

To our customers,

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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H8/300L Series User System Interface Cable  
For H8/300L Series Low-Cost Emulator

Microcomputer Development Environment System

User's Manual



**H8/300L Series User System Interface Cable**  
**TFP 80C-Pin**  
**(SD01AC38024T80C)**

H8/38024 series  
ALE300L-H8/3800 Emulator

**H8/300L Series User System Interface Cable  
User's Manual**

Published by : Renesas System Solutions Asia Pte. Ltd.  
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## IMPORTANT INFORMATION

- **READ this user's manual before using this emulator product.**
- **KEEP the user's manual handy for future reference.**

Do not attempt to use the emulator product until you fully understand its mechanism.

### **Emulator Product:**

Throughout this document, the term 'emulator product' shall be defined as the following products produced only by Renesas System Solutions Asia Pte. Ltd.:

- Emulation system (SD00ALE3800)
- User system interface cable (SD01AC38024F80A)
- User system interface cable (SD01AC38024T80C)

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

### **Purpose of the User System Interface Cable:**

This user system interface cable is for connection between the emulator station and the user system. This user system interface cable must only be used for the above purpose.

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### **Target User of the Emulator Product:**

Those who have carefully read and thoroughly understood the information and restrictions contained in the user's manual should only use this emulator product. Do not attempt to use the emulator product until you fully understand its mechanism.

It is highly recommended that users that are well versed in the operation of emulator product instruct first-time users.

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**Figures:**

Some figures in this user's manual may show items different from your actual system.

**Limited Anticipation of Danger:**

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

## **! 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.

- Always switch OFF the emulator product and the user system before connecting or disconnecting any cables, the user system interface cable connector, and the user system IC socket.
- When connecting the user system interface cable connector to the user system IC socket, ensure those pins 1 on both sides are correctly aligned.

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## Section 1. Introduction

## 1.1 General description

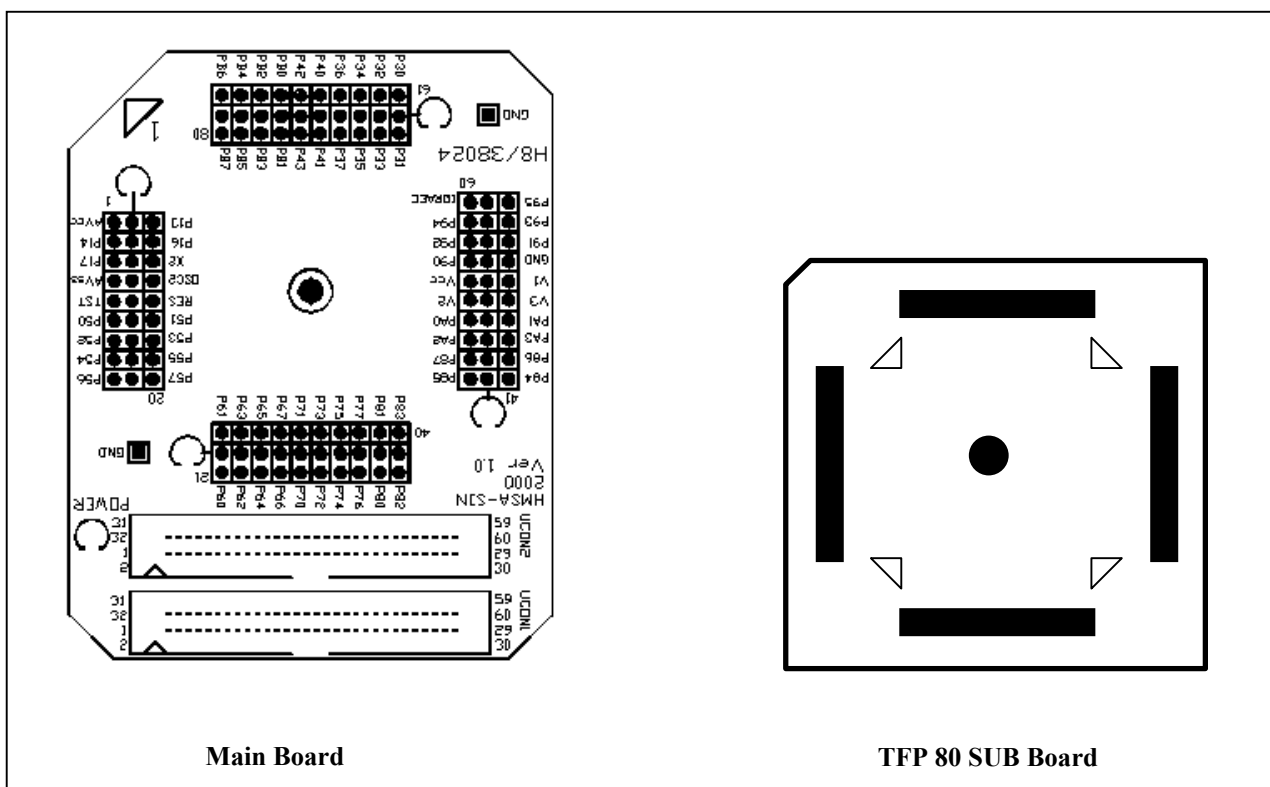
The user system interface cable connects an 8-bit ALE Emulator (ALE300L-H8/3800) to the IC socket for a TFP 80C-pin package (Package code: TFP-80C) for the H8/38024 series MCU on the user system.

