RKT102***MH

μ-Chip (RFID)

REJ03P0007-0100
Rev.1.00
Feb 23, 2007

Overview

- RKT102***MH is RFID (Radio Frequency Identification) for 2.45 GHz.
- It has a unique ID inside, then it is applicable for management of individual object.

Feature

- Thin and small package: COA (Chip on Aluminum)
- Including unique μ-Chip ID which is not alterable
- Including a unique ID
- Communication without contact
- Including a congestion control function

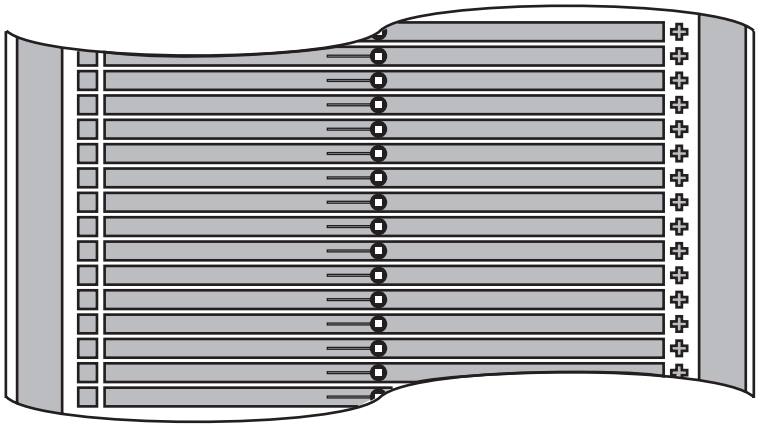
Note: "μ-Chip" and the μ-Chip Logo are either registered Trademarks or Trademarks of Hitachi,Ltd. in Japan and in other countries.

Order Part No.

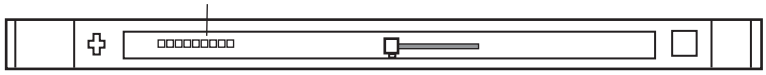
Order Part No.	Unit of Packaging	Packing Form	Unit of Order	Note
RKT102***MH	8,000 min	Reel	87,000	

Outline and Mark

Outline



Mark



First three digits indicate ROM code.

Absolute Maximum Ratings

Item	Symbol	Specification			Unit	Condition	Remark
		Min	Typ	Max			
Storage temperature	Tstg	–30	—	75	°C		
Ambient operation temperature	Ta	0	25	40	°C		No condensation
Received power	Pr	—	—	13.8	dBm		

Electrical Characteristics

Measurement conditions:
Unless otherwise specified, Ta = 25°C, fc = 2.402 to 2.421 GHz, reader power = 200 mW
Single-patch antenna, linearity polarized waves
Period of reading operations: 4 clock cycles, number of read bits: 128 bits

Item	Specification			Unit	Condition	Remark
	Min	Typ	Max			
Communication distance	6.5	—	23	cm	Note4	Note1
μ-Chip ID Check	—	Passed	—	—	EDC Check	Note2, Note3

Notes: 1. The distance at which the read μ-Chip ID value matches the indicated value and the EDC check is passed.
2. Verification value calculated from the read μ-Chip ID value.
3. Detail data of μ-Chip ID is describe on the commodity specification.
4. Relation between the inlet and antenna positions;
The planes of the metal-foil pattern for the antenna and the antenna itself should be parallel, the center of the inlet should be on the line that passes through the center of the antenna plane, and the inlet metal-foil pattern's longer side should be within the antenna's plane of polarization.

Reader Specifications and Type No.: HE-MU-380-SH14

Item	Symbol	Specification	Unit	Remarks
Operation temperature	Ta	25	°C	
Carrier frequency	fc	2.402 to 2.421	GHz	
Power	Pw	200	mW	
Data read cycle	Tfm	4	Clock	
Data read bit count	Nb	128	Bits	
Congestion control function	—	Action	—	

Cable Specifications

Item	Symbol	Specification	Unit	Remarks
Cable material	—	semi-rigid	—	
Total length of cable	L	20	cm	

