

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD6347S

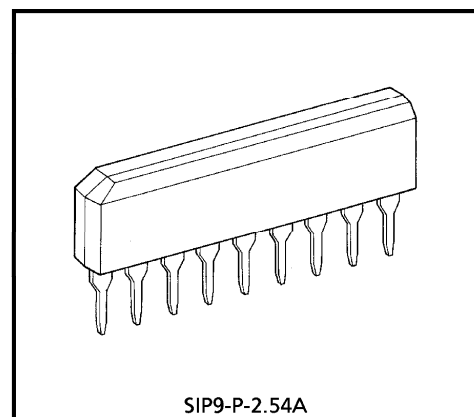
CONVENTIONAL TIMER

The TD6347S is an automotive I²L monolithic timer. It is a long-term timer superior in voltage and temperature characteristics. It produces an NPN transistor open-collector output.

The IC has three inputs : start/reset and two modes, so that it can be used in a variety of application fields.

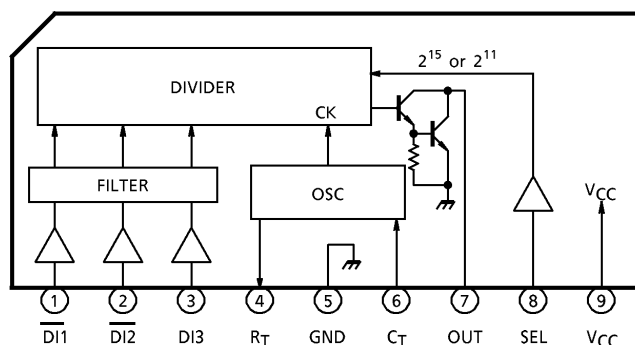
FEATURES

- Small standby current : 1mA
- 3 inputs : start/reset and two modes
- Power-on reset function incorporated
- Good voltage characteristics : $\pm 0.05\% / V$
- Good temperature characteristics : $\pm 0.02\% / ^\circ C$
- Output current/output withstand voltage : 250mA / 30V



Weight : 0.92g (Typ.)

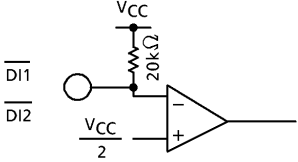
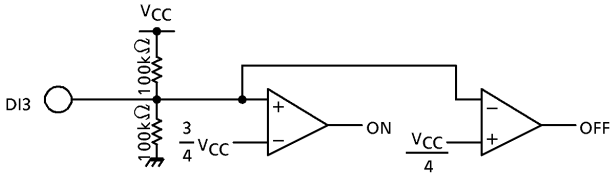
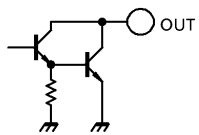
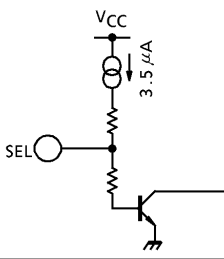
BLOCK DIAGRAM AND PIN LAYOUT



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PIN DESCRIPTION

PIN No.	SYMBOL	DESCRIPTION
1	$\overline{\text{DI1}}$	Connected to the input switch. When this pin is grounded, the IC accepts the input, and the output is reversed. The input circuit is as follows : 
2	$\overline{\text{DI2}}$	When this pin is grounded, the IC is reset. The input circuit construction is the same as that of $\overline{\text{DI1}}$.
3	DI3	When the input switch is connected and this pin is grounded, the output turns off. When this pin is connected to V_{CC}, the output turns on. The input circuit is as follows : 
4	R_T	The resistor for basic clock oscillation is connected between this pin and pin 6.
5	GND	Grounded
6	C_T	The capacitor for basic clock oscillation is connected to this pin. The clock frequency T is determined by external resistor R and capacitor C as follows : $T (\text{ms}) = 1.75C (\mu\text{F}) R (\text{k}\Omega)$ The time constant of the input filter consisting of $\overline{\text{DI1}}$, $\overline{\text{DI2}}$, and DI3 is four times the basic clock period.
7	OUT	Output pin. The circuit is shown at right. 
8	SEL	Timer time select pin. When this pin is open, the timer time is $32768 (2^{15})$ times the clock period. When it is grounded, the timer time is $2048 (2^{11})$ times the clock period. The input circuit is as follows : 
9	V_{CC}	Power supply pin

