

TA8028S

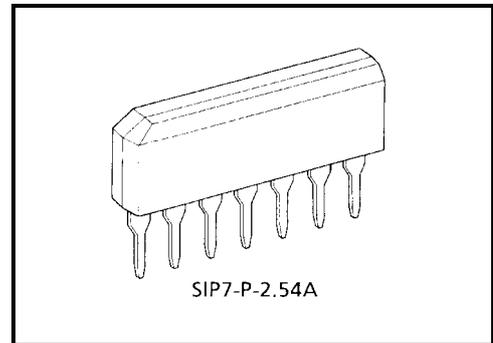
DUTY CONTROLLER

The TA8028S is an IC designed to control automotive illumination systems. It produces an accurate output with small temperature drift.

Either Sink or Source type output can be selected.

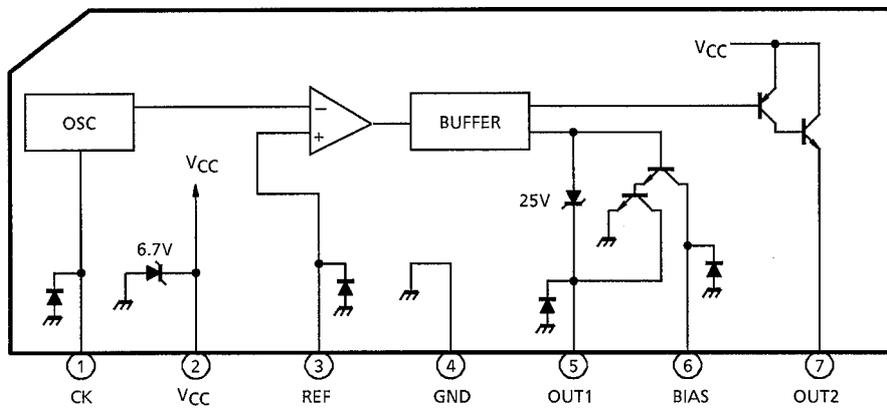
FEATURES

- Output ON / OFF duty variable
- Large output current
 - Sink type : $I_{OUT} = 300\text{mA}$
 - Source type : $I_{OUT} = 100\text{mA}$
- Regulated voltage circuit incorporated
 - : 6.7V shunt regulator
- Operating temperature range
 - : $T_a = -40$ to 85°C
- Small SIP-7 pin



Weight: 0.7 g (typ.)