Antenna Specifications and Type No.: PA1-2450ASA

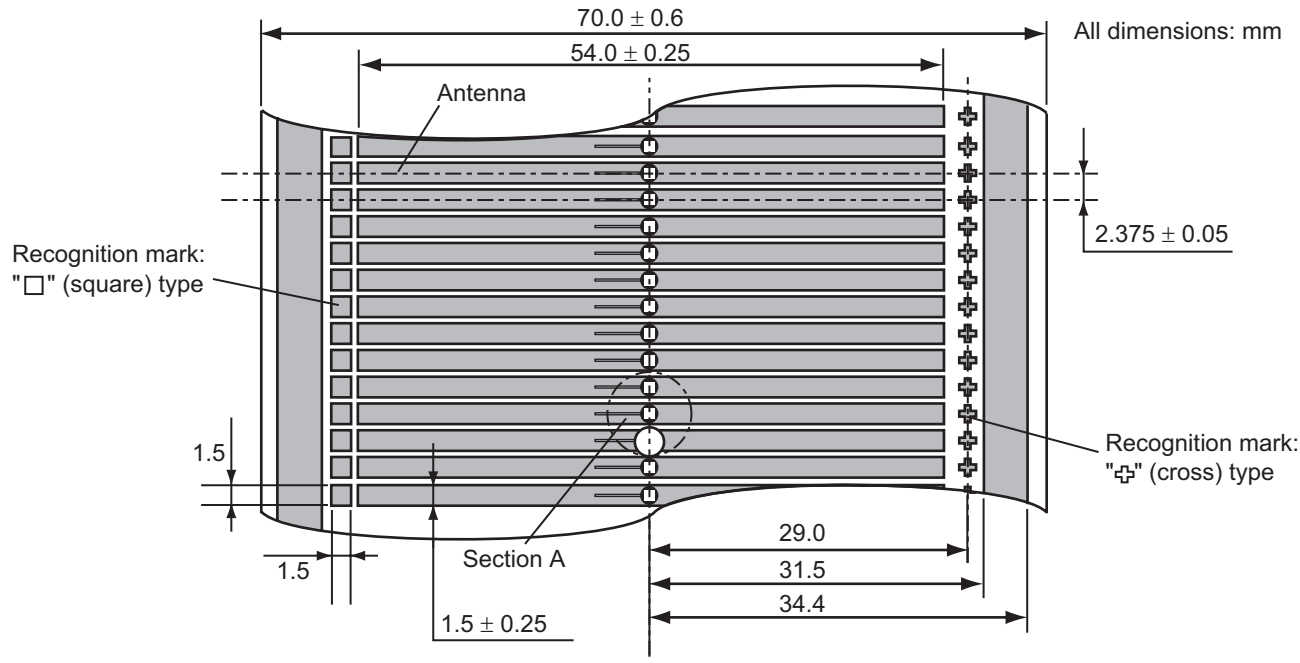
Item	Symbol	Specification	Unit	Remarks
Operation temperature	Ta	25	°C	
Polarization	—	Linear	—	
Number of patches	—	1	pcs	
Gain	—	6	dBi	

Dimension of Inlet Outline

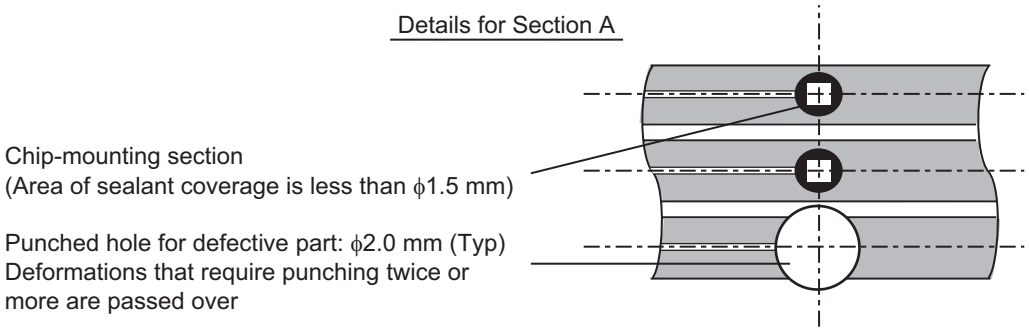
Tape Dimensions

The products, each of which consists of an antenna and chip, are aligned and mounted on tape as shown in the figure below.

The chip-mounting section is punched through if the chip is defective.

