

| Type    | Ordering code | Package  |
|---------|---------------|----------|
| SAS 580 | Q 67000-S28   | } DIP 18 |
| SAS 590 | Q 67000-S29   |          |

Channel memory for use in radio and TV sets. The four stages can be selected by touching the sensor area. Each stage is provided with an indicator output. The tuning voltage is applied to a common output. SAS 580 is the basic component for the first 4 channels. The number of channels can be increased by 4 with each additionally connected SAS 590 amplifier.

### Features

- High input sensitivity
- Low saturation voltage of the driver outputs
- Low temperature drift of the tuning switches
- Driver outputs to control filament lamps, LEDs, neon lamps, or nixie tubes
- Standby operation possible
- Ring counter up to 10 kHz
- No external diode matrix
- Single power supply

### Maximum ratings

|  |                           |            |     |
|--|---------------------------|------------|-----|
| Supply voltage (without series resistor)   | $V_{16}$                  | 36         | V   |
| Current consumption<br>(for operation with higher voltage,<br>a series resistor is required) | $I_6$                     | 15         | mA  |
| Driver current   | $I_3, I_5, I_7, I_9$      | 55         | mA  |
| Max. driver current, $t_{max.} \leq 2$ s   | $I_3, I_5, I_7, I_9$ max. | 100        | mA  |
| Junction temperature   | $T_j$                     | 150        | °C  |
| Storage temperature range  | $T_{stg}$                 | -40 to 125 | °C  |
| Thermal resistance (system-air)  | $R_{th SA}$               | 90         | K/W |

### Operating range

|                     |          |          |    |
|---------------------|----------|----------|----|
| Supply voltage 1    | $V_{16}$ | 10 to 36 | V  |
| Ambient temperature | $T_A$    | 0 to 70  | °C |

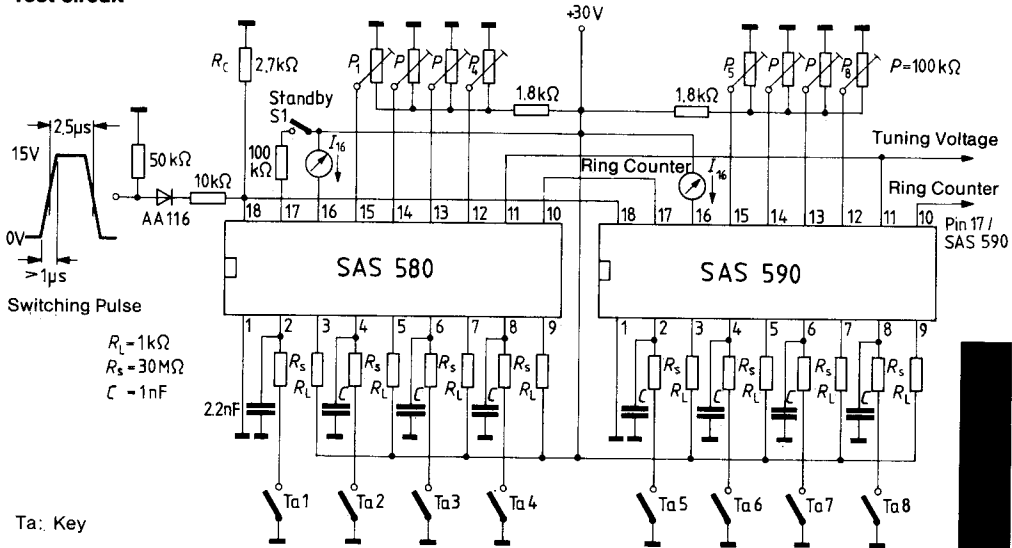
**Characteristics**

with reference to test circuit,  $V_{16} = 30 \text{ V}$ ,  $T_A = 25 \text{ }^\circ\text{C}$

