

|              |          |                                                                                                    |
|--------------|----------|----------------------------------------------------------------------------------------------------|
| <b>SANYO</b> | No. 5006 | <b>STK390-120</b>                                                                                  |
|              |          | <b>1-Channel + Supply Switching<br/>Convergence Correction Circuit (<math>I_C</math> max = 4A)</b> |

## Overview

The STK390-120 is a high-accuracy convergence correction circuit hybrid IC designed to complement the advances in modern high-resolution video projectors and CRT displays. It incorporates a convergence circuit that operates at high frequency with a corresponding high slew rate, without the increase in power dissipation and mounting space that discrete devices would entail. It also features a built-in supply switching circuit for high efficiency.

## Applications

- Video projectors
- Ultrahigh definition CRT displays

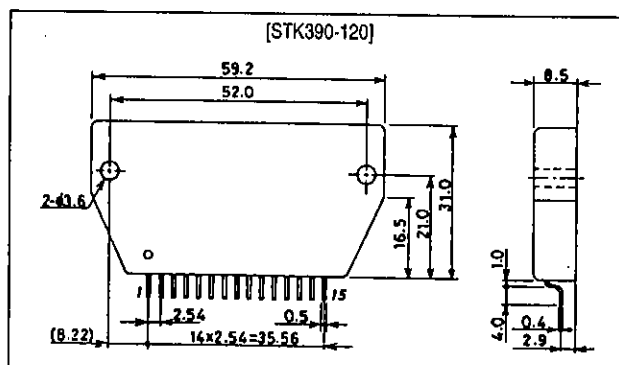
## Features

- High absolute maximum supply voltage ( $V_{CC}$  max =  $\pm 44V$ )
- Low thermal resistance ( $\theta_{j-c} = 2.7^{\circ}C/W$ )
- High temperature stability (strengthened idling current temperature compensation)
- Reduced correction coil inductance to improve stability (over the range  $f_H \leq 85kHz$ )
- Supply switching circuit built-in to enable large-scale decreases in power dissipation
- Improved convergence characteristics for CRT displays

## Package Dimensions

unit: mm

4151



## Specifications

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

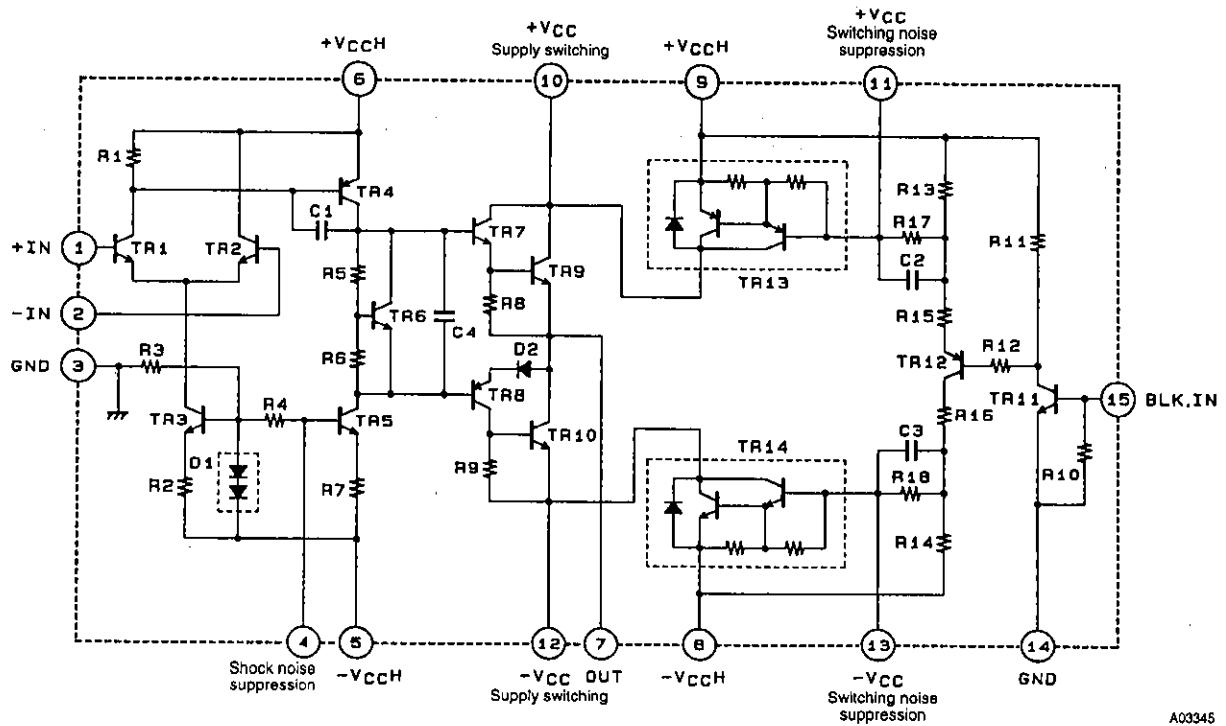
| Parameter                       | Symbol              | Conditions                | Ratings     | Unit                 |
|---------------------------------|---------------------|---------------------------|-------------|----------------------|
| Maximum supply voltage          | $V_{CC\text{ max}}$ | $V_{CCH}, V_{CCL}$        | $\pm 44$    | V                    |
| Maximum collector current       | $I_C$               | Tr9, 10, 13, 14           | 4.0         | A                    |
| Thermal resistance (1)          | $\theta_{j-c1}$     | Tr9, 10 (per transistor)  | 2.7         | $^{\circ}\text{C/W}$ |
| Thermal resistance (2)          | $\theta_{j-c2}$     | Tr13, 14 (per transistor) | 15.0        | $^{\circ}\text{C/W}$ |
| Junction temperature            | $T_j$               |                           | 150         | $^{\circ}\text{C}$   |
| Operating substrate temperature | $T_c$               |                           | 115         | $^{\circ}\text{C}$   |
| Storage temperature             | $T_{stg}$           |                           | -30 to +115 | $^{\circ}\text{C}$   |

