Datasheet

for

RTX1090 DECT communication module – support for multi-level modulation

4 Mechanical specification

The module is a rectangular PCB which is to be soldered onto a motherboard, using contact points at the bottom of the module PCB (i.e., the module employs LGA technology for the contact points). The component side of the module is covered by a shield, which is convenient for vacuum pick and place manufacturing equipment.

The module measures 15.4 x 21.6mm, and the module height is 2.60mm nom. (min: 2.20mm, max:2.84mm)[7]. The module has 88 contact points[8], each of which is made as a single solder point. The module does not have any buttons, LED, connectors, or a display.

The dimensions of the module are outlined in millimeters in the figure below. Please notice the three (3) guidance markings (two at the top of the module, and one at the bottom). Please refer to the footprint overview on the next page for dimensions and location of the soldering points.

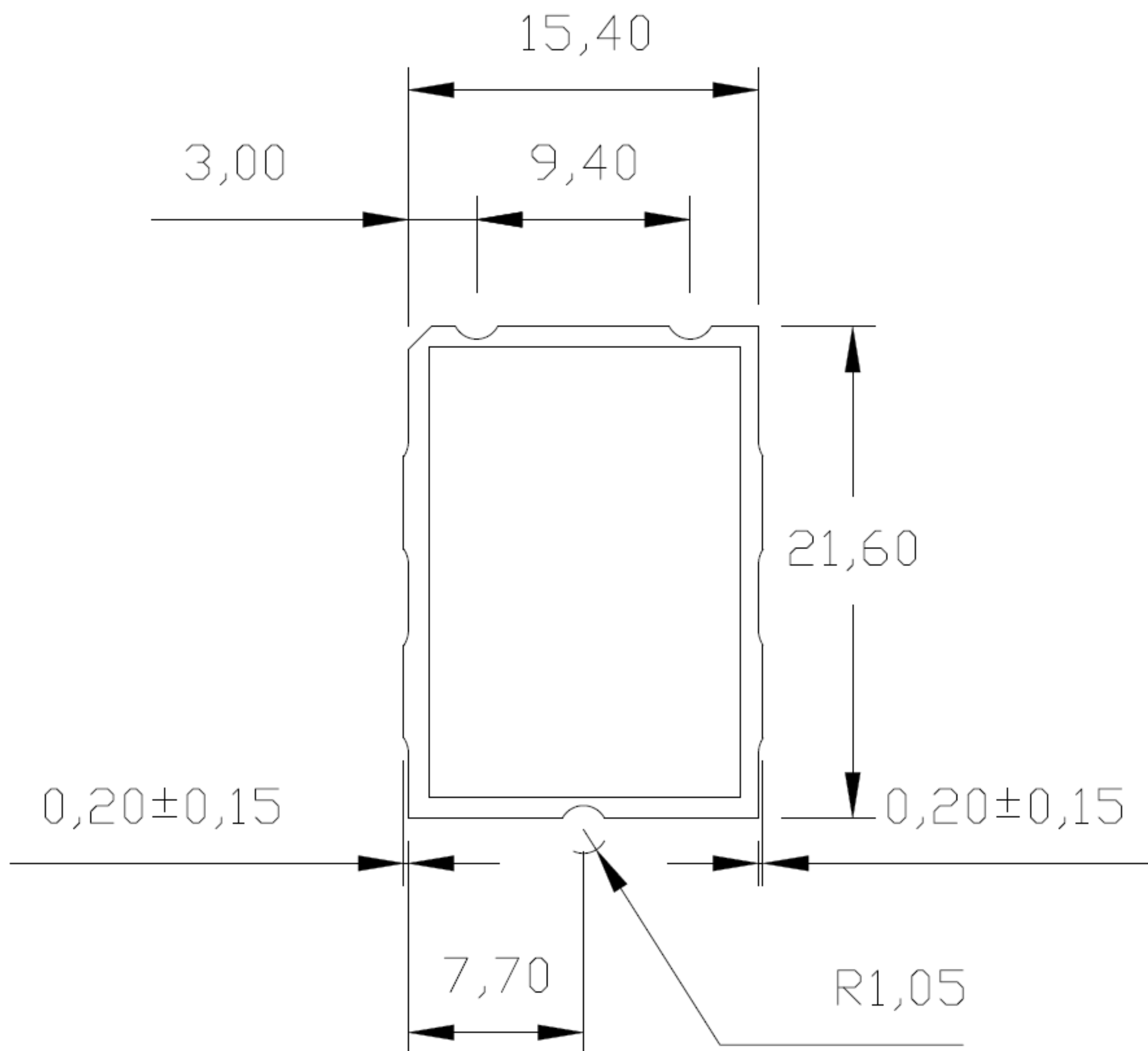


