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.

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Features

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

Application

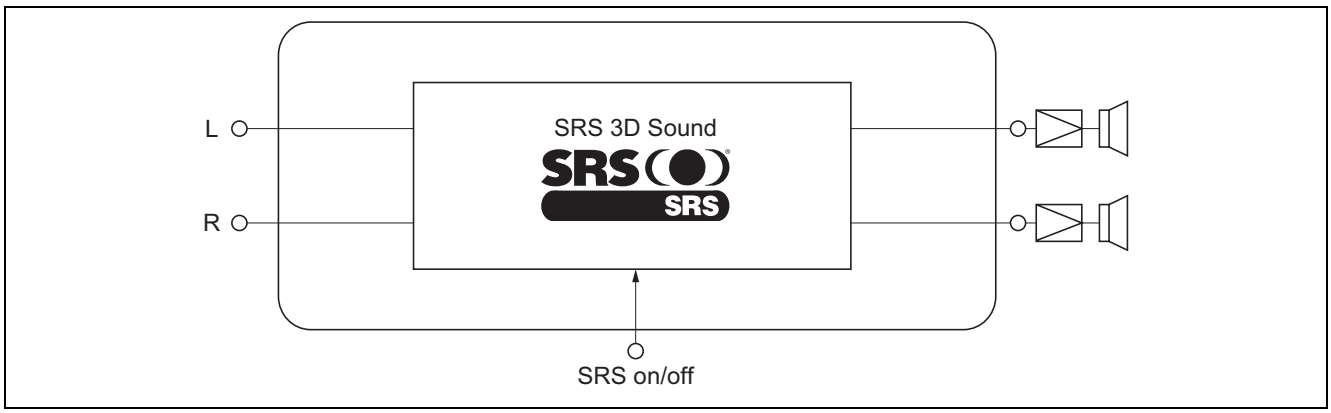
PC, TV, Mini Stereo, etc

Recommended Operating Condition

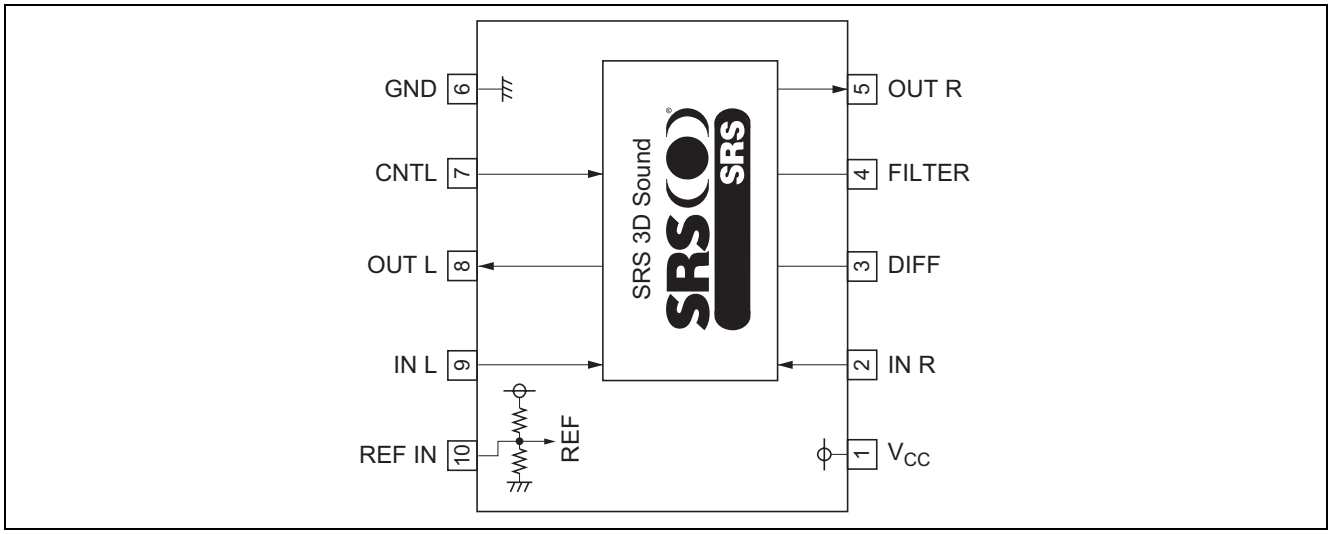
Supply voltage range: 4.5 to 12.0 V

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	Pd	400	mW	Ta < 25°C
Thermal derating	Kθ	4	mW/°C	Ta > 25°C
Operating temperature	Topr	–20 to 75	°C	
Storage temperature	Tstg	–40 to 125	°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

