New Mask ROM Code Transfer Procedure

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1. Introduction

ROM Code is a program, normally in hexadecimal format that can be loaded into a ROM. Mask ROM code is a program in hexadecimal format which is developed and supplied by the customer and programmed (masked) by NEC into the ROM portion of NEC device requested by the customer. Typical devices for Mask ROM programming are Single-chip microcomputers, Digital Signal Processors (DSPs) and PROMs.

This document describes the Mask ROM code handling procedure between the customer, the local Sales Company, NEC Electronics (Europe) GmbH (NEC-EE) and NEC Corporation, Japan (NEC-Tokyo)

1.1 The Procedure

The whole procedure can be sub divided into 5 major blocks:

1. Receiving Mask ROM code from customer
2. Mask ROM code pre processing using the Internet
3. Mask ROM code transfer to NEC-Tokyo
4. Customer verification and O.K for production
5. Production

The following sections will describe the individual blocks in detail

1.1.1 Receiving Mask ROM code from customer

The customer should send the Mask ROM code to the Technical Product Support Department at NEC-EE or to his local sales contact. The responsible person at NEC-EE is:

Mrs. H. Weinert or Mrs. G. Wollny
Technical Product Support
NEC Electronics (Europe) GmbH
Oberrather Strasse 2
40472 Duesseldorf
e-mail: romcode@ee.nec.de
Tel. +0211/6503-247 Fax: +0211/6503-279

1.1.2 Acceptable media for Mask ROM transfer

Mask ROM code can be transferred to NEC-EE using any one of the following ways:

A. On 3.5" double sided, high density diskette (DSHD, 1.44mbyte) in MS-DOS format.

B. Via Modem over the telephone line
- The transmission rate will be decided between the two modems
- 8 data bits, no parity, 1 stop bit

D. Via Datex-p link (FTP transfer)

E. Via INTERNET: romcode@ee.nec.de

Note(s):

1. *Unless submitted by means of programmable ICs, the Mask ROM data must be in Intel™ hexadecimal or extended hexadecimal format.*

2. *Prior to transmitting Mask ROM code via Modem and Datex-p link it is mandatory for the customer to contact NEC-EE and to make an appointment with ROM code operator to this effect.*

Caution:

NEC assumes no responsibility for data bits within a target device's programmable area, and it is therefore imperative that customer defines all bits within the possible range of addresses.

Note(s): *Intel is the registered trade mark of Intel Corp., USA.*

2. Mask ROM code pre-processing

The ROM code pre-processing is based on project information given by the customer or NEC sales representative on the so-called ***Mask ROM Order Sheet***. The form sheet is available on the Internet. The URL is:

