



# PRODUCT SPECIFICATION

## TITLE

### 2.4GHZ CERAMIC ANTENNA

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REVISION: <b>A</b>	ECR/ECN INFORMATION: EC No: 174874 DATE: 2018/04/17	TITLE: <b>2.4GHz CERAMIC ANTENNA</b>	SHEET No. <b>1 of 8</b>
DOCUMENT NUMBER: <b>PS-2065130001</b>	CREATED / REVISED BY: Kang Cheng 2018/04/17	CHECKED BY: Benson Liu 2018/04/17	APPROVED BY: Stary Song 2018/04/17

## 2.4GHz CERAMIC ANTENNA

### 1.0 SCOPE

This Product Specification covers the mechanical, electrical and environmental performances Specification and test methods for 2.4GHz ceramic Antenna.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER (S)

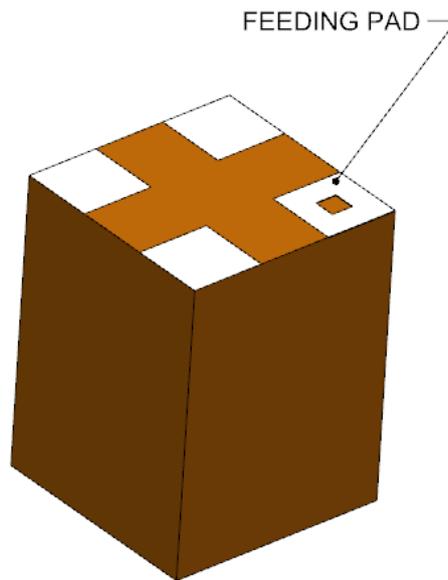
Product name: 2.4GHz Ceramic Antenna  
Series Number: 206513

#### 2.2 DESCRIPTION

206513 is 2.4GHz embedded antenna with high efficiency over 55% on all frequency bands. It's miniature SMT ceramic component, designed to be mounted directly at the corner of main device PCB, it requires very small PCB keep-out area 4x4mm totally.

#### 2.3 FEATURES.

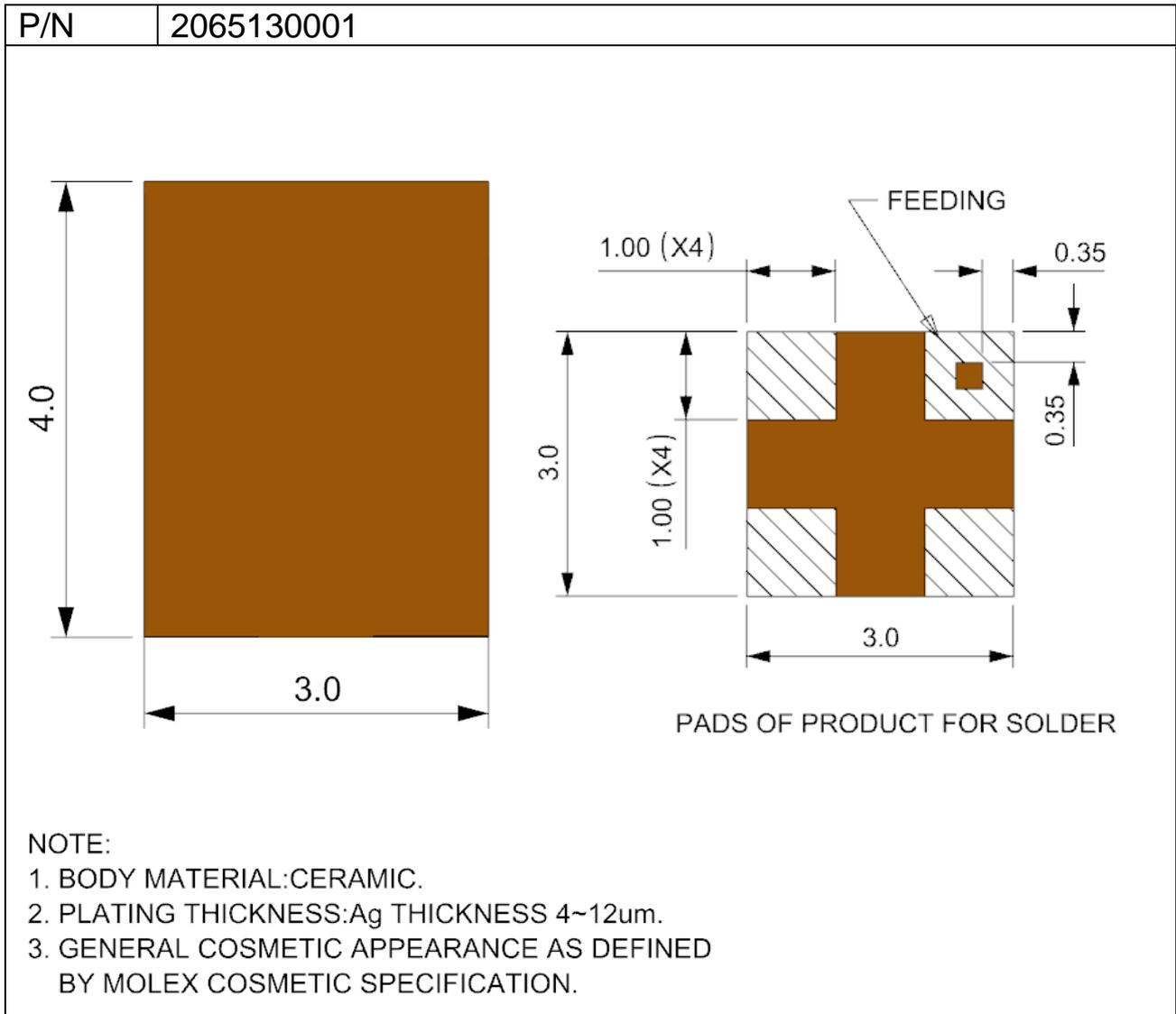
- 2.4GHz, monopole,
- Ceramic, SMT embedded, PCB corner mounting
- High efficiency over 55% on all bands
- Antenna size 3x3x4mm, PCB keep-out area 4x4mm
- RoHS Compliant



