



# WL-FC device

Rework Instructions  
December 2020

The Menlo Micro MM5130 is a Wafer Level Packaged device and although this provides many benefits in terms of space and performance there may be circumstances that require replacement of the part on the circuit PCB.

Treat the device as electrostatic sensitive and observe all customary handling precautions including working on static dissipative surfaces, wearing wrist/shoe straps, ESD smocks/jackets or other ESD control devices. Store unused devices in their packaging in ESD bags. Do not store loose parts in bulk bins, do not use parts that have been stored on workbench tops or that have been dropped.

As the device is only 2.5 x 2.5 x 1 mm in size much of the rework procedure needs to be performed under a microscope or other magnifier. The interconnects are formed using 0.100 mm diameter copper pillars with nominally 0.100 mm diameter solder bumps. At present no rework process is identified for reworking these solder bumps so any rework will require replacement with a new previously unmounted part.

The top surface of the chip is covered with a black acrylic coating and marked as indicated in the data sheet. Figure 1 shows typical part marking including machine readable 2D bar code and human readable part number.

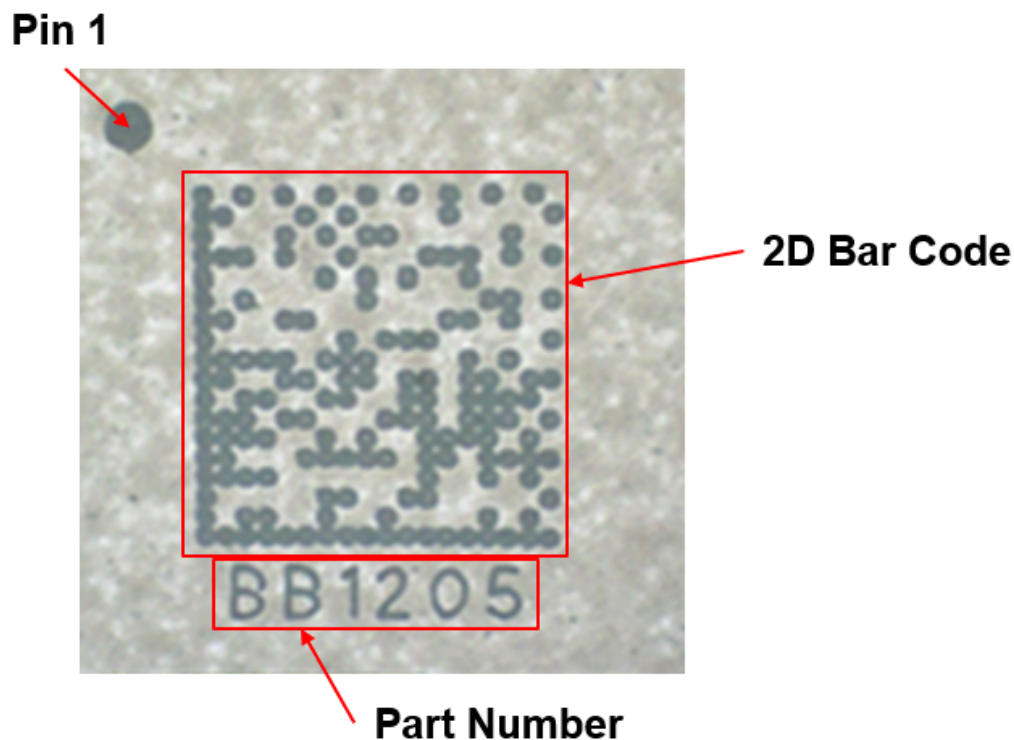
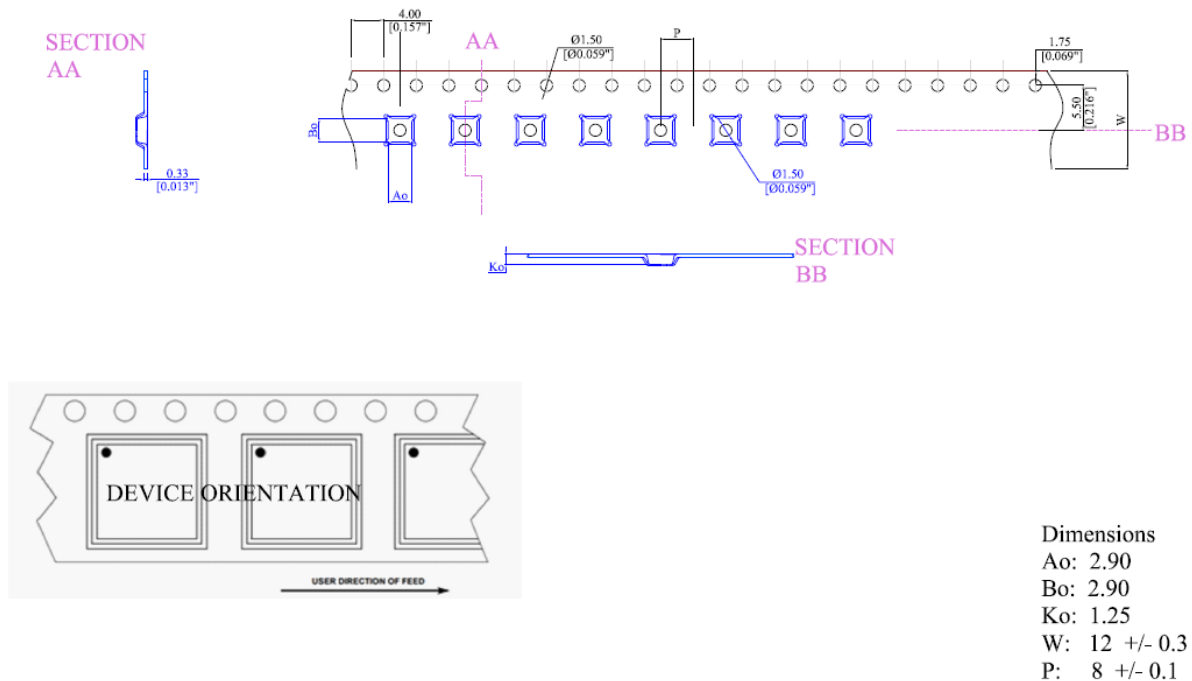