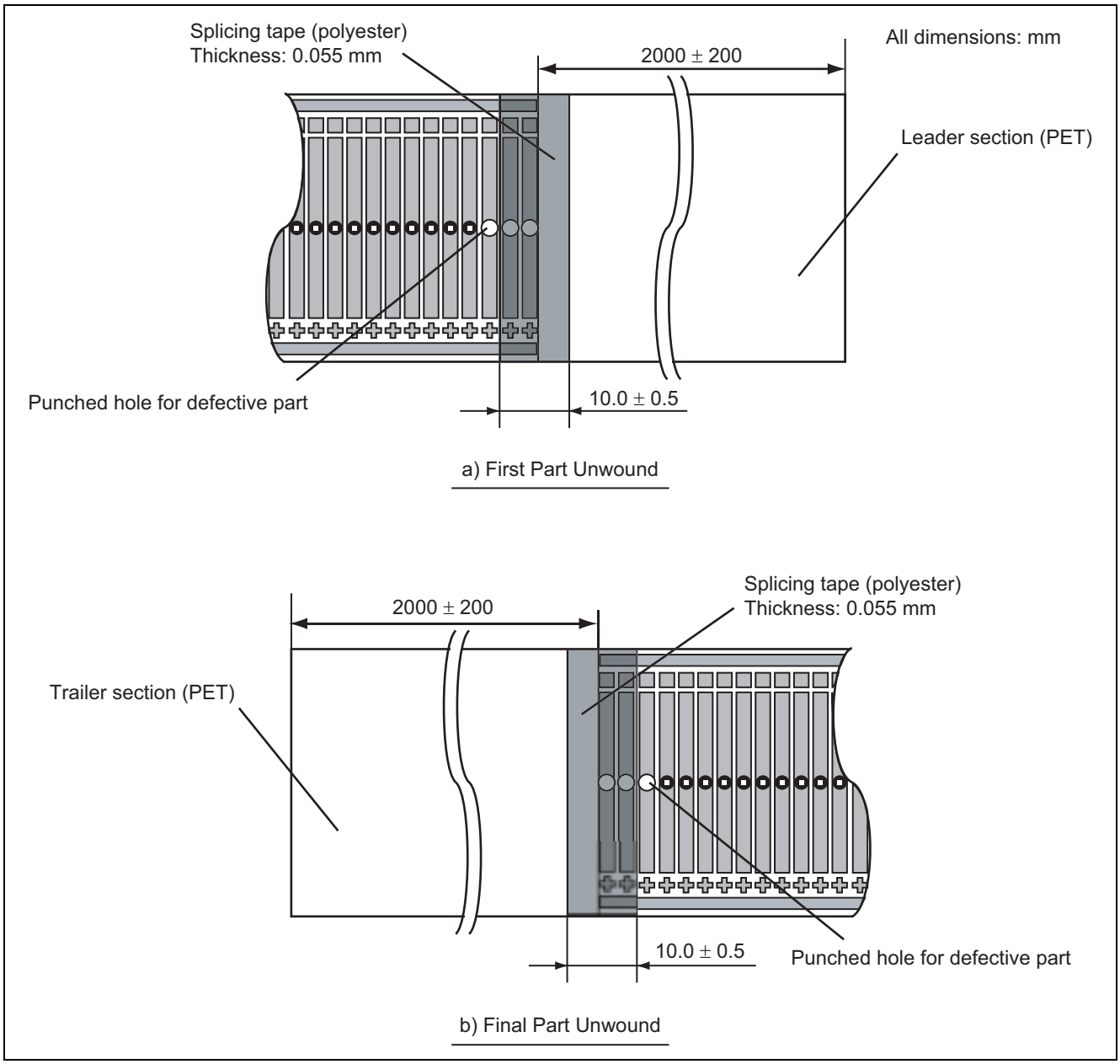


Note: Dimensional tolerance is ± 0.2 mm unless otherwise specified.



Leader and Trailer Sections

This product includes leader and trailer sections that precede and follow the product section, i.e. the section that carries the chips, as shown in the figure below.



