

# AN5791

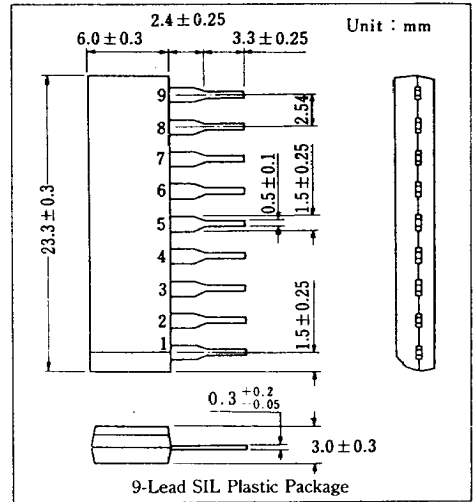
## Phase Shift Circuit for CRT Displays

### Outline

The AN5791 is an integrated circuit designed for phase shift circuit for CRT display.

### Features

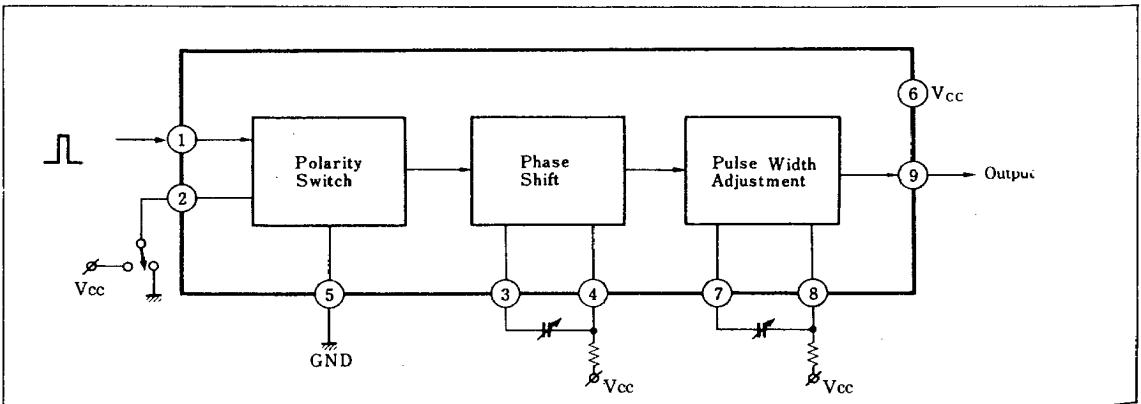
- Processing for both negative and positive sync. signals
- Wide range of possible phase shift ( $1\mu s \sim 40\mu s$ )
- Possible output pulse width  $2\mu s \sim 40\mu s$



### Pin

| Pin No. | Pin Name                | Pin No. | Pin Name                |
|---------|-------------------------|---------|-------------------------|
| 1       | H. Sync. Input          | 6       | Vcc                     |
| 2       | Polarity Switch         | 7       | Trigger for Pulse Width |
| 3       | Trigger for Phase Shift | 8       | Pulse Width Adj.        |
| 4       | Phase Shift Adj.        | 9       | Output                  |
| 5       | GND                     | -       | -                       |

### Block Diagram



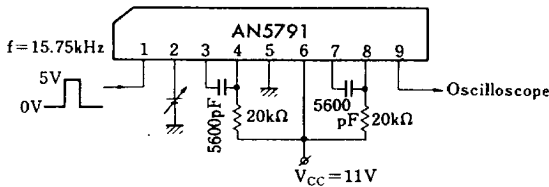
■ Absolute Maximum Ratings(Ta=25°C)

| Item              |                               | Symbol           | Rating   | Unit |
|-------------------|-------------------------------|------------------|----------|------|
| Supply Voltage    |                               | V <sub>CC</sub>  | 13.2     | V    |
| Power Dissipation |                               | P <sub>D</sub>   | 640      | mW   |
| Temperature       | Operating Ambient Temperature | T <sub>opr</sub> | -20~+70  | °C   |
|                   | Storage Temperature           | T <sub>stg</sub> | -40~+150 | °C   |

