

Preliminary Technical Data
AD8018
FEATURES

Line drive amplifiers provide 8Vpp differential output drive. Ideal xDSL line driver for USB, PCMCIA or PCI based Customer Premise Equipment (CPE).

High Output Voltage and Current Drive

350mA Minimum Output Drive Current
8Vp-p Differential Output Voltage, $R_L = 11\Omega$

Low Distortion

-95dBc SFDR @ 100kHz into 11Ω , 6Vpp Differential
4nV/ $\sqrt{\text{Hz}}$ Voltage noise density, 100kHz
Out of Band MTPR = -87dBc, 144kHz to 500kHz,
Zline = 11Ω , Pline = 13dBm

Low Power Operation

+5V to +8V Power Supply Range
2-bit logic controlled Stand-by, Shutdown

Low supply current of 9ma/amplifier (typ)

Current Feedback Amplifiers

High Speed

135MHz Bandwidth (-3dB)
370V/ μs Slew Rate

APPLICATIONS

xDSL USB, PCI, PCMCIA Cards

Consumer DSL Modems

Twisted Pair Line Driver

PRODUCT DESCRIPTION

The AD8018 is a dual, high speed, low cost amplifier capable of driving low distortion signals to within 0.5V of the supply rail. It is intended for use in single supply xDSL systems where low distortion and low cost is essential, and maximum reach on the line must be attained with the minimum of supply voltages. Each amplifier drives minimum 350mA of output current and while maintaining -95dBc of SFDR at 100kHz, outstanding performance for any xDSL CPE application. The AD8018 is available with flexible standby and shutdown modes. Two bit control (1.5V threshold referenced to DGND) will put the AD8018 into a full power, standby (outputs low Z) and shutdown (outputs high Z).

Fabricated in ADI's high speed XFCB process, the high bandwidth and fast slew rate of the AD8018 keep distortion to a minimum, while dissipating a minimum of power. The quiescent current of the AD8018 is low 8.7mA/amplifier max. Low distortion, high output voltage drive, and high output current drive in small packages make the AD8018 ideal for use in low cost USB, PCMCIA and PCI Customer Premise

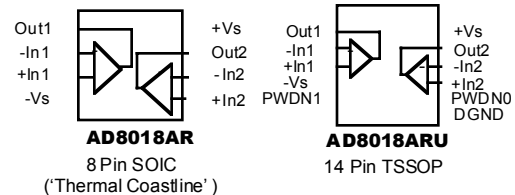


Figure 1. Distortion versus Rload.

Equipment for ADSL, SDSL, VDSL and proprietary xDSL systems.

The AD8018 drive capability comes in compact 8 Lead SOIC, and 14 lead TSSOP, 'Thermal Coastline' packages. Both models will operate over the Temperature range -40°C to +85°C.

SPECIFICATIONS (@25°C, Vs=+5V, RL=100Ω, RF=RG=900Ω unless otherwise noted)

