


SANYO Semiconductors

DATA SHEET

LA7693X Series

Monolithic Linear IC
For NTSC/PAL/SECAM Color TVs
Built-in CTV Microcontroller
**Video and Sound Processing ICs
(VIF/SIF/Y/C/Deflection/CbCr IN)**

Overview

The LA7693X series is a single-chip video and sound processor IC with a built-in microcontroller that supports all of the different worldwide broadcasting systems. The IC provides fully integrated solution to rationalize the design of color TV sets, increase productivity, and reduce total costs.

Functions

- I²C bus control system with a built-in microcontroller
- VIF/SIF/Y/C/Deflection/CbCr IN
- Adjustment-free VIF/SIF
- 1X'tal multi-system that supports all broadcasting systems
- No VCO coil required
- Internal sound carrier BPF, 4-system sound carrier trap
- Digital AFT system
- Supports EW (LA76933J, LA76938Y)
- Supports SECAM (LA76936Y, LA76938Y)

Line-up

Type name	NTSC	PAL	SECAM	Deflection	CbCr input	E/W
LA76931J	○	○	×	○	○	×
LA76933J	○	○	×	○	○	○
LA76936Y	○	○	○	○	○	×
LA76938Y	○	○	○	○	○	○

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LA7693X series

Specifications

Maximum Ratings (BIP Chip) at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_8 max		7.0	V
	V_{43} max		7.0	V
	V_{55} max		7.0	V
Maximum supply current	I_{11} max		25	mA
	I_{19} max		35	mA
Allowable power dissipation	P_d max	$T_a \leq 65^\circ\text{C}^*$	1.6	W
Operating temperature	T_{opr}		-10 to +65	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

* Mounted on a substrate : 213mm×140mm×1.6mm, glass epoxy board.

Absolute Maximum Ratings (Micro-computer Chip) at $T_a = 25^\circ\text{C}$, $V_{SS} = 0\text{V}$

Parameter		Symbol	Pins	Conditions	Ratings			Unit
					min	typ	max	
Maximum supply voltage		V_{DD} max	V_{DD}	Mask	-0.3		+6.0	V
				Flash	-0.3		+6.5	V
Input voltage		V_I	$\overline{RES}$		-0.3		$V_{DD}+0.3$	V
Output voltage		V_O	FILT		-0.3		$V_{DD}+0.3$	V
Input/output voltage		V_{IO}	Ports0, 1		-0.3		$V_{DD}+0.3$	V
High level output current	Peak output current *2	I_{OPH}	Ports04 to 07, 1	•CMOS output •For each pin.	-4			mA
	Total output current	ΣI_{OAH}	Ports04 to 07, 1	The total of all pins.	-15			mA
Low level output current	Peak output current *2	I_{OPL}	Ports0, 1	For each pin			20	mA
	Total output current	ΣI_{OAL}	Ports0, 1	The total of all pins.			30	mA

*1 J : unted on a MASKROM = 24KB, K : MASKROM = 28KB, L : MASKROM = 32KB, M : MASKROM = 40KB, N : MASKROM = 48KB

FB : FLASHROM = 48KB (This production is produced and sold by SANYO under license of the Silicon Storage Technology Inc.)

*2 The average current for each pin must not be over 1mA.

Operating Conditions (Bip Chip) at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_8		5.0	V
	V_{43}		5.0	V
	V_{55}		5.0	V
Recommended supply current	I_{11}		19	mA
	I_{19}		31	mA
Operating supply voltage range	V_8 op		4.7 to 5.3	V
	V_{43} op		4.7 to 5.3	V
	V_{55} op		4.7 to 5.3	V
Operating supply current range	I_{11} op		28 to 34	mA
	I_{19} op		17 to 21	mA

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Recommended Operating Range (Micro-computer Chip) at $T_a = -10^{\circ}\text{C}$ to $+65^{\circ}\text{C}$, $V_{SS} = 0\text{V}$