Punched Holes for Defective Part

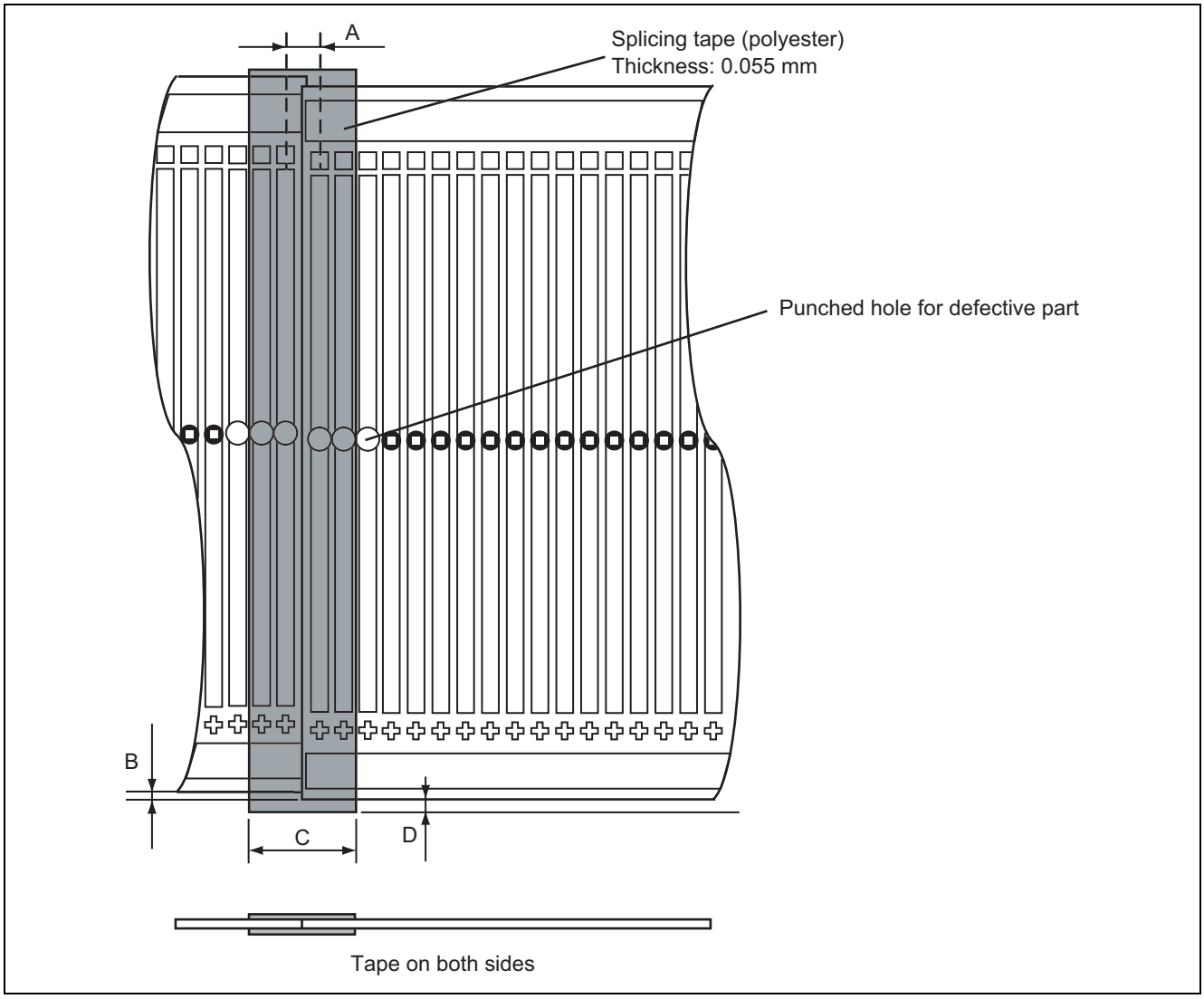
Chips of defective parts will be punched through with the hole size of ϕ2.0 mm.

Jointed Segments of Tape

This product may include splices, where two tapes are pasted together, as shown below.

The number of splices is no more than 5 per reel (excluding the attachment of leader/trailer tapes [Note]).

Products covered by the splicing tape will be punched through as defective parts.



