DESCRIPTION

The PT2348 is a 4.1CH audio processor designed for Car Audio purpose. Using I^2C interface controls all of the functions. Like most of audio processor, it equipped up to 4 stereo sources input with adjustable gain, master volume with adaptive loudness, treble and bass tone control.

In a car entertainment system needs front and rear seat individual control, the PT2348 provides separate input source selection and output volume adjust ; a special design mixing amp is very easy combine the navigation system or cellular phone's voice into the car audio system.

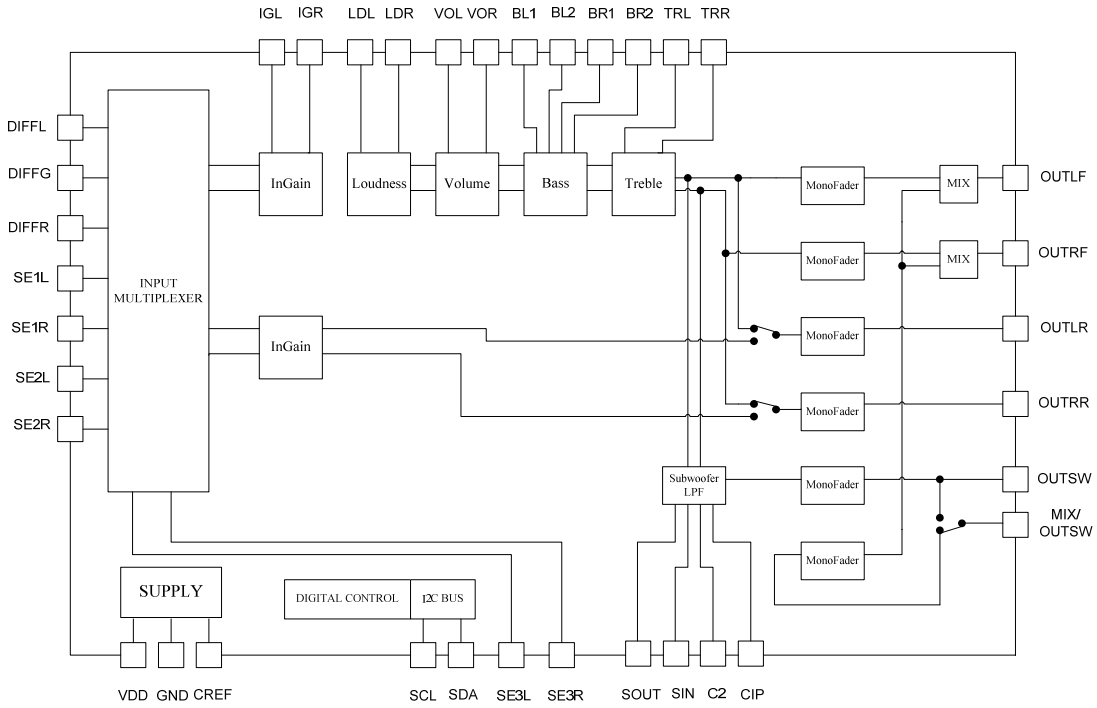
APPLICATION

- Car Audio

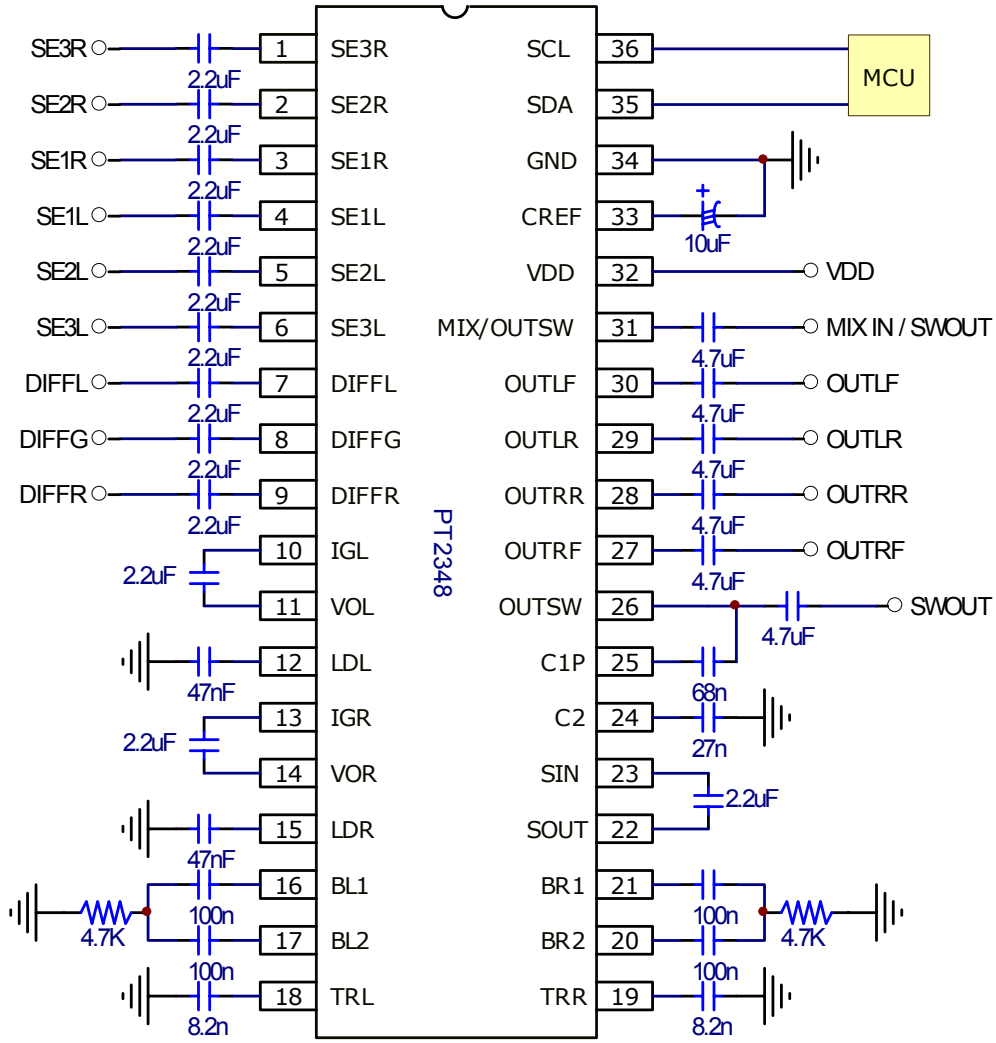
FEATURES

- Controlled by I^2C Interface
- 4 Stereo Inputs (including 1 quasi-differential input) with selectable input gain
- 2 Channels Electronic Volume： +15 to -79dB with 1dB/step
- 1 Subwoofer Output: +15 to -79dB with 1dB/step
- Adjustable crossover frequency for Subwoofer
- Tone Control (Bass and Treble): -15 to +15dB, 1dB/step
- Input Gain Control: 0 to +15dB, 1dB/step
- Loudness: 0 to -15dB, 1dB/step
- 4 independent speaker outputs: +15 to -79dB with 1dB/step & independent programmable mix input with 50% mixing ratio for front speakers
- Low Distortion and Low Noise
- 36-pin SSOP package

