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AMENDENT HISTORY

VERSION	DATE	DESCRIPITION
V1.0	September 27, 2007	First issue
V1.1	October 9, 2007	Advise Application Circuit
V1.2	November 2, 2007	Revise Package information.
V1.3	November 22, 2007	1. Revise Operation current. 2. Revise package information.

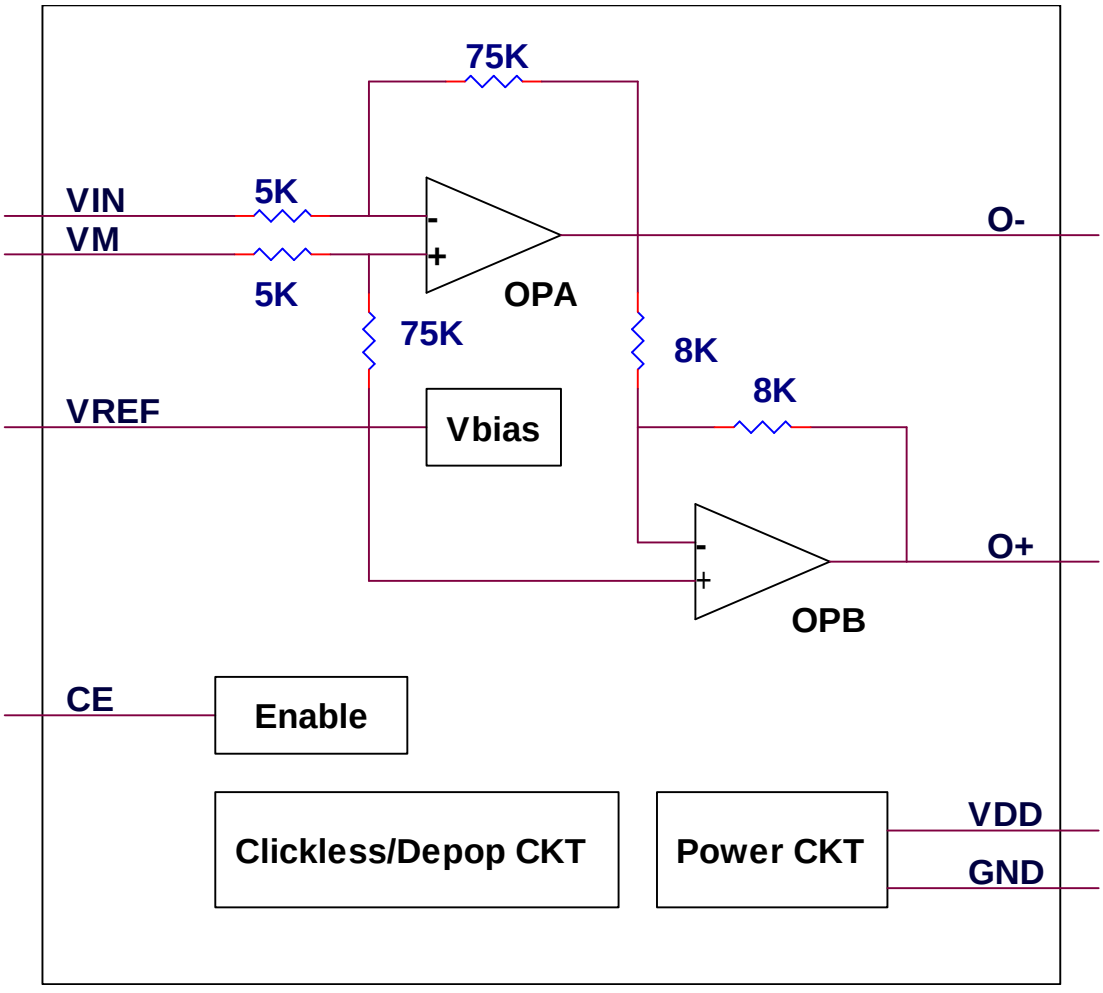
1. General Description

The SNAP01 is an integrated class AB mono speaker driver. The SNAP01 consist of single power supply, no switch-on/off click, high SNR ratio, power control, single-end/differential input mode and support Gain adjusted by external resistor.

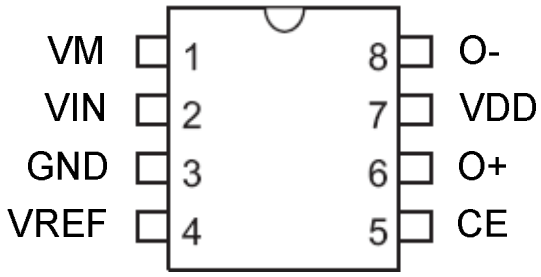
2. Features

- Operation voltage：2.4V-5.5V.
- High signal-to-noise ratio.
- Low distortion.
- High slew rate.
- No switch On/Off click.
- Power off control.
- Gain adjustment.
- Large output voltage swing.
- Direct driver speaker.
- Support single-end and differential mode.
- Low standby current：1.0μA.

