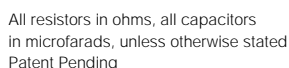




GS3031/GS3032 DATA SHEET

0.250 in x 0.115 in x 0.080 in)
(6.35 mm x 2.91 mm x 2.03 mm)


The gain setting stage is followed by a class D Integrated Receiver preamplifier stage. Symmetrical peak clipping is used to achieve MPO adjustment.



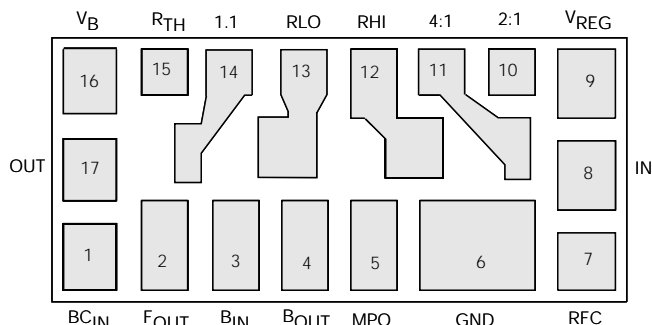
FUNCTIONAL BLOCK DIAGRAM

ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE / UNITS
Supply Voltage	3 VDC
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: Supply Voltage $V_B = 1.3$ V, Frequency = 1 kHz, Temperature = 25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Hybrid Current	I_{AMP}		-	370	530	μA
Minimum Voltage	V_b		1.1	-	-	V
Total Harmonic Distortion	THD	$V_{IN} = -40dBV$ at 1kHz	-	0.2	1.0	%
THD with Maximum Allowable Input	THD_M	$V_{IN} = -23dBV$, $R_{vc} = 47k\Omega$	-	2	10	%
Input Referred Noise	IRN	Aweight	-	3.0	-	μV_{RMS}
Total System Gain	A_V	$V_{IN} = -90dBV$	46	49	52	dB
Regulator Voltage	V_{REG}	$I_{LOAD} = 30\mu A$	890	930	1000	mV
AGC						
Lower Threshold	TH_{LO}		-91	-87	-83	dBV
Upper Threshold	TH_{HI}		-36	-32	-28	dBV
Compression Gain Range	ΔA	Gain(-90dBV $_{IN}$) -Gain(-30dBV $_{IN}$)	37.5	40.5	43.5	dB
System Gain in Compression	A_{60}	$V_{IN} = -60dBV$	26	29	32	dB
Min. Compression Ratio	$CMP_{1:1}$	$V_{IN} = 3kHz$, -60dBV to -40dBV, $R_{hp} = 1:1$ $R_{lp} = 1:1$	0.9	1.0	1.1	Ratio
Max. Comp. Ratio	$CMP_{4:1}$	$V_{IN} = 3kHz$, -60dBV to -40dBV, $R_{hp} = 4:1$ $R_{lp} = 4:1$	3.6	4.0	4.3	Ratio
Fast Detector Time Constant	τ_{FAST}		-	10	-	ms
Slow Detector Time Constant	τ_{SLOW}		-	220	-	ms
FILTER						
Maximum Cross-over Frequency	$f_{c,0}$	$R_{fc} = 0\Omega$	3.0	3.9	-	kHz
Nominal Cross-over Frequency	$f_{c,22}$	$R_{fc} = 22k\Omega$	1.5	1.9	2.3	kHz
Minimum Cross-over Frequency	$f_{c,220}$	$R_{fc} = 220k\Omega$	-	0.9	1.4	kHz
Filter Rolloff Rate (GS3027)			-	12	-	dB/oct
(GS3028)			-	24	-	dB/oct
STAGE A and B						
Open Loop Gain (B)	$A_{OL,B}$		-	52	-	dB
Input Impedance (A)	R_{IN}		9	11	13	$k\Omega$
OUTPUT STAGE						
Stage Gain	A_C	$V_{IN} = -30dBV$	7	9	11	dB
Max Output Level	MPO	$R_{vc} = 220k\Omega$, $V_{IN} = -25dBV$	-14.5	-12.5	-10.5	dBV
MPO Range	ΔMPO	$R_{MPO} = 0\Omega$ to $50k\Omega$	13	15	17	dB
Output Resistance	R_{OUT}		-	24	-	$k\Omega$

All conditions and parameters remain as shown in Test Circuit unless otherwise stated in "Conditions" column.

