BCT5252/5254
Ceramic Heating Controller

DESCRIPTION

The BCT5252/54 is designed for ceramic heating controller. The chip offers 5 different default heat temperature settings including 130°C, 145°C, 160°C, 175°C, 190°C. And the temperature range can be adjusted through external series resistance. The BCT5252 has an internal timer, if timeout, the device will stop heating automatically after 1 hour for 60Hz and 1.2 hour for 50Hz. The BCT5252/54 also has over temperature protection function. The chip is enclosed in Lead free SOP-16 package.

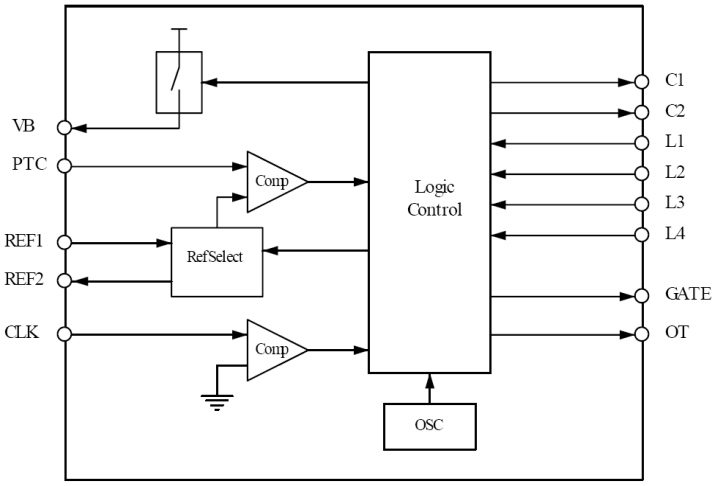
FEATURES

- High watt density ceramic heaters
- High triggering current pulse trigger for SCR
- Enhanced MHP Algorithm for Quickly Heating-Up and Quickly Lost-Heat-Recover
- Uniform Heat to Maintain Constant Temperature
- Adjustable to fit wide range heating plates
- Adjustable to different Thermal Coefficient of Resistively
- Full compensation and insensitive to environment temperature
- 5 Heat Temperature Settings
- Auto power off for BCT5252
- Over Temperature protection
- Lead free SOP-16 package

APPLICATION

- Ceramic Heating Controller

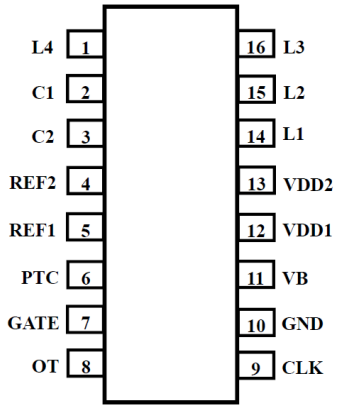
BLOCK DIAGRAM



ORDERING INFORMATION

P/N	Last setting keep	Timer	Package
BCT5252AWE	Y	Y	SOP-16
BCT5252BWE	N	Y	SOP-16
BCT5254AWE	Y	N	SOP-16
BCT5254BWE	N	N	SOP-16

PIN CONFIGURATION



BCT5252/54

PIN DESCRIPTION

Pin No.	Pin Name	I/O	Pin Description
1	L4	I/O	Adjust Lost-heat-recover input and LED ON/OFF cathode output.
2	C1	O	LED scan common driver.
3	C2	O	LED scan common driver.
4	REF2	I	Reference 2 for internal comparator.
5	REF1	I	Reference 1 for internal comparator.
6	PTC	I	Temperature sensor input.
7	GATE	O	SCR trigger output, active high.
8	OT	O	Over heat output, active high.
9	CLK	I	Clock input from power line.
10	GND	GND	Ground.
11	VB	O	PTC sampling power source.
12	VDD1	Power	Power.
13	VDD2	Power	Power.
14	L1	I/O	On/Off key input and LED anode output.
15	L2	I/O	Down key input and LED anode output.
16	L3	I/O	Up key input and LED anode output.

