

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

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

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## M62438FP

### Simplified SRS 3D Sound Processor

REJ03F0217-0201  
Rev.2.01  
Mar 31, 2008

#### Description

M62438FP is an SRS 3D sound processor for PC, TV and audio equipment.

This IC has only simplified SRS circuit and packed in a small 10-pin SOP.

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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#### Features

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

#### Application

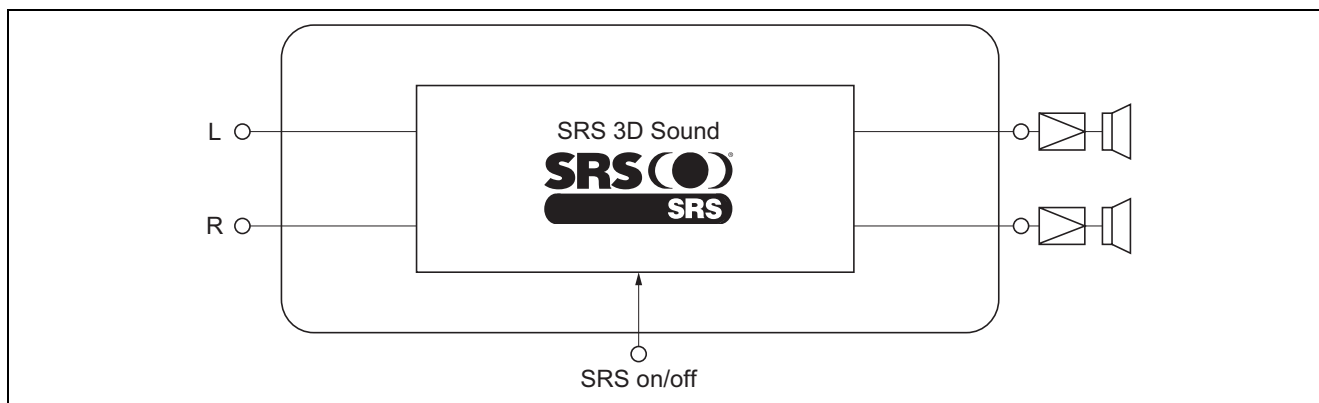
PC, TV, Mini Stereo, etc

#### Recommended Operating Condition

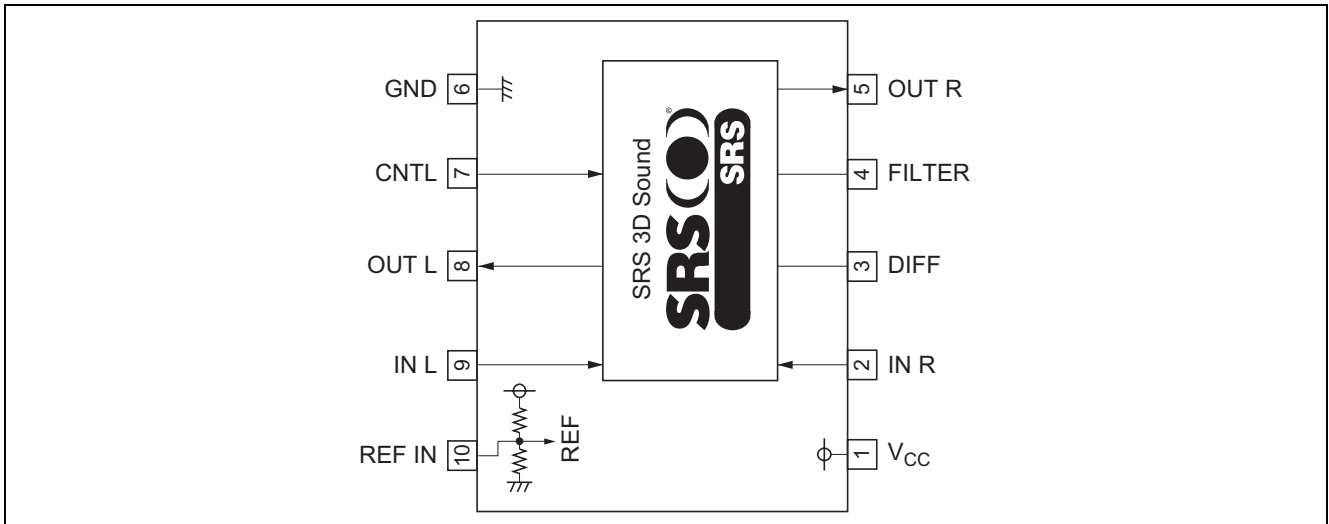
Supply voltage range: 4.5 to 12.0 V

Rated supply voltage: 9 V

