



## FEATURES

- Compatible with HIP6020.
- Provides 4 Regulated Voltages for Microprocessor Core, AGP Bus, Memory and GTL Bus Power.
- TTL Compatible 5-bit Digital-to-Analog Core Output Voltage Selection. Range from 1.3V to 3.5V.
  - 0.1V Steps from 2.1V to 3.5V.
  - 0.05V Steps from 1.3V to 2.05V.
- $\pm 1.0\%$  PWM Output Voltage for VCORE.
- $\pm 3\%$  PWM Output Voltage for AGP Bus.
- $\pm 3.0\%$  Reference Voltage for Chipset and/or Cache Memory and VGTL.
- Simple Voltage-Mode PWM Control.
- N-Channel MOSFET Driver.
- Operates from +3.3V, +5V and +12V Inputs.
- Fast Transient Response.
- Full 0% to 100% Duty Ratios.
- Adjustable Current Limit without External Sense Resistor.
- Microprocessor Core Voltage Protection against Shorted MOSFET.
- Power Good Output Voltage Monitor.
- Over-Voltage and Over-Current Fault Monitors.
- 200KHz Free-Running Oscillator Programmable up to 500KHz.

## APPLICATIONS

- Full Motherboard Power Regulation for Computers.

## DESCRIPTION

The AIC1573 combines two PWM voltage mode controllers and two linear controllers as well as the monitoring and protection functions in this chip. One PWM controller regulates the microprocessor core voltage with a synchronous rectified buck converter. The second PWM controller provides AGP bus 1.5V or 3.3V power with a standard buck converter. Two linear controllers regulate power for the 1.5V GTL bus and 1.8V power for the chip set core voltage and/or cache memory circuits.

An integrated 5 bit D/A converter that adjusts the microprocessor core voltage from 2.1V to 3.5V in 0.1V increments and from 1.3V to 2.05V in 0.05V increments. The second PWM controller for AGP bus power is selectable by means of SELECT pin status for 1.5V or 3.3V with 3% accuracy. Two linear controllers drive with external N-channel MOSFETs to provide  $1.5V \pm 3\%$  and fixed output voltage  $1.8V \pm 3\%$ .

This chip monitors all the output voltages. Power Good signal is issued when the core voltage is within  $\pm 10\%$  of the DAC setting and the other levels are above their under-voltage levels. Over-voltage protection for the core output uses the lower N-channel MOSFET to prevent output voltage above 115% of the DAC setting.

The PWM over-current function monitors the output current by using the voltage drop across the upper MOSFET's  $R_{DS(on)}$ , eliminating the need for a current sensing resistor.



ORDERING INFORMATION

AIC1573-XX

PACKAGING TYPE
S: SMALL OUTLINE
TEMPERATURE RANGE
C: 0°C~+70°C

Table with 2 columns: ORDER NUMBER and PIN CONFIGURATION. Includes pin list for AIC1573CS (SO28) with pins 1-14 on the left and 15-28 on the right.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage, VCC ..... +15V
PGOOD, FAULT and GATE Voltage ..... GND -0.3V to VCC +0.3V
Input, Output, or I/O Voltage ..... GND -0.3V to 7V
Recommended Operating Conditions
Supply Voltage; VCC ..... +12V±10%
Ambient temperature Range ..... 0°C~70°C
Junction Temperature Range ..... 0°C~125°C

Thermal Information

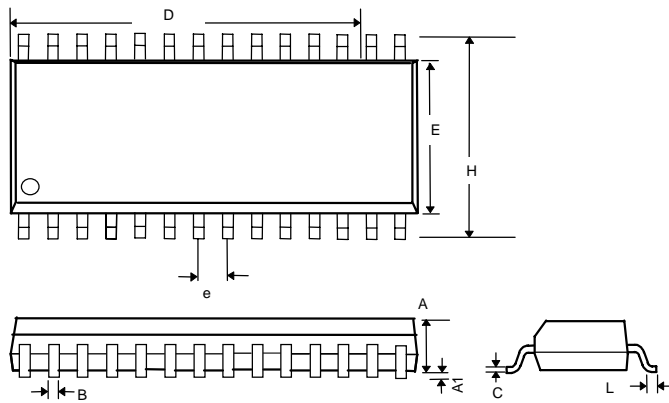
Thermal Resistance, θJA
SOIC package ..... 60°C/W
SOIC package (with 3in² of copper) ..... 50°C/W
Maximum Junction Temperature (Plastic Package) ..... 150°C
Maximum Storage Temperature Range ..... -65°C ~ 150°C
Maximum Lead Temperature (Soldering 10 sec) ..... 300°C





### PHYSICAL DIMENSIONS

- 28 LEAD PLASTIC SO (unit: mm)



| SYMBOL | MIN        | MAX   |
|--------|------------|-------|
| A      | 2.35       | 2.65  |
| A1     | 0.10       | 0.30  |
| B      | 0.33       | 0.51  |
| C      | 0.23       | 0.32  |
| D      | 17.70      | 18.10 |
| E      | 7.40       | 7.60  |
| e      | 1.27 (TYP) |       |
| H      | 10.00      | 10.65 |
| L      | 0.40       | 1.27  |