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User's Manual

PCA7302E1F-80
PCA7302E1L-80

User's Manual

PROM Programming Adapter for M16C/20 Series MCUs

Renesas Electronics
www.renesas.com

Rev.1.00 2003.09

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Renesas Tools Homepage http://www.renesas.com/en/tools

Contents

To use the product properly

Precautions for Safety

- Either in the instruction manual or on the product, several icons are used to insure proper handling of this product and also to prevent injuries to you or other persons, or damage to your properties.
- Their graphic images and meanings are given in Chapter 1, Precautions for Safety. Be sure to read this chapter before using the product.

1. Precautions for Safety

In both the user's manual and on the product itself, several icons are used to insure proper handling of this product and also to prevent injuries to you or other persons, or damage to your properties.

This chapter describes the precautions which should be taken in order to use this product safely and properly. Be sure to read this chapter before using this product.

1.1 Safety Symbols and Meanings

⚠ WARNING — If the requirements shown in the "WARNING" sentences are ignored, the equipment may cause serious personal injury or death.

⚠ CAUTION — If the requirements shown in the "CAUTION" sentences are ignored, the equipment may malfunction.

IMPORTANT — It means important information on using this product.

In addition to the three above, the following are also used as appropriate.

△ means WARNING or CAUTION.

Example:  **CAUTION AGAINST AN ELECTRIC SHOCK**

⃠ means PROHIBITION.

Example:  **DISASSEMBLY PROHIBITED**

● means A FORCIBLE ACTION.

Example:  **UNPLUG THE POWER CABLE FROM THE RECEPTACLE.**

The following pages describe the symbols "WARNING", "CAUTION", and "IMPORTANT".

⚠ WARNING

Warning for Use Environment :

- This equipment is to be used in an environment with a maximum ambient temperature of 35℃. Care should be taken that this temperature is not exceeded.
- Select the proper programming mode of the PROM programmer.

⚠ CAUTION

Cautions to Be Taken for This Product :

- Do not disassemble or modify this product. Personal injury due to electric shock may occur if this product is disassembled or modified.
- Use caution when handling this product. Be careful not to apply a mechanical shock such as falling, etc.
- Do not directly touch the connector pins of this product.
- Be careful with the static electricity when handling this product and the MCU.

When Not Using This Product for a Long Time :

(1) Attach the connector pins of this product to the conductive sponge.

(2) Put it into a conductive polyvinyl, and keep it in the package case shipped from the factory.

(3) Store it in the place where humidity and temperature are low and direct sunshine does not strike.

IMPORTANT

When Using the Products :

- Attach this product to the IC socket on the PROM programmer properly.
- Insert the MCU to the IC socket of this product properly.
- When opening and closing the IC socket of this product, be sure to keep it horizontal.
- Be sure to set the programming area as described in this instruction manual.
- Do not use the PROM programmer's device identification code readout function.

2. Introduction

This product is a PROM programming adapter for 16-bit microcomputers of M16C/20 Series. The adapter is a tool that can be used to write a program into internal ROM of microcomputers using a commercially available PROM programmer.

This manual describes the specifications and operation of this product. Figure 2.1 shows the external view of this product and constituent parts.

