To our customers,

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April 1st, 2010
Renesas Electronics Corporation

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User's Manual

# SH7058, SH7058S, SH7059 Group PRQP0256KB-A User System Interface Board

## HS7058ECF62H User's Manual

Renesas Microcomputer Development Environment System

SuperHTM Family/SH7050 Series

Renesas Electronics
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Rev.1.00 2009.06

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**• READ this user's manual before using this user system interface board.**

**• KEEP the user's manual handy for future reference.**

**Do not attempt to use the user system interface board until you fully understand its mechanism.**

### User System Interface Board:

Throughout this document, the term "user system interface board" shall be defined as the following product produced only by Renesas Technology Corp. excluding all subsidiary products.

- User system interface board (HS7058ECF61H)

The user system or a host computer is not included in this definition.

### Purpose of the User System Interface Board:

This user system interface board is for connecting the evaluation chip board and user system. This user system interface board must only be used for the above purpose.

### Improvement Policy:

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### Target User of the User System Interface Board:

This user system interface board should only be used by those who have carefully read and thoroughly understood the information and restrictions contained in the user's manual. Do not attempt to use the user system interface board until you fully understand its mechanism.

It is highly recommended that first-time users be instructed by users that are well versed in the operation of the user system interface board.

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Renesas cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this user's manual and on the user system interface board are therefore not all inclusive. Therefore, you must use the user system interface board safely at your own risk.

# SAFETY PAGE

## READ FIRST

**• READ this user's manual before using this user system interface board.**

**• KEEP the user's manual handy for future reference.**

**Do not attempt to use the user system interface board until you fully understand its mechanism.**

## DEFINITION OF SIGNAL WORDS

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**CAUTION** used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

**NOTE** emphasizes essential information.

# ⚠ WARNING

**Observe the precautions listed below. Failure to do so will result in a FIRE HAZARD and will damage the user system and the emulator product or will result in PERSONAL INJURY. The USER PROGRAM will be LOST.**

1. **Do not repair or remodel the emulator product by yourself for electric shock prevention and quality assurance.**
2. **Always switch OFF the E6000H emulator and user system before connecting or disconnecting any CABLES or PARTS.**
3. **Always before connecting any BOARDS, make sure that pin 1 on both sides are correctly aligned.**

# Contents

# Preface

The HS7058ECF62H is a user system interface board that connects a user system for the SH7058 PRQP0256KB-A package to the SH7058 E6000H emulator (HS7058EPH62H) or the SH7058S, SH7059 E6000H emulator (HS7059EPH62H).

# Section 1 Configuration

Figure 1 and table 1 show the configuration and components of the user system interface board for the PRQP0256KB-A package. Please make sure you have all of these components when unpacking.

