

AS2180 – Pre-trimmed voltage controlled amplifier (VCA)

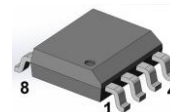
Features

- wide dynamic range > 120 dB
- wide exponential gain range > 130 dB
- low distortion < 0,01 %

Applications

- Industrial control
- Music devices
- Filters, etc.

AS2180DE



SOIC-8 EPAD 150mil, 1.27 mm

General Description

AS2180 voltage controlled amplifier (VCA) is a high performance current-in/current-out device with two opposing-polarity, voltage-sensitive control ports which offer wide-range exponential control of gain and attenuation with low signal distortion. AS2180 is trimmed at wafer stage for low THD and control-voltage feedthrough without further adjustment. Exposed pad has slight internal electrical contact with V- (pin 5).

Pin Information

Pin No	Pin Name	Description
1	In	Input current
2	Ec+	Gain + control
3	Ec-	Gain - control
4	Sym	Output signal trimming
5	V-	Negative supply
6	GND	Reference input Gnd
7	V+	Positive supply
8	Out	Output current
	EP	Heat sink

Structure

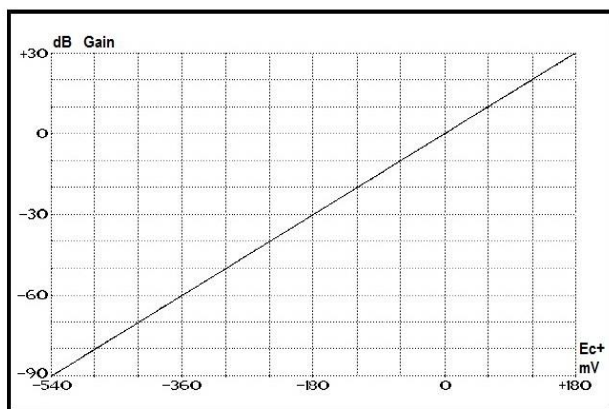
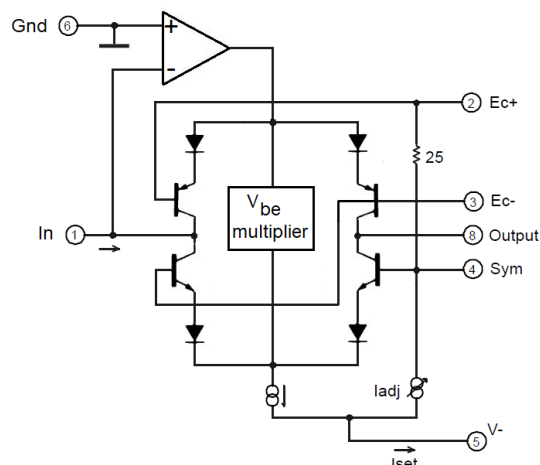


Figure 1. Gain vs. Control Voltage (E_{c+} , Pin 2) at 25°C

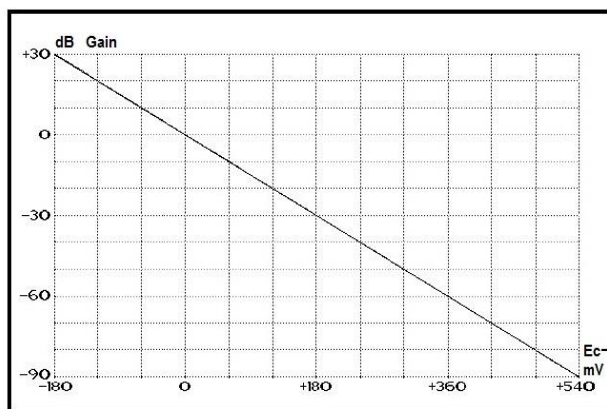


Figure 2. Gain vs. Control Voltage (E_{c-} , Pin 3) at 25°C



Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25^\circ\text{C}$

Parameters	Symbol	Value	Units
Supply voltage	V_{CC}	+20	V
Supply voltage	V_{EE}	-20	V
Maximum E_{C+} , E_{C-} , Sym		± 1	V
Supply current	I_{CC}	10	mA

Electrical Characteristics

($V_{CC} = +12\text{ V}$, $-V = -12\text{ V}$, $-40^\circ\text{C} < T_A < +85^\circ\text{C}$ using typical application circuit Fig.3, typical specifications apply at $T_A = +25^\circ\text{C}$.)

Parameters	Symbol	Conditions	Min	Typ	Max	Units
Positive supply voltage	V_{CC}		4	15	18	V
Negative supply voltage	V_{EE}	$R_{EE} = 5,1\text{k}$	4	15	18	V
Supply Current	I_{CC}	$V_{EE} = -15\text{V}$ $R_{EE} = 5,1\text{k}$ no input signal		2,4	4	mA
Voltage at V_-			-3,1	-2,85	-2,6	V
Bias Current	I_{SET}	$V_{CC} - V_{EE} = 30\text{ V}$	1	2,4	5	mA
Signal Current	$I_{IN} + I_{OUT}$	$I_{SET} = 2,4\text{ mA}$	-	0,35	1,5	mA
Input bias current				2		nA
Input offset voltage		no input signal		5		mV
Output offset voltage		$R_{out} = 20\text{ k}\Omega$ 0 dB gain		1	2	mV
Gain cell idling current				20		μA
Gain-Control constant			5,95	6,05	6,15	mV/dB
Gain-Control linearity		-60 dB to +40 dB		0,05	0,2	%
Gain range				130		dB
Distortion untrimmed AS2180DE AS2180DE* AS2180DE*/AS2180D externally trimmed			0,002 0,002	0,005 0,05 0,002	0,01 0,07	%
Gain at 0 V control voltage				1		
Output noise				-117	-114	dBV

