



SANYO Semiconductors DATA SHEET

LV1117 — Bi-CMOS LSI Surround Processor IC for Electronic Volume Control

Overview

The LV1117 is a sound processor IC developed for use in TV sets.

It incorporates surround processing function (AViSS™), pseudo stereo function, auto gain control, and the major functional blocks of an electronic volume control IC.

Functions

- Input function SW (4-channel stereo inputs [L, R])
- LINE OUT (through output)
- Input gain control (-6dB, -4dB, 0dB, 4dB, 6dB: 5 positions)
- AViSS™ (ON/OFF/6-stage level control)
- Tone control (BASS: ± 20 dB, TREBLE: ± 18 dB [in 2dB steps])
- Master volume control (0dB to -14dB: 1dB steps/-14dB to -80dB: 2dB steps/- ∞ = -82dB)
- Balance control
- THROUGH mode/MUTE mode
- Pseudo stereo function (ON/OFF/MONO control)
- L+R output with LPF (MUTE + 7-stage level control: 8 positions)
- I²C bus control
- Parallel output port (4 pin)

* Initial output gain of L+R can be controlled by the resistance value of external resistor.

Specifications

Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC max}		10.5	V
Allowable power dissipation	P _{d max}	Ta ≤ 70°C	700	mW
Operating temperature	Topr		-25 to +70	°C
Storage temperature	Tstg		-40 to +125	°C

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LV1117

Operating Conditions at $T_a=25^\circ\text{C}$

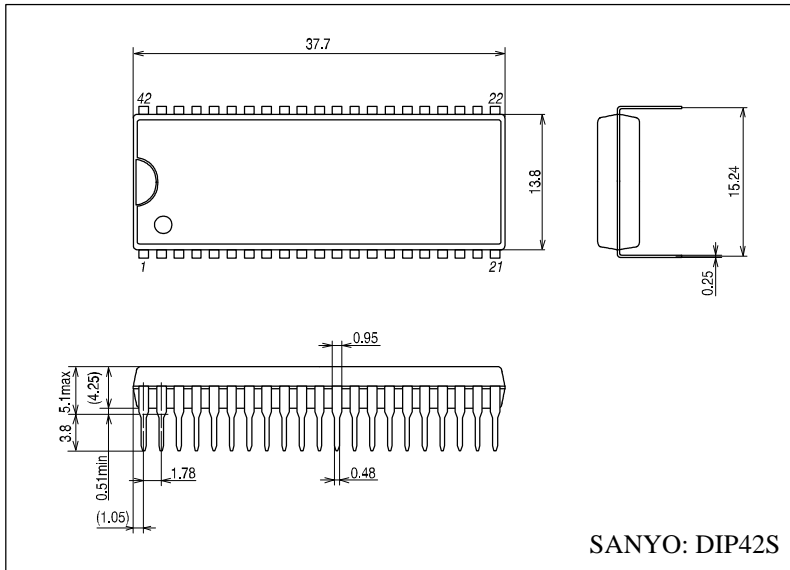
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		9.0	V
Operating supply voltage	$V_{CC\ opg}$		5.0 to 10.0	V
Control data				
"H" level voltage	V_{IH}		2.0 to 5.5	V
"L" level voltage	V_{IL}		0.0 to 1.0	V
Pulse width	$t_{\phi w}$		1.0	μs
Hold time	t_{hold}		1.0	μs
Operating frequency	f_{opg}		500	kHz

Electrical Characteristics at $T_a=25^\circ\text{C}$, $V_{CC}=9.0\text{ V}$, $f_{in}=1\text{kHz}$, $V_{IN}=300\text{mV}_{rms}=0\text{dB}$, $R_L=10\text{k}\Omega$ (Input=L/Rch-A, Output=L/R-VROUT)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	ICCO			48		mA
[Total through (Total through mode, Volume control: 0dB)]						
Voltage gain	VG_T		-1.6	-0.6	+0.6	dB
Maximum output voltage	VO_T	THD=1%	2.0	2.6		Vrms
Total harmonic distortion	THD_T	DIN AUDIO		0.03	0.1	%
Output noise voltage	VNO_T	DIN AUDIO		-93	-85	dBV
Cross talk	CT_T	DIN AUDIO	85	93		dB
[Matrix through (Matrix mode, Input gain: 0dB, Volume control: 0dB)]						
Voltage gain	VG_F		-1.7	-0.7	+0.7	dB
Maximum output voltage	VO_M	THD=1%	1.5	2.0		Vrms
Total harmonic distortion	THD_M	DIN AUDIO		0.04	0.1	%
Output noise voltage	VNO_M	DIN AUDIO		-92	-83	dBV
Cross talk	CT_M	DIN AUDIO	85	91		dB
[MONO mode (MONO mode, Input gain: 0dB, Volume control: 0dB)]						
Maximum output voltage	VO_S	THD=1%	1.5	2.0		Vrms
Total harmonic distortion	THD_S	DIN AUDIO		0.04	0.5	%
Output noise voltage	VNO_S	DIN AUDIO		-92	-82	dBV
[Surround (Surround mode-A, Input gain : 0dB, Volume control : 0dB)]						
Maximum output voltage	VO_S	THD=1%	1.5	2.0		Vrms
Total harmonic distortion	THD_S	DIN AUDIO		0.2	0.5	%
Output noise voltage	VNO_S	DIN AUDIO		-90	-81	dBV
[Pseudo stereo (Pseudo mode, Input gain: 0dB, Volume control: 0dB)]						
Maximum output voltage	VO_S	THD=1%	1.5	2.0		Vrms
Total harmonic distortion	THD_S	DIN AUDIO		0.07	0.5	%
Output noise voltage	VNO_S	DIN AUDIO		-90	-82	dBV
[Bass band EQR (Matrix through mode, Input gain: 0dB, Volume control: 0dB)]						
Control range	Geq_B	Max. Boost/Cut	± 18	± 20	± 22	dB
Step resolution	$Estep_B$		1.0	2.0	3.0	dB
[Treble band EQR (Matrix through mode, Input gain: 0dB, Volume control: 0dB)]						
Control range	Geq_T	Max. Boost/Cut	± 16	± 18	± 20	dB
Step resolution	$Estep_T$		1.0	2.0	3.0	dB
[L+R output function (Output=L+ROUT, Step=0dB, L+R_Step=Step 4)]						
Voltage gain	VG_F		-2.3	-1.3	-0.3	dB
Maximum output voltage	VO_F	THD=1%	2.0	2.5		Vrms
Total harmonic distortion	THD_F	DIN AUDIO		0.03	0.1	%
Output noise voltage	VNO_F	DIN AUDIO		-99	-85	dBV
[Port output (20/21/22/23 pin)]						
Low level output voltage	V_{OL}	$I_O=1\text{mA}$			0.3	V
Port output sink current	I_O				1.0	mA

Package Dimensions

unit : mm
3025C



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