AN5769

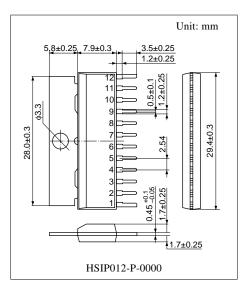
H/V convergence correction IC

Overview

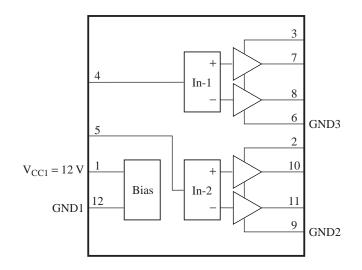
The AN5769 is an IC to correct convergence in horizontal and vertical directions. It is possible to allow ± 100 mA (max.) DC current flow by connecting a coil between the output pins which operate with the reverse phase each other.

Features

- \bullet DC control input ~0 V to 5 V
- Output dynamic range 1.2 V to 3.8 V
- Maximum output current $\pm 100 \text{ mA}$
- Applications
- CRT monitors



Block Diagram



Pin Descriptions

Pin No.	Description	Pin No.	Description
1	Power supply 12 V (V _{CC1})	6	Output block GND (GND3)
2	Output block power supply 7 V (V _{CC2}),	7	H-conv. positive output
	protection resistor is required.	8	H-conv. negative output
3	Output block power supply 7 V (V _{CC3}),	9	Output block GND (GND2)
	protection resistor is required.	10	V-conv. positive output
4	H-conv. control input	11	V-conv. negative output
5	V-conv. control input	12	GND (GND1)

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC1}	13.5	V
	V _{CC2}	11.05	
	V _{CC3}	11.05	
Supply current	I _{CC1}	28	mA
	I _{CC2}	150	
	I _{CC3}	150	
Power dissipation *2	P _D	1 171	mW
Operating ambient temperature *1	T _{opr}	-25 to +75	°C
Storage temperature *1	T _{stg}	-55 to +150	°C

Note) 1. *1: Except for the operating ambient temperature and storage temperature, all ratings are for $T_a = 25^{\circ}C$.

*2: The power dissipation shown is for the IC package at $T_a = 75^{\circ}C$.

2. Pay attention to a breakdown to be caused by static electricity for pin 1.

3. Observe the following order of the supply power start-up:

 Turn-on order 	First: Pin 2, pin 3 on (7 V) power supply
	Second: Pin 1 on (12 V) power supply
• Turn-off order	First: Pin 1 off (12 V) power supply
	Second: Pin 2, pin 3 off (7 V) power supply

Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V _{CC1}	10.8 to 13.2	V
	V _{CC2}	6.0 to 9.0	
	V _{CC3}	6.0 to 9.0	

\blacksquare Electrical Characteristics at $T_a = 25^{\circ}C$

Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Circuit current 1	I _{CC1}	$V_{CC1} = 12 V, V_{CC2} = V_{CC3} = 7 V$	17	22	27	mA
Circuit current 2	I _{CC2}	$V_{CC1} = 12 V, V_{CC2} = V_{CC3} = 7 V$	—	0	1	mA
Circuit current 3	I _{CC3}	$V_{CC1} = 12 V, V_{CC2} = V_{CC3} = 7 V$	—	0	1	mA
Circuit voltage 7	V ₇₋₆	$V_{CC1} = 12 V, V_{CC2} = V_{CC3} = 7 V$	2.8	3.0	3.2	V
Circuit voltage 8	V ₈₋₆	$V_{CC1} = 12 V, V_{CC2} = V_{CC3} = 7 V$	2.8	3.0	3.2	V
Circuit voltage 10	V ₁₀₋₉	$V_{CC1} = 12 V, V_{CC2} = V_{CC3} = 7 V$	2.8	3.0	3.2	V
Circuit voltage 11	V ₁₁₋₉	$V_{CC1} = 12 V, V_{CC2} = V_{CC3} = 7 V$	2.8	3.0	3.2	V
H-conv. output voltage 1	E _{H1}	$V_7 - V_8$ at $V_4 = 2.5$ V	- 0.15	0	+0.15	V
H-conv. output voltage 2	E _{H2}	$V_7 - V_8$ at $V_4 = 5$ V	+2.3	+2.5	+2.7	V
H-conv. output voltage 3	E _{H3}	$V_7 - V_8$ at $V_4 = 0$ V	-2.7	-2.5	-2.3	V
V-conv. output voltage 1	E _{V1}	$V_{10} - V_{11}$ at $V_5 = 2.5$ V	- 0.15	0	+0.15	V
V-conv. output voltage 2	E _{V2}	$V_{10} - V_{11}$ at $V_5 = 5$ V	+2.3	+2.5	+2.7	V
V-conv. output voltage 3	E _{V3}	$V_{10} - V_{11}$ at $V_5 = 0$ V	-2.7	-2.5	-2.3	V