|  |                                  | min  | typ | max          |               |
|--|----------------------------------|------|-----|--------------|---------------|
| Internal current consumption   |                                  |      |     |              |               |
| channel switched   | $I_6$                            | 4.5  | 7   | 9.5          | mA            |
| channel not switched   | $I_6$                            | 2.9  | 5   | 8.5          | mA            |
| Voltage at pin 18  |                                  |      |     |              |               |
| during touching keys 1...8   | $V_{18s}$                        | 3.25 | 3.7 | 4.2          | V             |
| after touching keys 1...8  | $V_{18h}$                        | 2.6  | 2.9 | 3.2          | V             |
| Saturation voltage of driver outputs   |                                  |      |     |              |               |
| $R_L = 1 \text{ k}\Omega$  | $V_3, V_5, V_7, V_9$             |      | 0.8 | 1.5          | V             |
| $R_L = 30 \text{ k}\Omega$   | $V_3, V_5, V_7, V_9$             |      | 30  | 60           | mV            |
| Reverse voltage of driver outputs  |                                  |      |     |              |               |
| $I_{rev} = 100 \text{ }\mu\text{A}$  | $V_3, V_5, V_7, V_9$             | 60   |     |              | V             |
| $I_{rev} = 5 \text{ }\mu\text{A}$  | $V_3, V_5, V_7, V_9$             | 50   |     |              | V             |
| Tuning voltage   |                                  |      |     |              |               |
| Input current of tuning voltage inputs   | $V_{12}, V_{13}, V_{14}, V_{15}$ | 0.3  |     | $V_{16} - 2$ | V             |
| Offset voltage of tuning switches <sup>1)</sup>  | $I_2, I_3, I_4, I_5$             |      | 150 | 300          | nA            |
|  | $V_{12-11}, V_{13-11}$           |      |     | $\pm 100$    | mV            |
|  | $V_{14-11}, V_{15-11}$           |      |     | $\pm 100$    | mV            |
| Temperature drift of tuning voltage switches ( $T_A = 25$ to $50 \text{ }^\circ\text{C}$ ) <sup>1)</sup> | $V_T$                            |      |     | 5            | mV            |
| Resistance of tuning output  | $R_{q11}$                        |      | 3   |              | k $\Omega$    |
| $I_{11} < \pm 30 \text{ }\mu\text{A}$  |                                  |      |     |              |               |
| Input current  |                                  |      |     |              |               |
| for channel switching amplifiers   | $I_2, I_4, I_6, I_8$             | 20   | 80  | 200          | nA            |
| Input threshold voltage of switching amplifiers ( $I_2, I_4, I_6, I_8 = 80 \text{ nA}$ )                 | $V_2, V_4, V_6, V_8$             |      | 5.5 |              | V             |
| Switching frequency of ring counter  | $f_{rc}$                         |      | 10  |              | kHz           |
| Reset to channel 1   |                                  |      |     |              |               |
| Switching pulse level  | $V_{SI18}$                       |      | 15  |              | V             |
| Switching pulse duration   | $T_{SI18}$                       | 70   |     |              | $\mu\text{s}$ |
| Switching pulse rise time  | $t_{SILH18}$                     |      |     | 1            | $\mu\text{s}$ |
| Switching to the next stage  |                                  |      |     |              |               |
| Switching pulse level  | $V_{SI18}$                       |      | 15  |              | V             |
| Switching pulse duration   | $T_{SI18}$                       |      | 2.5 |              | $\mu\text{s}$ |
| Switching pulse rise time  | $t_{SILH18}$                     |      |     | 1            | $\mu\text{s}$ |
| <b>Characteristics of the Z diode</b>  |                                  |      |     |              |               |
| Z voltage ( $I_{16(30V)} + 3 \text{ mA}$ )   | $V_Z$                            | 34   |     | 39           | V             |

<sup>1)</sup> measured between connected input and pin 11.