3. Block Diagram



4. Pin Assignment



Pin No.	Symbol	I/O	Function Description
1	VM	I	Signal Input Positive
2	VIN	I	Signal Input Negative
3	GND	I	Negative Power Supply
4	VREF	O	Voltage Reference
5	CE	I	Chip Enable, High Active
6	O+	O	Positive Output
7	VDD	I	Positive Power Supply
8	O-	O	Negative Output

5. Electrical Characteristics

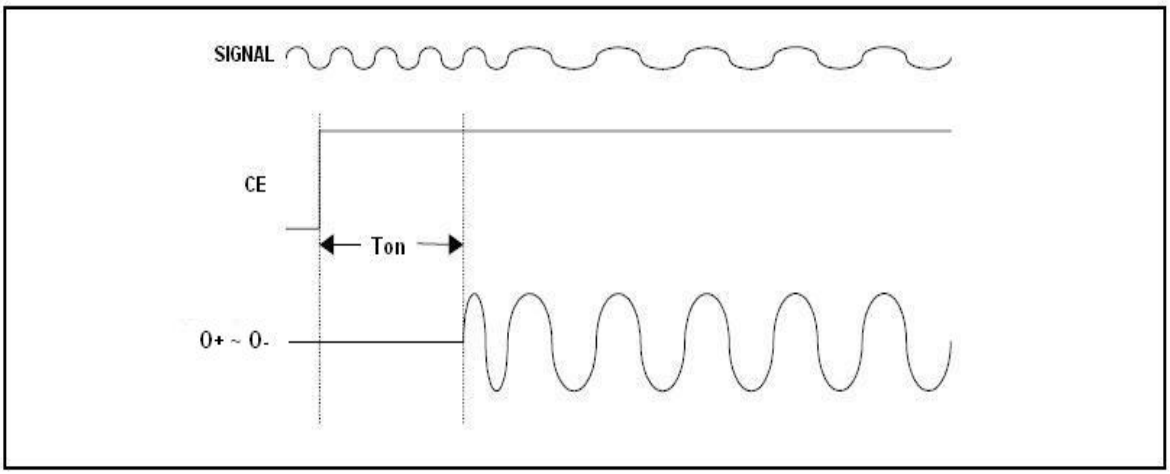
5.1. Absolute Maximum Ratings

Characteristic	Symbol	Min	Max	Unit
Supply Voltage	VDD	-0.3	6.0	V
Operating Temperature	T_{OG}	0	55	℃
Storage Temperature	T_{STG}	-55	125	℃

5.2. DC Characteristics (Ta=25℃)

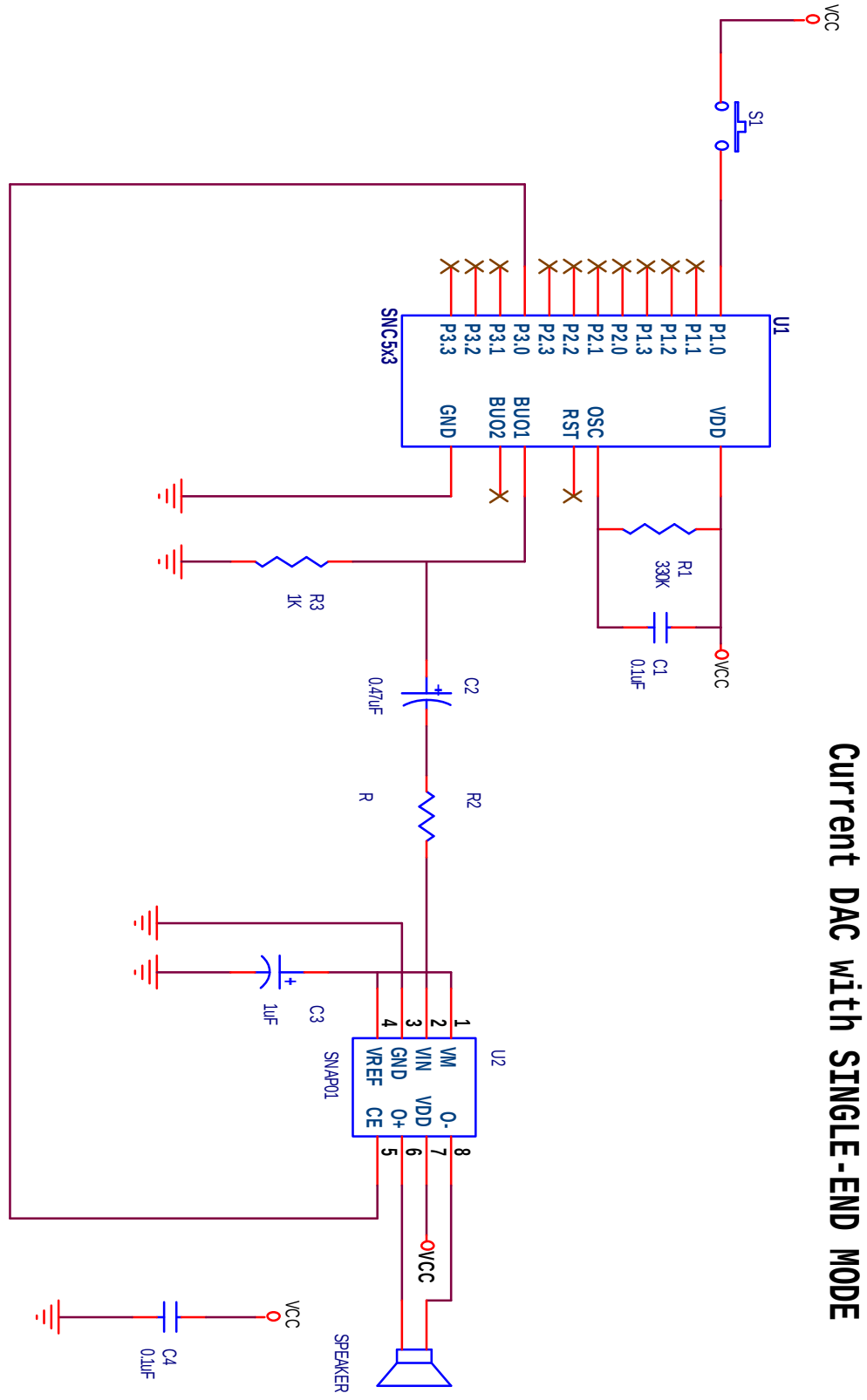
Parameter	Symbol	Min	Typical	Max	Unit	Condition
Supply Power	V_{DD}	2.4	-	5.5	V	
Standby Current	I_{STB}	-	-	1	μA	CE=Low
Operating Current	I_{OP}	-	-	12	mA	VDD=3.0V, CE=High, No load & V_{IN} and V_M is floating.