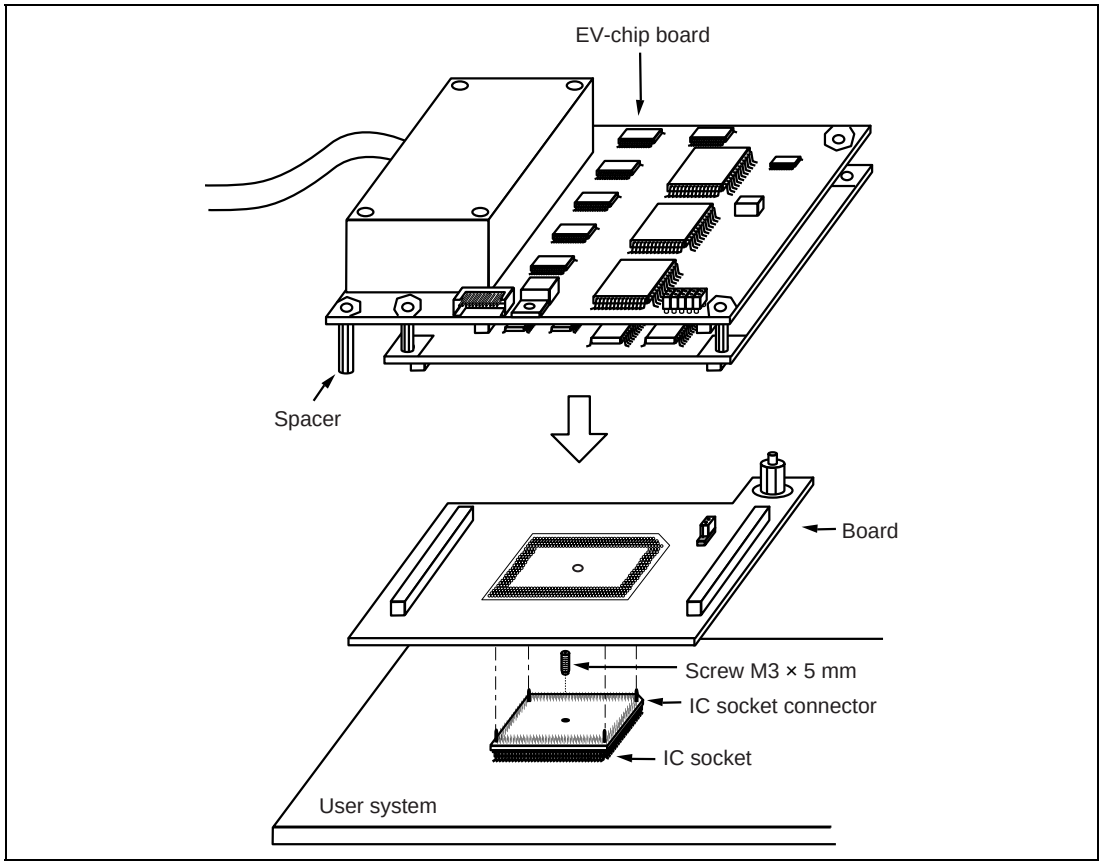



**Figure 1 User System Interface Board for the SH7058, SH7058S, SH7059 PRQP0256KB-A Package**

# CAUTION

**Use a TQPACK256RD socket and a TQSOCKET256RDP (manufactured by Tokyo Eletech Corporation) for the PRQP0256KB-A package IC socket and IC socket connector on the user system.**

**Table 1 HS7058ECF62H Components**

| No. | Component | Quantity | Remarks |
|---|---|---|---|
| 1 | Board | 1 | |
| 2 | IC socket | 1 | For the PRQP0256KB-A package (to be mounted on the user system) |
| 3 | IC socket connector | 1 | For the PRQP0256KB-A package (for connecting the IC socket and the user system interface board) |
| 4 | Screw (M3 x 5 mm) | 1 | For fastening board |
| 5 | Spacers (2.6MP x 25 mm) | 2 | |
| 6 | User's manual | 1 | User's manual for HS7058ECF62H (this manual) |

# Section 2 Connection Procedures

## 2.1 Connecting User System Interface Board to User System

**⚠ WARNING**

**Always switch OFF the user system and the emulator product before the USER SYSTEM INTERFACE BOARD is connected to or removed from any part. Before connecting, make sure that pin 1 on both sides are correctly aligned. Failure to do so will result in a FIRE HAZARD and will damage the user system and the emulator product or will result in PERSONAL INJURY. The USER PROGRAM will be LOST.**

To connect the cable head to the user system, follow the instructions below.

### 2.1.1 Installing IC Socket

1. Solder the IC socket for an PRQP0256KB-A package to the user system (figure 2).

**CAUTION**

**Be sure to completely solder the leads so that the solder slops gently over the leads and forms solder fillets. (Use slightly more solder than the MCU.)**

2. After checking the location of pin 1 on the IC socket connector and pin 1 on the IC socket, align the guide pins on the IC socket connector with the guide holes on the IC socket, and insert the IC socket connector into the IC socket (figure 2).