Figure 2: Module dimensions

[7] When the module is mounted on a carrier board, lift from the solder will elevate the module with typical 0.04mm. The elevation caused by soldering is included.
[8] The contact points are arranged in an 8x11 matrix structure as outlined in the module solder footprint, and the diameter of the pads is 0.8mm.

The module solder footprint (top view) including outlining of pin-numbering. The solder pad is 0.8mm in diameter:

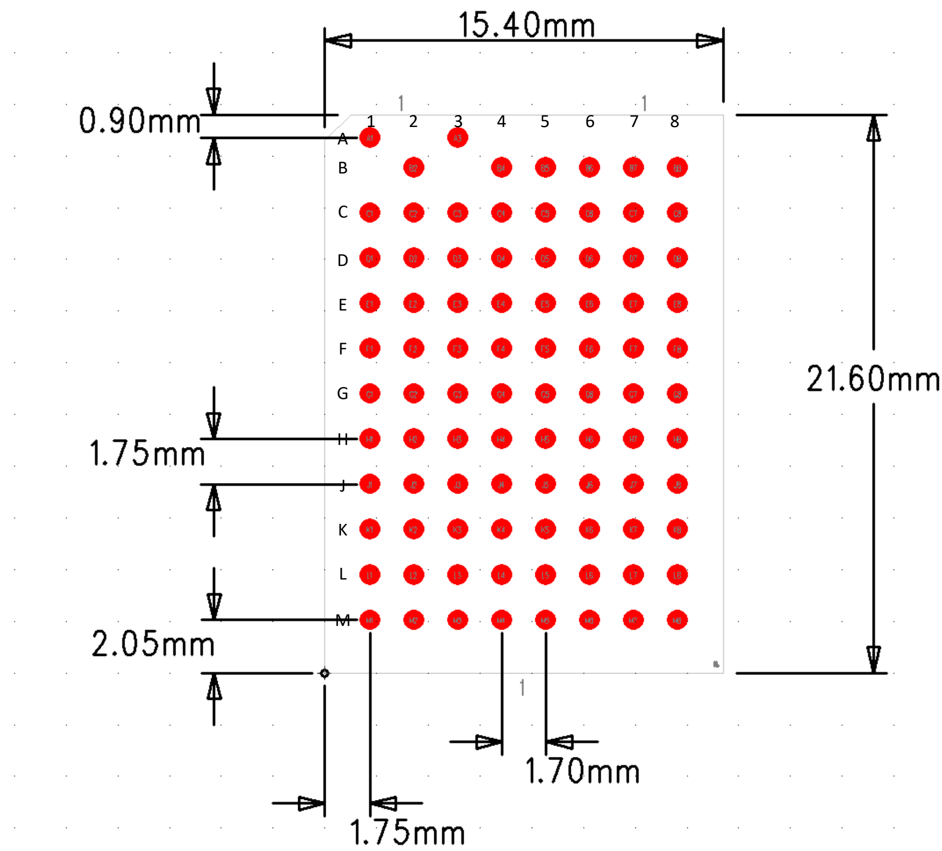


Figure 3: Module solder footprint

7 Soldering profile

As shown below, the RTX1090 should be soldered using a standard reflow soldering profile and standard solder paste (Sn96.5 / Ag3 / Cu0.5 alloy). Solder paste supplier is Indium Corporation. Adjustments to the profile may be necessary, depending on the process requirements. Consequently, the following information represents a typical starting point for the optimization process in relation to the specific solder profile for use in the specific product.

