Ordering number : EN 2873

Monolithic Linear IC

SANYO No.2873

LA7853

CRT Display Synchronization Deflection Circuit

The LA7853 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 LA7853 contains these peripherals on chip and adopts a stable circuit for hoirizontal oscillation from 15kHz to 100kHz aiming at improving the characteristics required for CRT display use.
The LA7853 has independent GND pins for the horizontal block and vertical block, thus facilitating pattern layout for applications where the LA7853 is used at high frequencies.

On-chip Functions

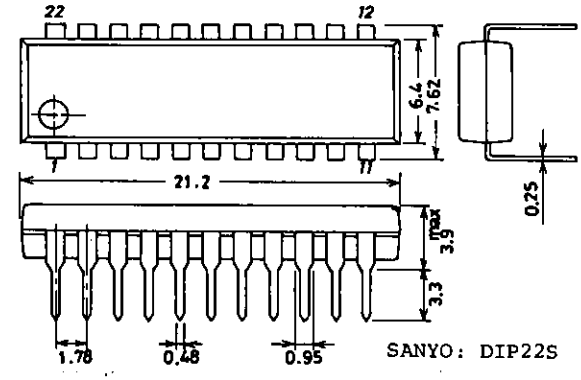
[Horizontal Block]
- AFC
- Horizontal OSC
- X-ray protector
- Horizontal phase shift
- AFC sawtooth wave generator
- Horizontal pulse duty setting

[Vertical Block]
- Vertical OSC
- Vertical sawtooth wave generator
- Sampling type DC voltage control

Features
- The vertical pull-in range is approximately 20Hz, 2 times that of the LA7852, at $f_V = 60Hz$.
- 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 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.

Package Dimensions

(unit :mm)
3059



Maximum Ratings at Ta = 25°C

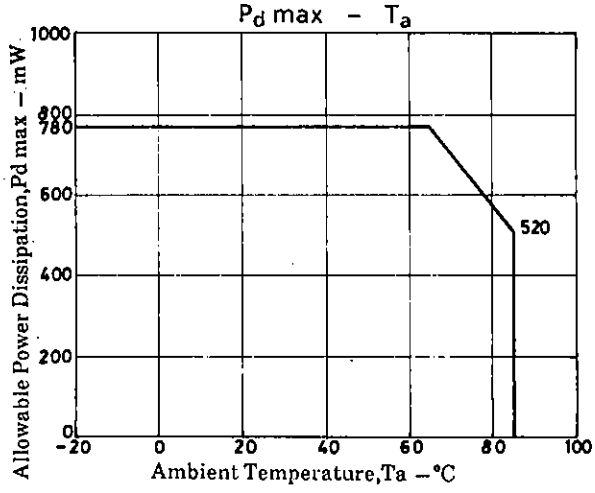
				unit
Maximum Supply Voltage	V_{11},V_{22}		14	V
Allowable Power Dissipation	P_d max	Ta ≦ 65°C	780	mW
Operating Temperature	Topr		−20 to +85	°C
Storage Temperature	Tstg		−55 to +125	°C

Operating Conditions at Ta = 25°C

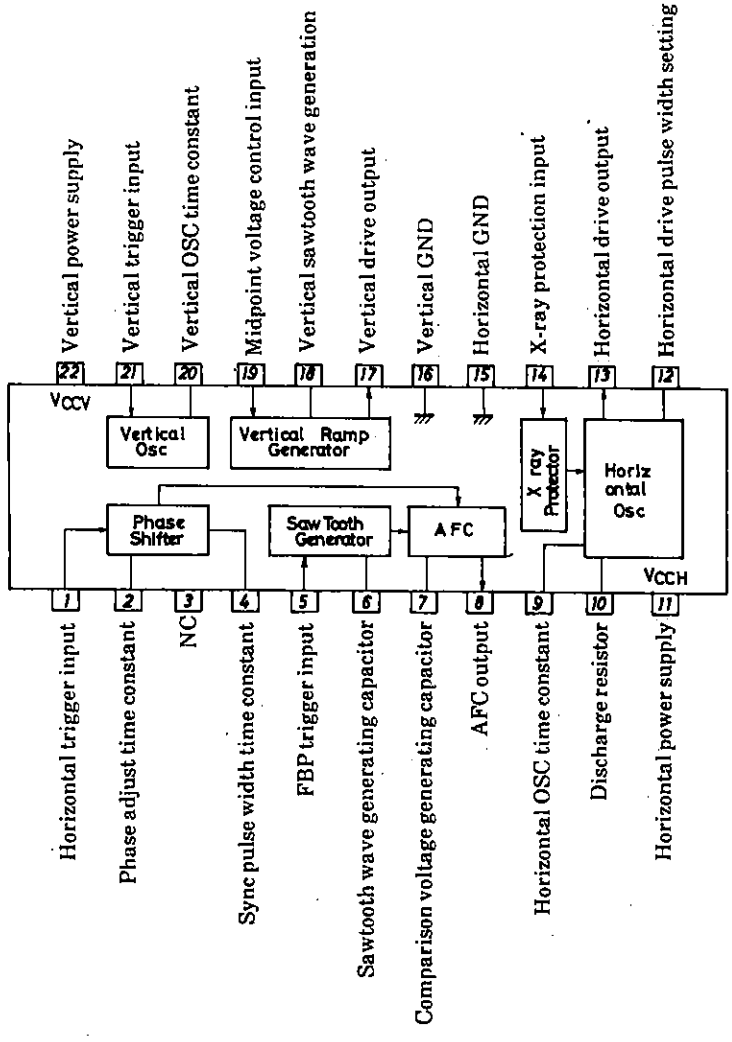
			unit
Recommended Supply Voltage	V_{11},V_{22}	12	V
Operating Voltage Range	V_{11},V_{22}	9 to 13.5	V
Recommended Vertical Pulse Input Peak Value	V_{PULSE}	5	Vp-p
Operating Vertical Pulse Input Peak Value Range	V_{PULSE}	2 to 6	Vp-p
Recommended Horizontal Pulse Input Peak Value	H_{PULSE}	5	Vp-p
Operating Horizontal Pulse Input Peak Value Range	H_{PULSE}	2 to 6	Vp-p

Operating Characteristics at Ta = 25°C

			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	V_pIN	Vertical sync 60Hz	19.0		23.0	Hz
Vertical Free-running Frequency	f_v	f_v center 55 Hz	50		60	Hz
Increased/Reduced Voltage Characteristic of Vertical Frequency	$\Delta f_{v\cdot v}$	V_{22} = 12 ± 1V,55Hz at 12V	−0.1		0.1	Hz
Midpoint Control Threshold Level			3.8		4.4	V
Vertical OSC Start Voltage	$F_{v\cdot st}$				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
	I_{AFC}^-		−1.6		−0.85	mA
Horizontal Free-running Frequency	f_H	f_H center 15.734kHz	−750		750	Hz
Horizontal OSC Start Voltage	$f_{H\cdot st}$				4.0	V
Increased/Reduced Voltage Characteristic of Horizontal Frequency	$\Delta f_{H\cdot v}$	V_{11} = 12V ± 1V,15.734kHz at 12V	−50		50	Hz
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_{13}		6.0		12.0	mA
Increased/Reduced Voltage Characteristic of Phase Shifter Delay Time		V_{11} = 12 ± 1V	−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 Pulse Width		V_{11} = 12 ± 1V	−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		15.734kHz after F.B.P. input	9.9		11.5	μs
Increased/Reduced Voltage Characteristic of AFC Phase Comparison Center Time		V_{11} = 12 ± 1V	−1.5		1.5	%/V
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_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



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