

**LA7852****CRT Display Synchronization Deflection Circuit****Overview**

The LA7852 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 LA7852 contains these peripherals on chip and adopts a stable circuit for horizontal oscillation from 15 kHz to 100 kHz aiming at improving the characteristics required for CRT display use.

The LA7852 has independent GND pins for the horizontal block and vertical block, thus facilitating pattern layout for applications where the LA7852 is used at high frequencies.

Features

- The vertical pull-in range is approximately 10 Hz at $f_v = 60$ Hz.
- The horizontal oscillation frequency can be adjusted stably from 15 kHz to 100 kHz.
- 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.
- Excellent interlace and vertical jitter characteristics on the high-definition display because of independent GND pins for the horizontal block and vertical block.

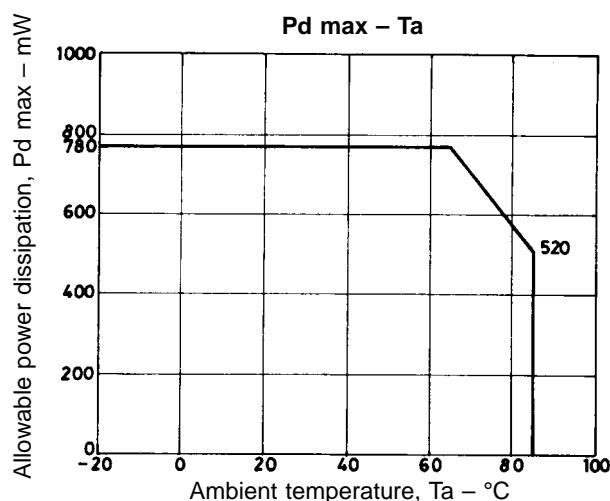
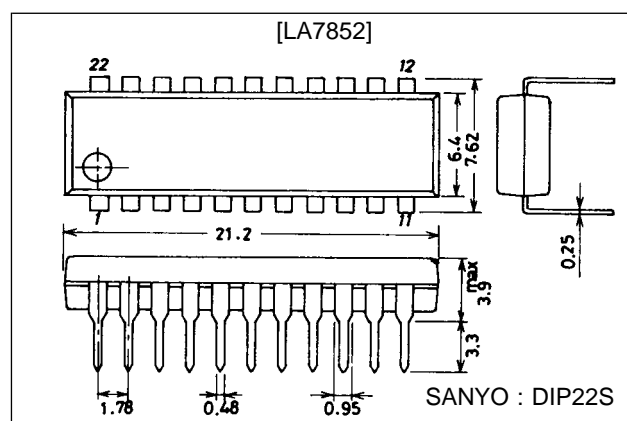
Built-in Functions

[Horizontal Block]

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

Package Dimensions

unit : mm

3059-DIP22S

[Vertical Block]

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

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V ₁₁ , V ₂₂		14	V
Allowable power dissipation	Pd 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

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V ₁₁ , V ₂₂		12	V
Operating voltage range	V ₁₁ , V ₂₂		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

