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Dual High Output Current, High Speed Amplifier

Preliminary Technical Data AD8017

FEATURES

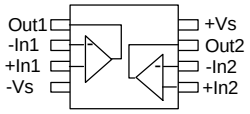
Low cost drive amplifiers provide 200mA, 10.2Vpp output. Ideal as a PC based, Customer Premise Equipment (CPE) driver in DSL applications.

Output Voltage 1.0V to the Rail into 100Ω
Low Cost
Low Power Operation
+5V to +12V Voltage Supply
7mA/amp Supply Current
Current Feedback Amplifiers

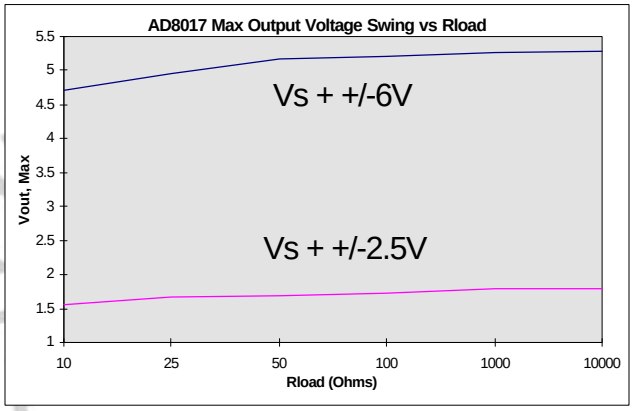
High Output Voltage and Current Drive
200mA Output Drive Current into 25Ω
500mA Short Circuit Output Drive Current
20Vp-p Differential Output Voltage, R_L= 50Ω
Low Distortion
-83dBc @ 500kHz SFDR, R_L= 100Ω, Vo = 2Vp-p
1.9nV/√Hz Voltage noise density
High Speed
160MHz Bandwidth (-3dB)
1500V/µS Slew Rate

APPLICATIONS

xDSL PCI Cards
Consumer DSL Modems
Line Driver
Video Distribution



AD8017
8 Pin 'Thermal Coastline' SOIC



PRODUCT DESCRIPTION

The AD8017 is a low cost, dual high speed amplifier capable of driving low distortion signals to within 1.0V of the supply rail. It is intended for use in single supply xDSL systems where low distortion and low cost is essential. The amplifiers will be able to drive minimum 200mA of output current per amplifier. The AD8017 will deliver -68dBc of SFDR at 500kHz, required for many xDSL applications.
Fabricated in ADI's high speed XFCB process, the high bandwidth and fast slew rate of the AD8017 keep distortion to a minimum, while dissipating a minimum of power. The quiescent current of the AD8017 is low 7mA/amp max.

Low distortion, high output voltage drive, and high output current drive make the AD8017 ideal for use in low cost
Customer Premise End (CPE) equipment for ADSL, SDSL, VDSL and proprietary xDSL systems.

The AD8017 drive capability comes in a very compact form. Utilizing ADI's proprietary 'Thermal Coastline' SOIC package, the AD8017's total (static and dynamic) power on +12V supplies is easily dissipated without external heat sink, other than to place the AD8017 on a 4-layer PCB.

The AD8017 will operate over the Commercial Temperature range 0°C to +85°C.

