Two major features of this text

試　用

＜This is a text to pass the Japanese national certification examination. ＞

- Since explanatory materials are systematically made based on subject examination questions, preparation studies are possible about all items of subject examinations without prior knowledge. Therefore, even if you begin studying from text parts, or solving problems, you can understand. It contains examination questions for the past four years.
- Studies other than processes of which you take charge are also easy.
- As for "difficult industry English notation", commentaries are attached.

＜This is an educational text of semiconductor packages and backend processes for new employees.＞

- All the semiconductor assemblies can be understood visually from beginning to end.
- Since the semiconductor packages are introduced in order of developments depending on familiar usage, you can understand why many kinds of packages are required.
- You will understand something with the assembly (the bonding) of the semiconductor.

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Kinds and Use Examples of Semiconductor Packages

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2 Vacuum Tube Radio
3 Transistor
4 Transistor Television
5 DIP
6 Terminal Insertion Type
7 Home TV Game Machine
8 Refrigerators and Air Conditioners
9 QFP (Quad Flat Package)
10 SOP (Small Outline Package)
11 J Lead Surface Mounting Type
12 Second Generation TV Game Machine
13 BGA (Ball Grid Array)
14 BGA and QFN (QF Non-leaded Package)
15 Television and PC
16 BGA with a Heat Sink
17 Third Generation TV Game Machine
18 FCBGA (Flip Chip BGA)
19 Fourth Generation TV Game Machine
20 High Performance Computer
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24 Cellular Phone and Digital Camera
25 How to Call Package Externals

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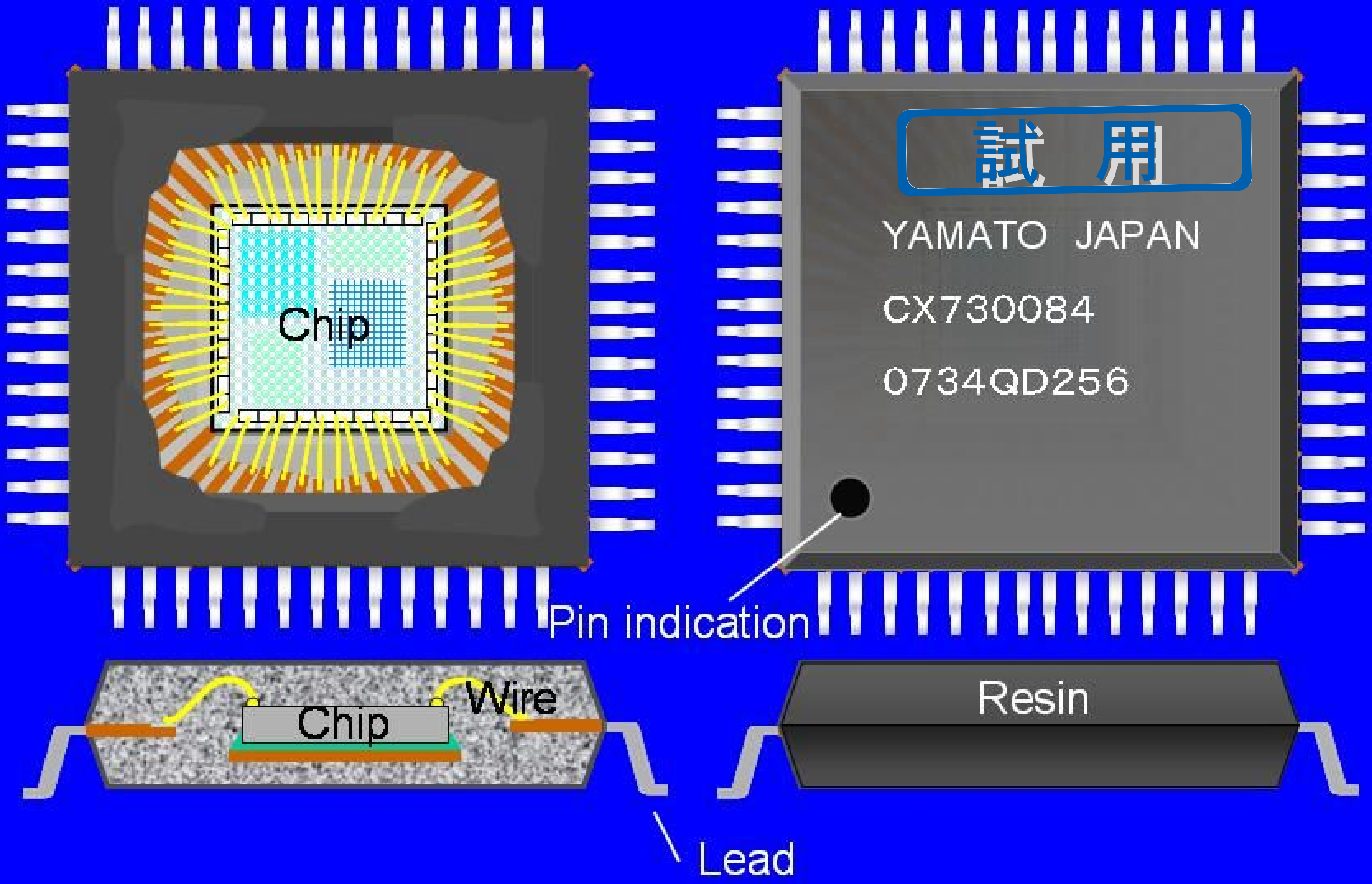
QFP



