

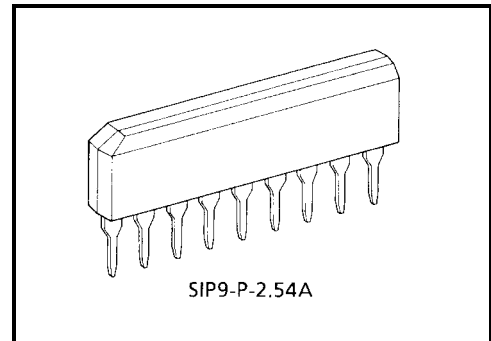
# TA8020S

## DUAL VOLTAGE SENSOR

The TA8020S is an IC designed for lamp failure detection. When a lamp failure occurs, it detects the resulting lamp current change from the voltage across the detection resistor  $R_S$ . It has a reference voltage characterized by high accuracy and small temperature drift as well as a voltage comparator. It is also designed to compensate for lamp current changes due to supply voltage variations. It consists of two circuits which are supplied with power from separate pins.

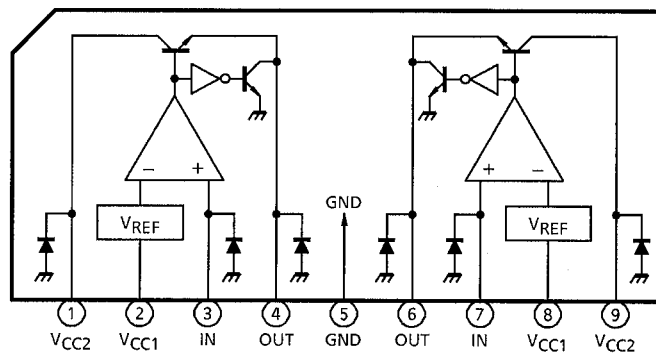
### FEATURES

- Two circuits served by separate power supplies
- High-performance input amplifier incorporated
- Reference voltage characterized by small temperature drift
- Built-in circuit which compensates for lamp voltage characteristic variations
- Operating temperature range : from  $-40$  to  $85^{\circ}\text{C}$
- Plastic SIP-9 pin



Weight: 0.92 g (typ.)

### BLOCK DIAGRAM AND PIN LAYOUT



## PIN DESCRIPTION

PIN No.	SYMBOL	DESCRIPTION
1, 9	V <sub>CC2</sub>	Power supply pin dedicated to the output transistor. Since it is connected to V <sub>CC1</sub> outside the IC, influence of output on / off on the detection voltage is low so that accurate detection is assured.
2, 8	V <sub>CC1</sub>	Power supply pin for the IC. High accuracy is assured under the condition of V <sub>CC</sub> = 8 to 16V.
3, 7	IN	Detection pin which leads to a differential input circuit consisting of a PNP transistor. The detected voltage is amplified ten times within the IC. The resulting voltage is fed to the differential-input PNP-transistor comparator.
4, 6	OUT	Push-pull output pin which connects to an NPN transistor. When a lamp failure is detected, this signal goes high to flow out a current for driving the external output circuit.
5	GND	Grounded

(Note: Operation mode)

Input Voltage	Output Mode
V <sub>IN</sub> > V <sub>TH</sub>	LOW
V <sub>IN</sub> < V <sub>TH</sub>	HIGH

## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	30	V
Power Dissipation	P <sub>D</sub>	500	mW
Output Current	I <sub>OUT</sub>	-20	mA
Input Voltage	V <sub>IN</sub>	-0.3~V <sub>CC</sub>	V
Operating Temperature	T <sub>opr</sub>	-40~85	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C
Lead Temperature-time	T <sub>sol</sub>	260 (10s)	°C

