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April 1st, 2010
Renesas Electronics Corporation

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M32173T-PTC

Converter Board for In-circuit Connection (for M32173F2VFP/M32172F2VFP)

User's Manual

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CAUTION

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Renesas Technology

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1. Outline

The M32173T-PTC is a converter for featuring the debugging function such as real-time tracing when using emulators M32170T-SDI or M32100T-SDI-E with the M32173F2VFP or M32172F2VFP.

2. Package Components

- (1) M32173T-PTC converter
- (2) YQPACK144SD (made by Tokyo Eletech Corporation)
- (3) NQPACK144SD (made by Tokyo Eletech Corporation)
- (4) YQ-GUIDE (4 pieces)
- (5) Screwdriver (made by Tokyo Eletech Corporation)
- (6) M32173T-PTC User's Manual (This manual)

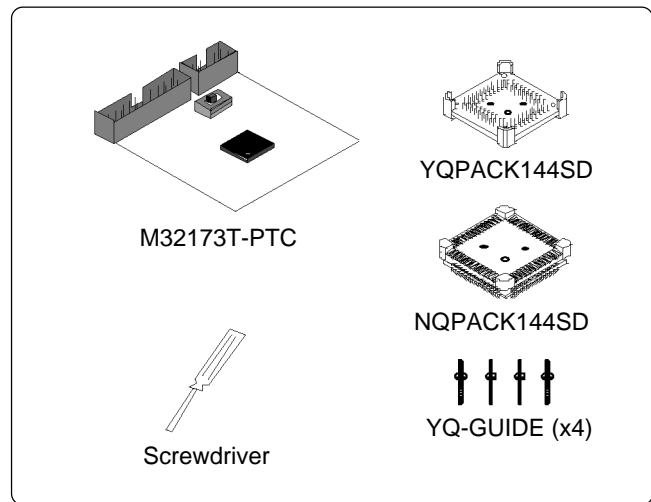


Figure 1 Package components of M32173T-PTC

3. Specifications

Table 1 Specifications

Applicable package	144P6Q-A (144-pin 0.5-mm-pitch QFP)
Supported MCU	M32173F2VFP/M32172F2VFP
Supported emulator	M32170T-SDI M32100T-SDI-E
Mounted MCU	M32173F2VWG
Clock	10 MHz
Power supply	Supplied from target board

4. Usage

The M32173T-PTC can be used for debugging and board mounted evaluation in common by mounting the NQPACK144SD on the target board.

(1) For debugging

Mount the NQPACK144SD (included with the M32173T-PTC) on the 144QFP foot pattern of the target board. Then connect the M32173T-PTC via the YQPACK144SD. As the M32173F2VWG is mounted on the M32173T-PTC, all functions of the emulator such as real-time tracing can be used.

(2) For board-mounted evaluation

Mount the M32173F2VFP (or M32172F2VFP) and the HQPACK144SD (separately available) in that order on the NQPACK144SD on the target system.

Before using the M32173T-PTC, be sure to read "8. Precautions" on page 5.

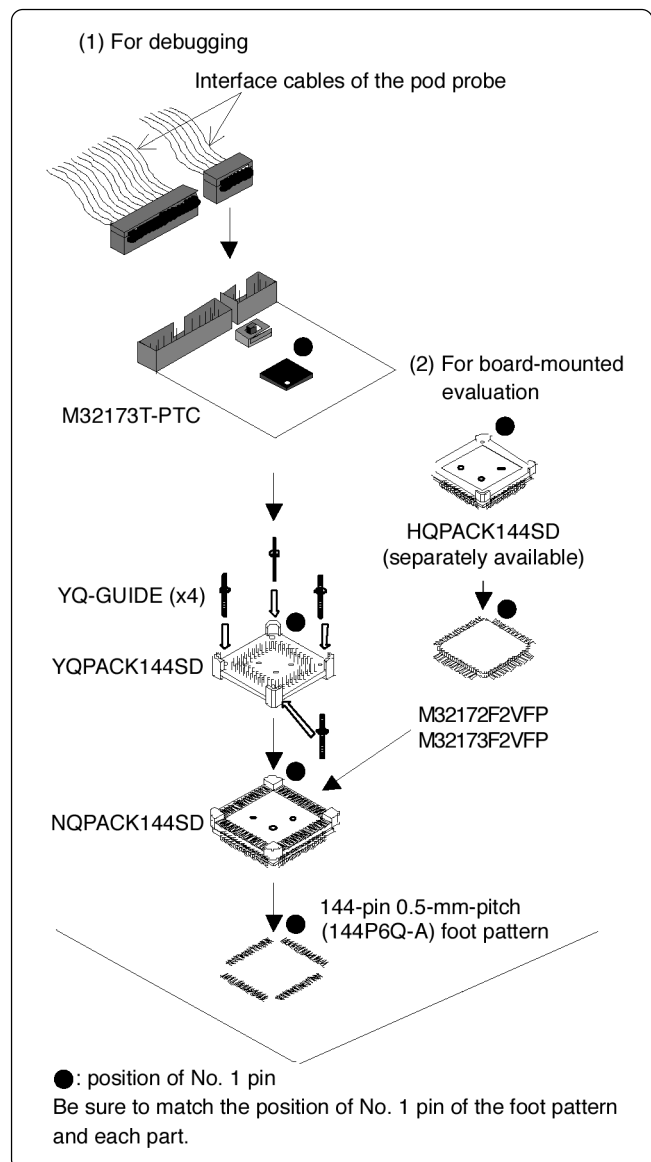


Figure 2 Usage of M32173T-PTC

5. Connection Procedure

The procedure for connecting the M32173T-PTC is shown below.