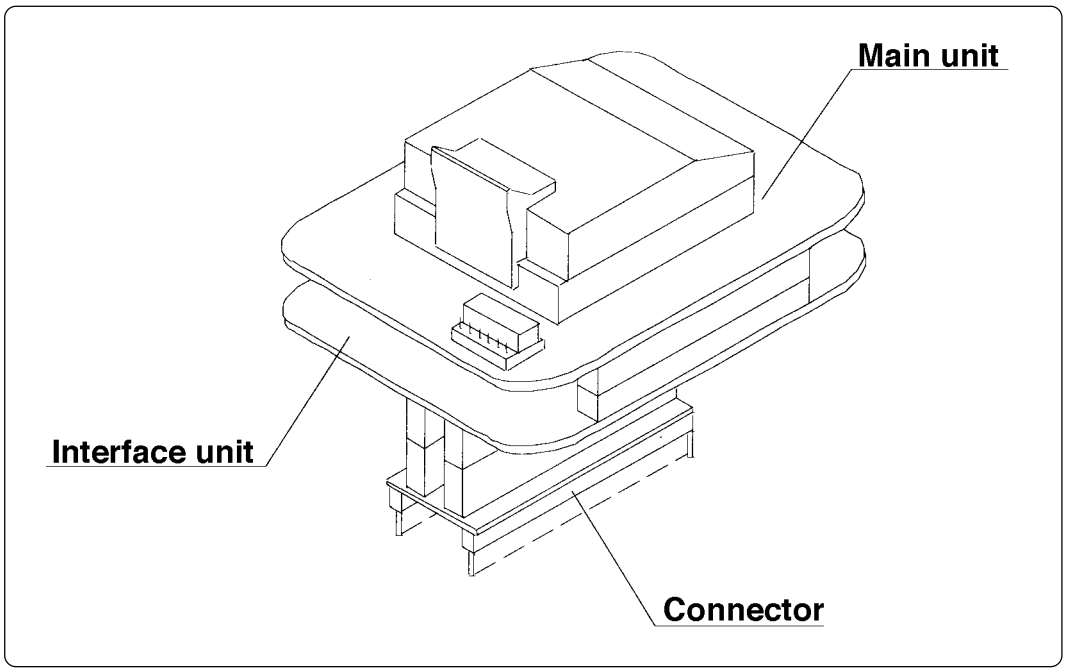

Figure 2.1 External view of the adapter and constituent parts

2.1 Things to Check When Unpacking

This product consists of the following parts. Check to see that it contains all of the components shown in Table 2.1 below.

Table 2.1 Contents

Product type name	PCA7302E1F-80	PCA7302E1L-80
Main unit	PCA7302E1F-80	PCA7302E1L-80
Interface unit	PCA7412C	
Connector	PCA7402E (32-pin)	
Instruction manual	PCA7302E1F-80, PCA7302E1L-80 Instruction Manual (This manual)	

If any part is missing or there is any doubt about your product package, contact your local distributor.

3. Specifications

Tables 3.1 and 3.2 list specifications of PCA7302E1F-80 and PCA7302E1L-80 respectively.

Table 3.1 Specifications of PCA7302E1F-80

MCU type		80-pin QFP packages (80P6N-A) of M16C/20 Series 80-pin FP packages
Type of internal ROM of MCU		EPROM
IC socket		IC51-0804-819-6 (Yamaichi Electronics Co., Ltd.)
Operating clock frequency		8 MHz (Supplied by the ceramic oscillator mounted on the adapter)
Power supply		Supplied from V_{CC} of a PROM programmer
Board configuration	PCA7302E1F-80 (Main unit)	Board to insert a programmable MCU (IC socket is mounted on this board.)
	PCA7412C (Interface unit)	Interface board (Connected by two standard-pitch 20-pin connectors and two standard-pitch 16-pin connectors to the upper and lower boards.)
	PCA7402E (Connector)	Board to connect to the PROM programmer (Standard-pitch 32-pin pin-header is mounted on it.)

Table 3.2 Specifications of PCA7302E1L-80

MCU type		80-pin LCC packages (80D0) of M16C/20 Series 80-pin FS packages
Type of internal ROM of MCU		EPROM
IC socket		IC51-0804-890 (Yamaichi Electronics Co., Ltd.)
Operating clock frequency		8 MHz (Supplied by the ceramic oscillator mounted on the adapter)
Power supply		Supplied from V_{CC} of a PROM programmer
Board configuration	PCA7302E1L-80 (Main unit)	Board to insert a programmable MCU (IC socket is mounted on this board.)
	PCA7412C (Interface unit)	Interface board (Connected by two standard-pitch 20-pin connectors and two standard-pitch 16-pin connectors to the upper and lower boards.)
	PCA7402E (Connector)	Board to connect to the PROM programmer (Standard-pitch 32-pin pin-header is mounted on it.)

Note:

As this product is designed to support the same packages of M16C/20 Series, it is ready for most of the products which will be introduced in the future.

4. How to Write the Program

This chapter describes procedures you need to follow when writing a program. For details on how to operate the PROM programmer, refer to the user's manual of the PROM programmer.

4.1 Programming Procedure

Follow procedures (1) to (8) to write a program.