## 1.2 IC socket type

The IC socket used on the user system is manufactured by YAMAICHI ELECTRONICS Co., Ltd.). The part number for the TFP-80C pin package IC socket is given below:

- IC149-080-058-S51 [Tin-plated]
- IC149-080-058-B51 [Gold-plated]

### 1.3 Configuration



**Figure 1.0 Main Board and TFP 80 SUB Board**

## 1.4 Components

No.	Component	Quantity	Remarks
1	Main board	1	
2	TFP 80 SUB BOARD	1	With IC PCB Footprint
3	IC socket	1	For TFP 80-pin package (TFP-80C)
4	Socket cover	1	For installing the MCU
5	Screws (M2.5x4.5)	4	For fastening SUB board to the socket (with four flat washers)
6	Screws (M3x4.5)	1	For fastening SUB board to the main board

## Section 2. Connection Procedures

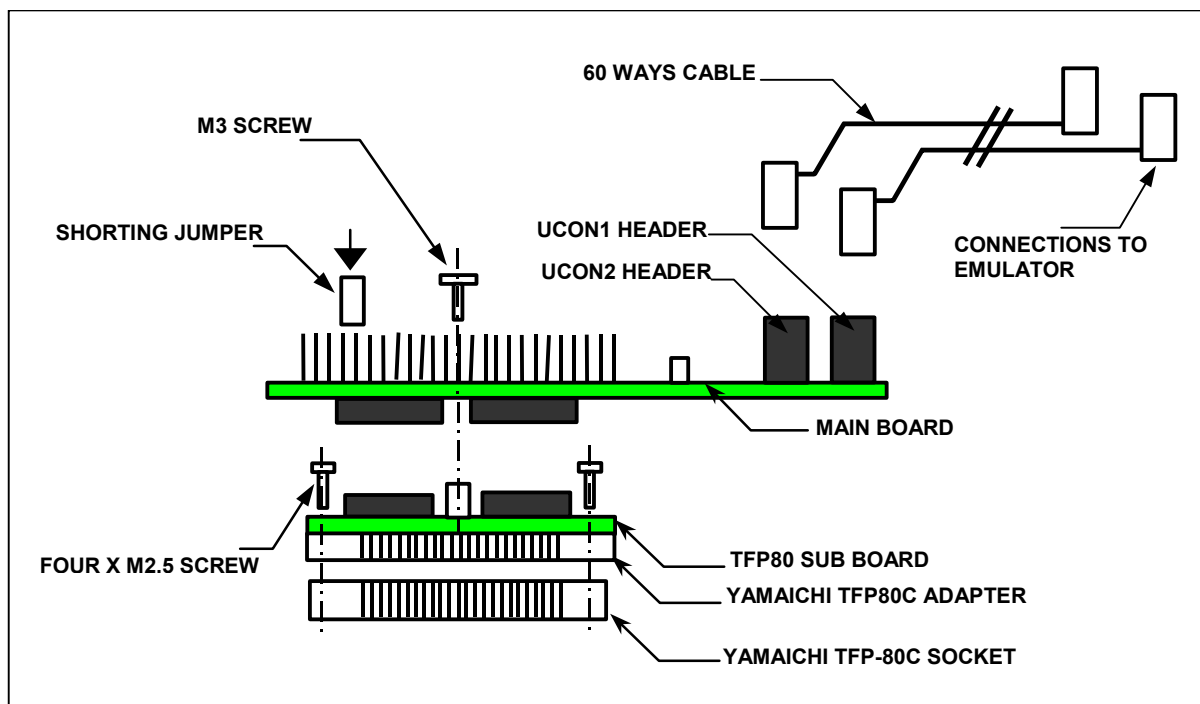
**WARNING:** Always switch OFF the user system and the emulator product before the USER SYSTEM INTERFACE CABLE is connected to or removed from either of the boards. Before connecting, make sure that pin 1 on both sides is correctly aligned. Failure to do so will result in a FIRE HAZARD and will damage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

