GS3019 Hybrid with LS509 Amplifier

GS3019 - HYB DATA SHEET

FEATURES

- **Gennum's LS509 3 stage amplifier**
- **independent preamp can be used as telecoil preamplifier**
- **four "must use" capacitors mounted on hybrid**
- **choice of 5 settings for optimal transducer current**
- **easy assembly and high reliability**

STANDARD PACKAGING

- Hybrid Typical Dimensions
  0.276 in x 0.101 in x 0.094 in
  (7.01 mm x 2.57 mm x 2.39 mm)

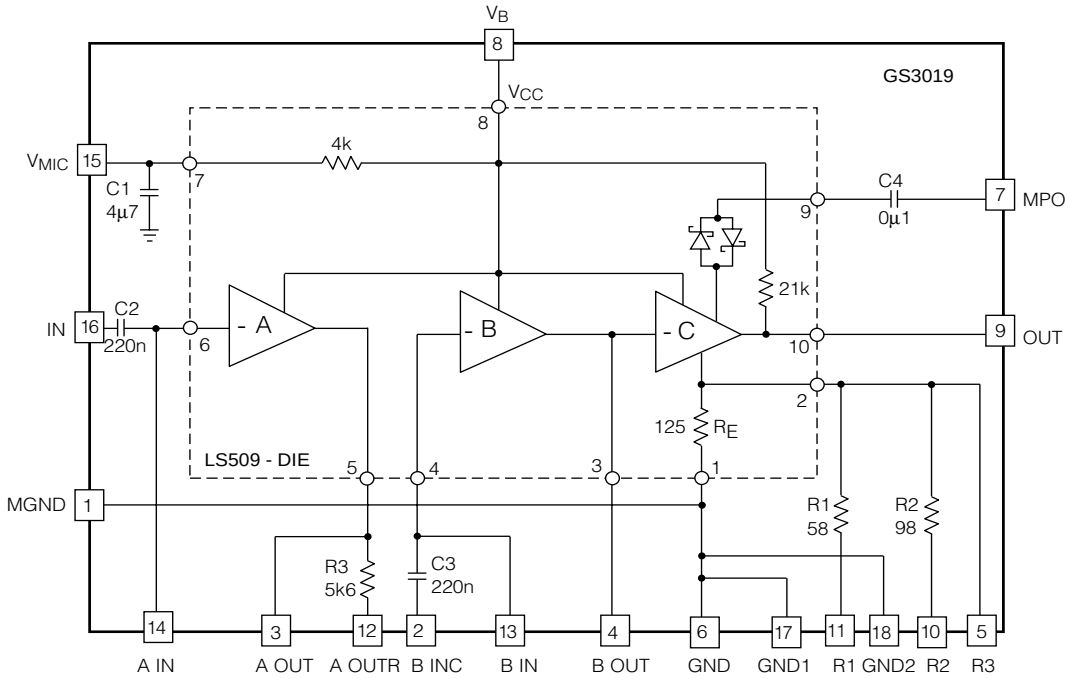
DESCRIPTION

The hybrid consists of Gennum's LS509 class A amplifier, four capacitors, and two selectable bias resistors. This hybrid is very similar to Gennum's 3010 with the exception that capacitors C2 and C3 on the GS3019 have been increased in value to extend the frequency response of the system.

This hybrid is very similar to Gennum's 3010 with the exception that capacitors C2 and C3 on the GS3019 have been increased in value to extend the frequency response of the system. C2 and the output impedance of the microphone form a high pass filter with a corner frequency of approximately 180 Hz. The hybrid allows for easy adjustment of this corner frequency via the addition of components to its many additional solder pads. Likewise, R3 and C3 form a high pass filter with a corner frequency of 130 Hz. Altering this frequency is easily accomplished by adding additional capacitance between pads 12 and 2 on the hybrid.

