

Kyocera RFID Introduction



2017.08.19

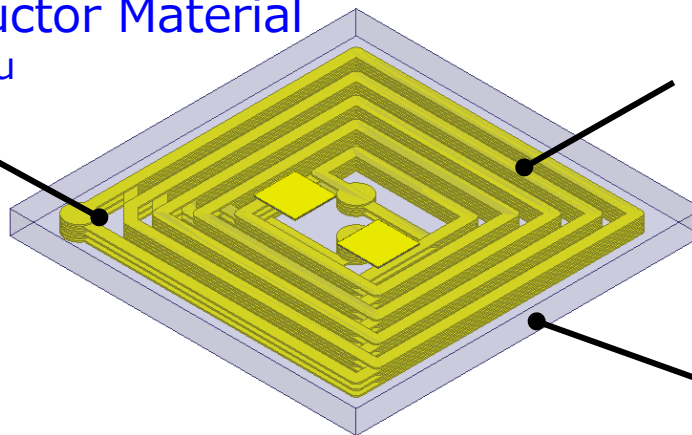
LTCC Material for RFID tag GL580

PYE-3763-G

1.Low Resistance Conductor Material

Low Resistance Conductor : Cu

- ✓ Communication Distance Extension



2.Thin Layer LTCC

Inner layer 20umMIN.