**CAUTION**

**Check the location of pin 1 before inserting.**

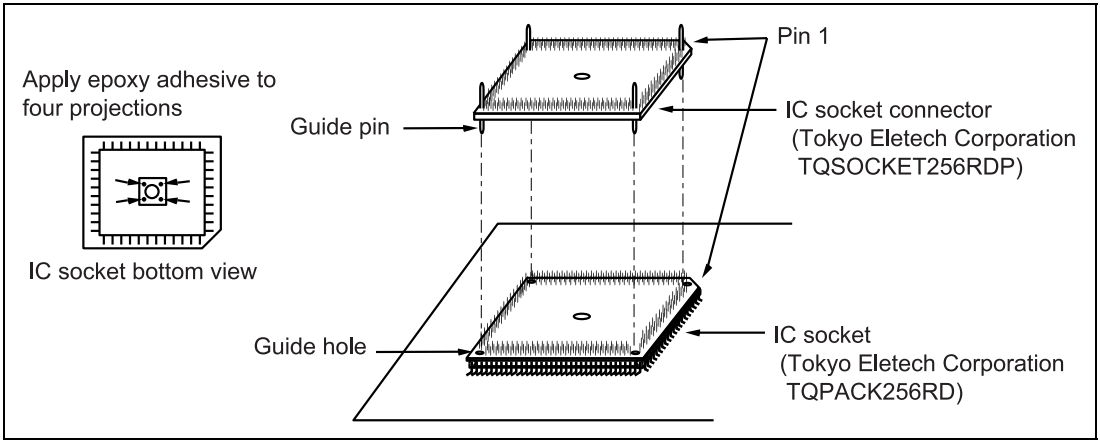



**Figure 2 Installing IC Socket to User System**

### 2.1.2 Installing IC Socket Connector

**CAUTION**

**Check the location of pin 1 before inserting.**

After checking the location of pin 1 on the user system interface board and pin 1 on the IC socket connector, align the guide pins on the IC socket connector with the guide holes on the user system interface board, and insert the IC socket connector into the IC socket (figure 3).

### 2.1.3 Fastening IC Socket Connector

# CAUTION

1. **Use a hexagonal wrench (ϕ 1.5 mm).**
2. **Stop tightening when the force required to turn the screw becomes significantly greater than that needed when first tightening. If a screw is tightened too much, the screw head may break or an IC socket contact error may be caused by a crack in the IC socket solder.**
3. **If the emulator does not operate correctly, cracks might have occurred in the solder. Check conduction with a tester and re-solder the IC socket if necessary.**

Fasten the user system interface board to the IC socket and the IC socket connector on the user system with the screw (M3 x 5 mm) provided.
Take special care, such as manually securing the IC socket soldered area, to prevent the soldered IC socket from being damaged by twisting the components.