### Operating Characteristics at $T_c = 25^{\circ}\text{C}$ , $V_{CCH} = \pm 35\text{V}$ , $V_{CCL} = \pm 15\text{V}$

| Parameter                                           | Symbol          | Conditions                                                                                       | min | typ | max | Unit          |
|-----------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------|-----|-----|-----|---------------|
| <b>Output amplifier block</b>                       |                 |                                                                                                  |     |     |     |               |
| Output noise voltage                                | $V_{NO}$        | $R_g = 10\text{k}\Omega$                                                                         | —   | —   | 0.2 | mVrms         |
| Quiescent current                                   | $I_{CCO}$       | $R_g = 10\text{k}\Omega$                                                                         | —   | 10  | 20  | mA            |
| Neutral voltage                                     | $V_N$           | $R_g = 10\text{k}\Omega$                                                                         | -50 | 0   | +50 | mV            |
| Output delay time                                   | $t_D$           | $R_g = 50\Omega$ , $f = 100\text{kHz}$ ,<br>triangular wave input,<br>$V_{OUT} = 1.5\text{Vp-p}$ | —   | —   | 0.1 | $\mu\text{s}$ |
| Output saturation voltage (upper)                   | $V_{sat\ 10-7}$ | Between pins 10 and 7,<br>$I = 1.0\text{A}$                                                      | —   | 1.0 | 1.5 | V             |
| Output saturation voltage (lower)                   | $V_{sat\ 7-12}$ | Between pins 7 and 12,<br>$I = 1.0\text{A}$                                                      | —   | 1.7 | 2.2 | V             |
| <b>Supply switching block</b>                       |                 |                                                                                                  |     |     |     |               |
| Supply switching circuit saturation voltage (upper) | $V_{sat\ 9-10}$ | Between pins 9 and 10,<br>$I = 1.0\text{A}$                                                      | —   | 1.0 | 1.5 | V             |
| Supply switching circuit saturation voltage (lower) | $V_{sat\ 12-8}$ | Between pins 12 and 8,<br>$I = 1.0\text{A}$                                                      | —   | 1.0 | 1.5 | V             |
| Supply switching pulse width (upper)                | $t_{PW10}$      | Pin 10 $I = 1.0\text{A}$ , $f = 100\text{kHz}$ ,<br>BLK input pulse width = $1.0\mu\text{s}$     | —   | —   | 3.0 | $\mu\text{s}$ |
| Supply switching pulse width (lower)                | $t_{PW12}$      | Pin 12 $I = 1.0\text{A}$ , $f = 100\text{kHz}$ ,<br>BLK input pulse width = $1.0\mu\text{s}$     | —   | —   | 3.0 | $\mu\text{s}$ |

