



Working Instruction, Electrical

Applicable for Z530c, Z530i

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1 Moisture Sensitivity and Component Baking

Some components in this product are moisture sensitive and must be baked prior to use if they have been exposed to air. These components and their moisture sensitivity levels are specified in the Electrical Component Placing document. Below is a brief description of moisture sensitivity levels, but repair centers should visit the JEDEC website for more details before reworking moisture sensitive components. Search for the most recent version of the IPC/JEDEC J-STD-033A standard online at <http://www.jedec.org/>

- Level 1** **unlimited floor life**; does not require dry pack or re-baking.
- Level 2** **1 year floor life**; $\leq 30^{\circ}\text{C}$; 60% relative humidity (rh); shipped in dry pack; must be re-baked after being opened if floor life is exceeded.
- Level 2A** **4 weeks floor life**; $\leq 30^{\circ}\text{C}$; 60% rh; shipped in dry pack; must be re-baked after being opened if floor life is exceeded.
- Level 3** **168 hours floor life**; $\leq 30^{\circ}\text{C}$; 60% rh; shipped in dry pack; must be re-baked after being opened if floor life is exceeded.
- Level 4** **72 hours floor life**; $\leq 30^{\circ}\text{C}$; 60% rh; shipped in dry pack; must be re-baked after being opened if floor life is exceeded.

Parts shipped from the Sony Ericsson Parts Warehouse are most likely NOT shipped in dry pack. This means the time elapsed between placing the order and receiving the parts must be considered as time exposed to the environment.

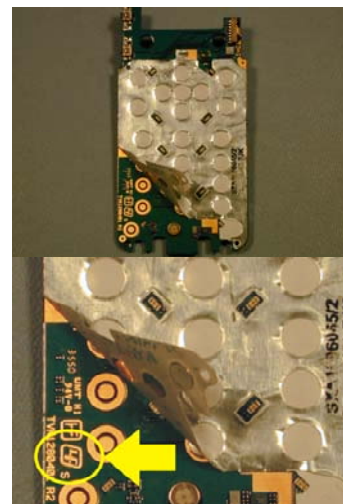
Different moisture sensitivity levels and exposure times create the need for different baking temperatures and times. More detailed information may be found in the most recent version of the IPC/JEDEC J-STD-033A standard. The standard is available online at <http://www.jedec.org/>.

2 Lead-free Rework

2.1 Lead-free Symbol

NOTE!

- This is a lead-free product!
- All solder wire or paste used with this product must be lead-free.
- All rework tools that directly contact the solder must remain lead-free. They must only be used for lead-free repairs.
- The lead-free symbol is under the dome foil.





2.2 Bottom Heat

Because of the higher temperatures required for lead-free solder, bottom heat is strongly recommended for rework of all ASICs. This does not include small transistors or chips, but it does include fine pitch components and BGA type components.

2.3 Reflow Profile

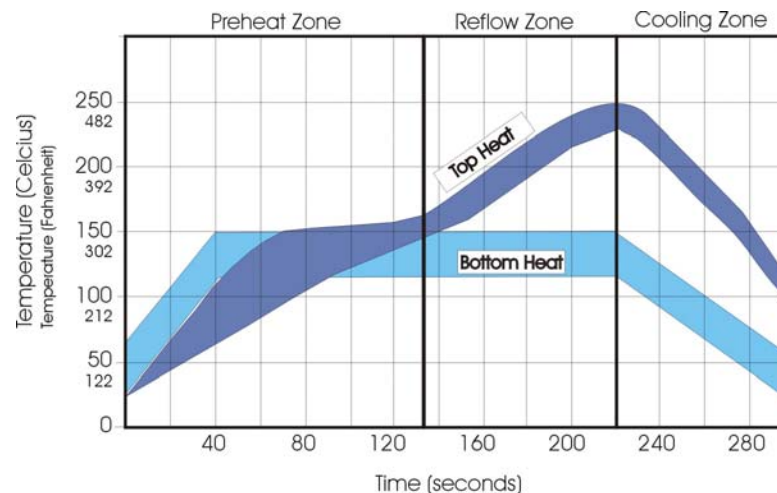
The general reflow profile for lead-free components is different than that of leaded components because lead-free solder has a higher melting point. The maximum temperature for any component must not exceed 250°C. The table below is a comparison borrowed from IPC/JEDEC J-STD-020B July 2002 (www.jedec.org).

