

SANYO	No.1775A	LA7851
		CRT Display Synchronization Deflection Circuit

The LA7851 is a sync-deflection circuit IC dedicated to CRT display use. It can be connected to the LA7832,7833 (for vertical output use) to form a sync-deflection circuit that meets every requirement for CRT display use.

So far, ICs for color TV use have been applied to the sync-deflection circuit for CRT display use and general-purpose ICs such as one-shot multivibrator, inverter and a lot of transistors have been used to form the peripherals such as sync input interface, horizontal phase shifter. The LA7851 contains these peripherals on chip, has a wide vertical pull-in range of 20Hz, and adopts a stable circuit for horizontal oscillation from 15kHz to 100kHz aiming at improving the characteristics required for CRT display use.

Features

- The vertical pull-in range 20Hz permits non-adjusting at vertical sync 50Hz/60Hz.
- The horizontal oscillation frequency can be adjusted stably from 15kHz to 100kHz.
- The horizontal display can be shifted right/left.
- The horizontal/vertical sync input can be used intact regardless of the difference in pulse polarity and pulse width.
- The AFC feedback sawtooth wave can be obtained by simply applying a flyback pulse to the IC as a trigger pulse.
- Any duty of the horizontal pulse can be set.
- Good linearity because DC bias at vertical output stage is subjected to sampling control within retrace time.

On-chip Functions

[Horizontal Block]

- AFC
- Horizontal OSC
- X-ray protector
- Horizontal phase shift
- AFC sawtooth wave generator
- Horizontal pulse duty setting

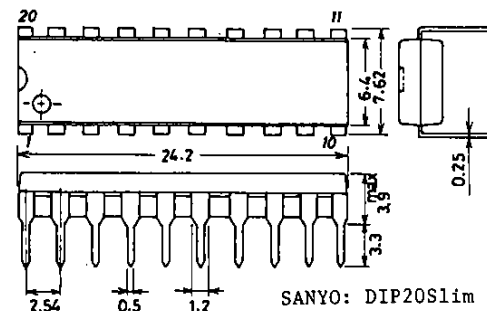
[Vertical Block]

- Vertical OSC
- Vertical sawtooth wave generator
- Sampling type DC voltage control

Package Dimensions

(unit:mm)

