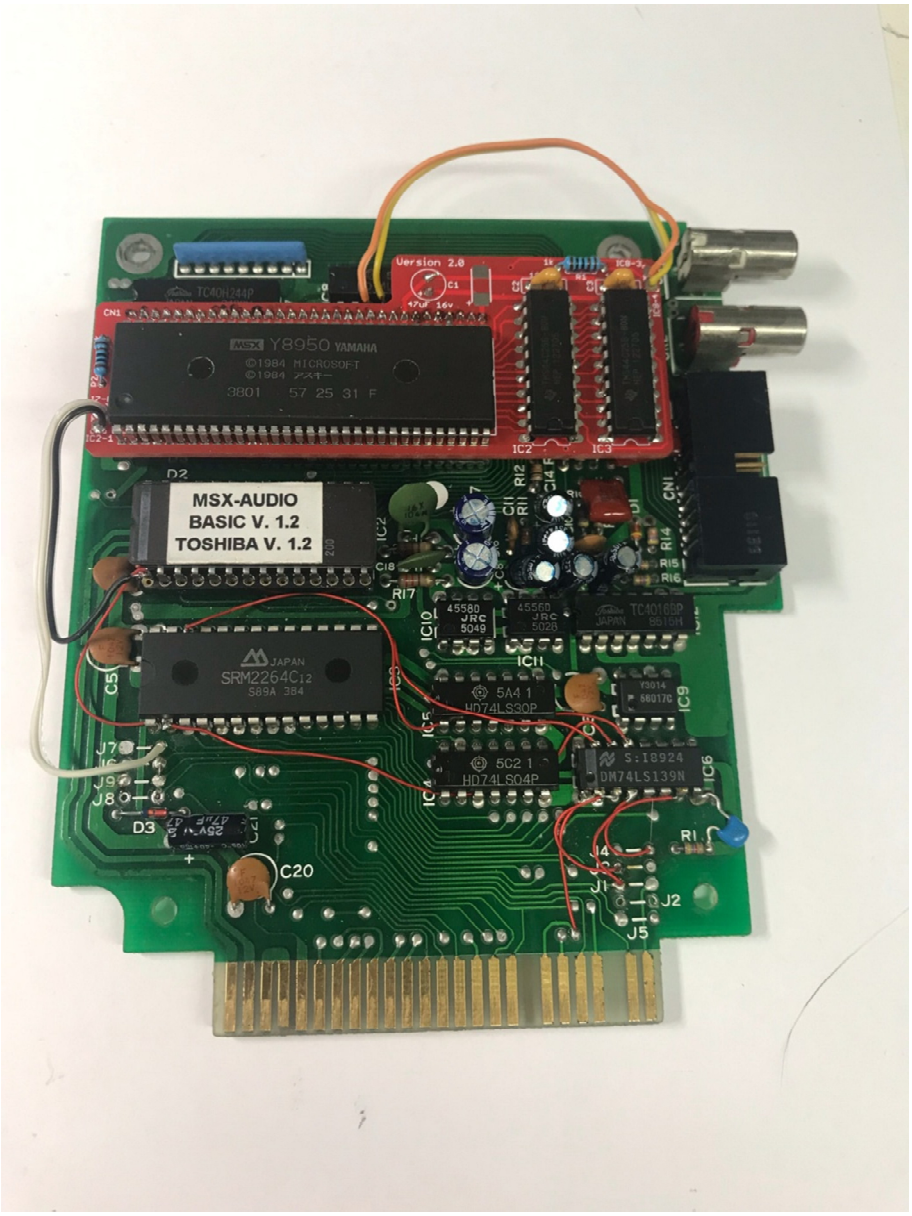
Toshiba HX-MU900 Music Module Expander Version 2

256 kB Sample RAM, MSX-Audio Basic and Original ROM



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Background

Back in 2005 Brazilian MSX-users Fábio Ricardo Schmidlin (FRS) and Luciano Sturaro (MSXPró) released an expander-PCB for the Philips Music Module. This board came with an adjusted Panasonic MSX Audio ROM and with 256 kB sample memory. A while ago FRS published his schematics, so other MSX-users could recreate this upgrade PCB. Because nobody took this challenge while there was still demand SuperSoniqs and Repair Bas jumped in. It took us some months to gather all the necessary parts, order the PCB's and assemble the upgrade boards. After some setbacks we finally succeeded. The First Toshiba Music Module Expander is based on a modified Philips Music Module Expander. Now this Second version was the idea of Repair Bas and designed by Alexey Wierzbowsky (RBSC). This version is much easier and faster to built in. We would thank FRS and MSXpró for their great work. We hope you have great fun with this upgrade.