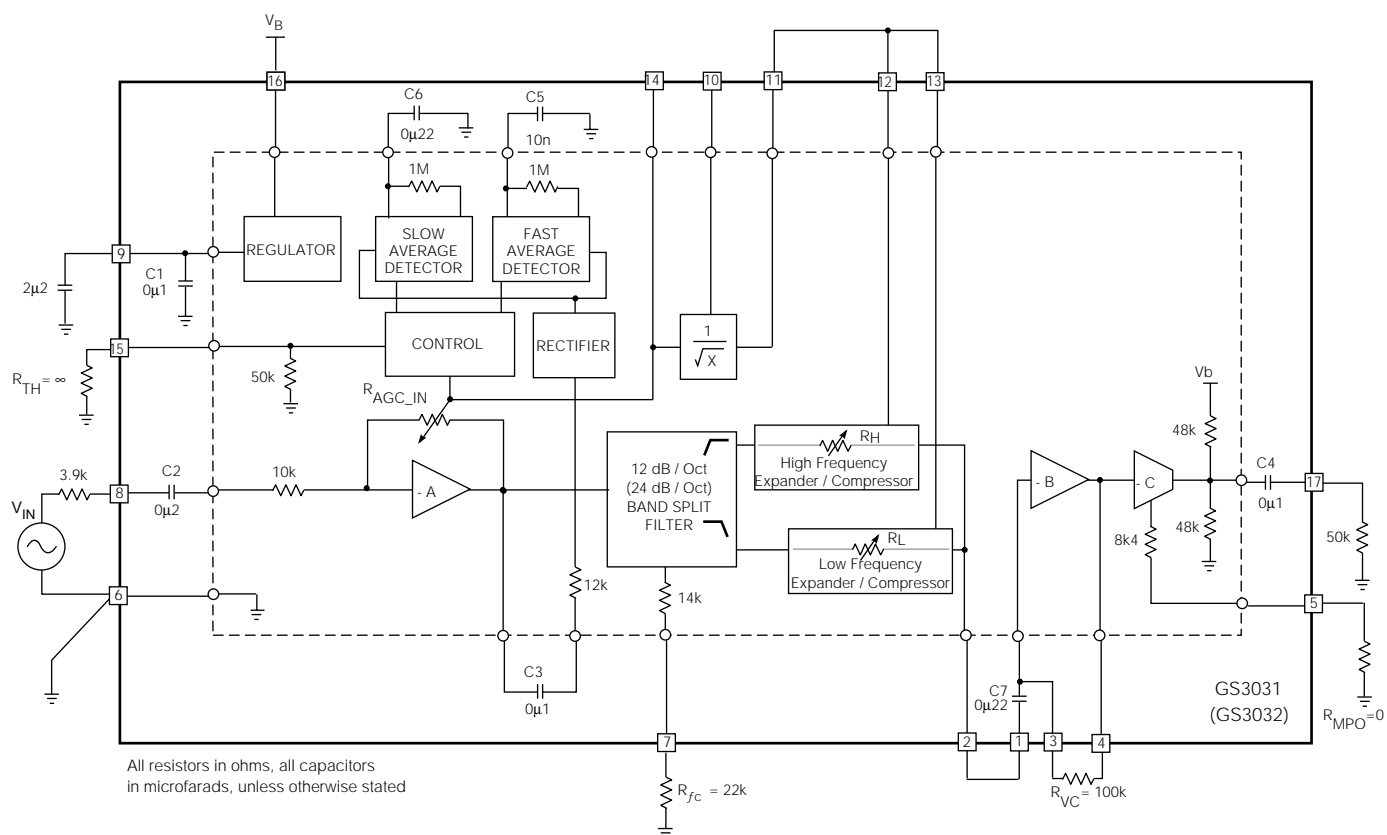


Fig. 1 Production Test Circuit

