

	No.1581D	LA7850
	CRT Display Synchronization Deflection Circuit	

The LA7850 is a sync-deflection circuit IC dedicated to CRT display use. It can be connected to the LA7832, 7833, 7837, 7838 (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 LA7850 contains these peripherals on chip and adopts a stable circuit for horizontal oscillation from 15kHz to 100kHz aiming at improving the characteristics required for CRT display use.

Features

- 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 vertical 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]

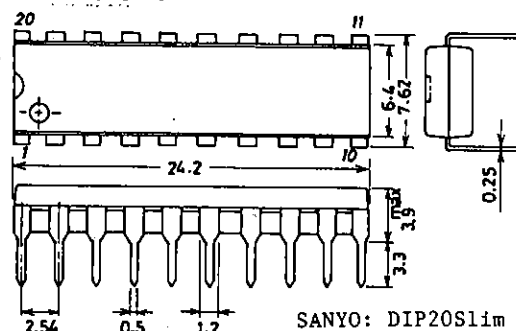
- Vertical OSC
- Vertical sawtooth wave generator
- Sampling type DC voltage control

Maximum Ratings at Ta = 25°C

Maximum Supply Voltage	$V_{10}, V_{20} \text{ max}$	14	unit
Allowable Power Dissipation	$P_d \text{ max}$ $T_a \leq 65^\circ\text{C}$	780	mW
Operating Temperature	T_{opr}	-20 to +85	°C
Storage Temperature	T_{stg}	-55 to +125	°C

Package Dimensions

(unit : mm)
3021B



LA7850

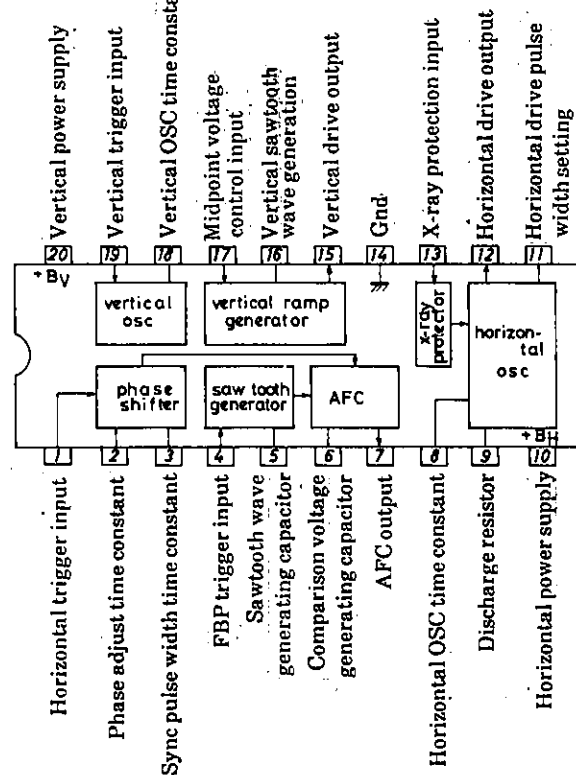
Operating Conditions at $T_a = 25^\circ\text{C}$

		unit
Recommended Supply Voltage	V_{10}, V_{20}	12 V
Operating Voltage Range	V_{10}, V_{20}	9 to 13.5 V
Recommended Vertical Pulse Input Peak Value	V_{pulse}	5 Vp-p
Operating Vertical Pulse Input Peak Value Range	V_{pulse}	2 to 6 Vp-p
Recommended Horizontal Pulse Input Peak Value	H_{pulse}	5 Vp-p
Operating Horizontal Pulse Input Peak Value Range	H_{pulse}	2 to 6 Vp-p