#### System Block Diagram



## Block Diagram



## Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	Condition
Supply voltage	$V_{CC}$	13.0	V	
Power dissipation	$P_d$	400	mW	$T_a < 25^\circ\text{C}$
Thermal derating	$K\theta$	4	mW/ $^\circ\text{C}$	$T_a > 25^\circ\text{C}$
Operating temperature	$T_{opr}$	-20 to 75	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-40 to 125	$^\circ\text{C}$	

## Recommended Operating Condition

Item	Symbol	Min	Typ	Max	Unit	Condition
Supply voltage	$V_{CC}$	4.5	9.0	12.0	V	
High level input voltage	$V_{IH}$	2.1	—	$V_{DD}$	V	Pin-7 (SRS on)
Low level input voltage	$V_{IL}$	0	—	0.8	V	Pin-7 (SRS off)

## Electrical Characteristics

### (1) Power Supply Characteristics

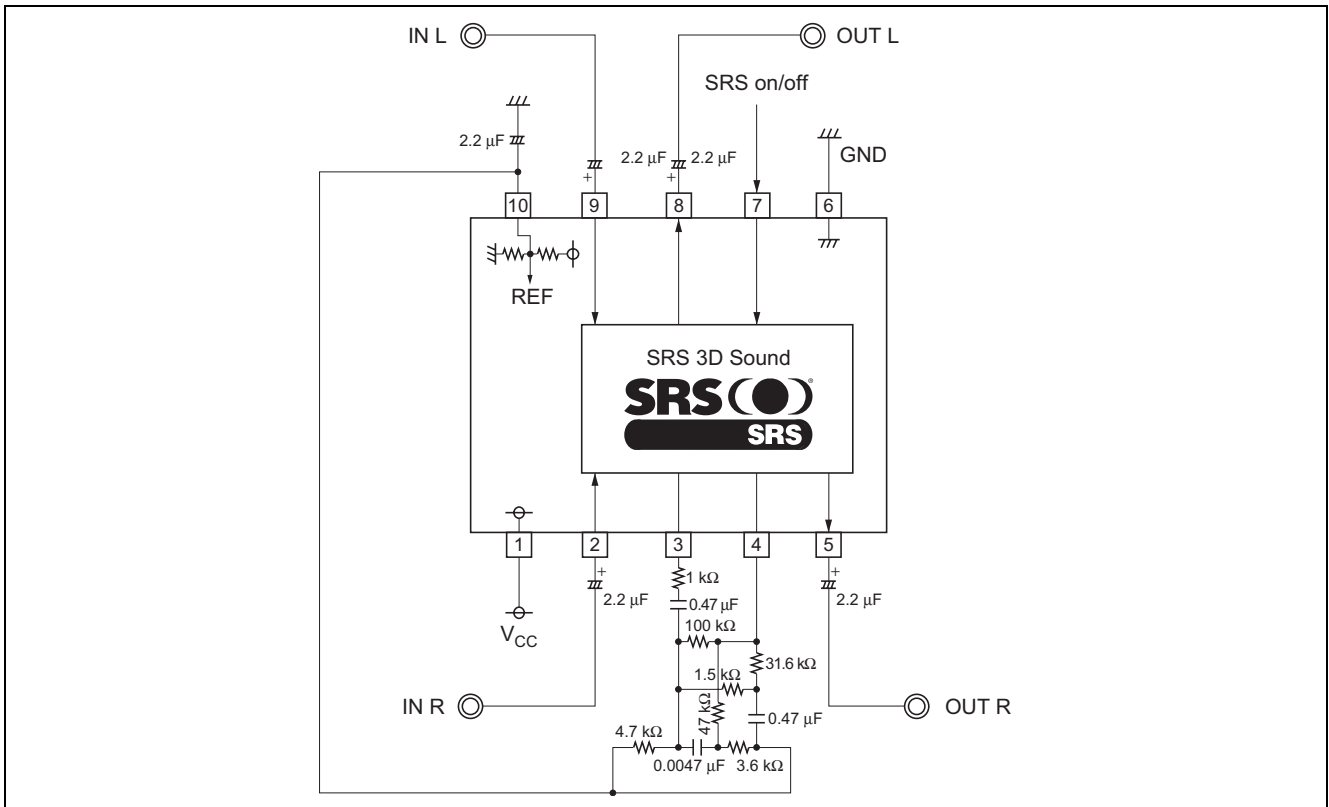
Item	Symbol	Min	Typ	Max	Unit	Conditions
Circuit current	$I_{CC}$	—	15	30	mA	