		-	-	16	mA	VDD=4.5V CE=High, No load & V_{IN} and V_M is floating.
Chip Enable	CE		$V_{DD}/3$		V	$V_{CE}>2/3V_{DD}$ = High $V_{CE}<1/3V_{DD}$ = Low
Reference Voltage	V_{REF}	-	$V_{DD}/2$	-	V	CE=High, CE=Low, V_{REF} =VDD
Output Current	Io	-	180	-	mA	V_{DD}=3.0V, R_L=8Ω
		-	360	-	mA	V_{DD}=4.5V, R_L=8Ω
Signal to Noise Ratio	SNR	-	57	-	dB	Single-End Mode
		-	72	-	dB	Differential Mode
The Harmonic Distortion + Noise	THD+N	-	-	1	%	V_{DD}=3.0V, RL=8Ω P=0.25W
		-	-	1	%	V_{DD}=4.5V, RL=8Ω P=0.58W
Output Power	P_{OUT}	0.5	0.58	-	W	V_{DD}=4.5V, R_L=8Ω, THD+N=1%
		0.7	0.75	-	W	V_{DD}=4.5V, R_L=8Ω, THD+N=10%
Enable Time	T_{ON}	-	16	-	ms	VDD=4.5V
		-	32	-	ms	VDD=3.0V
Gain			15			Single-end mode Gain=75K/(5K+R1)
			30			Differential-mode Gain=75K/(5K+R1)

