

HY0021

Bluetooth® low energy module with Slot Antenna Built into Shielded Package Application Note

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Version	Date	Description
1.0	Nov.29, 2024	First edition issued

1 Purpose of this document

This document describes the considerations on the usage of HY0021, and the design and the manufacturing of the integration.

2 Module footprint

2.1 Overview of the conductor layer pads and the solder resist opening

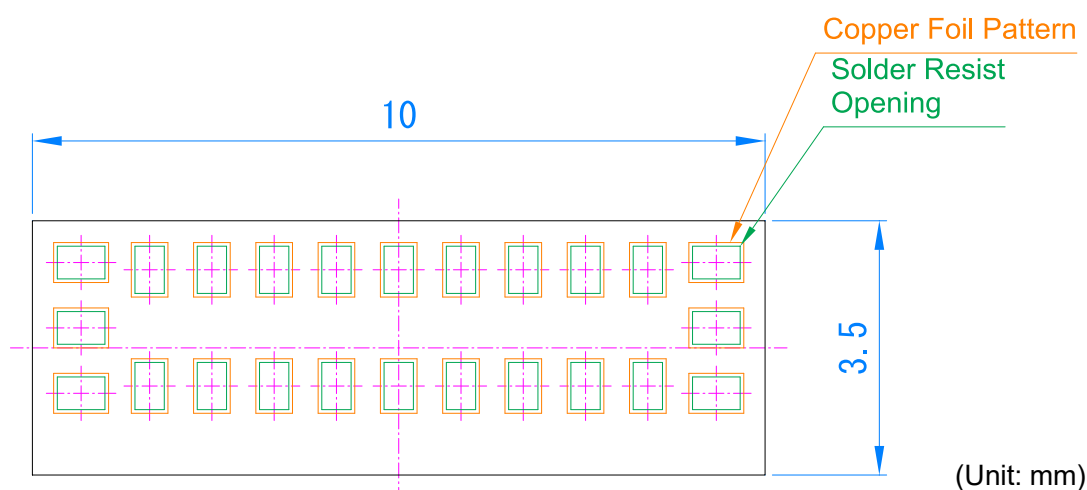


Figure 2-1 The overlaid diagram of the recommended conductor layer pads and the solder resist opening (Top view)

2.2 Dimensions of the conductor layer pads

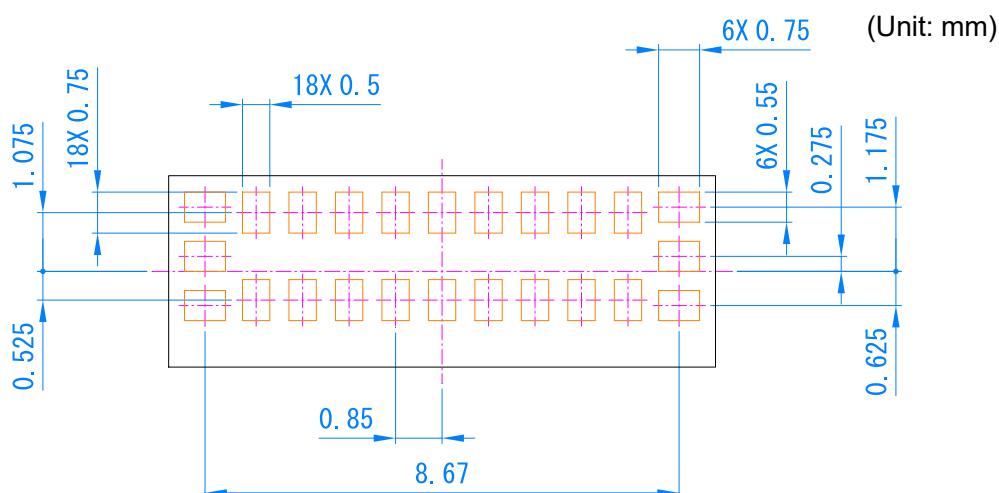


Figure 2-2 Recommended dimensions of the module footprint conductor layer pads (Top view)