※Under Development

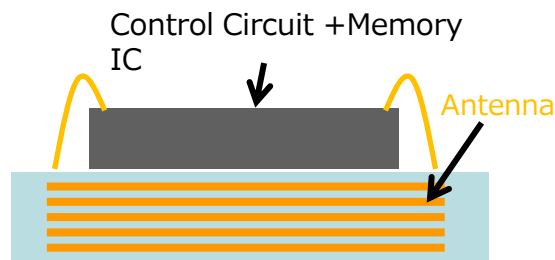
- ✓ Small Size , Low Profile

3.High Reliability LTCC

- ✓ Environmental ,
- ✓ Chemical Resistance

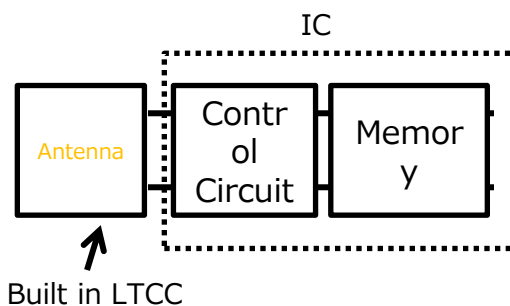
LTCC Built-in Inductor Pattern

RF tag Cross section Image

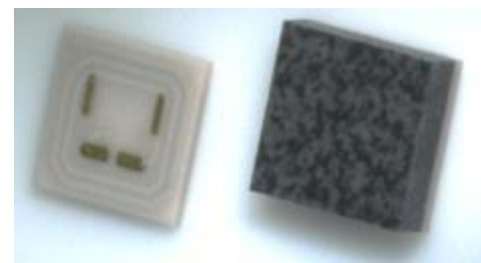


- Antenna built in LTCC
- Antenna made by Inductor

Circuit Block

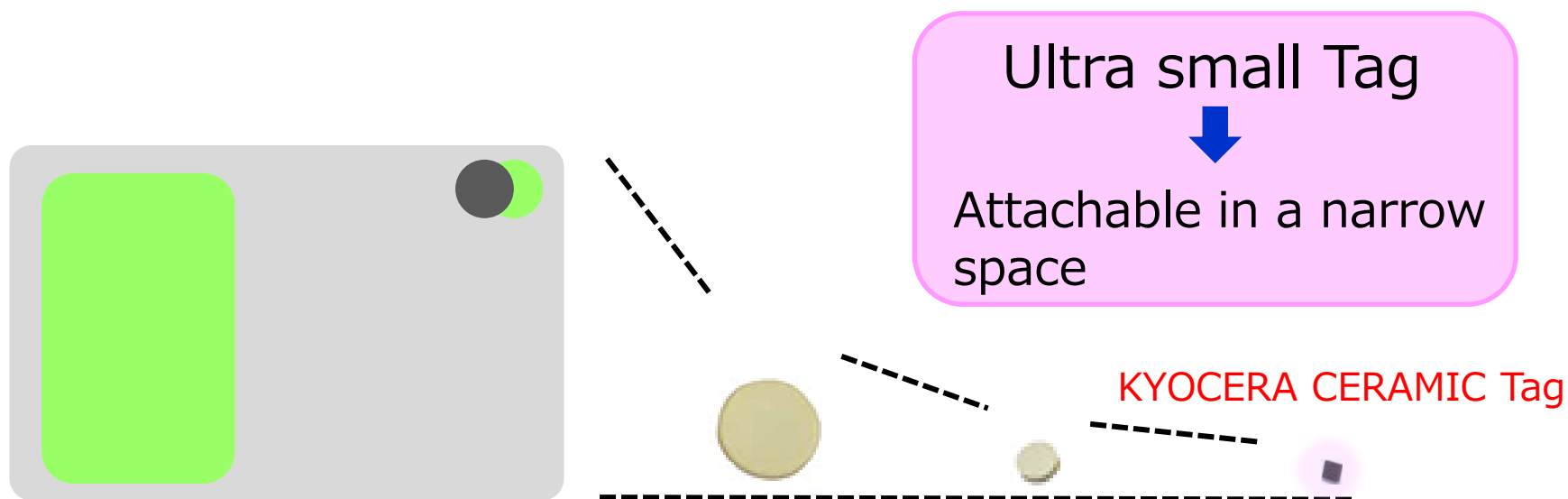


Product



Left : LTCC
Right : IC/After Assembly

Ultra-small ceramic RFID Tag



	Card type.	Coin type.	Tablet tag	KYOCERA CERAMIC Tag
SIZE	85.5x54mm	Φ15mm	Φ6.5mm	2.5x2.5mm
Comparison	740	28	5	1

■ Measuring Condition

IC TYPE

NXP ICODE SLIX(13.56MHz)

Reader/Writer

TAKAYA TR3-MD001E(300mW)

Antenna

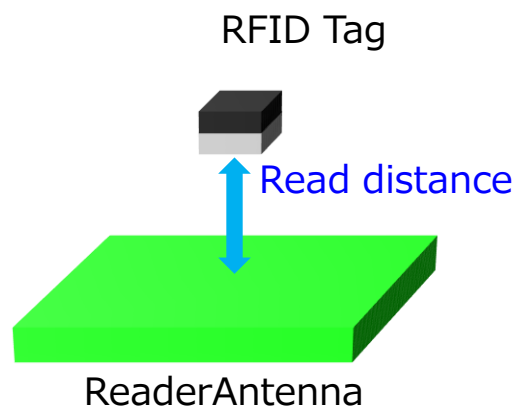
TAKAYA A301-3 :15x52.5mm

Tag Size

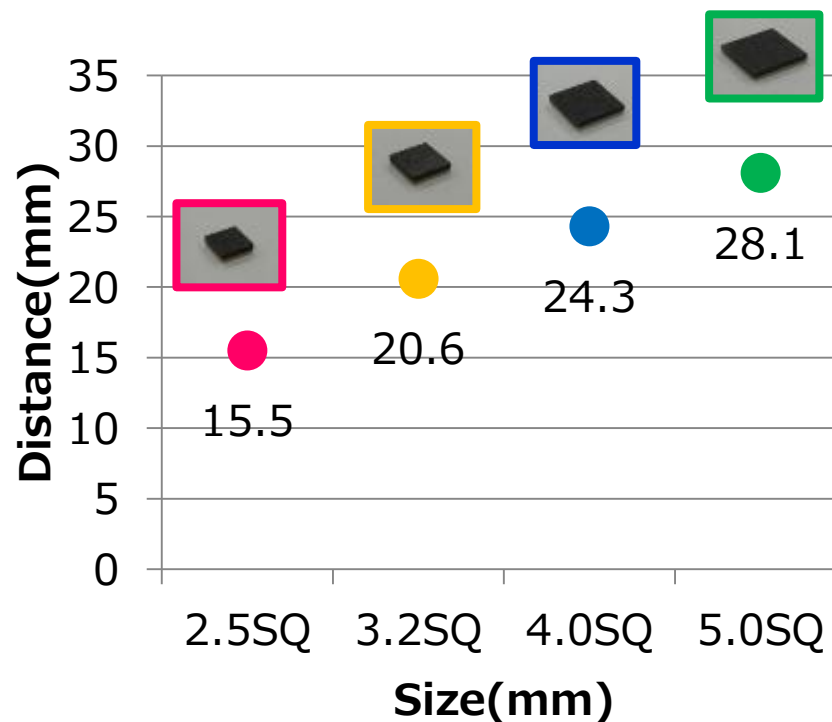
2.5mmSQ,3.2mmSQ,4.0mmSQ,5.0mmSQ

IC

ICODE SLIX 97[pF]