Test circuit



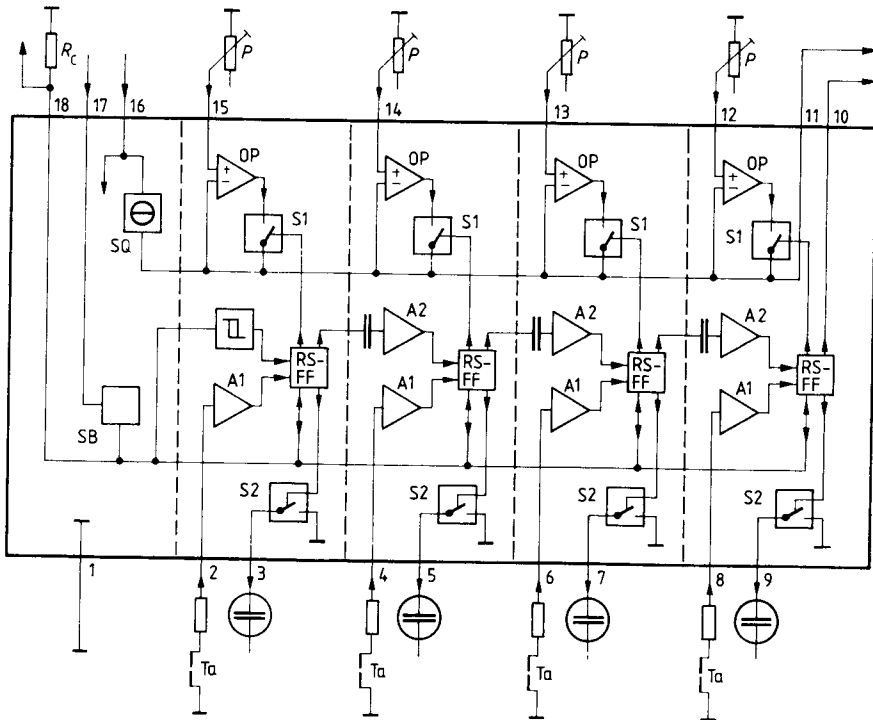
SAS 580 is absolutely necessary for testing SAS 590;  
otherwise no function  
SAS 580 can be tested individually.

During channel changes, the capacitor operating as a load on pin 11 is reversely charged with a current of approx.  $\pm 50\ \mu\text{A}$ .

SAS 580 only: After applying supply voltage  $V_{16}$ , channel 1 is selected, i.e. the tuning voltage is switched from pin 15 to pin 11 and the lamp at pin 3 is switched on.

$V_{17} < 0.5\ \text{V}$  means standby operation, i.e. even when selecting another channel, the previously selected channel remains stored. Selection of a new channel is not possible. A stored channel must be present again after closing S1.