About this document

This document describes how to mount the recreated MSX Audio Expander Version 2 for the Toshiba HX-MU900 Music Module. This manual assumes that you have extensive skills when it comes to handling and soldering electronic parts. If you do not know how to solder electronics or you are not sure about your skills, please contact Bas Kornalijnslijper (www.bas-ditta.info) to do the upgrade for you, or find someone in your network who can do it for you. We cannot be held responsible for damage to your Toshiba Music Module when you do the upgrade by yourself. Also keep in mind that The Tosbiba Music Module is a 35 year old device and making adjustments to such old electronics need the greatest care possible.

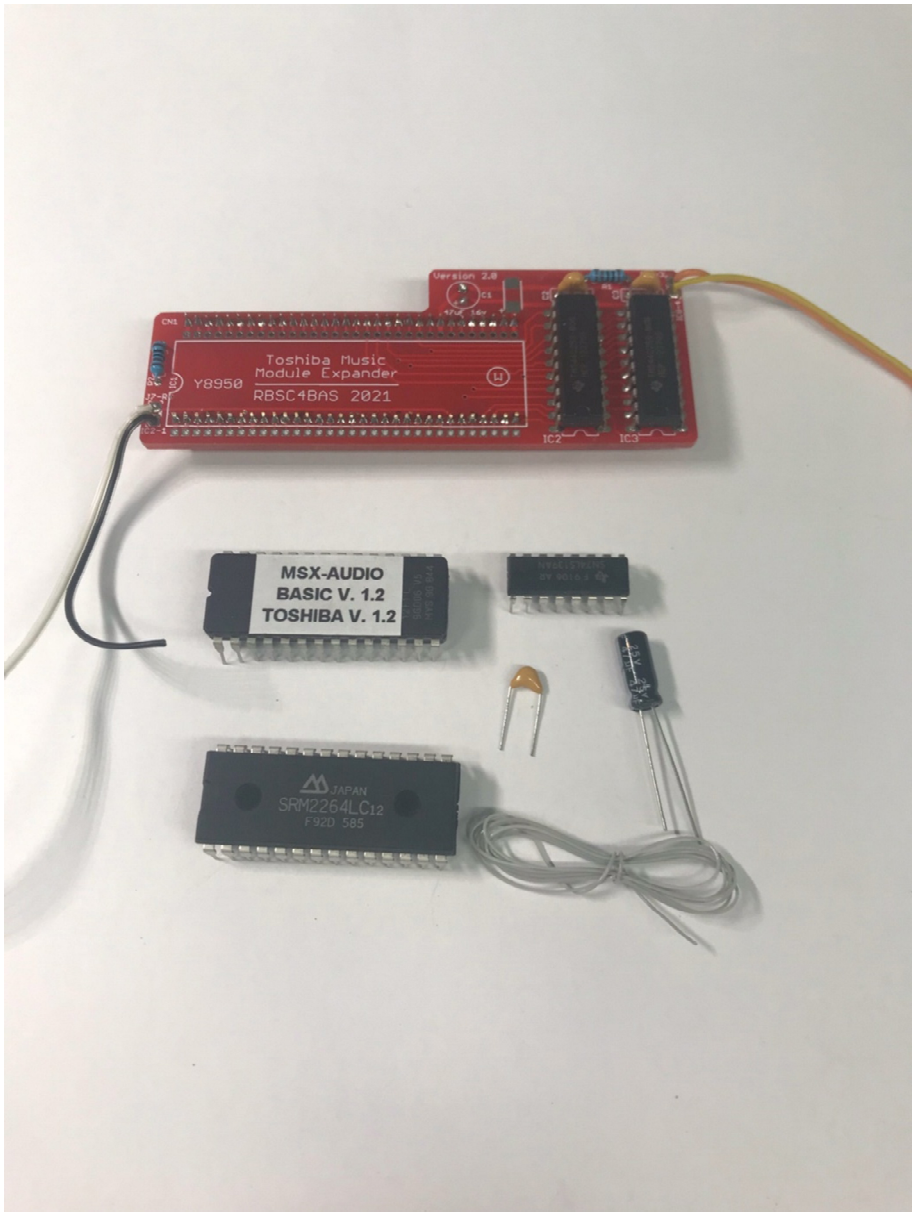
After the upgrade

When you insert the Toshiba Music Module in your MSX, holding <ESC> key during boot will start the internal Toshiba Software. Pressing <TAB> key will disable the MSX Audio Basic ROM. For normal oparation no keys have to be pressed.