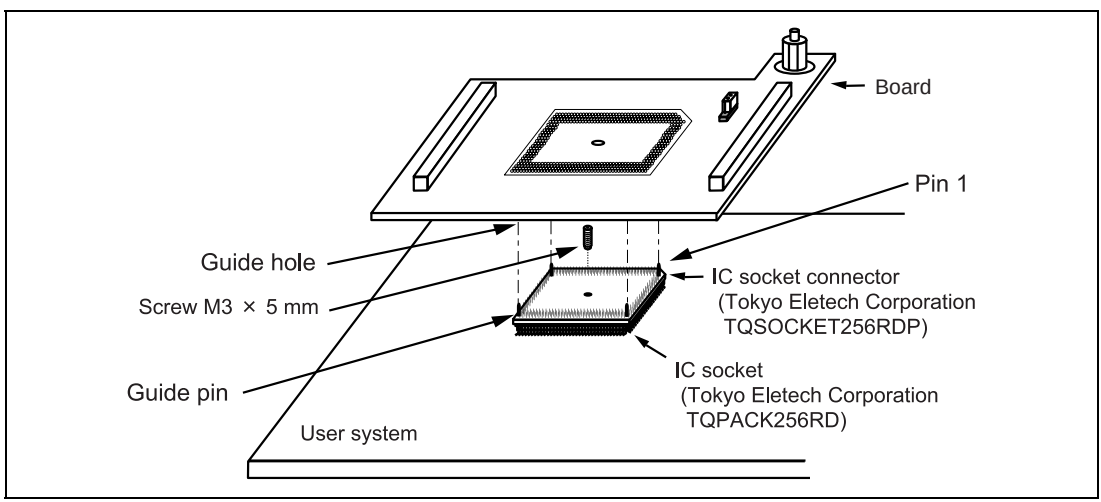



**Figure 3 Connecting User System Interface Board to User System**

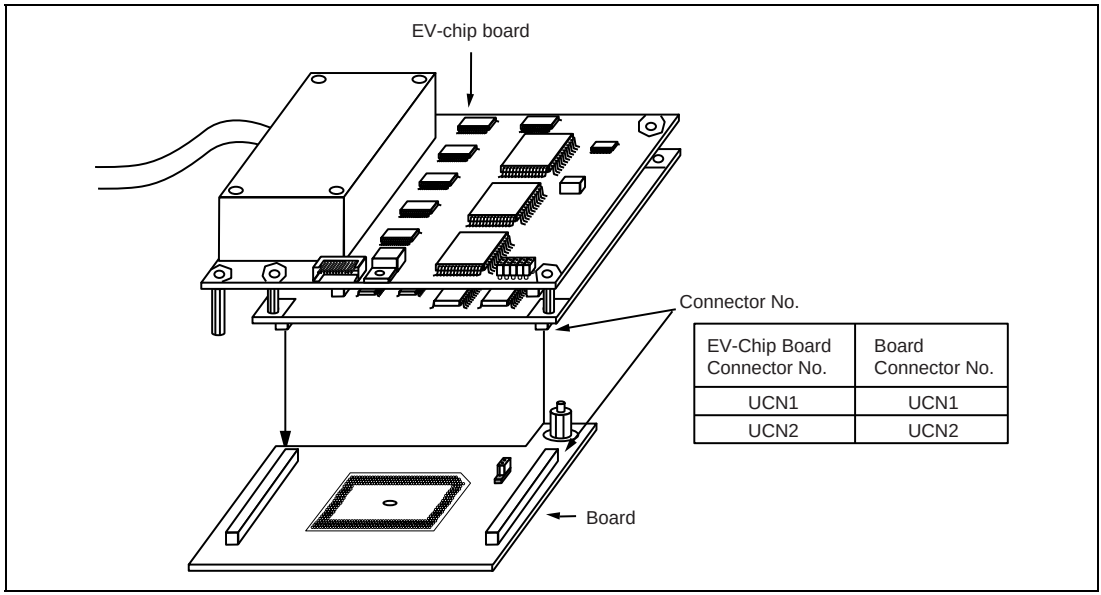
## 2.2 Connecting User System Interface Board to EV-Chip Board

**⚠ WARNING**

**Observe the precautions listed below. Failure to do so will result in a FIRE HAZARD and will damage the user system and the emulator product or will result in PERSONAL INJURY. The USER PROGRAM will be LOST.**

1. **Always switch OFF the user system and the emulator product before the USER SYSTEM INTERFACE BOARD is connected to or removed from any part. Before connecting, make sure that pin 1 on both sides are correctly aligned.**
2. **The user system interface board dedicated to the emulator must be used.**

1. Make sure the user system and emulator are turned off.
2. Align the connectors on the board with those on the EV-chip board according to their numbers (figure 4).
3. Adjust the height of the spacer of the EV-chip board with the user system.




| EV-Chip Board Connector No. | Board Connector No. |
|---|---|
| UCN1 | UCN1 |
| UCN2 | UCN2 |

**Figure 4 Connecting User System Interface Board to EV-Chip Board**

## 2.3 Recommended Dimensions for User System Mount Pad (Footprint)

Figure 6 shows the recommended dimensions for the mount pad (footprint) for the user system with an IC socket for an PRQP0256KB-A package (TQPACK256RD: manufactured by Tokyo Eletech Corporation). Note that the dimensions in figure 5 are somewhat different from those of the actual chip's mount pad.

