

*October 1996*

*Emulation Board for S1207*

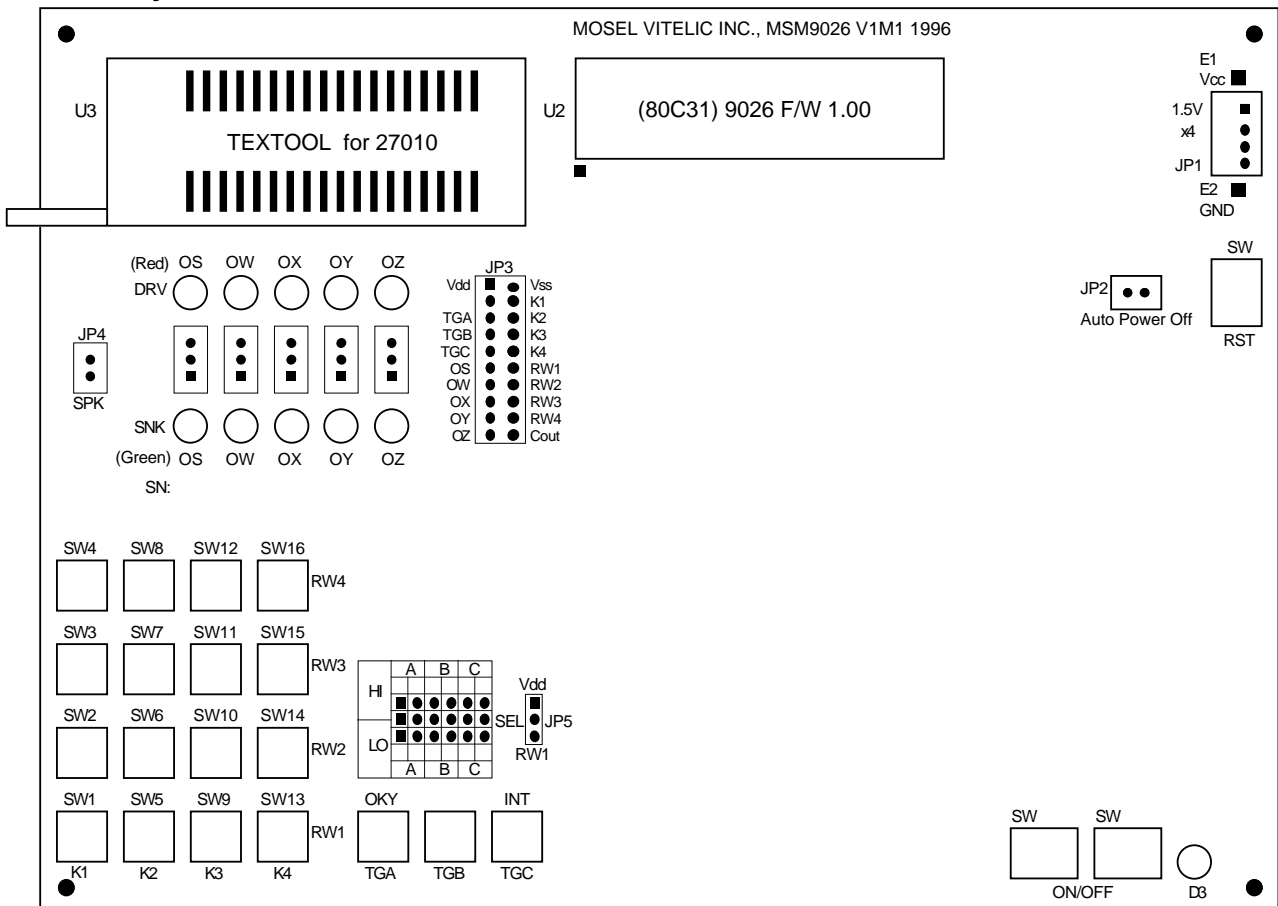
**Features**

- To emulate S1207 chip and its derivatives, see data sheet PID 247.
- Driven by either 1.5 V x 4 battery or 5 - 6 V power supply.
- A 4x1 jumper header JP1 is provided to accept power source.
- A pair or strengthen wire (E1 & E2) is provided to accept the power source.
- 2 push button switches are provided to control the power on/off.
- Selectable (by JP2) auto power off function (after 60" no operation) is provided.
- A push button switch is provided to reset this M9026 board.
- A red LED lamp D3 is provided to indicate the power on or off.
- A 32-pin textool U3 is provided to store 27C010 EPROM (access time 120 ns or faster).
- 5 green LED lamps are provided on EAC area.
- 5 red LED lamps are provided on EAC area.
- 19 push button switches for triggers are provided on EAC area.
- A 2x1 jumper header JP4 is provided on EAC area to accept wires to speaker.
- A 3x1 jumper header JP5 is provided on EAC area to decide source for K1,2,3,4 triggers.
- A 3x5 jumper header is provided on EAC area to select LED lamps for 5 output pins or not.
- To be continued on page 3/6.