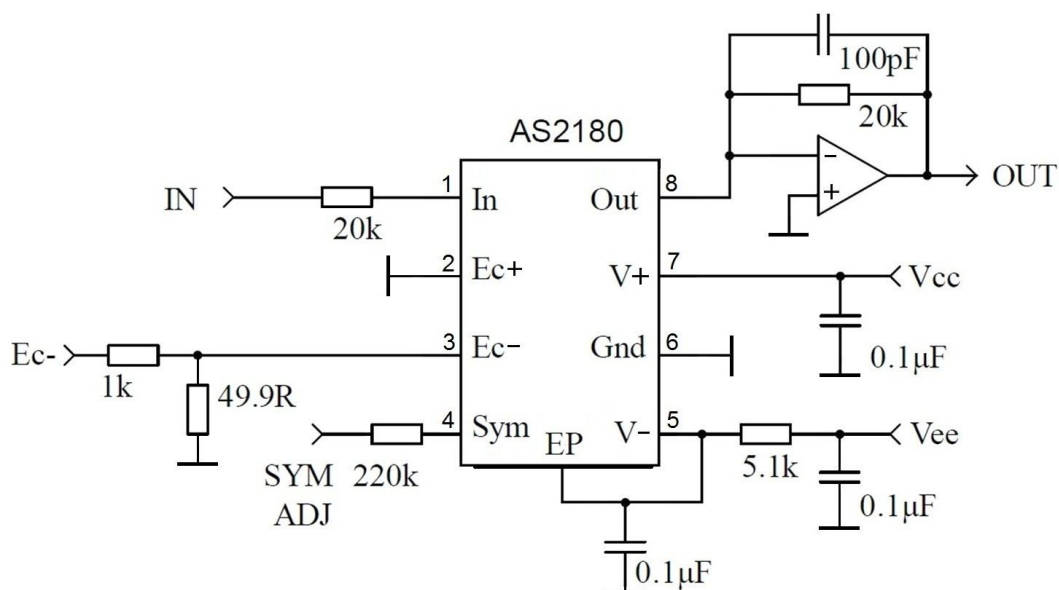
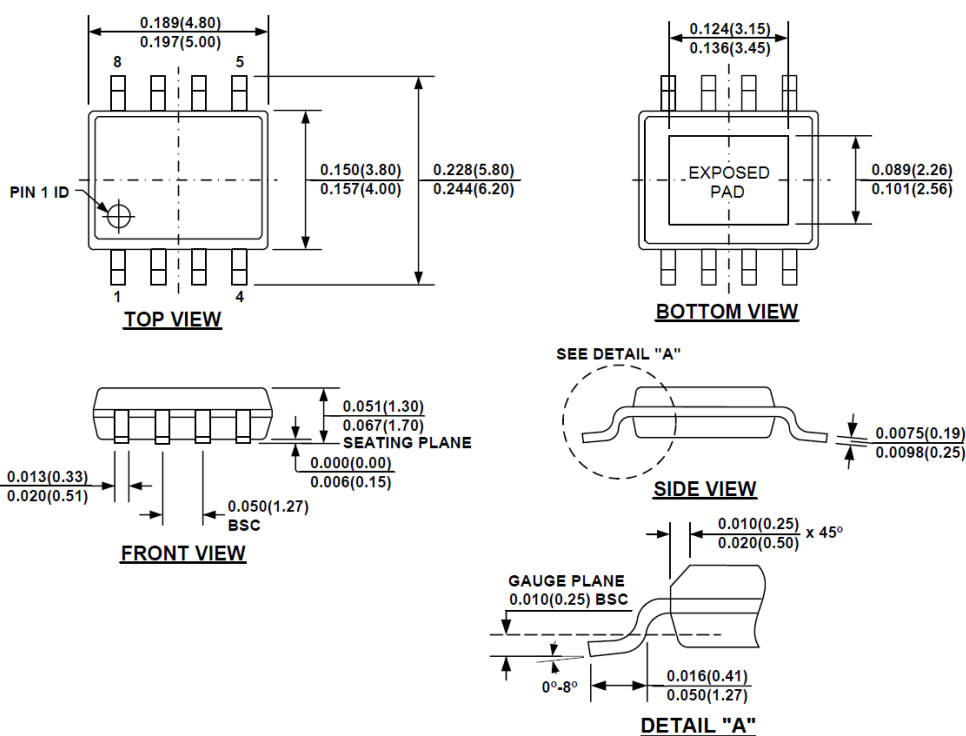


Fig.3 Typical application circuit

Device type	Package
AS2180DE	SOIC-8 (150 mil, Epad)
AS2180DE*	SOIC-8 (150 mil, Epad)

OUTLINE DIMENSIONS

Dimensions show in inches and (millimeters)



Revision history

Date	Revision	Changes
01-Feb-2022	1	Initial version
26-Jul-2022	2	Minor changes