Programming guide
for OTP, Flash, EEPROM

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ABOV OTP/Flash/EEPROM Programming - Sequence

❑ Programming sequence
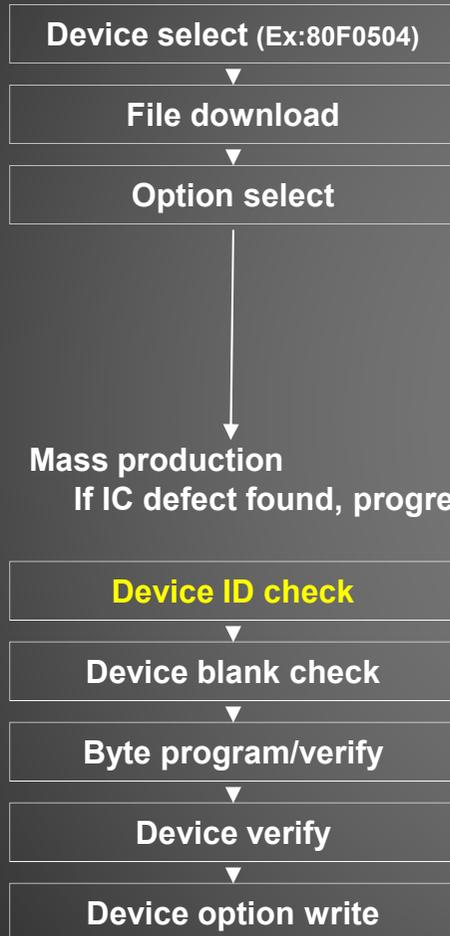
Device select (Ex:80F0504)	Buffer memory is cleared when power on
File download	Code file download
Option select	Ex) X-tal, RC, Lock

You have to care followings
- **device name**
- **package and socket type**
- **file checksum (fill data to unused area)**
- **device option, if it is not matched, device will not work correctly.**

Mass production
If IC defect found, progress will be stopped during any following sequence.

| Device ID check | Validate between device and socket's conduction.
Check device is inserted correctly. |
Device blank check	
Byte program/verify	Repeat for entire OTP/Flash/EEPROM area
Device verify	Device read & verify at once
Device option write	Ex) X-tal, RC, Lock

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ABOV OTP/Flash/EEPROM Programming – Caution

❑ **How to reduce the possibility to make blank devices after programming**

- ● **Do not forget to check the code checksum**

  - Always check that checksum is right.

- ● **Do not forget to download the code file**

  - If you read blank IC, then the buffer will be filled blank data.

- ● **Do not forget to press the Auto/Program button**

  - Even If device programming is skipped but the LED display is maintained ok sign
    (After press writing button, then check busy sign. Otherwise you may mistake
      as if it were programmed normally.)

- ● **Do not mix the programmed devices during handling**

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ABOV OTP/Flash/EEPROM Programming - Handling

❑ **Socket's life time**

- ● **Do not use over the socket life time**
- ● **Life time of socket for each company's**
  - **- Yamaichi , Enplas QFP type : about 10,000 cycles**
  - **- 3M Dip type : about 20,000 cycles**
  - **- ChipTool : about 8,000 cycles**

❑ **Maintain socket's cleanness**

- ● **Clean socket and avoid from dust**
- ● **Do not close socket when you do not use it**
  Otherwise socket's life time would be shortened

❑ **Store blank and programmed MCUs in chip carrier(sleeve)**

- ● **Minimize the contact with hands of operators during programming.**

❑ **Update writing S/W with the latest version**

- ● **http://www.abov.co.kr**

ABOV OTP/Flash/EEPROM Programming - FAQ

❑ FAQ

Q : Why the yield rate fluctuates ?

A : Oxidation on pins of IC and the socket is the main reason affects the yield rate.
Improper contact due to oxidation occurs more often on ICs of PLCC, QFP and SDIP packages.
Following steps lead you to solve the problem in ease.

1) Lay pins of a QFP IC flat on an A4 paper, move the IC back and forth to get rid of the oxide.
   If needed you may even slightly scrub the layer of oxide with a knife.
2) Check if there is oxide on the connecting metal of the socket.
   Periodically brush away the oxide with remover to keep the socket clean and prolong its life expectancy.
3) Contact our customer service Dept. if above two ways cannot solve your problem.

On Handling Devices

Because CMOS device inputs have such high impedance, they are subject to damage from ESD.
The input structures of modern CMOS devices use various measures to reduce their susceptibility to ESD damage, but no device is completely immune. Therefore, to protect CMOS devices from ESD damage during shipment and handling, manufacturers normally package their devices in conductive bags, tubes, or foam.
To prevent ESD damage, circuit assemblers and technicians usually wear conductive Wrist straps that are connected by a coil cord to earth ground.
This prevents a static charge from building up on their bodies as they move around the factory or lab.