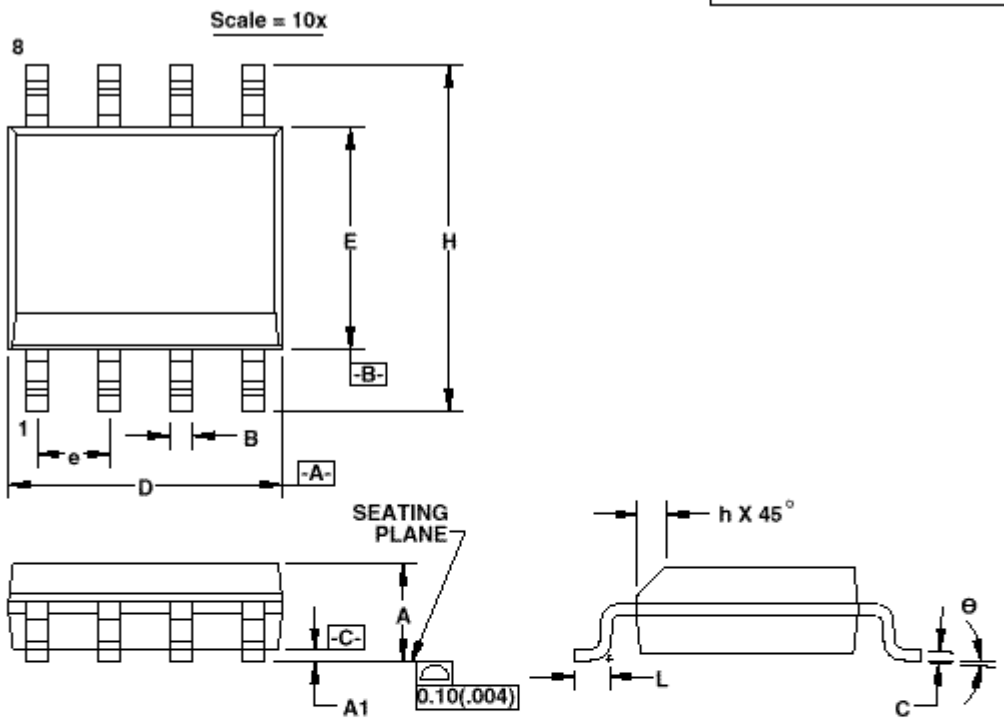
SPECIFICATIONS **(@25°C, Vs=+/-6V, R_L=100Ω,R_F=R_G=620Ω, unless otherwise noted)**

Parameter	Conditions	AD8017 Min	Typ	Max	Units
DYNAMIC PERFORMANCE					
-3dB Bandwidth	G= +2, V_{OUT}<0.4V p-p	TBD	160		MHz
0.1dB Bandwidth	V_{OUT}<0.4V p-p		70		MHz
Large Signal Bandwidth	V_{OUT}=4V p-p		TBD		MHz
Slew Rate	Non-Inverting,V_{OUT}=2Vp-p, G=+2	1500		V/µs	
Rise & Fall Time	Non-Inverting, V_{OUT}= 2Vp-p		2.6		ns
Settling Time	0.1%, V_{OUT}= 2Vp-p		14		ns
Peaking	V_{OUT}=0.4V p-p,<5MHz		TBD		dB
NOISE / HARMONIC PERFORMANCE					
Distortion,	V_{OUT}= 2Vp-p				
2nd Harmonic	500kHz, R_L=100 Ω /25 Ω		-78/-71		dBc
	1MHz, R_L=100 Ω /25 Ω		-76/-69		dBc
3rd Harmonic	500kHz, R_L=100 Ω /25 Ω		-105/-91		dBc
	1MHz, R_L=100 Ω /25 Ω		-81/-72		dBc
IP3	500kHz, R_L=100 Ω /25 Ω		TBD		dBm
IMD	500kHz, R_L=100 Ω /25 Ω		TBD		dBc
MTPR	26kHz to 1.1MHz		TBD		dBc
Input Noise Voltage	f=10kHz		1.9		nV√Hz
Input Noise Current	f=10kHz (+ Inputs)		TBD		pA√Hz
Input Noise Current	f=10kHz (- Inputs)		TBD		pA√Hz
Crosstalk	f = 5MHz, G=+2		70		dB
DC PERFORMANCE					
Input Offset Voltage			1.5	TBD	mV
	Tmin-Tmax			TBD	mV
Transimpedance Gain	V_{OUT}= 2Vp-p	TBD	800		KΩ
	Tmin-Tmax	TBD			KΩ
INPUT CHARACTERISTICS					
Input Resistance	+Input		TBD		KΩ
	-Input		TBD		KΩ
Input Capacitance	+Input		2		pF
Input Bias Current (-)	Tmin-Tmax		±10	TBD	µA
Input Bias Current (+)	Tmin-Tmax		±10	TBD	µA
CMRR	Vcm=+/-2.5V		60		dB
Input CM Voltage Range			±5.1		V
OUTPUT CHARACTERISTICS					
Output Resistance			TBD		Ω
Output Voltage Swing	Rl =25Ω	TBD	±5.1		V
Output Current	Rl =25 Ω	TBD	200		mA
Short-Circuit Current			500		mA
POWER SUPPLY					
Supply Current/Amp			7.0	TBD	mA
	Tmin - Tmax			TBD	mA
Operating Range	Dual Supply	±TBD		±6.0	V
Power Supply Rejection Ratio			66	TBD	dB
Operating Temperature Range		0		+85	Deg C