TRUTH TABLE

(1) Input Switch

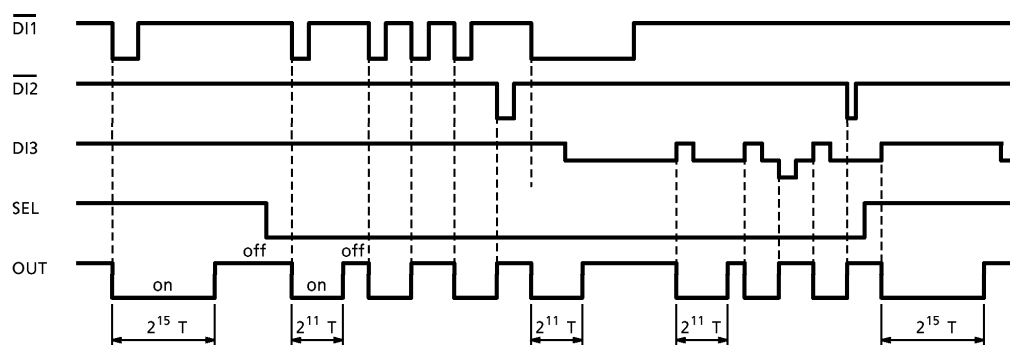
Input			Output
$\overline{\text{DI1}}$	$\overline{\text{DI2}}$	DI3	
	H	H or M	Inversion
H	H		ON
H	H	L	OFF
don't care	L	don't care	OFF

(2) Timer Time

SEL	Timer Time
H	$2^{15} T$ ※
L	$2^{11} T$ ※

※ $T = 1.75 \text{ CR}$

TIMING CHART



MAXIMUM RATINGS (Ta = 25°C)

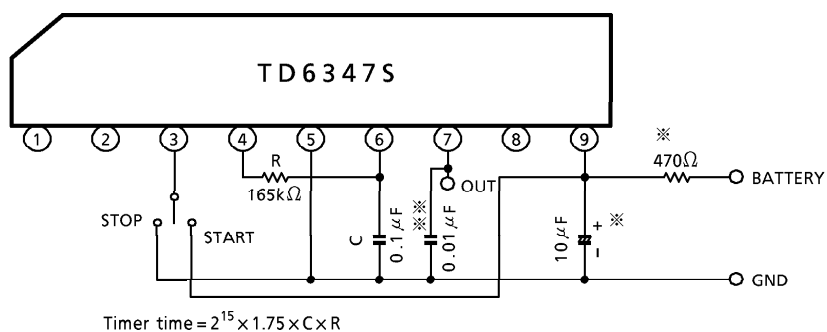
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	30	V
Output Current	I _{OUT}	250	mA
Output Voltage	V _{OUT}	30	V
Operating Voltage	V _{opr}	5 to 16	V
Power Dissipation	P _D	500	mW
Operating Temperature	T _{opr}	- 40 to 85	°C
Storage Temperature	T _{stg}	- 55 to 150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{CC} = 12V)

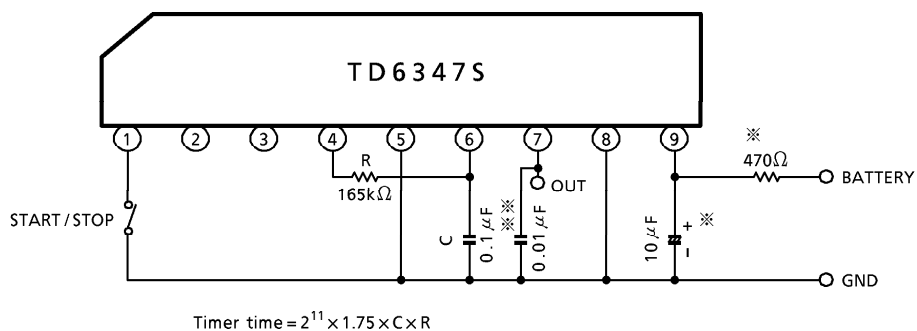
CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Consumption	I _{CC}	V _{CC}	—	OUT = OFF	—	—	1.0	mA
Input Threshold Voltage	V _{TH}	DI1	—	—	5.4	6	6.6	V
		DI2	—	—	5.4	6	6.6	
		DI3	—	START mode	8.1	9	9.9	
			—	STOP mode	2.7	3	3.3	
Input Current	I _{IL}	DI1	—	V _{IL} = 0V	—	—	- 1.0	mA
		DI2	—	V _{IL} = 0V	—	—	- 1.0	
		DI3	—	V _{IL} = 0V	—	—	- 0.25	
	I _{IH}		—	V _{IH} = 12V	—	—	0.25	
Output Voltage	V _{OL}	OUT	—	I _{OL} = 200mA	—	—	1.3	V
Output Leakage Current	I _{LEAK}		—	V _{OUT} = 30V	—	—	100	μA
Input Current	I _{IN}	C _T	—	V _{IN} = 1 to 4V	—	—	± 1	μA
Output Voltage	V _{OH}	R _T	—	I _{OH} = 50μA	3.5	3.9	4.3	V
	V _{OL}			I _{OL} = 50μA	—	—	0.3	