■ Read distance



(Read Distance)

Distance from Reader/Writer antenna surface to tag surface antenna

Kyocera RFID tag Product Line Up for HF Band

PYE-3763-G

P/N	CAA-161150-0	CAA-161240-0	CAA-161360	CAA-161450
Appearance				
Band	HF(13.56MHz)			
IC	NXP ICODE SLIX			
size	2.5x2.5mm	3.2x3.2mm	4x4mm	5x5mm
Thickness	0.7mm NOM			
Read Distance*	15.5mm	20.6mm	24.3mm	28.1mm

*Read distance is between Reader/Writer antenna surface and tag surface antenna.
Read distance depends on the performance of the reader: the power, the antenna size etc.

[Features]

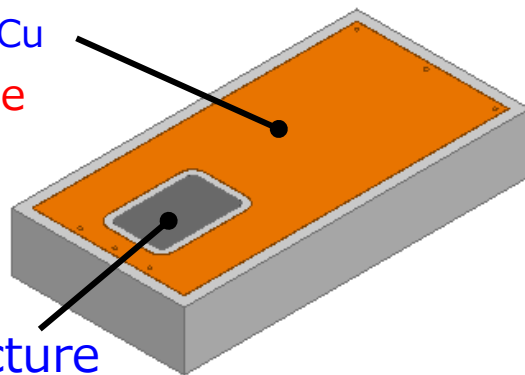
- Miniature package with advance read distance (i.e. 20.6mm by 3x3mm)*
- RF antenna is embedded in substrate.
- Operating temperature -40~85 degree C
- Custom design is available .

Feature

1.Low loss conductor

Conductor material : Cu

✓Long Read Range

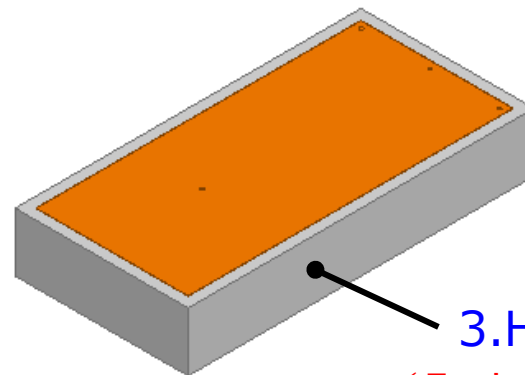


GND

2.CAVITY Structure

IC is mounted into cavity

✓IC is protected
from outside
stress.

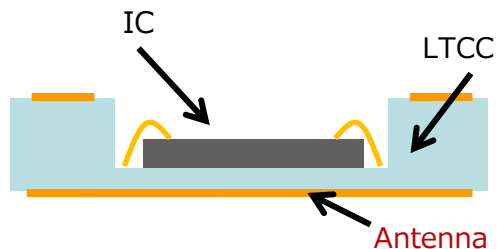


3.High Reliability

✓ Environment Resistance
✓ Chemical Resistance

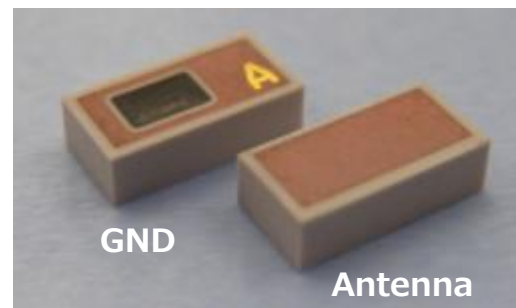
Antenna

Cross Section



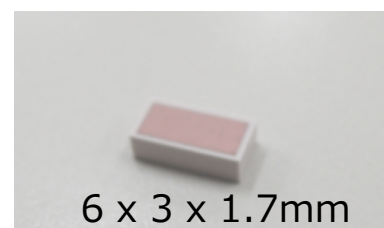
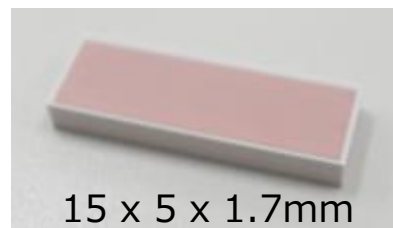
- Antenna built in LTCC
- Solder reflow available