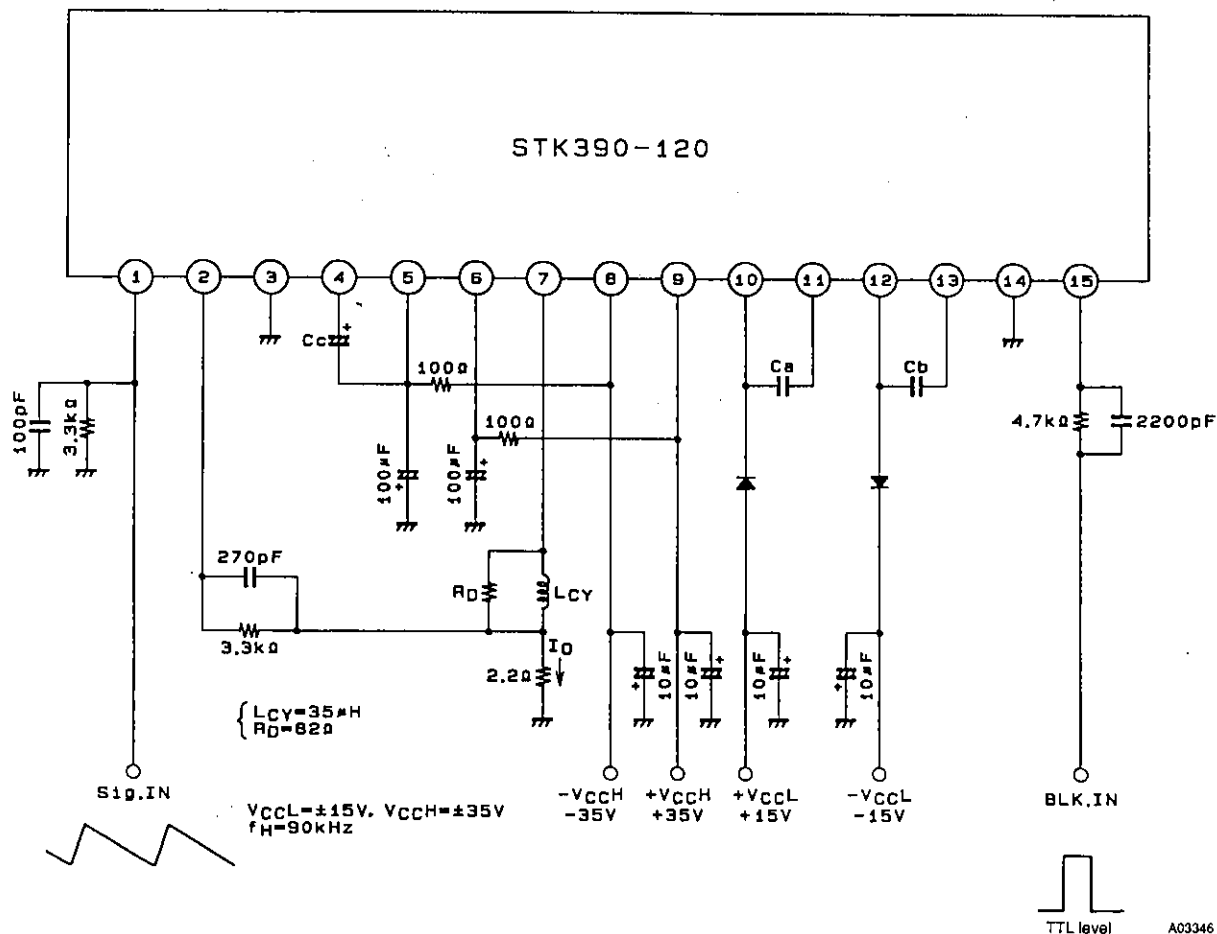
Note. All measurements are made using a constant-voltage supply.

# Equivalent Circuit



A03345

## Sample Application Circuit



Notes. Ca, Cb (0 to 120pF) are for  $V_{CC}$  switch noise suppression.  
Cc (47 to 220μF) is for supply switch ON shock noise suppression.

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