BLOCK DIAGRAM AND PIN LAYOUT

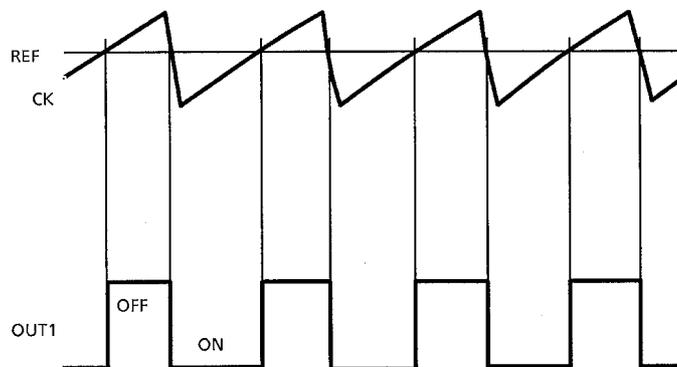


PIN DESCRIPTION

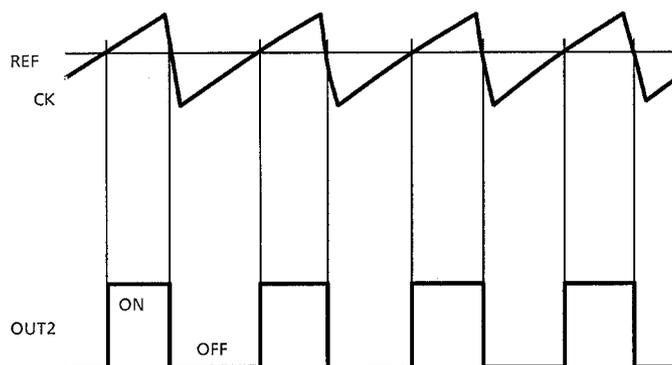
PIN No.	SYMBOL	DESCRIPTION
1	CK	Pin for determining the output frequency. A resistor is connected between V_{CC} and CK ; a capacitor is connected between CK and GND.
2	V_{CC}	Power supply pin. This pin connects to the 6.7V regulated voltage circuit.
3	REF	Duty control pin. The voltage at this pin determines the output duty.
4	GND	Grounded
5	OUT1	Sink-type output pin which supplies the open-collector output of an NPN transistor.
6	BIAS	Connects to the collector of an NPN transistor preceding the NPN transistor which leads to the OUT1 pin. A resistor is connected between this pin and the power supply. When this pin is connected to OUT1, it supplies a Darlington transistor output.
7	OUT2	Source-type output pin which supplies the open-emitter output of an NPN transistor.

TIMING CHART

(1) SINK TYPE



(2) SOURCE TYPE



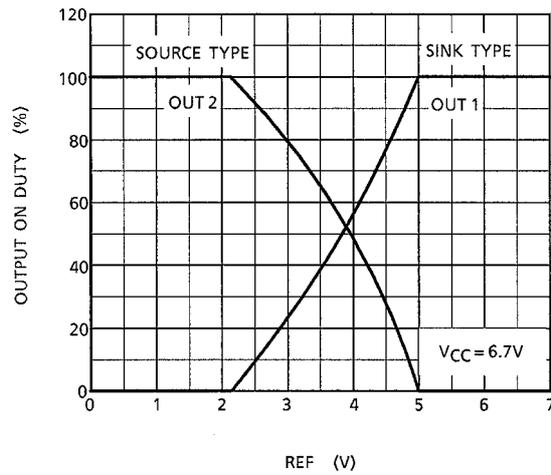
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Current	I _{CC}	50 (1s)	mA
Output Current	I _{OUT1}	300	mA
	I _{OUT2}	100	
Output Voltage	V _{OUT1,2}	24	V
Input Voltage	V _{IN}	-0.3~V _{CC}	V
Power Dissipation	P _D	300	mW
Operating Temperature	T _{opr}	-40~85	°C
Storage Temperature	T _{stg}	-55~150	°C

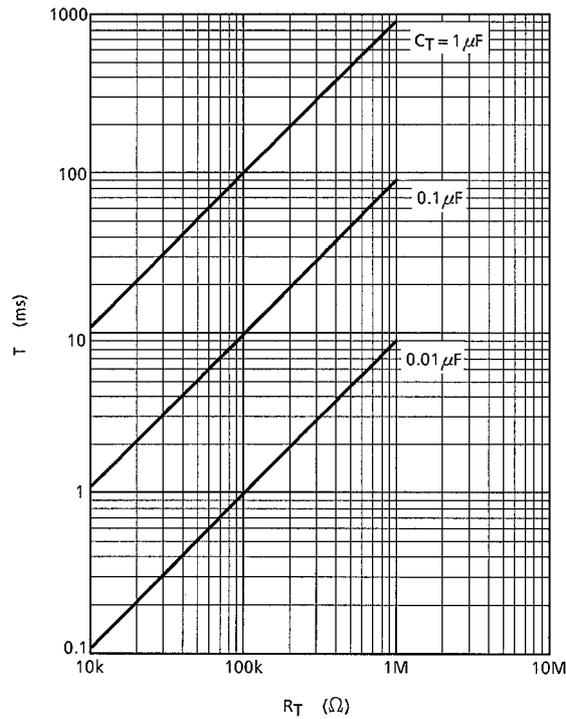
ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{CC} = 6V)

CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Current Consumption	I _{CC}	V _{CC}	—		—	3.0	4.5	mA
Regulated Voltage	V _S	V _{CC}	—	I _{CC} = 10mA	6.2	6.7	7.2	V
Input Current	I _{IN}	CK	—	V _{IN} = 0	-5	—	5	μA
		REF	—	V _{IN} = 0~V _{CC}	-5	—	5	
Output Voltage	V _{OUT}	V _{OUT1}	—	I _{OUT} = 200mA (BIAS : I _{OUT} = 15mA)	—	—	0.7	V
		V _{OUT2}	—	I _{OUT} = 80mA	V _{CC} -1.3	—	—	
		BIAS	—	I _{OUT} = 15mA	—	—	1.5	
Output Leakage Current	I _{LEAK}	V _{OUT1}	—	V _{OUT} = 16V	—	—	10	μA
		V _{OUT2}	—	V _{OUT} = 0V	-10	—	—	
		BIAS	—	V _{OUT} = 16V	—	—	10	
Detection Voltage	V _{IH}	CK	—		0.71× V _{CC}	0.75× V _{CC}	0.79 × V _{CC}	V
	V _{IL}				0.29× V _{CC}	0.31× V _{CC}	0.33 × V _{CC}	
Duty variation with temperature			—	R _T = 100kΩ C _T = 0.01μF	—	50	—	ppm /°C

