

**SANYO**

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]**

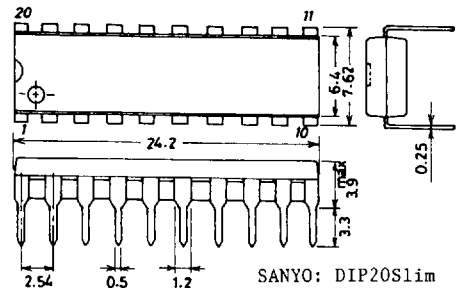
- AFC
- Horizontal OSC
- X-ray protector
- Horizontal phase shift
- AFC sawtooth wave generator
- Horizontal pulse duty setting

**[Vertical Block]**

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

**Maximum Ratings at  $T_a = 25^\circ\text{C}$** 

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

**Package Dimensions**(unit : mm)  
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**Operating Conditions at Ta=25°C**

			unit
Recommended Supply Voltage	V <sub>10</sub> , V <sub>20</sub>	12	V
Operating Voltage Range	V <sub>10</sub> , V <sub>20</sub>	9 to 13.5	V
Recommended Vertical Pulse Input Peak Value	V <sub>pulse</sub>	5	V <sub>p-p</sub>
Operating Vertical Pulse Input Peak Value Range	V <sub>pulse</sub>	2 to 6	V <sub>p-p</sub>
Recommended Horizontal Pulse Input Peak Value	H <sub>pulse</sub>	5	V <sub>p-p</sub>
Operating Horizontal Pulse Input Peak Value Range	H <sub>pulse</sub>	2 to 6	V <sub>p-p</sub>

**Operating Characteristics at Ta=25°C, V<sub>10</sub>, V<sub>20</sub>=12V**

		min	typ	max	unit
V <sub>CC10</sub> Current Dissipation	I <sub>10</sub>	12		30	mA
V <sub>CC20</sub> Current Dissipation	I <sub>20</sub>	5		12	mA
Vertical Frequency Pull-in Range	V <sub>p in</sub> Vertical sync 60Hz	10.0		12.0	Hz
Vertical Free-running Frequency	f <sub>v</sub> f <sub>v</sub> center 55 Hz	50		60	Hz
Increased/Reduced Voltage	Δf <sub>vv</sub> V <sub>20</sub> =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 <sub>vst</sub>			4.0	V
Temperature Characteristic of Vertical Frequency	Ta=-10 to +60°C	-0.028		0.028	Hz/°C
Vertical Driver Amplification Factor	G <sub>v</sub>	12		18	dB
Horizontal AFC DC Loop Gain	I <sub>AFC</sub>	±0.85		±1.6	mA
Horizontal Free-running Frequency	f <sub>H</sub> f <sub>H</sub> center 15.734kHz	-750		750	Hz
Horizontal OSC Start Voltage	f <sub>Hst</sub>			4.0	V
Increased/Reduced Voltage	Δf <sub>Hv</sub> V <sub>10</sub> =12±1V, 15.734kHz at 12V	-50		50	Hz
Characteristic of Horizontal Frequency					
Horizontal OSC Warm-up Drift	Δf <sub>H</sub> 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 <sub>12</sub>	6.0		12.0	mA
Increased/Reduced Voltage	V <sub>10</sub> =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 <sub>10</sub> =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 <sub>10</sub> =12±1V	-1.5		1.5	%/V
Characteristic of AFC Phase Comparison Center Time					
Temperature Characteristic of AFC Comparison Center Time	Ta=-10 to +60°C	-0.2		0.2	%/°C
Comparison Waveform Generating Input Operation Voltage	V <sub>4</sub>	0.6		0.9	V
Pin 13 Voltage at Hold-down Operation Start	V <sub>13</sub>	0.5		0.8	V



# LA7850

**Sample Application Circuit : 14" monitor oniror/ $f_V = 60\text{Hz}$ ,  $f_H = 15.734\text{kHz}$   
Vertical retrace time  $\leq 700\mu\text{s}$**

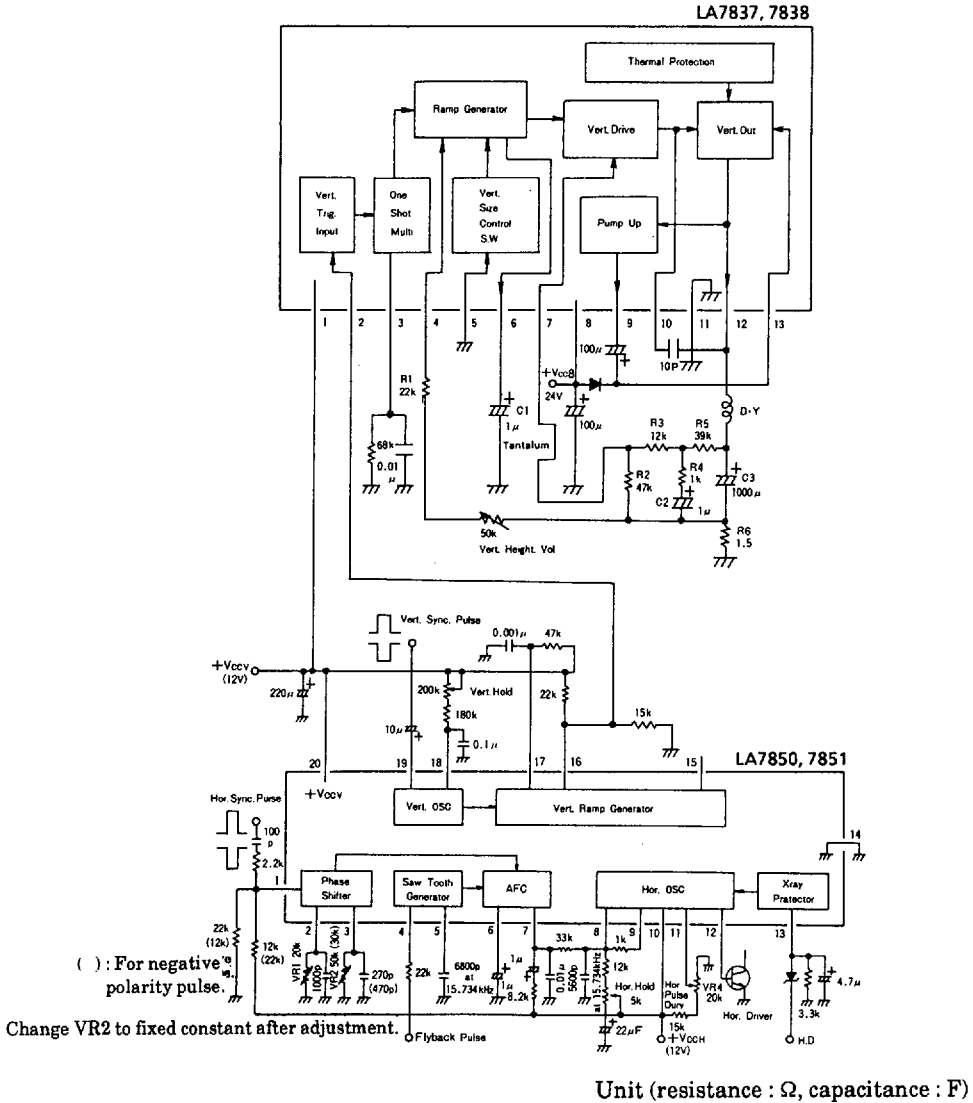


Fig.1

## 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
	GND pin	Hor./vert. common	Hor./vert. common	Hor./vert. separated