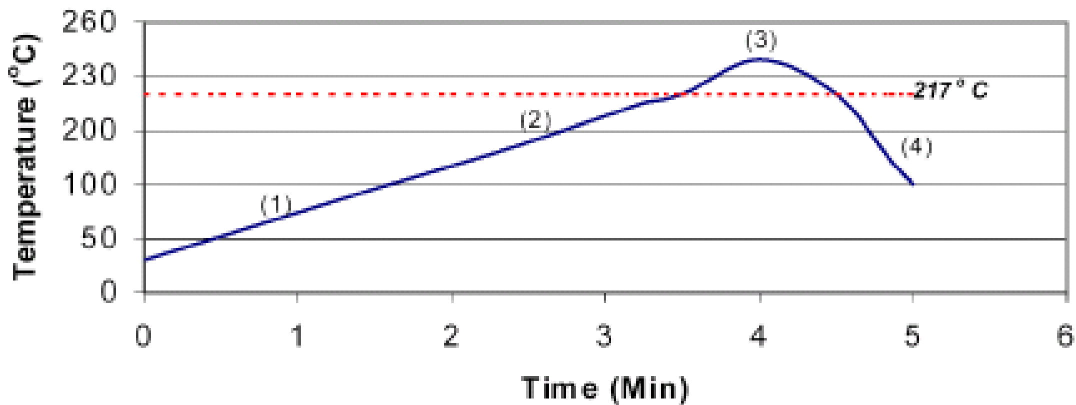


Figure 4: Solder paste composition

7.1 Preheat

The temperature rise from room temperature to 150 degrees shall be made for 30 seconds or longer - typically 90 – 120 seconds. A linear ramp rate of 0.5 – 2.0 degrees/second allows gradual evaporation of volatiles.

7.2 Soak or dry-out

When 150 degrees is reached, the temperature rises to 190 degrees with a continued linear ramp of 0.5 – 2.0 degrees/second - typically 90 – 120 seconds. This stage serves to activate the flux and stabilize the temperature across the board. The uniform heating allows a more linear ramp rate right up to liquid temperature.

7.3 Reflow

The linear ramp rate of 0.5 – 2.0 degrees/second is continued up to the point of liquidus. When liquidus is reached, the temperature should rise with about 1 - 2 degrees/second to a spike 15 - 43 degree above liquidus to form a quality solder joint. Time above liquidus should be 30 - 90 seconds to reduce excessive inter-metallic compound. Thermal damage and charring of the post-reflow residue can also result from excessive time above liquidus and/or too high a peak temperature.

7.4 Cooling

A rapid cooldown of < 4 degrees/second is desired to form a fine grain structure. Slow cooling will form a large grain structure, which typically exhibits poor fatigue resistance. If excessive cooling > 4 degrees/second is used, both the component and the solder joint can be stressed due to a high TCE mismatch. Stencil thickness of 0.150mm is recommended.

8 Packaging of module

The RTX1090 module is delivered in a tape on reel solution (see chapter 11 for details).

Module software
Production software only. Module is intended to be programmed when deployed in actual product.

Packaging material and quantity
The RTX1090 module is delivered as a tape and reel cassette with 1000 pcs. per cassette. The cassettes are sealed in an anti-static bag with an anti-moisture pad and a humidity indicator.

10 Product labeling

Figure 5: Product labeling

10.1 Serial number definition

The serial number uses the syntax ”YYWWAXXXXXX” based on the following information:

- Digit 1-4: YY = production year, WW = production week
- Digit 5: A = a (unique RTX1090 identifier)
- Digit 6-11: XXXXXX = serial number incrementing by one for each unit

Hence, from the label example above, the following information can be extracted:

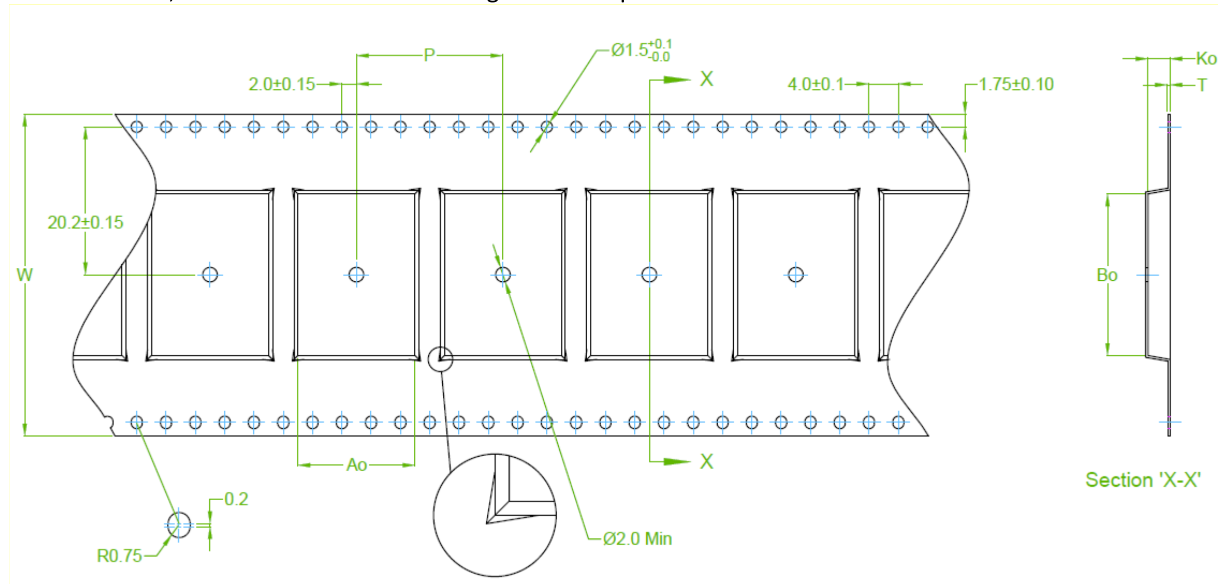
- Production year = 2018
- Production week = 35
- Serial number = 000001