2.3 Dimensions of the solder resist opening

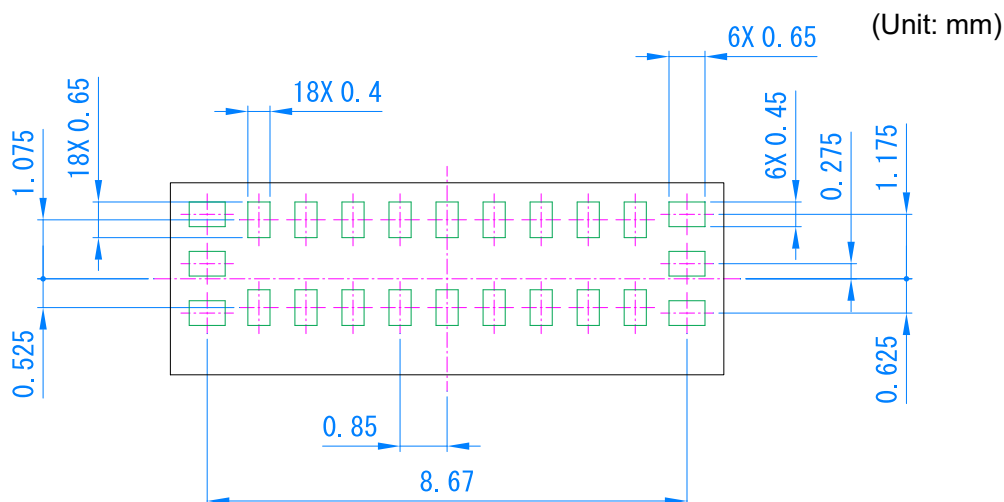


Figure 2-3 Recommended dimensions of the module footprint solder resist opening (Top view)

2.4 Keep-out zone and surrounding GND pattern

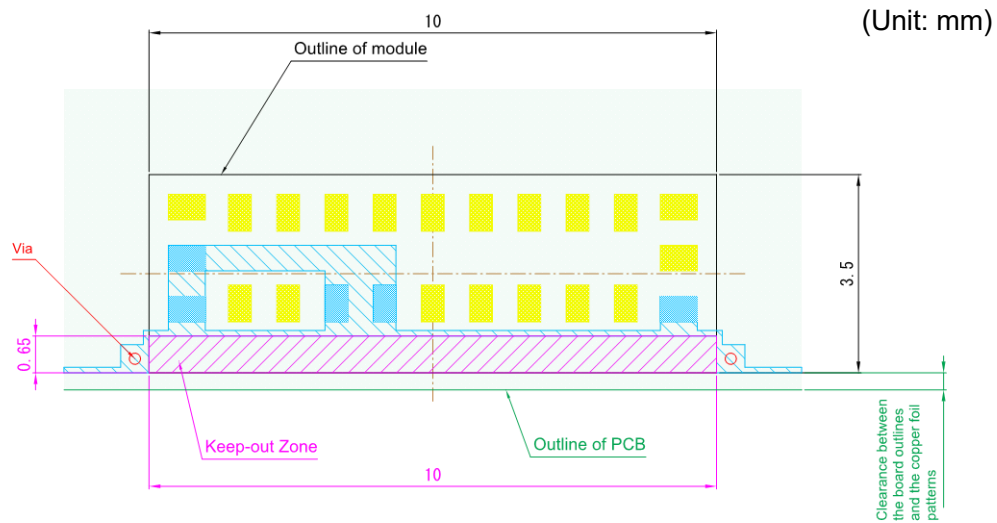


Figure 2-4 Pattern of the top layer of the PCB (Top view)

- No conductor layers or no parts should be placed in the keep-out zone. Please note that the same keep-out zone is applied to all of the other layers as well as the top layer.
- Thinner than 0.10mm GND patterns should be placed on the three sides of the keep-out zone and connected to the surrounding GND patterns.
- The module should be placed along the outline of the PCB. There are no limitations of the clearance dimensions between the board outlines and the copper foil patterns, but the copper foil patterns should not be placed between the keep-out zone and the PCB outlines.

