

To all our customers

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## **Regarding the change of names mentioned in the document, such as Mitsubishi Electric and Mitsubishi XX, to Renesas Technology Corp.**

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The semiconductor operations of Hitachi and Mitsubishi Electric were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Mitsubishi Electric, Mitsubishi Electric Corporation, Mitsubishi Semiconductors, and other Mitsubishi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

**PRELIMINARY**  
 Notice ; This is not a final specification.  
 some parametric limits are subject to change.

MITSUBISHI SOUND PROCESSOR



**M62458FP**

SRS 3D SOUND PROCESSOR

## SRS-Headphone 3D Sound Processor

### OUTLINE

M62458FP is an SRS-Headphone 3D sound processor for Headphone, Speaker and Audio equipment.

This IC has only SRS-Headphone circuit and packed in a small 14-pin SOP.

### FEATURES

- SRS-Headphone 3D sound circuit
- SRS on/off function switch included

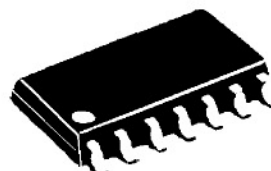
### APPLICATION

- Headphone, Speaker, etc

### RECOMMENDED OPERATING CONDITION

- Supply voltage range      4.5~12.0V
- Rated supply voltage      5V

### PACKAGE OUTLINE



**14Pin SOP**

Size : 10.1mm X 5.3mm X 1.8mm

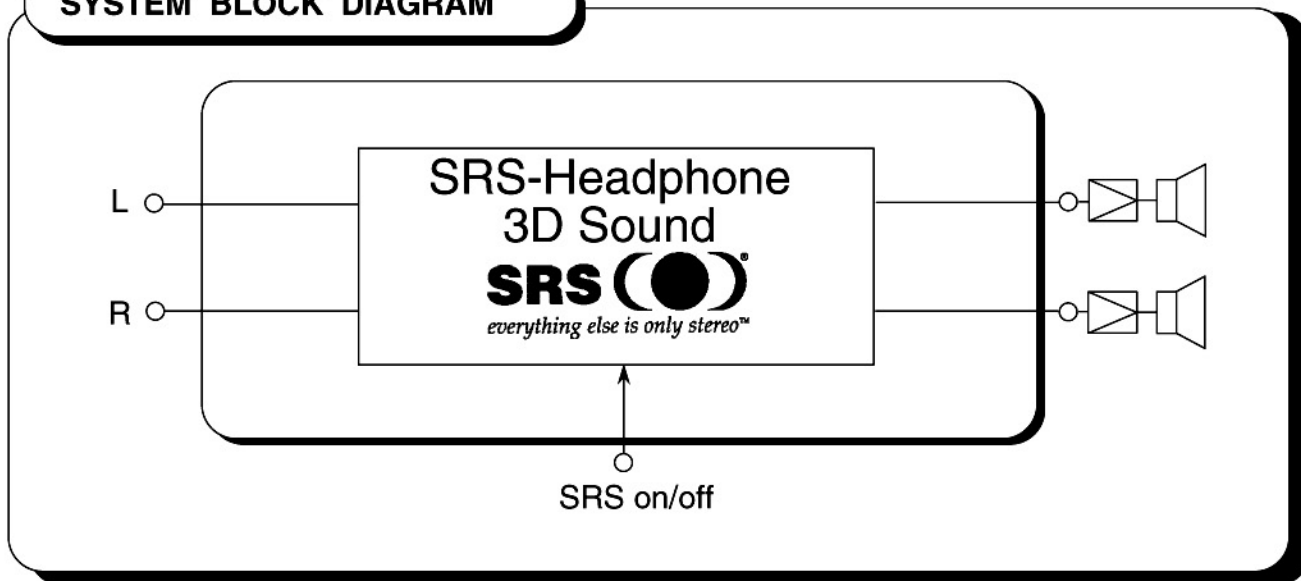
### Note !!

SRS, the SRS logo, Sound Retrieval System and "everything else is only stereo" are registered trademarks of SRS Labs, Inc.