### (2) -1 Input/Output Characteristics

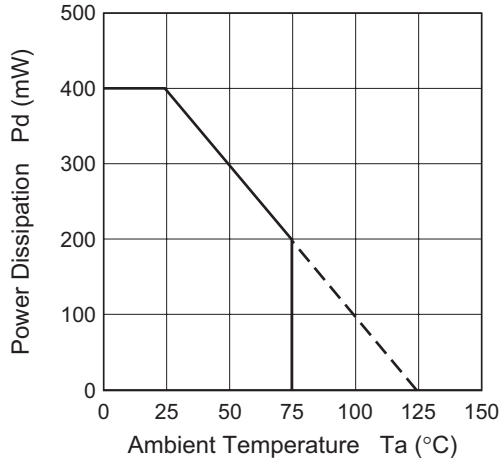
( $V_{CC} = 9\text{ V}$ ,  $T_a = 25^\circ\text{C}$ ,  $V_i = 500\text{ mVrms}$ )

Item	Symbol	Limits			Unit	Conditions		Conditions
		Min	Typ	Max		Input	Output	
Input-output voltage gain1	Gv1	-3	0	+3	dB	$f = 1\text{ kHz}$	$R_L = 10\text{ k}\Omega$	SRS off
Input-output voltage gain2	Gv2	+3.5	+6.5	+9.5	dB	$f = 1\text{ kHz}$	$R_L = 10\text{ k}\Omega$	SRS on
Input-output voltage gain3	Gv3	+9.5	+12.5	+15.5	dB	$f = 100\text{ Hz}$	$R_L = 10\text{ k}\Omega$	SRS on
Input-output voltage gain4	Gv4	+7	+10	+13	dB	$f = 10\text{ kHz}$	$R_L = 10\text{ k}\Omega$	SRS on
Maximum output voltage	$V_{OM}$	1.8	2.2	—	Vrms	$f = 1\text{ kHz}$	THD = 1% IHF-A filter $R_L = 10\text{ k}\Omega$	SRS on/off
Total harmonic distortion	THD	—	0.01	0.05	%	$f = 1\text{ kHz}$ $V_i = -10\text{ dBv}$	DIN-A filter $R_L = 10\text{ k}\Omega$	SRS off
Output noise voltage1	$V_{NO1}$	—	5	10	$\mu\text{Vrms}$	—	IHF-A filter	SRS off
Output noise voltage2	$V_{NO2}$	—	50	100	$\mu\text{Vrms}$	—	IHF-A filter	SRS on

