AT1002Z

Dual Operation Amplifier

General Description

The AT1002Z is a highly integrated solution for PSU(power supply unit) application requiring a remote sense feedback to regulate the feedback voltage. AT1002Z integrates two Op-Amps and a 1msec counter to control the sequence of the chip. It is designed to allow for operating a wide supply voltage range from 8V to 24V. The internal excellent offset voltage cancellation mechanism makes the low offset voltage have good line regulation with flexible external supply voltage design. The devices are available in SOT23-8L packages and require very few external devices for operation.

(Patent Protected)

Features

- ☐ **V_{IN} Operate with 4.5V ~ 24V Supply Voltage**
- ☐ **UVLO Protection (min=7V, typ=7.5V, max=8V)**
- ☐ **Enable Sequence Control**
- ☐ **Input Offset Voltage+-5mV**
- ☐ **IN1/2 Pin Singal Range 0~Vin-2V**
- ☐ **OUT1 Pin Driving Capability 5mA**
- ☐ **Sot23-8L Package**

Applications

- ☐ **PSU remote sense**

## Ordering and Marking Information

Order Number	Package	Top Marking
AT1002ZST8	SOT23-8L	ZB

Note: Aplustek products are compatible with the current IPC/JEDEC J-STD-020 requirement. They are halogen-free, RoHS compliant and 100% matte tin (Sn) plating that are suitable for use in SnPb or Pb-free soldering processes.

Pin Configuration

SOT23 8pin
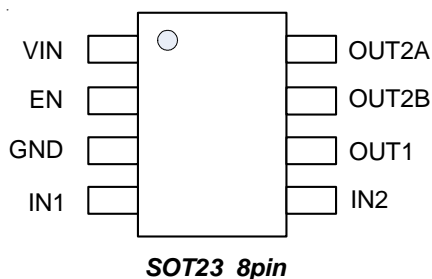
Typical Application Circuit
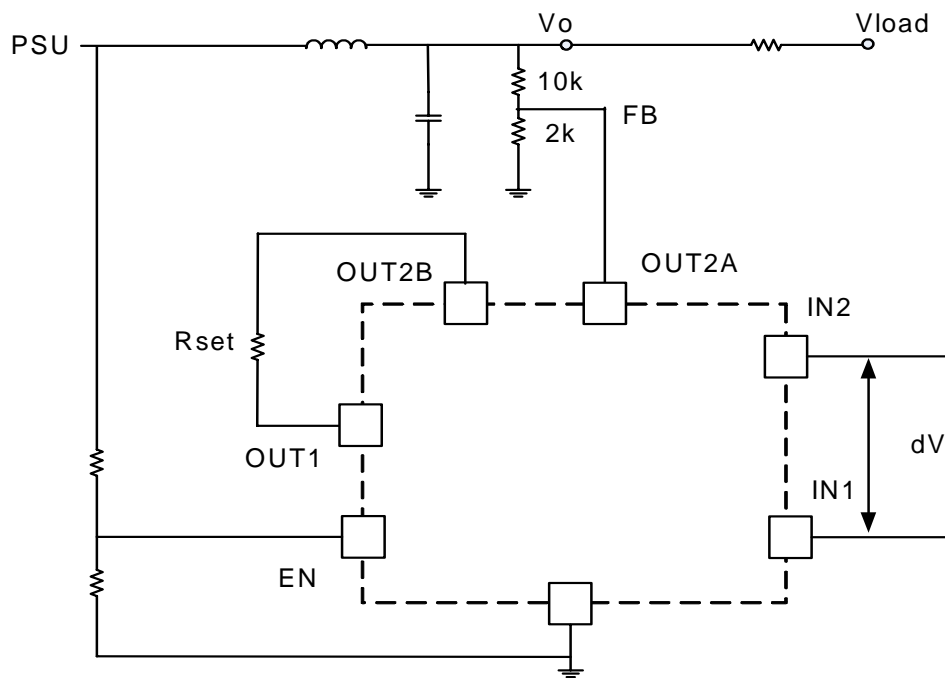
Function Pin Description

No.	Pin Name	Pin Function
1	VIN	**Power Supply Input**. Bypass this pin with a 0.1uF ceramic capacitor to GND, placed as close to the IC as possible.
2	EN	**Enable signal input pin.** The input signal voltage is recommended from 0~5V
3	GND	**Ground. The device`s gnd.**
4	IN1	**Op-Amp1 positive input pin.** The input signal voltage is recommended from 0~VIN-2V.
5	IN2	**Op-Amp2 positive input pin.** The input signal voltage is recommended from 0~VIN-2V.
6	OUT1	**Op-Amp1 output pin.**
7	OUT2B	**Op-Amp2 second output pin.** The OUT2B outputs a sink current from the difference voltage between IN1 and IN2 , and the value is |IN1-IN2|/Rset.
8	OUT2A	**Op-Amp2 first output pin.** The Op-Amp2 acts a unit gain buffer to regulate OUT2A to IN2.