Figure 1: Typical marking with Pin 1 identifier, 2D barcode and Part Number

The devices are provided on tape and reel as defined below in Figure 2.



#### Notes

- 1) Cumulative tolerance for 10 sprocket holes +/- 0.20mm
- 2) Ao & Bo are measured from the top of the radius along the pocket edge.
- 3) Pocket position is true position of pocket relative to sprocket holes, not pocket hole
- 4) Camber not to exceed 1mm per 250mm in either direction

Figure 2: Tape and Reel definition, MM5130 EVK (dimensions in mm)

## Required Tools and Supplies

It is critical to ensure that any rework is performed in an ESD safe work area, which includes static dissipative surfaces, wearing wrist/shoe straps, ESD smocks/jackets or other ESD control devices.

Typical supplies and tools required for the rework are listed below:

- IR Rework station or hotplate set to 120 C – for pre-heat operation
- IR Lamp or hot air gun set to 300 C – for reflow operation. Ensure hot air flow will not move the device.
- Soldering iron
- Flux
- Solder paste
- Solder wick
- Kapton tape
- Fine tip pick



- IPA
- Cotton swabs
- Kimwipes
- Vacuum pick up tool or Plastic tipped tweezers
- Microscope

## Rework Sequence

The rework sequence follows typical guidance for any part replacement:

- Removal of part
- Clean up of mounting location
- Applying fresh solder paste
- Placement of part
- Reflow of part

For best results the PCB assembly in the area of the device to be reworked should be pre-heated to approximately 120 C prior to all soldering/desoldering applications.

## Removal of Part

1. Where possible the area around the part should be taped off using Kapton tape, this is used to form a dam around the part so the area can be flooded with flux to enable easier removal of the part. It can also be used to mark out the mounting location should the board not have a silkscreen outline around the part.
2. Apply flux to the underside of the part ensuring it seeps underneath to cover all pin locations.
3. Apply a small solder dot on the Kapton tape near the part, this is to be used to gauge when the part has reached temperature.
4. Preheat board assembly to ~ 120 C and allow to soak until board is up to temperature.
5. Apply additional heat using IR lamp or hot air, once the solder dot has melted and flowed continue heating for 10-15 seconds. Remove the part with vacuum pick up tool or tweezers and put aside.
6. Allow the board to cool to ambient temperature in air.

## Clean Up of Mounting Area

1. Clean the mounting area of residual flux using IPA and a cotton swab, allow to dry completely.
2. Apply clean flux to the mounting area.
3. Using soldering iron and wick remove excess solder from the mounting pads as shown in Figure 3.
4. Clean the mounting area of residual flux using IPA and a cotton swab, allow to dry completely.



5. Applying fresh solder paste
6. Clean the mounting area of residual flux using IPA and a cotton swab, allow to dry completely.
7. Under the microscope and using the fine pick apply solder to the mounting pads on the board. Ensure the solder paste does not extend beyond the solder mask.

### Placement of part

1. Obtain a new part.
2. Using vacuum pick up tool or plastic tweezers, place the device in the area marked out with Kapton tape or silkscreen.
3. Ensure device is oriented correctly with pin 1 marker. Press the device down slightly.
4. Check around the perimeter of the device to ensure contact of the copper pillars with the solder paste – be careful not to jolt or tip the board.
5. Place another solder dot on the Kapton tape near the part this is to be used to gauge when the part has reached temperature.

### Reflow of part

1. Preheat board assembly to ~ 120 C and allow to soak for 2 minutes.
2. Apply additional heat using IR lamp or hot air (set to 300C), once the solder dot has melted and flowed continue heating for 10-15 seconds.
3. Allow the board to cool to ambient temperature in air.
4. Remove the Kapton tape and clean the area around the part of residual flux using IPA and a cotton swab, allow to dry completely.
5. Inspect the part under magnification and rotate board to ensure part pins have been soldered and part is planar to the board.

