

<b>SANYO</b>	No.2843	<b>LA7938</b>
	<b>Electronic Channel Select System Control Circuit for TV / VCR Use</b>	

**Overview**

The Sanyo LA7938 Monolithic Linear TV/VCR Electronic Tuner System Controller IC integrates all the peripheral circuitry for a TV or VTR tuner, with the exception of the microcontroller, into a single chip.

It incorporates a 2-input/4-output band-switch, 5.0V and 5.75V voltage regulators, comparator, sync signal processing circuit, AFT DC shift circuit and constant current circuit. Each PNP output of the band-switch circuit typically sources 40mA, eliminating the need for external current drivers.

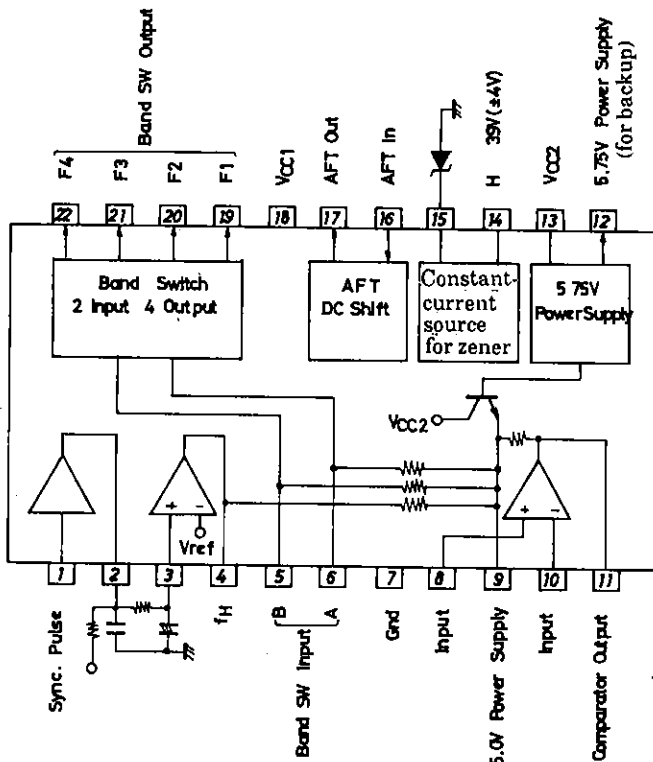
The LA7938 operates from a recommended supply voltage range of 8.7 to 12.5V. It is available in 22-pin shrink DIPs.

**Features**

- Integrates all tuner peripheral circuits except controller
- Band-switch outputs source up to 40mA
- Regulators each supply up to 50mA
- 22-pin shrink DIP

**Block Diagram**

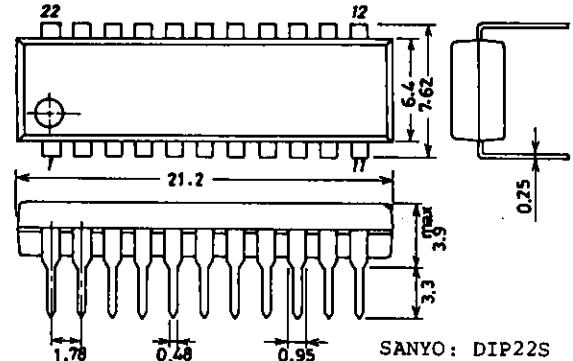
[For backup purposes]



**Package Dimensions**

(unit : mm)

3059



## LA7938

Maximum Ratings at Ta = 25°C			unit
Allowable Power Dissipation	Pd max	Ta ≤ 65°C	1000 mW
Operating Temperature	Topr		-20 to +65 °C
Storage Temperature	Tstg		-55 to +150 °C
<b>[Band-Switch]</b>			
VCC1 Maximum Supply Voltage	V18 max		13 V
Maximum Load Current	I19 max		-50 mA
	I20 max		-50 mA
	I21 max		-50 mA
	I22 max		-50 mA
Applied Input Voltage	V6 max		3.5 V
	V5 max		3.5 V
<b>[Sync Detector]</b>			
Positive Input Voltage	V1 max		3.5 V
Negative Input Voltage	-V1 max		-1.4 V
Applied Input Voltage (Pin3)	V3 max	VCC1 = 13V	10 V
Applied Input Voltage	V4 max	VCC1 = VCC2 = 12V	4.6 V
<b>[Voltage Regulators]</b>			
VCC2 Supply Voltage	V13 max		13 V
+5.75V Output Current	I12 max		-50* mA
+5.0V Output Current	I9 max		-50* mA
<b>[Comparator]</b>			
Maximum Input Voltage	V8 max	VCC2 = 13V	13 V
	V10 max	VCC2 = 13V	13 V
Applied Output Voltage	V11 max		6 V
<b>[+31V Constant Current Source]</b>			
Applied Voltage	V14 max		43 V
<b>[AFT Shift Circuit]</b>			
Maximum Input Voltage	V16 max	VCC1 = 13V	13 V