Note1：T_{ON} is the time from CE high (chip enable) to O+ or O- output.

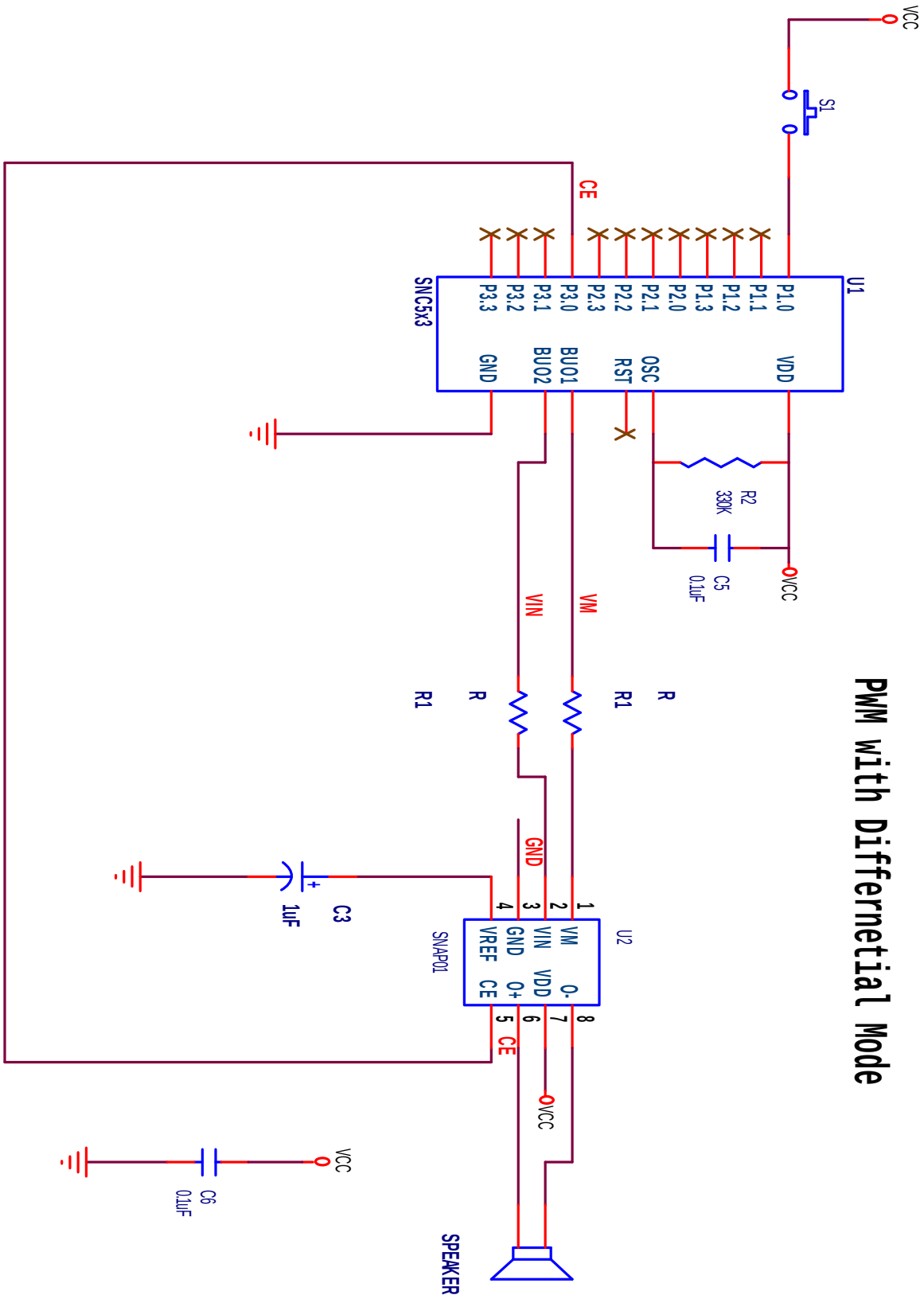


6. Application Circuit

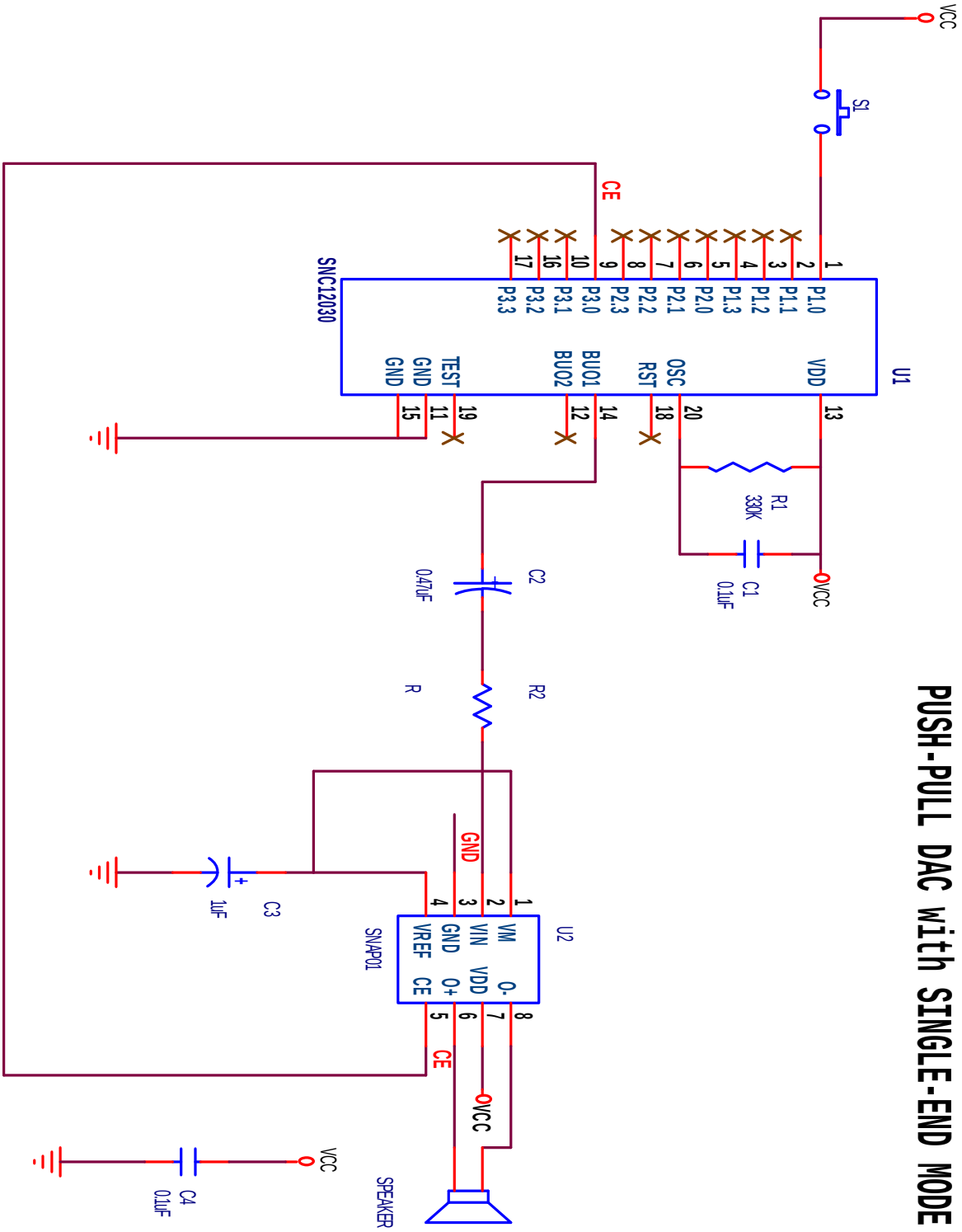
6.1. Current DAC application with Single-End Mode