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### SYSTEM BLOCK DIAGRAM



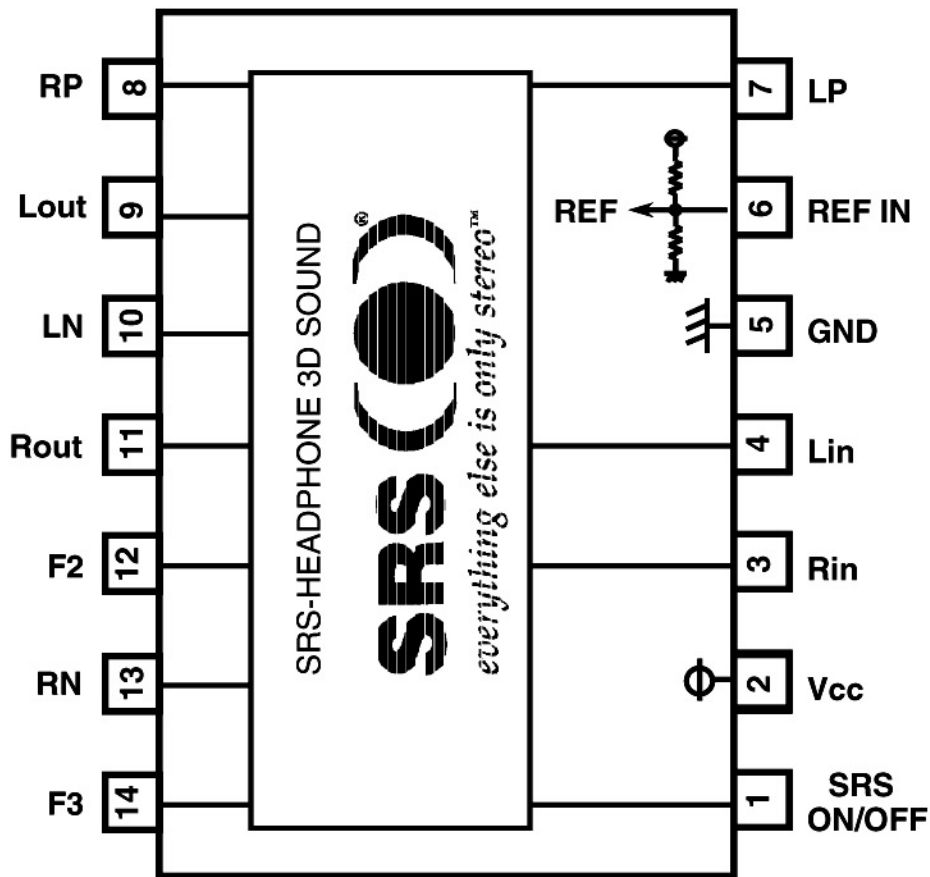
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## BLOCK DIAGRAM

