To our customers,

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April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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M32170T-PTC

Converter Board for In-circuit Connection (for 32170 Group MCUs)

User's Manual

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Renesas Technology
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1. Outline

The M32170T-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 M32170FxVFP.

2. Package Components

(1) M32170T-PTC converter
(2) YQPACK240SD (made by Tokyo Eletech Corporation)
(3) NQPACK240SD (made by Tokyo Eletech Corporation)
(4) YQ-GUIDE (4 pieces)
(5) Screwdriver (made by Tokyo Eletech Corporation)
(6) M32170T-PTC User's Manual (This manual)

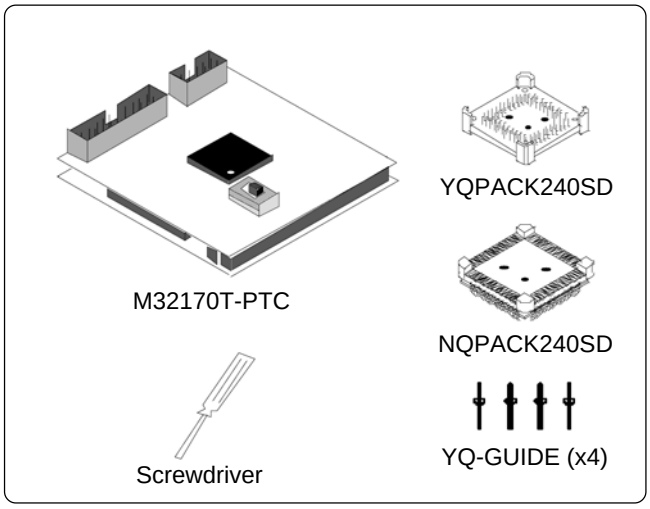

Figure 1 Package components of M32170T-PTC

3. Specifications

Table 1 Specifications

Applicable package	240P6Y-A (240-pin 0.5-mm-pitch QFP)
Supported MCU	M32170FxVFP
Supported emulator	M32170T-SDI M32100T-SDI-E
Mounted MCU	M32170F6VWG
Mounted clock	10 MHz
Power supply	Supplied from target board

4. Usage

The M32170T-PTC can be used for debugging and board mounted evaluation in common by mounting the NQPACK240SD on the target board.

(1) For debugging

Mount the NQPACK240SD (included with the M32170T-PTC) on the 240QFP foot pattern of the target board. Then connect the M32170T-PTC via the YQPACK240SD. As the M32170F6VWG is mounted on the M32170T-PTC, all functions such as real-time tracing can be used.

(2) For board-mounted evaluation

Mount the M32170FxVFP and the HQPACK240SD (separately available) in that order on the NQPACK240SD on the target system.

Before using the M32170T-PTC, be sure to read "7. Precautions" on page 4.

