

**FM IF Amplifier and Demodulator for TV Sound Application**

**Technology:** Bipolar

**Features**

- Outstanding limiting qualities
- Very few external components
- Wide supply voltage range
- High ripple rejection
- Minimum IF passage to audio output
- High IF residual carrier rejection
- U828B with integrated de-emphasis resistor

**Case:** 8-pin dual-inline plastic

**Absolute Maximum Ratings**

Reference point Pin 2

| Parameters                | Symbol                                    | Value      | Unit             |
|---------------------------|---|------------|------------------|
| Supply voltage            | Pin 7<br>$V_S$                            | 18         | V                |
| Power dissipation         | $T_{amb} = 70^\circ\text{C}$<br>$P_{tot}$ | 550        | mW               |
| Junction temperature      | $T_j$                                     | 125        | $^\circ\text{C}$ |
| Ambient-temperature range | $T_{amb}$                                 | -15 to +70 | $^\circ\text{C}$ |
| Storage-temperature range | $T_{stg}$                                 | 25 to +125 | $^\circ\text{C}$ |

**Thermal Resistance**

| Parameters       | Symbol     | Maximum | Unit |
|------------------|------------|---------|------|
| Junction ambient | $R_{thJA}$ | 100     | K/W  |

# U828B/ U829B/ U829BS

**TEMIC**  
Semiconductors

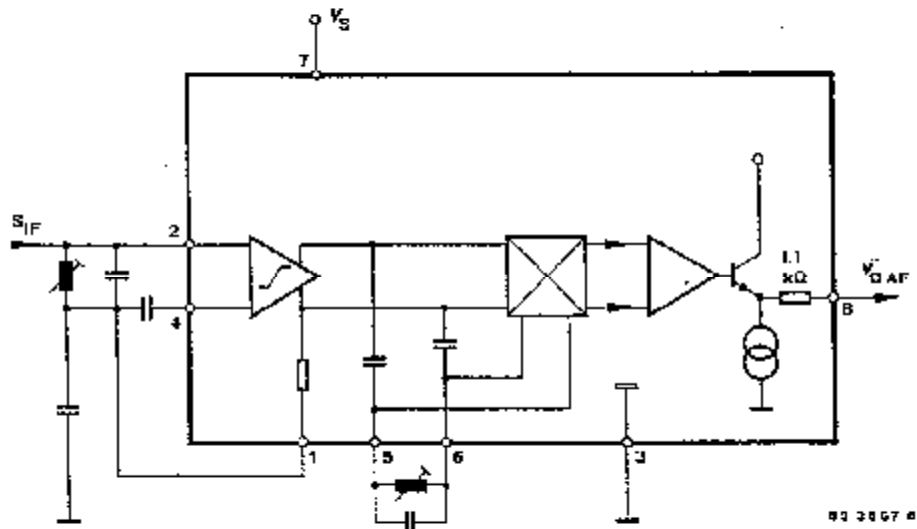


Figure 1. Block diagram U828B

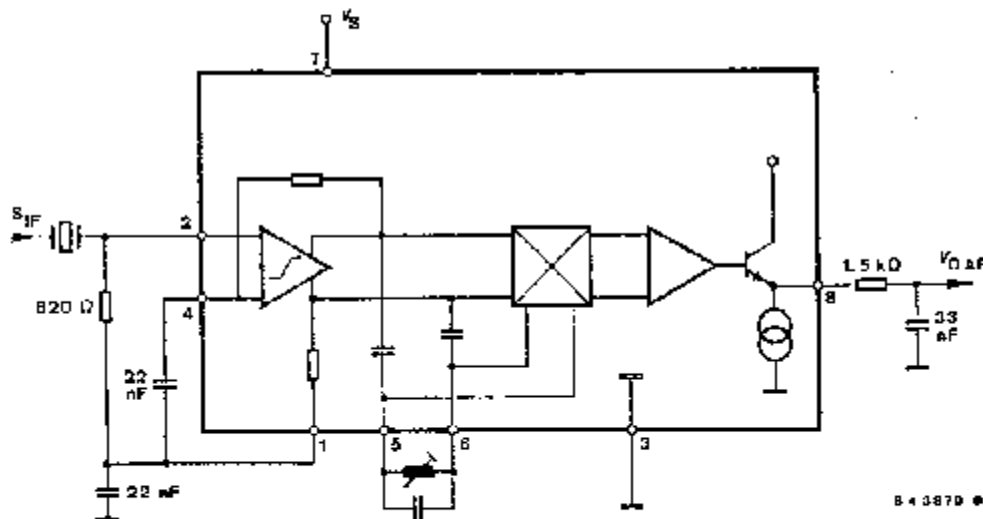


Figure 2. Block diagram U829B

**Electrical Characteristics**

$V_S = 12$  V, reference point Pin 3,  $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified

| Parameters                        | Test Conditions / Pin  | Symbol   | Min.              | Typ. | Max.       | Unit          |
|-----------------------------------|--|--|-------------------|------|------------|---------------|
| Supply voltage range              | Pin 7  | $V_S$  | 10                |      | 18         | V             |
| Supply current                    | Pin 7  | $I_S$  | 9.5               | 14   | 17.5       | mA            |
| Frequency range                   |  | f  |                   |      | 12         | MHz           |
| Input voltage for limitation      | $f = 5.5$ MHz,<br>$\Delta f = \pm 50$ kHz,<br>$f_{mod} = 1$ kHz, $Q^{(1)} = 45$                          |  |                   |      |            |               |
| Input impedance                   | Pin 2  | v  |                   | 75   | 90         | $\mu\text{V}$ |
|                                   |  | R  | 15                | 40   |            | k $\Omega$    |
|                                   |  | C  |                   | 4.5  | 6          | pF            |