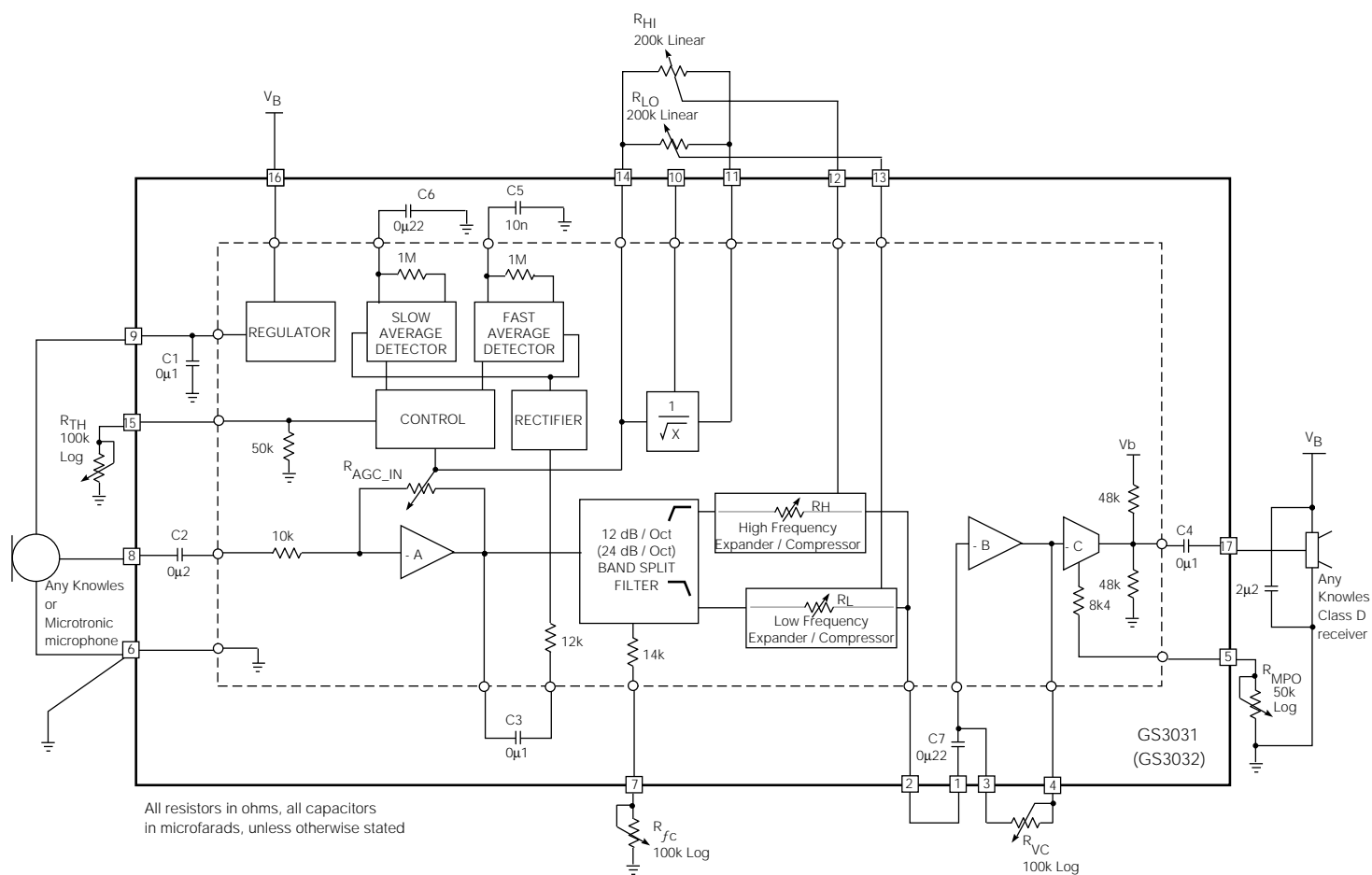