Function Blocks

Absolute Maximum Ratings

(Note1)

Supply Input Voltage, V_{IN} --- -0.3V to +30V

IN1/2,OUT1/2A/2B to GND DC --- - 0.3V to +30V

EN to GND DC --- - 0.3V to +7V

Storage Temperature Range --- -65°C to +150°C

Junction Temperature --- -40°C to +150°C

Lead Temperature Range(Soldering 10sec) --- 260°C

ESD Rating (Note2)

  HBM(Human Body Mode)---2KV

  MM(Mechine Mode)---200V

Thermal Characteristics

Package Thermal Resistance (Note3)

    SOT23-8L θ_{JA} --250°C/W

    SOT23-8L θ_{JC} -- 130°C/W

Power Dissipation, PD @ TA = 25°C

    SOT23-8L --- 0.4W

Electrical Characteristics

(V_{IN} = 12V, T_A = +25°C unless otherwise specified.)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Input Section						
VIN operation range	$V_{IN,Range}$		8		24	V
VIN UVLO threshold	$V_{IN,R}$	VIN Rising	--	7.5	--	V
	$V_{IN,F}$	VIN Falling	--	6.25	--	V
VIN operation current	I_{IN}	VIN=8V to 24V, IN1/2=5V, OUT1/2A/2B Floating		1	1.3	mA
IN1/2/3 Section						
IN1/2 pin input leakage	$I_{INLEAK1/2}$	$IN_{1/2}$ = 0~VIN-2V	--	0.1	1	uA
OUT1 Section						
OUT1 souring ability	$Out1_{source}$		5	--	--	mA
OUT2A/2B Section						
OUT2A/OUT2B current gain	I_{gain}	VIN=8~24V	0.95	1	1.05	

Note 1. Exceeding these limits may impaire the life of the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.
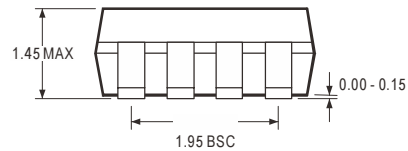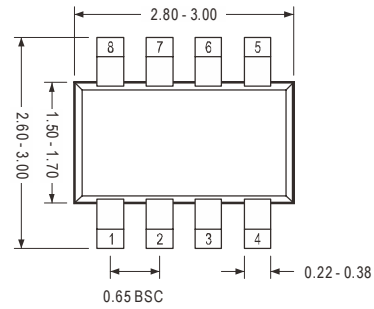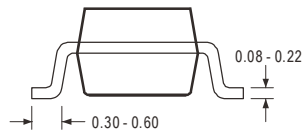
Note 2. θ_{JA} is measured with the component mounted on a high effective thermal conductivity test board in free air.The exposed pad of the package is soldered directly on the PCB.

Package Information

SOT23-8L

0.45 ± 0.05   0.65 ± 0.05

1.00 ± 0.10

3.60 ± 0.10   2.60 ± 0.10   1.60 ± 0.10
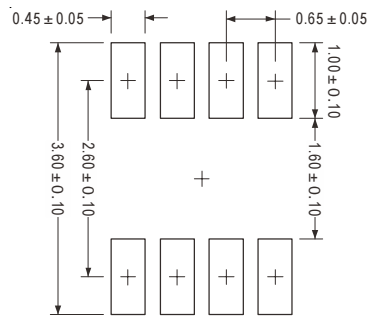
Recommended Solder Pad Layout

2.80 - 3.00

8 7 6 5

2.60 - 3.00   1.50 - 1.70

1 2 3 4

0.65 BSC   0.22 - 0.38

0.08 - 0.22

0.30 - 0.60

1.45 MAX   0.00 - 0.15

1.95 BSC

Note
1. Package Outline Unit Description:
   BSC: Basic. Represents theoretical exact dimension .
   MAX: Maximum dimension specified.
   MIN: Minimum dimension specified.
   REF: Represents dimension for reference use only. The value is not the device specification.
   TYP: Represents as a typical value. The value is not the device specification.
2. All linear dimensions are in Millimeters.