SPECIFICATIONS **(@25°C, Vs=+/-2.5V, R_L=100Ω,R_F=R_G=620Ω, unless otherwise noted)**

Parameter	Conditions	AD8017 Min	Typ	Max	Units
DYNAMIC PERFORMANCE					
-3dB Bandwidth	G= +2, V_{OUT}<0.4V p-p	TBD	120		MHz
0.1dB Bandwidth	V_{OUT}<0.4V p-p		TBD		MHz
Large Signal Bandwidth	V_{OUT}=4V p-p		TBD		MHz
Slew Rate	Non-Inverting,V_{OUT}=2Vp-p, G=+2	TBD		V/µs	
Rise & Fall Time	Non-Inverting, V_{OUT}= 2Vp-p		1.3		ns
Settling Time	0.1%, V_{OUT}= 2Vp-p		14		ns
Peaking	V_{OUT}=0.4V p-p,<5MHz		TBD		dB
NOISE / HARMONIC PERFORMANCE					
Distortion,	V_{OUT}= 2Vp-p				
2nd Harmonic	500kHz, R_L=100 Ω /25 Ω		-75/-68		dBc
	1MHz, R_L=100 Ω /25 Ω		-73/-67		dBc
3rd Harmonic	500kHz, R_L=100 Ω /25 Ω		-91/-90		dBc
	1MHz, R_L=100 Ω /25 Ω		-79/-79		dBc
IP3	500kHz, R_L=100 Ω /25 Ω		TBD		dBm
IMD	500kHz, R_L=100 Ω /25 Ω		TBD		dBc
MTPR	26kHz to 1.1MHz		TBD		dBc
Input Noise Voltage	f=10kHz		1.8		nV√Hz
Input Noise Current	f=10kHz (+ Inputs)		18.9		pA√Hz
Input Noise Current	f=10kHz (- Inputs)		17.7		pA√Hz
Crosstalk	f = 5MHz, G=+2		70		dB
DC PERFORMANCE					
Input Offset Voltage			1.5	TBD	mV
	Tmin-Tmax			TBD	mV
Transimpedance Gain	V_{OUT}= 2Vp-p	TBD	800		KΩ
	Tmin-Tmax	TBD			KΩ
INPUT CHARACTERISTICS					
Input Resistance	+Input		TBD		KΩ
	-Input		TBD		KΩ
Input Capacitance	+Input		2		pF
Input Bias Current (-)	Tmin-Tmax		±10	TBD	µA
Input Bias Current (+)	Tmin-Tmax		±10	TBD	µA
CMRR	Vcm=+/-1.0V		60		dB
Input CM Voltage Range			±1.6		V
OUTPUT CHARACTERISTICS					
Output Resistance			TBD		Ω
Output Voltage Swing	Rl =25Ω	TBD	±1.6		V
Output Current	Rl =25 Ω	TBD	66		mA
Short-Circuit Current			TBD		mA
POWER SUPPLY					
Supply Current/Amp			6.6	TBD	mA
	Tmin - Tmax			TBD	mA
Operating Range	Single Supply	TBD		+5	V
Power Supply Rejection Ratio			63	TBD	dB
Operating Temperature Range		0		+85	Deg C

FOR REVISION DETAILS AND APPROVALS SEE ECN



MILLIMETERS		
Dimension	Min.	Max
A	1.35	1.75
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC.	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.27
Θ	0°	8°

INCHES		
Dimension	Min.	Max
A	.0532	.0688
A1	.0040	.0098
B	.013	.020
C	.0075	.0098
D	.1890	.1968
E	.1497	.1574
e	.050 BSC.	
H	.2284	.2440
h	.0099	.0196
L	.016	.050
Θ	0°	8°

Title: 8L SOIC 150 mil
Package Outline
CUSTOMER

NOTES:

1. Controlling Dimensions are in mm.
2. All Dimensions per JEDEC Standards MS-012 AA