

<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.

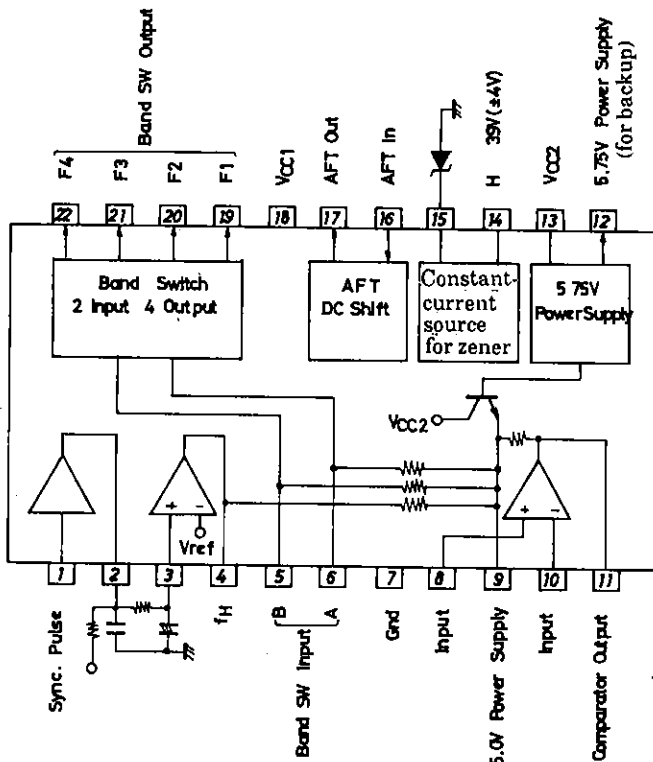
The LA7938 operates from a recommended supply voltage range of 8.7 to 12.5V. It is available in 22-pin shrink DIPs.

**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**

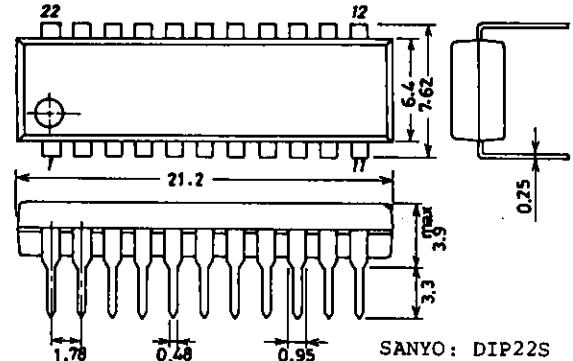
[For backup purposes]



**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

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