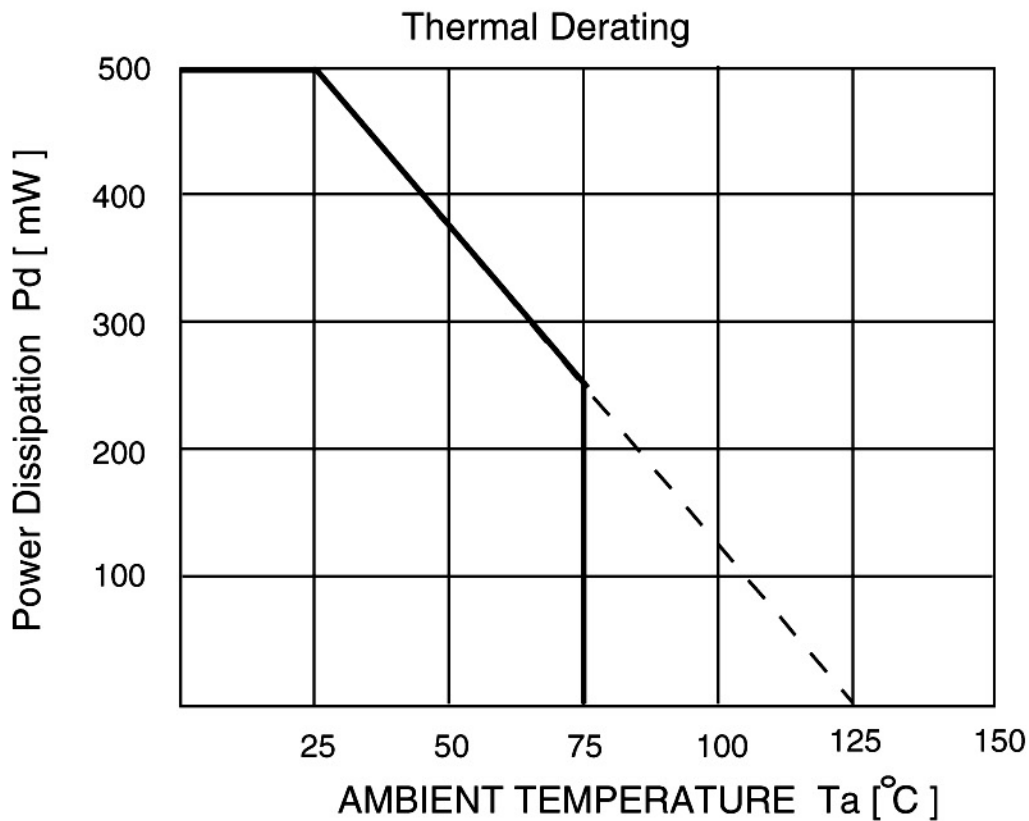


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**M62458FP**

**ABSOLUTE MAXIMUM RATINGS**

| Symbol     | Parameter             | Conditions | Ratings   | Unit  |
|------------|-----------------------|------------|-----------|-------|
| Vcc        | Supply Voltage        |            | 13.0      | V     |
| Pd         | Power Dissipation     | Ta<25      | 500       | mW    |
| K $\theta$ | Thermal Derating      | Ta>25      | 5         | mW/°C |
| Topr       | Operating Temperature |            | -20 ~ 75  | °C    |
| Tstg       | Storage Temperature   |            | -40 ~ 125 | °C    |



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## RECOMMENDED OPERATING CONDITION

| Symbol          | Parameter                | Conditions      | Min. | Typ. | Max. | Unit |
|-----------------|--------------------------|-----------------|------|------|------|------|
| Vcc             | Supply Voltage           |                 | 4.5  | 5.0  | 12.0 | V    |
| V <sub>IH</sub> | High Level Input Voltage | Pin-1 (SRS on)  | 2.1  | —    | VDD  | V    |
| V <sub>IL</sub> | Low Level Input Voltage  | Pin-1 (SRS off) | 0    | —    | 0.8  | V    |

## ELECTRICAL CHARACTERISTICS

### (1) Power Supply Characteristics

| Symbol          | Parameter       | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|-----------------|------------|------|------|------|------|
| I <sub>cc</sub> | Circuit Current |            | —    | 10   | 20   | mA   |

### (2) -1 Input / Output Characteristics (V<sub>cc</sub>=5V, T<sub>a</sub>=25°C, V<sub>i</sub>=0.1V<sub>rms</sub>)

| Symbol           | Parameter                    | Conditions                       |  | Conditions       | Limit |      |      | Unit              |
|------------------|------------------------------|----------------------------------|--|------------------|-------|------|------|-------------------|
|                  |                              | Input                            | Output   |                  | Min.  | Typ. | Max. |                   |
| G <sub>v1</sub>  | Input - Output Voltage Gain1 | f=1kHz                           | R <sub>L</sub> =10KΩ                           | SRS off          | -3    | 0    | +3   | dB                |
| G <sub>v2</sub>  | Input - Output Voltage Gain2 | f=1kHz                           | R <sub>L</sub> =10KΩ                           | SRS on (VOL=max) | 3.5   | 6.5  | 9.5  | dB                |
| G <sub>v3</sub>  | Input - Output Voltage Gain3 | f=100Hz                          | R <sub>L</sub> =10KΩ                           | SRS on (VOL=max) | 13.0  | 16.0 | 19.0 | dB                |
| G <sub>v4</sub>  | Input - Output Voltage Gain4 | f=10KHz                          | R <sub>L</sub> =10KΩ                           | SRS on (VOL=max) | 8.0   | 11.0 | 14.0 | dB                |
| V <sub>OM</sub>  | Maximum Output Voltage       | f=1kHz                           | THD=1%<br>IHF-A filter<br>R <sub>L</sub> =10KΩ | SRS on/off       | 0.7   | 1.0  | —    | V <sub>rms</sub>  |
| THD              | Total Harmonic Distortion    | f=1kHz<br>V <sub>i</sub> =-10dBv | DIN-A filter<br>R <sub>L</sub> =10KΩ           | SRS off          | —     | 0.01 | 0.05 | %                 |
| V <sub>NO1</sub> | Output Noise Voltage1        |                                  | IHF-A filter                                   | SRS off          | —     | 5    | 10   | μV <sub>rms</sub> |
| V <sub>NO1</sub> | Output Noise Voltage2        |                                  | IHF-A filter                                   | SRS on (VOL=max) | —     | 40   | 100  | μV <sub>rms</sub> |