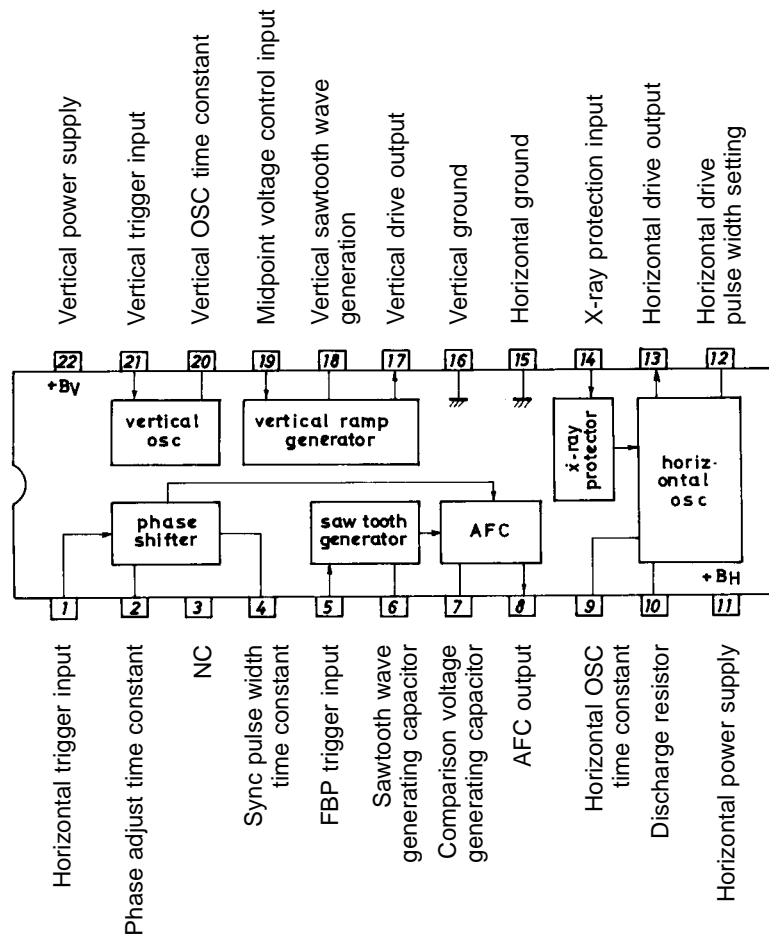
Operating Characteristics at Ta = 25°C, V₁₁, V₂₂ = 12 V

Parameter	Symbol	Conditions	min	typ	max	Unit
V _{CC11} current dissipation	I ₁₁		12		30	mA
V _{CC22} current dissipation	I ₂₂		5		12	mA
Vertical frequency pull-in range	Vp _{IN}	Vertical sync 60 Hz	10.0		12.0	Hz
Vertical free-running frequency	fv	fv center 55 Hz	50		60	Hz
Increased/reduced voltage characteristic of vertical frequency	Δfv-v	V ₂₂ = 12 ± 1 V, 55 Hz at 12 V	-0.1		+0.1	Hz
Midpoint control threshold level			3.8		4.4	V
Vertical OSC start voltage	Fv*st				4.0	V
Temperature characteristic of vertical frequency		Ta = -10 to +60°C	-0.028		+0.028	Hz/°C
Vertical driver amplification factor	Gv		12		18	dB
Horizontal AFC DC loop gain	I _{AFC+}		0.85		1.6	mA
	I _{AFC-}		-1.6		-0.85	mA
Horizontal free-running frequency	f _H	f _H center 15.734 kHz	-750		+750	Hz
Horizontal OSC start voltage	f _H *st				4.0	V
Increased/reduced voltage characteristic of horizontal frequency	Δf _H v	V ₁₁ = 12 ± 1 V, 15.734 kHz at 12 V	-50		+50	Hz
Horizontal OSC warm-up drift	Δf _H	5 s to 30 min. 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 ₁₃		6.0		12.0	mA
Increased/reduced voltage characteristic of phase shifter delay time		V ₁₁ = 12 ± 1 V	-0.5		+0.5	%/V
Temperature characteristic of phase shifter delay time		Ta = -10 to +60°C	-0.1		+0.1	%/°C
Increased/reduced voltage characteristic of phase shifter delay time		V ₁₁ = 12 ± 1 V	-1.0		+1.0	%/V
Temperature characteristic of phase shifter pulse width		Ta = -10 to +60°C	-0.13		+0.13	%/°C
AFC phase comparison center time		15.734 kHz after FBP input	9.9		11.5	μs

LA7852

Parameter	Symbol	Conditions	min	typ	max	Unit
Increased/reduced voltage characteristic of AFC phase comparison center time		$V_{11} = 12 \pm 1 \text{ V}$	-1.5		+1.5	%/V
Temperature characteristic of AFC phase comparison center time		$T_a = -10 \text{ to } +60^\circ\text{C}$	-0.2		+0.2	%/°C
Comparison waveform generating input operation voltage	V_5		0.6		0.9	V
Pin 14 voltage at hold-down operation start	V_{14}		0.5		0.8	V