### 2.1 Connecting User System Interface Cable to ALE300L Emulator

To connect the cable body to the emulator, follow the instructions below:

- Make sure the user system and emulator are powered off.
- Open the cover at the bottom of the emulator.
- Align the connectors of the cable body with those on the emulator according to the specified number.
- Insert the connectors of the cable body to those found on the emulator until they are locked. Refer to figure 2.1.

Figure 2.1 Connect User System Interface Cable to ALE300L Emulator



1. Align pin 1 indicated by a chamfered edge of the SUB board to IC socket on the user system.
2. Install SUB board to the socket with tightened screws.
3. Align the chamfered edge of the SUB board to the chamfered edge of the Main board
4. Install the SUB board to the Main board with tightened screws.
5. Connect the user cable header to the ALE300L Emulator using the cable provided.

## 2.2 Connecting User System Interface Cable to User System

### 2.2.1 Soldering IC Socket

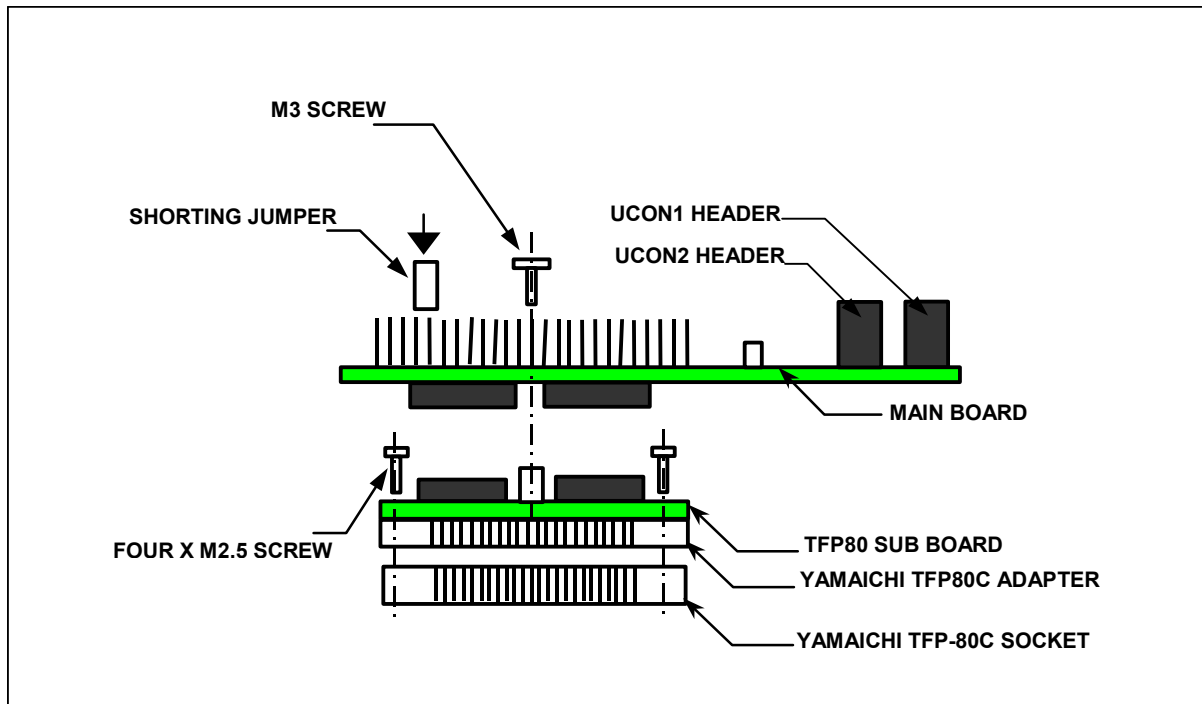
- Apply epoxy resin adhesive to the corner guides and bottom face of an IC socket for the TFP-80C pin package and fasten it to the user system.