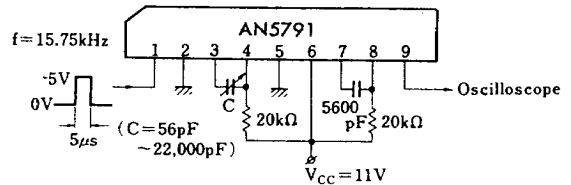
■ Electrical Characteristics(Ta=25°C)

| Item  | Symbol                               | Test Circuit | Condition                           | min. | typ. | max. | Unit |
|---|--------------------------------------|--------------|-------------------------------------|------|------|------|------|
| Circuit Current   | I <sub>6</sub>                       |              | V <sub>CC</sub> =11V                | 18   | 25   | 32   | mA   |
| Circuit Voltage(1)  | V <sub>3-5</sub>                     |              | V <sub>CC</sub> =11V                | 1.3  | 1.6  | 1.9  | V    |
| Circuit Voltage(2)  | V <sub>7-5</sub>                     |              | V <sub>CC</sub> =11V                | 1.3  | 1.6  | 1.9  | V    |
| Polarity Changeover Voltage(1)                            | V <sub>2-5</sub>                     | 1            | Positive Polarity Signal Input      | 0    |      | 0.4  | V    |
| Polarity Changeover Voltage(2)                            | V <sub>2-5</sub>                     | 1            | Negative Polarity Signal Input      | 2.5  |      | 5.5  | V    |
| Phase Shift Time  | t <sub>(1)</sub>                     | 2            | V <sub>CC</sub> =11V                | 4.5  | 5.0  | 5.5  | μs   |
| Enable Pulse Shift Time                                   | t <sub>(2)</sub>                     | 2            | V <sub>CC</sub> =11V                | 1    |      | 40   | μs   |
| Change with Supply Voltage for Phase Modulation Time      | Δt <sub>(1)</sub> /V <sub>CC</sub>   | 3            | V <sub>CC</sub> =9.9V~12.1V         |      |      | 5    | %    |
| Change with Ambient Temperature for Phase Modulation Time | Δt <sub>(1)</sub> /Ta                | 3            | V <sub>CC</sub> =11V, Ta=-20°C~60°C |      |      | 5    | %    |
| Output Pulse Width  | τ <sub>(HD1)</sub>                   | 4            | V <sub>CC</sub> =11V                | 4.4  | 4.9  | 5.4  | μs   |
| Enable Output Pulse Width                                 | τ <sub>(HD2)</sub>                   | 4            | V <sub>CC</sub> =11V                | 2    |      | 40   | μs   |
| Change with Supply Voltage for Output Pulse Width         | Δτ <sub>(HD1)</sub> /V <sub>CC</sub> | 3            | V <sub>CC</sub> =9.9V~12.1V         |      |      | 5    | %    |
| Change with Ambient Temperature for Output Pulse Width    | Δτ <sub>(HD1)</sub> /Ta              | 3            | V <sub>CC</sub> =11V, Ta=-20°C~60°C |      |      | 5    | %    |

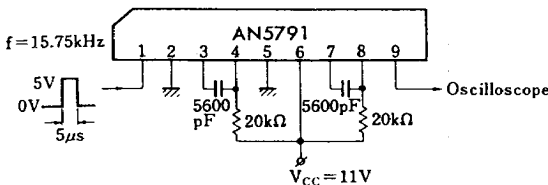
Test Circuit 1 (V<sub>2-5</sub>)



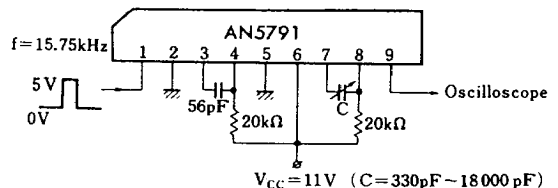
Test Circuit 2 (t<sub>(1)</sub>, t<sub>(2)</sub>)



Test Circuit 3 (Δt<sub>(1)</sub>/V<sub>CC</sub>, Δt<sub>(1)</sub>/Ta, Δτ<sub>(HD1)</sub>/V<sub>CC</sub>, Δτ<sub>(HD1)</sub>/Ta)



Test Circuit 4 (τ<sub>(HD1)</sub>, τ<sub>(HD2)</sub>)



■ Application Circuit