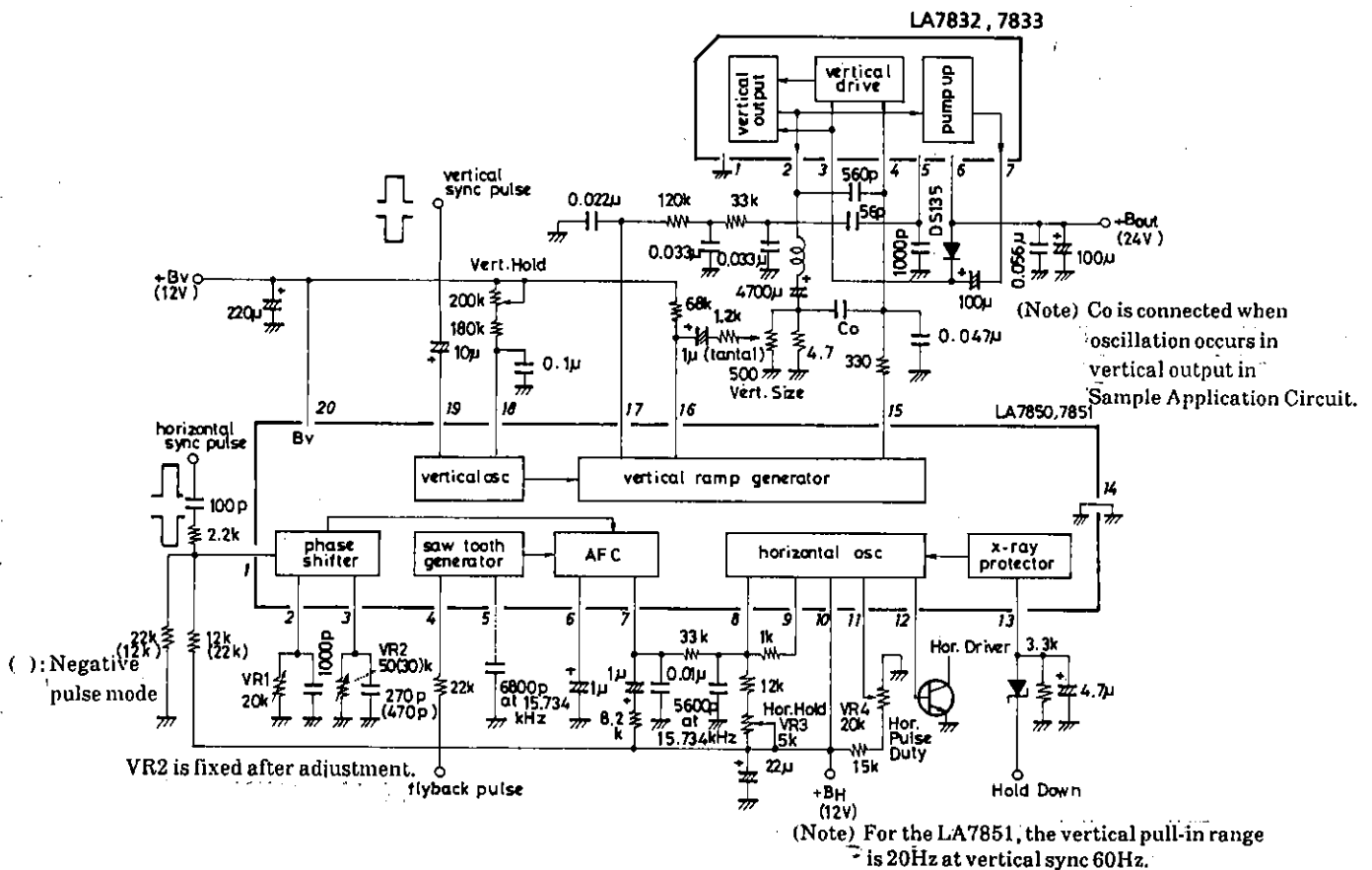
Operating Characteristics at $T_a = 25^\circ\text{C}, V_{10}, V_{20} = 12\text{V}$

		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_{pin} Vertical sync 60Hz	10.0		12.0	Hz
Vertical Free-running Frequency	f_v f_v center 55 Hz	50		60	Hz
Increased/Reduced Voltage	Δf_{vv} $V_{20} = 12 \pm 1\text{V}, 55\text{Hz}$ 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_{vst}			4.0	V
Temperature Characteristic of Vertical Frequency	$T_a = -10$ to $+60^\circ\text{C}$	-0.028		0.028	Hz/ $^\circ\text{C}$
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_{Hst}			4.0	V
Increased/Reduced Voltage	Δf_{Hv} $V_{10} = 12 \pm 1\text{V}, 15.734\text{kHz}$ 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	$T_a = -10$ to $+60^\circ\text{C}$	-2.9		2.9	Hz/ $^\circ\text{C}$
Horizontal Output Drive Current	I_{12}	6.0		12.0	mA
Increased/Reduced Voltage	$V_{10} = 12 \pm 1\text{V}$	-0.5		0.5	%/V
Characteristic of Phase Shifter Delay Time					
Temperature Characteristic of Phase Shifter Delay Time	$T_a = -10$ to $+60^\circ\text{C}$	-0.1		0.1	%/ $^\circ\text{C}$
Increased/Reduced Voltage	$V_{10} = 12 \pm 1\text{V}$	-1.0		1.0	%/V
Characteristic of Phase Shifter Delay Time					
Temperature Characteristic of Phase Shifter Pulse Width	$T_a = -10$ to $+60^\circ\text{C}$	-0.13		0.13	%/ $^\circ\text{C}$
AFC Phase Comparison Center Time	15.734kHz after F.B.P. input	9.9		11.5	μs
Increased/Reduced Voltage	$V_{10} = 12 \pm 1\text{V}$	-1.5		1.5	%/V
Characteristic of AFC Phase Comparison Center Time					
Temperature Characteristic of AFC Comparison Center Time	$T_a = -10$ to $+60^\circ\text{C}$	-0.2		0.2	%/ $^\circ\text{C}$
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