### 2.2.2 Connecting the MAIN BOARD AND SUB BOARD to user system

- Align pin 1 on the IC socket with pin 1 on the TFP80 SUB BOARD, and insert the TFP 80 SUB BOARD into the IC socket on the user system as shown in figure 2.2.
- Fasten the TFP80 SUB BOARD to the IC socket on the user system with the four screws provided. *Note... Make sure to use the short M2.5 screws supplied with the user cable and NOT the screws supplied with the YAMAICHI socket otherwise the target board may be damaged.* Each screw should be tightened a little at a time, alternating between screws on opposite corners. Use special care to prevent the soldered IC socket from being damaged by over-tightening the screws or twisting the components.
- Align the MAIN BOARD on top of the TFP 80 SUB BOARD by using the pin 1 arrow (and PCB chamfer) of the MAINBOARD to the pin 1 arrow of the TFP 80 SUB BOARD. Line up the hole in the center of the MAIN BOARD with the standoff on the TFP 80 SUB BOARD. There is only a single way whereby the boards can be connected together as the connectors are polarized.
- After they are aligned, gently push them together.
- Fix the whole assembly with the M3 screw. This provides good mechanical strength for the system.
- Attach the ribbon cables to the emulator ensuring they are oriented correctly. Pls. note the labeling for each connector and insert accordingly.
- Place the ribbon cables into the main board make sure they are seated in a secured manner.
- *Note...* The target cable assembly is relying on the integrity of the TFP solder joints, which could break or fracture if stressed. Therefore it is important to make sure the user cable header assembly and cable assembly is not twisted. It is also a good idea to support the cables to prevent the user cable header assembly from dipping.
- Orient the emulator and work area to allow a proper lay-out of the cables between the emulator and the target system.
- The system can now be powered up by conventional means.