- (1) Mount the NQPACK144SD.
 - (2) Mount the YQPACK144SD on the NQPACK144SD.
 - (3) Secure the four corners of the YQPACK144SD with the YQ-GUIDE's.
 - (4) Set the clock select switch.
- For details, refer to "6. Selecting the Clock" shown below.
- (5) Connect the probe of the emulation pod and the M32173T-PTC via the SDI MCU control interface cable and the SDI trace interface cable.
 - (6) Mount the M32173T-PTC on the YQPACK144SD.

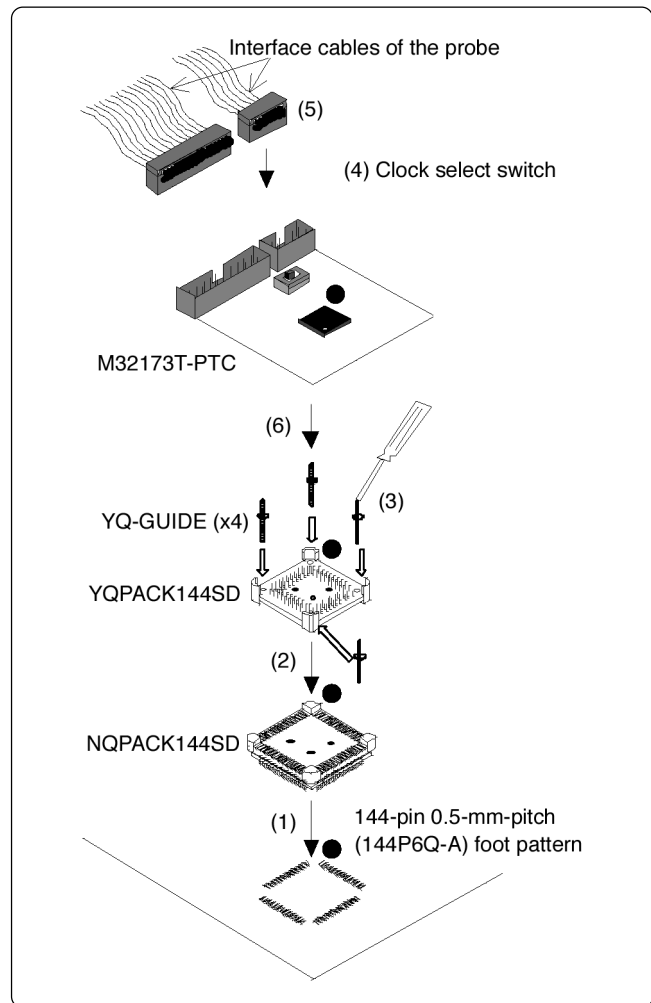


Figure 3 Connection procedure of M32173T-PTC

6. Selecting the Clock

With the M32173T-PTC, it is possible to select the clock supply to the MCU by the clock select switch (SW1). Select the clock supply as shown below.

However, when using the M32173T-PTC, the clock cannot be supplied from the target system.

10 MHz: Supplies the clock (X1: 10 MHz) on the M32173T-PTC board to the MCU.

SOCKET: Supplies the clock to the MCU from the socket (X2) for mounting the oscillator on the M32173T-PTC board. By mounting the oscillator to the X2 socket of the MCU, it is possible to change the operating frequency.

For more details on the connecting the X2 socket and the MCU, see Figure 4 (right).