BLOCK DIAGRAM



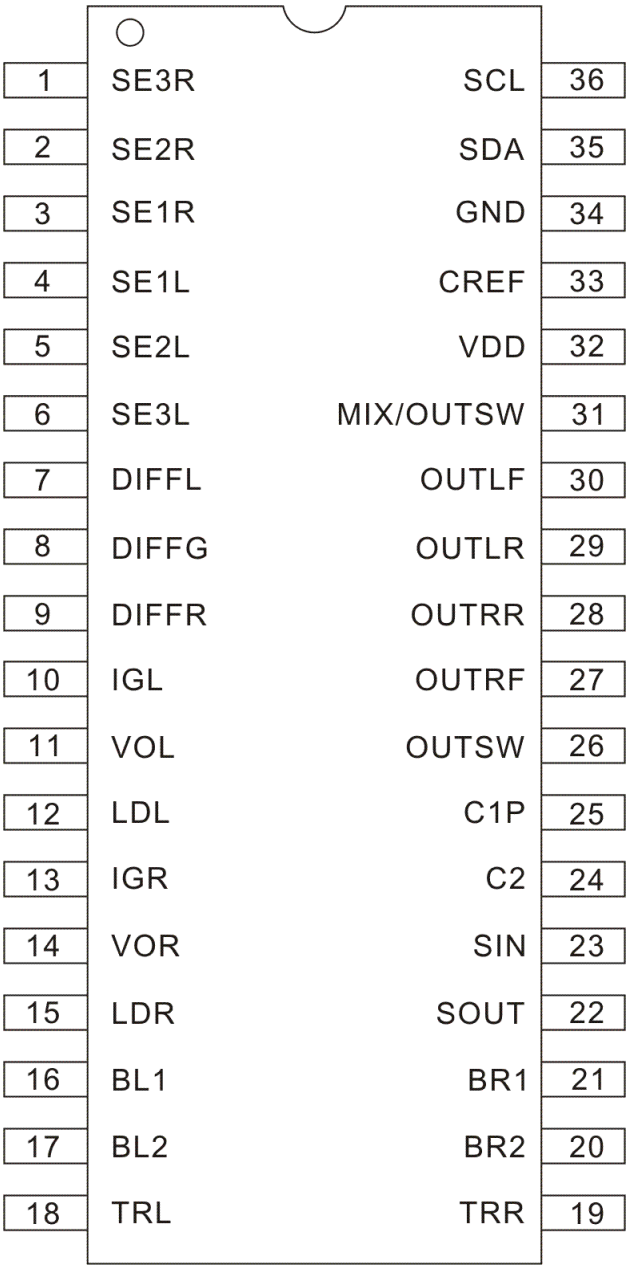
APPLICATION CIRCUIT



ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT2348-X	36 Pins, SSOP, 300mil	PT2348-X

PIN CONFIGURATION



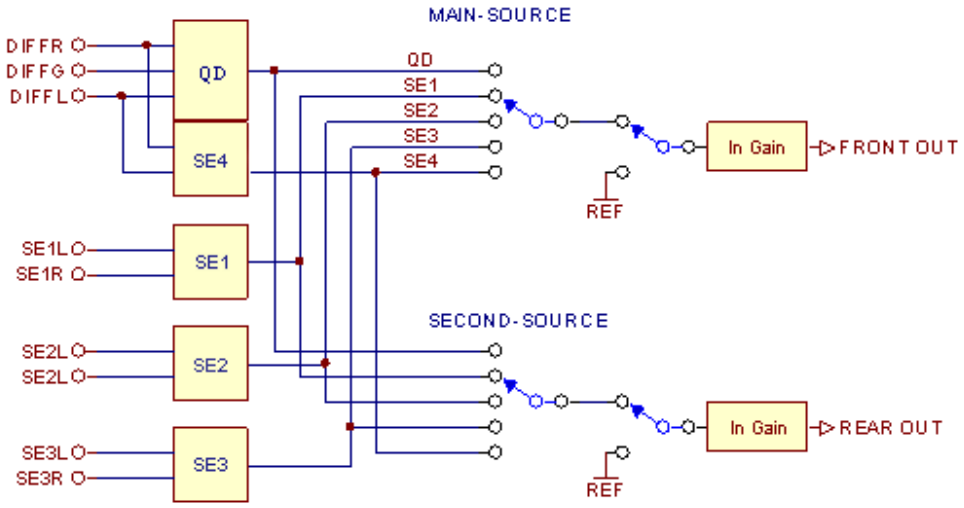
PIN DESCRIPTION

Pin Name	I/O	Description	Pin No.
SE3R	I	Single-ended Right Channel Input 3	1
SE2R	I	Single-ended Right Channel Input 2	2
SE1R	I	Single-ended Right Channel Input 1	3
SE1L	I	Single-ended Left Channel Input 1	4
SE2L	I	Single-ended Left Channel Input 2	5
SE3L	I	Single-ended Left Channel Input 3	6
DIFFL	I	Pseudo Differential Stereo Input Left	7
DIFFG	I	Pseudo Differential Stereo Input Common	8
DIFFR	I	Pseudo Differential Stereo Input Right	9
IGL	O	Left Channel Input Selector Output	10
VOL	I	Left Channel Volume Input	11
LDL	I	Left Channel Loudness Input	12
IGR	O	Right Channel Input Selector Output	13
VOR	I	Right Channel Volume Input	14
LDR	I	Right Channel Loudness Input	15
BL1	I	Left Channel Bass Cap 1	16
BL2	O	Left Channel Bass Cap 2	17
TRL	I	Left Channel Treble Cap	18
TRR	I	Right Channel Treble Cap	19
BR2	O	Right Channel Bass Cap 2	20
BR1	I	Right Channel Bass Cap 1	21
SOUT	O	R + L Output (-6db Gain)	22
SIN	I	Subwoofer Filter Input	23
C2	I	Subwoofer Filter Cap 2	24
C1P	I	Subwoofer Filter Cap 1	25
OUTSW	O	Subwoofer Output	26
OUTRF	O	Right Front Output	27
OUTRR	O	Right Rear Output	28
OUTLR	O	Left Rear Output	29
OUTLF	O	Left Front Output	30
MIX/OUTSW	I/O	Mix input / Subwoofer output	31
VDD	-	Supply Voltage	32
CREF	I	Analog Reference Voltage (1/2 VDD)	33
GND	-	Ground	34
SDA	I	SDA INPUT	35
SCL	I	SCL INPUT	36

FUNCTION DESCRIPTIONS

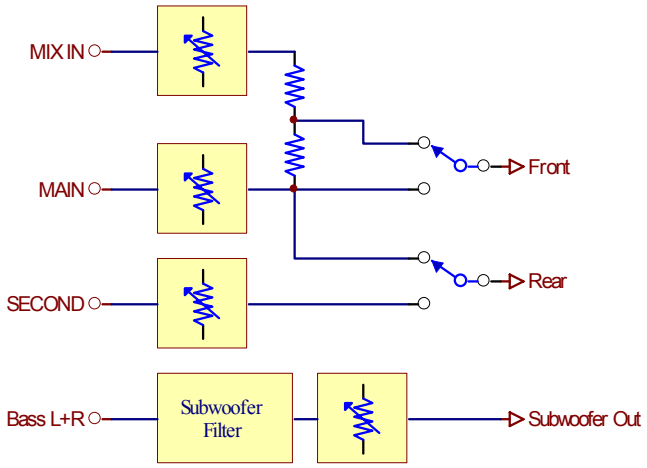
INPUT MULTIPLEXER

The PT2348 provides pseudo-differential stereo input and single-ended stereo input, the pseudo differential input also could configured as single-ended input 4th, in this configuration the DIFFG pin is no connection.