Table 5-2 Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly		Pb-Free Assembly	
	Large Body	Small Body	Large Body	Small Body
Average ramp-up rate (T_L to T_p)	3°C/second max.		3°C/second max.	
Preheat				
– Temperature Min (T_{smin})	100°C		150°C	
– Temperature Max (T_{smax})	150°C		200°C	
– Time (min to max) (t_s)	60-120 seconds		60-180 seconds	
T_{smax} to T_L				
– Ramp-up Rate			3°C/second max.	
Time maintained above:				
– Temperature (T_L)	183°C		217°C	
– Time (t_L)	60-150 seconds		60-150 seconds	
Peak Temperature (T_p)	225 +0/-5°C	240 +0/-5°C	245 +0/-5°C	250 +0/-5°C
Time within 5°C of actual Peak Temperature (t_p)	10-30 seconds	10-30 seconds	10-30 seconds	20-40 seconds
Ramp-down Rate	6°C/second max.		6°C/second max.	
Time 25°C to Peak Temperature	6 minutes max.		8 minutes max.	


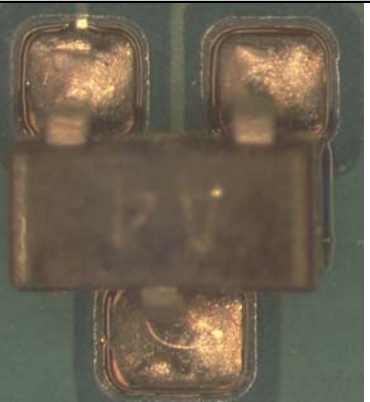
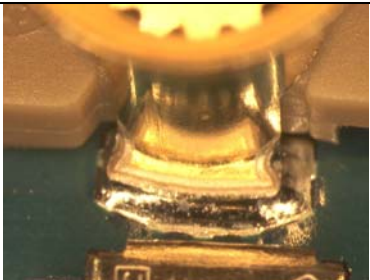

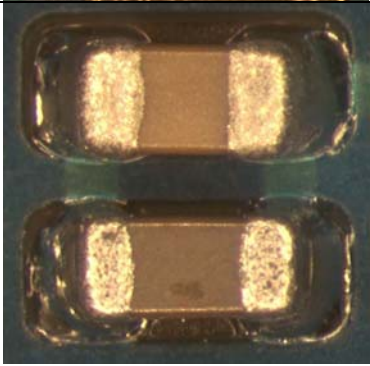
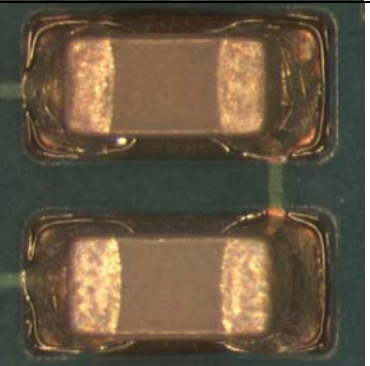
Note: All temperatures refer to topside of the package, measured on the package body surface.

The following graph shows an example of a lead-free profile including bottom heat and top heat. The profile for specific parts and specific equipment will vary, but the maximum temperature must not be exceeded.


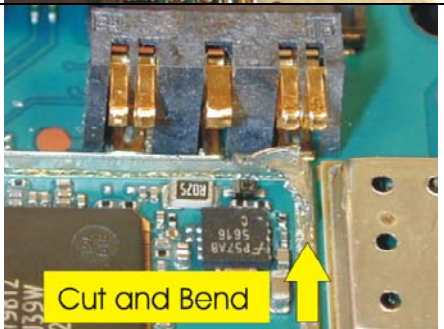
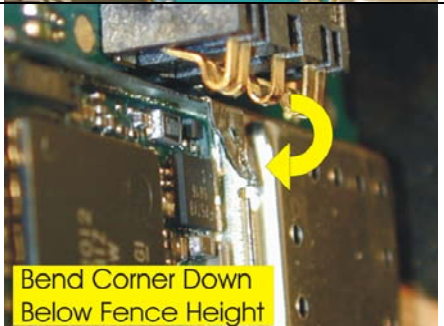


2.4 Inspection





Lead-free solder joints are more difficult to inspect because they do not have shiny surfaces like leaded solder joints. Also, lead-free solder does not flow as well as leaded solder, so some of the solder pad area may remain exposed.