Input-Output Characteristic

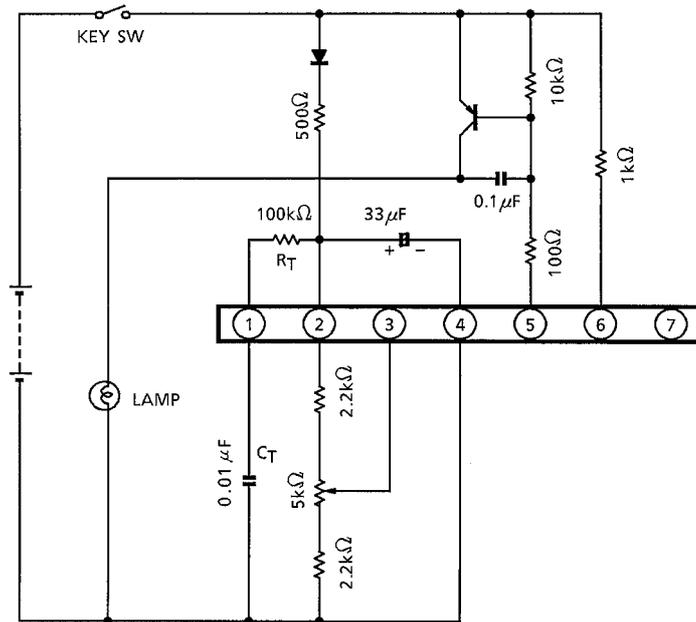


Relationship between Frequency and C_T, R_T

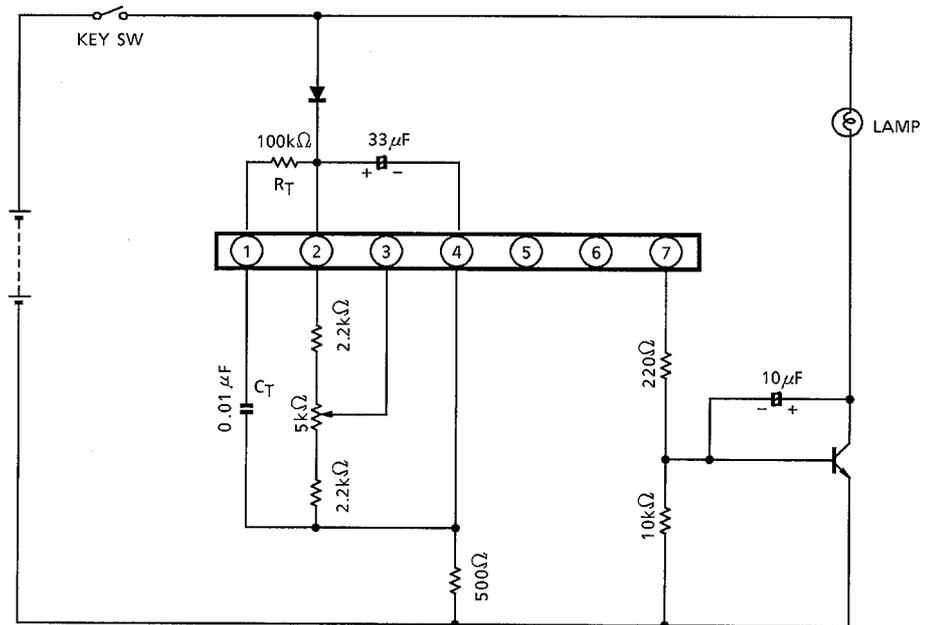


EXAMPLE OF APPLICATION CIRCUIT

(1) SINK TYPE (OUT1)



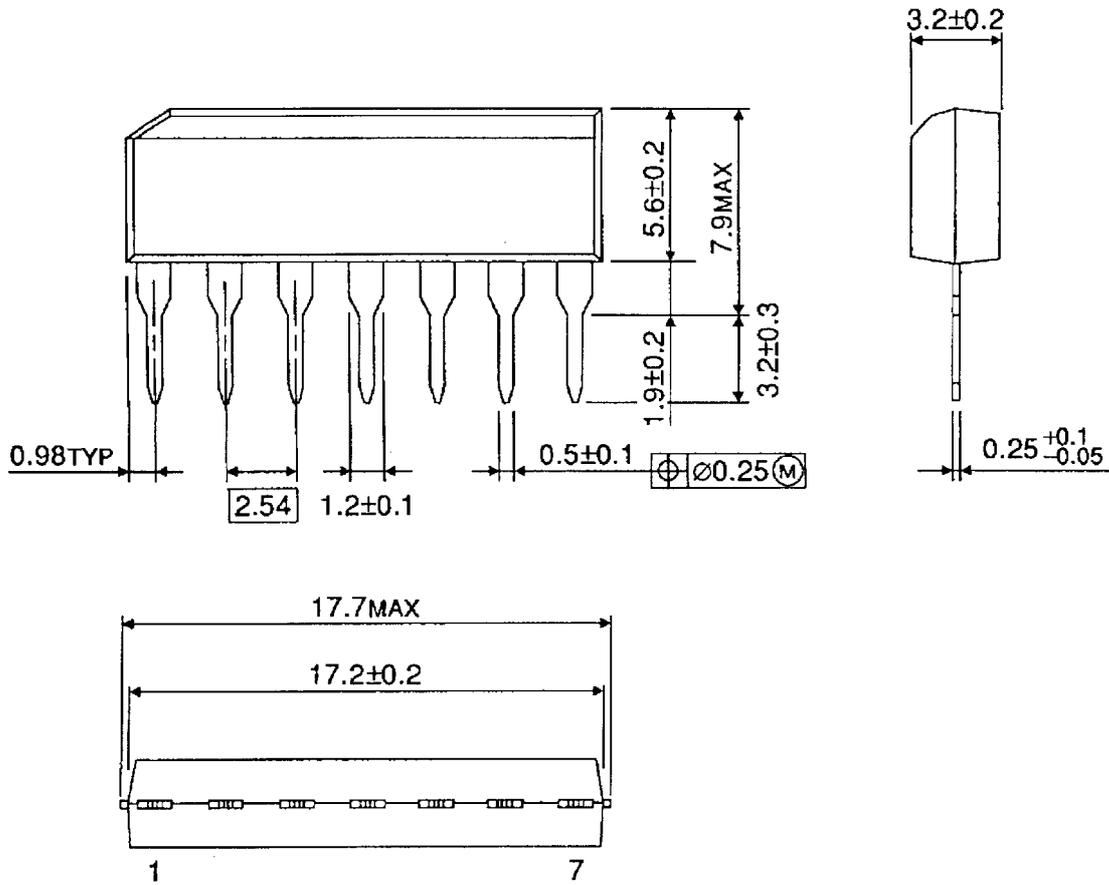
(2) SOURCE TYPE (OUT2)



PACKAGE DIMENSIONS

SIP7-P-2.54A

Unit : mm



Weight: 0.7g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EAA_S

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.