(1) Read the program into the PROM programmer. (Offset at $C0000_{16}$ required)

▼

(2) Attach the adapter to the PROM programmer. (see Section 4.2)

▼

(3) Set the switches (JP1). (see Section 4.3)

▼

(4) Insert the MCU into the adapter. (see Section 4.4)

▼

(5) Set the programming area with the PROM programmer. (see Section 4.7) *1

▼

(6) Check to erase the programming area. *2

Using the PROM programmer's erase check function, check whether data can be written into the MCU's programming area.

▼

(7) Write the program into the programming area of the MCU using the PROM programmer. *2

▼

(8) Verify the programming area of the MCU using the PROM programmer to check whether the program is written into the MCU correctly. *2

Notes:

*1 Be sure to set the programming area. Otherwise the mode's shift to the programming mode may not be performed successfully. The erase check function etc. may not also be performed completely.

*2 Some PROM programmers perform the steps (6) to (8) automatically.

4.2 Attaching Adapter to PROM Programmer

As shown Figure 4.1, attach the pin No. 1 of the PCA7402E connector (standard-pitch 32-pin pin-header mounted) to the pin No. 1 of the IC socket of the PROM programmer.

Be careful when attaching the adapter because incorrect insertion can cause fatal damage to the MCU.

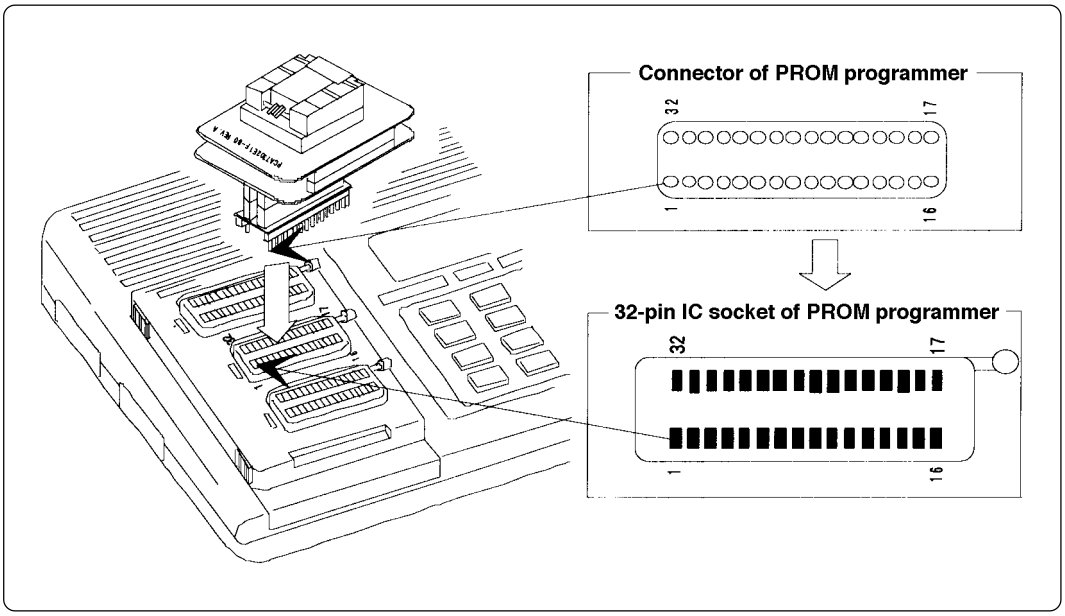

Figure 4.1 Attaching adapter to PROM programmer

4.3 Setting Switches

The setting of JP1 switch is prepared for MCUs with their ROM area expanded in the future. Use this setting for the current MCUs. Figure 4.2 shows the factory-setting of JP1 switch.