Parameter	Conditions	Min	Typ	Max	Units
DYNAMIC PERFORMANCE					
-3dB Bandwidth	G= +1, VOUT<0.4V p-p	TBD	135		MHz
	G= +2, VOUT<0.4V p-p	TBD	110		MHz
0.1dB Bandwidth	VOUT < 0.4V p-p		70		MHz
Large Signal Bandwidth	VOUT = 4V p-p		50		MHz
Slew Rate	Non-Inverting, VOUT=4Vp-p		370		V/μs
Rise & Fall Time	Non-Inverting, VOUT= 2Vp-p		5.5		ns
Settling Time	0.1%, VOUT= 2Vp-p			20	ns
NOISE / HARMONIC PERFORMANCE					
Distortion,	VOUT= 6Vp-p (differential)				
2 nd Harmonic	100kHz, RL=11 Ω		-97		dBc
	500kHz, RL=11 Ω		-82		dBc
3 rd Harmonic	100kHz, RL=11 Ω		-95		dBc
	500kHz, RL=11 Ω		-85		dBc
MTPR (Out of band)	144kHz to 500kHz, RL=11Ω		-87		dBc
Input Noise Voltage	f=100kHz	4	TBD		nV√Hz
Input Noise Current	f=100kHz (+ Inputs)	1			pA√Hz
Input Noise Current	f=100kHz (- Inputs)	10			pA√Hz
Crosstalk	f = 1MHz, G=+2	TBD			dB
DC PERFORMANCE					
Input Offset Voltage	Tmin-Tmax		1	5.5	mV
			2	10	mV
Input Offset Voltage Match			TBD		mV
Transimpedance	VOUT= 2Vp-p, RL = 11 Ohms		15		MΩ
	Tmin-Tmax	TBD			MΩ
INPUT CHARACTERISTICS					
Input Resistance	+Input		10		MΩ
	-Input		125		Ω
Input Capacitance	+Input		0.5		pF
Input Bias Current (-)	TMIN to TMAX		0.25	TBD	μA
Input Bias Current (-) Match	TMIN to TMAX		TBD	TBD	μA
Input Bias Current (+)	TMIN to TMAX		1	TBD	μA
Input Bias Current (+) Match	TMIN to TMAX		TBD	TBD	μA
CMRR	Vin 2V to 4V		58		dB
Input CM Voltage Range	Conditions TBD	2		4	V
OUTPUT CHARACTERISTICS					
Cap Load	30% overshoot		TBD		pF
Output Resistance	Frequency = 100kHz, PWDN1, PWDN0 = "1"		0.2		Ω
Output Voltage Swing		2		4	V
Output Voltage Swing	RL = 5.5Ω	TBD		TBD	V
Linear Output Current	SFDR < -TBD dBc, f=100kHz, RL=11 Ω	350	400		mA
Short-Circuit Current			1000		mA
POWER SUPPLY					
Supply Current/Amp	PWDN1= "1", PWDN0 = "1"			9	TBD
	Tmin - Tmax			TBD	mA
STBY Supply Current/Amp	PWDN1= "0", PWDN0 = "1"		TBD	TBD	mA
SHUTDOWN Supply Current/Amp	PWDN1= "0", PWDN0 = "0"		TBD	TBD	mA
Operating Range	Single Supply	+4		+8	V
Power Supply Rejection Ratio	ΔVs = ± 1V		56	TBD	dB
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SPECIFICATIONS (@25°C, V_s=+5V, R_L=100Ω, R_F=R_G=900Ω unless otherwise noted)

Logic Inputs (PWDN [1,0])

Logic "1" Voltage
 Logic "0" Voltage
 Logic Input Bias Current
 Standby Recovery Time