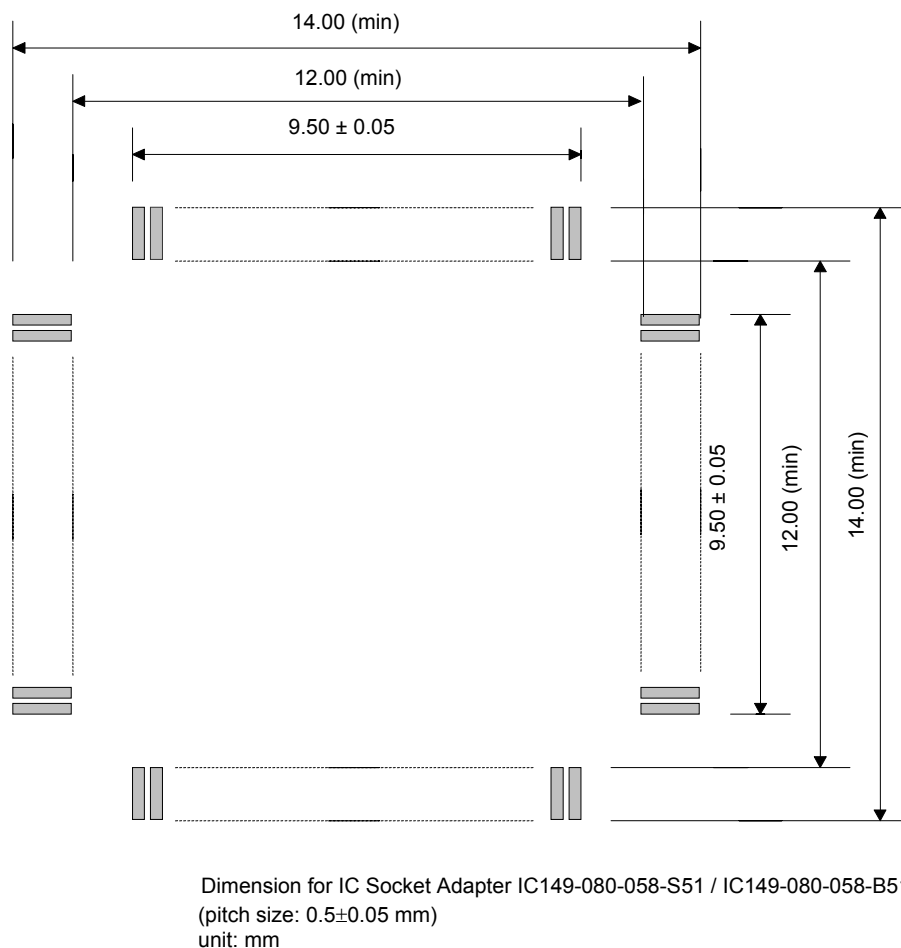


Figure 2.2 Connecting user system interface cable to user system



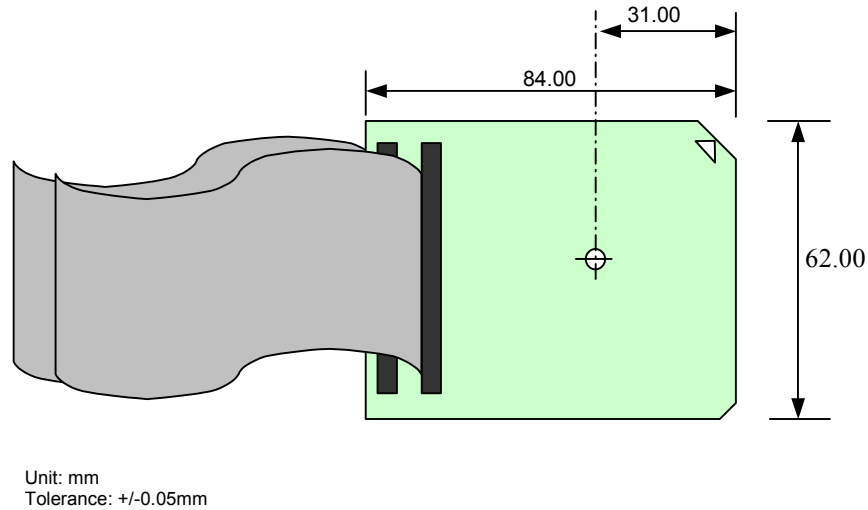
## Section 3. Dimensions for User System Cable Head

The dimensions for the recommended mount pad(footprint) for the user system shown in figure 3.1 for the IC socket used on a TFP-80C-pin package (manufactured by YAMAICHI ELECTRONICS Co., Ltd.



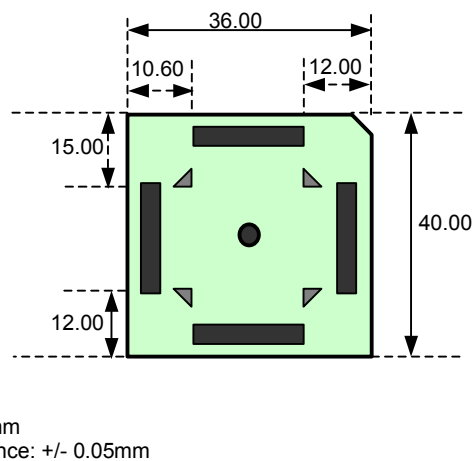
**Figure 3.1** PCB footprint of YAMAICHI IC socket

The dimensions of the Main board of the user system interface cable head is shown in figure 3.2.



