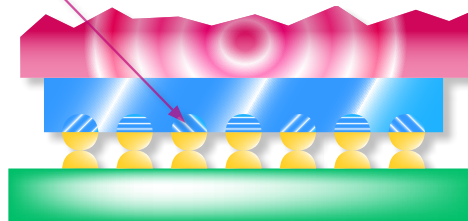
■ This shaking provides obstructed sine wave.

Inertia



When resonance state is unstable, inertia is exerted and water is spilled.

Internal cracking of IC Flip-Chip Bonding
Inertia causes internal cracking of IC chip during bonding.



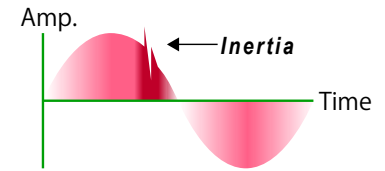
Horn
IC chip
Bump & Pad
Circuit substrate

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Beautiful wave of SoundBonding

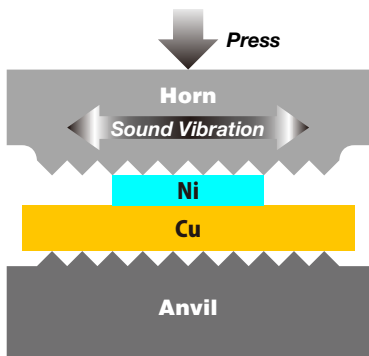
It is easy to destroy bonding parts due to generating heat and damage to the inside of the parts with general [ultrasonic welding]. [Sound power bonding] can solve this problem.



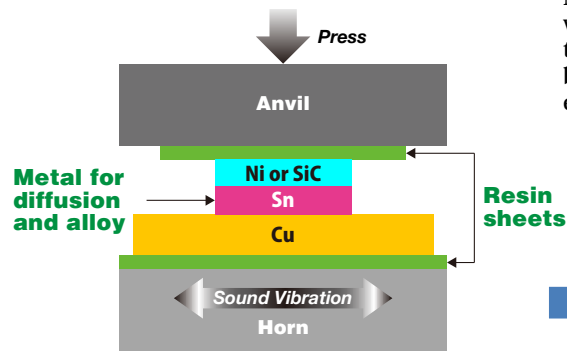
[Bonding without damages to parts] with Sound energy!!

Mechanism for smooth operation of <electrical signal of generator> which generates sound wave and <mechanical vibration of horn and tool connected to transducer> is required. All things such as [natural frequency] change of transducer, electrical [load], [gap of phase] between electrical signal and mechanical vibration are adjusted. Sine wave that Inertia is not exerted is maintained during bonding process. As a result damages to the parts are reduced by [beautiful sine wave].

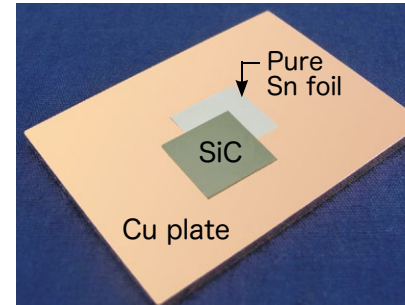
[Bonding in atmosphere and room temperature]
Direct bonding of multi-foil such as <Copper and Aluminum foil> at once
Bonding that <Pure tin foil> are sandwiched for <SiC chip> and <IC package>



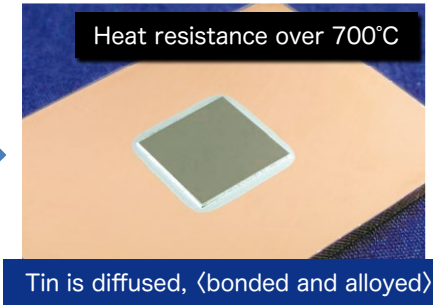
[SoundBonding]



[SEB Sound Excitation Bonding]



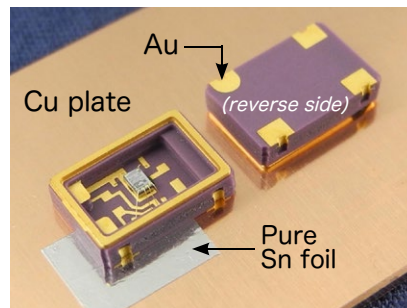
[Bonding that pure tin foil are sandwiched for <SiC and Copper plate>]



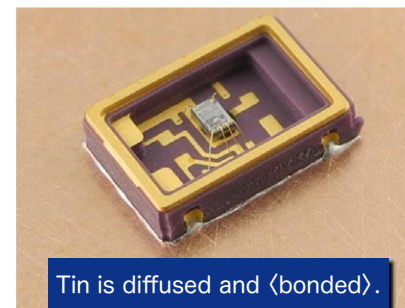
Tin is diffused, <bonded and alloyed>.