Stage C of the LS509 is a class A current drive output. There is a fixed reference voltage of typically 29 mV at pin 2 of the chip (pad 5 of the hybrid). The current that flows in the receiver is the ratio of this 29 mV reference voltage to the resistance seen from pin 2 to ground. R1 and R2 have been included on the GS3019 to allow for easy adjustment of the current for the most commonly used receivers.

The system also has the capability of MPO (Maximum Power Output) control. This is provided by the Schottky diodes on the LS509 die. To make use of the diodes in the system, a potentiometer must be added from pads 7 to 9 on the hybrid.



All resistors in ohms, all capacitors in farads unless otherwise stated.

FUNCTIONAL BLOCK DIAGRAM

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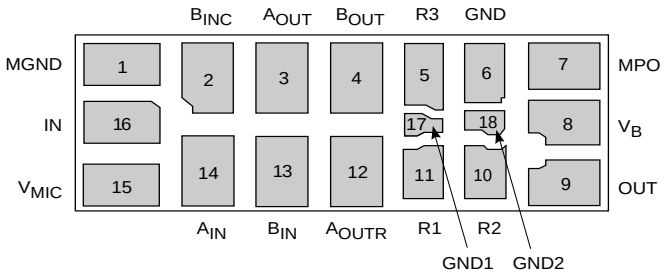
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ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE/UNITS
Supply Voltage	3 V DC
Power Dissipation	25 mW
Operating Temperature Range	-10°C to +40°C
Storage Temperature Range	-20°C to +70°C

CAUTION
CLASS 1 ESD SENSITIVITY

PAD CONNECTION



ELECTRICAL CHARACTERISTICS

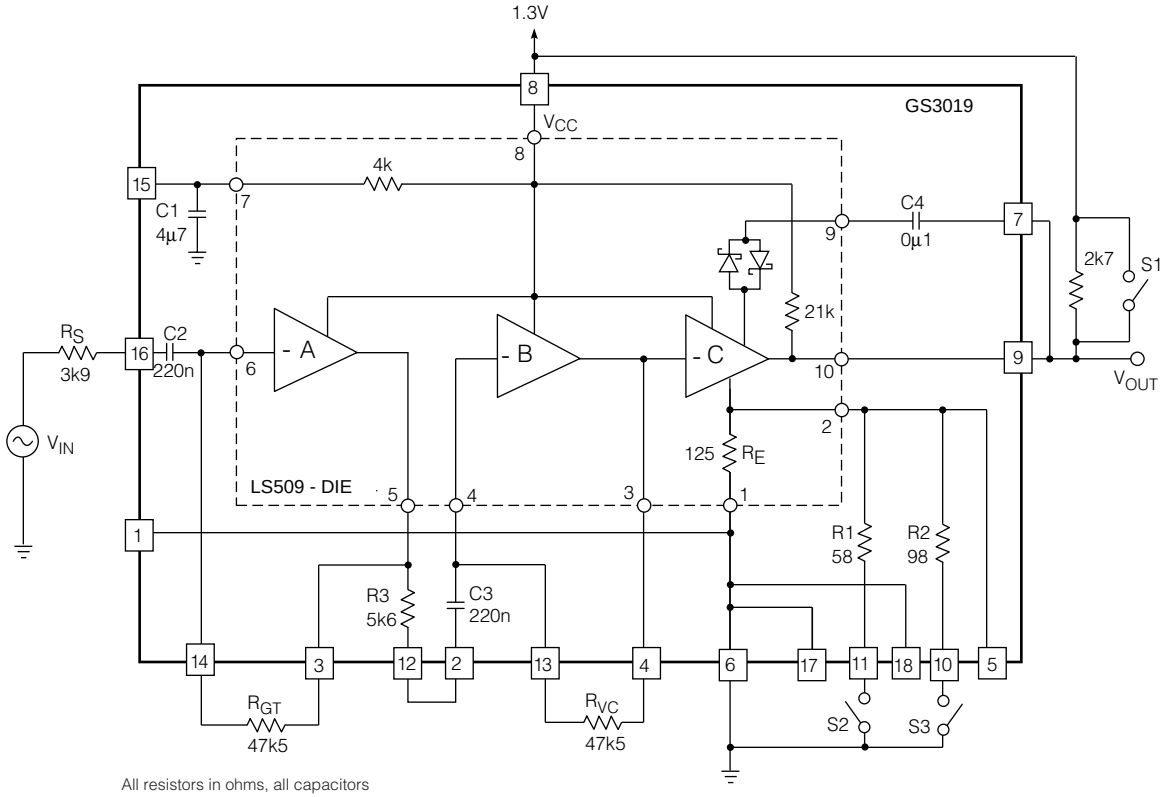
Conditions: Frequency = 3 kHz, Temperature = 25°C, Supply Voltage V_B = 1.3 V