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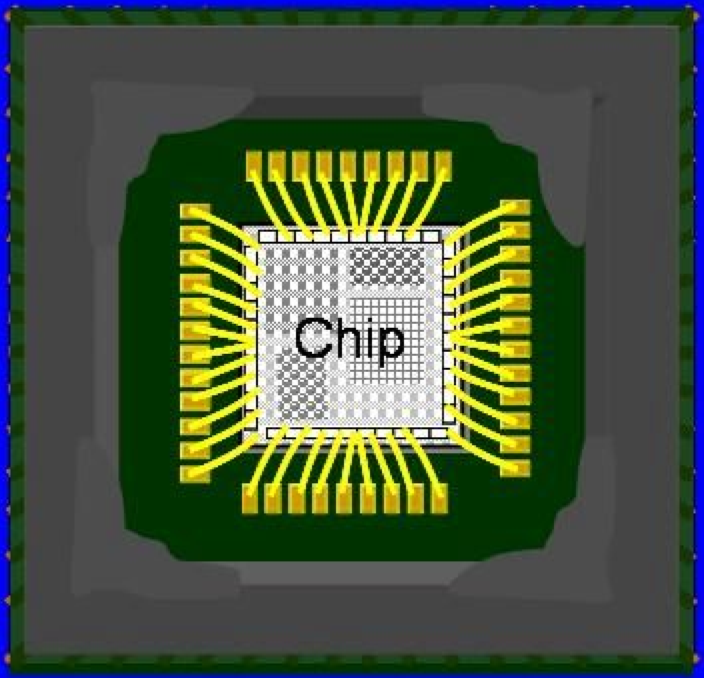
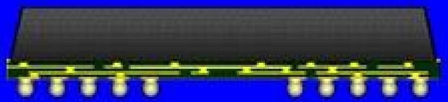
BGA