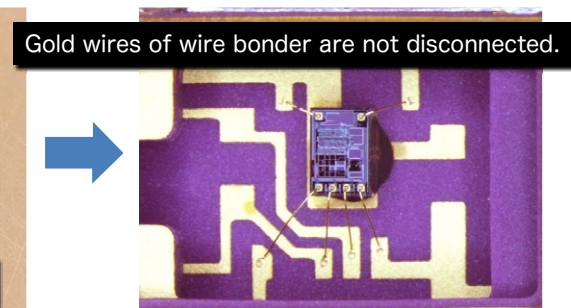
[Beautiful direct bonding of multi-foil such as <Aluminum foil and Copper foil> at once without contamination]



[Bonding that pure tin foil are sandwiched for <IC package and Copper plate>]



Tin is diffused and <bonded>.



-Patents pending-

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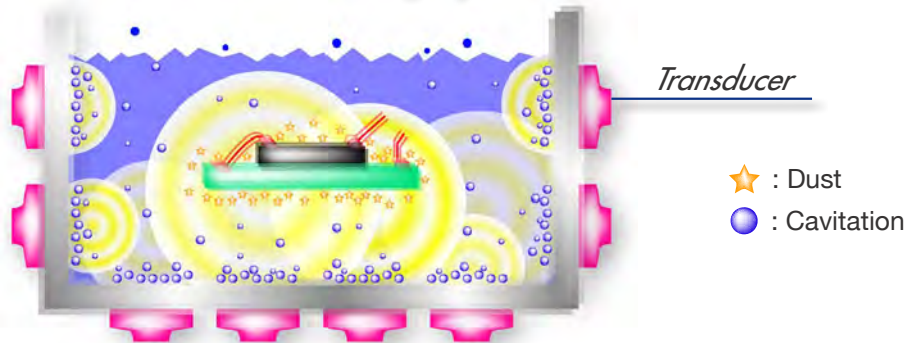
TI-E-0057LTR-2017112201

technical information

〈Sound Soldering & Cleaning Tech. for IC package〉

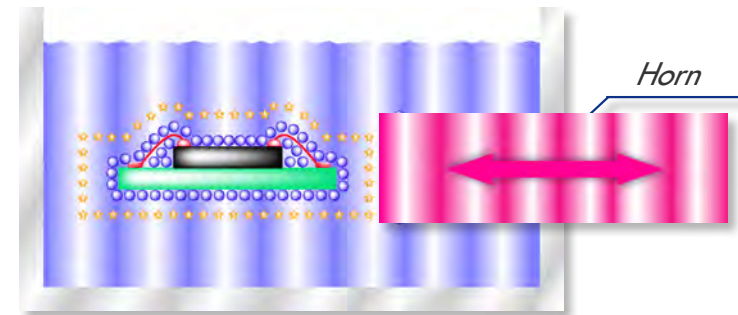
Ultex's [Sound Soldering] is the same theory as [Sound Cleaning] technology.

■ General Cleaning system



A number of transducers are fixed to external surface of tank with glue. Because natural frequency of all transducers are different and entire system can't resonate, inertia by shock wave is exerted and parts are damaged.

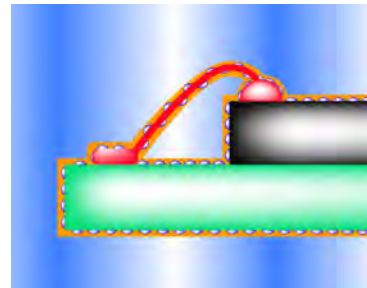
■ Ultex's Sound Cleaning system



Just one horn is inserted into tank from outside. Because entire system including parts resonates, parts are not damaged. (Digi-Track feature)

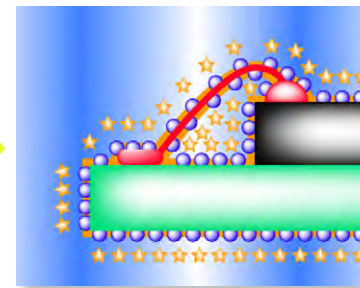
〈Step.1〉

Horn and parts resonate through pure water. Dust is separated by cavitation generated from a horn and parts.



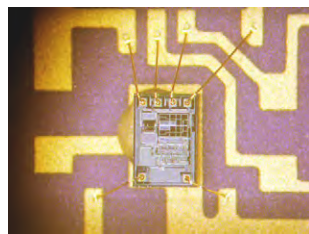
〈Step.2〉

Dust is removed completely by cavitation generated from surface of the parts.

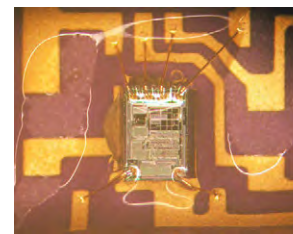


Before Cleaning

[Cleaning condition]
Cleaning solution : Tap water
Frequency : 20kHz
Amplitude : 5um
Cleaning time : 10sec.



After Cleaning



IC package
Wire bondings are not damaged
because there are no inertia.

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