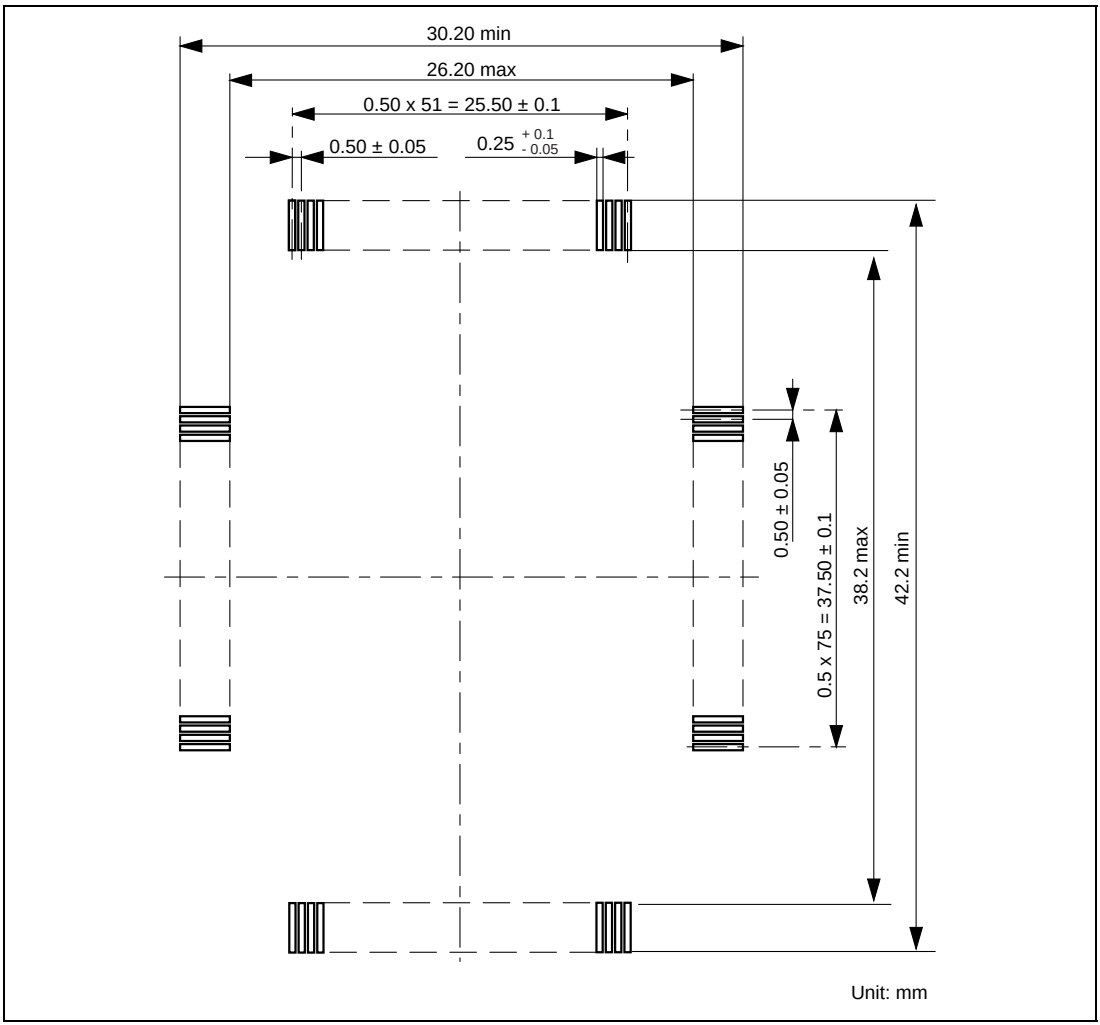



**Figure 5 Recommended Dimensions for Mount Pad**

## 2.4 Dimensions for EV-Chip Board and User System Interface Board

The dimensions for the EV-chip board and the user system interface board are shown in figure 6.

