

## Ceramic Heating Controller (LCD)

### Features

- High watt density Alumina Heaters
- Pulse trigger with high current for SCR
- Quickly Heat-Up and Quickly Lost-Heat Recover
- External adjustable to fit wide range heating plates
- External adjustable to fit TCR of sensors
- Full temperature compensation and insensitive to environment temperature
- Internal zener
- 11 heat temperature settings
- Auto power off for PT8A3351/3/5/7
- Backlights for indicating work status
- LCD screen for showing temperature setting
- Dual Temperature (Fahrenheit/Centigrade) Display
- Wet function: It will keep heating on state to level 2.
- Dual voltage (120V/240V) operations.
- Support 3 keys, on/off, up and down
- SOIC-24, QFN-24 and TSSOP-24 package

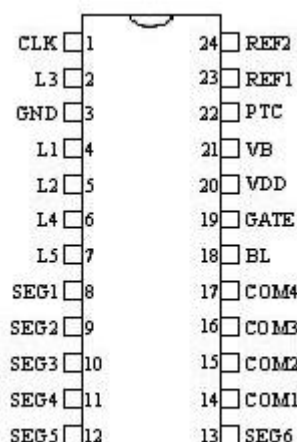
### Description

The PT8A335xA/B is special designed for ceramic heating control with 11 temperature levels(show as below function comparison table). It can drive SCR directly and detect heater temperature by heater-self without extra temperature sensor. It has 3 keys for function setting. LCD displays and backlight indicate the working status. Build-in timer will be auto-power off after power on 1 hour for 60Hz or 1.2 hour for 50Hz.

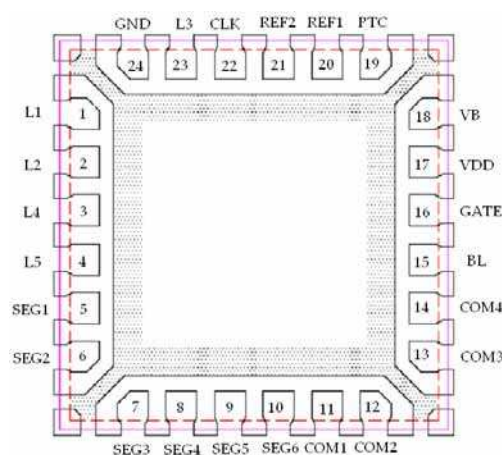
### Applications

- Ceramic heating controller

### Pin Configuration



SOIC-24/TSSOP-24



QFN-24

## Pin Description

| Name                                   | Pin No.          |              | Type  | Description                                               |
|----------------------------------------|------------------|--------------|-------|-----------------------------------------------------------|
|                                        | SOIC-24/TSSOP-24 | QFN-24       |       |                                                           |
| CLK                                    | 1                | 22           | I     | Clock input from power line and Detect operation voltage. |
| L3                                     | 2                | 23           | I     | Input to adjust Recovery Rate.                            |
| L1                                     | 4                | 1            | I     | Power on/off key inputs                                   |
| L2                                     | 5                | 2            | I     | Up and down key inputs.                                   |
| L4                                     | 6                | 3            | I     | High: LCD shows °F,<br>Low : LCD shows °C.                |
| L5                                     | 7                | 4            | I     | Supply LCD power.                                         |
| SEG1,SEG2,<br>SEG3,SEG4,<br>SEG5,SEG6, | 8,9,10,11,12,13  | 5,6,7,8,9,10 | O     | LCD digits control output.                                |
| COM1,COM<br>2,<br>COM3,COM<br>4        | 14,15,16,17      | 11,12,13,14  | O     | LCD digits control output.                                |
| BL                                     | 18               | 15           | O     | Drive LCD backlight                                       |
| GATE                                   | 19               | 16           | O     | SCR trigger output, active high                           |
| VB                                     | 21               | 18           | O     | PTC sampling power source                                 |
| PTC                                    | 22               | 19           | I     | Temperature sensor input                                  |
| REF1                                   | 23               | 20           | I     | Reference 1 for internal comparator                       |
| REF2                                   | 24               | 21           | O     | Reference 2 for internal comparator                       |
| GND                                    | 3                | 24           | Power | Ground and Power                                          |
| VDD                                    | 20               | 17           |       |                                                           |

The block diagram illustrates the internal architecture of the L3960, showing the flow of data and control signals between various functional blocks. Key components include:

- Power and Reset:** POR (Power-On Reset) block, Line Clk Sample, and OSC (Oscillator) block.
- Timing and Control:** Timing block, CTRL (Control) block, Level Set, and KEY IN (Key Input) block.
- Res Chain:** Res Chain (Resistor Chain) block.
- LCD Driver:** LCD Driver block.
- Test and Timing:** Test block and TIMER block.

The diagram shows the following signals and connections:

- Inputs:** CLK, 50Hz, 80kHz, rst, PTC, VB, REF1, REF2, GATE, BL, L1 (Up/Dn), L2 (On/Off), Vlcd, COM1, COM2, COM3, COM4, SEG1, SEG2, SEG3, SEG4, SEG5, SEG6, F\_C select, test1, test2, test3, test4, test5, test6.
- Outputs:** rst, 50Hz, 80kHz, stop, ptci, vbo, LEVEL, Timer\_rst, test1, test2, test3, test4, test5, test6.

|                                                                         |                 |
|-------------------------------------------------------------------------|-----------------|
| Storage Temperature .....                                               | -55°C to +150°C |
| Ambient Temperature with Power applied.....                             | -20°C to +85°C  |
| Supply Voltage to Ground Potential (Input & V <sub>DD</sub> Only) ..... | -0.5V to +6.5V  |
| Supply Voltage to Ground Potential (Output s Only) .....                | -0.5V to +6.5V  |
| DC Input Voltage .....                                                  | -0.5V to +6.5V  |
| Input/Output Current .....                                              | 50mA            |
| Input/Output Current (Pin VDD, VB only).....                            | 200mA           |
| Power Dissipation .....                                                 | 500mW           |

Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

| Sym             | Parameter             | Pin | Min | Typ | Max            | Unit |
|-----------------|-----------------------|-----|-----|-----|----------------|------|
| V <sub>DD</sub> | Operating Voltage     | VDD | 4.0 | -   | V <sub>Z</sub> | V    |
| T <sub>A</sub>  | Operating temperature | -   | -20 | -   | 85             | °C   |