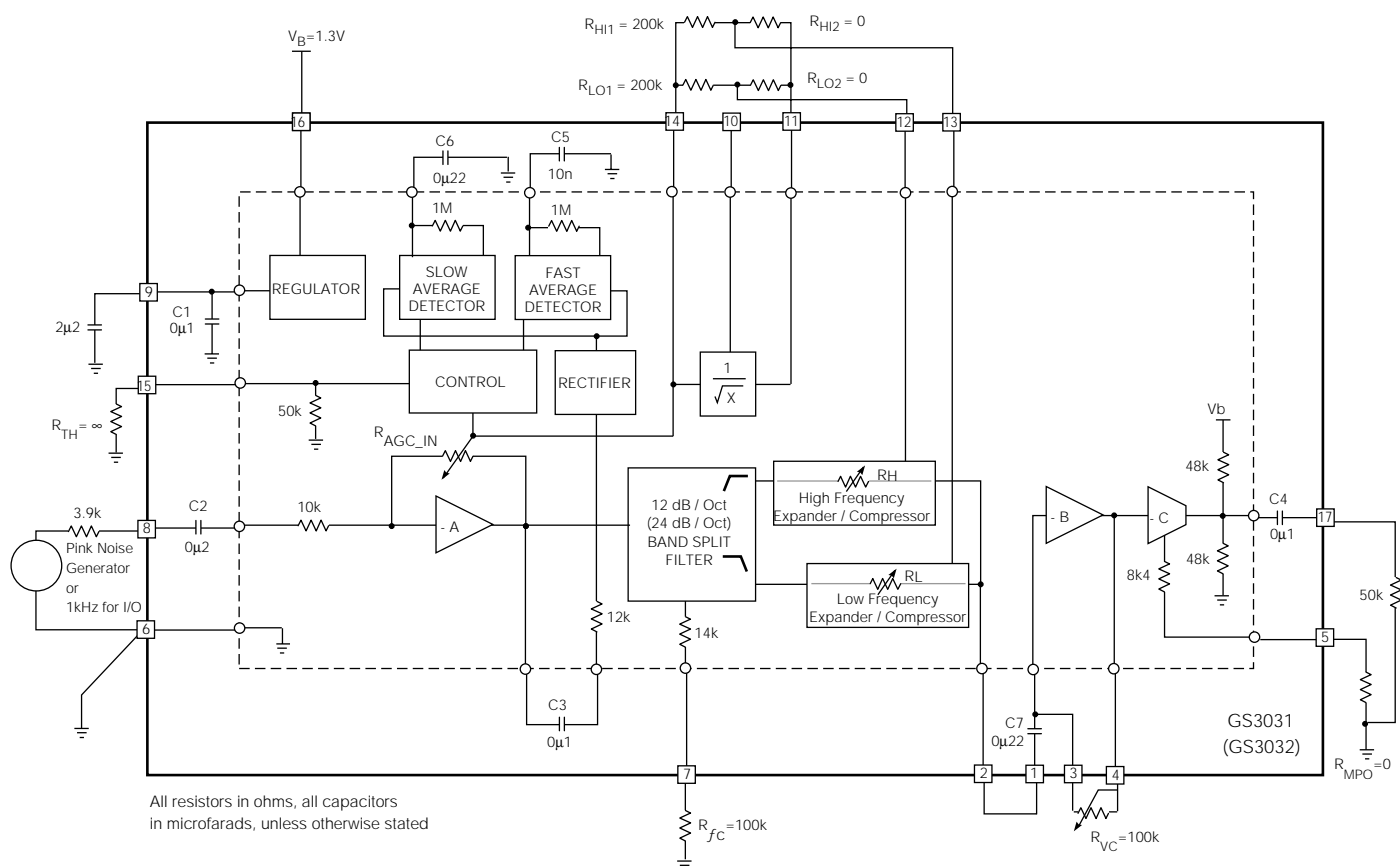
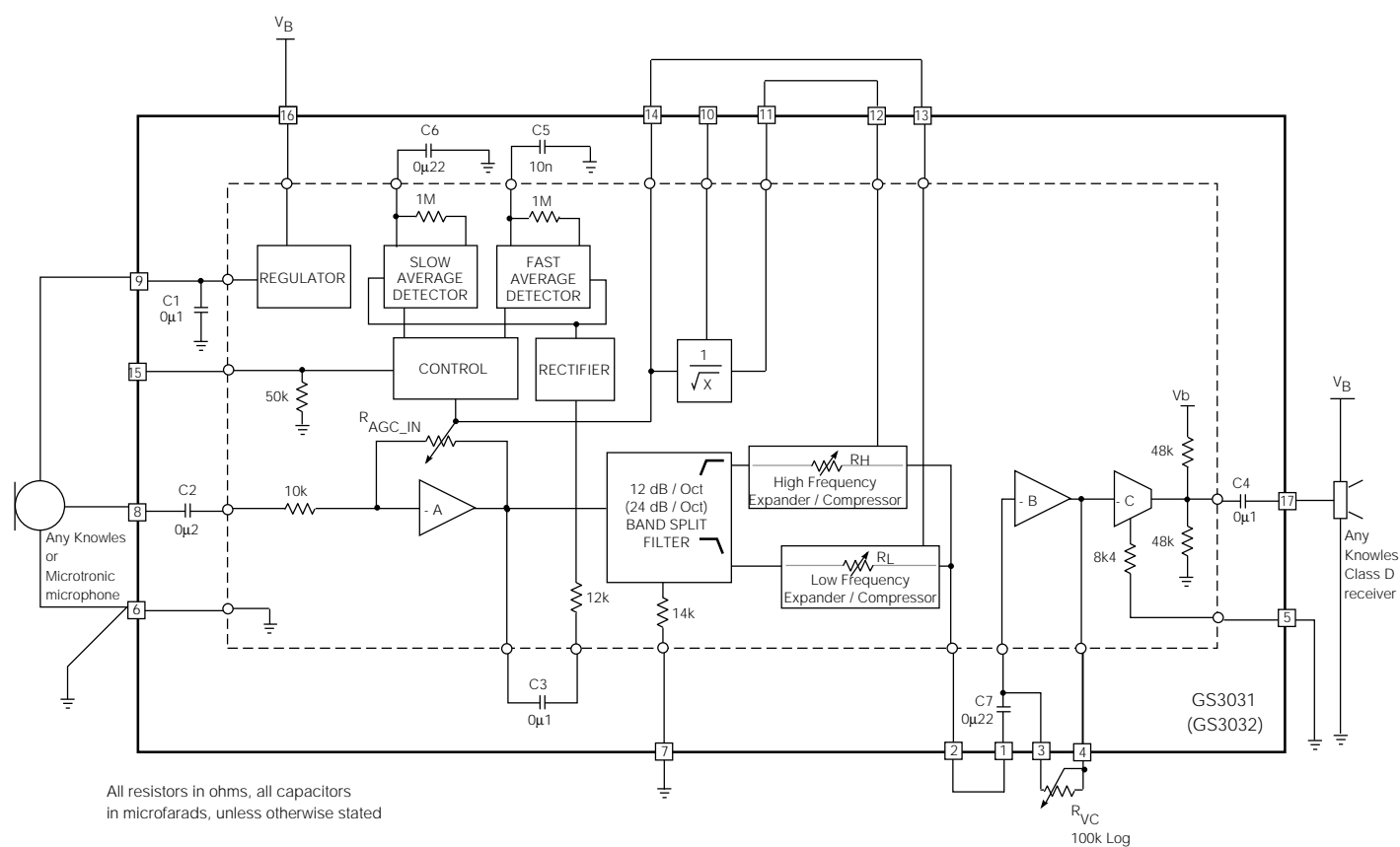