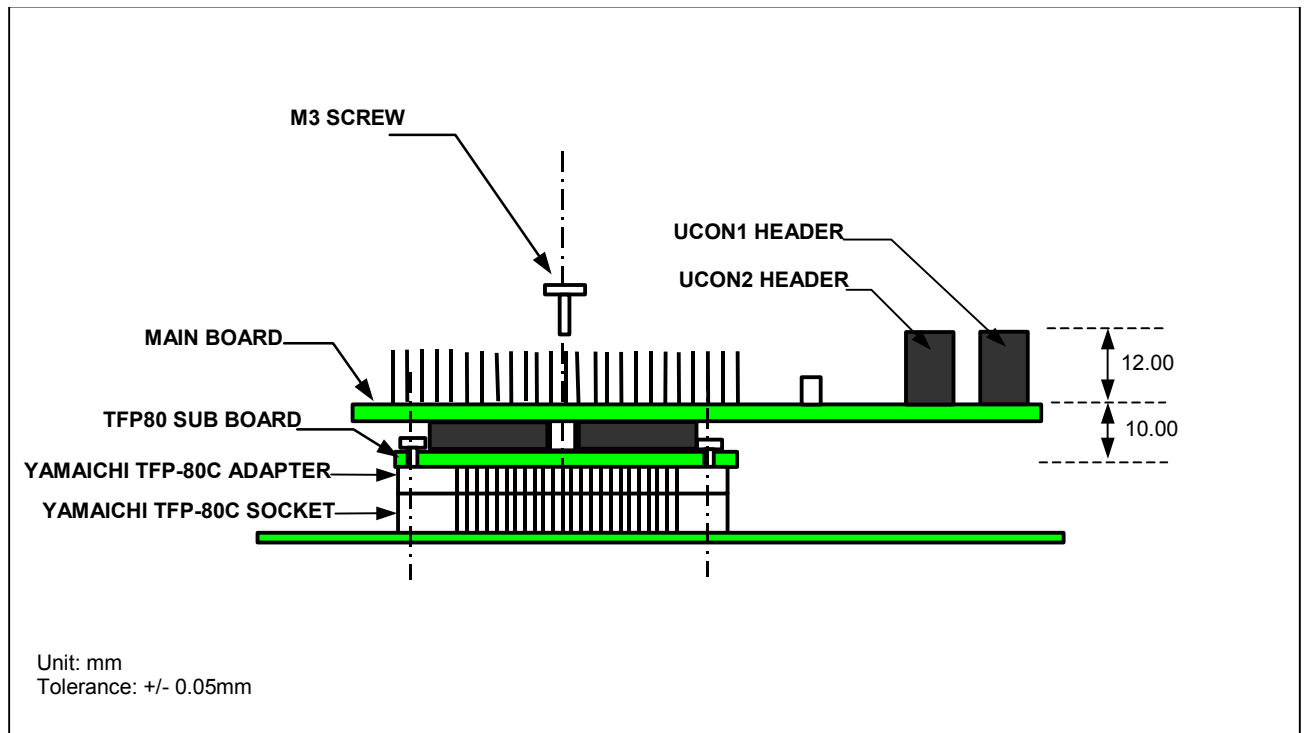
**Figure 3.2** User system interface cable head - Main board

The dimensions of the TFP 80 SUB board of the user system interface cable head is shown in figure 3.3.



**Figure 3.3** User system interface cable head - TFP 80 SUB board

Below shows the dimension after connecting to User System Interface Cable to the user system.



**Figure 3.4** Connecting user system interface cable to user system

## Section 4. Installing MCU to the User System

- Check the location of pin 1 before inserting the MCU into the IC socket on the user system as shown in figure 4.1.
- After inserting the MCU, fasten the socket cover with the four screws provided.
- Take special care, such as manually securing the IC socket soldered area, to prevent the soldered IC socket from being damaged by over-tightening the screws or twisting the component.