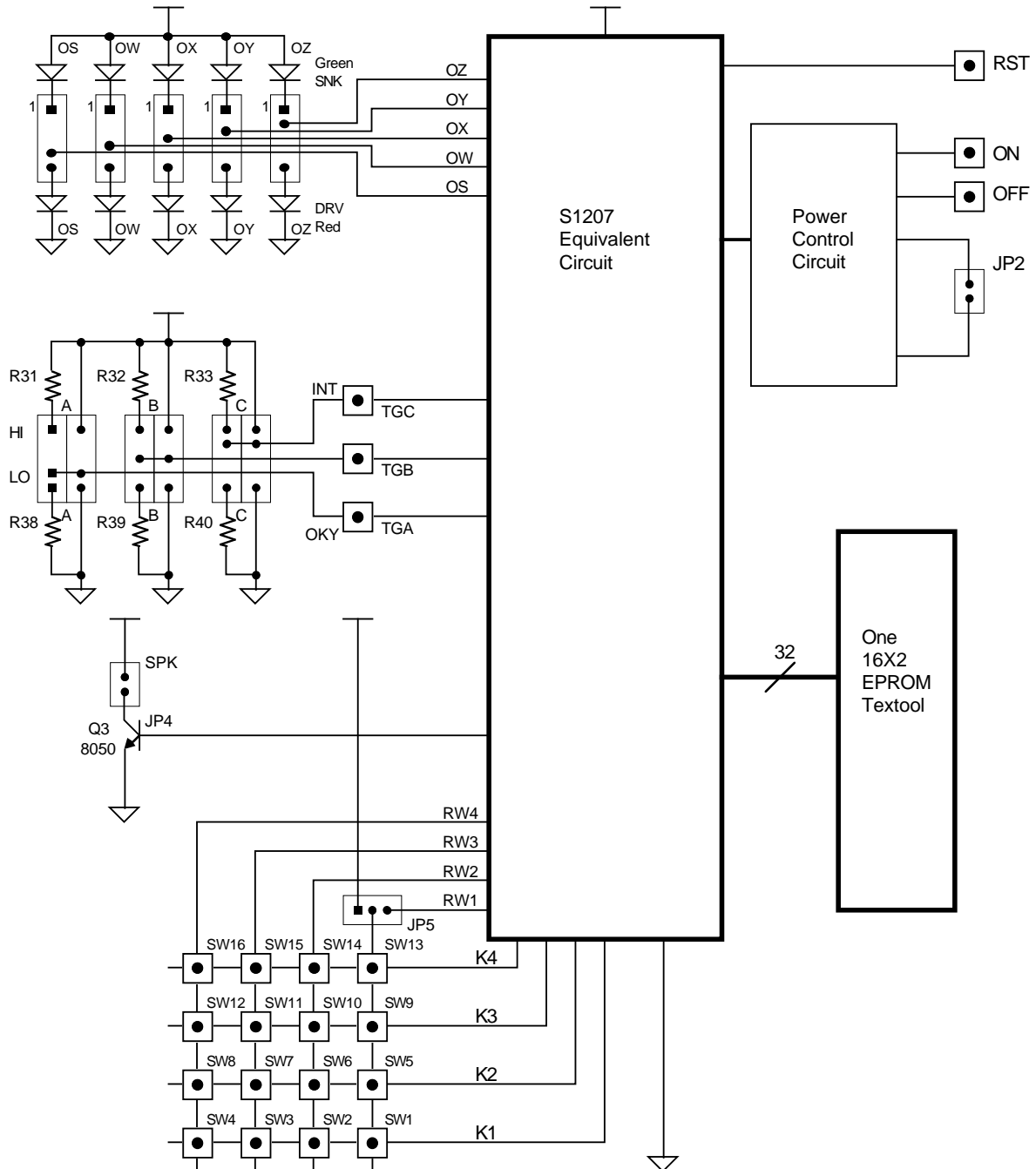
**Description**

By storing digitized sound data and options into 27C010 and inserting it onto U3, this MSM9026 board emulates the function of S1207 chip and its derivatives. The file for 27C010 content should be prepared by running program 9026pack.exe. The demanded external components are provided on board in specific EAC (External Application Component) area.