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Amplifier Current	I_{AMP}		75	160	245	µA
Transducer Current	$I_{TRANS\ 1}$		175	225	290	µA
Transducer Current	$I_{TRANS\ 2}$	S1 = Closed, S3 = Closed	450	520	600	µA
Transducer Current	$I_{TRANS\ 3}$	S1 = Closed, S2 = Closed	650	725	820	µA
Bias Voltage (Pad 15)	V_{P15}		1.27	1.3	-	V
Bias Voltage (Pad 5)	V_{P5}		21.5	28.5	35.5	mV
System Voltage Gain	Gain	V_{IN} = -90 dBV	61.5	64.5	67.5	dB
Maximum Power Output	MPO	V_{IN} = -60 dBV	-17	-12	-9	dBV

All conditions and parameters remain as shown in the Test Circuit unless otherwise specified in CONDITIONS Column.

V_{PX} - Actual voltage measured on the pin at given condition (X is pin number).

Notes: **1.** All capacitors on Hybrid ±20%, all screened on resistors ±5%.



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Fig. 1 Production Test Circuit

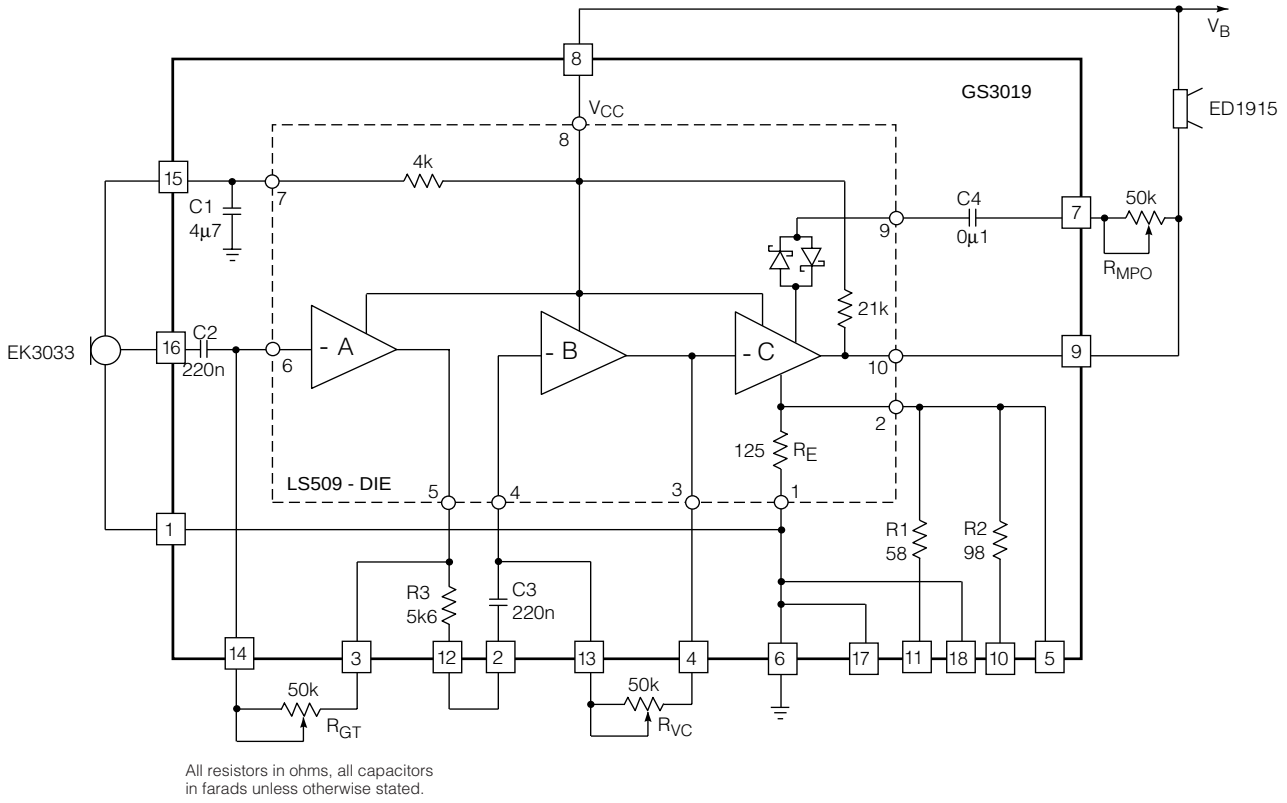


Fig. 2 Typical Hearing Instrument Application

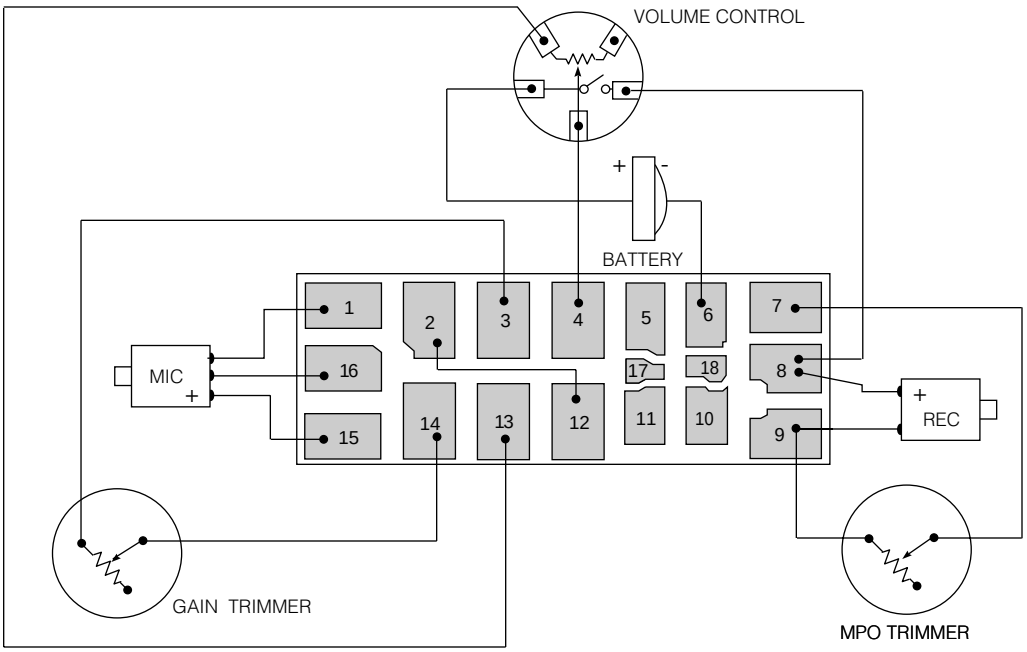
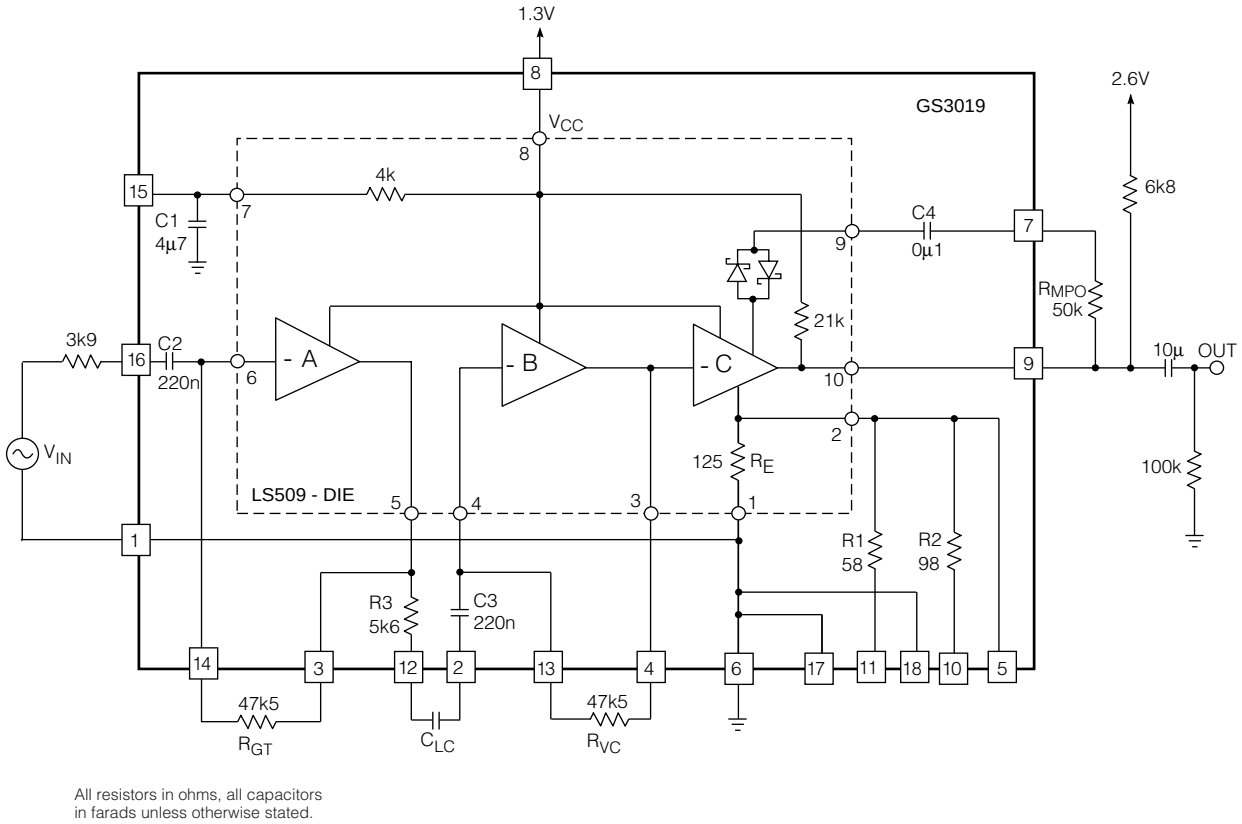


Fig. 3 Typical Assembly Diagram



All resistors in ohms, all capacitors in farads unless otherwise stated.

Fig. 4 Characterization Circuit (used to generate typical curves)