Molex 2065130001 2.4GHz Ceramic SMT Antenna 3D View

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## 2.4 PRODUCT STRUCTURE INFORMATION



Mechanical Structure Information for 2065130001

## 3.0 APPLICABLE DOCUMENTS

Document	Number	Description
Sale Drawing(SD)	SD-2065130001	Mechanical dimension of the product
Application Guide(AS)	AS-2065130001	Antenna application and surrounding
Packing Drawing(PK)	PK-2065130001	Product packaging specifications

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<b>PS-2065130001</b>	Kang Cheng 2018/04/17	Benson Liu 2018/04/17	Stary Song 2018/04/17



# PRODUCT SPECIFICATION

## 4.0 GENERAL SPECIFICATION

Product name	2.4GHz Ceramic Antenna.
Part number	2065130001
Frequency Range	2.4~2.5GHz
Return Loss	<-6 dB
Peak Gain(Max)	3.6dBi
Avg. Total Efficiency	>55%
Polarization	Linear
Impedance with matching	50 Ohms
Operating with matching	-40°C to 125°C
Storage with matching	-40°C to 125°C
RF Power	2 Watts
Antenna type	ceramic

Note that the above antenna performance is measured with just the antenna mounted on a recommended PCB to similar a free-space condition. When implement into the system, the frequency resonant might be off-tune due to the loading of surrounding components especially metal plane. This off-tune can be compensated through matching. Although module manufacturers specify a peak gain limit, it is based on free-space conditions. The peak gain will be degraded by 1 to 2dBi in the actual implementation as the radiation pattern will change due to the surround components. As such, during selection of antenna, you can select one with high peak gain to compensate for the loss. Molex can offer assistant to choose the best location and best tuning in-order to meet this peak gain requirement.

## 5.0 MECHANICAL REQUIREMENTS

DESCRIPTION	SPECIFICATION
Shear Force	Apply three axial peeling force on parts soldered on the PCB at the speed rate of 25±3 mm/minute. Shear force: 8N Min.
Solderability testing	Dip solder tails into the molten solder (held at 245+/-5°C for 5s). Solder coverage: 95% Min