10.2 Barcode

ECC200 data matrix: product serial number

11 Tape and reel specification

Measurements of the tape and reel solution is provided in figure 6 below. The module is placed in the chambers with the shield, and the label is visible through the clear protective membrane.



DIMENSIONS	
Ao	16.00 ±0.10
Bo	22.10 ±0.10
Ko	3.00 ±0.10
P	20.00 ±0.10
T	0.30 ±0.05
W	44.00 ±0.30

NOTES:

ALL DIMENSIONS IN MILLIMETRES
10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ± 0.20
MATERIAL: CONDUCTIVE POLYSTYRENE
CAMBER NOT TO EXCEED 1.0mm IN 250mm

Figure 6: Tape and reel specification

The module is placed in the chambers as outlined in figure 7 below i.e., with the cut corner placed in the lower left corner according to the feeding direction.

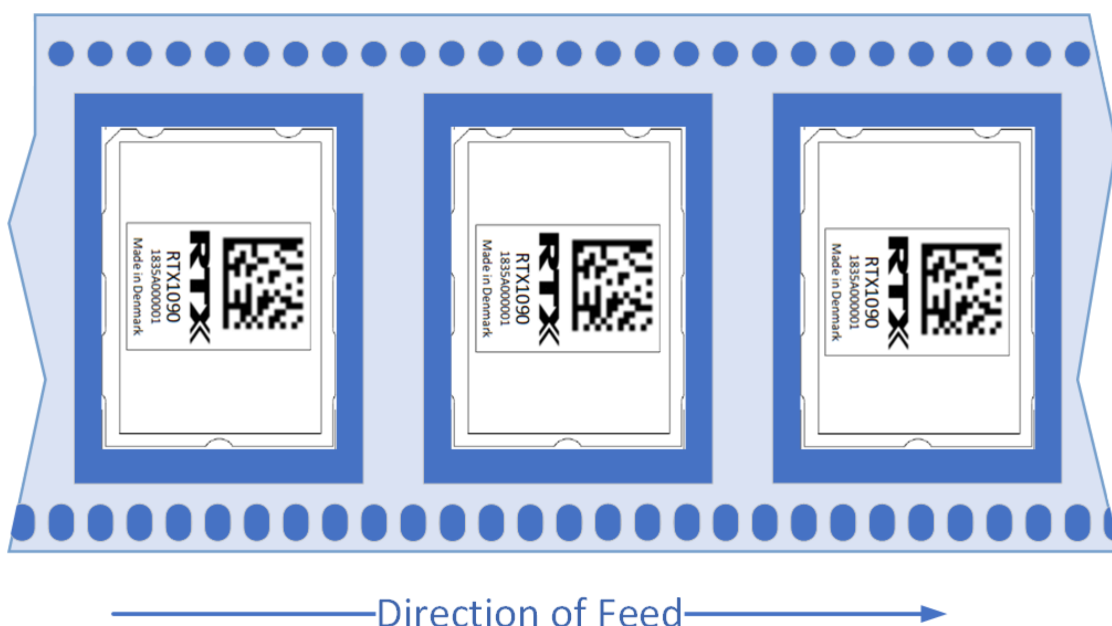


Figure 7: Module feed direction from reel