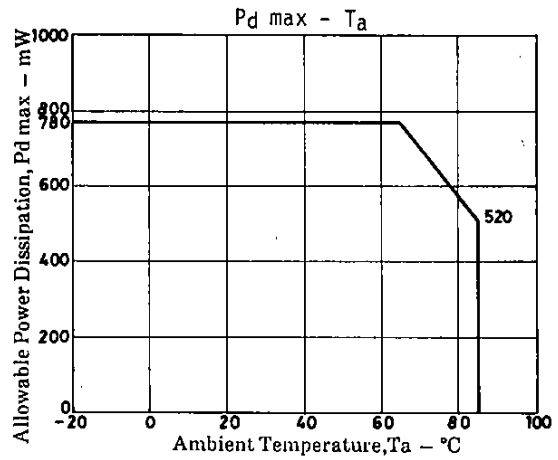
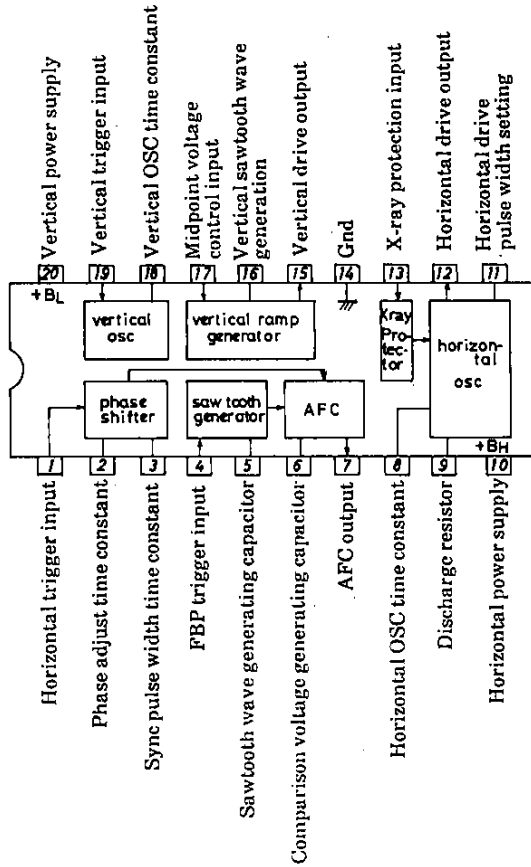
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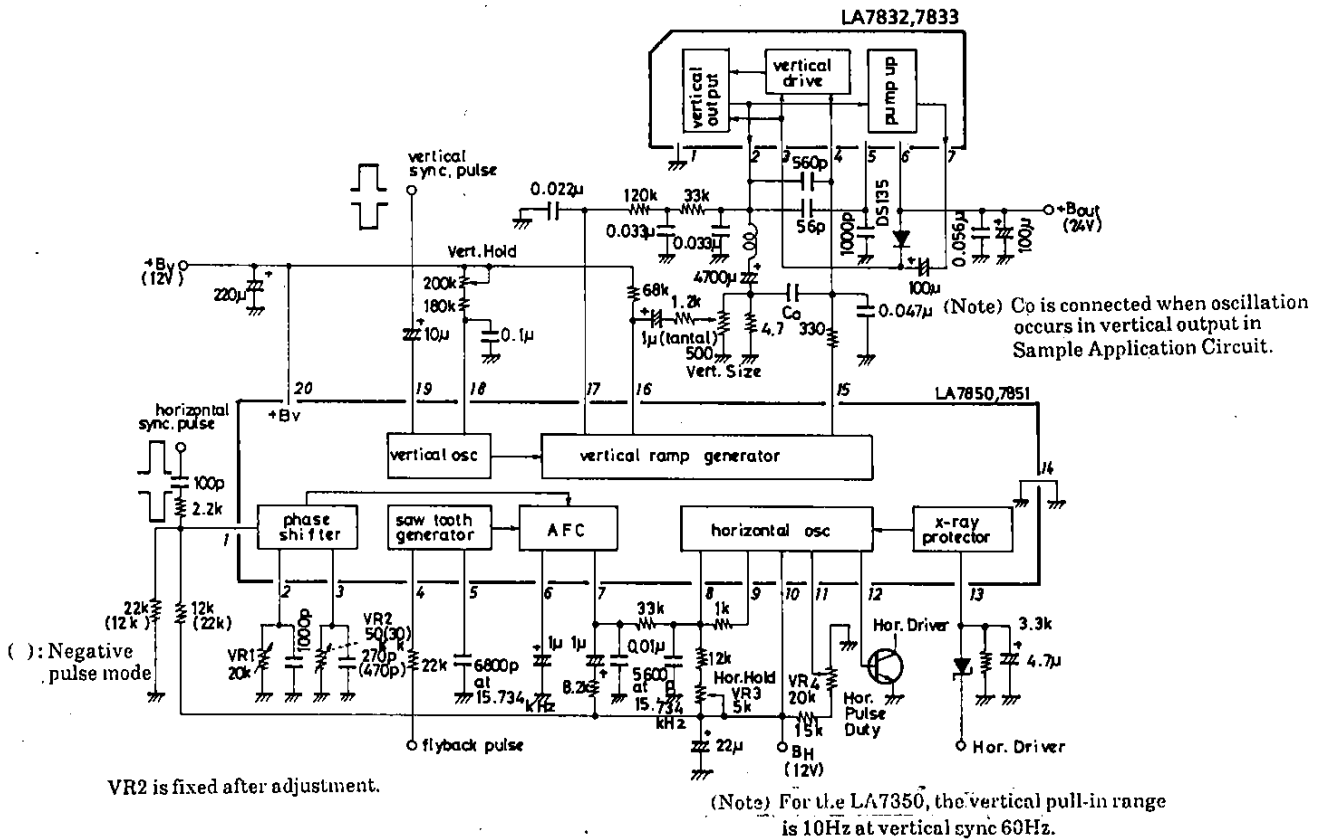
LA7851