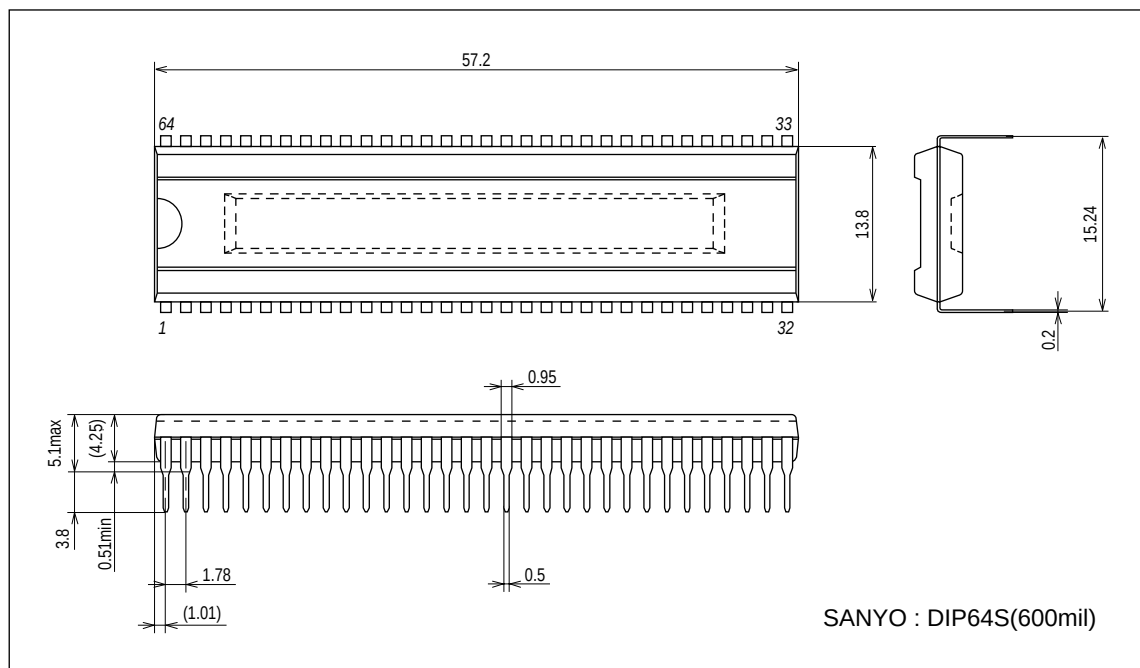
Parameter	Symbol	Pins	Conditions	V_{DD} [V]	Ratings			Unit
					min	typ	max	
Operating supply voltage	V_{DD}	V_{DD} max			4.5		5.5	V
Hold voltage	V_{HD}	V_{DD}	RAMs and the registers data are kept in HOLD mode.		2.0		5.5	V
High level input voltage	V_{IH} (1)	Ports04 to 07	Output disable	4.5 to 5.5	$0.75V_{DD}$		V_{DD}	V
	V_{IH} (2)	Ports00 to 03, 1 (Schmitt) $\overline{\text{RES}}$ (Schmitt)	Output disable	4.5 to 5.5	$0.75V_{DD}$		V_{DD}	V
Low level input voltage	V_{IL} (1)	Ports0	Output disable	4.5 to 5.5	V_{SS}		$0.25V_{DD}$	V
	V_{IL} (2)	Ports00 to 03, 1 (Schmitt) $\overline{\text{RES}}$ (Schmitt)	Output disable	4.5 to 5.5	V_{SS}		$0.25V_{DD}$	V
Operation cycle time	t_{CYC} (1)		All functions operating	4.5 to 5.5	0.844	0.848	0.852	μs
	t_{CYC} (2)		OSD and Data slicer are not operating	4.5 to 5.5	0.844		400	μs
Oscillation frequency range	F_{mRC}		Internal RC oscillation	4.5 to 5.5	0.4	0.8	3.0	MHz

(Note) FLASH-ROM erase/write temperature range : $T_a = 25 \pm 2^{\circ}\text{C}$ ($V_{DD} = 4.5$ to 5.5V)