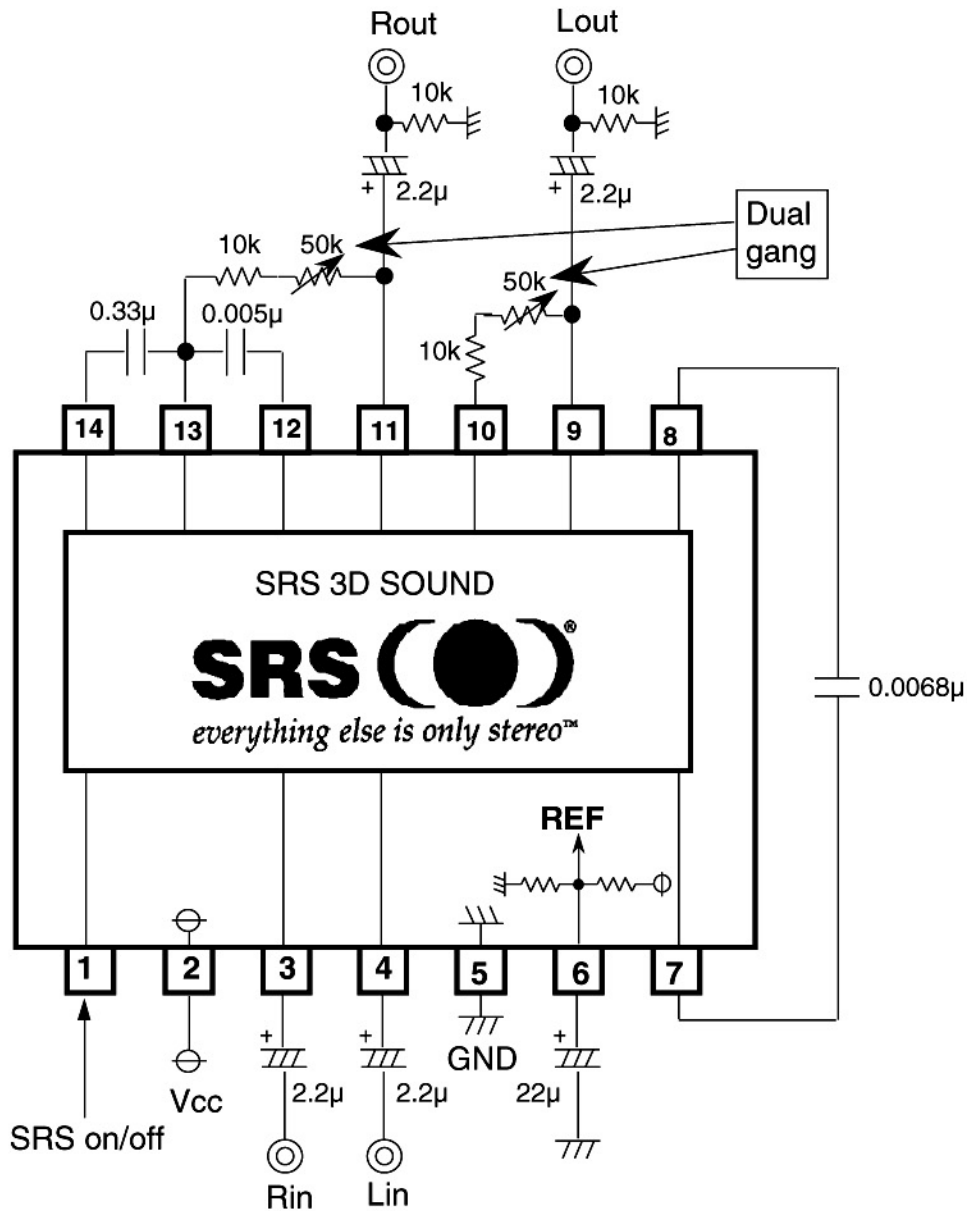
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## APPLICATION EXAMPLE



Unit R:Ω  
 C: F

Keep safety first in your circuit designs !

- Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, in order to prevent fires from spreading, redundancy, malfunction or other mishap.

Notes regarding these materials

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