Inside

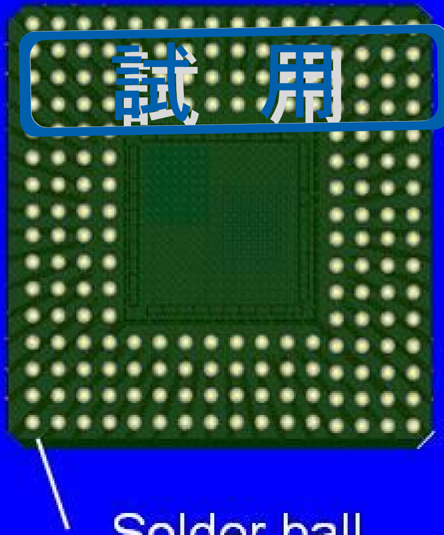


Front side



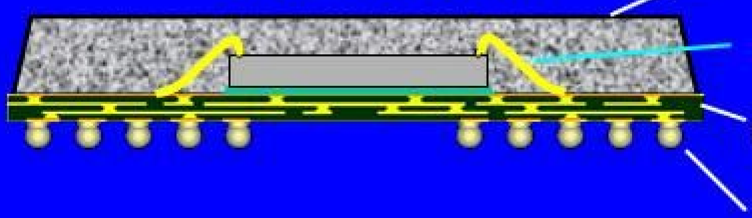
Side view

Back side



Solder ball

Cross section



Resin

Wire

Glass epoxy substrate

Solder ball

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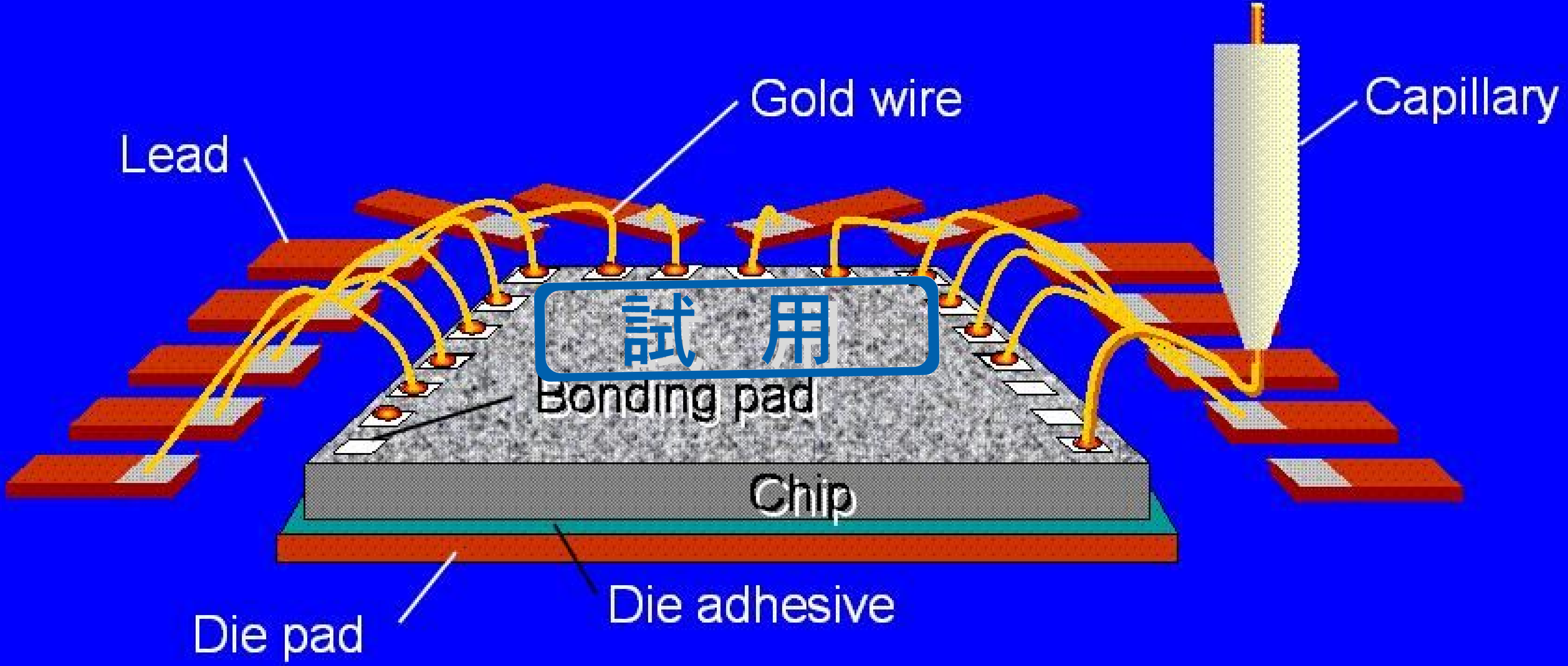
Outline of wire bonding