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# PRODUCT SPECIFICATION

## 6.0 ENVIRONMENTAL SPECIFICATION

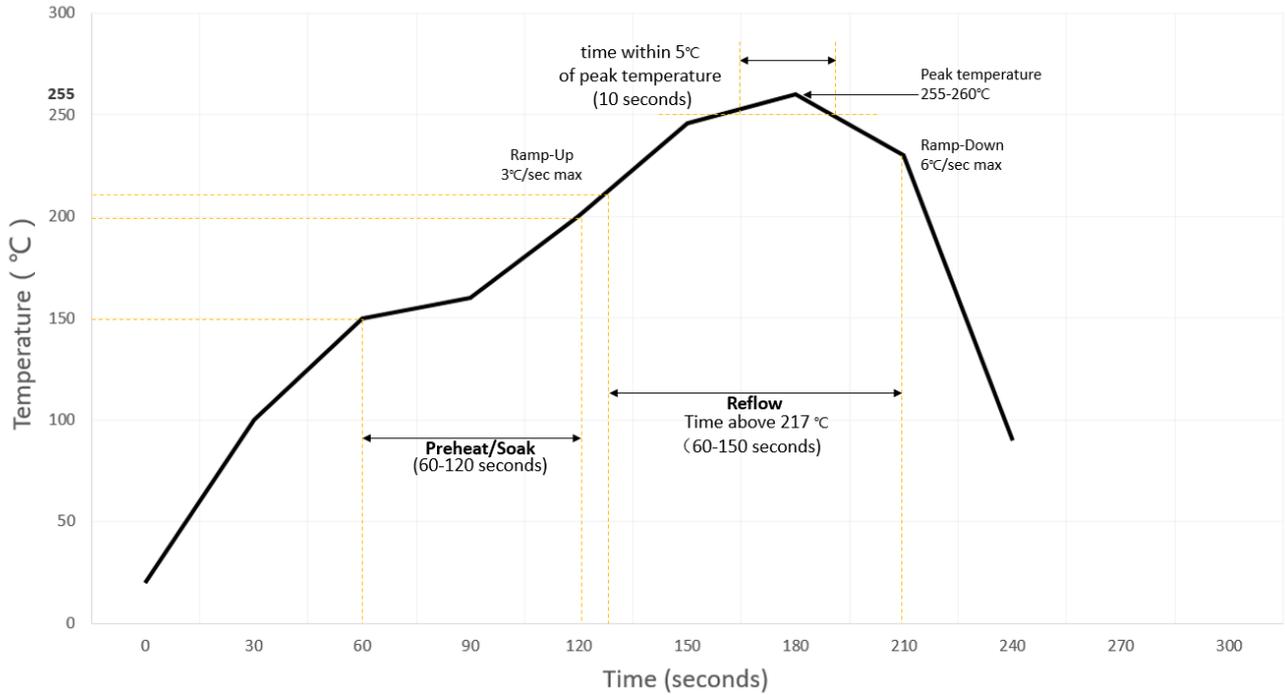
DESCRIPTION	SPECIFICATION
Humidity Test	<ol style="list-style-type: none"> <li>The device under test is kept for 12 hours in an environment with a temperature of 55 degrees and a relating humidity of 95%. Thereafter for 12 Hours in an environment with a temperature of 25 degrees and a relative humidity of 95%. The cycle is repeated until a total of 6 cycles have been completed. Hereafter the conditions are stabilized at room temperature.</li> <li>Parts should meet RF spec before and after test.</li> <li>No cosmetic problem (No bubble issue、 No plating peeling off issue、 No mechanical damage.)</li> </ol>
Temperature cycling test	<ol style="list-style-type: none"> <li>The device under test at -40 °C↔125 °C by 72 cycles, Dwell of 30 min, transition time between Dwell 15 sec (~ 61 min / cycle ) and each item should be measured after exposing them in normal temperature and humidity for 24 h.</li> <li>Parts should meet RF spec before and after test.</li> <li>No cosmetic problem (No bubble issue、 No plating peeling off issue、 No mechanical damage.)</li> </ol>
High Temperature	<ol style="list-style-type: none"> <li>Temperature:125°C, time:1008 hours</li> <li>There is no substantial obstruction to air flow across and around the samples, and the samples are not touching each other</li> <li>Parts should meet RF spec before and after test.</li> <li>No cosmetic problem (No bubble issue、 No plating peeling off issue、 No mechanical damage.)</li> </ol>
Salt mist test	<ol style="list-style-type: none"> <li>The device under test is exposed to a spray of a 5% (by volume) resolution of Nacl in water for 2 hours. Thereafter the device under test is left for 1 week in room temperature at a relative humidity of 95%. The cycle is repeated until a total of 2 cycles have been completed. Here after the conditions are stabilized at room temperature.</li> <li>Parts should meet RF spec before and after test.</li> <li>No visible corrosion. Discoloration accept.</li> </ol>