http://193.141.220.25/ros/internet.html

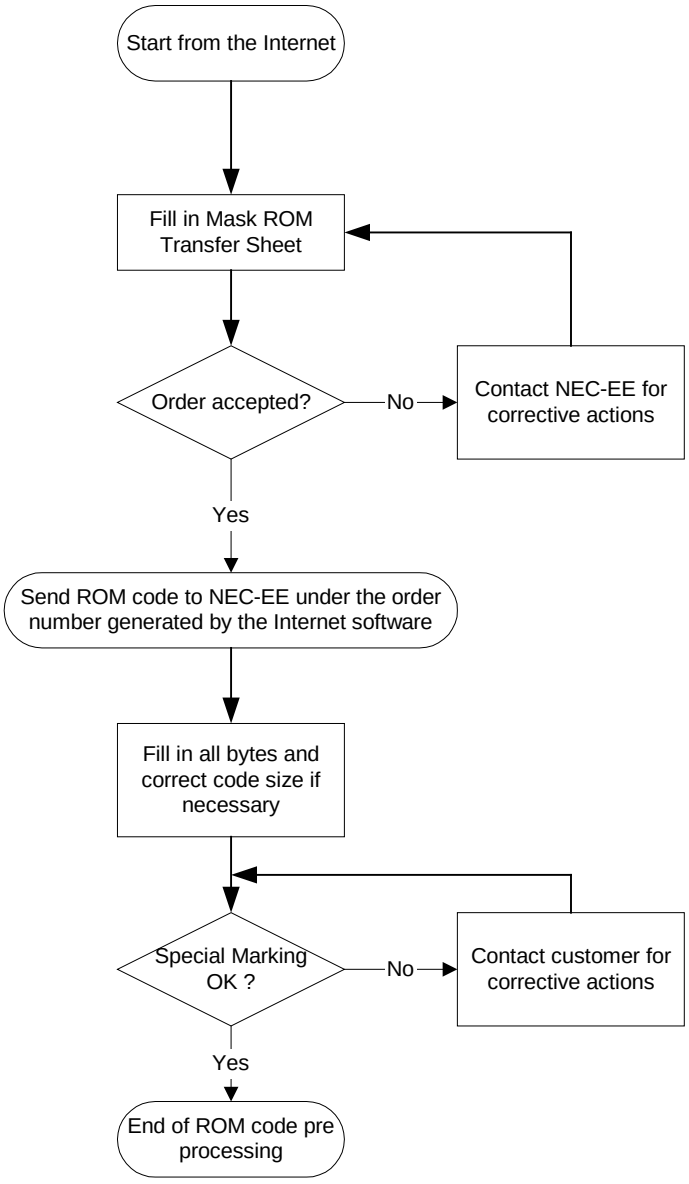

Figure 1: Mask ROM Code pre processing

After the form sheet was filled in correctly, a so-called ROM Order No. is generated, which is used as reference in all future communications.

3. Mask ROM code transfer to NEC-Tokyo

The Mask ROM code transfer to NEC-Tokyo is initiated by assigning to each Mask ROM Code Project the unique ROM Order No. and by informing NEC Tokyo about the various project details as available from the so called 'ROM Code Order Sheet' (ROS) filled in on the Internet earlier. The main subjects are:

- ROM code order number
- ROM code receiving date
- Mask ROM device type
- Mask options
- Special marking
- Customer -end application
- Customer name and address
- NEC sales representative reference
- Number and delivery request of ES, CS and MP

The ***ROS*** is an interactive program managing the Mask ROM code project with all the above mentioned project details and is activated at various stages of the ROM code transfer project.

The Mask ROM device type (name), the mask options and package particulars etc. are maintained in a device library.

The *ROS* program assigns a unique order number to each ROM code project Once the project data has been entered in *ROS* ensuring that all information necessary for a Mask ROM code are available, the customer Mask ROM code is transmitted to NEC-Tokyo. This transmission from NEC-EE in Düsseldorf to the host computer of NEC-Tokyo (assigned for Mask ROM code processing) takes place via NEC Network (NECNET).

The ROM code file transferred to NEC-Tokyo is referencing the order number and is termed as ***DAT file***.

The transmitted file is read back by NEC-EE from NEC-Tokyo with the same order number reference but is termed as ***VER file.***

The *.DAT* and the *.VER* file are compared by a so-called 'Compare' program installed and running in NEC-EE to check correct transfer of the customer Mask ROM code data to NEC-Tokyo.

If the comparison fails, the file transfer (*.DAT*) file and read back process (*.VER*) mentioned above are repeated.

As a next step, the *.VER* received back from NEC-Tokyo has to be compared with the contents of the customer data media.

3.1 Mask ROM code post-processing by NEC-EE

NEC-EE generates a checksum from the Mask ROM data file (*.VER*) contents, copies the same on the customer Mask ROM Order Sheet and sends both items, the Mask ROM Order Sheet and the VER file, to the customer.
While the Mask ROM Order Sheet is usually send by e-mail or (when no e-mail is available) by Fax, the VER file is transmitted as requested by the customer.
Usually, if the customer had used modem, Datex-p or INTERNET as media for original code transfer, than NEC-EE also sends the *'.VER'* file through same channel viz. modem, Datex-p or INTERNET to the customer for verification.

Note

NEC-EE uses the same Mask ROM transfer media for sending the .VER file for confirmation by customer as used by customer for the initial code transfer to NEC-EE.

To summarize, the customer will receive from NEC-EE for the purpose of verification:

1. One copy on the original media customer has used to send the data file
2. The Mask ROM Order Sheet

4. Verification and production O.K. by customer

The customer is requested to check the Mask ROM code data returned by NEC-EE plus all other items viz. the Checksum, the 'Special marking' etc. mentioned on the 'Mask ROM Oder Sheet' for their correctness.

Important

Confirmation of correctness of data on the 'Mask ROM Order Sheet' by customer is mandatory. NEC cannot proceed with the Mask ROM device production unless this document is received duly signed from customer.

In general this is termed as 'Customer O.K.'

Upon receipt of the signed Mask ROM Code Order Sheet by NEC-EE, which can be accepted by fax or e-mail, NEC-Tokyo is informed.

5. Production

NEC-Tokyo will produce and supply 10 engineering samples (free of charge) to customer. The rest of the Mask ROM devices will be produced and supplied at a later date in batch(es) as per customer order.

6. ROM code data maintenance

Customer Mask ROM code data files are kept in archival storage for two years (More than two years are not guaranteed) at NEC using magnetic storage media.

Important

IC masks are stored at NEC's manufacturing facility for only one year after the last order from customer is received.