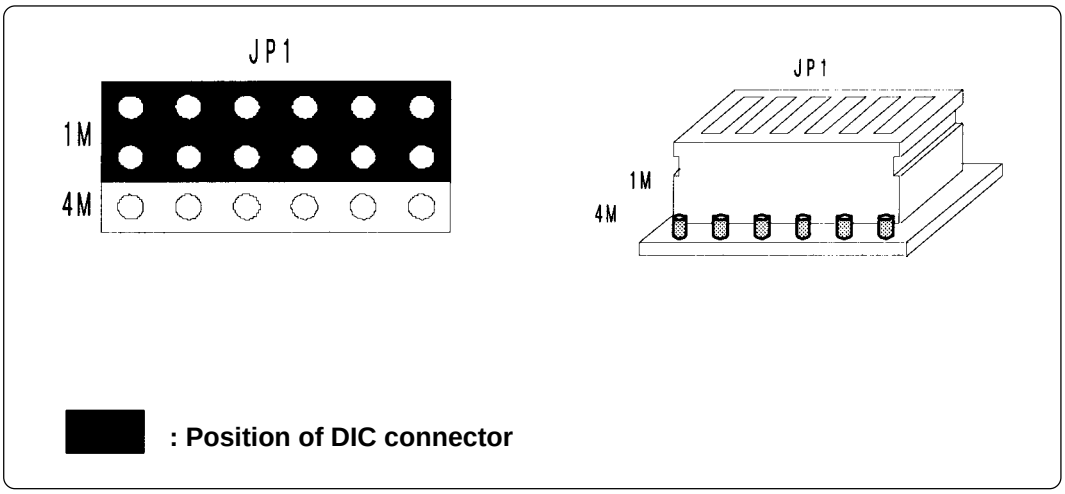

Figure 4.2 JP1 switch setting

Note:

(1) Be sure to set the switch properly. Otherwise wrong settings can cause fatal damage to the MCU.

(2) Figure 4.2 applies to both PCA7302E1F-80 and PCA7302E1L-80.

4.4 Inserting MCU into Adapter

As shown in Figure 4.3, insert the MCU into the IC socket, with the pin No. 1 of the MCU matched to the pin No. 1 of the IC socket on the adapter.

Be careful when inserting the MCU because incorrect insertion can cause fatal damage to the MCU.

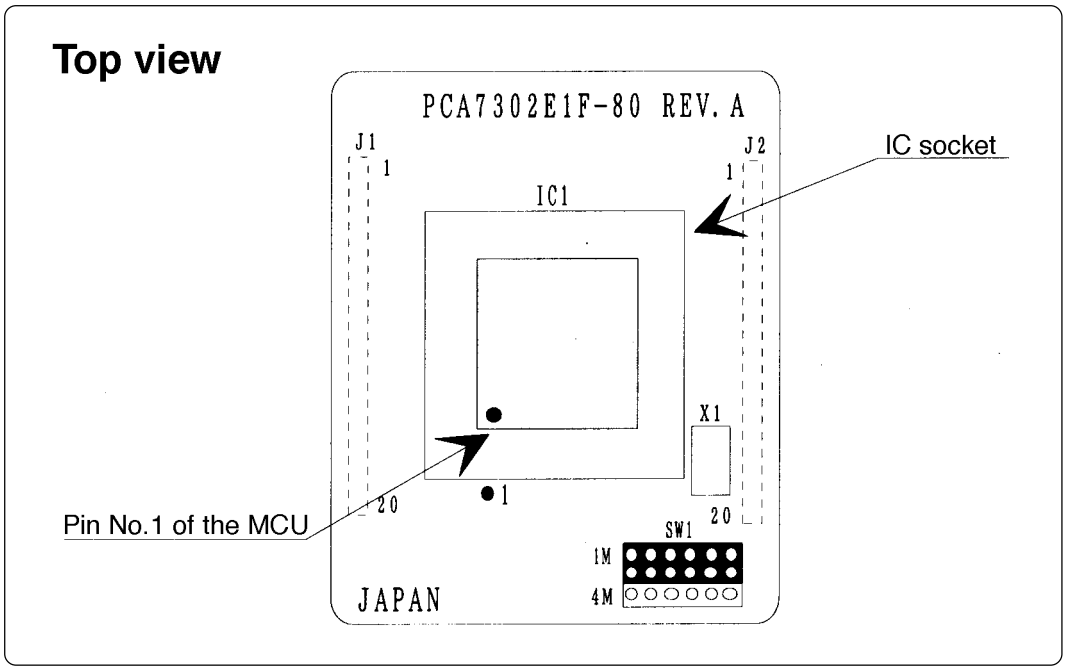

Figure 4.3 Inserting the MCU

4.5 Precautions When Opening and Closing IC Socket

When opening and closing the IC socket to insert the MCU, hold the adapter horizontally. Otherwise the inside of the IC socket may become damaged and cause an electrical insulation failure. Figure 4.4 shows opening and closing of the IC socket.