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## 7.0 RECOMMENDED REFLOW CONDITION

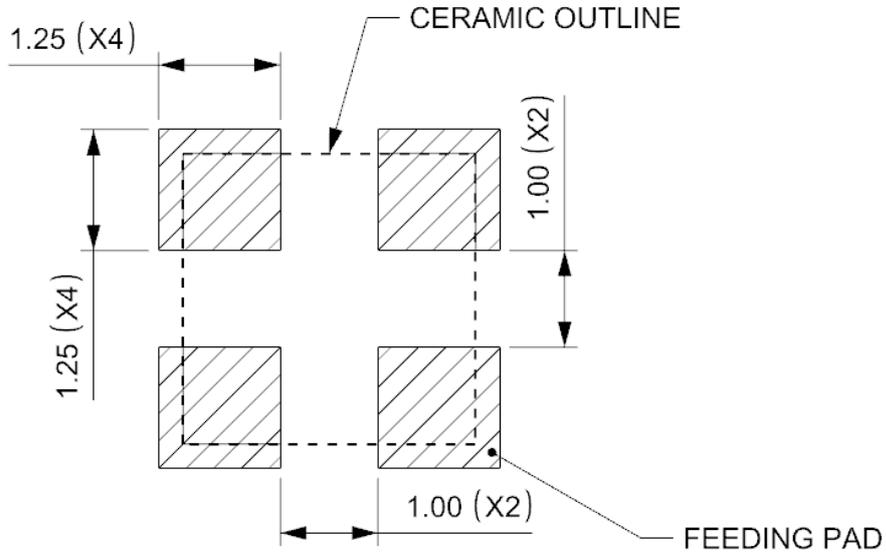


Recommended solder paste: ALPHA CAP-390 SAC305

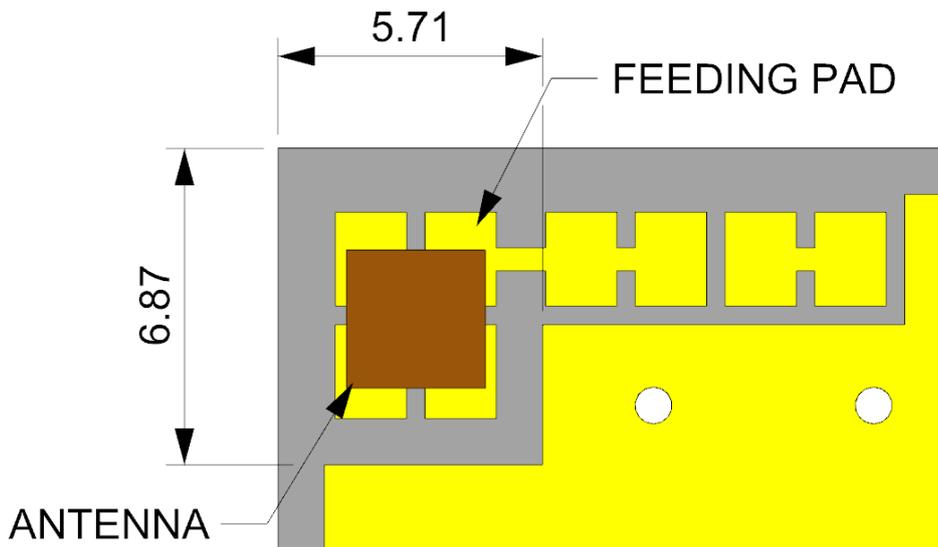
For mechanically challenging applications Molex recommends using surface mount adhesive (e.g. Loctite 3611) before reflow soldering process, to ensure increased mechanical retention on the PCB.