2.5 Test terminal

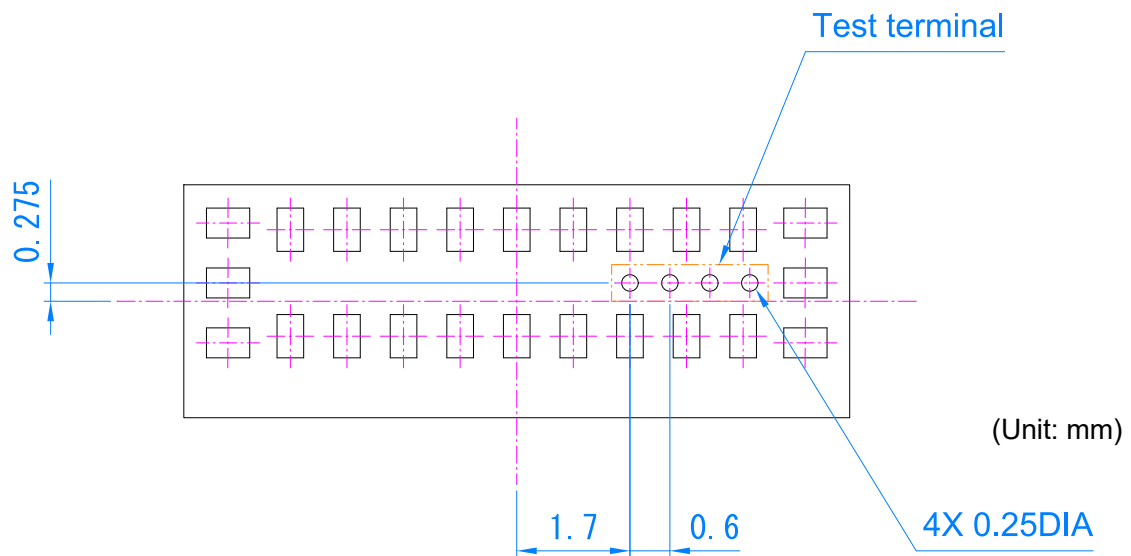
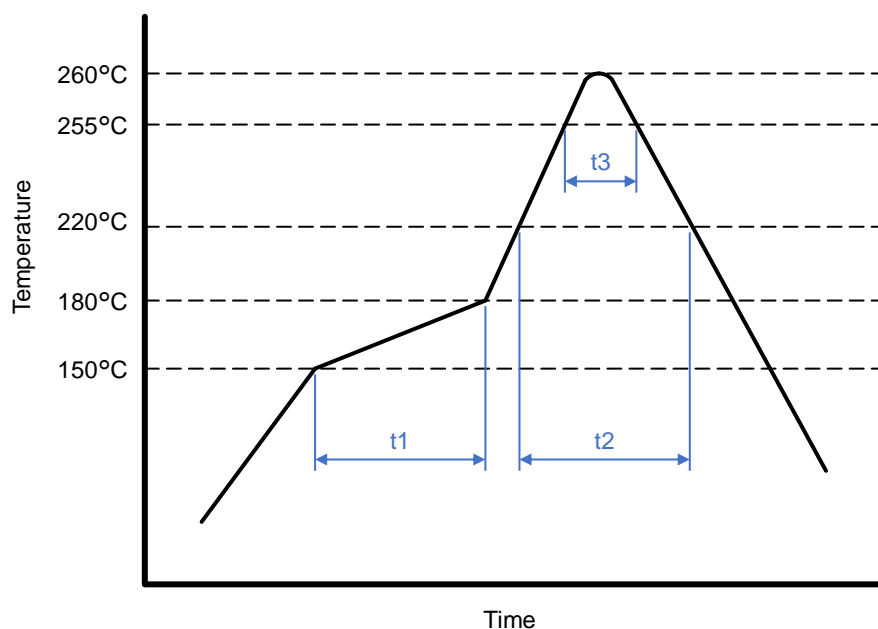


Figure 2-5 Test terminal (top view)

- Do not provide metal mask openings for the test terminals, and do not connect them to the board by soldering.

3 Reflow soldering profile



t1	150 to 180°C	60 to 120 sec.
t2	220°C and above	60 sec. or less
t3	255°C and above	5 sec. or less
peak	260°C Max.	

- Note:
- (1) Solder paste: Sn-3.0Ag-0.5Cu
 - (2) Do not apply vibration to the product during reflow.
 - (3) The maximum number of times allowed for reflow is 2 times.
 - (4) After opening the moisture-barrier bag, reflow soldering must be performed within 168 hours in an environment with a temperature of +5 to +30°C and humidity of 60% RH or less.
 - (5) For safe use, please reflow solder all the products within the specified storage time. If it is anticipated that the storage time will exceed the specified time, please store the product in a dry box or in moisture-barrier packaging again.

4 Enclosure design

- (1) Conductive enclosures are recommended such as resin. The distance between the resin and the module should be more than 0.5mm in the horizontal and vertical directions. The resin should not be attached to the top or the side of the module.
- (2) In case the conductive enclosure has to be used, it is recommended to place it on the other side of the PCB and keep the distance of 1mm and above to the PCB, which makes the radiation performance better. Any metals on the top or the side may not secure the good antenna performance.

5 Precautions

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