Good Leaded Solder Joints	Good Lead-free Solder Joints
	
	
	

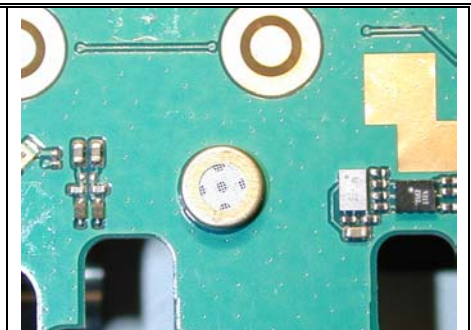
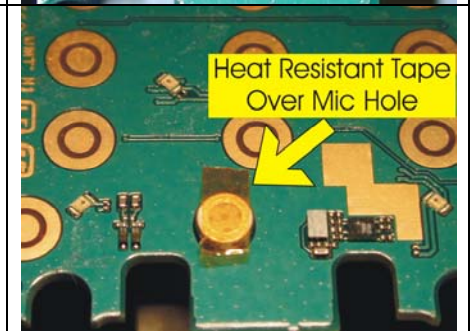

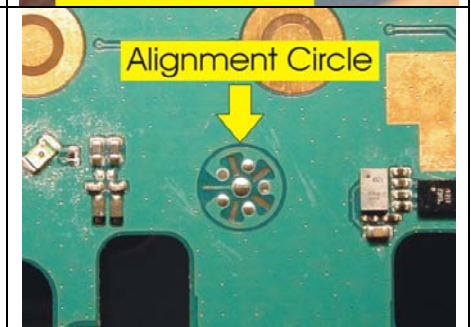
3 N4138 – LED Backlight Driver

<p>It may be necessary to cut and bend the fence corner in order to rework N4138.</p>	
<p>Cut one side of the corner, and then bend it up toward the battery connector.</p>	 <p>Cut and Bend</p>
<p>After placing the new part, bend the corner back down toward the part. Bend the corner down below the height of the fence, but do not let it touch the parts on the board.</p>	 <p>Bend Corner Down Below Fence Height</p>

4 X2415 – Storage Card Connector

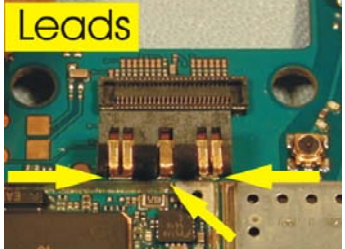

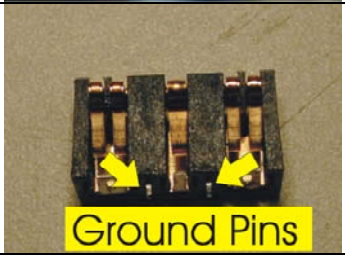
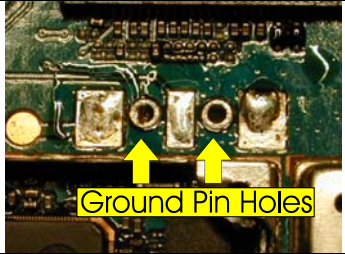
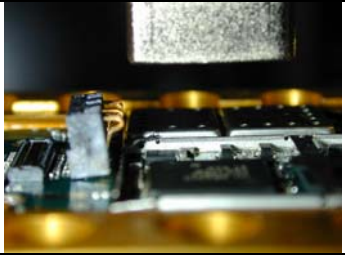
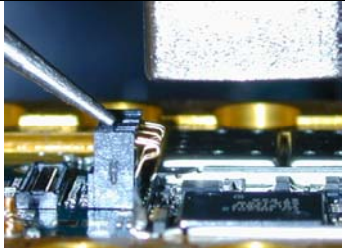
<p>Remove the labels before reworking X2415.</p>	
<p>Use a large hot air device to remove the part from the board.</p>	
<p>Remove excess solder and clean the pads.</p>	
<p>Place the new part and solder the leads with an iron.</p>	

5 B3202 - Microphone


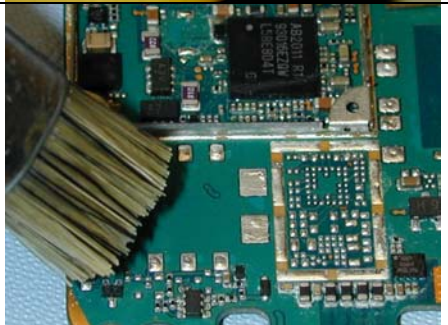
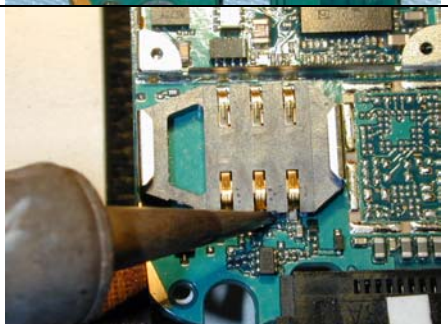
<p>Use a hot air device to remove the microphone.</p>	
<p>Place a piece of heat-resistant tape over the top of the microphone to prevent heat from entering.</p>	
<p>Aim the hot air device at the bottom of the microphone.</p>	
<p>Place the new part within the alignment circle, and then use a hot air device to flow the solder.</p>	