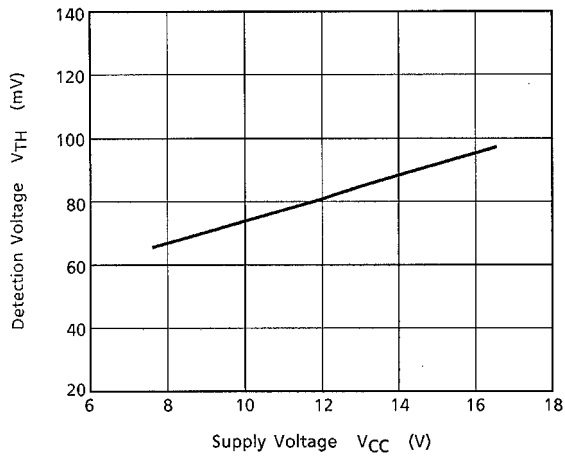
## ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 12V, Ta = -40 to 85°C)

CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Operating Voltage	V <sub>CC</sub>		—		8	—	16	V
Current Consumption	I <sub>CC</sub>	V <sub>CC1</sub> V <sub>CC2</sub>	—	V <sub>CC</sub> = 12V	—	—	7	mA
Output Voltage	V <sub>OUT</sub>	OUT	—	R <sub>L</sub> = 1kΩ(Note)	—	—	1.5	V
Leakage Current	I <sub>LEAK</sub>	OUT	—	V <sub>OUT</sub> = 0V	—	—	10	μA
Input Current	I <sub>IN</sub>	IN	—	V <sub>CC</sub> = 12V, V <sub>IN</sub> = 12V	20	50	100	μA
Detection Voltage	V <sub>TH</sub>	IN	—	V <sub>CC</sub> = 9V	60	70	80	mV
	ΔV <sub>TH</sub>		—	V <sub>TH</sub> (V <sub>CC</sub> = 16V) / V <sub>TH</sub> (V <sub>CC</sub> = 9V)	1.32	1.36	1.40	—
	ΔV <sub>TH</sub> / ΔT		—	V <sub>CC</sub> = 9V	-40	—	40	μV / °C

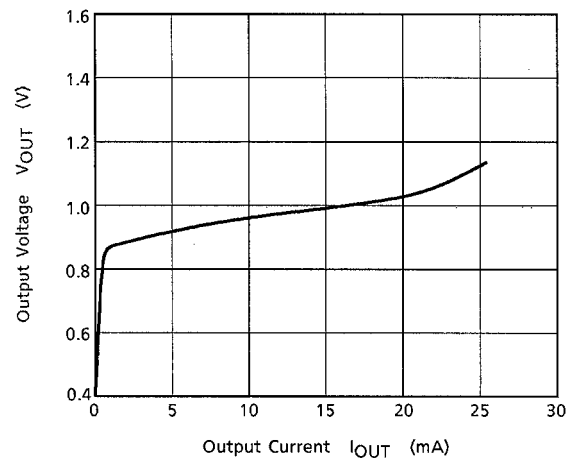
Note: V<sub>CC</sub>-V<sub>OUT</sub>

## TYPICAL CHARACTERISTICS

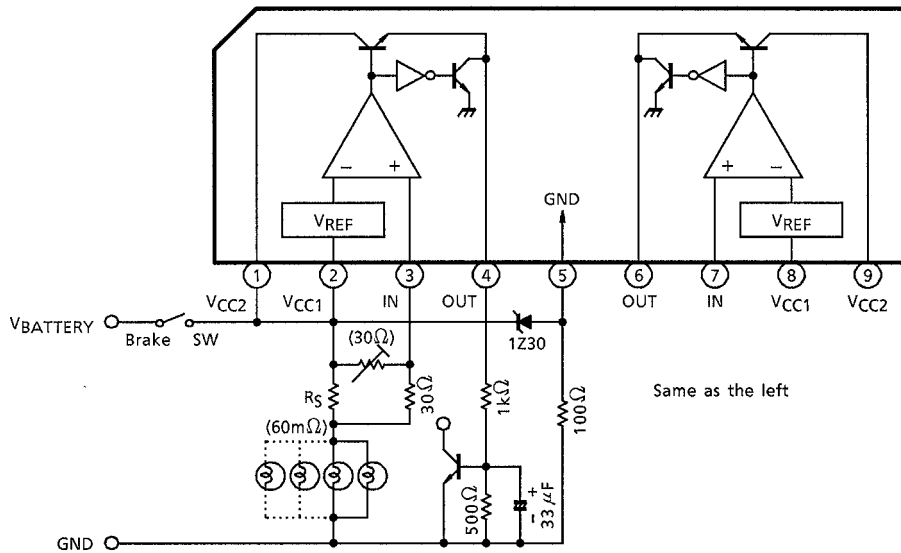
(1) Detection Voltage Characteristic( $V_{TH}$ )