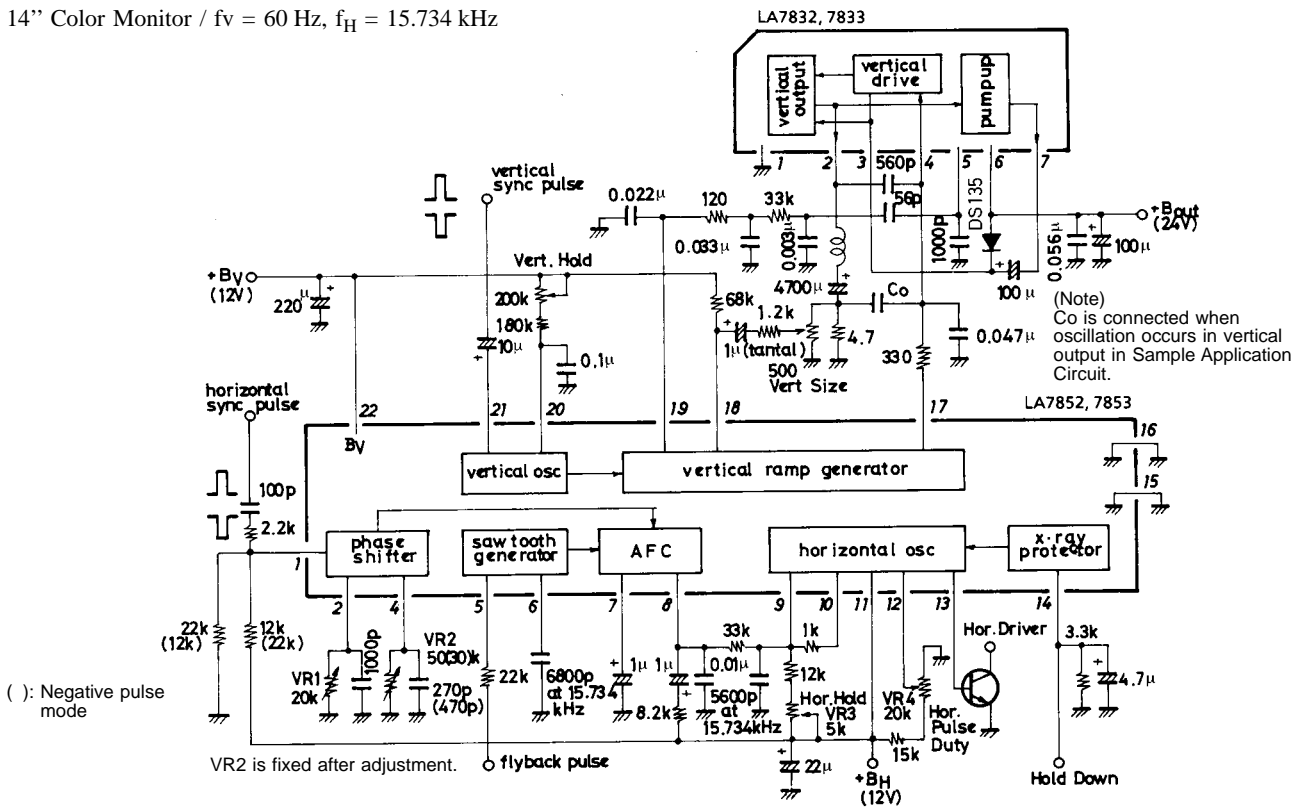
Equivalent Circuit Block Diagram



LA7852

Sample Application Circuit

14" Color Monitor / $f_v = 60 \text{ Hz}$, $f_H = 15.734 \text{ kHz}$



(-): Negative pulse mode

VR2 is fixed after adjustment.

(Note) Co is connected when oscillation occurs in vertical output in Sample Application Circuit.