Warning: *The most important part in the Toshiba Music Module is the circuit board. Parts can be replaced, however the circuit board can not. Do not try to desolder parts, but just cut them loose and remove the remaining pins.*

The package consists of the following components

- Complete pre-assembled expander PCB with 256 kB Sample Ram
- Eprom with MSX-Audio Basic and custom original software
- SRAM memory IC (SRM2264C)
- 74LS139 IC
- Capacitor 47 µF
- Capacitor 100 nF
- Wiring

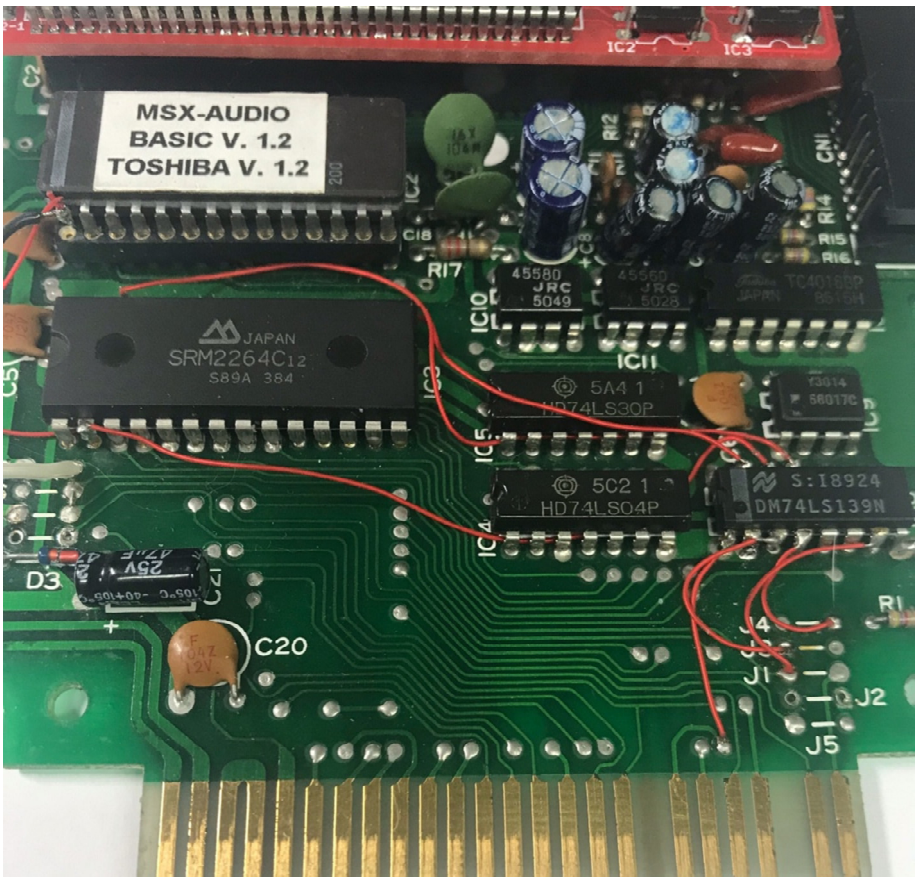


Preparation

- Remove IC1 / Y8950 (Music Chip in IC-socket)
- Remove IC2 (Eprom in IC-socket)
- Remove the solderdrops on the empty spots of IC3 at the circuit board
- Remove the solderdrops on the empty spots of IC6 at the circuit board
- Remove the solderdrops on the empty spots of C21 at the circuit board
- Remove wire bridge J2
- Remove wire bridge J8