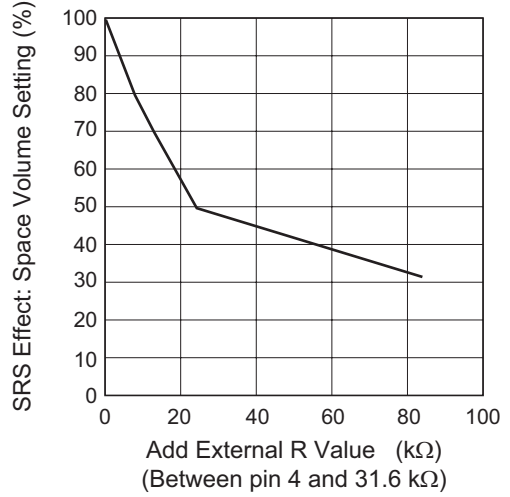
## Application Example



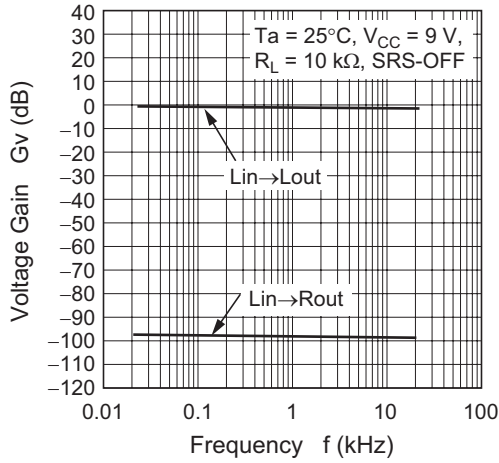
Thermal Derating



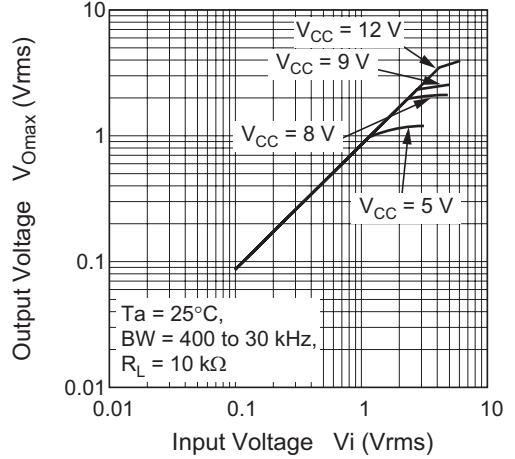
Space Volume as a Function of Add External R