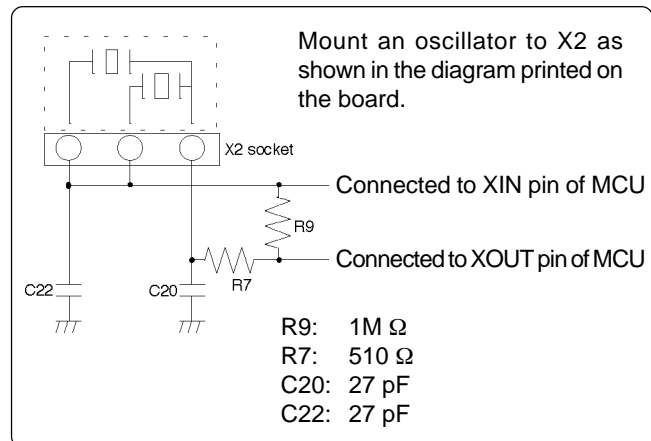


Figure 4 Connection diagram of X2 socket

7. External Dimensions and Sample Foot Pattern of M32173T-PTC

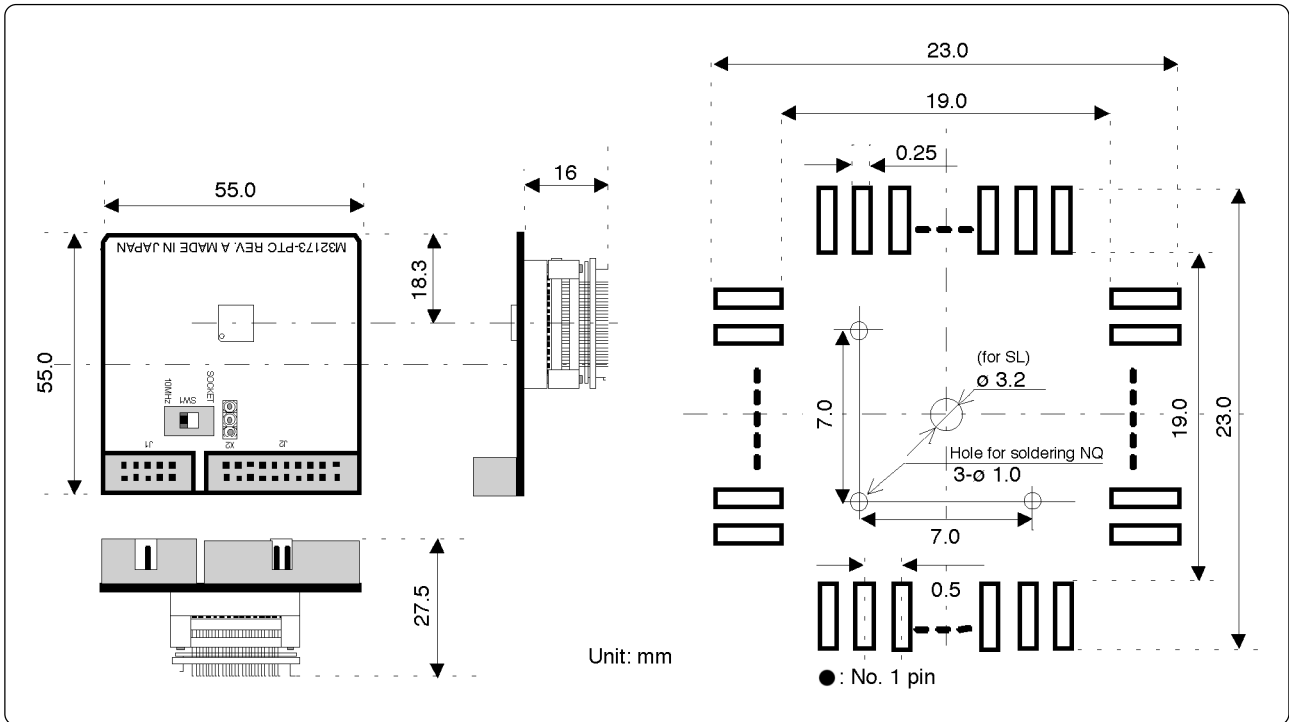


Figure 5 External dimensions and sample foot pattern of M32173T-PTC

8. Precautions

CAUTION

Cautions to Be Taken for Emulator:



- For debugging, use this product in the combination with the M32170T-SDI or M32100T-SDI-E emulator.
- When starting up emulator debugger PD32R, select the MCU file below according to the type name and the operation mode of the MCU to be debugged.

MCU type name	Single-chip and memory expansion modes	Microprocessor mode
M32172F2VFP	M32172F2VWG_MCU.MCU	M32172F2VWG_MPU.MCU
M32173F2VFP	M32173F2VWG_MCU.MCU	M32173F2VWG_MPU.MCU

- Connect the both cables for connecting the emulator, the SDI MCU control interface cable (10-pin) and the SDI trace interface cable (20-pin).
- For the precautions for the combination of the emulator, refer to the user's manual of the M32170T-SDI or M32100T-SDI-E.

Cautions for Differences between MCU and This Product:



- For debugging, as the M32173F2VWG (32KB internal SRAM) on the M32173T-PTC is used, be careful about the difference of the SRAM size when using the M32172F2VFP.
- When setting the clock select switch to the "SOCKET" side, the oscillation occurs by itself, be careful about the difference of the resistor value and the capacitor.
- The capacity load of the all lines of the MCU will increase depending on wirings and connectors. Use the part whose timing is critical after checking it works properly.

Cautions to Be Taken for This Product:



- When connecting the YQPACK144SD, be sure to use the included YQ-GUIDE's.
- We cannot accept any request for repair.
- For purchasing the NQPACK144SD, YQPACK144SD and HQPACK144SD, contact the following:

Daimaru Kogyo Ltd.
<http://www.daimaru-kogyo.com/>

Tokyo Eletech Corporation
http://www.tetc.co.jp/e_tet.htm

- For inquiries about the product or the contents of this manual, contact your local distributor.

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