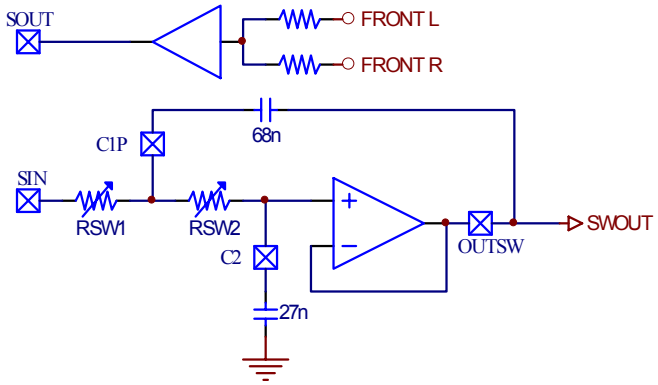
OUTPUT MULTIPLEXER

Pin 31 is bi-direction function, if D5 of data-byte 03H is 0 the pin 31 will becomes an input pin, an auxiliary source (such navigation system or cellular phone) can be mix with front channel output. Otherwise D5=1 the pin 31 will outputs subwoofer signal. The rear output signal is flexible from second sources selector or sync with front channel signal. Each channel's output level can be controlled from +15dB to -79dB and individually, it is well to be the balance and fader control.



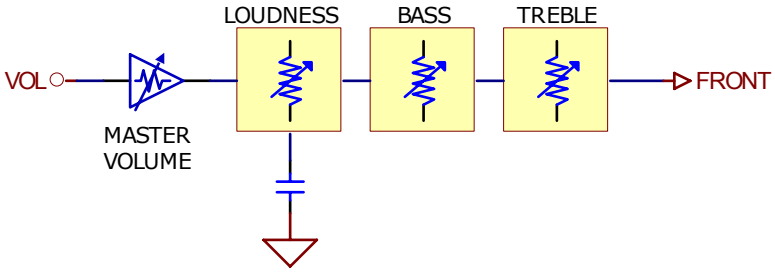
SUBWOOFER FILTER

Built-in mono-mixer (with 50% mixture ratio) would mix both front channel outputs to SOUT and coupling with a capacitor to SIN, the subwoofer filter input. It is a 2nd order low pass filter with programmable cut off frequency, there have 3 cut off frequencies could be choosing: 80Hz, 120Hz and 160Hz, the output level of subwoofer filter is from +15dB to -79dB with 1dB step resolution.



VOLUME, LOUDNESS AND TONE CONTROL

Master volume controller is similar to others, provides from +15dB to -79dB range with 1dB step resolution; the loudness block is a 1st order filter configuration behind the volume output, provides 15dB gain with 1dB step resolution to boost up the bass response, in the flat mode is will performs as a ordinary attenuator. The bass and treble corner frequency is on the 100Hz and 10KHz, provides ±15dB gain and 1dB step resolution.



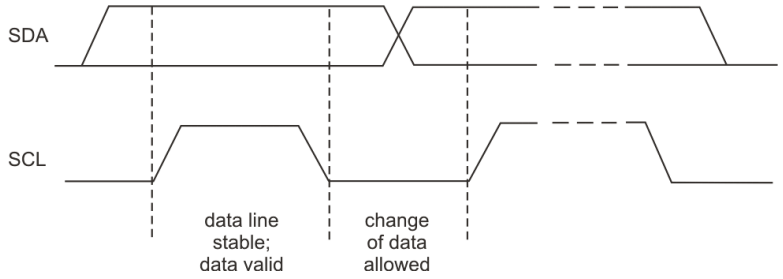
CONTROL BUS SPECIFICATION

BUS INTERFACE

All functions of the PT2348 are controlled by the I^2C interface, the interface is consisting by SDA and SCL pins. Detail protocol of the I^2C bus will discuss on the next section. It should be noted that the bus level pull-up resistors connected to the PT2348 positive supply voltage may required in some application especially the MCU output high level is no enough.

DATA VALIDITY

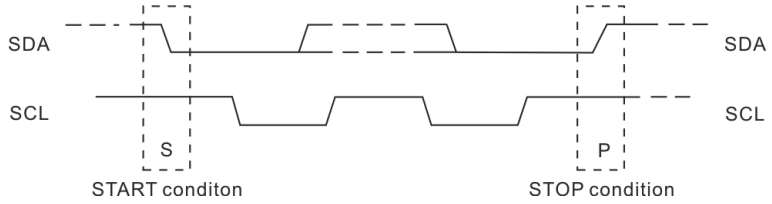
A data on the SDA Line is considered valid and stable only when the SCL Signal is in HIGH State. The HIGH and LOW State of the SDA Line can only change when the SCL signal is LOW. Please refer to the figure below.



START AND STOP CONDITIONS

A Start Condition is activated when
1) The SCL is set to HIGH and
2) SDA shifts from HIGH to LOW State.

The Stop Condition is activated when
1) SCL is set to HIGH and
2) SDA shifts from LOW to HIGH State. Please refer to the timing diagram below.

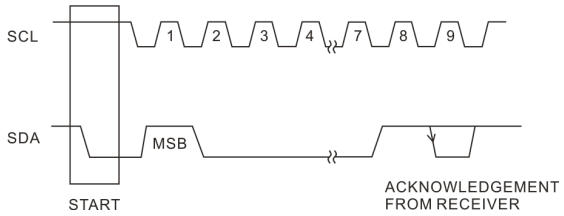


BYTE FORMAT

Every byte transmitted to the SDA Line consists of 8 bits. Each byte must be followed by an Acknowledge Bit. The MSB is first transmitted.

ACKNOWLEDGE

During the Acknowledge clock pulse (ACK), the SDA output port of the master device (μP) would be sets on Hi-Z state, if peripheral device (ex: audio processor) recognize the I^2C command the SDA line will be pull-down by slave device during the SCL clock pulse held in HIGH state period. Please refer to the diagram below. The slave device that has been addressed to generate an Acknowledge after receiving each byte, otherwise, the SDA Line will remain at the High level in period of the ninth (9th) clock pulse. In this case, the host controller will generate a STOP sign in order to abort the transfer mission.



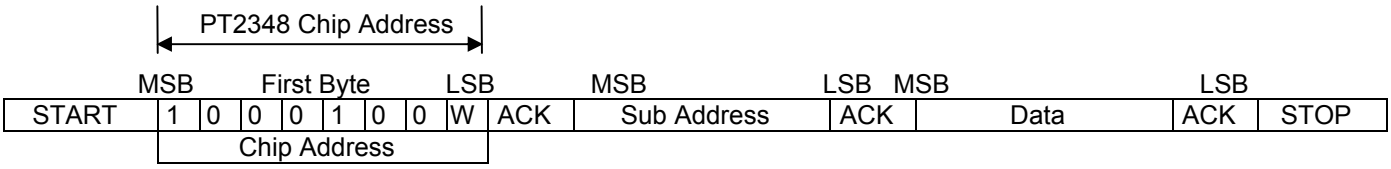
TRANSMISSION WITHOUT ACKNOWLEDGE

If the application does not need to verify the Acknowledge signal that generated by the slave device is right or not, host controller can just bypass the acknowledge check and transmit next data byte to the slave device. If this approach is used, there are greater chances of faulty operation as well as decrease in noise immunity.