MAXIMUM RATINGS

Storage Temperature.....-55℃ to +150℃
Ambient Temperature with Power applied.....-40℃ to +85℃
Supply Voltage to Ground Potential (Input & VDD 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 VDD2, VB only)..... 200mA
Power Dissipation.....500mW

Note:

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.

RECOMMENDED OPERATION CONDITIONS

Sym	Parameter	Pin	Min	Typ	Max	Unit
VDD	Operating Voltage	VDD1, VDD2	4.0	5.0	5.5	V
TA	Operating temperature	-	-20	-	85	°C

DC INPUT ELECTRICAL CHARACTERISTICS

Sym	Description	Test Conditions		Min	Typ	Max	Unit
IIH	Input high current	PIN: PTC,CLK	VIN = VDD	-	-	5	μA
		PIN:L1, L2,L3,L4	VIN = VDD (L1, L2, L3, L4 is of input)	-	-	5	
IIL	Input low current	PIN:PTC,CLK	VIN = GND	-	-	-5	μA
		PIN:L4	VIN = GND (L4 is of input)	-	-	-5	
		PIN: L1, L2, L3	VDD =5.0V,VIN = 2.0V (L1, L2, L3 is of input)	-0.16	-0.20	-0.24	mA
VIH	Input High Voltage	PIN:L1,L2,L3	-	0.8VDD	-	-	V
VIL	Input Low Voltage	PIN:L1,L2,L3	-	-	-	0.4VDD	V
VIT	Input Threshold Voltage	VT1_Level	L4	2.8	3.3	3.8	V
		VT2_Level		1.1	1.6	2.1	V

DC OUTPUT ELECTRICAL CHARACTERISTICS

Sym	Description	Test Conditions		Min	Type	Max	Unit
IOH	Output High Current	PIN: GATE	V DD = 5.0V Vout = 4.5V	-3.0	-	-	mA
		PIN: OT	V DD = 5.0V Vout = 4.5V	-3.0	-	-	
		PIN: L1, L2, L3	V DD = 5.0V Vout = 2.2V	-0.8	-1	-1.2	
		PIN:C1	V DD = 5.0V Vout = 4.5V	-3.0	-	-	
		PIN:L4	V DD = 5.0V Vout = 4.5V	-3.0	-	-	
IOL	Output Low Current	PIN: GATE	V DD = 5.0V Vout =0.5V	4.0	-	-	mA
		PIN: OT	V DD = 5.0V Vout =0.5V	4.0	-	-	
		PIN: C1, C2	V DD = 5.0V Vout =0.5V	4.0	-	-	
		PIN: L4	V DD = 5.0V Vout =2.8V	0.8	1	1.2	