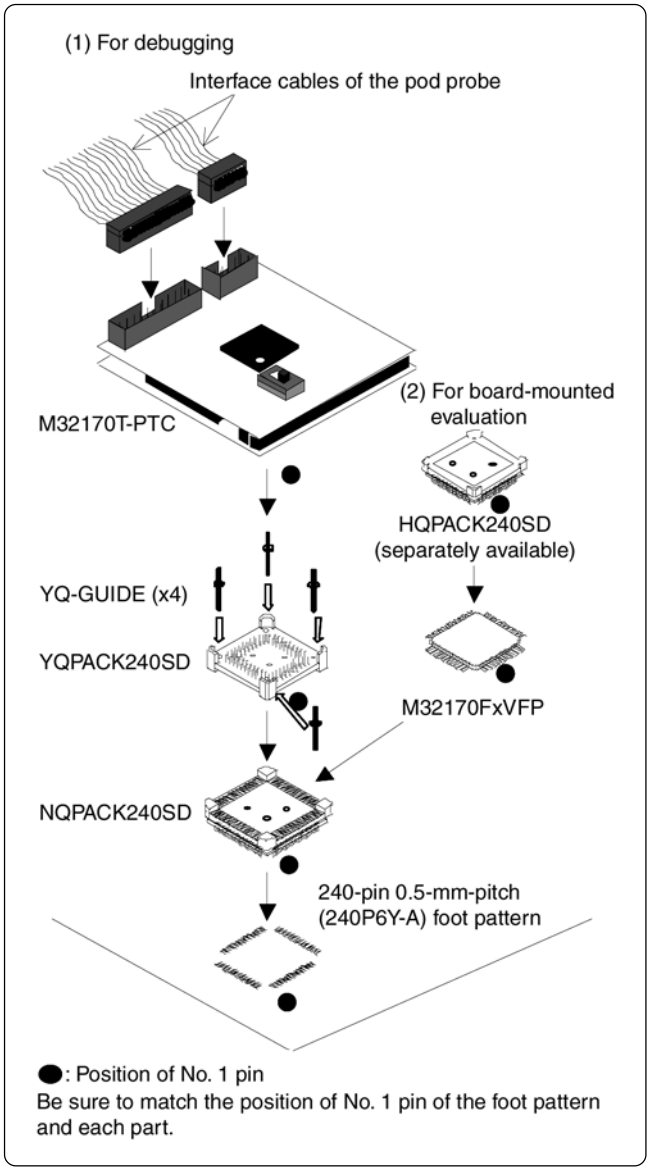

Figure 2 Usage of M32170T-PTC

5. Connection Procedure

The procedure for connecting the M32170T-PTC is shown below.

(1) Mount the NQPACK240SD.

(2) Mount the YQPACK240SD on the NQPACK240SD.

(3) Secure the four corners of the YQPACK240SD with the YQ-GUIDE's.

(4) Set the clock select switch.

EXT*[1]: Supplies the clock of the XIN pin of the target board to the MCU on the M32170T-PTC board.

INT: Supplies the clock (10 MHz) on the M32170T-PTC board to the MCU.

(5) Connect the probe of the emulation pod and the M32170T-PTC via the SDI MCU control interface cable and the SDI trace interface cable.

(6) Mount the M32170T-PTC on the YQPACK240SD.

*1 When setting to "EXT", make note of the fact that the oscillation by the oscillator on the target board does not occur. Connect the output of the oscillator etc. to the XIN pin.

