

**MICROPHONE AMPLIFIER**

- VERY FEW EXTERNAL COMPONENTS
- BUILT IN PARTIAL BRIDGE
- HIGH IMMUNITY AGAINST EMI
- ACCURATE GAIN CONTROL
- NO CAPACITOR REQUIRED
- WIDE OPERATING VOLTAGE AND CURRENT RANGE
- PROGRAMMABLE DC CHARACTERISTICS

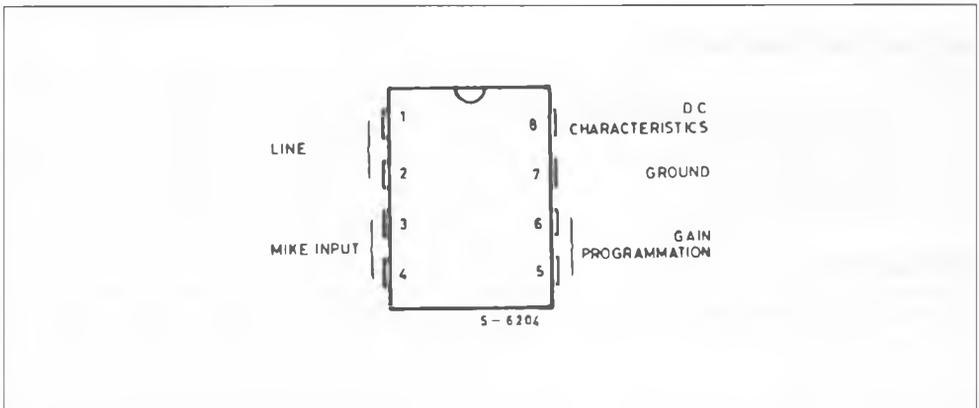
internal reference and a current modulator stage enabling the device to send the amplifier speech to the line.

**DESCRIPTION**

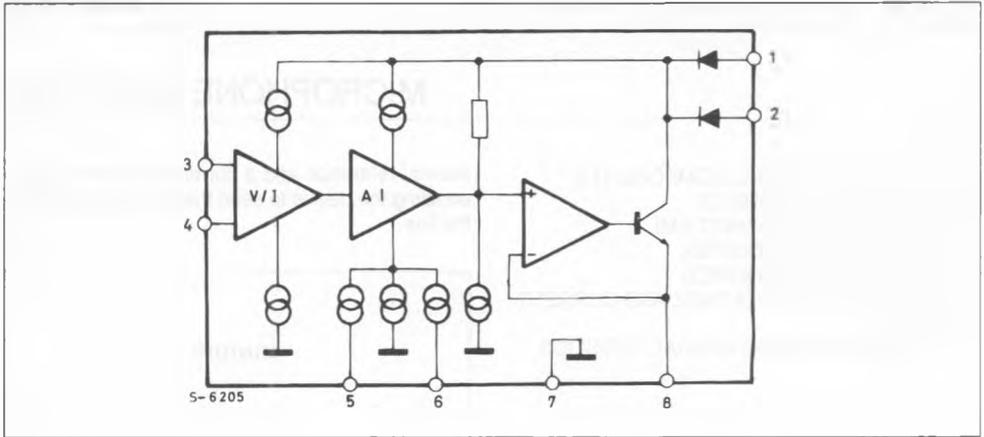
The LS188 is a monolithic microphone amplifier designed to be used with several kinds of transducers. It can replace the carbon microphone in telephones and may also be used in cassette recorder, walky talkies, or infrared receiver applications. The circuit is assembled in a 8-pin Dual in Line Package. The LS188 consists of a differential input amplifier,



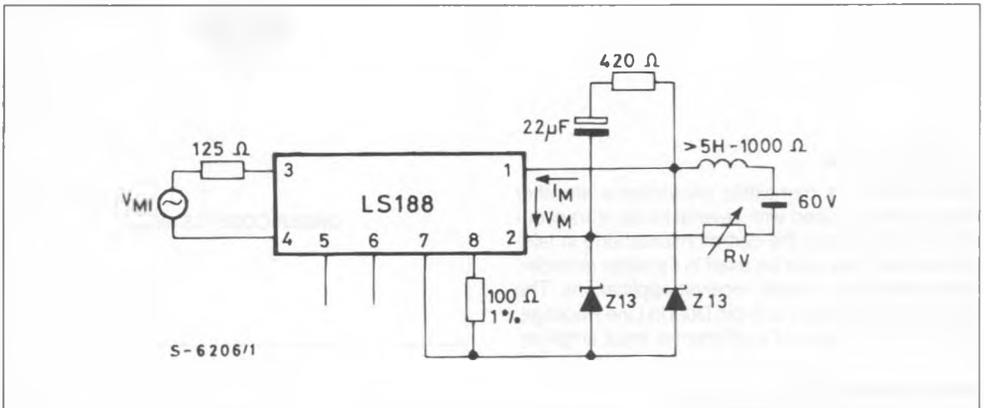
**PIN CONNECTION (top view)**



BLOCK DIAGRAM



TEST CIRCUIT



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_M$	Microphone Voltage (3ms duration)	20	V
$I_M$	Microphone Current	150	mA
$P_{tot}$	Power Dissipation	600	mW
$T_{op}$	Operating Temperature	- 30 to 70	°C

THERMAL DATA

$R_{th j-amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W
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**ELECTRICAL CHARACTERISTICS** (refer to the test circuit at 25 °C with  $f = 300$  Hz to 3400 Hz (pins 5-6 floating), unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$G_s$	Sending Gain	$V_{MI} = 1$ mV $f = 1$ KHz $I_M = 15$ mA	39.5	40.5	41.5	dB
G	Gain Spread vs. Temperature	$-25$ °C $T_{amb} = +60$ °C			$\pm 1$	dB
G	Gain Spread vs. Polarity	$I_M = \pm 15$ mA			$\pm 0.3$	dB
G	Gain Spread vs. Line Current	$V_{MI} = 1$ mV $f = 1$ KHz $I_{ref} = 15$ mA $I_M = 7$ to 60 mA			$\pm 1$	dB
$V_{1-7}$	Microphone Voltage	$I_M = 7$ mA $I_M = 15$ mA $I_M = 40$ mA		4.5	5.9 8.65	V V V
	Differential Resistance and Output Impedance	$I_M = 7$ to 60 mA		120	200	$\Omega$
	Frequency Response	$I_M = 15$ mA			$\pm 1$	dB
	Sending Noise	$V_{MI} = 0$			-67	dBmp
	Input Impedance	$I_M = 7$ to 60 mA	7.3	9.75	12.2	K $\Omega$
	Distortion	$f_{ref} = 1$ KHz $I_M = 7$ to 15 mA $V_o = 0.4$ V $I_M = 15$ to 60 mA $V_o = 1.25$ V			2 7	% %
$I_q$	Quiescent Current			1		mA

### TYPICAL GAIN VERSUS PIN 5 - 6 CONNECTION

Pin 5	Pin 6	
	Floating	Grounded
Floating	40.5 dB	47 dB
Grounded	45.5 dB	49.5 dB

Intermediate values of  $G_s$  are obtained by right resistors from pins 5 or 6 to ground.