INTERFACE PROTOCOL

The interface protocol sequence was defined in below section:

- A Start sign.
- A Chip Address of the desire slave device. The W Bit must be “0” (written). The PT2348 will always response an Acknowledge on the end of each byte.
- A Data Sequence (N-Bytes + Acknowledge)
- A Stop Condition



If more than one Data Byte is transmitted, then the significant SUB ADDRESS bits are auto incremented.
00H→ 01H→ 02H→ 03H→ 04H→ 05H→ 06H→ 07H→ 08H→ 09H→ 10H→11H

DATA RATE

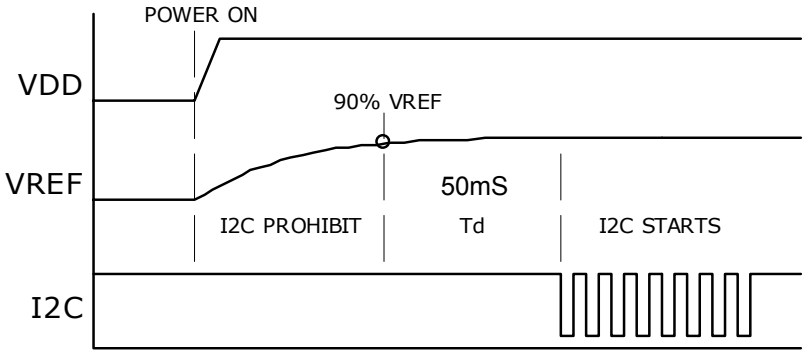
The PT2348 support Standard-Mode (100kbit/s) I^2C data rate In all operation condition, in specified condition it also support Fast-Mode (400kbit/s) I^2C data rate, please refer to the follow table:

MCU Level	PT2348 VDD Voltage						
	4V	5V	6V	7V	8V	9V	10V
2.5V	F	F	x	x	x	x	x
3.3V	F	F	F	F	S	S	x
5V	x	F	F	F	F	F	F

Notes:
1. x = Not allow in this combination, S = Standard Mode Supported, F = Fast Mode Supported.
2. Data rate specification is design guarantee and exams in test bench only, not fully tested in final production.

I²C BUS INITIAL TIME

The PT2348 is controlled by the I²C bus command; each time the supply voltage applied to chip it needs an initial time to reset all of the internal decoder register, in this period access the I²C bus is prohibited. The initial time is determinate by capacitance it attached on CREF pin and Td. For proper operation user must check the I²C starts timing is fit this requirement and recommended Td timing shown on next page is 50mS.



SOFTWARE SPECIFICATION

PT2348 CHIP ADDRESS

The PT2348 chip address is 88H AND binary table is shown on below.

MSB							LSB
1	0	0	0	1	0	0	0

SUB ADDRESS TABLE

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	Sub address
0	Input Gain				Main Input Selector			00H
0	Subwoofer		Loudness					01H
Volume								02H
Mix3	Mix2	Mix1	Bass					03H
0	0	0	Treble					04H
Mixing Level Control								05H
Speaker Attenuator Left Front								06H
Speaker Attenuator Right Front								07H
Speaker Attenuator Left Rear								08H
Speaker Attenuator Right Rear								09H
Subwoofer Attenuator								10H
R.Spkr	Input Gain				Second Input Selector			11H

DATA TABLE DESCRIPTION

MAIN INPUT SELECTOR / INPUT GAIN (00H)

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	
								Input Selector
0					0	0	0	QD/SE : QD
0					0	0	1	SE IN1
0					0	1	0	SE IN2
0					0	1	1	SE IN3
0					1	0	0	QD/SE : SE IN4
0					1	0	1	Mute
								Input Gain
0	0	0	0	0				0dB
0	0	0	0	1				+1dB
0	0	0	1	0				+2dB
0	0	0	1	1				+3dB
0	0	1	0	0				+4dB
0	0	1	0	1				+5dB
0	0	1	1	0				+6dB
0	0	1	1	1				+7dB
0	1	0	0	0				+8dB
0	1	0	0	1				+9dB
0	1	0	1	0				+10dB
0	1	0	1	1				+11dB
0	1	1	0	0				+12dB
0	1	1	0	1				+13dB
0	1	1	1	0				+14dB
0	1	1	1	1				+15dB

LOUDNESS / SUBWOOFER (01H)

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	
								Loudness
0				0	0	0	0	0dB
0				0	0	0	1	-1dB
0				0	0	1	0	-2dB
0				0	0	1	1	-3dB
0				0	1	0	0	-4dB
0				0	1	0	1	-5dB
0				0	1	1	0	-6dB
0				0	1	1	1	-7dB
0				1	0	0	0	-8dB
0				1	0	0	1	-9dB
0				1	0	1	0	-10dB
0				1	0	1	1	-11dB
0				1	1	0	0	-12dB
0				1	1	0	1	-13dB
0				1	1	1	0	-14dB
0				1	1	1	1	-15dB
0			0					Loudness On
0			1					Loudness Off
								Subwoofer Cut-off Frequency
0	0	1						80Hz
0	1	0						120Hz
0	1	1						160Hz

VOLUME (02H)

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	
								Volume Gain
0	0	0	0	0	0	0	0	0dB
0	0	0	0	0	0	0	1	+1dB
0	0	0	0	0	0	1	0	+2dB
0	0	0	0	0	0	1	1	+3dB
0	0	0	0	0	1	0	0	+4dB
0	0	0	0	0	1	0	1	+5dB
0	0	0	0	0	1	1	0	+6dB
0	0	0	0	0	1	1	1	+7dB
0	0	0	0	1	0	0	0	+8dB
0	0	0	0	1	0	0	1	+9dB
0	0	0	0	1	0	1	0	+10dB
0	0	0	0	1	0	1	1	+11dB
0	0	0	0	1	1	0	0	+12dB
0	0	0	0	1	1	0	1	+13dB
0	0	0	0	1	1	1	0	+14dB
0	0	0	0	1	1	1	1	+15dB
								Volume Attenuation
				0	0	0	0	-0dB
				0	0	0	1	-1dB
				0	0	1	0	-2dB
				0	0	1	1	-3dB
				0	1	0	0	-4dB
				0	1	0	1	-5dB
				0	1	1	0	-6dB
				0	1	1	1	-7dB
0	0	0	1					-0dB
0	0	1	0					-8dB
0	0	1	1					-16dB
0	1	0	0					-24dB
0	1	0	1					-32dB
0	1	1	0					-40dB
0	1	1	1					-48dB
1	0	0	0					-56dB
1	0	0	1					-64dB
1	0	1	0					-72dB
1	1	1	1	0	0	0	0	Mute

BASS / MIX1/ MIX2/ MIX (03H)

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	
								Bass Cut
			0	0	0	0	0	0dB
			0	0	0	0	1	-1dB
			0	0	0	1	0	-2dB
			0	0	0	1	1	-3dB
			0	0	1	0	0	-4dB
			0	0	1	0	1	-5dB
			0	0	1	1	0	-6dB
			0	0	1	1	1	-7dB
			0	1	0	0	0	-8dB
			0	1	0	0	1	-9dB
			0	1	0	1	0	-10dB
			0	1	0	1	1	-11dB
			0	1	1	0	0	-12dB
			0	1	1	0	1	-13dB
			0	1	1	1	0	-14dB
			0	1	1	1	1	-15dB
								Bass Boost
			1	0	0	0	0	0dB
			1	0	0	0	1	+1dB
			1	0	0	1	0	+2dB
			1	0	0	1	1	+3dB
			1	0	1	0	0	+4dB
			1	0	1	0	1	+5dB
			1	0	1	1	0	+6dB
			1	0	1	1	1	+7dB
			1	1	0	0	0	+8dB
			1	1	0	0	1	+9dB
			1	1	0	1	0	+10dB
			1	1	0	1	1	+11dB
			1	1	1	0	0	+12dB
			1	1	1	0	1	+13dB
			1	1	1	1	0	+14dB
			1	1	1	1	1	+15dB
		0						Mixing Enable on
		1						Mixing Enable off*
	0							Mixing to LF on
	1							Mixing to LF off
0								Mixing to RF on
1								Mixing to RF off

Note: Mixing Enable off means pin 31 as 2nd subwoofer output.