| Output impedance                  |  | $R_o$  |                   |      | 200        | $\Omega$      |
| AM rejection                      | $f = 5.5$ MHz,<br>$\Delta f = \pm 50$ kHz,<br>$m = 30\%$ , $Q^{(1)} = 45$ ,<br>$V_i = 500$ $\mu\text{V}$ | $k_{AM}$   | 50                | 60   |            | dB            |
| DC voltage at AF output           | Pin 8  | $V_i = 0$  |                   |      |            |               |
|                                   |  | U828B<br>U829B   | $V_G$<br>$V_G$    |      | 5.6<br>4.0 |               |
| Ripple rejection                  | Pin 7,8  | $k_{RRM}$  |                   | 35   |            | dB            |
| IF residual voltage without $C_p$ | Pin 8  | $V_{off}$  |                   | 20   |            | mV            |
| AF output voltage                 | Pin 8  | $V_i = 10$ mV, $f = 5.5$ MHz,<br>$\Delta f = \pm 50$ kHz,<br>$f_{mod} = 1$ kHz, $Q^{(1)} = 45$ |                   |      |            |               |
|                                   |  | U828B  | $V_{oAF}$         | 0.8  |            | 1.3           |
| Group 0                           | = U829B  | $V_{oAI}$  | 1.0               |      | 1.90       | V             |
| Group 1                           | = U829BS   | $V_{oAF}$  | 1.0               |      | 1.25       | V             |
| Group 2                           | = U829BS   | $V_{oAI}$  | 1.22              |      | 1.55       | V             |
| Group 3<br>$Q^{(1)} = 20$         | = U829BS   | $V_{oAI}$  | 1.5 <sup>2)</sup> |      | 1.90       | V             |
|                                   |  | U828B  | $V_{oAF}$         |      | 0.65       |               |
| Distortion                        | Pin 8  | $f = 5.5$ MHz, $V_i = 10$ mV,<br>FM-Mod = 50 kHz,<br>$f_{mod} = 1$ kHz                         |                   |      |            |               |
|                                   |  |  |                   |      |            |               |
| $Q^{(1)} = 45$                    |  | d  |                   | 3.0  |            | %             |
| $Q^{(1)} = 20$                    |  | d  |                   | 1.0  |            | %             |
| Signal-to-noise ratio             | $V_i = 10$ mV<br>(unmodulated),<br>according to DIN 45 405<br>(A weighted)                               | Pin 8  | 70                | 80   |            | dB            |
| Mute function                     | Switching current  | $I_{sw}$   |                   |      | 400        | $\mu\text{A}$ |
|                                   |  |  |                   |      |            |               |