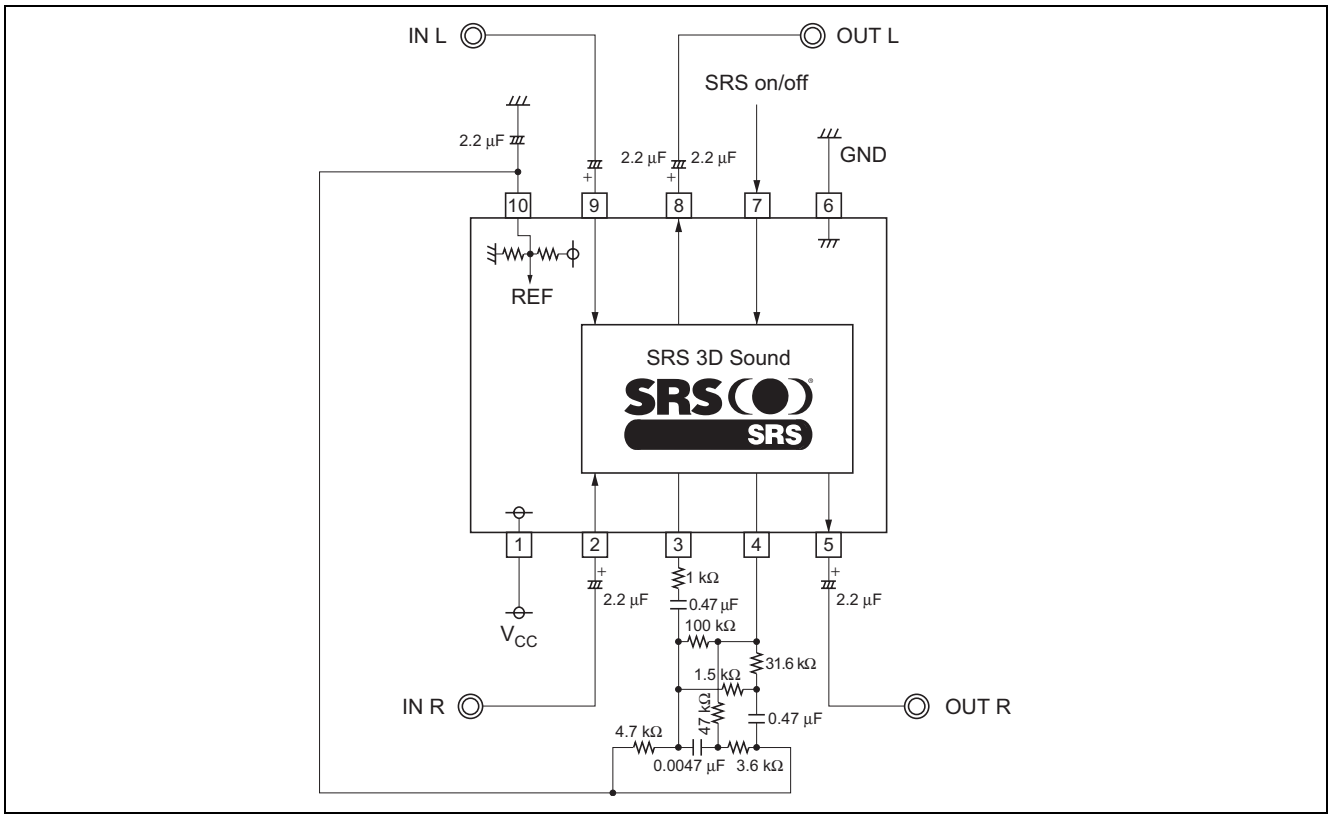
Item	Symbol	Min	Typ	Max	Unit	Conditions
Circuit current	I_{CC}	—	15	30	mA	