TREBLE (04H)

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	
								Treble Cut
0	0	0	0	0	0	0	0	0dB
0	0	0	0	0	0	0	1	-1dB
0	0	0	0	0	0	1	0	-2dB
0	0	0	0	0	0	1	1	-3dB
0	0	0	0	0	1	0	0	-4dB
0	0	0	0	0	1	0	1	-5dB
0	0	0	0	0	1	1	0	-6dB
0	0	0	0	0	1	1	1	-7dB
0	0	0	0	1	0	0	0	-8dB
0	0	0	0	1	0	0	1	-9dB
0	0	0	0	1	0	1	0	-10dB
0	0	0	0	1	0	1	1	-11dB
0	0	0	0	1	1	0	0	-12dB
0	0	0	0	1	1	0	1	-13dB
0	0	0	0	1	1	1	0	-14dB
0	0	0	0	1	1	1	1	-15dB
								Treble Boost
0	0	0	1	0	0	0	0	0dB
0	0	0	1	0	0	0	1	+1dB
0	0	0	1	0	0	1	0	+2dB
0	0	0	1	0	0	1	1	+3dB
0	0	0	1	0	1	0	0	+4dB
0	0	0	1	0	1	0	1	+5dB
0	0	0	1	0	1	1	0	+6dB
0	0	0	1	0	1	1	1	+7dB
0	0	0	1	1	0	0	0	+8dB
0	0	0	1	1	0	0	1	+9dB
0	0	0	1	1	0	1	0	+10dB
0	0	0	1	1	0	1	1	+11dB
0	0	0	1	1	1	0	0	+12dB
0	0	0	1	1	1	0	1	+13dB
0	0	0	1	1	1	1	0	+14dB
0	0	0	1	1	1	1	1	+15dB

MIXING LEVEL (05H) / SPEAKER ATTENUATOR LEFT FRONT (06H) / RIGHT FRONT (07H) /LEFT REAR (08H) / RIGHT REAR (09H) / SUBWOOFER (10H)

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	
								Gain
0	0	0	0	0	0	0	0	0dB
0	0	0	0	0	0	0	1	+1dB
0	0	0	0	0	0	1	0	+2dB
0	0	0	0	0	0	1	1	+3dB
0	0	0	0	0	1	0	0	+4dB
0	0	0	0	0	1	0	1	+5dB
0	0	0	0	0	1	1	0	+6dB
0	0	0	0	0	1	1	1	+7dB
0	0	0	0	1	0	0	0	+8dB
0	0	0	0	1	0	0	1	+9dB
0	0	0	0	1	0	1	0	+10dB
0	0	0	0	1	0	1	1	+11dB
0	0	0	0	1	1	0	0	+12dB
0	0	0	0	1	1	0	1	+13dB
0	0	0	0	1	1	1	0	+14dB
0	0	0	0	1	1	1	1	+15dB
								Attenuation
				0	0	0	0	-0dB
				0	0	0	1	-1dB
				0	0	1	0	-2dB
				0	0	1	1	-3dB
				0	1	0	0	-4dB
				0	1	0	1	-5dB
				0	1	1	0	-6dB
				0	1	1	1	-7dB
0	0	0	1					-0dB
0	0	1	0					-8dB
0	0	1	1					-16dB
0	1	0	0					-24dB
0	1	0	1					-32dB
0	1	1	0					-40dB
0	1	1	1					-48dB
1	0	0	0					-56dB
1	0	0	1					-64dB
1	0	1	0					-72dB
1	1	1	1	0	0	0	0	Mute

SECOND INPUT SELECTOR / INPUT GAIN (11H)

MSB							LSB	Function
D7	D6	D5	D4	D3	D2	D1	D0	
								Second Input Selector
					0	0	0	QD/SE:QD
					0	0	1	IN1
					0	1	0	IN2
					0	1	1	IN3
					1	0	0	QD/SE : SE IN4
					1	0	1	Mute
								Input Gain
	0	0	0	0				0dB
	0	0	0	1				+1dB
	0	0	1	0				+2dB
	0	0	1	1				+3dB
	0	1	0	0				+4dB
	0	1	0	1				+5dB
	0	1	1	0				+6dB
	0	1	1	1				+7dB
	1	0	0	0				+8dB
	1	0	0	1				+9dB
	1	0	1	0				+10dB
	1	0	1	1				+11dB
	1	1	0	0				+12dB
	1	1	0	1				+13dB
	1	1	1	0				+14dB
	1	1	1	1				+15dB
								Rear Speaker Source
0								Main Source
1								Second Source

ABSOLUTE MAXIMUM RATINGS

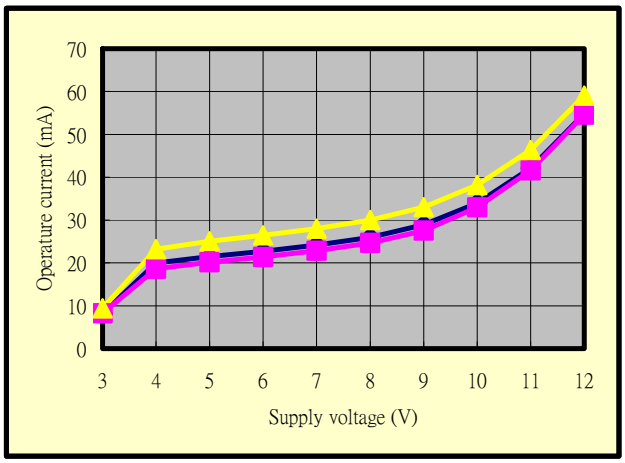
Parameter		Symbol	Min.	Max.	Unit
Operating supply voltage		Vs	-	10	V
Latch up current		Iin	-150	+150	mA
ESD level	Human body model	HBM	-2	+2	KV
	Machine model	MM	-0.2	+0.2	KV
Input voltage		Vin	-0.3	Vs+0.3	V
Operating temperature		Topr	-40	+85	℃
Storage temperature		Tstg	-65	+150	℃

ELECTRICAL CHARACTERISTICS

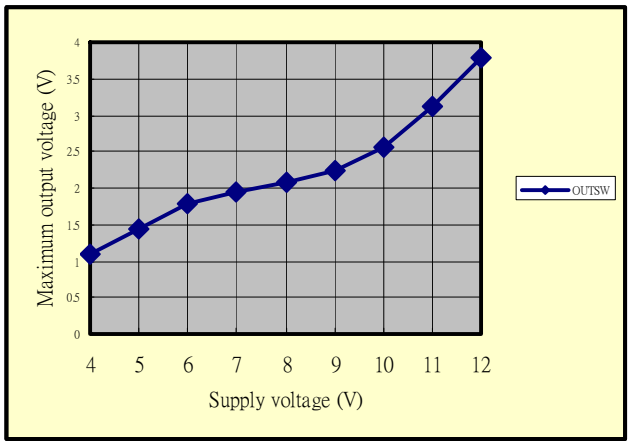
(Unless specified: Ta=25℃, VCC=9V, RL=10KΩ, Rg = 40Ω, all controls flat (G=0), f=1KHz)