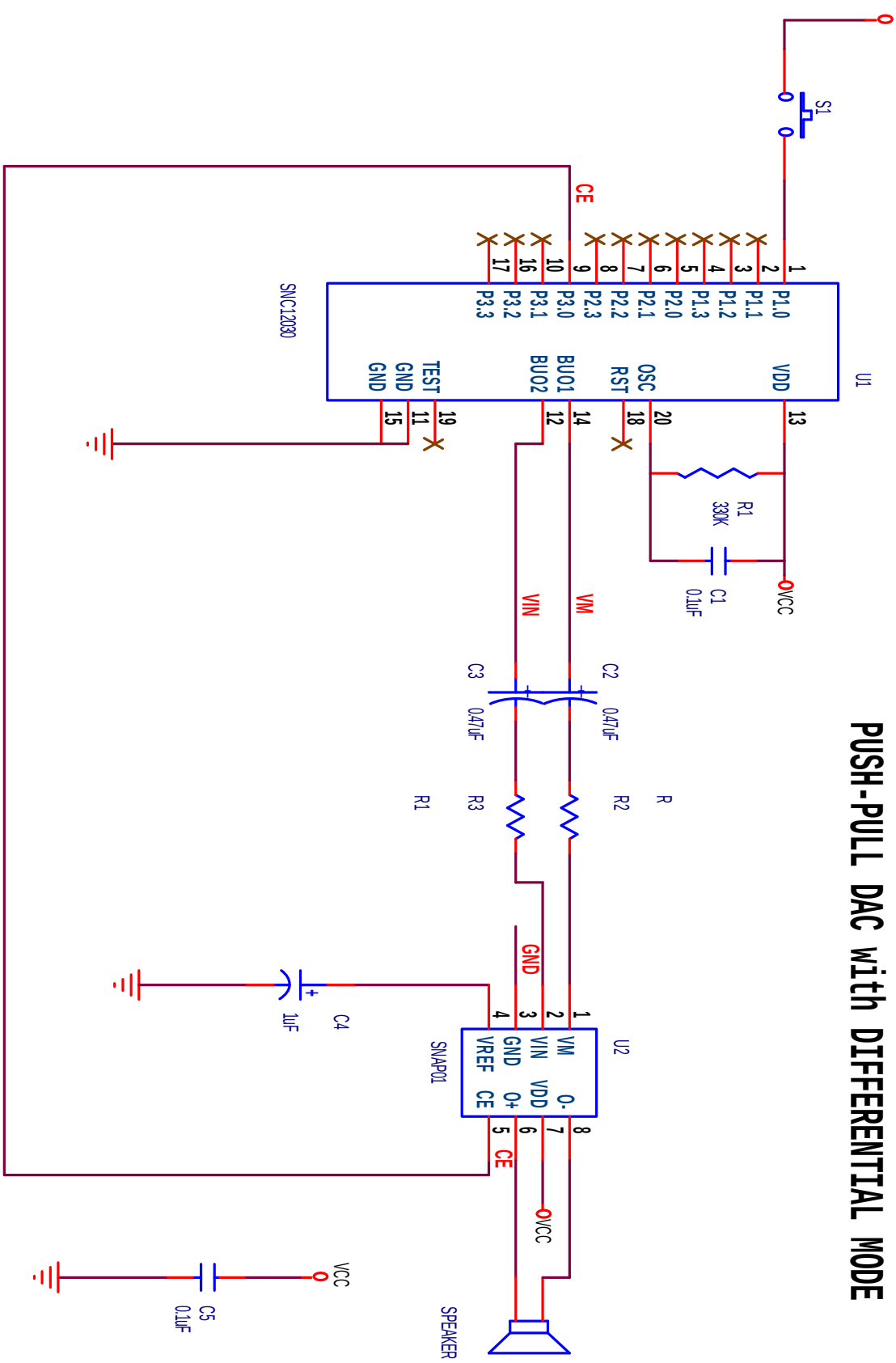
6.2. PWM with Differential Mode



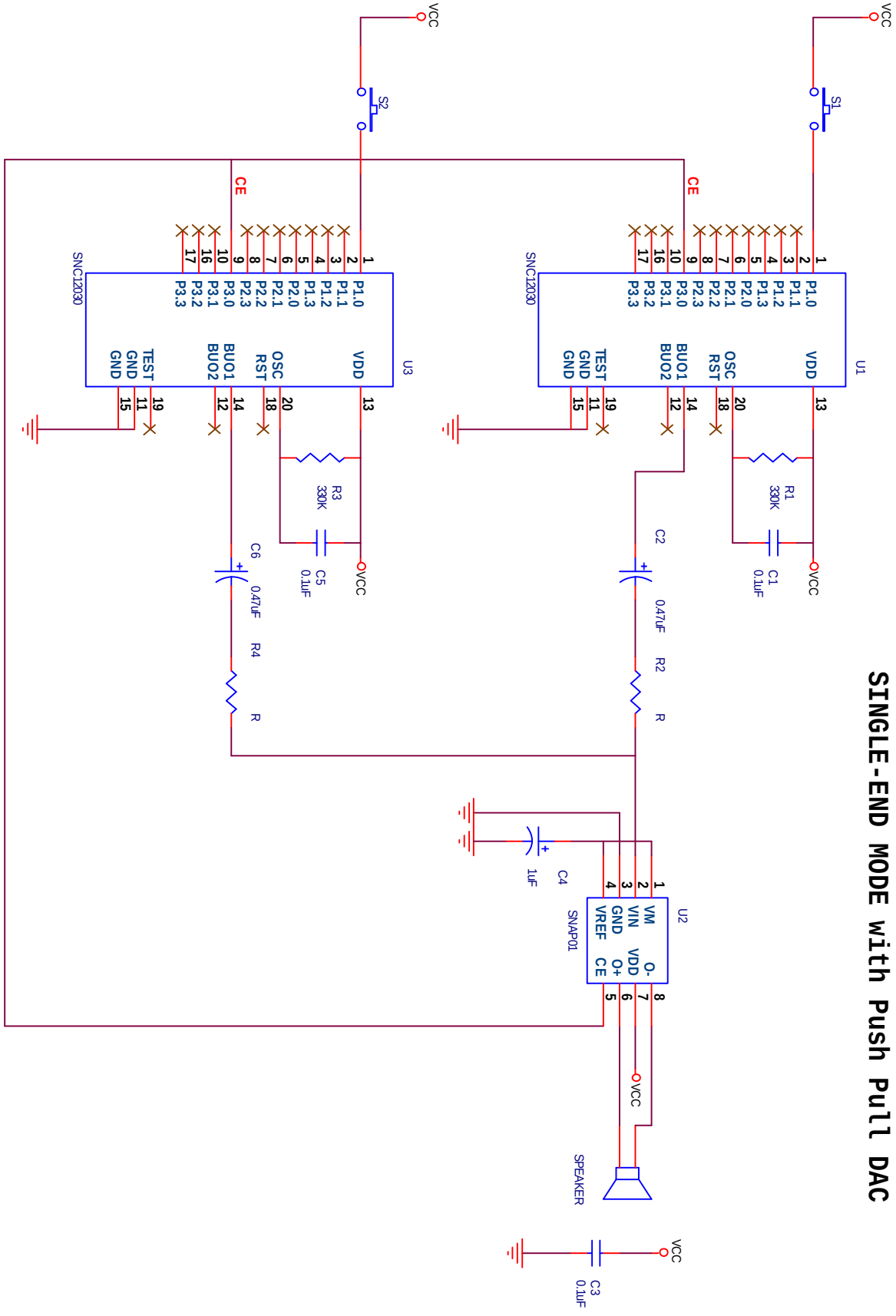