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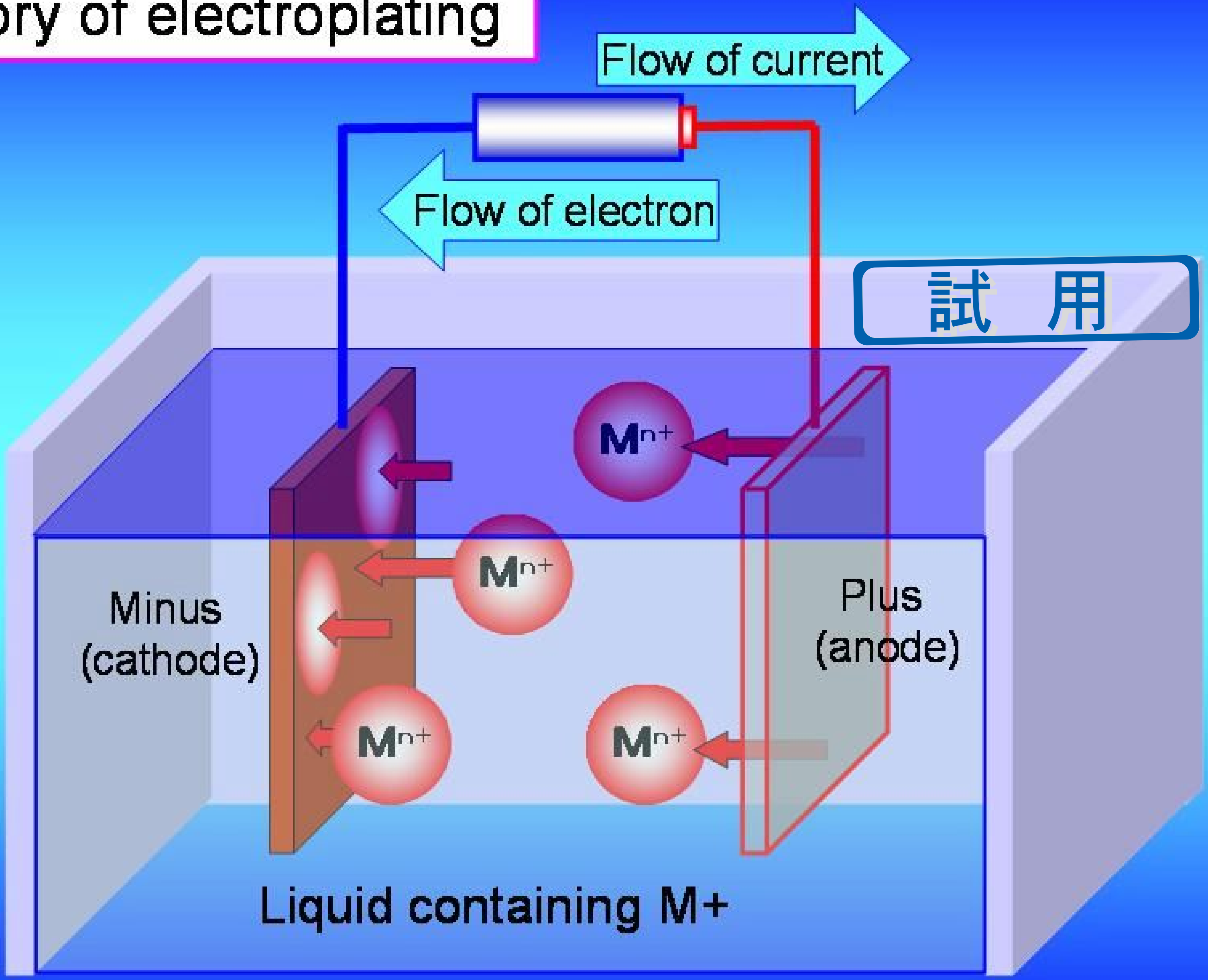
Theory of electroplating



Flow of current

Flow of electron

M^{n+}

M^{n+}

Minus
(cathode)

M^{n+}

M^{n+}

Plus
(anode)

Liquid containing M+

試　用

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