SAA1094-2 **Tone Ringer IC** (14-Pin Plastic Package TO-116)

This integrated CMOS circuit replaces the customary electromechanical telephone ringer and calls the subscriber by a melodic tone sequence, using a small magnetic or piezoceramic sound transducer. The tone ringer circuit, together with its transducer is powered by the ringing current from the exchange. This makes it compatible with the conventional telephone network and, furthermore, no battery or mains connections are needed.

Functional Description

The tone ringer circuit normally derives the power required for its operation from the ringing AC supplied by the exchange via lines a and b. Together with the loop resistance, the 1 μF isolating capacitor and a 2.2 kΩ resistor, the ringing generator in the exchange operates as an alternating-current source. The 2.2 kΩ resistor is needed to ensure a minimum impedance. The supplied alternating current is fed to pins 5 and 7 of the SAA1094-2 and is rectified by means of an integrated bridge circuit in the SAA1094-2. The rectified current charges the electrolytic capacitor at pins 4 and 6. The direct voltage produced across this capacitor mainly depends on the loop resistance and on the ringing frequency and is limited to the operating voltage V_Z of the Zener diode integrated in the SAA1094-2. Tone ringing is switched on when the DC voltage across C_1 has reached the value of about 6 V. The switch-off threshold at decreasing supply voltage is about 3 V.

ZSY0,7 **Silicon Click Suppressor** (DO-35 Package)

Monolithic integrated analog circuit with symmetric V/I-characteristic for use as voltage limiter, e.g. as click suppressor in telephone subsets.

Type	Maximum Ratings				Characteristics at T_A = 25 °C				
	Operating Current at T_A = 25 °C	Surge Current at t = 100 μs	Power Dissipation at T_A = 25 °C	Junction Temperature	Forward Voltage Drop at I_F = 100 mA	Dynamic Resistance at I_F = 2 mA, f = 1 kHz	Residual Attenuation at $R_G = R_L$ = 600 Ω, f = 0.2...4 kHz Voltage Level at the Generator −4 N	−0.5 N	0 N
	± I_F mA	± I_{FSM} A	P_{tot} mW	T_j °C	V_F V	r_F Ω	D N	D N	D N
ZSY0,7	150	1	300	150	<1.35	20 (<29)	<0.05	0.05	1.8 (>0.5)