Maximum Ratings at Ta = 25°C				unit
Maximum Supply Voltage	V ₁₀ , V ₂₀ max		14	V
Allowable Power Dissipation	P _d max	Ta ≤ 65°C	780	mW
Operating Temperature	Topr		-20 to +85	°C
Storage Temperature	Tstg		-55 to +125	°C
Operating Conditions at Ta = 25°C				unit
Recommended Supply Voltage	V ₁₀ , V ₂₀		12.0	V
Operating Voltage Range	V ₁₀ , V ₂₀ op		9 to 13.5	V
Recommended Vertical Pulse Input Peak Value	V _{PULSE}		5.0	V _{p-p}
Operating Vertical Pulse Input Peak Value Range	V _{PULSE}		2.0 to 6.0	V _{p-p}
Recommended Horizontal Pulse Input Peak Value	H _{PULSE}		5.0	V _{p-p}
Operating Horizontal Pulse Input Peak Value Range	H _{PULSE}		2.0 to 6.0	V _{p-p}
Operating Characteristics at Ta = 25°C, V ₁₁ , V ₂₂ = 12V				min typ max unit
V _{CC10} Current Dissipation	I ₁₀		12	30 mA
V _{CC20} Current Dissipation	I ₂₀		5	12 mA
Vertical Frequency Pull-in Range	V _{P IN}	Vertical sync 60Hz	21.0	23.0 Hz
Vertical Free-running Frequency	f _V	f _V center 55Hz	50	60 Hz
Increased/Reduced Voltage	Δf _{VV}	V ₂₂ = 12 ± 1V, 55Hz at 12V	-0.1	0.1 Hz
Characteristic of Vertical Frequency				
Midpoint Control Threshold Level			3.8	4.4 V
Vertical OSC Start Voltage	f _{V, st}			4.0 V
Temperature Characteristic of Vertical Frequency		Ta = -10 to +60°C	-0.028	0.028 Hz/°C
Vertical Driver Amplification Factor				
	G _V		12	18 dB
Horizontal AFC DC Loop Gain	I _{AFC}		±0.85	±1.6 mA
Horizontal Free-running Frequency	f _H	f _H center 15.734kHz	-750	750 Hz
Horizontal OSC Start Voltage	f _{H, st}			4.0 V
Increased/Reduced Voltage	Δf _{H, V}	V ₁₁ = 12 ± 1V, 15.734kHz at 12V	-50	50 Hz
Characteristic of Horizontal Frequency				
Horizontal OSC Warm-up Drift	Δf _H	5s. to 30min. after application of power	-50	50 Hz
Temperature Characteristic of Horizontal Frequency		Ta = -10 to +60°C	-2.9	2.9 Hz/°C
Horizontal Output Drive Current	I ₁₂		6.0	12.0 mA
Increased/Reduced Voltage		V ₁₀ = 12 ± 1V	-0.5	0.5 %/V
Characteristic of Phase Shifter Delay Time				
Temperature Characteristic of Phase Shifter Delay Time		Ta = -10 to +60°C	-0.1	0.1 %/°C
Increased/Reduced Voltage		V ₁₀ = 12 ± 1V	-1.0	1.0 %/V
Characteristic of Phase Shifter Delay Time				
Temperature Characteristic of Phase Shifter Pulse Width		Ta = -10 to +60°C	-0.13	0.13 %/°C
AFC Phase Comparison Center Time		15.734kHz after F.B.P. input	9.9	11.5 μs
Increased/Reduced Voltage		V ₁₀ = 12 ± 1V	-1.5	1.5 %/V
Characteristic of AFC Phase Comparison Center Time				
Temperature Characteristic of AFC Phase Comparison Center Time		Ta = -10 to +60°C	-0.2	0.2 %/°C
Comparison Waveform Generating Input Operation Voltage	V ₄		0.6	0.9 V
Pin 13 Voltage at Hold-down Operation Start	V ₁₃		0.5	0.8 V

Equivalent Circuit Block Diagram



Sample Application Circuit: 14" Color Monitor/ $f_V = 60\text{Hz}$, $f_H = 15.734\text{kHz}$



Unit (resistance:Ω, capacitance:F)

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