Parameter	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Supply							
Supply voltage	VDD	-		5	9	10	V
Supply current	Is	-		23	30	40	mA
PSRR	PSRR	Vr=200mV		-	-	-	-
Input Selector							
Input resistance	R_{in}	SE/QD		35	50	65	KΩ
Clipping level	V_{CL}	SE/QD Input		2	2.5		Vrms
Channel separation	CS_{IN}	SE		85	100		dB
		QD		70	85		
Input separation	S_{IN}	All Inputs		70	90		dB
QD common mode rejection ratio	CMRR	Vcm = 1Vrms@1KHz		45	60		dB
		Vcm = 1Vrms@10KHz		45	60		
Input gain	G_{INmin}	For Front & Rear Channel	Min	-1	0	1	dB
	G_{INmax}		Max	13	15	17	
Step resolution	A_{INSTEP}	-		-1	1	+1	dB
Minimum load	RL	IGL, IGR		10	-	-	KΩ
Mixing Control							
Max. attenuation	A_{mMAX}	-		-83	-79	-75	dB
Max. gain	G_{mMAX}	-		13	15	17	dB
Step resolution	A_{mSTEP}	-		0.5	1	1.5	dB
Mixing ratio	Mlevel	Main & Mix-In source		-	-6	-	dB
Loudness Control							
Min. attenuation	A_{lMAX}	-		-1	0	+1	dB
Max. attenuation	A_{lMAX}	-		-17	-15	-13	dB
Step resolution	A_{lSTEP}	-		0.5	1	1.5	dB
Bass Control							
Control range	Gb	F=100Hz		±13	±15	±17	dB
Step resolution	B_{STEP}	-		0.5	1	1.5	dB

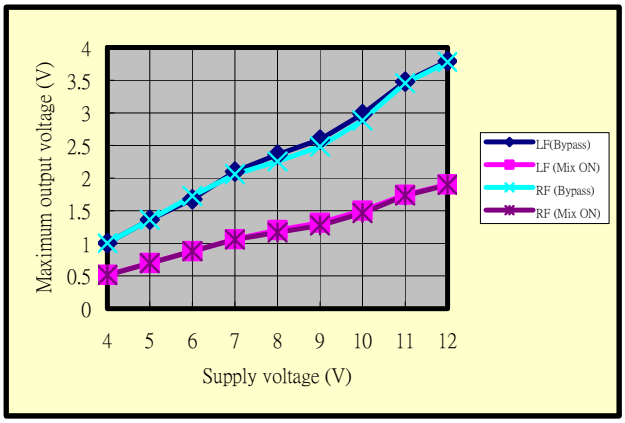
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Treble Control						
Control range	Gt	F=15KHz	±13	±15	±17	dB
Step resolution	T_{STEP}		0.5	1	1.5	dB
Volume Control						
Input resistance	R_{in}	Loud=ON	70	100	130	KΩ
		Loud=OFF	20	30	40	
Max. gain	G_{VMAX}	-	13	15	17	dB
Max. attenuation	A_{VMAX}	-	-83	-79	-75	dB
Step resolution	A_{STEP}	-	0.5	1	1.5	dB
Attenuation set error	E_A	Step= -20 to +20dB	-0.75	0	0.75	dB
		Step= -79 to –20dB	3		3	
Mute attenuation	A_{MUTE}	-	85	100	-	dB
Speaker Attenuator						
Max. gain	G_{sMAX}	Front and Rear CH	13	15	17	dB
Max. attenuation	A_{sMAX}	-	-83	-79	-75	dB
Step resolution	S_{STEP}	-	0.5	1	1.5	dB
Attenuation set error	E_A	-	-	0	1	dB
Mute attenuation	A_{MUTE}	-	85	100	-	dB
Subwoofer Output						
Max. gain	G_{sMAX}	-	14	15	16	dB
Max. attenuation	A_{sMAX}	-	-83	-79	-75	dB
Step resolution	S_{STEP}	-	0.5	1	1.5	dB
Attenuation set error	E_A	Step= -50 to -79dB	-0.5	-1	-2.5	dB
		Step=+15 to -50dB	-1	0.5	0	
Mute attenuation	A_{MUTE}	-	70	80	-	dB
f_{LP}	f_{LP1}	Lowpass corner frequency	72	80	88	Hz
	f_{LP2}		108	120	132	Hz
	f_{LP3}		144	160	176	Hz
Audio Outputs						
Clipping level	V_{OCL}	d=0.3%	2	2.5	-	Vrms
Load resistance	R_L	Front, Rear, Sub-out	7	10	-	KΩ
Output noise	e_{no1}	Front, Sub, Rear(Main Source)	-	7	15	μV
	e_{no2}	Rear(Second Source)	-	5	10	
Signal to noise ratio	S/N_1	Front, Sub, Rear(Main Source)	-	100	-	dBV
	S/N_2	Rear(Second Source)	-	105	-	
Distortion	THD	Vin=1Vrms; all gain=0dB	-	0.025	0.08	%
Channel separation	Sc		80	90	-	dB