6.3. Push-Pull DAC with Single-End Mode



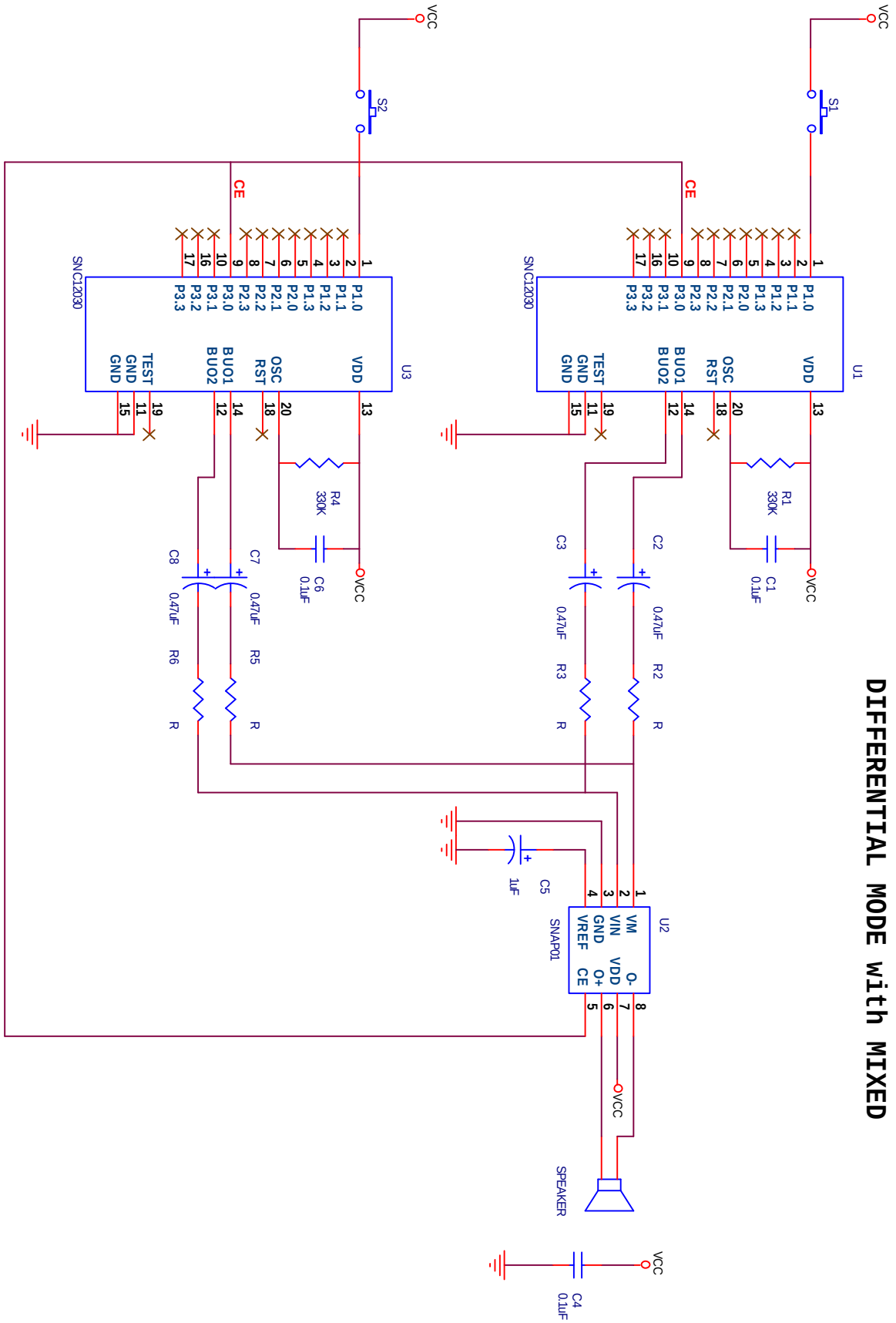
6.4. Push-Pull DAC with Differential Mode