Dimension	Description	Specification
A	The antenna pitch at spliced part	2.375 ± 0.2 mm
B	Misalignment at spliced point	± 0.2 mm
C	Splicing tape width	10.0 ± 0.5 mm
D	Overflow of splicing tape	< 0.5 mm

Note: If leader/trailer parts are broken or spoiled by creases, the tape will be cut and jointed again.
The attachment of leader/trailer will not be punched through as defective parts.

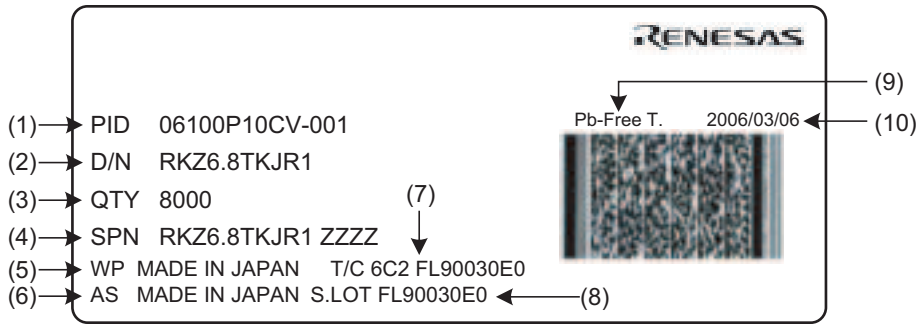
Packing Specifications

Packing Specifications and Quantity

(1) As shipped, this product is packed in reel.
(2) Quantity is 8,000 good pieces/reel Min. Note
(3) Quantity of punched hole for defective part is 20% or less of total quantity of antenna.

Note: Tapes can be joined to increase the quantity.

Example of Labeling



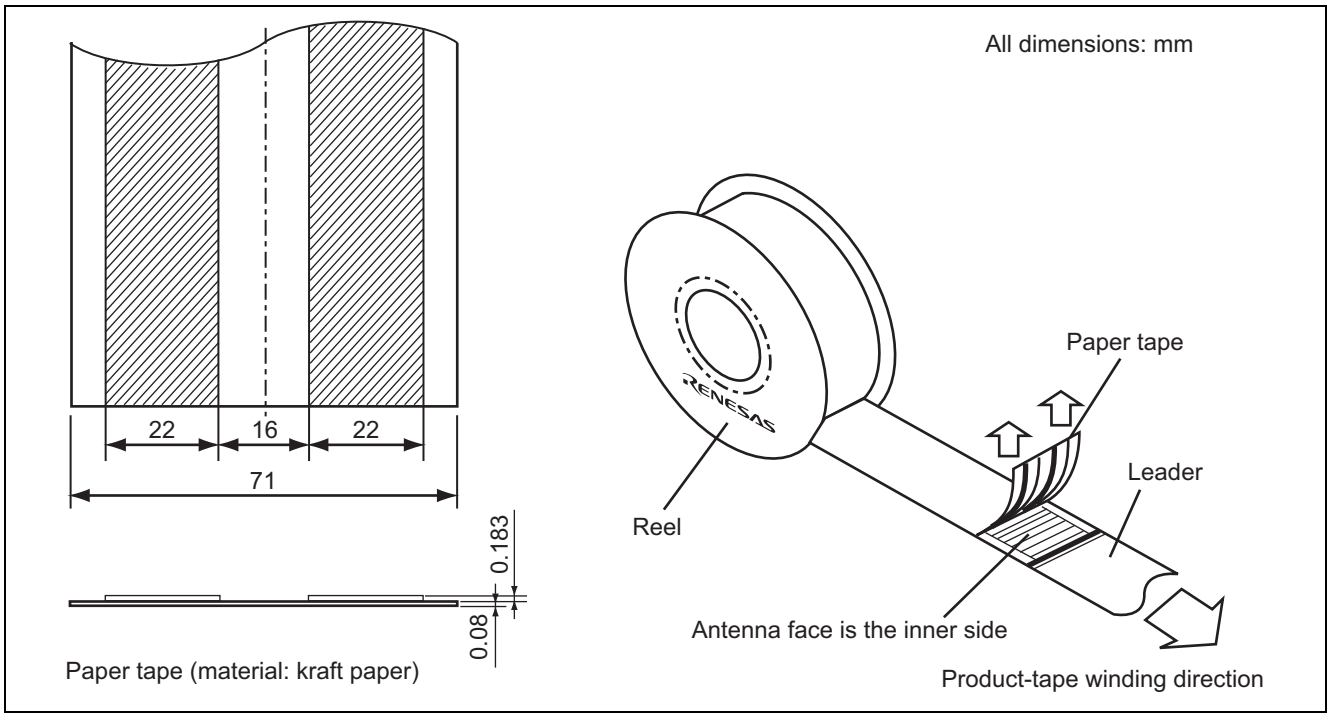
(1) Pack-ID
(2) Device Name
Note: Indicate "Q" the end of a device name only in the case of direct sale in Malaysia
(3) Quantity
(4) SAP Name
(5) Country of Wafer Process
(6) Country of Assembly
Japan → MADE IN JAPAN
Malaysia → MADE IN MALAYSIA
(7) Trace code
(8) Lot code
(9) Pb-Free indication (Only for Pb-free product)
(10) Date of Label issuance