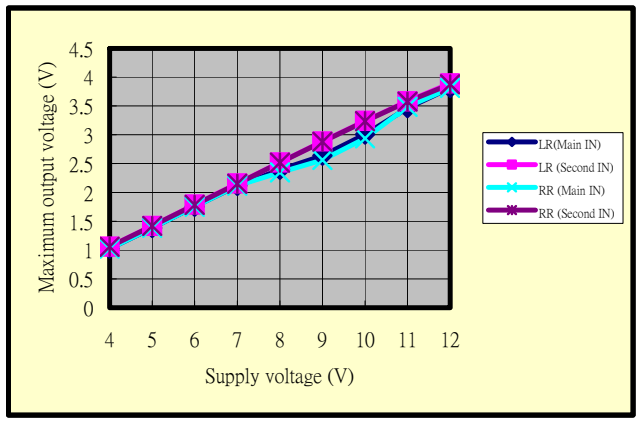
Is VS VDD



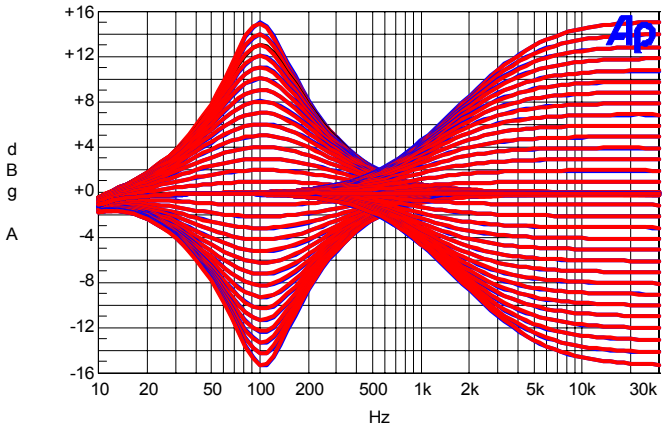
OUTSW Output Level VS VDD



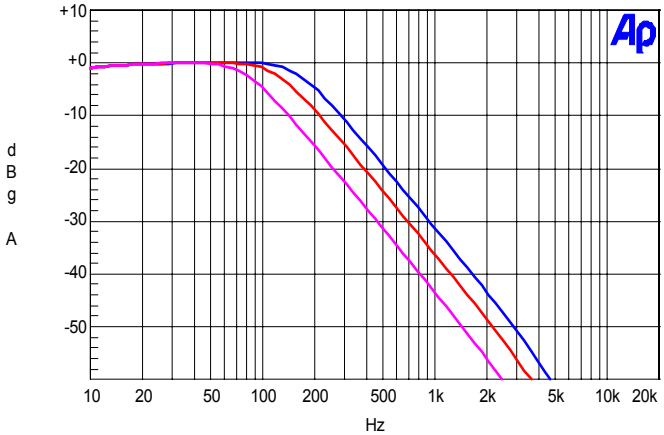
Front Output Level VS VDD



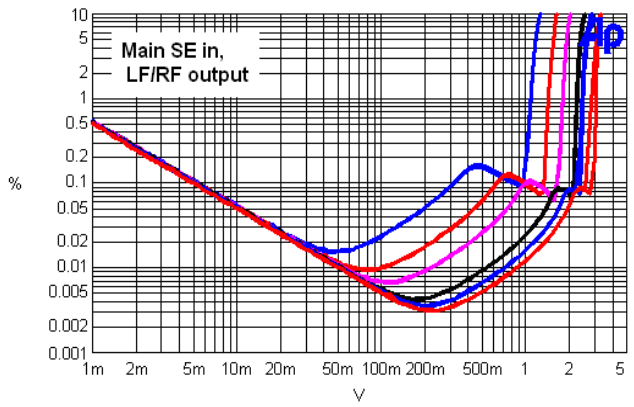
Rear Output Level VS VDD



Tone Curve

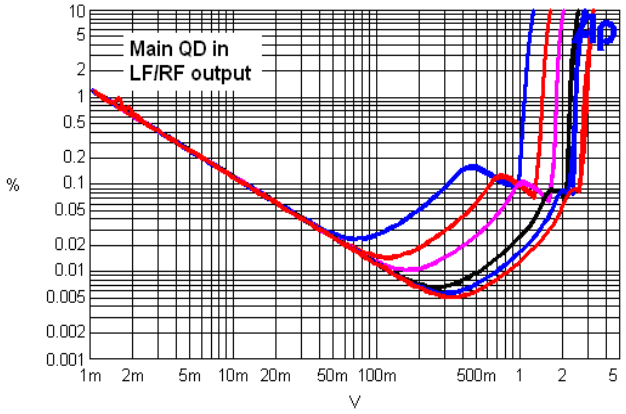


Lo w Pass Crossover Frequency



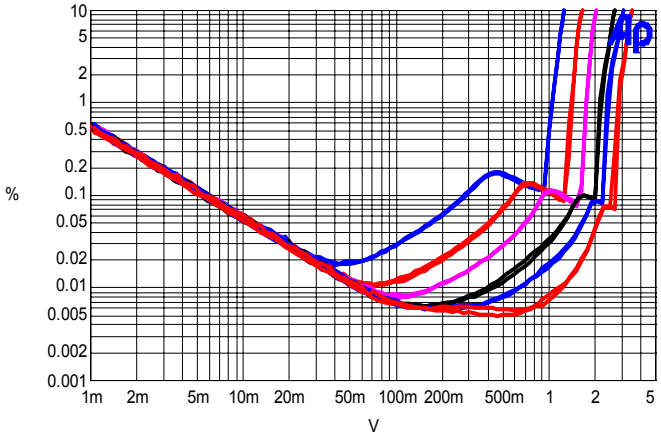
VDD=4,5,6,8,9,10V

Output THD VS VDD, SE IN



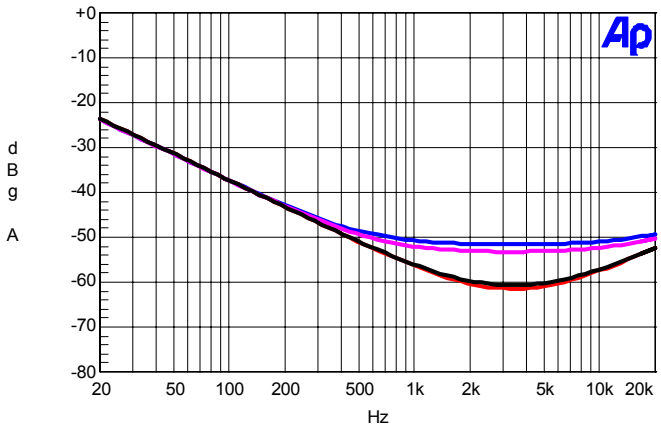
VDD=4,5,6,8,9,10V

Output THD VS VDD, QD IN

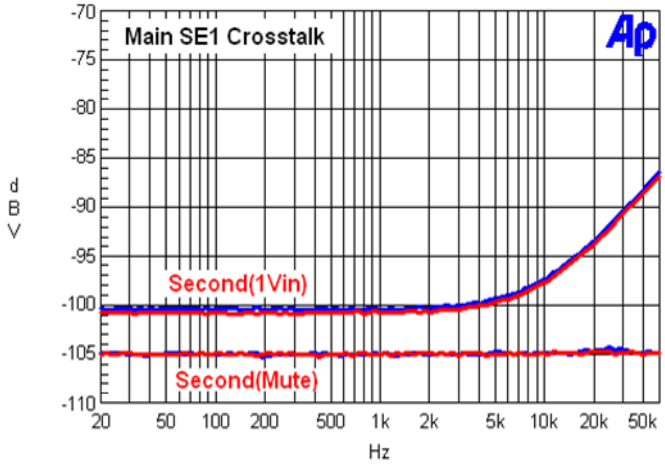


VDD=4,5,6,8,9,10V, f=80Hz, LPF=160Hz

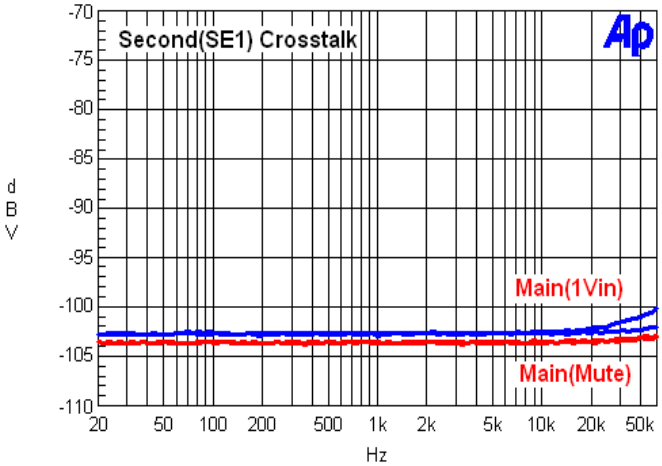
Subwoofer Output THD VS VDD



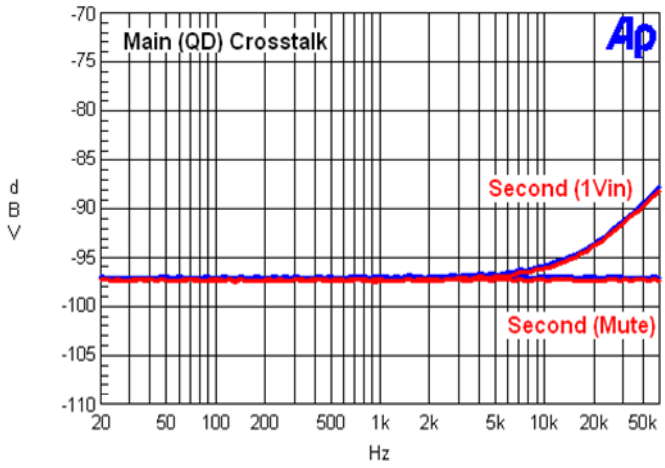