R_I=11 Ω, C_I=?pF, G=?, I_s = 90% of Typical

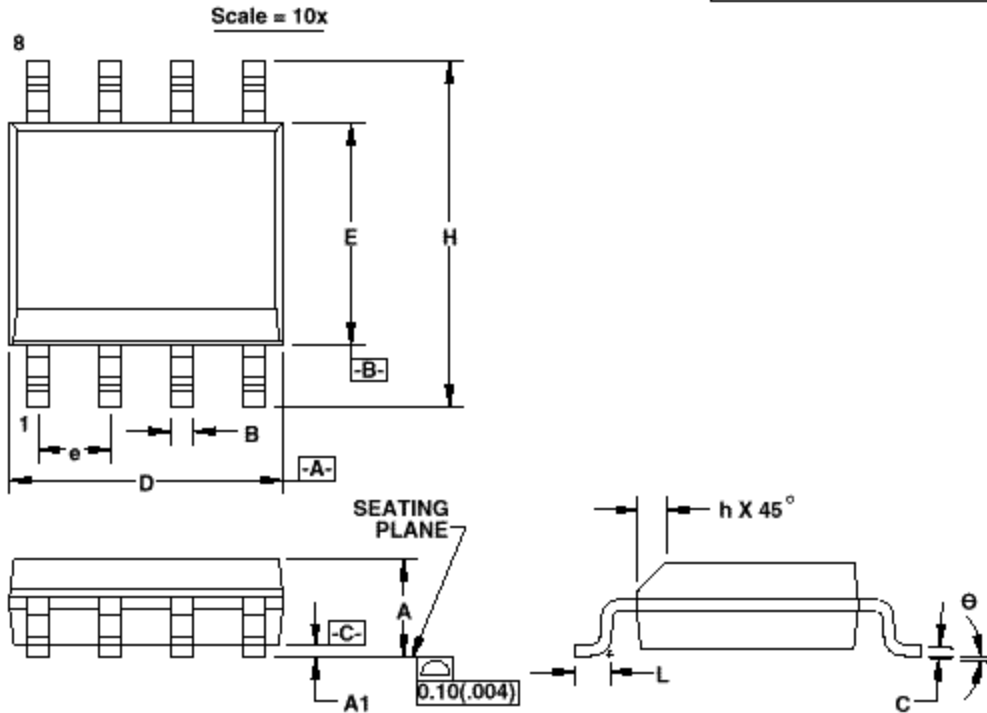
2.0

TBD 0.8
 5

V
 V
 μA
 μs

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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:

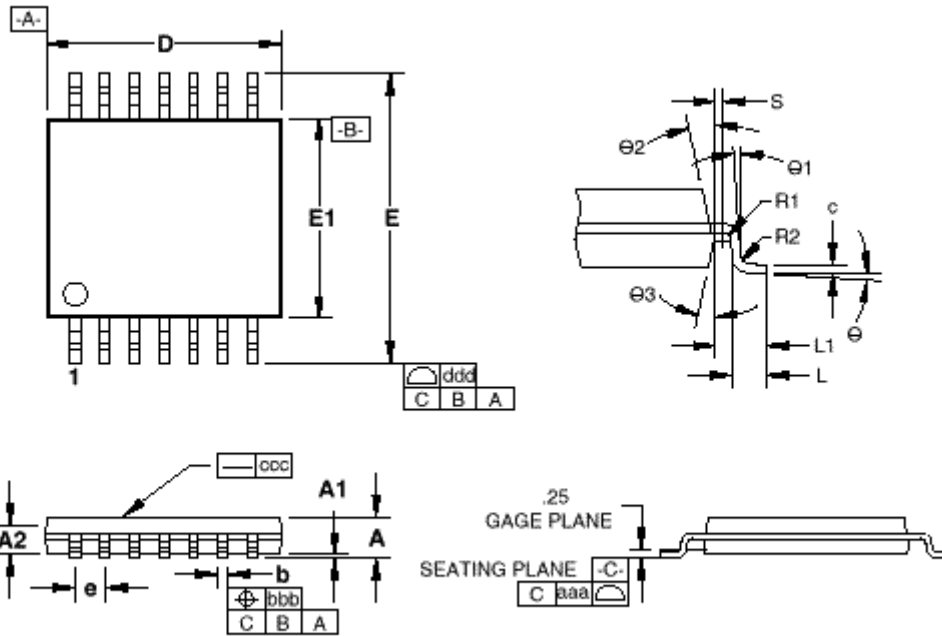
1. Controlling Dimensions are in mm.
2. All Dimensions per JEDEC Standards MS-012 AA

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Dim	Min.	Nom.	Max
A			1.2
A1	0.05		0.15
A2	0.80	1.00	1.05
D	4.90	5.00	5.10
E	6.40 BSC		
E1	4.30	4.40	4.50
b	0.19		0.30
c	0.09		0.20
e	0.65 BSC		
L	0.45	0.60	0.75
L1	1.00 REF		
R1	0.09		
R2	0.09		
S	0.20		
θ_1	0°		8°
θ_2	12° REF		
θ_3	12° REF		
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.20		

NOTES:

1. Controlling Dimensions are in mm.
2. All Dimensions per JEDEC Standards MO-153-AB-1

**Title: 14L TSSOP 4.40mm
Package Outline
Customer**

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