Package Dimensions

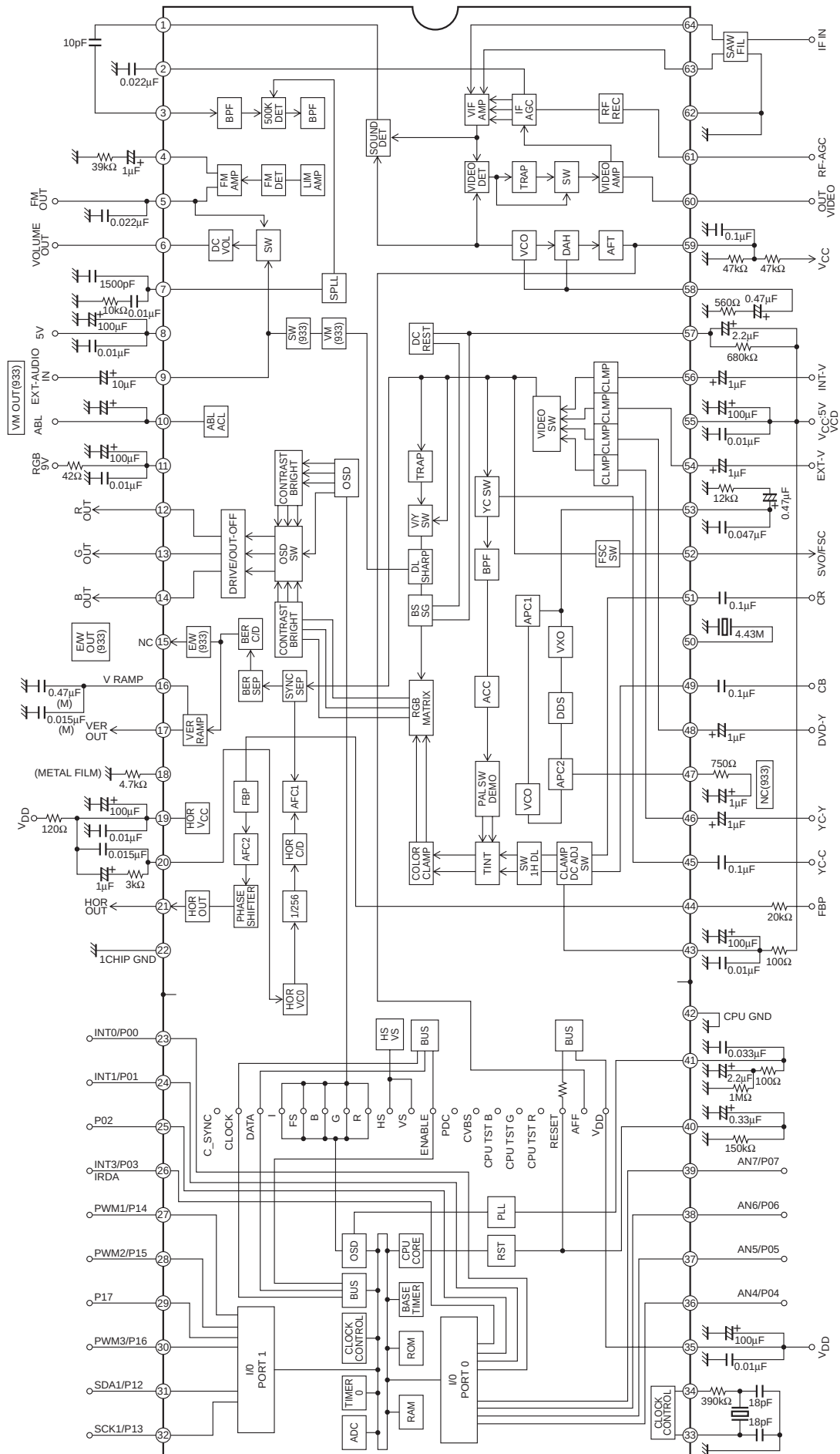
unit : mm (typ)