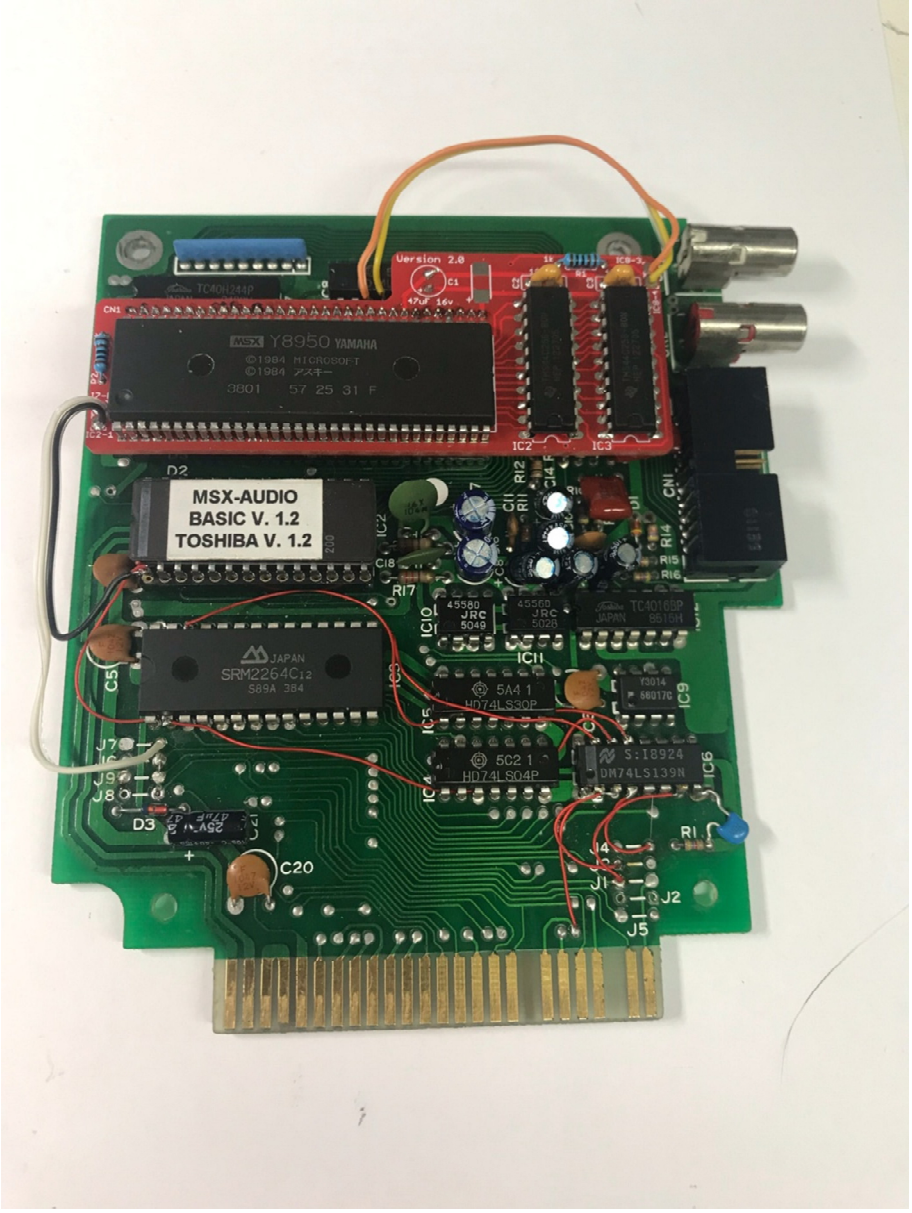
Circuit board mounting

- New Eprom, trim (shorten) pin 1
- Place the new Eprom with the remaining pins in the empty IC-socket (IC2)
- Place the SRAM memory IC (SRM2264C) in the empty place of IC3
- 74LS139 IC, trim (shorten) pin 1, 2, 3, 13, 14 and 15
- Place the 74LS139 IC with the remaining pins in the empty place of IC6
- Place the capacitor of 47 µF in the empty place of C21
- Solder the capacitor of 100 nF between IC6 (74LS139) pin 8 and the right side of R1
- Create a connection between the right side of J6 and the right side of J9
- Create a connection between IC6 (74LS139) pin 1 and the slotconnector pin 14
- Create a connection between IC6 (74LS139) pin 2, IC6 (74LS139) pin 3 and the left side of J3
- Create a connection between IC6 (74LS139) pin 4 and the right side of J4
- Create a connection between IC6 (74LS139) pin 7 and the left side of J1
- Create a connection between IC6 (74LS139) pin 13 and IC3 (SRM2264C) pin 26
- Create a connection between IC6 (74LS139) pin 14 and IC3 (SRM2264C) pin 2
- Create a connection between IC6 (74LS139) pin 15 and IC2 (Eprom) pin 1



Mounting the Expander PCB with 256 kB Sample RAM

- Solder the Y8950 at the expander PCB
- Solder the orange wire from the Expander PCB to IC8 pin 3 (74LS08)
- Solder the yellow wire from the Expander PCB to IC8 pin 4 (74LS08)
- Insert the Expander PCB in the empty socket of IC1
- Solder the white wire from the Expander PCB to J7 (right side)
- Solder the black wire from the Expander PCB to IC2 pin 1 (Eprom)



And you are done. Now it is time to download some testprograms to see if your upgrade works as it should.
On my YouTube channel you will find a video how to test this upgrade.