Figure



Read Range(Measurement Result) [UHF]

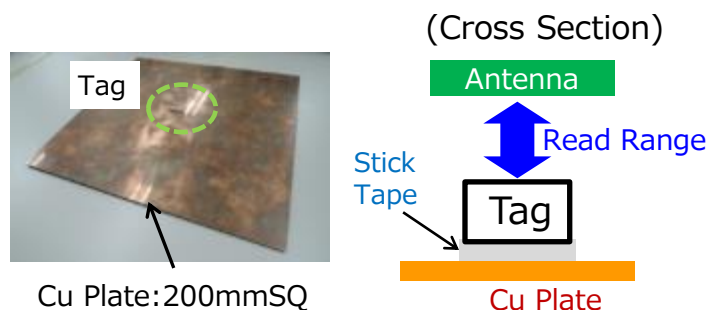
■ Tag



(IC)
Monza 4QT(Impinj)

■ Measurement Condition

■ Measurement Result

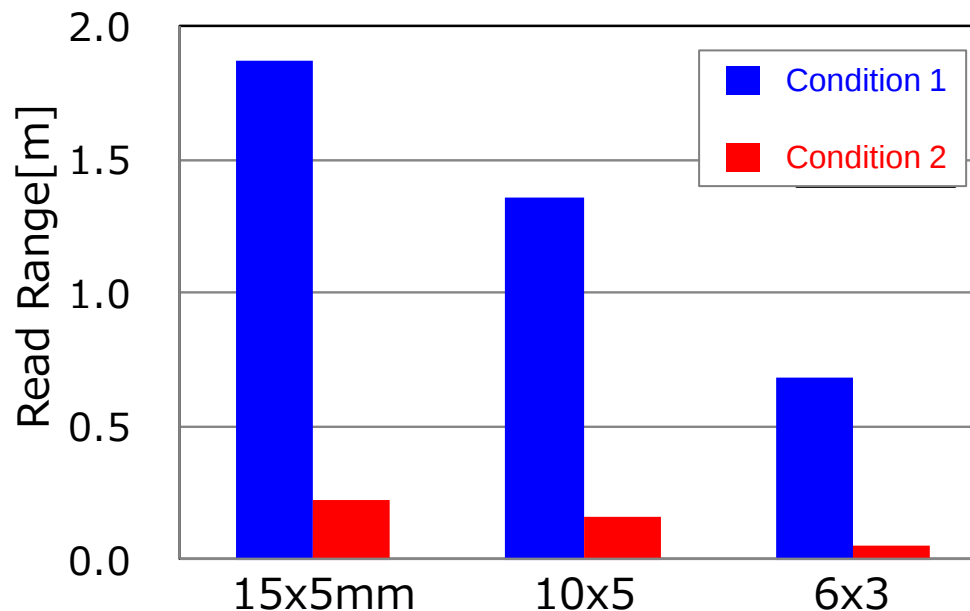


Condition 1

- Power : 1W
- Antenna Gain : +6dBi

Condition 2

- Power : 200mW
- Antenna Gain : -3.5dBi



*Technical data contained is for description representation and does not constitute any guarantee.

Kyocera RFID tag Product Line Up for UHF Band

PYE-3763-G

P/N	CAA-170730	CAA-170840	CAA-170720	CAA-170830	CAA-170710	CAA-170820
Band	920MHz	866-868MHz	920MHz	866-868MHz	920MHz	866-868MHz
Appearance						
IC	Impinj Monza 4QT					
size	6.0x3.0mm		10.0x5.0mm		15.0x5.0mm	
Thickness	1.7mm NOM					
Read Distance*	0.7m		1.3m		1.9m	

Read distance is between Reader/Writer antenna surface and tag surface antenna.

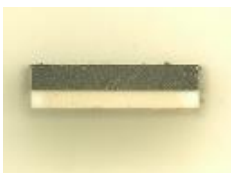
Read distance depends on the performance of the reader: the power, the antenna size etc.

[Features]

- RF antenna is embedded in substrate.
- Operating temperature -40~85 degree C
- Custom design is available .