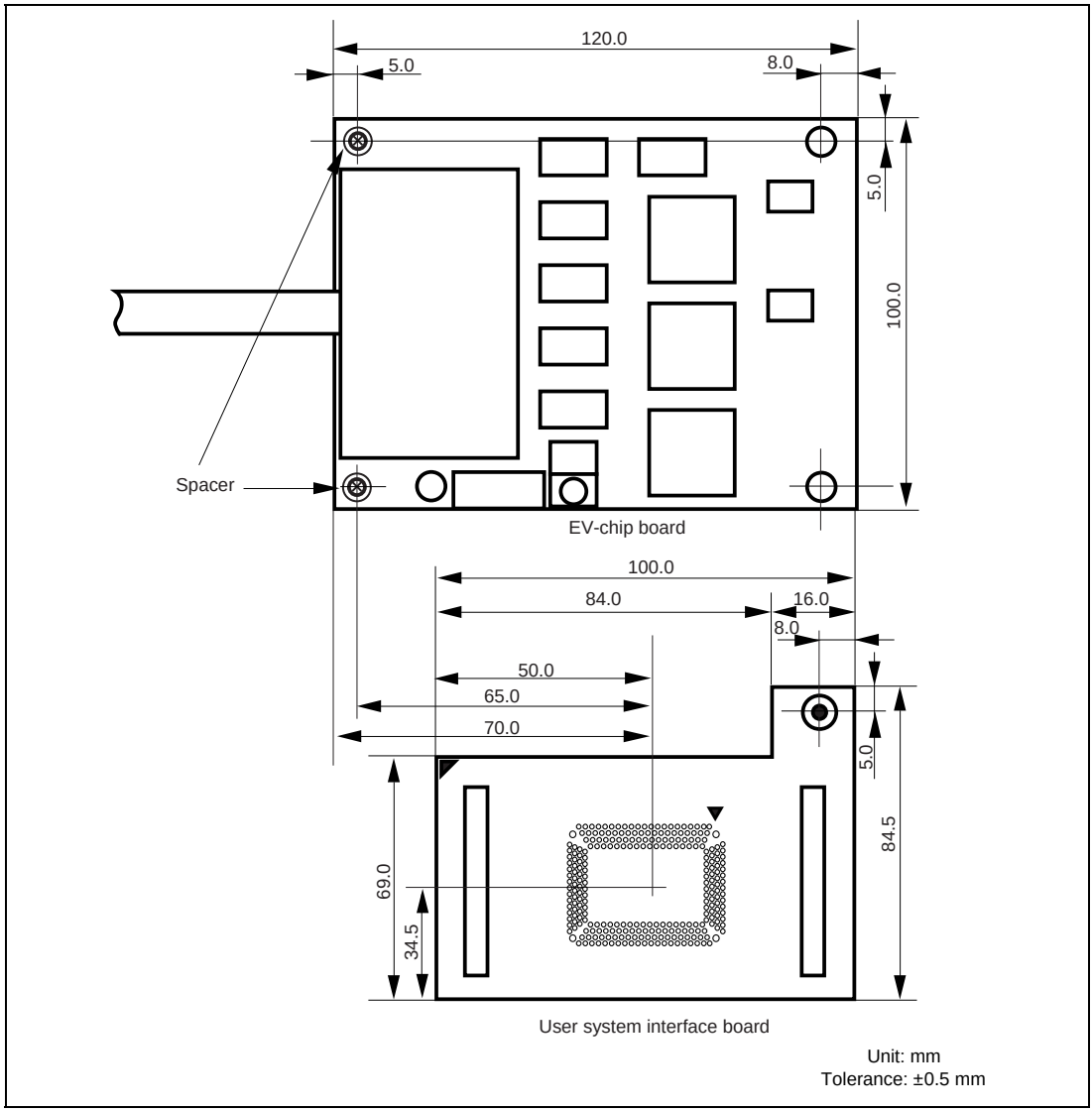



**Figure 6 Dimensions for EV-Chip Board and User System Interface Board**

## 2.5 Resulting Dimensions after Connecting User System Interface Board

The resulting dimensions, after connecting the user system interface board to the user system, are shown in figure 7.