(2) –1 Input/Output Characteristics

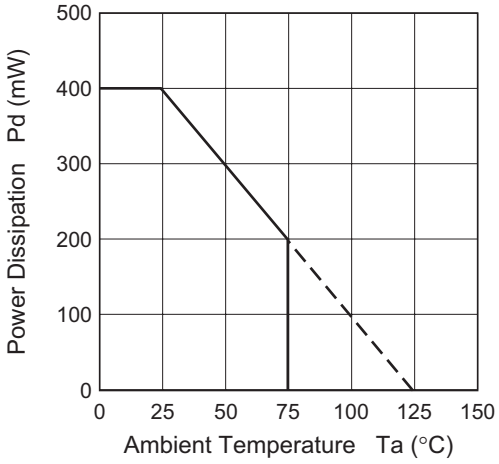
(V_{CC} = 9 V, Ta = 25°C, Vi = 500 mVrms)

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

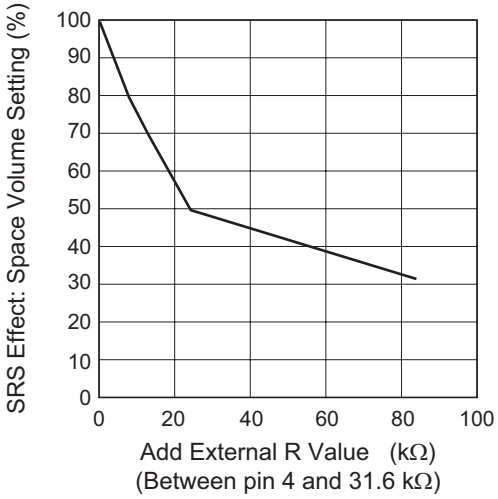
Application Example



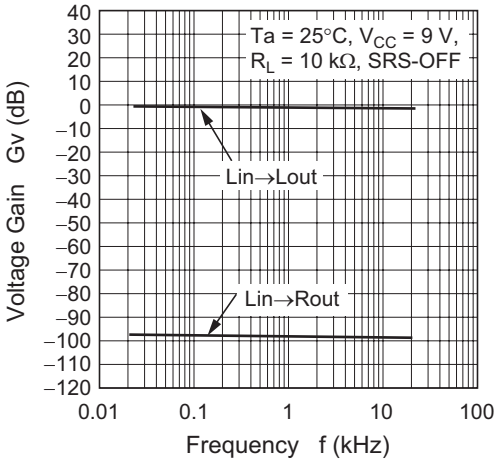
Thermal Derating



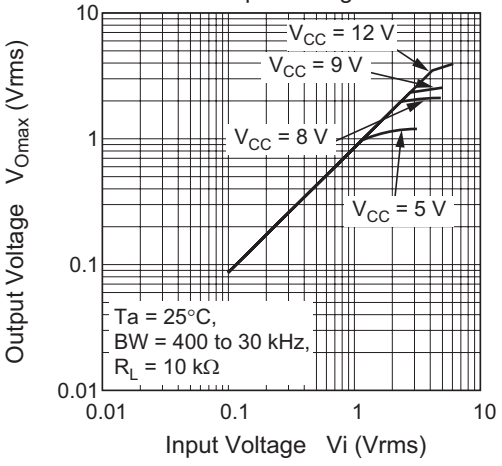
Space Volume as a Function of Add External R