Reliability Test Result

N=20pcs. PYE-3763-G

Evaluation item	Condition	Communications (after 1000h)	Appearance	
High temperature storage	+175℃	OK		
Low temperature storage	-65℃	OK		
Temperature cycle	-40℃⇔160℃	OK		
High temperature/high humidity bias	85℃85%RH	OK		

It does not guarantee how to use.

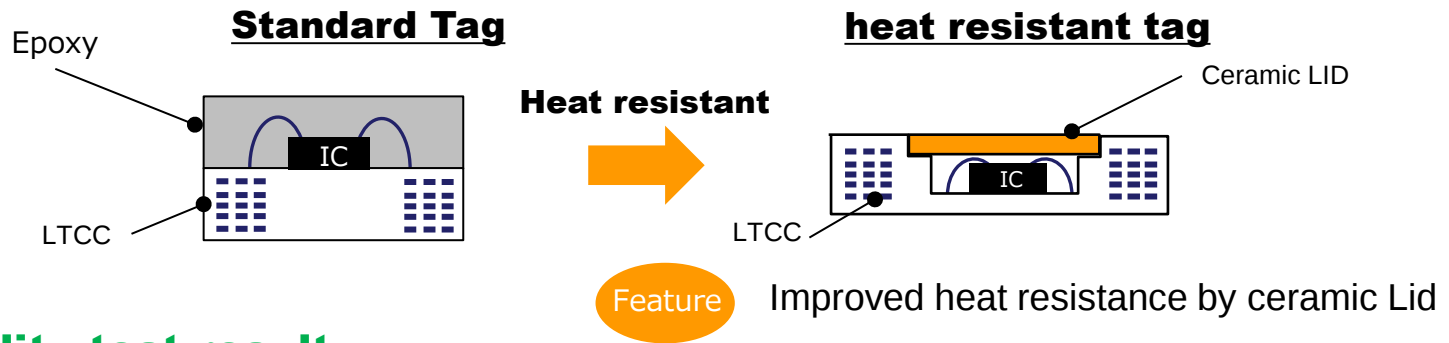
(Evaluation tag)

Dimensions 2.5x2.5x0.6mm

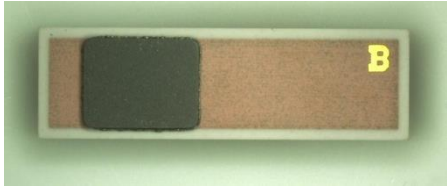
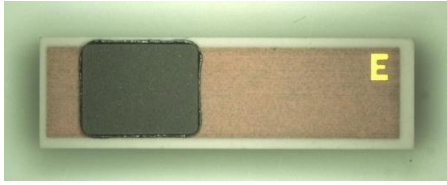
IC TYPE NXP ICODE SLIX(13.56MHz)

■ Kyocera heat resistant tag Features

PYE-3763-G



■ Reliability test result

Reliability test	read	Appearance after test
High Temperature Storage 300°C 50h	3/3	
PCT 121°C/48H	3/3	

Chemical resistance

N=3pcs.

	Dipping (hour)	Communications
Boiling water (100°C)	48	OK
Brine (5%)	48	OK
Na-carbonate aqueous solution (5%)	48	OK
Ethanol	48	OK
Methanol	48	OK
MEK	48	OK
Toluene	48	OK

It does not guarantee how to use.

(Evaluation tag)

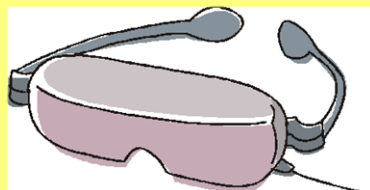
Dimensions 2.5x2.5x0.6mm

IC TYPE NXP ICODE SLIX(13.56MHz)

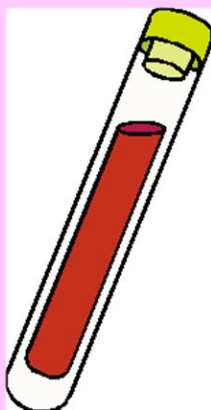
Ultra-small ceramic RFID usage scene ! ! (assumed image.)

PYE-3763-G

WEARABLE



INVENTORY MANAGEMENT



MEDICAL



TOY

Attachment location freely. Resistance to thermal, excellent chemical resistance, plastic, also built-in to the resin molded product possible! !

THE NEW VALUE FRONTIER



KYOCERA Corporation