(2) Output Voltage Characteristic( $V_{OUT}$ )



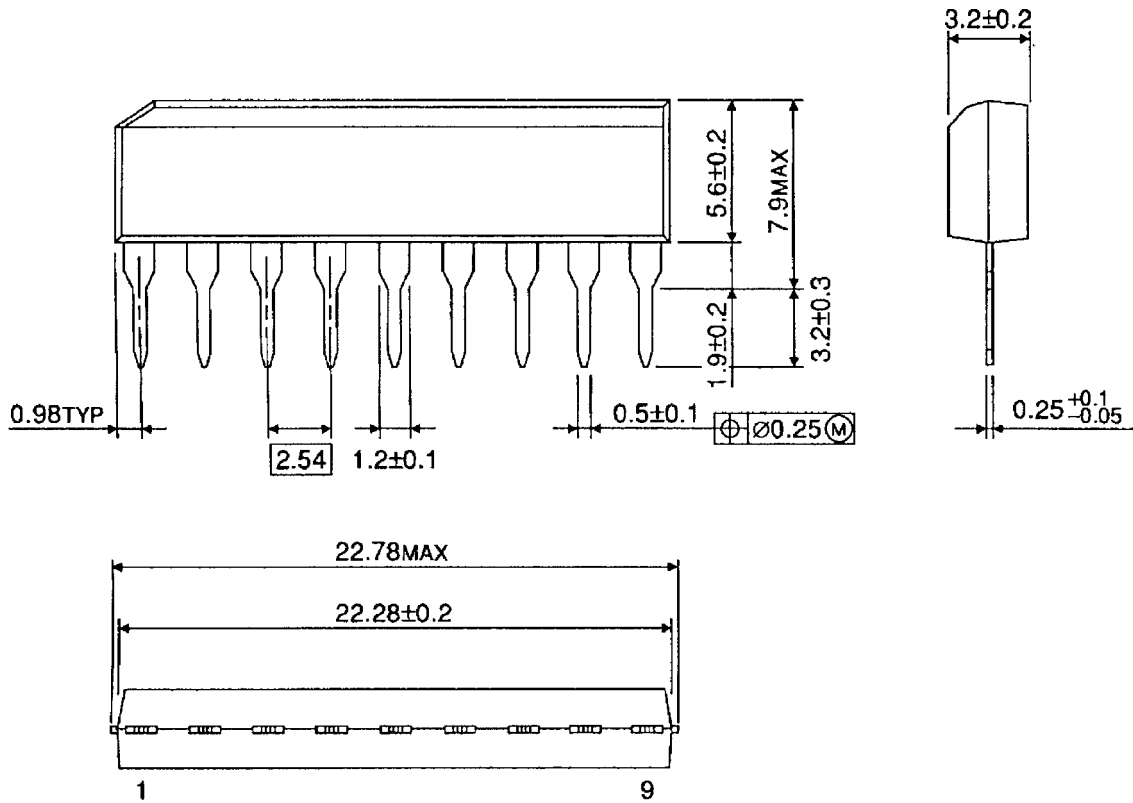
## EXAMPLE OF APPLICATION CIRCUIT (120Vpeak 200ms LOAD DUMP)



## PACKAGE DIMENSIONS

SIP9-P-2.54A

Unit : mm



Weight: 0.92g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

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