Block diagram SAS 580



SQ: Current source  
SB: Standby  
OP: Operational amplifiers  
Ta: Key

Figure 1



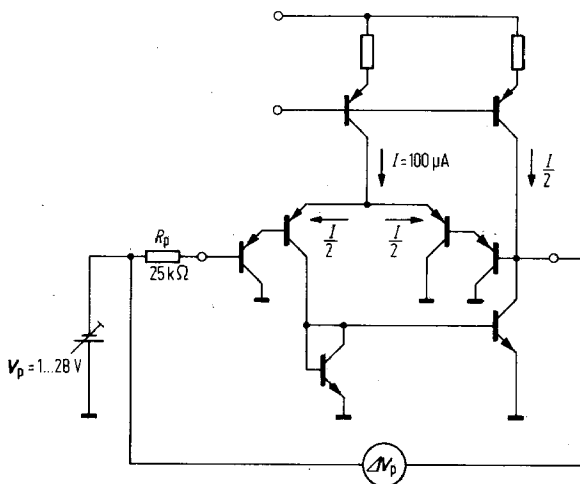


Figure 3

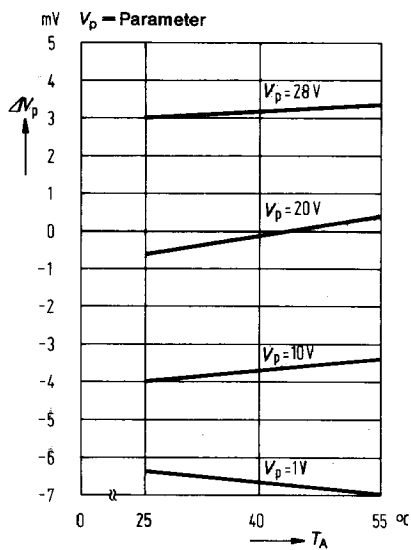


Figure 4

Application circuit 1

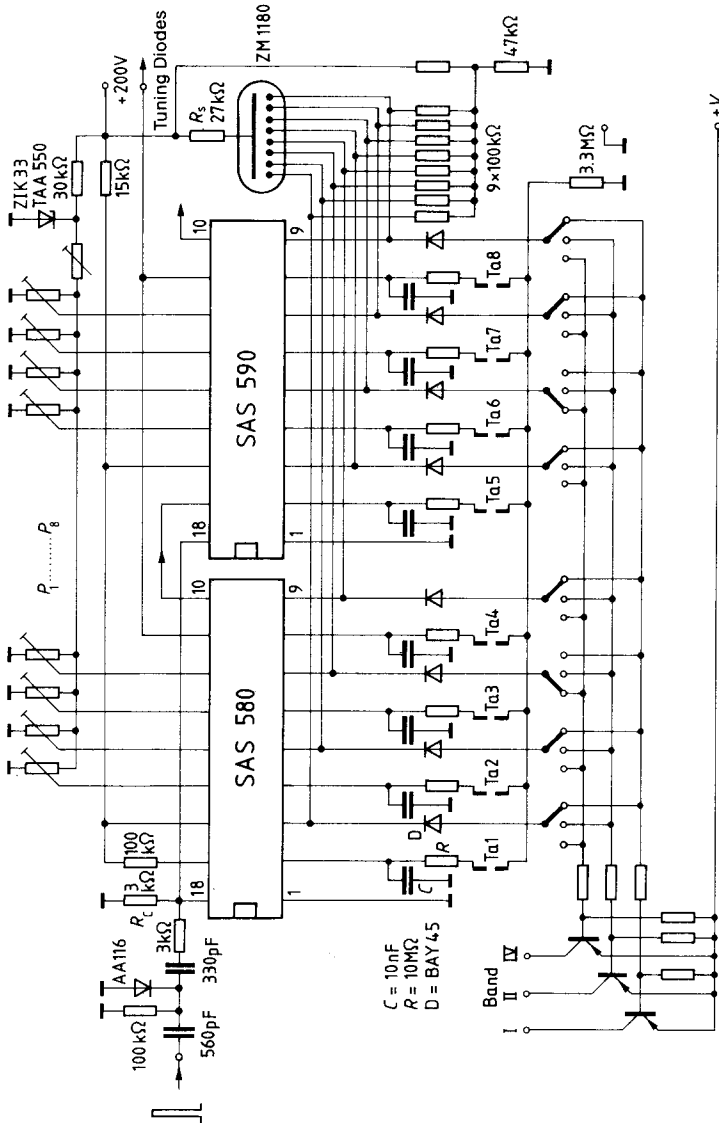


Figure 5

Application circuit 2

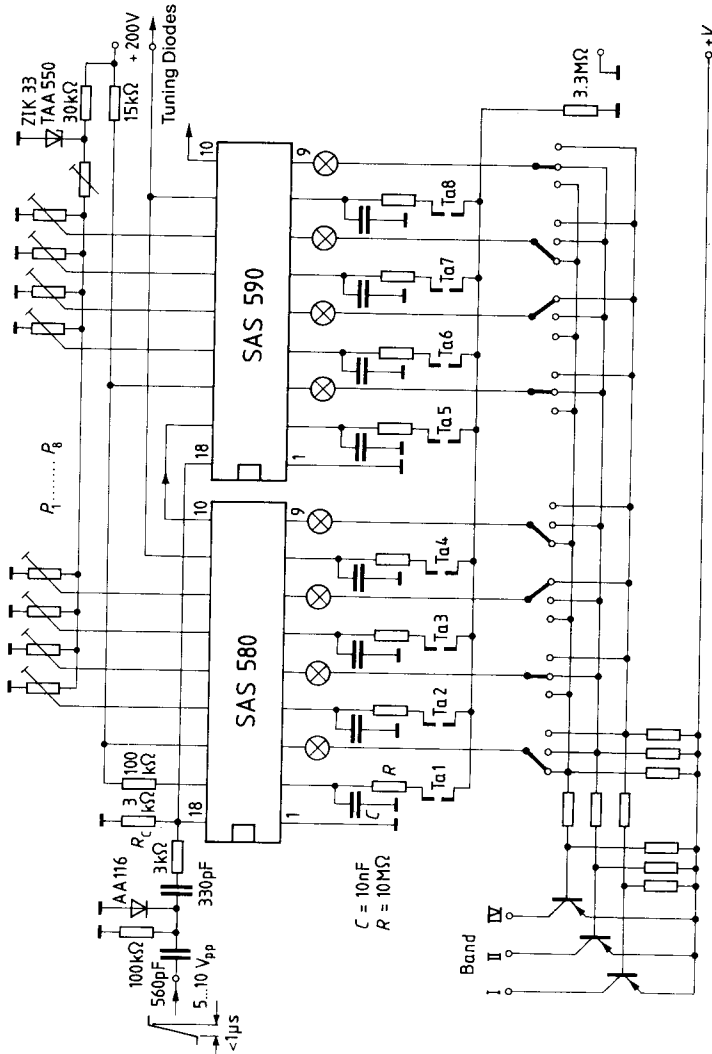


Figure 6