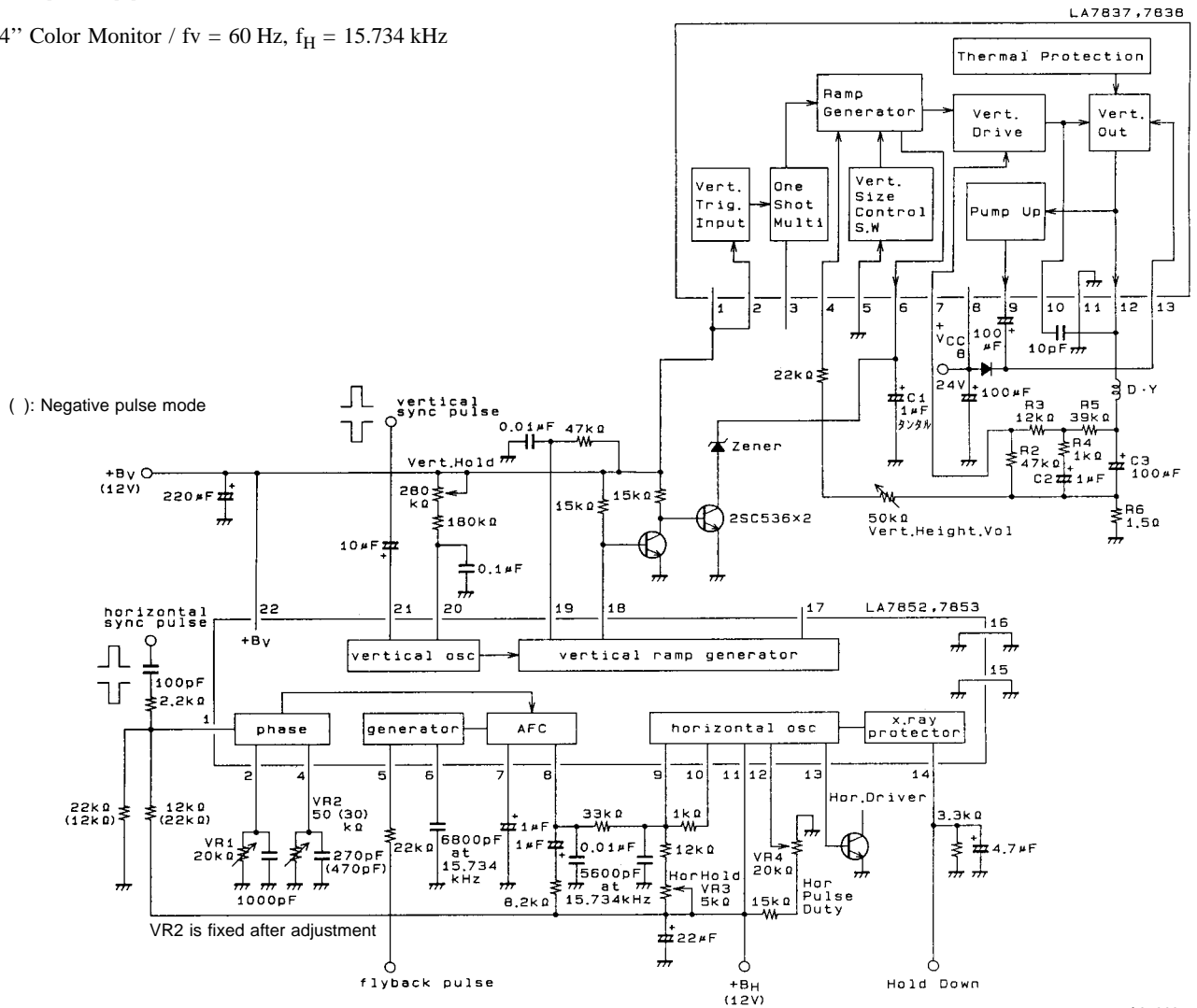
(Note) For the LA7853, the vertical pull-in range is 20 Hz at vertical sync 60 Hz.

Unit (resistance: Ω, capacitance: F)

LA7852

Sample Application Circuit

14" Color Monitor / $f_v = 60 \text{ Hz}$, $f_H = 15.734 \text{ kHz}$



A05903

LA7850 Family

Type Number	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 ($f_v = 60 \text{ Hz}$)	10 Hz	20 Hz	10 Hz
	Ground pin	Horizontal/vertical common	horizontal/vertical common	Horizontal/vertical separated

- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of August, 1996. Specifications and information herein are subject to change without notice.