



**ST92163 EMULATOR AND EPROM FOOTPRINT
COMPATIBILITY GUIDELINES**

by Microcontroller Division Application Team

INTRODUCTION

The purpose of this Application Note is to describe the means of using ST92163 devices (EPROM or OTP) or emulators. This is due to the fact that OTP devices are supplied in TQFP64 packages, while EPROM devices are in CQFP64 packages and the emulation socket is based on a PQFP footprint and designed for PQFP64 packages.

This document will list five solutions for using ST92163 MCUs or emulators:

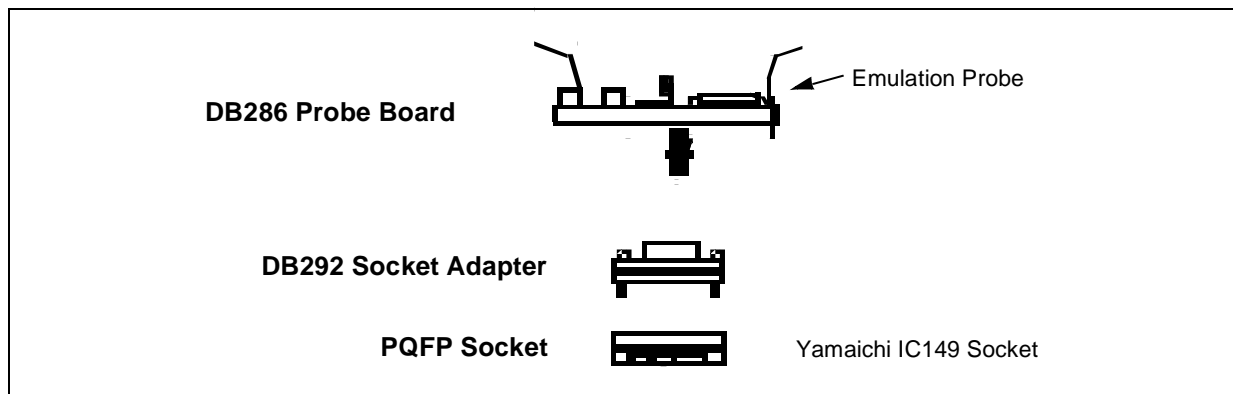
- Emulation Mode,
- EPROM Mode (CQFP64 package) compatible with Emulation mode,
- OTP Mode (TQFP64 package)
 - Yamaichi socket, reference IC149, compatible with Emulation mode,
 - Yamaichi Clam Shell socket, reference IC51-0644-1240KS-14584, without emulation capacity,
 - Emplas Open-top socket, reference OTQ-64-0.8-02, without emulation capacity,
- Soldered TQFP64 package.

1 ADAPTING TQFP64 PACKAGES TO PQFP64 SOCKETS

1.1 EMULATION MODE

In Emulation mode, the IC149 emulation socket must be soldered (SMD) on the PCB with a PQFP64 footprint. The emulation probe (DB286) is then inserted onto the emulation socket via the mechanical DB292 adaptor.

Figure 1. Emulation Mode Diagram

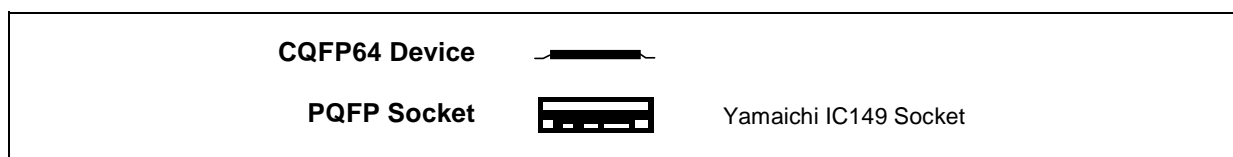


Note: The DB286 probe board, DB292 socket adaptor and the Yamaichi IC149 socket are all included in the ST9216x Emulator Kit.