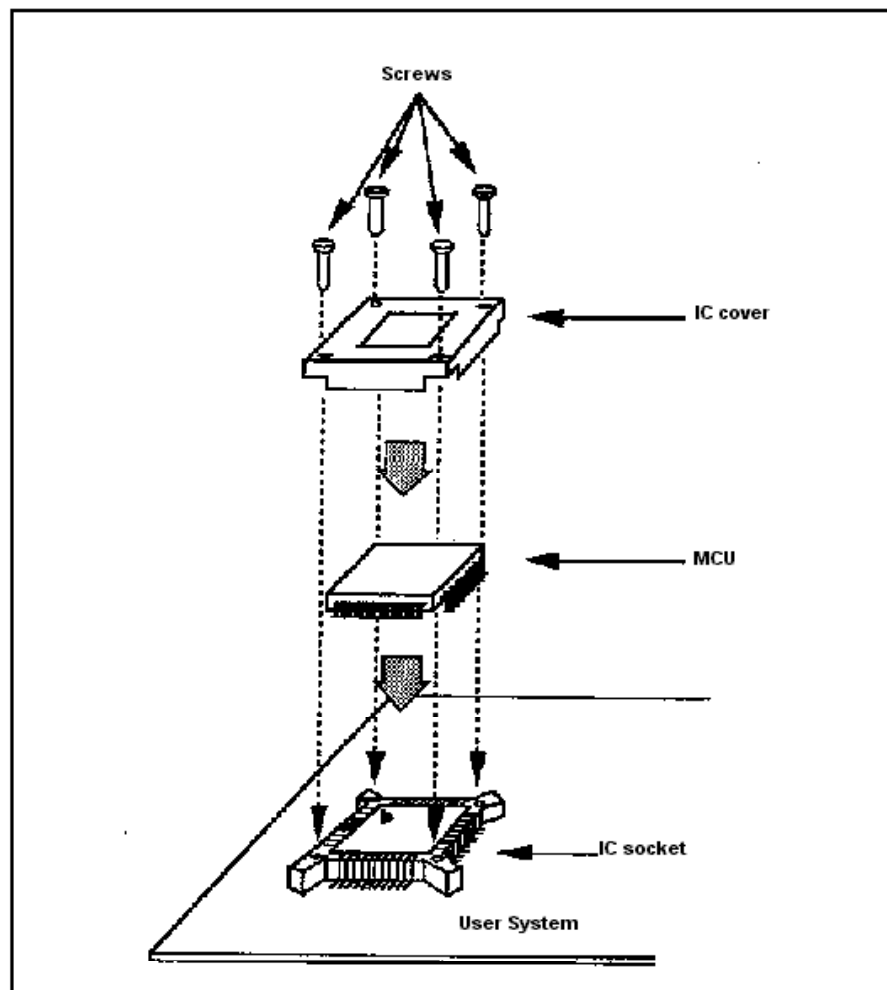


Figure 4.1 Installing MCU to user system

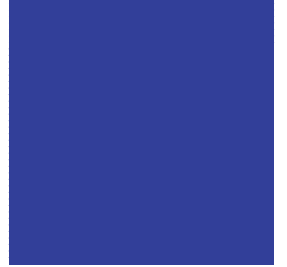
## Section 5. Warnings

- Make sure that pin 1 on the IC socket is correctly aligned with pin 1 on the TFP 80 SUB board of the user cable header before inserting the TFP 80 SUB board into the IC socket on the user system.
- Do not apply excessive force to the user system interface cable while it is connected to the user system.
- This user system interface cable is specifically designed for the ALE300L-H8/3800 emulator. Do not use this cable with any other emulator.
- This user system interface cable can be operated with an external crystal oscillator installed onto the user system. The clock signal is buffered and with a propagation delay of 6nsec (max.)

## **Renesas Technology (Asia Sales Offices)**

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## H8/300L Series User System Interface Cable



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