

# TD6347F

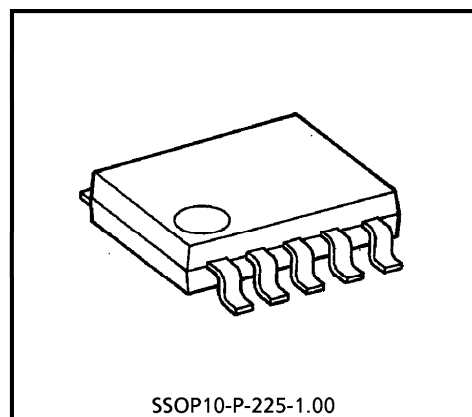
## CONVENTIONAL TIMER

The TD6347F is an automotive I<sup>2</sup>L 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.

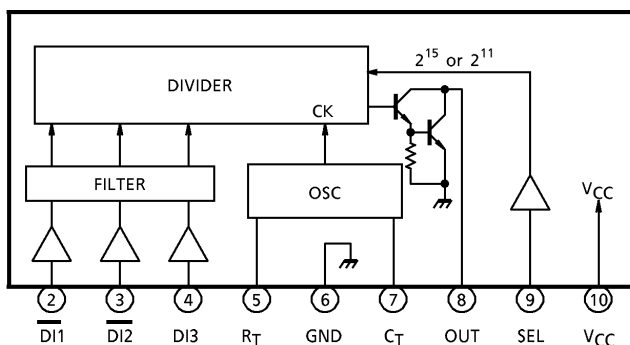
### FEATURES

- Small standby current : 1mA
- 3 inputs : start/reset and two modes
- Power-on reset function incorporated
- Good voltage characteristics : ±0.05% /V
- Good temperature characteristics : ±0.02% /°C
- Output current/output withstand voltage : 250mA / 30V
- Small SSOP-10 pin



SSOP10-P-225-1.00  
Weight : 0.10g (Typ.)

### BLOCK DIAGRAM AND PIN LAYOUT



961001EBA2

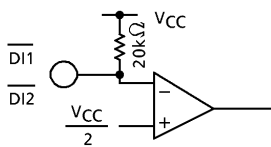
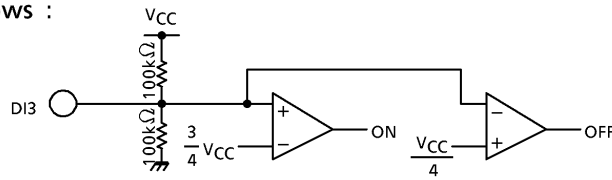
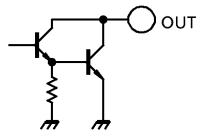
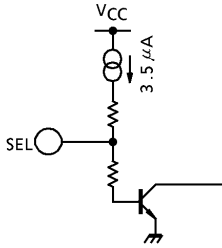
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**PIN DESCRIPTION**

PIN No.	SYMBOL	DESCRIPTION
1	NC	Not connected
2	$\overline{DI1}$	<p>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 :</p> 
3	$\overline{DI2}$	When this pin is grounded, the IC is reset. The input circuit construction is the same as that of $\overline{DI1}$ .
4	DI3	<p>When the input switch is connected and this pin is grounded, the output turns off. When this pin is connected to <math>V_{CC}</math>, the output turns on. The input circuit is as follows :</p> 
5	$R_T$	The resistor for basic clock oscillation is connected between this pin and pin 7.
6	GND	Grounded
7	$C_T$	<p>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 :</p> $T \text{ (ms)} = 1.75C \text{ (}\mu\text{F)} R \text{ (k}\Omega\text{)}$ <p>The time constant of the input filter consisting of <math>\overline{DI1}</math>, <math>\overline{DI2}</math>, and DI3 is four times the basic clock period.</p>
8	OUT	<p>Output pin. The circuit is shown at right.</p> 
9	SEL	<p>Timer time select pin. When this pin is open, the timer time is <math>32768 (2^{15})</math> times the clock period. When it is grounded, the timer time is <math>2048 (2^{11})</math> times the clock period. The input circuit is as follows :</p> 
10	$V_{CC}$	Power supply pin