CMRR



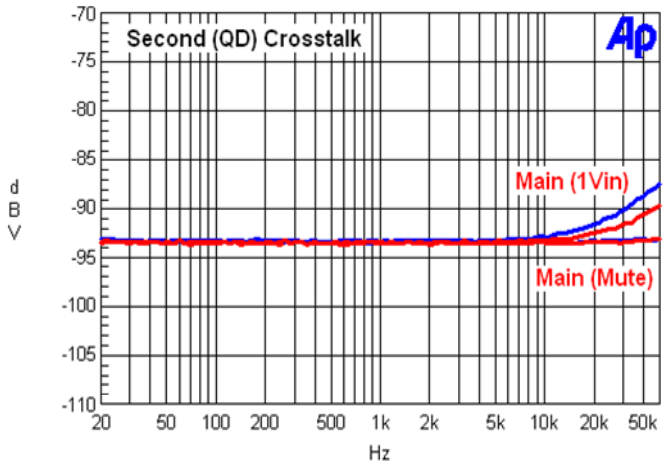
Crosstalk, Main, SE IN



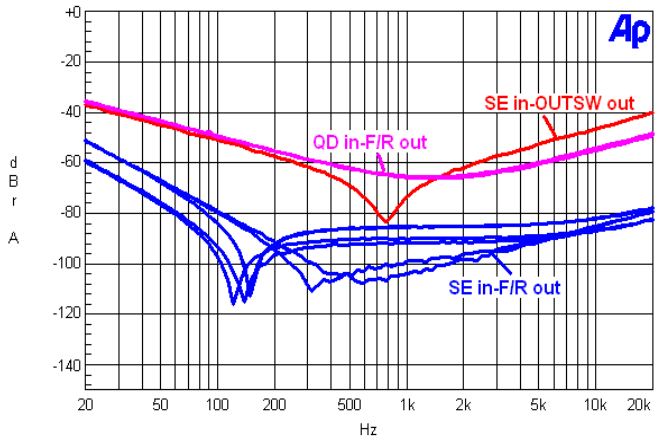
Crosstalk, Second, SE IN



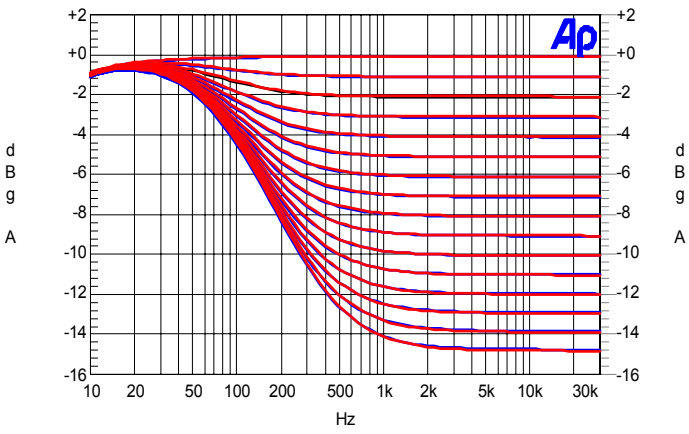
Crosstalk, Main, QD IN



Crosstalk, Second, QD IN



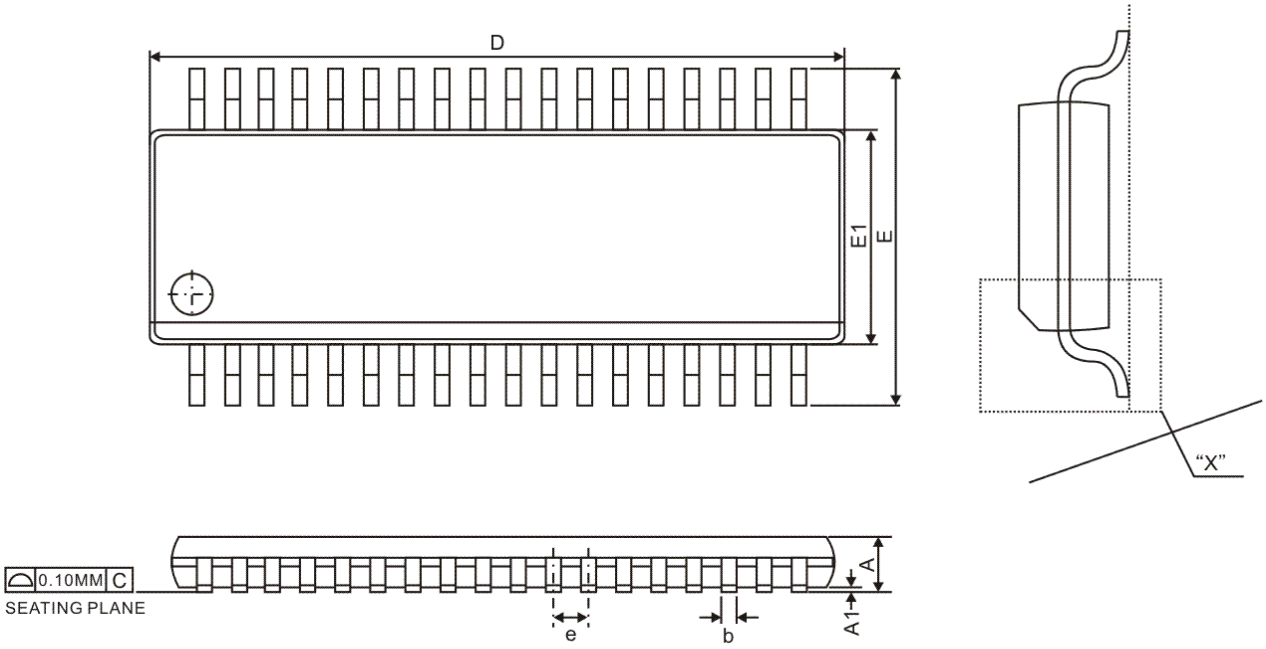
PSRR

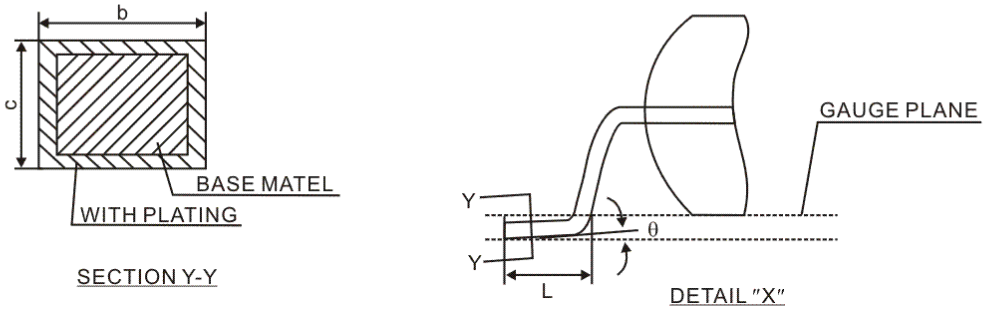


Loudness

PACKAGE INFORMATION

36 PINS, SSOP, 300MIL





Symbol	Dimensions (MM)		
	Min.	Nom.	Max.
A	2.413	2.591	2.794
A1	0.203	0.305	0.406
b	0.300	-	0.450
c	0.127	-	0.254
e		0.800 BSC	
D	15.748	15.875	16.002
E	10.033	-	10.668
E1	7.391	7.493	7.595
L	0.508	-	1.016
θ	0°	-	8°

Notes: Refer to JEDEC MO-118 AA

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