6.5. SINGLE-END with MIXED



6.6. Differential Mode with Mixed

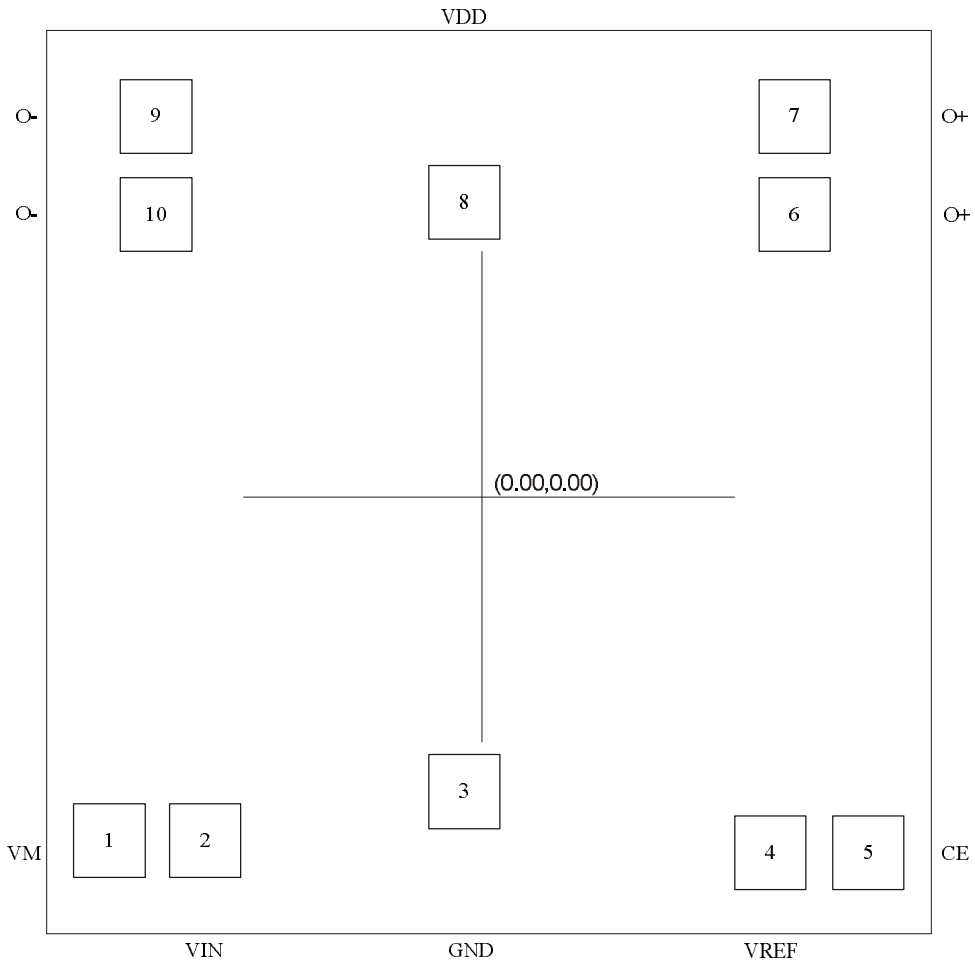


7. PACKAGE/PAD LOCATIONS

7.1. SNAP01H (Dice)

PAD Assignment

NO	PAD NAME	X(um)	Yum)	NO	PAD NAME	X(um)	Yum)
1	VM	-495.31	-370.90	6	O+	375.49	234.14
2	VIN	- 385.31	-370.90	7	O+	375.49	349.14
3	GND	-21.41	-295.15	8	VDD	-21.41	291.64
4	VREF	385.31	-370.90	9	O-	-418.31	349.14
5	CE	495.31	-370.90	10	O-	-418.31	234.14



CHIP SIZE: X=1124um,Y=960um

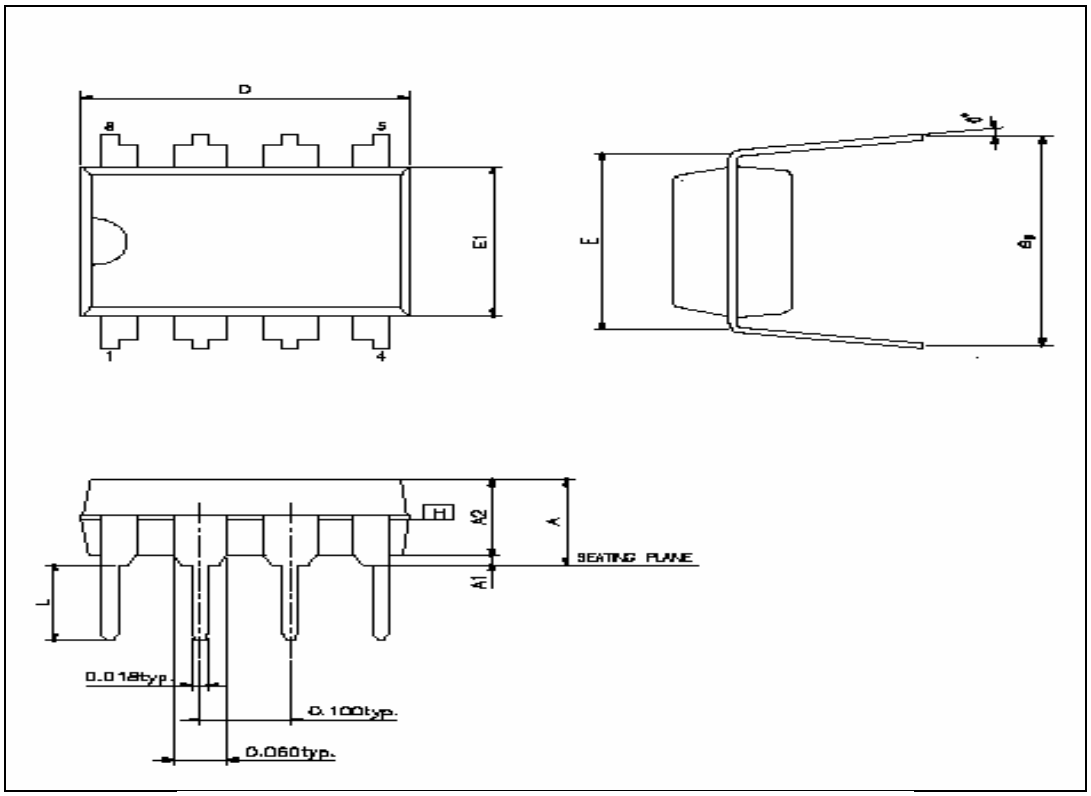
Note: 1.The VDD pin MUST bonding to VDD in PCB layout.