Fig. 2 Maximum Flexibility Hearing Instrument Application



TYPICAL PERFORMANCE CURVES

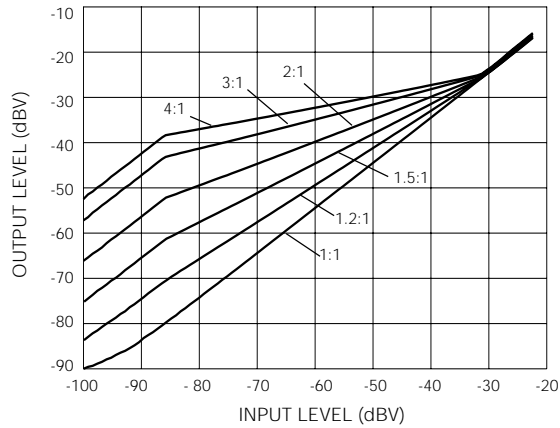


Fig. 5 I/O Transfer function for Different Compression Ratios

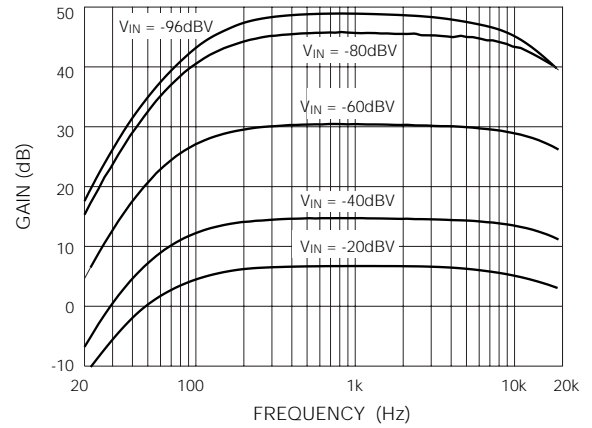


Fig. 6 Frequency Response for Different Input Levels

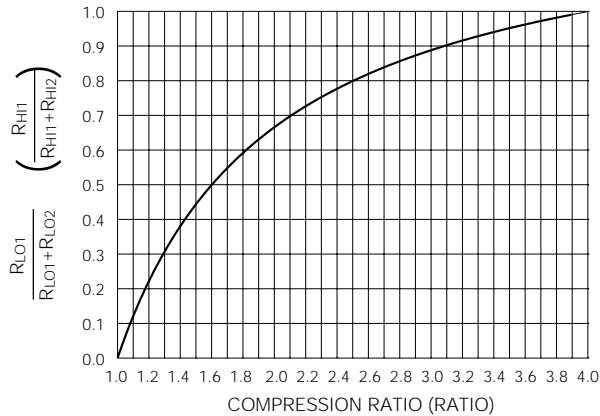


Fig. 7 Compression Settings Resistor Ratio for High Pass Channel (R_{H11} & R_{H12}) and Low Pass Channel (R_{L01} & R_{L02})