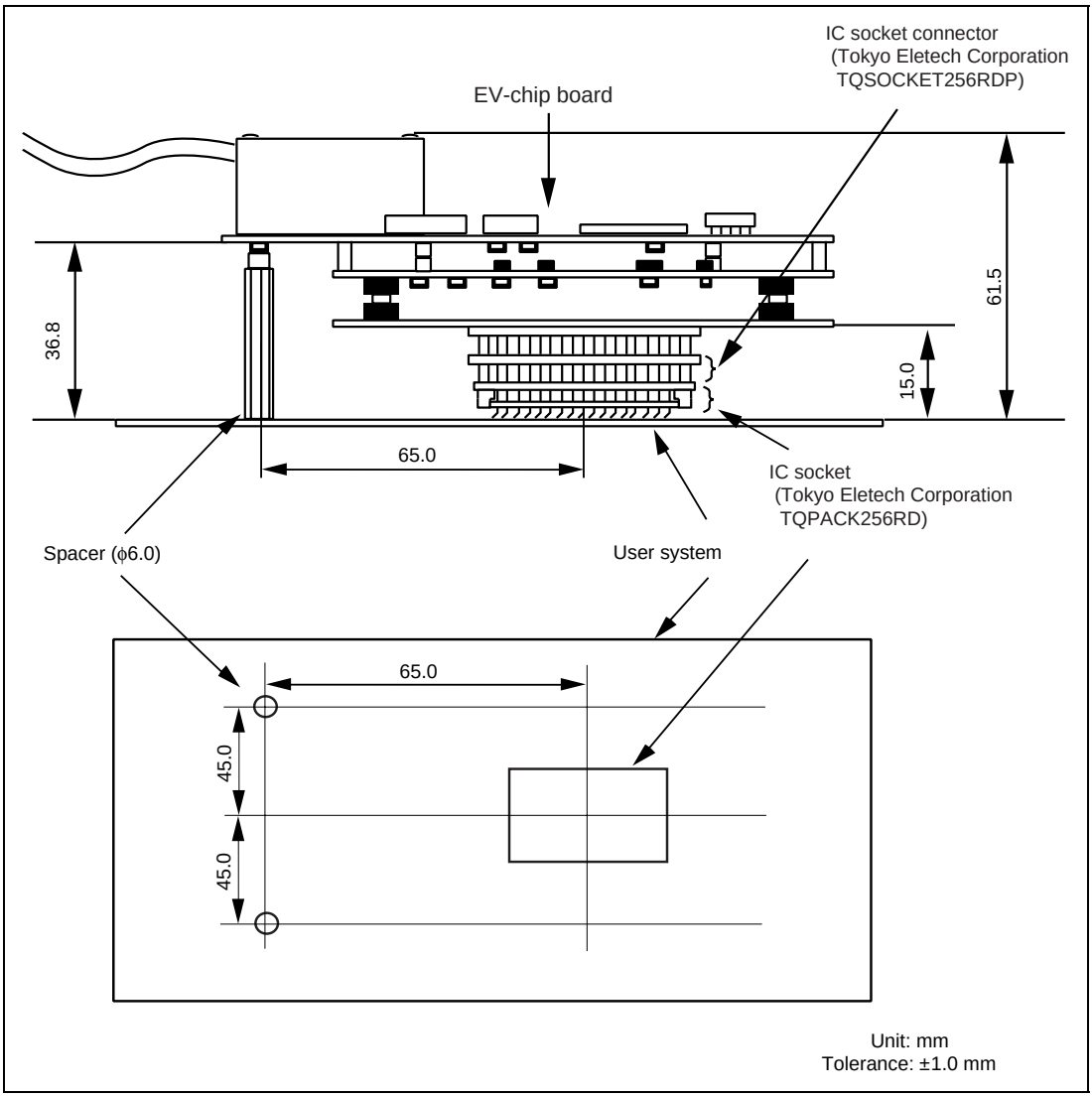



**Figure 7 Resulting Dimensions after Connecting User System Interface Board**

# Section 3 Verifying Operation

1. Turn on the emulator according to the procedures described in the SH7058, SH7058S, SH7059 E6000H Emulator User's Manual (HS7058EPH62HE).
2. Verify the user system interface cable connections by checking the pin states with the CHECK command (emulator command) and checking the bus states with the FILL command (emulator command). If an error is detected, recheck the soldered IC socket and the location of pin 1.
3. The emulator connected to this user system interface board supports three kinds of clock sources as the MCU clock. For details, refer to the SH7058, SH7058S, SH7059E6000H Emulator User's Manual (HS7058EPH62HE).
   - To use the emulator internal clock
     Select the clock in the emulator by the CLOCK command (emulator command).
   - To use the external clock on the user system
     Supply the external clock from the user system to the emulator by inputting the EXTAL pin (pin 51) on the user system interface board or connecting the crystal oscillator to the XTAL (pin 53) and EXTAL pins. For details, refer to section 5, Clock Pulse Generator (CPG), in the SH-2E SH7058F-ZTATTM, the SH-2E SH7059F-ZTATTM, or the SH-2E SH7058S-ZTATTM Hardware Manual.
     Figure 8 shows the clock oscillator on the user system interface board.

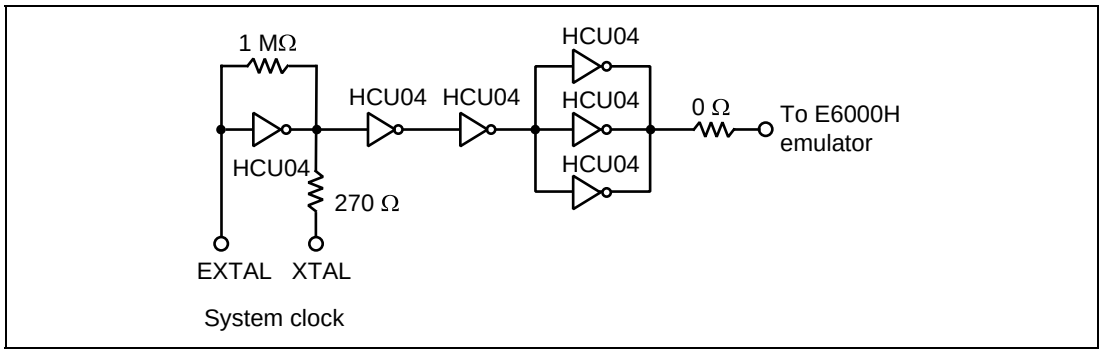



**Figure 8 Clock Oscillator**

— To use the crystal oscillator mounted on the EV-chip board
Install a crystal oscillator into the crystal oscillator terminals on the EV-chip board.