2.The substrate MUST be connected to GND in PCB layout.

7.2. SNAP01PG (DIP Green Package)

8-pin DIP (300mil) Outline Dimensions

Pin No.	Symbol	I/O	Function Description
1	VM	I	Signal Input Positive
2	VIN	I	Signal Input Negative
3	GND	I	Negative Power Supply
4	VREF	O	Voltage Reference
5	CE	I	Chip Enable, High Active
6	O+	O	Positive Output
7	VDD	I	Positive Power Supply
8	O-	O	Negative Output



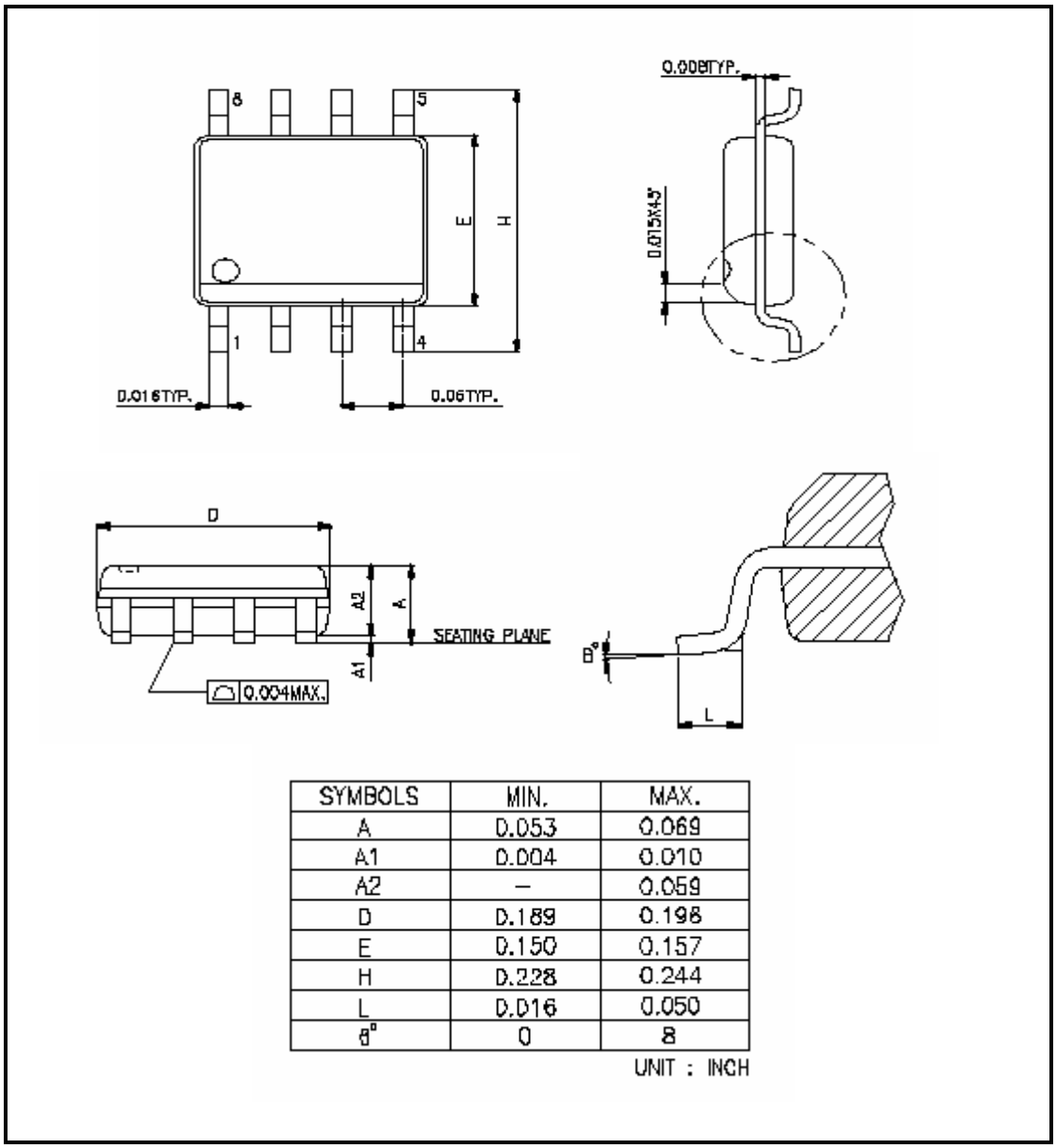
SYMBOLS	MIN.	NOR.	MAX.
A	—	—	0.210
A1	0.015	—	—
A2	0.125	0.130	0.135
D	0.355	0.365	0.400
E		0.300 BSC.	
E1	0.245	0.250	0.255
L	0.115	0.130	0.150
e_B	0.335	0.355	0.375
θ°	0	7	15

UNIT : INCH

7.3. SNAP01SG (SOP Green Package)

8-pin SOP (150mil) Outline Dimensions

Pin No.	Symbol	I/O	Function Description
1	VM	I	Signal Input Positive
2	VIN	I	Signal Input Negative
3	GND	I	Negative Power Supply
4	VREF	O	Voltage Reference
5	CE	I	Chip Enable, High Active
6	O+	O	Positive Output
7	VDD	I	Positive Power Supply
8	O-	O	Negative Output



SYMBOLS	MIN.	MAX.
A	0.053	0.069
A1	0.004	0.010
A2	–	0.059
D	0.189	0.198
E	0.150	0.157
H	0.228	0.244
L	0.016	0.050
θ°	0	8

UNIT : INCH

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