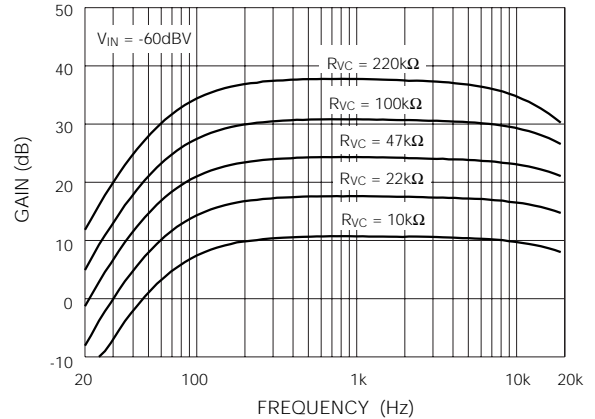


Fig. 8 Frequency Response for Different R_{VC} Values

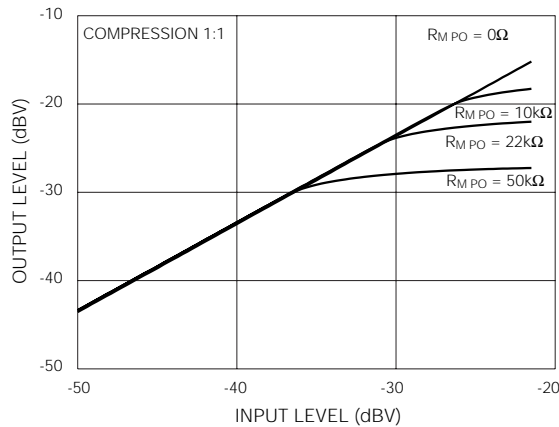


Fig. 9 I/O Transfer Function for Different R_{MPO} Resistors

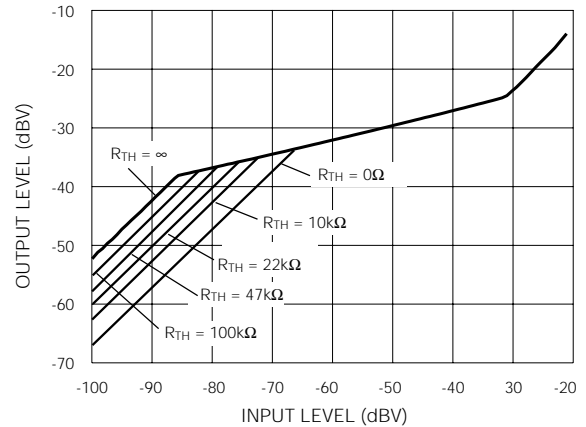


Fig. 10 I/O Transfer Function for Different R_{TH} Resistors

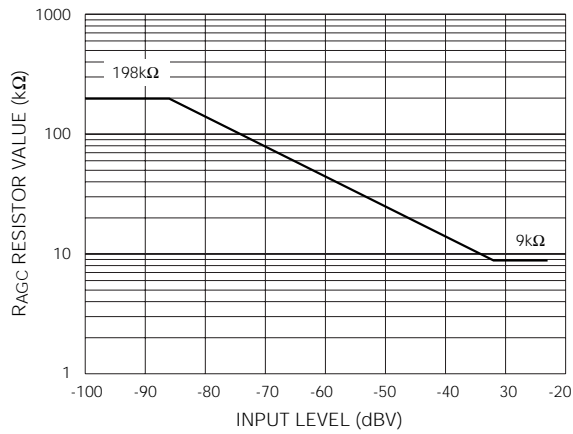


Fig. 11 Stage A Compressor Feedback Resistor Value

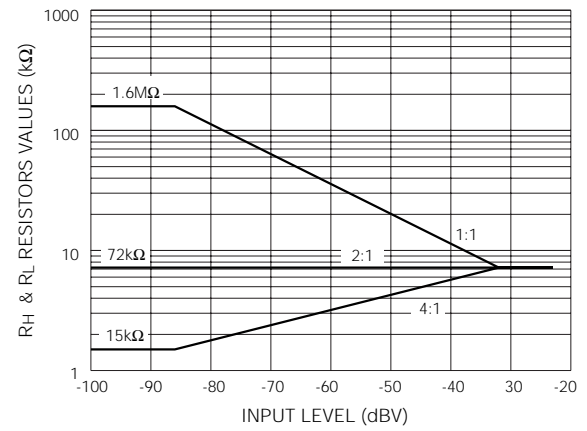


Fig. 12 Expander / Compressor Resistors Values

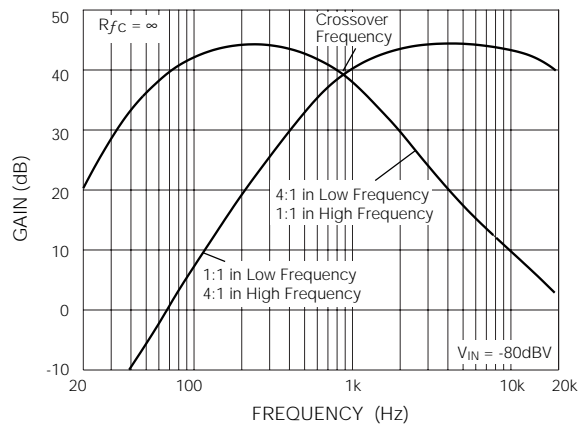


Fig. 13 Crossover Frequency Representation for GS3031 Processor

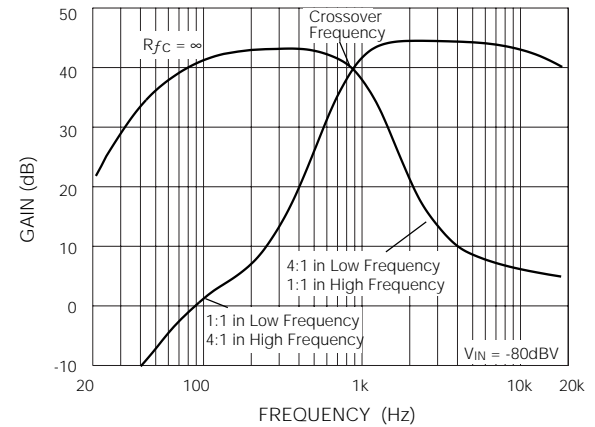