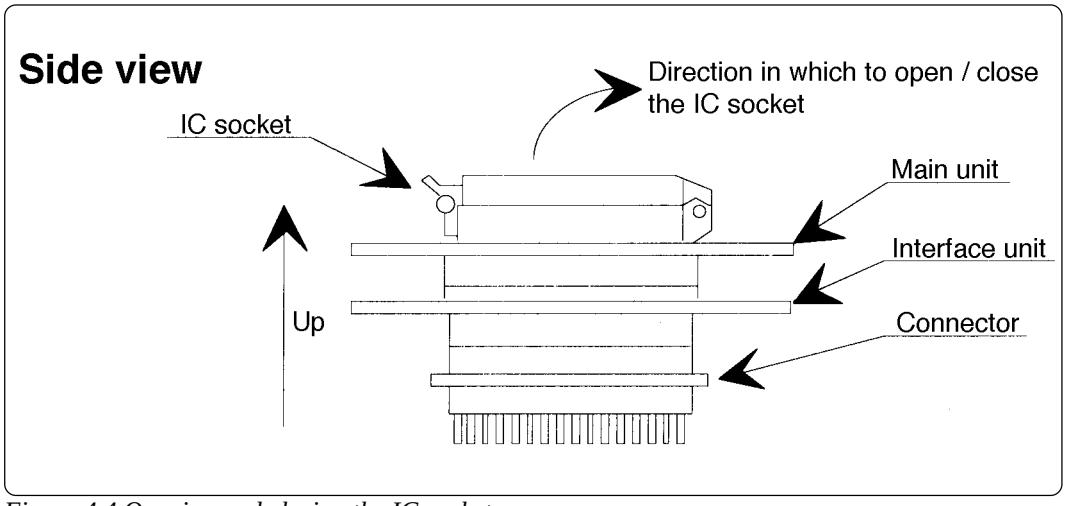

Figure 4.4 Opening and closing the IC socket

4.6 Precautions When Handling Adapter

Don't touch the connector in the IC socket and the pins on the PROM programmer connector. Otherwise it can cause an electrical insulation failure because of dirt.

When not using, attach the connector pins of this product to the conductive sponge as it was shipped from the factory.

4.7 Setting Programming Area

When writing the program into the MCU, be sure to set the programming area. And also, specify its device of the PROM programmer.

Table 4.1 Programming area

MCU type name		ROM size	PROM programmer		Internal ROM area of MCU
MCU type	Example		Device	Programming area	
M302XXEC	M30240ECFP	128K byte	M5M27C201	20000_{16} - $3FFFF_{16}$	$E0000_{16}$ - $FFFFF_{16}$

Note:

(1) Be sure to set the programming mode properly. Otherwise wrong settings can cause fatal damage to the MCU.

(2) The programming method for the M5M27C201 mode is the byte-programming method.

5. Recommended PROM Programmers

PROM programmers listed in Table 5.1 are recommended for the adapter. Using the actual products, we have verified that these PROM programmers can be used to write programs without problem. Nonconformity occurring by using any other PROM programmers can not be supported. For the latest type of PROM programmers, contact the manufacturer to confirm whether it can be used for your product.

Table 5.1 Recommended PROM Programmers

Manufacturer	Type name	Device	Programming voltage (V_{PP})
Advantest	R4945	M5M27C201 mode	12.5 V
	R4945A		

Note:

(1) Be sure to set the programming mode properly. Otherwise wrong settings can cause fatal damage to the MCU.

(2) The programming method for the M5M27C201 mode is the byte-programming method.

6. Memory Map

Figure 6.1 shows memory maps of the MCU and the PROM programmer.