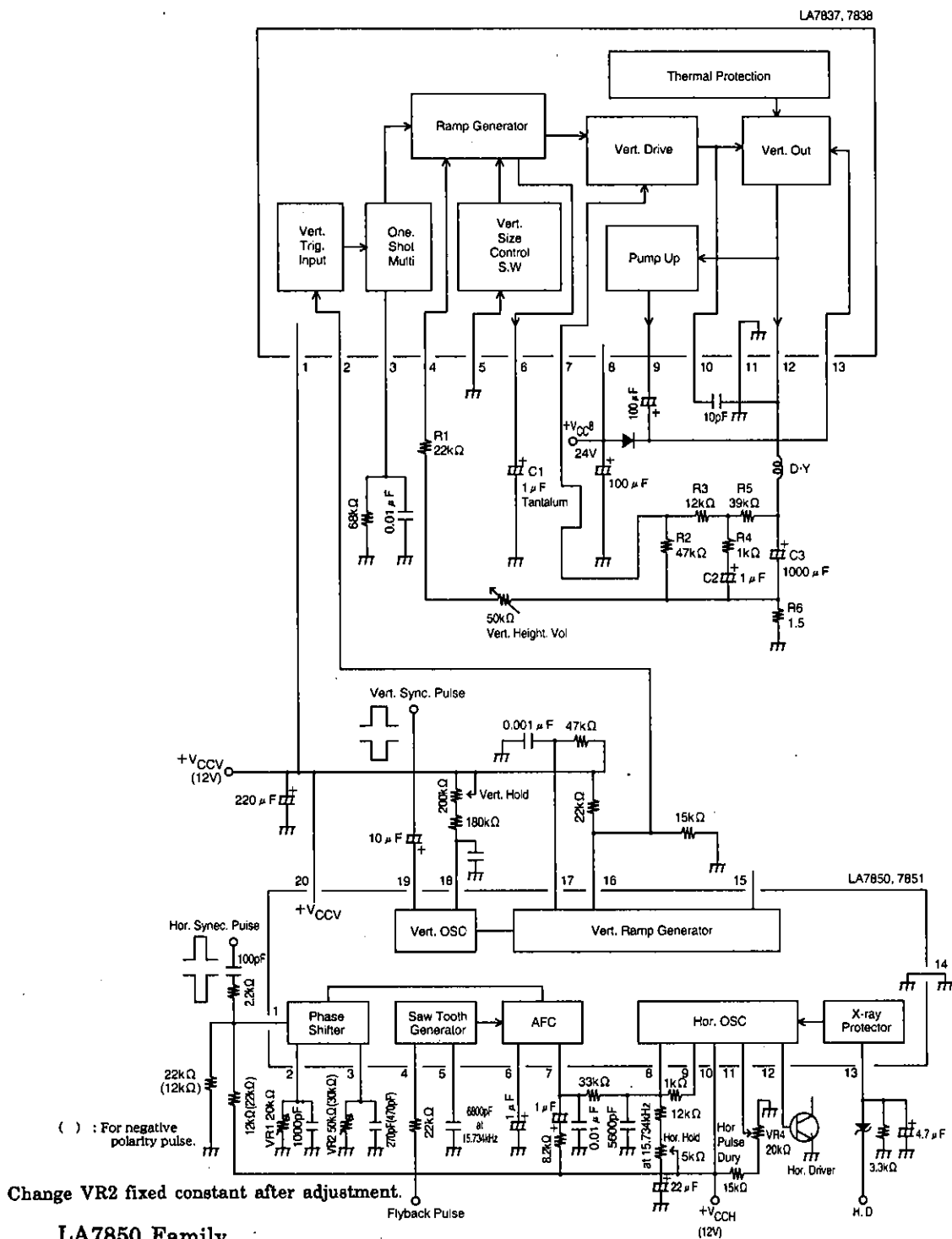
Sample Application Circuit: 14" Color Monitor/ $f_V = 60\text{Hz}$, $f_H = 15.734\text{kHz}$



Unit (resistance: Ω , capacitance: F)

LA7850

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



LA7850 Family

Type No.		LA7850	LA7851	LA7852	LA7853
Package		DIP-20S (Slim Type)	DIP-20S (Slim Type)	DIP-22S (Shrink Type)	DIP-22S (Shrink Type)
Differences in characteristics.	Vertical pull-in range ($f_v = 60\text{Hz}$)	10Hz	20Hz	10Hz	20Hz
	GND pin	Hor./vert. common	Hor./vert. common	Hor./vert. separated	Hor./vert. separated

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