

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

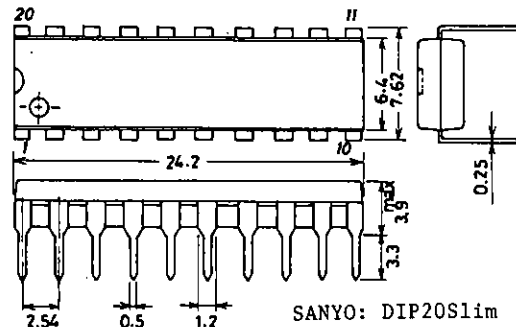
#### [Vertical Block]

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

### Package Dimensions

(unit:mm)

3021B



LA7851

Maximum Ratings at Ta = 25°C

Maximum Supply Voltage	V <sub>10</sub> , V <sub>20</sub> max	14	V	unit
Allowable Power Dissipation	P <sub>d</sub> max Ta ≤ 65°C	780	mW	
Operating Temperature	T <sub>opr</sub>	-20 to +85	°C	
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C	

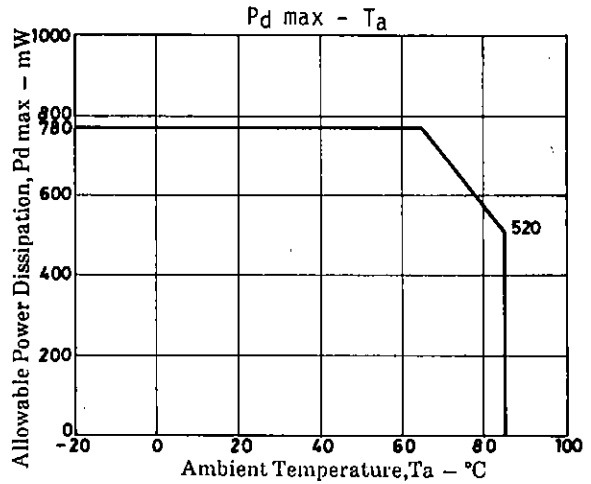
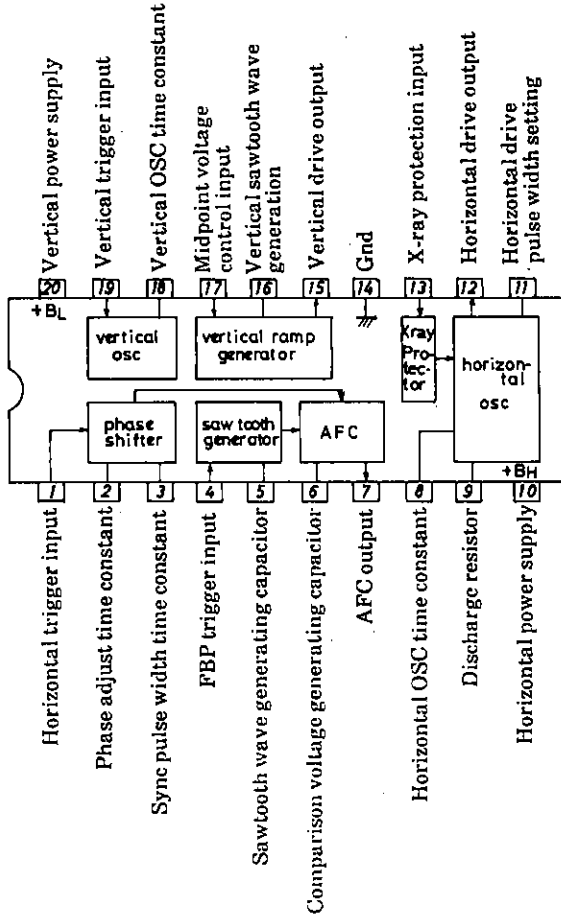
Operating Conditions at Ta = 25°C

Recommended Supply Voltage	V <sub>10</sub> , V <sub>20</sub>	12.0	V	unit
Operating Voltage Range	V <sub>10</sub> , V <sub>20</sub> op	9 to 13.5	V	
Recommended Vertical Pulse Input Peak Value	V <sub>PULSE</sub>	5.0	V <sub>p-p</sub>	
Operating Vertical Pulse Input Peak Value Range	V <sub>PULSE</sub>	2.0 to 6.0	V <sub>p-p</sub>	
Recommended Horizontal Pulse Input Peak Value	H <sub>PULSE</sub>	5.0	V <sub>p-p</sub>	
Operating Horizontal Pulse Input Peak Value Range	H <sub>PULSE</sub>	2.0 to 6.0	V <sub>p-p</sub>	