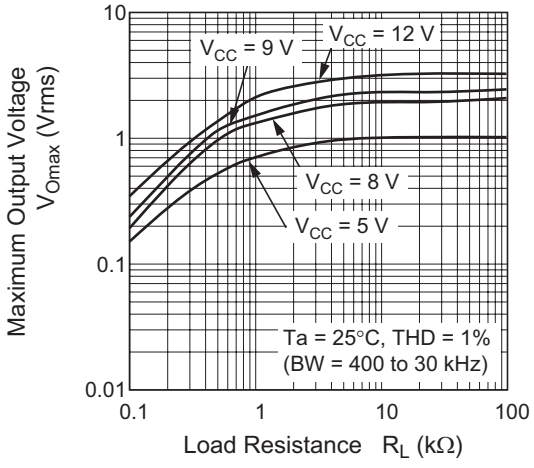
Voltage Gain vs. Frequency



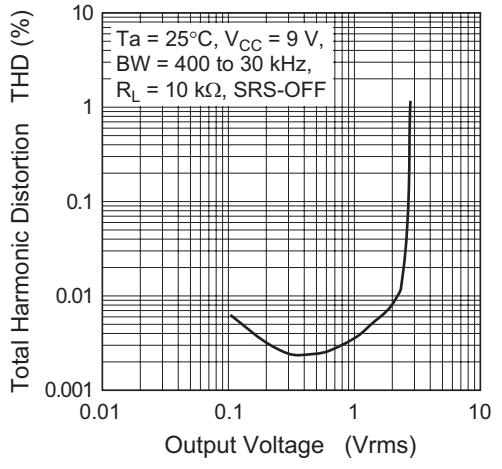
Output Voltage vs. Input Voltage

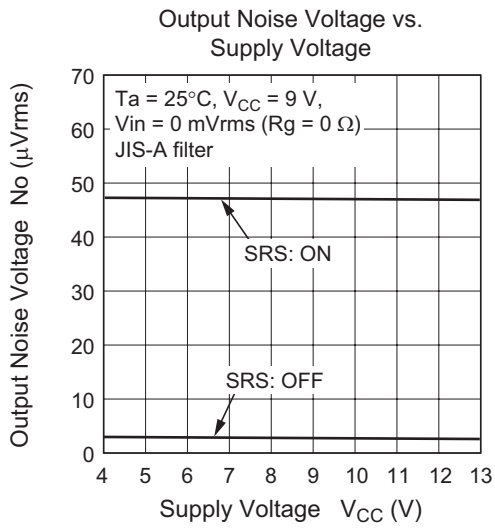


Maximum Output Voltage vs. Load Resistance



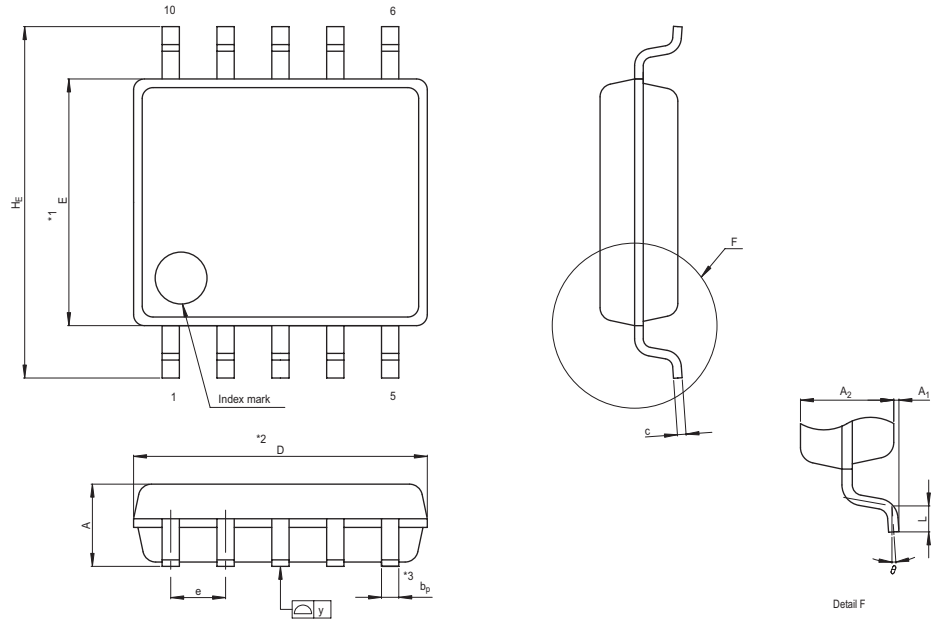
Output Voltage vs. Total Harmonic Distortion




Output Noise Voltage vs.
Supply Voltage
Ta = 25°C, V_{CC} = 9 V,
Vin = 0 mVrms (Rg = 0 Ω)
JIS-A filter
SRS: ON
SRS: OFF
Output Noise Voltage No (μVrms)
Supply Voltage V_{CC} (V)
70
60
50
40
30
20
10
0
4 5 6 7 8 9 10 11 12 13

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_2	—	1.8	—
A_1	0	0.1	0.2
A	—	—	2.1
b_p	0.35	0.4	0.5
c	0.18	0.2	0.25
θ	0°	—	8°
H_E	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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