EXAMPLE OF APPLICATION CIRCUIT

(1) 15-minute timer (using DI3)



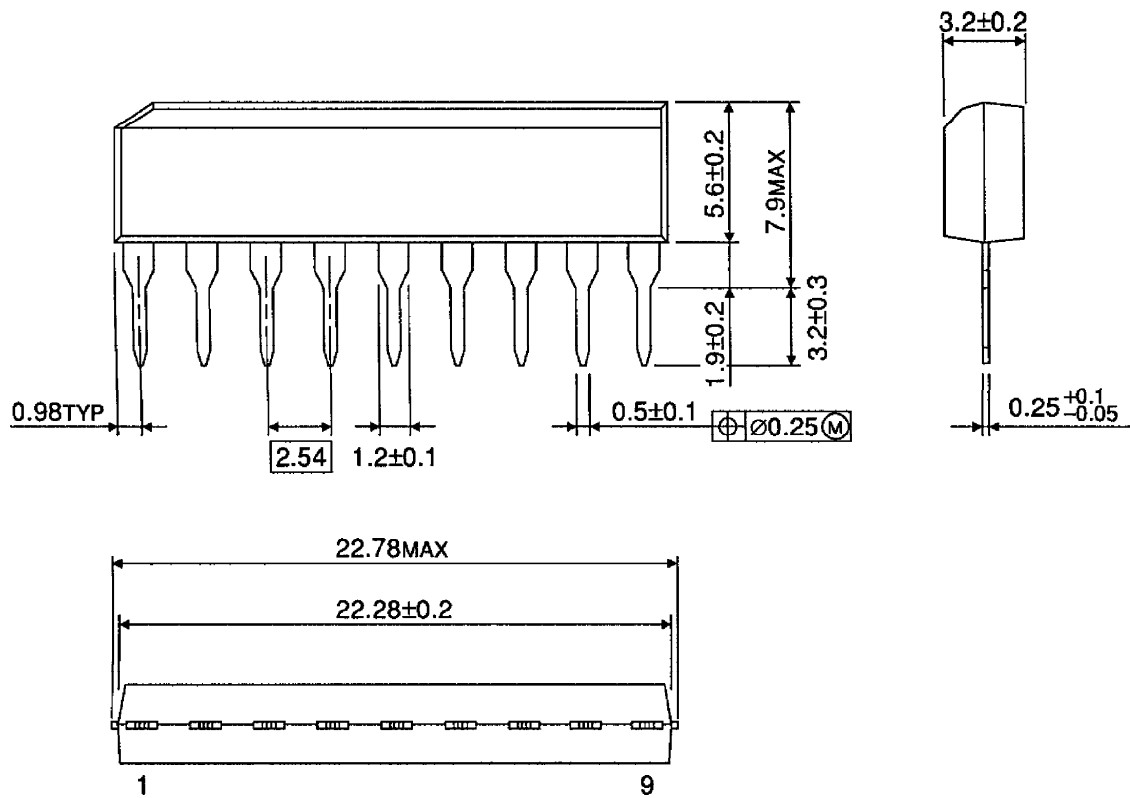
(2) 56-second timer (using DI1)



- ※ If the IC is used with a regulated power supply which is free from surge voltage, the CR combination is unnecessary.
- ※※ For negative surge absorption

OUTLINE DRAWING
SIP9-P-2.54A

Unit : mm



Weight : 0.92g (Typ.)