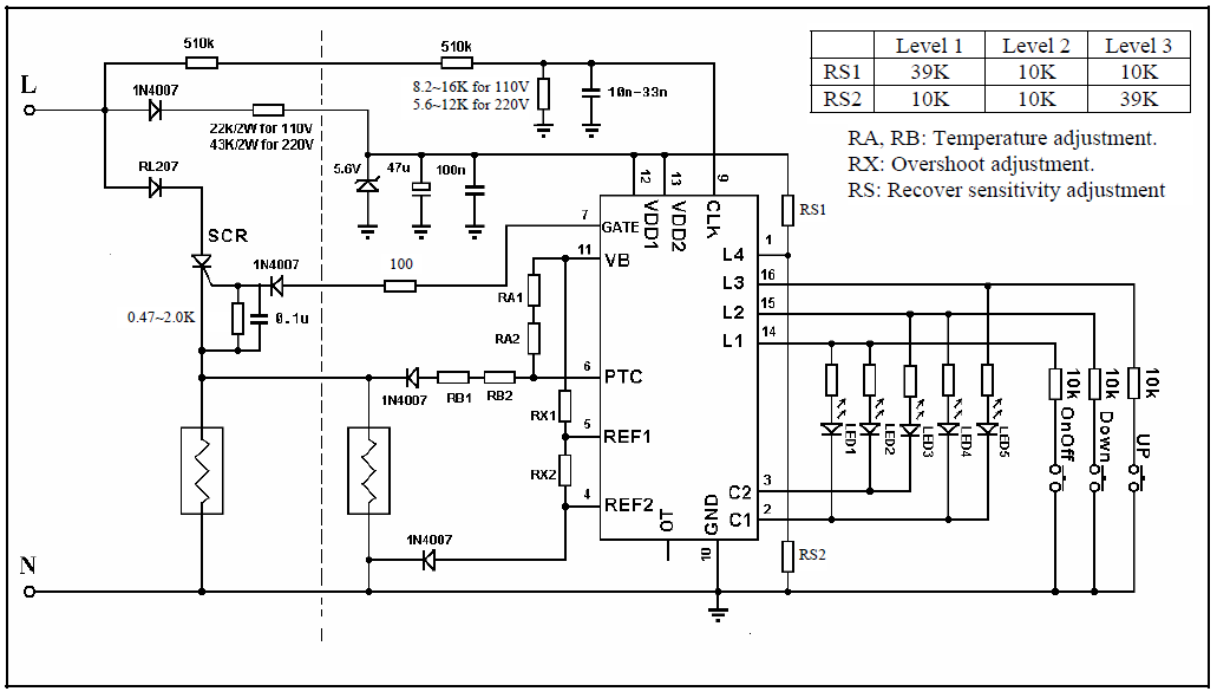
POWER SUPPLY CHARACTERISTICS

Sym	Description	Test Conditions	Min	Type	Max	Unit
VPOR	Voltage of POR	-	1.5	-	2.5	V
IDD	Current consumption	No loading, VDD = 5.0V	-	-	400	μA
VDD	Supply voltage	Control function normal	3.5	-	5.5	V
TPOoff	Power off timer	FCLK= 50Hz	1.15	1.2	1.25	Hour

TEMPERATURE CONTROL CHARACTERISTICS

Sym	Description	Test Conditions	Type	Unit
VT130	Threshold Voltage Level (130C)	VDD2=5.0V VREF2=0.7V VREF1=0~100%(VB-VREF2) Test GATE output about 50% heating power	0.467 VB-VREF2	V
VT145	Threshold Voltage Level (145C)		0.481 VB-VREF2	
VT160	Threshold Voltage Level (160C)		0.488 VB-VREF2	
VT175	Threshold Voltage Level (175C)		0.497 VB-VREF2	
VT190	Threshold Voltage Level (190C)		0.506 VB-VREF2	
VOT250	Voltage Level of resistor net (250C)	VDD2=5.0V,VREF2=0.7V VREF1=0~100%(VB-VREF2), When increase VPTC, test OT is just from “L” to “H”	0.540 VB-VREF2	V
VT130H	Heat-up Threshold Voltage Level (130C)	VDD2=5.0V VREF2=0.7V VREF1=100%(VB-VREF2) Test GATE output about 50% heating power	VT130 +1.8%(VB-VREF2)	V
VT145H	Heat-up Threshold Voltage Level (145C)		VT145 +1.6%(VB-VREF2)	
VT160H	Heat-up Threshold Voltage Level (160C)		VT160 +1.5%(VB-VREF2)	
VT175H	Heat-up Threshold Voltage Level (175C)		VT175 +1.3%(VB-VREF2)	
VT190H	Heat-up Threshold Voltage Level (190C)		VT190 +1.2%(VB-VREF2)	

APPLICATION CIRCUIT



	Level 1	Level 2	Level 3
RS1	39K	10K	10K
RS2	10K	10K	39K

PACKAGING MECHANICAL: 16-PIN SOP