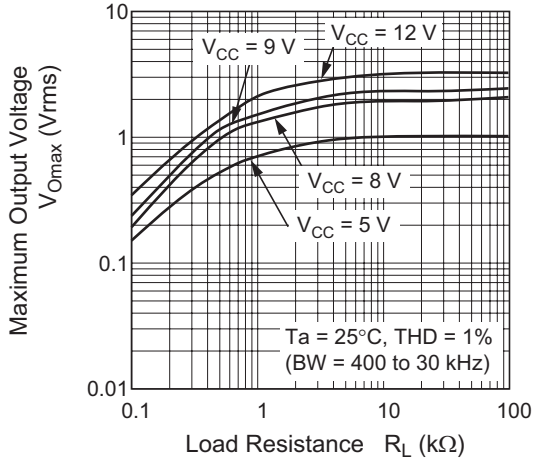
Voltage Gain vs. Frequency



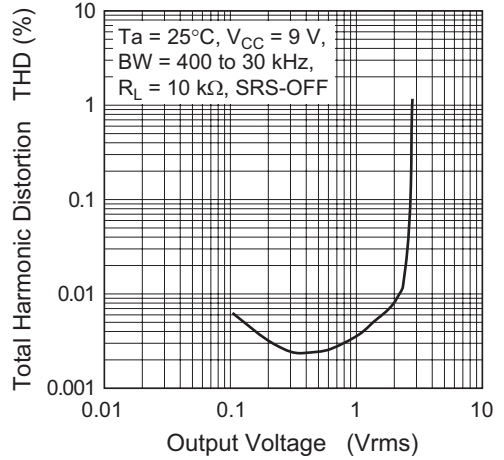
Output Voltage vs. Input Voltage

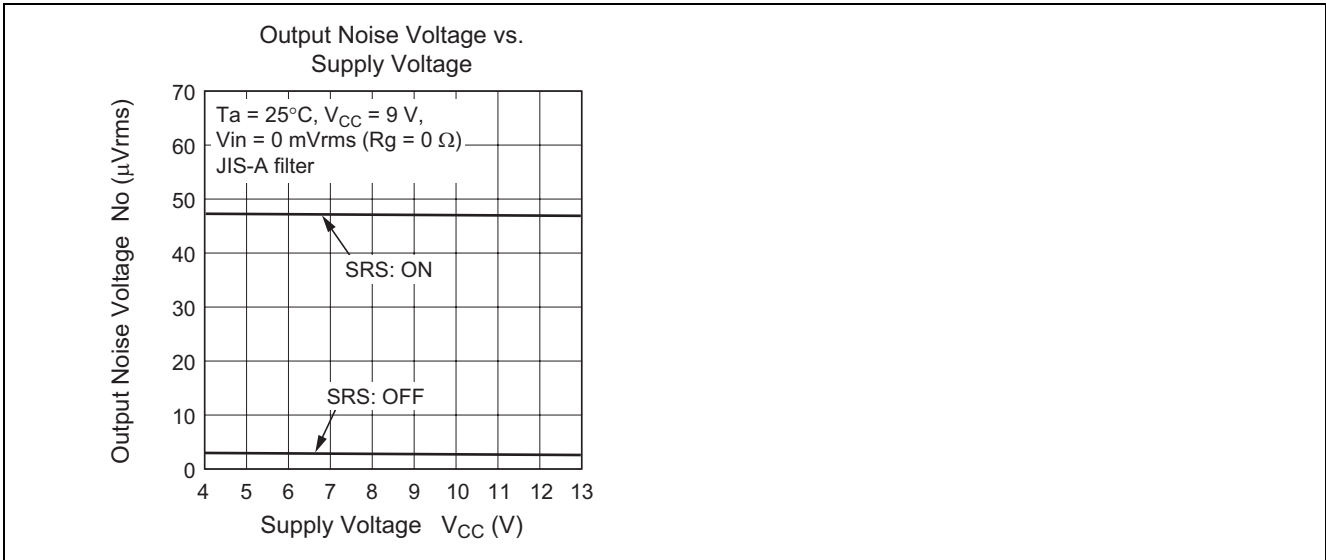


Maximum Output Voltage vs. Load Resistance



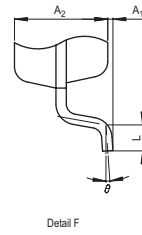
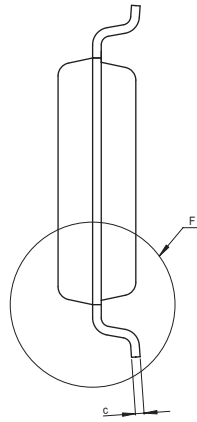
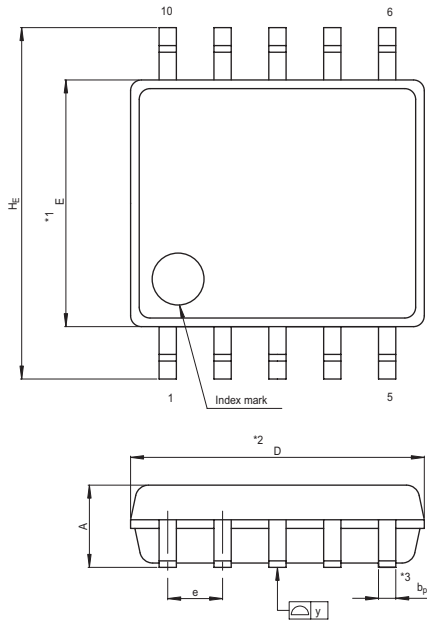
Output Voltage vs. Total Harmonic Distortion





### Package Dimensions

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP10-5.7x6.8-1.27	PRSP0010DB-A	10P2N-A	0.2g



NOTE)  
 1. DIMENSIONS \*\*1" AND \*\*2"  
 DO NOT INCLUDE MOLD FLASH.  
 2. DIMENSION \*\*3" DOES NOT  
 INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	6.7	6.8	6.9
E	5.6	5.7	5.8
A <sub>2</sub>	—	1.8	—
A <sub>1</sub>	0	0.1	0.2
A	—	—	2.1
b <sub>p</sub>	0.35	0.4	0.5
c	0.18	0.2	0.25
θ	0°	—	8°
H <sub>E</sub>	7.82	8.12	8.42
e	1.12	1.27	1.42
y	—	—	0.1
L	0.3	0.5	0.7



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