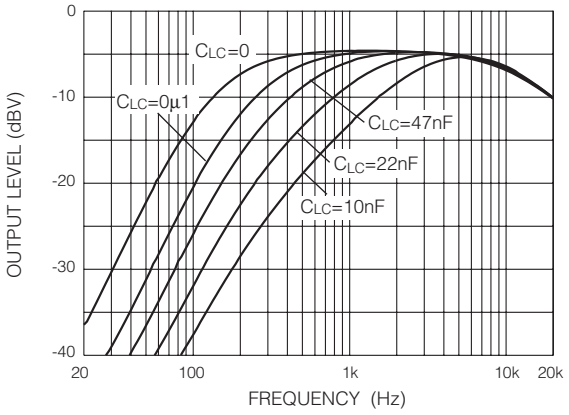


Fig. 5 Frequency Response for Different C_{LC} Capacitors

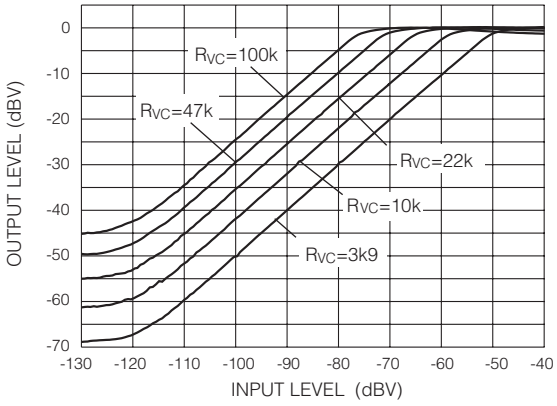
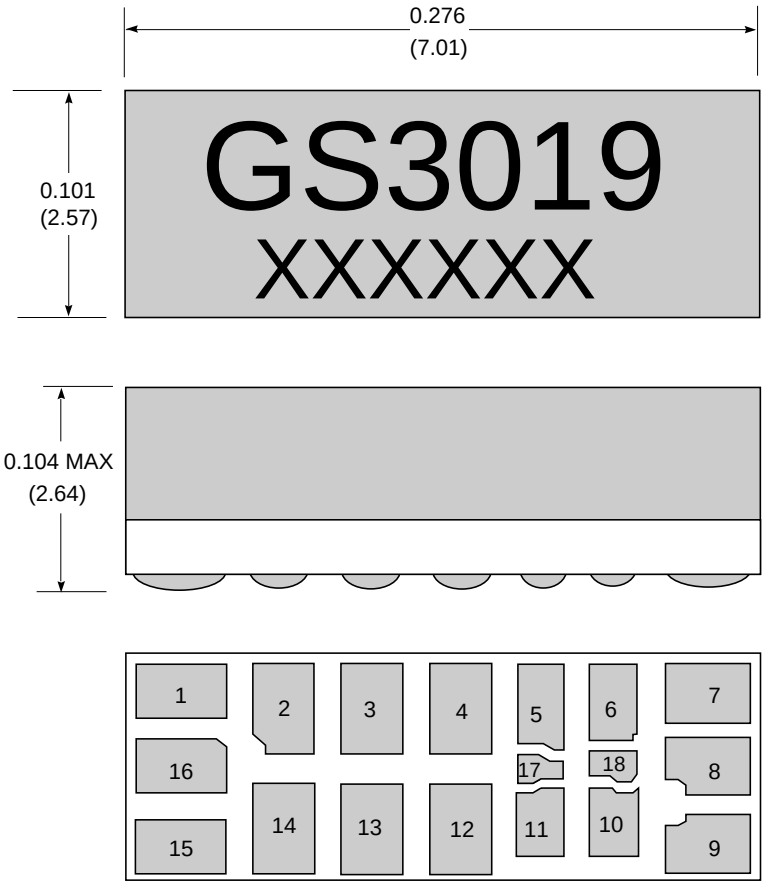


Fig. 6 I/O Curves at Various R_{VC} Settings



Dimensions are in inches. Dimensions in parenthesis are in millimetres, converted from inches and include minor round off errors.
1.0000 inches = 25.400 mm.
Dimensions ±0.005 (±0.13) unless otherwise stated.
Pad numbers for illustration purposes only.
Smallest pad 0.023 x 0.013 (0.58 x 0.33).
Largest pad 0.036 x 0.027 (0.92 x 0.69).
XXXXXX - work order number.
This hybrid is designed for point to point manual soldering.

Fig. 7 Hybrid Layout & Dimensions

DOCUMENT IDENTIFICATION: DATA SHEET
The product is in production. Gennum reserves the right to make changes at any time to improve reliability, function or design, in order to provide the best product possible.

REVISION NOTES:

Updated to Data sheet

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