\*: The rating for the total current drawn from both the 5.0V and 5.75V supplies is 70mA.

Operating Conditions at Ta = 25°C			unit
Operating Voltage Range	VCC op		8.7 to 12.5 V

(Band-Switch Truth Table)

Input		Output			
A (Pin6)	B (Pin5)	F1 (Pin19)	F2 (Pin20)	F3 (Pin21)	F4 (Pin22)
L	L	H	Z	Z	Z
H	L	Z	H	Z	Z
L	H	Z	Z	H	Z
H	H	Z	Z	Z	H

Z: HIGH-impedance

## LA7938

Operating Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC1}, V_{CC2} = 12\text{V}$		min	typ	max	unit
Quiescent Current Dissipation (1)	$I_{CC1}$		9.0		mA
Quiescent Current Dissipation (2) [Band-Switch]	$I_{CC2}$		7.0		mA
Output Saturation Voltage	$F_1(\text{sat.})$ $I_O = -40\text{mA}$			0.7	V
	$F_2(\text{sat.})$ $I_O = -40\text{mA}$			0.7	V
	$F_3(\text{sat.})$ $I_O = -40\text{mA}$			0.7	V
	$F_4(\text{sat.})$ $I_O = -40\text{mA}$			0.7	V
H-Level Input Voltage	$V_{5HI}$ $V_{6HI}$	Open gate type microcomputer must be in OFF state (pull-up resistance on chip).			
L-Level Input Voltage	$V_{5LO}$ $V_{6LO}$			0.8	V
Output Leakage Current [Sync Circuit]	$I_{FL}$	-50			$\mu\text{A}$
Input Threshold Voltage	$V_{1TH}$	0.4	0.72	1.5	V
Pin2 Output Saturation Voltage	$V_{2(\text{sat.})}$ $I_{SINK} = 10\text{mA}$			1.0	V
Pin3 H-Level Input	$V_{3HI}$	5.0			V
Pin3 L-Level Input	$V_{3HO}$			3.0	V
Pin4 Output Saturation Voltage	$V_{4(\text{sat.})}$ $I_{SINK} = 2\text{mA}$			0.7	V
[+5.75V, +5.0V Regulators]					
+5.75V Output Voltage	$V_{12}$ $I_{12} = -20\text{mA}$	5.35	5.75	6.15	V
+5.75 Output Voltage Regulation	$V_{12\text{Reg}}$ $I_{12} = 5\text{mA} \rightarrow 20\text{mA}$	-25		25	mV
+5.0V Output Voltage	$V_9$ $I_9 = -20\text{mA}$	4.6	5.0	5.4	V
+5.0V Output Voltage Regulation	$V_{9\text{Reg}}$ $I_9 = 5\text{mA} \rightarrow 20\text{mA}$		50	100	mV
[31V Current Source]					
Pin15 Output Current [AFT Shift Circuit]	$I_{15}$	4.2	6.0	7.8	mA
DC Shift Voltage	$V_{16} - V_{17}$	4.23	4.73	5.23	V
Pin17 Maximum Output Voltage	$V_{17\text{max}}$	5.35	5.75	6.15	V
[Comparator]					
Maximum Operating Input Voltage	$V_{8\text{to }10\text{max}}$	9.0			V
Minimum Operating Input Voltage	$V_{8\text{to }10\text{min}}$			0.7	V
Output Saturation Voltage	$V_{11(\text{sat.})}$ $I_{SINK} = 2\text{mA}$			0.7	V

■ No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.

■ Anyone purchasing any products described or contained herein for an above-mentioned use shall:

- ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use;
- ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.

■ Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of June, 1996. Specifications and information herein are subject to change without notice.