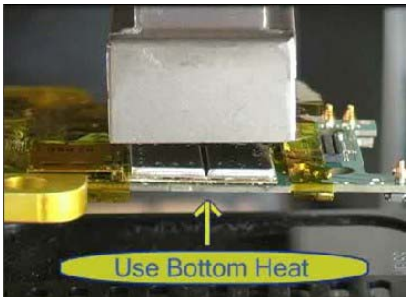
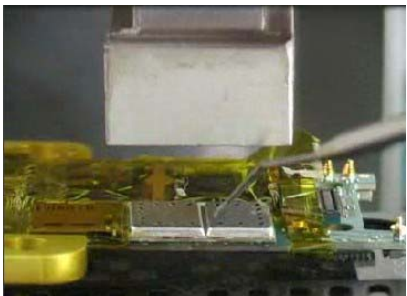


6 X2600 – Battery Connector

<p>X2600 may be difficult to rework because its leads are very close to a shield fence, so it is difficult to insert a soldering iron.</p>	
<p>Use a large hot air device to remove the old part. Place the nozzle in front of the part instead of directly over it to avoid melting the plastic or damaging X1200.</p>	
<p>Place the ground pins of the new part into the holes on the board. Do not force the pins into the holes. They only need to go in enough to hold the connector in place.</p>	
<p>It may be necessary to remove some of the solder from the holes first.</p>	
<p>Use a large hot air device to place the new part. Position the nozzle in front of the part instead of directly over it.</p>	
<p>After the solder flows, push the part into the ground pin holes and into an upright position.</p>	






7 J2401 – SIM Connector

<p>Use a large hot air device to remove the old part.</p>	
<p>Remove excess solder and clean the pads.</p>	
<p>Place the new part and solder the leads with an iron.</p>	

8 N1200 - RF Module (Mini T-top)

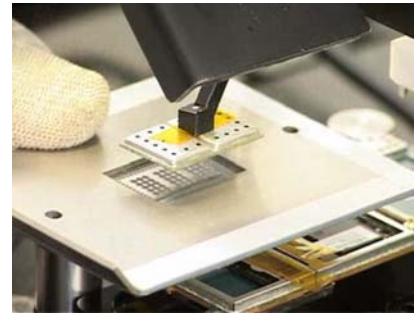
<p>Apply heat resistant tape to adjacent components.</p>	
<p>Use hot air and an appropriate nozzle to reflow the solder and remove the component.</p>	
<p>After the solder flows, use a dental hook to slide the part off the board.</p>	
<p>Remove all excess solder from the pads.</p>	
<p>Clean the pads.</p>	



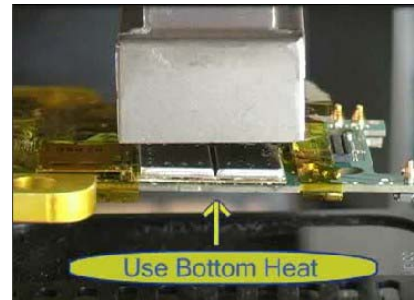
<p>Place the new component into the fixture with the pads down.</p>	
<p>Adhere a piece of heat resistant tape across the top side of the new component. This tape will be used for a vacuum surface later in the process.</p>	 <p>Vacuum tape</p>
<p>Turn the fixture over.</p>	
<p>Apply a small amount of solder paste to the surface.</p>	 <p>Lead-free solder paste</p>
<p>Spread the solder paste over the stencil and through the holes. Make sure every hole is filled.</p>	 <p>Lead-free solder paste</p>



Use a vacuum device to remove the part from the stencil and place it on the board.



Use split vision equipment to place the new component on the board and use hot air to reflow the solder.



9 Revision History

Rev.	Date	Changes / Comments
A	2006-Mar-20	Initial Release
B	2006-Mar-30	Due to system problem. No changes made on content