<sup>1)</sup> Operation quality factor for the demodulator circuit

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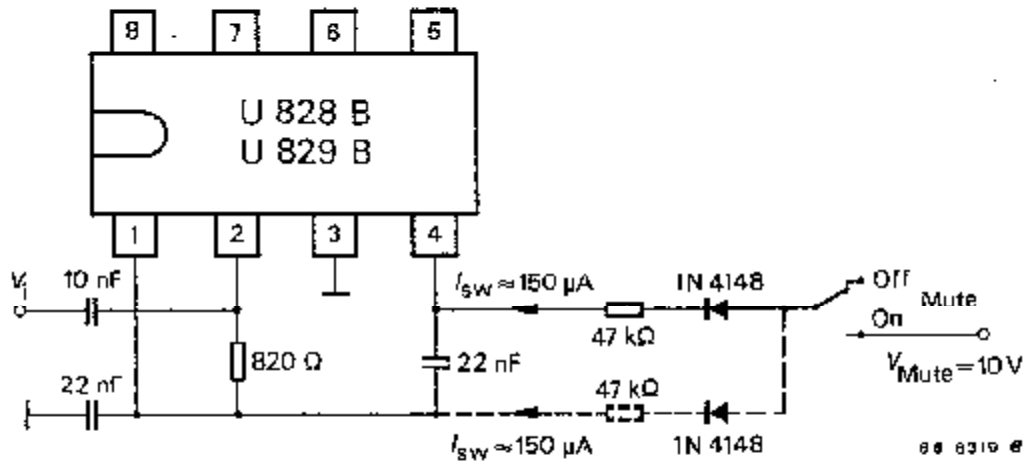


Figure 3.

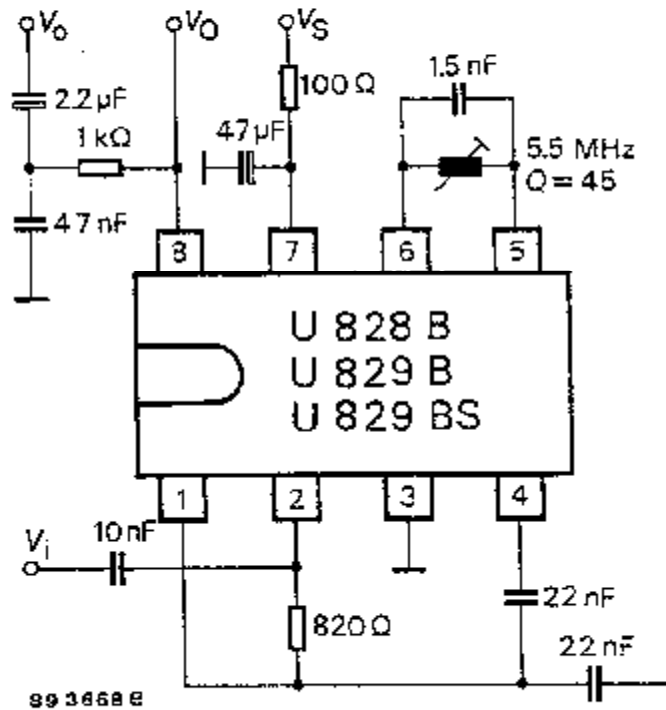


Figure 4. Test circuit

(The supply voltage must be disconnected before inserting the integrated circuit in the socket.)

**Dimensions in mm**

Package: DIP8