Form of Delivery

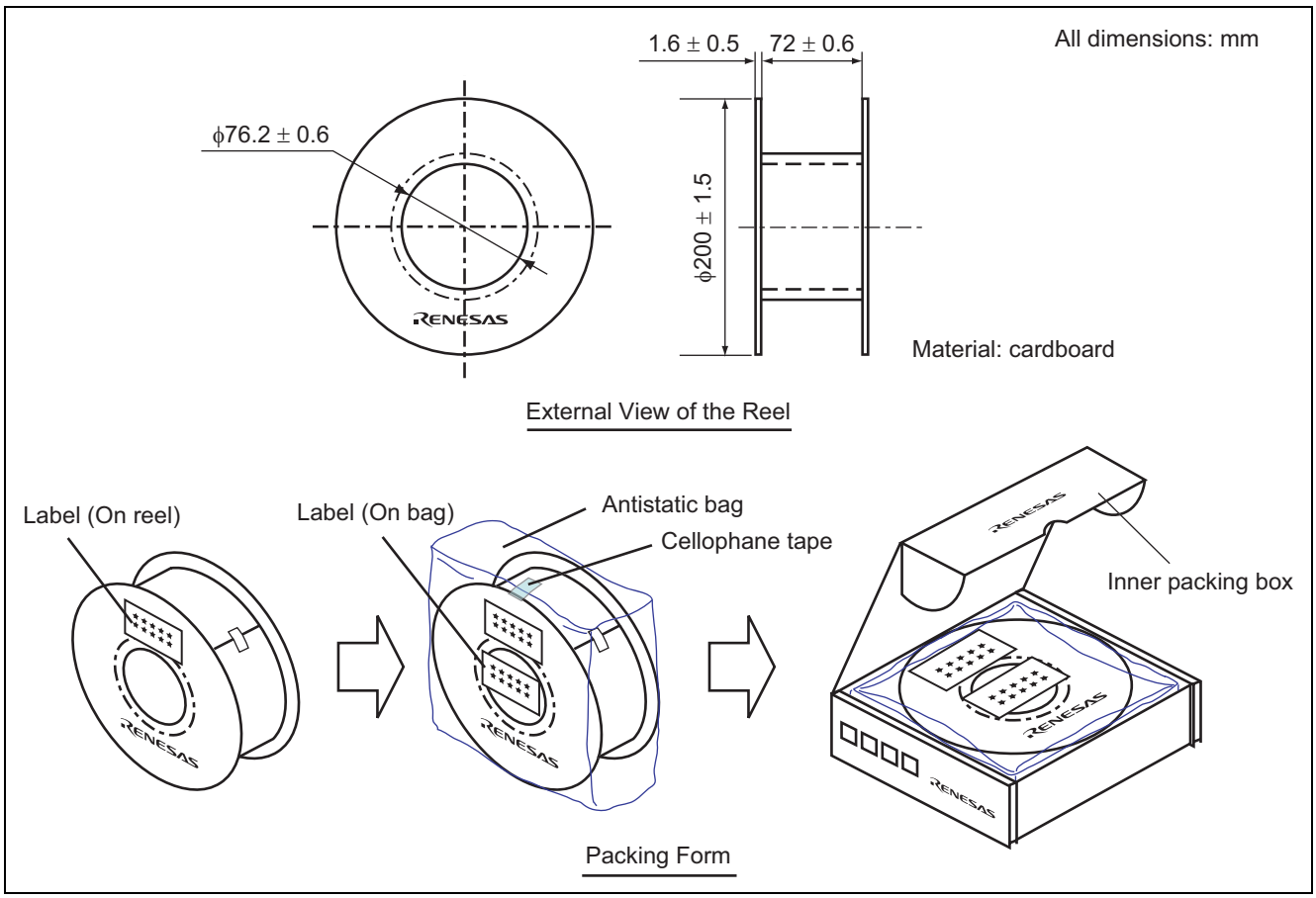
(1) Paper tape for spacers

Paper tape is inserted as a spacer for the product tape.

When wound onto the reel, the product tape is oriented so that the antenna face is on the inner side.



(2) Packing and reel dimensions



Appearance

There should not be any scratch or/and dirt that affect characteristics.

Quality Level

(Compliant with the JIS Z 9015)

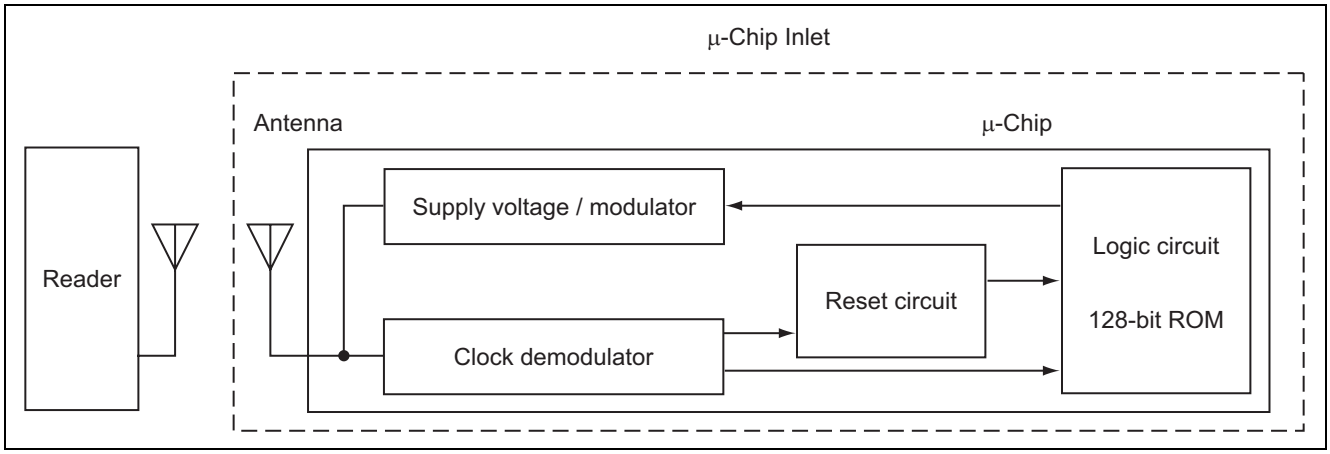
Electrical characteristics: AQL = 4.0%

Appearance: AQL = 4.0%

Precautions on Usage

1. Renesas Technology does not guarantee the product characteristics after it has been through assembly on the customer side.
2. Please refer to the mounting manual. (Document No.: REJ11P0007-0100)
3. As for the structure of this product, resist on the surface of a metallic antenna is lost compared with past COA goods. It wishes the examination of reliability when using it.
4. There is a sign in the aluminum part for the edge on both sides of the antenna tape of this product. It is likely to be going to change without a previous notice in the future because this is the one for our shop floor control. There is no problem in the product performance at all even if for instance, there is a display "RKT101■■■".

System Outline



Function Blocks

Block Name	Description of Functions
Supply voltage/modulator	Generates power-supply voltage from carrier signals, varies the output impedance of the modulator circuit to match the input impedance of the antenna, and handles communications. The IC incorporates a power limiter for the protection of internal devices.
Reset circuit	Determines whether or not a clock signal is being supplied and cancels the reset mode in synchronization with the first clock cycle.
Clock demodulator	Demodulates the clock signal from the envelope signal of the received signal.
Logic circuit	The IC includes a congestion control circuit and an on-chip 128-bit ROM from which data signals are sent out in synchronization with the clock signal.

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