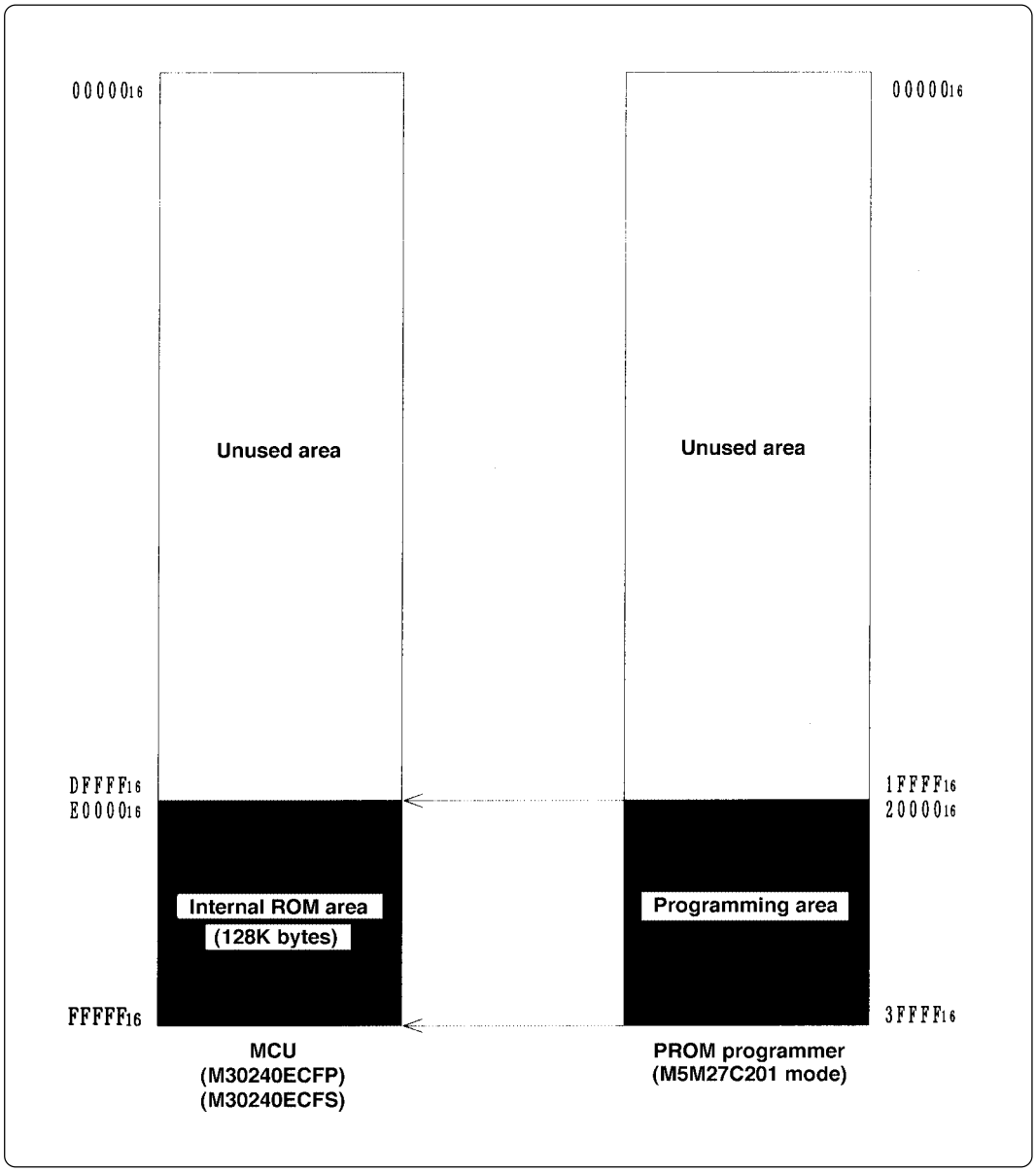

Figure 6.1 Memory Map

7. How to Request for Support

After checking this manual, fill in the following information and email to your local distributor. For prompt response, please specify the following information:

(1) Contact address

- Company name
- Department
- Responsible person
- Phone number
- Fax number
- E-mail address

(2) Product information

- Name of the programming adapter
- Serial number
- Date of purchase
- Target MCU
- Symptoms (Fails blank check/Cannot write a program/Fails verification etc.)
- Detailed symptoms
- How often does the problem occur? (2 out of 10 etc.)
- When did the problem start to occur? (Since purchase/Used to work correctly)
- Type name of the PROM programmer (Advantest R4945A etc.)
- Specified device when writing to PROM (M27C101 etc.)
- Specified programming area when writing to PROM
- Switch settings of the adapter when writing to PROM

MEMO

PCA7302E1F-80/PCA7302E1L-80 User's Manual

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PCA7302E1F-80 PCA7302E1L-80
User's Manual

Renesas Electronics Corporation
1753, Shimonumabe, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8668 Japan

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