Fig. 14 Crossover Frequency Representation for GS3032 Processor

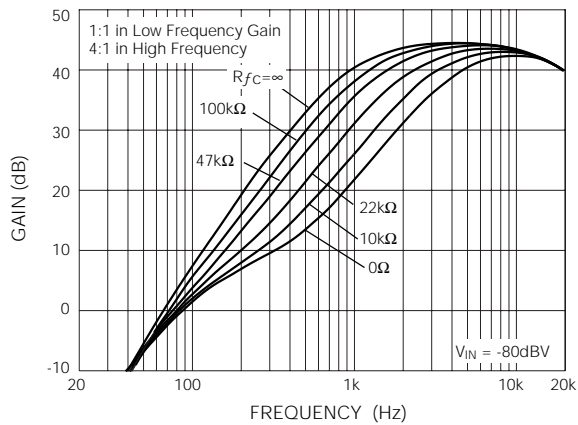


Fig. 15 GS3031 Frequency Response for Different R_{fc} Resistor Values

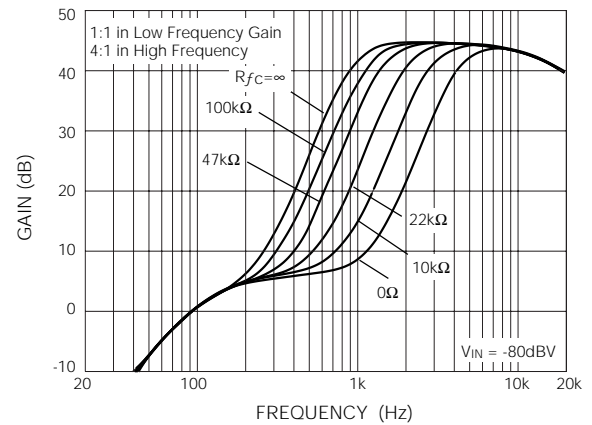


Fig. 16 GS3032 Frequency Response for Different R_{fc} Resistor Values

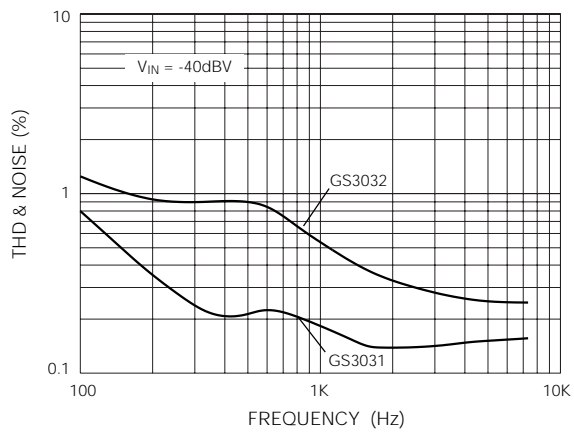


Fig. 17 THD and Noise vs Frequency

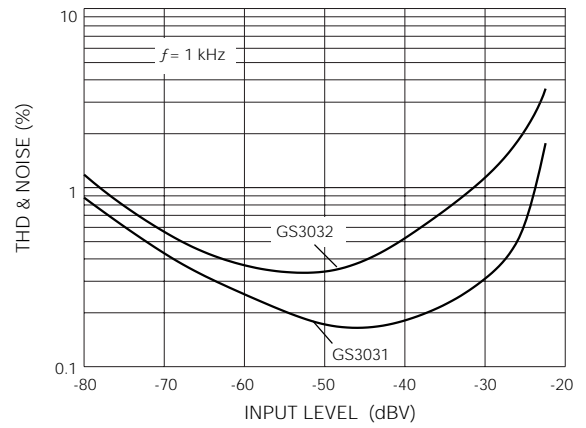


Fig. 18 THD and Noise vs Input Level

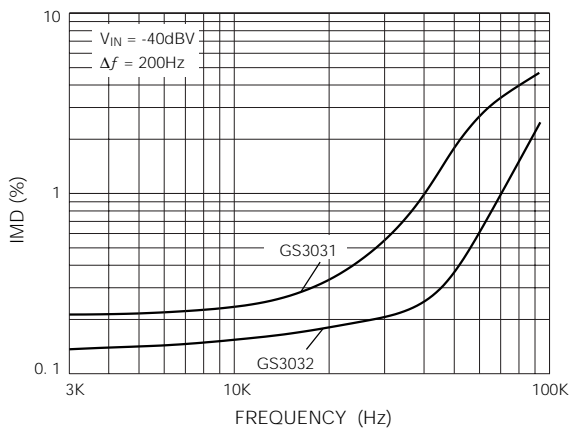


Fig. 19 Intermodulation Distortion (CCIF) vs Frequency

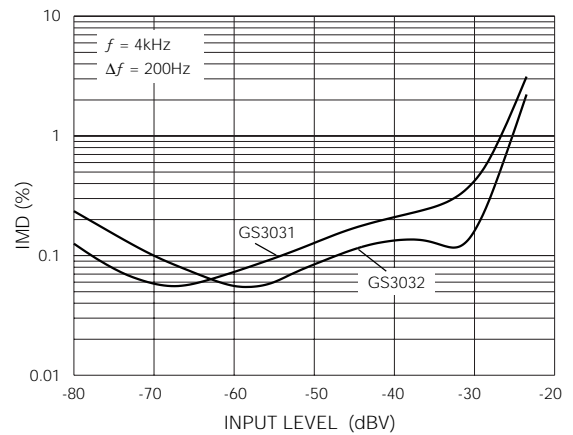
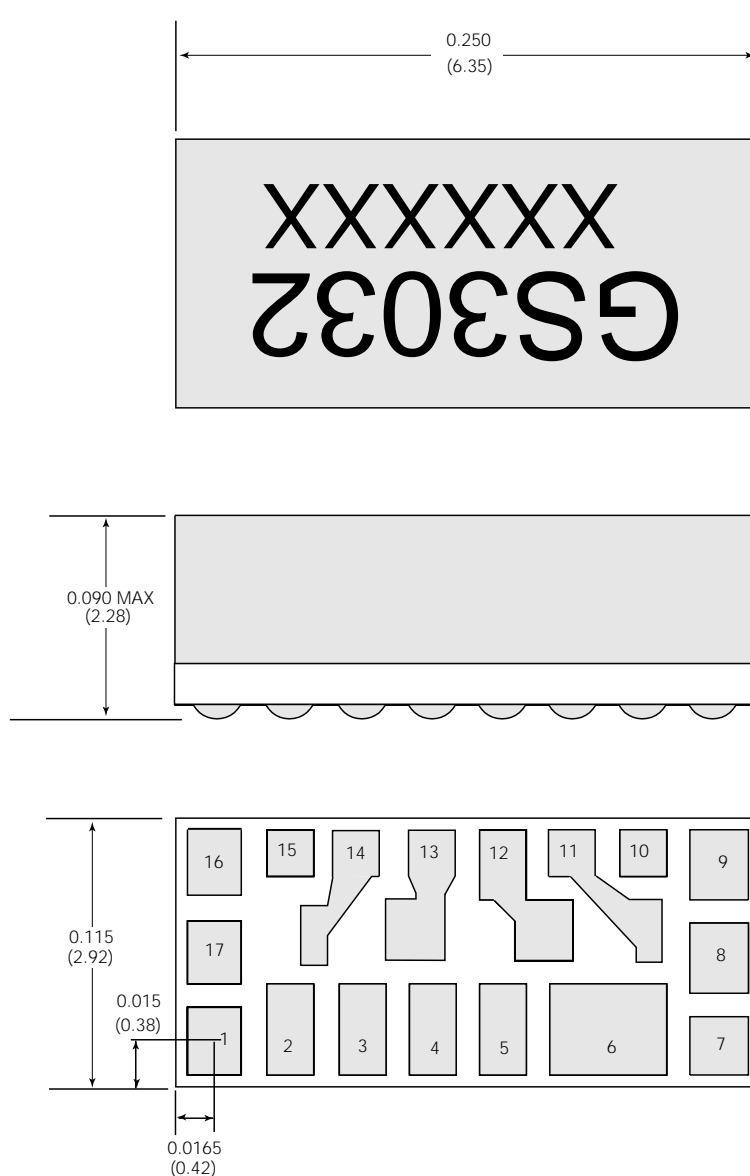


Fig. 20 Intermodulation Distortion (CCIF) vs Input Level



Dimension units are in inches.
 Dimensions in parenthesis are in millimetres converted from inches and include minor rounding errors.
 1.0000 inches = 25.400 mm.
 Dimension ± 0.003 (± 0.08) unless otherwise stated.
 XXXXXX - work order number.
 Component name - either GS3031 or GS3032
 This hybrid is designed for point to point soldering.
 Contact Gennum Representative for pad layout in electronic format.

Fig. 21 Hybrid Layout & Dimensions

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DOCUMENT IDENTIFICATION: DATA SHEET

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REVISION NOTES:

Updated to Data sheet

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