**Board Layout**



Block Diagram & Schematics



**Features** (continued)

- A 3x6 jumper header is provided on EAC area to select drive circuit for 3 trigger inputs.
- A transistor 8050 is provided on EAC area to drive the current running through speaker.
- The board's AC characteristics is not identical to chip's.
- The board's DC characteristics is not identical to chip's.
- The board's behavior is not identical to chip's.
- Neither identical to S1207's derivatives.

**DC Characteristics**

| Symbol          | Parameter      | Valid      | Min                  | Typ. | Max. | Unit | Remark                               |
|-----------------|----------------|------------|----------------------|------|------|------|--------------------------------------|
| V <sub>iL</sub> | input low V    | TGA,B,C    |                      |      | 0.9  | V    |                                      |
| V <sub>iH</sub> | input high V   | TGA,B,C    | 3.15                 |      |      | V    |                                      |
| V <sub>oL</sub> | output low V   | OS,W,X,Y,Z |                      |      | 0.1  | V    |                                      |
| V <sub>oH</sub> | output high V  | OS,W,X,Y,Z | V <sub>cc</sub> -0.1 |      |      | V    |                                      |
| I <sub>iL</sub> | input low I    | TGA,B,C    |                      | -1   |      | uA   |                                      |
| I <sub>iH</sub> | input high I   | TGA,B,C    |                      | 1    |      | uA   |                                      |
| I <sub>oL</sub> | output high I  | OS,W,X,Y,Z |                      | 4    |      | mA   | V <sub>o</sub> =0.4V                 |
| I <sub>oH</sub> | output high I  | OS,W,X,Y,Z |                      | -4   |      | mA   | V <sub>o</sub> =V <sub>cc</sub> -0.8 |
| I <sub>co</sub> | Current output | Cout       |                      | 2.2  |      | mA   | 5 V <sub>dd</sub>                    |
| I <sub>co</sub> | Current output | Cout       |                      | 2.8  |      | mA   | 6 V <sub>dd</sub>                    |

The DC characteristics of TGs input and outputs are the same as those of 74Cxx series.

**AC Characteristics**

| Symbol           | Parameter           | Valid      | Min | Typ. | Max. | Unit  | Remark            |
|------------------|---------------------|------------|-----|------|------|-------|-------------------|
| t <sub>STP</sub> | Stop pulse width    | OS,W,X,Y,Z |     | 30   |      | ms    | pitch independent |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 10   |      | ms    | pitch = 0, SRI    |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 13   |      | ms    | pitch = 1, SRI    |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 15   |      | ms    | pitch = 2, SRI    |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 17   |      | ms    | pitch = 3, SRI    |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 20   |      | ms    | pitch = 4, SRI    |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 23   |      | ms    | pitch = 5, SRI    |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 25   |      | ms    | pitch = 6, SRI    |
| t <sub>T</sub>   | Trigger pulse width | TGA,B,C    |     | 27   |      | ms    | pitch = 7, SRI    |
| f                |                     | LED        |     | 198% |      | f led | pitch = 0, SRI    |
| f                |                     | LED        |     | 158% |      | f led | pitch = 1, SRI    |
| f                |                     | LED        |     | 133% |      | f led | pitch = 2, SRI    |
| f                |                     | LED        |     | 115% |      | f led | pitch = 3, SRI    |
| f                |                     | LED        |     | 100% |      | f led | pitch = 4, SRI    |
| f                |                     | LED        |     | 88%  |      | f led | pitch = 5, SRI    |
| f                |                     | LED        |     | 80%  |      | f led | pitch = 6, SRI    |
| f                |                     | LED        |     | 73%  |      | f led | pitch = 7, SRI    |

SRI := Sample Rate Independent.