1.2 EPROM MODE (CQFP64 PACKAGE)

A 64-pin Ceramic Quad Flat Package (CQFP64) is used for the EPROM device. The CQFP64 device can be directly mounted on the Yamaichi IC149 socket used for emulation and enclosed using an adapter cover that is included in the Emulation Kit.

Figure 2. EPROM Mode Diagram



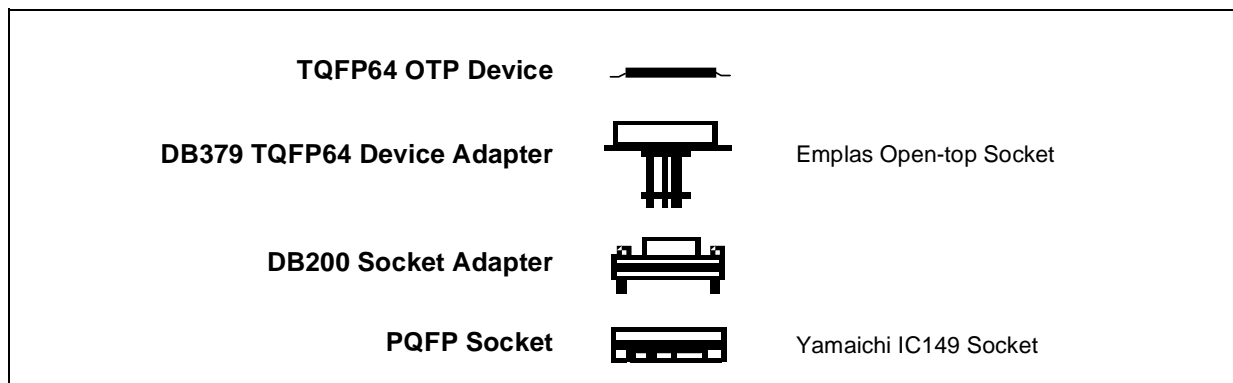
1.3 OTP MODE (TQFP64 PACKAGE)

1.3.1 Yamaichi IC149 Socket

This solution enables the same printed-circuit board (PCB) with a PQFP64 footprint to be used in either Emulation or OTP (One-Time Programmable) mode.

A DB200 socket adapter is screwed onto the Yamaichi IC149 PQFP socket that is soldered to the PCB. The TQFP64 OTP device is then mounted on a DB379 TQFP64 device adapter which is then placed on the DB200 socket adapter.

Figure 3. Emulation Mode Diagram



Note: The DB379 TQFP64 device adapter uses an Emplas Open-top socket.

1.3.2 Yamaichi Clam Shell Socket

The Yamaichi Clam Shell socket (Ref. IC51-0644-1240KS-14584) can also be used, but Emulation mode is no longer available.

In this case, the Clam Shell socket replaces the IC149 socket and is soldered directly to the PCB with a pin-through footprint.

1.3.3 Emplas Open-top Socket

The Emplas Open-top socket (Ref. OTQ-64-0.8-02) can also be used, but Emulation mode is no longer available.

In this case, the Open-top socket replaces the IC149 socket and is soldered directly to the PCB with a pin-through footprint.

1.4 SOLDERED OTP MODE

At the end of the development stage or in production, the OTP TQFP device can be soldered directly to the PCB, with a TQFP64 -compatible footprint.

2 ORDERING INFORMATION

The following devices are available:

Device	How to Order
ST9 Emulator (including DB286 probe board, DB292 socket adaptor and the Yamaichi IC149 socket)	Available
DB200 Socket	See ST9 Spare Parts List
DB379 Socket	See ST9 Spare Parts List
IC149 Socket	See ST9 Spare Parts List

To order the above devices, please contact your nearest STMicroelectronics Sales Office or distributor.

3 CUSTOMER SUPPORT

Additional information is available on the STMicroelectronics web site (<http://mcu.st.com>).

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