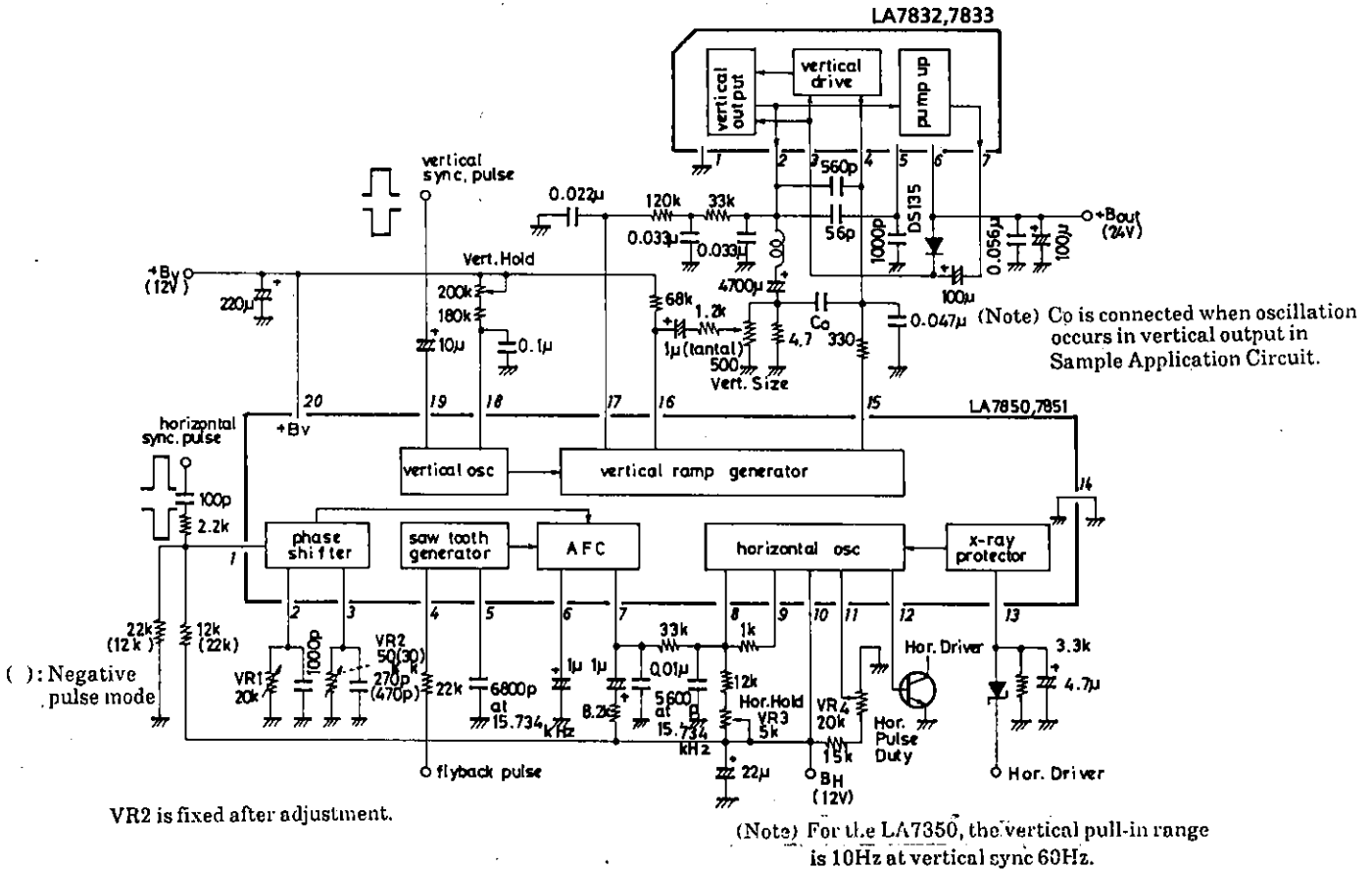
Operating Characteristics at Ta = 25°C, V<sub>11</sub>, V<sub>22</sub> = 12V

		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	21.0		23.0	Hz
Vertical Free-running Frequency	f <sub>v</sub> f <sub>v</sub> center 55Hz	50		60	Hz
Increased/Reduced Voltage	Δf <sub>VV</sub> V <sub>22</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>v, st</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>H, st</sub>			4.0	V
Increased/Reduced Voltage	Δf <sub>H, V</sub> V <sub>11</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 Phase 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

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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