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## 8.0 RECOMMENDED FOOTPRINT ON PCB FOR SOLDERING



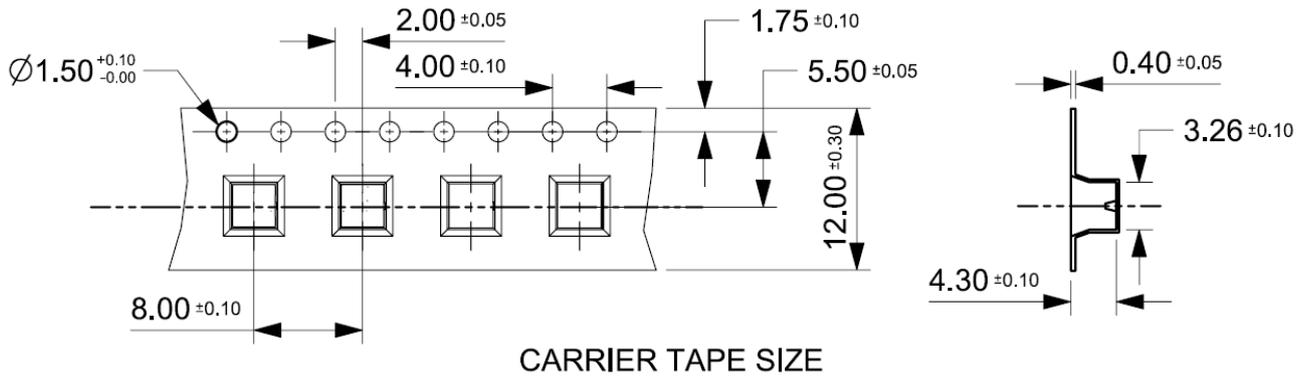
**RECOMMENDED PCB KEEP OUT AREA**



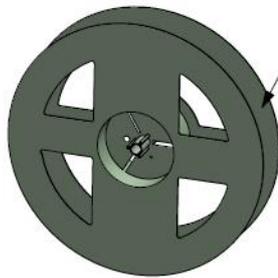
**RECOMMENDED PCB CLEARANCE KEEP OUT AREA**

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## 9.0 PACKING



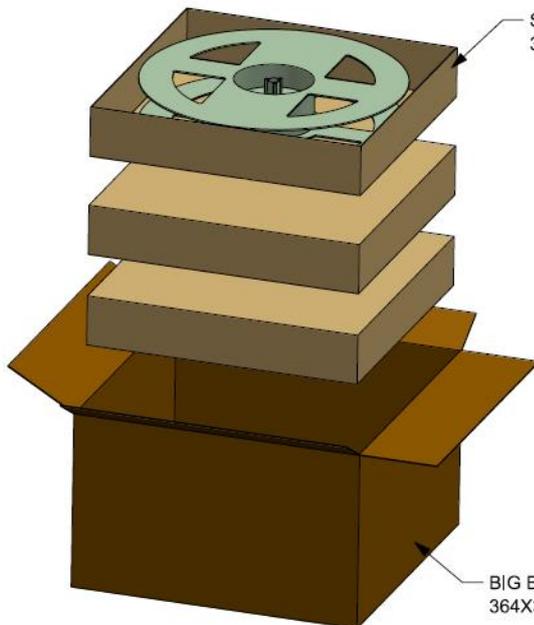
P/N	Q'TY/REEL	REEL/SMALL BOX	SMALL BOX/BIG BOX	PCS/BIG BOX
2065130001	1800	1	5	9000



ONE REEL :885960695  
THE REEL NEED TO SEAL  
REEL SIZE Ø13X4

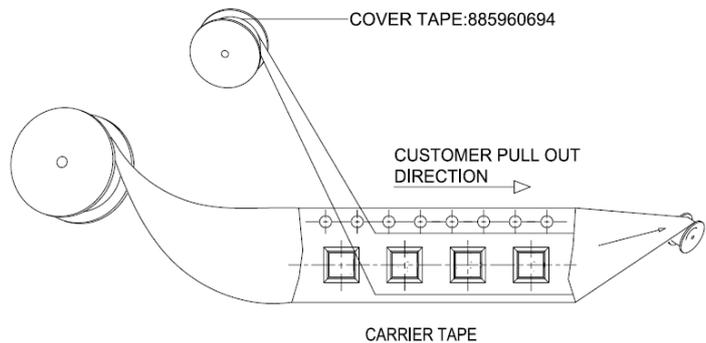
**NOTES:**

- 1.PRODUCTS MUST BE PACKED IN CARTONS AND SEALED UP WITH TAPE.
- 2.STICK LABEL WITH PART NUMBER AND DATE CODE
- 3.STANDARD PACKAGING QUANTITY:SEE TABLE
- 4.THIS PACKAGINGSPECIFICATION TO BE USED FOR "2.4GHz CERAMIC SMT ANTENNA".



SMALL BOX :885960736  
345X345X35mm

BIG BOX:885960363  
364X36XX176mm



Packaging information for 2065130001

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