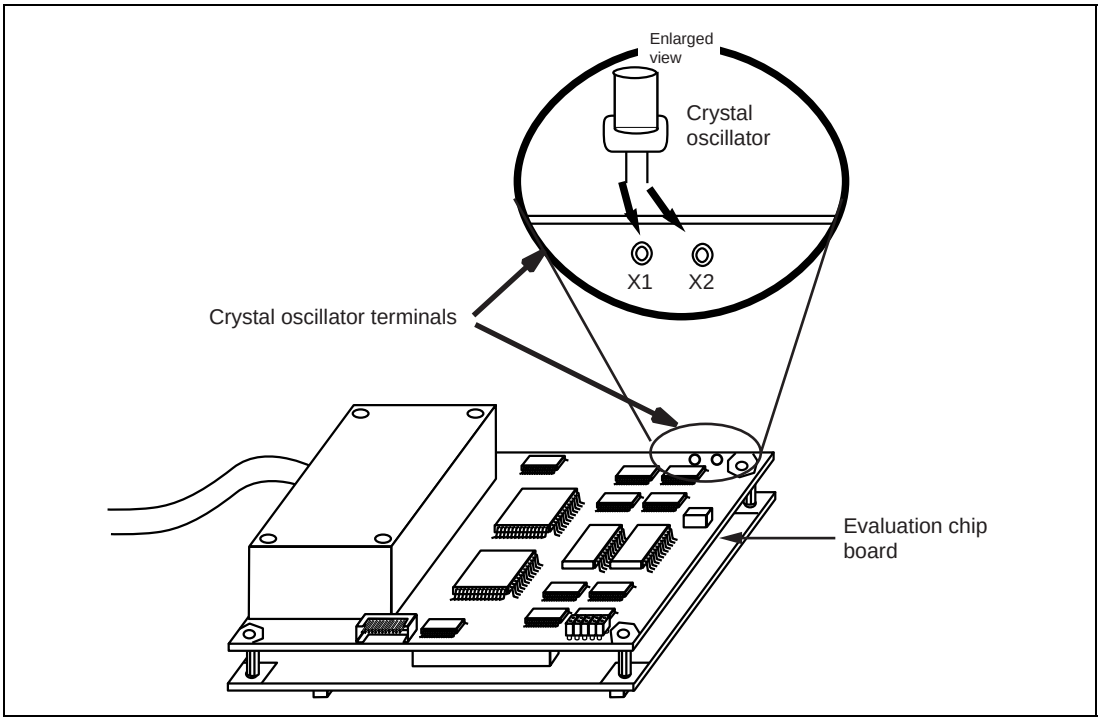



**Figure 9 Installing the Clock Oscillator**

# Section 4 Notice

1. The MCU cannot be installed directly into the IC socket provided for connecting this user system interface board.
2. Before connecting any parts or cables, make sure that pin 1 on the both sides are correctly aligned.
3. Do not apply excessive force to the user system interface board while it is connected to the user system.
4. The dimensions of the recommended mount pad for the IC socket for this user system interface board are different from those of the MCU.
5. This user system interface board is specifically designed for the HS7058EPH62H or HS7059EPH62H emulator. Do not use this board with any other emulator.
6. When power is not supplied to the Vcc pin on the user system interface board, the emulator displays ** VCC DOWN. The emulator will not operate correctly.

**SH7058, SH7058S, SH7059 Group PRQP0256KB-A**
**User System Interface board**
**HS7058ECF62H User's Manual**

Publication Date: Rev.1.00, June 30, 2009
Published by: Sales Strategic Planning Div.
Renesas Technology Corp.
Edited by: Customer Support Department
Global Strategic Communication Div.
Renesas Solutions Corp.

Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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# HS7058ECF62H User's Manual

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REJ10J2015-0100