LED selection by 3X5 Jumper

|   |  |                                 |  |    |  |                                   |  |
|---|--|---------------------------------|--|----|--|-----------------------------------|--|
| 1 |  | Red LED.S is used for output OS |  | 6  |  | Green LED.S is used for output OS |  |
| 2 |  | Red LED.W is used for output OW |  | 7  |  | Green LED.W is used for output OW |  |
| 3 |  | Red LED.X is used for output OX |  | 8  |  | Green LED.X is used for output OX |  |
| 4 |  | Red LED.Y is used for output OY |  | 9  |  | Green LED.Y is used for output OY |  |
| 5 |  | Red LED.Z is used for output OZ |  | 10 |  | Green LED.Z is used for output OZ |  |

Auto Power off control

|  |               |                 |
|--|---------------|-----------------|
|  | JP2 open      | Power always on |
|  | JP2 connected | Auto power off  |

Trigger Drive Selection by 3X6 Jumper

|   |  |   |  |
|---|--|---|--|
| 1 |  | Use Vdd to drive TGA through 10K ohm (R31) and SW-TGA |  |
|   |  | Use Vss to drive TGA through 10K ohm (R38) and SW-TGA |  |
|   |  | Use Vdd to drive TGA through SW-TGA                   |  |
|   |  | Use Vss to drive TGA through SW-TGA                   |  |
| 2 |  | Similar operation as TGA's                            |  |
| 3 |  | Similar operation as TGA's                            |  |

**Before Operating 9026**

**To prepare voice file(s)**

To prepare up to 32 voice files by MES 2.0 or 3.0. These files must be 8-bit PCM file.

**To prepare a filled PRF**

To write down your demand options on PRF (product request form) is strongly recommended before you are running 9026pack.exe.

**To prepare a source text**

Using commercial text editor on personal computer, you can set up a source text in the format defined in 9026pack software user's manual (pid 392 10/96). In this source text, you can define the both word sections and sentence tables. This source text must have the file extension .SRC. Most of mask options can be defined on the screen in 9026pack.exe. The entry dependent options could be defined inside source text.

**To have a compiled binary file**

Running 9026pack.exe and entering keystrokes as prompt, you can easily define the options and read in the source text. Completing as the screen tells, you can get a compiled binary file in your specified file name. Its file extension is always .BIN.

**To have 27C010 programmed**

Programming this .BIN file into an 27C010 chip by commercial EPROM programmer, you have it ready.

**To insert this 27C010**

To insert this EPROM chip into textool U3 of 9026 board in right direction.

**To set up LED selections**

To set up LED connection by jumper 3x5 if needed.

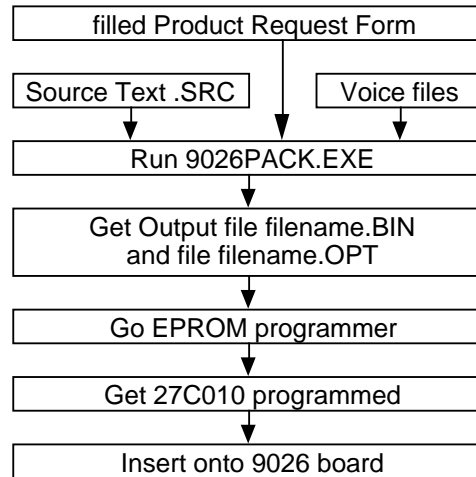
**To set up Trigger Drive**

To set up trigger drive circuit as your requirement on jumper 3x6. Without the drive source (either high or low, either R or bare wire) the switch keeps floating and never be capable to activate the trigger. Without right polarity of drive source you can neither trigger the sound and you may hurt this 9026 board.

**To configure demanded wires**

Ensuring you have both 1.5Vx4 power and speaker well connected, this board are ready to work. There are push-button switches to turn on or off the power. Red LED lamp D3 tells the power on. JP2 enables the auto power off function.

**Operation Flow**



**Warning**

**Output pin definition restricted:** If you select LED dynamic flash, then the M9026 output level will remain the same as the output level of the previous entry.

**Trigger pin definition restricted:** M9026 performs two trigger options only, active high & pull low & low latch as well as active low & pull high & high latch.

The M9026 debounce time (min. trigger pulse width) is shown as table in page 3/6, not optional as chip.

**Misc**

- Fuse : Not Available
- Power : 1.5V x 4 (battery) or 6 VDC power supply
- Dimension : (LxWxH) 160x115x20 mm  
textool included
- Weight : 150 g
- Demonstration Kit

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