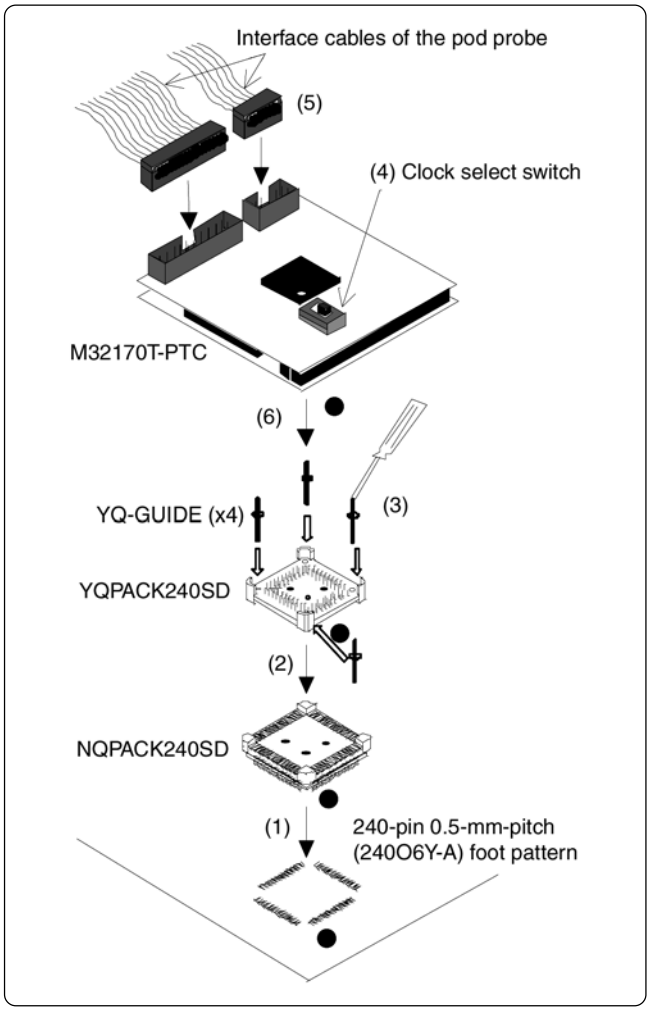

Figure 3 Connection procedure of M32170T-PTC

6. External Dimensions and Sample Foot Pattern of M32170T-PTC

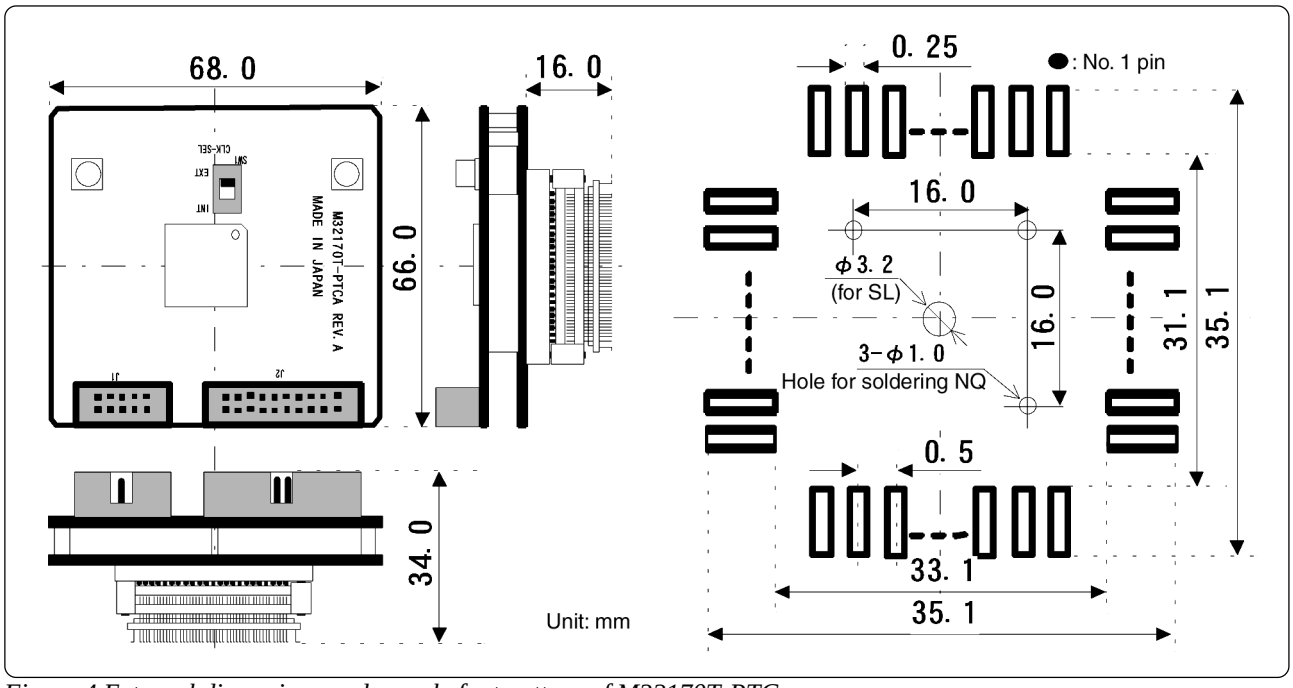

Figure 4 External dimensions and sample foot pattern of M32170T-PTC

7. Precautions

⚠CAUTION

Cautions to Be Taken for Emulator:

- When 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
M32170F3VFP	M32170F3PTC_MCU.MCU	M32170F3PTC_MPU.MCU
M32170F4VFP	M32170F4PTC_MCU.MCU	M32170F4PTC_MPU.MCU
M32170F6VFP	M32170F6VWG_MCU.MCU	M32170F6VWG_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 manuals of the M32170T-SDI or M32100T-SDI-E.

Cautions for Differences between MCU and this Product:

- When debugging, as the M32170F6VWG (768KB internal flash ROM) on the M32170T-PTC is used, be careful about the difference of the flash ROM size.
- When setting to the clock select switch to the "EXT" side, connect the clock generated by the oscillator on the target board etc. to the XIN pin. The oscillation by the oscillator on the target board between the XIN and XOUT does not occur.
- 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 YQPACK240SD, be sure to use the included YQ-GUIDE's.
- We cannot accept any request for repair.
- For purchasing the NQPACK240SD, YQPACK240SD and HQPACK240SD, contact the following:

  ~~Daimaru Kogyo Ltd.~~
  ~~URL: http://www.daimaru-kogyo.com/~~

  Tokyo Eletech Corporation
  URL: 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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