



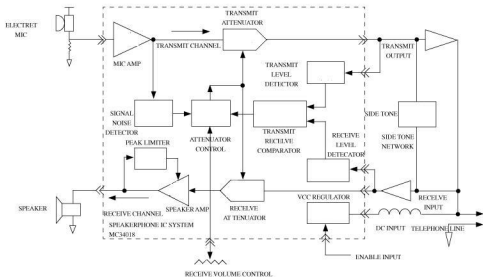
The FM34018 Speakerphone integrated circuit incorporates the necessary amplifiers, attenuators, and control functions to produce a high quality hands-free speakerphone system. Included are a microphone amplifier, a power audio amplifier for the speaker, transmit and receive attenuators, a monitoring system for background, sound level, and an attenuation control system which responds to the relative transmit and receive levels as well as the background level. Also included are all necessary regulated voltages for both internal and external circuitry, allowing line-powered operation (no additional power supplies required). A Chip Select pin allows the chip to be powered down when not in use. A volume control function may be implemented with an external potentiometer. FM34018 applications include speaker phones for household and business use, intercom systems, automotive telephones, and others.

## FEATURES

- ◆ All necessary level detection and attenuation controls for a hands-free telephone in a single integrated circuit
- ◆ Background noise level monitoring with long time constant
- ◆ Wide operating dynamic range through signal compression
- ◆ On-chip supply and reference voltage regulation
- ◆ Typical 100 mW output power (into 25 Ohms) with peak limiting to minimize distortion
- ◆ Chip Select pin for active/standby operation
- ◆ Linear Volume Control Function
- ◆ Standard 28-pin plastic DIP package, and SOIC package



## BLOCK DIAGRAM



# PIN FUNCTIONS

pin	symbol	Description
1	RR	A resistor to ground
2	RTX	A resistor to ground determines the nominal gain of the transmit attenuator. The transmit channel gain is inversely proportional to the RTX resistance.
3	TXI	Input to the transmit attenuator.
4	TXO	Output of the transmit attenuator.
5	TLI	Input of the transmit level detector.
6	TLO	Output of the transmit level detector.
7	RLI	Input of the receive level detector.
8	RLO	Output of the receive level detector.
9	MCI	Microphone amplifier input.
10	MCO	Microphone amplifier output.
11	CP1	A parallel resistor and capacitor connected between this pin and Vcc holds a voltage corresponding to the background noise level.
12	CP2	A capacitor at this pin peak detects the speech signals for comparison with the background noise level held at CP1.
13	XDI	Input to the transmit detector system.
14	SKG	High current ground pin for the speaker amp output stage.
15	SKO	Speaker amplifier output.
16	V+	Input dc supply voltage.
17	AGC	A capacitor from this pin to VB stabilizes the speaker amp gain control loop, and additionally controls the attack and decay time of this circuit. The gain control loop limits the speaker amp input to prevent clipping at SKO. The internal resistance at the AGC pin is nominally 110k ohms.
18	CS	Digital Chip select input.
19	SKI	Input to the speaker amplifier.
20	VCC	regulated output which powers all circuits except the speaker amplifier output stage.
21	VB	An output voltage equal to approximately Vcc/2.
22	GND	Ground pin for the IC(except the speaker amplifier).
23	XDC	Transmit detector output.
24	VLC	Volume control input.
25	ACF	Attenuator control filter. A capacitor connected to this pin reduces noise transients as the attenuator control switches levels of attenuation.
26	RXO	Output of the receive attenuator. Normally this pin is ac coupled to the input of the speaker amplifier.
27	RXI	Input of the receive attenuator. Input resistance is nominally 5.0 k ohms.
28	RRX	A resistor to ground determines the nominal gain of the receive attenuator. The receive channel gain is directly proportional to the RRX resistance.