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Тур	Max	Unit
High-level H-conv. output fluctuation with supply voltage	ΔE _{H/VCCH}	$\label{eq:deltaE} \begin{split} \Delta E \text{ with } V_{CC1} \text{ change } 12 \text{ V to } 13.2 \text{ V}, \\ \text{and } V_{CC2,} V_{CC3} \text{ from } 7 \text{ V to } 9 \text{ V} \end{split}$	- 0.1	_	+0.1	V
Low-level H-conv. output fluctuation with supply voltage	$\Delta E_{H/VCCL}$	$\label{eq:lambda} \begin{split} \Delta E \text{ with } V_{CC1} \text{ change } 12 \text{ V to } 10.8 \text{ V}, \\ \text{and } V_{CC2,} V_{CC3} \text{ from } 7 \text{ V to } 6 \text{ V} \end{split}$	- 0.1		+0.1	V
High-level V-conv. output fluctuation with supply voltage	ΔE _{V/VCCH}	$\label{eq:deltaE} \begin{split} \Delta E \text{ with } V_{CC1} \text{ change } 12 \text{ V to } 13.2 \text{ V}, \\ \text{and } V_{CC2,} V_{CC3} \text{ from } 7 \text{ V to } 9 \text{ V} \end{split}$	- 0.1	_	+0.1	V
Low-level V-conv. output fluctuation with supply voltage	$\Delta E_{V/VCCL}$	$\label{eq:deltaE} \begin{split} \Delta E \text{ with } V_{CC1} \text{ change } 12 \text{ V to } 10.8 \text{ V}, \\ \text{and } V_{CC2,} V_{CC3} \text{ from } 7 \text{ V to } 6 \text{ V} \end{split}$	- 0.1		+0.1	V
H-conv. output fluctuation with temperature	ΔE _{H/Ta}	$\label{eq:deltaE} \begin{split} \Delta E \text{ with } T_a \text{ change from } +25^\circ\text{C to } +70^\circ\text{C} \\ \text{and with } T_a \text{ change from } +25^\circ\text{C to } -20^\circ\text{C} \end{split}$	- 0.1		+0.1	V
V-conv. output fluctuation with temperature	ΔE _{V/Ta}	$\label{eq:deltaE} \begin{split} \Delta E \text{ with } T_a \text{ change from } +25^\circ\text{C to } +70^\circ\text{C} \\ \text{and with } T_a \text{ change from } +25^\circ\text{C to } -20^\circ\text{C} \end{split}$	- 0.1		+0.1	V

Terminal Equivalent Circuits

Pin No.	Equivalent circuit	Description	DC voltage (V)
1	(1) V _{CC1}	Power supply 12 V (V _{CC1}): Power supply pin Apply DC 12 V.	12
2	$7 V \xrightarrow{-} W \xrightarrow{-} 2$ $To 10 \Omega$ To 10 To 10 To 9 To 9	Output block power supply 7 V (V _{CC2}): Power supply pin for V-conv. output Apply DC 7 V via protective resistor.	7
3	$7 V \sim \frac{3}{10 \Omega}$ To 7 To 8 To 6	Output block power supply 7 V (V _{CC3}): Power supply pin for H-conv. output Apply DC 7 V via protective resistor.	7
4	(4)	H-conv. control input: Control input for H-conv. Apply DC 0 V to 5 V. (typ. = 2.5 V)	_
5	(5) (3)	V-conv. control input: Control input for V-conv. Apply DC 0 V to 5 V. (typ. = 2.5 V)	_
6		GND3: Grounding pin of H-conv. output block	0

7		H-conv. positive output: Positive output pin for H-conv. Outputs polarity as same as that of pin 4.	1.7 to 4.2
8		H-conv. negative output: Negative output pin for H-conv. Outputs polarity opposite to that of pin 4.	1.7 to 4.2
9		GND2: Grounding pin of V-conv. output block	0
10	To 2 To 2 To 9	V-conv. positive output: Positive output pin for V-conv. Outputs polarity as same as that of pin 5.	1.7 to 4.2
11		V-conv. negative output: Negative output pin for V-conv. Outputs polarity opposite to that of pin 5.	1.7 to 4.2
12	(12) GND1	GND1: Grounding pin for 12V-system	0

Terminal Equivalent Circuits (continued)

Equivalent circuit

Pin No.

DC voltage

(V)

Description

■ Application Circuit Example