3300



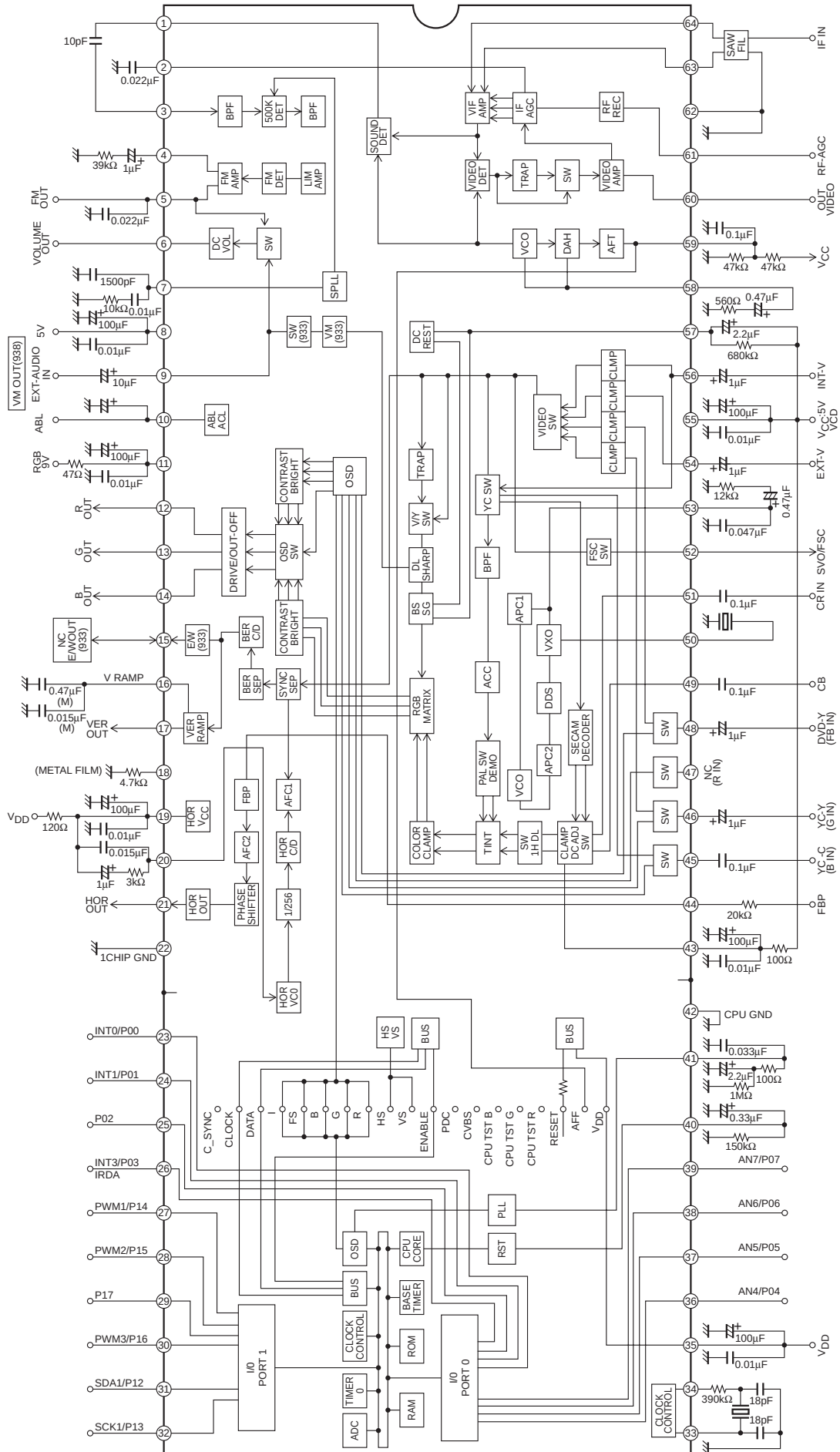
LA7693X series

Block Diagram 1 LA76931J/933J



LA7693X series

Block Diagram 2 LA76936Y/938Y



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