**TRUTH TABLE**

(1) Input Switch

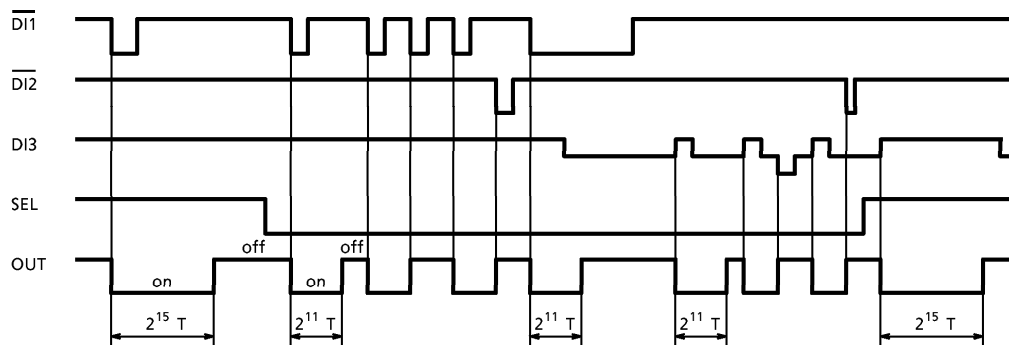
Input			Output
DI1	DI2	DI3	
	H	H or M	Inversion
H	H		ON
H	H	L	OFF
don't care	L	don't care	OFF

(2) Timer Time

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

※  $T = 1.75 CR$

**TIMING CHART**



## MAXIMUM RATINGS (Ta = 25°C)

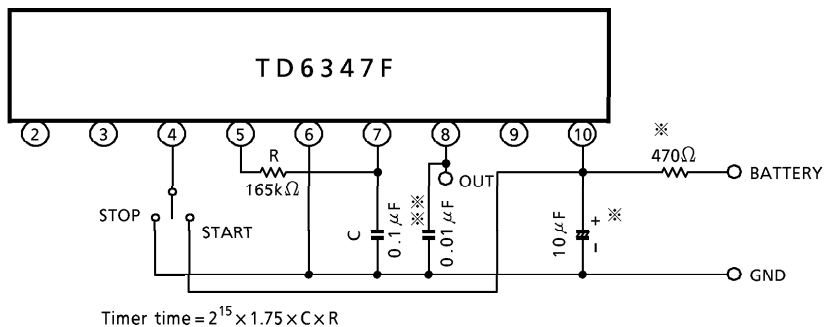
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	30	V
Output Current	I <sub>OUT</sub>	250	mA
Output Voltage	V <sub>OUT</sub>	30	V
Operating Voltage	V <sub>opr</sub>	5 to 16	V
Power Dissipation	P <sub>D</sub>	400	mW
Operating Temperature	T <sub>opr</sub>	-40 to 85	°C
Storage Temperature	T <sub>stg</sub>	-55 to 150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C, V<sub>CC</sub> = 12V)

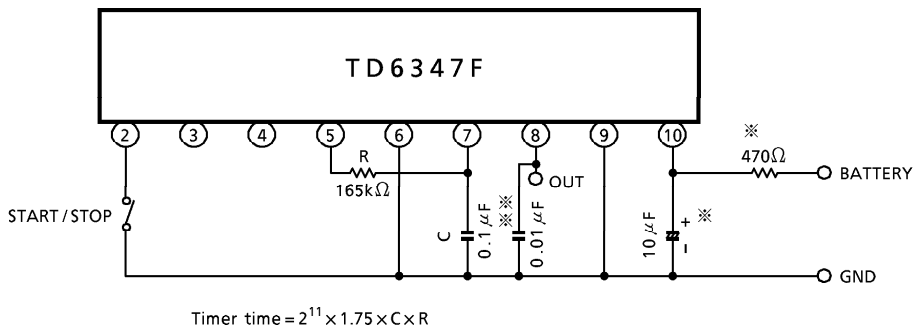
CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Consumption	I <sub>CC</sub>	V <sub>CC</sub>	—	OUT = OFF	—	—	1.0	mA
Input Threshold Voltage	V <sub>TH</sub>	DI1	—	—	5.4	6	6.6	V
		DI2	—	—	5.4	6	6.6	
		DI3	—	START mode	8.1	9	9.9	
			—	STOP mode	2.7	3	3.3	
Input Current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

**EXAMPLE OF APPLICATION CIRCUIT**

(1) 15-minute timer (using DI3)



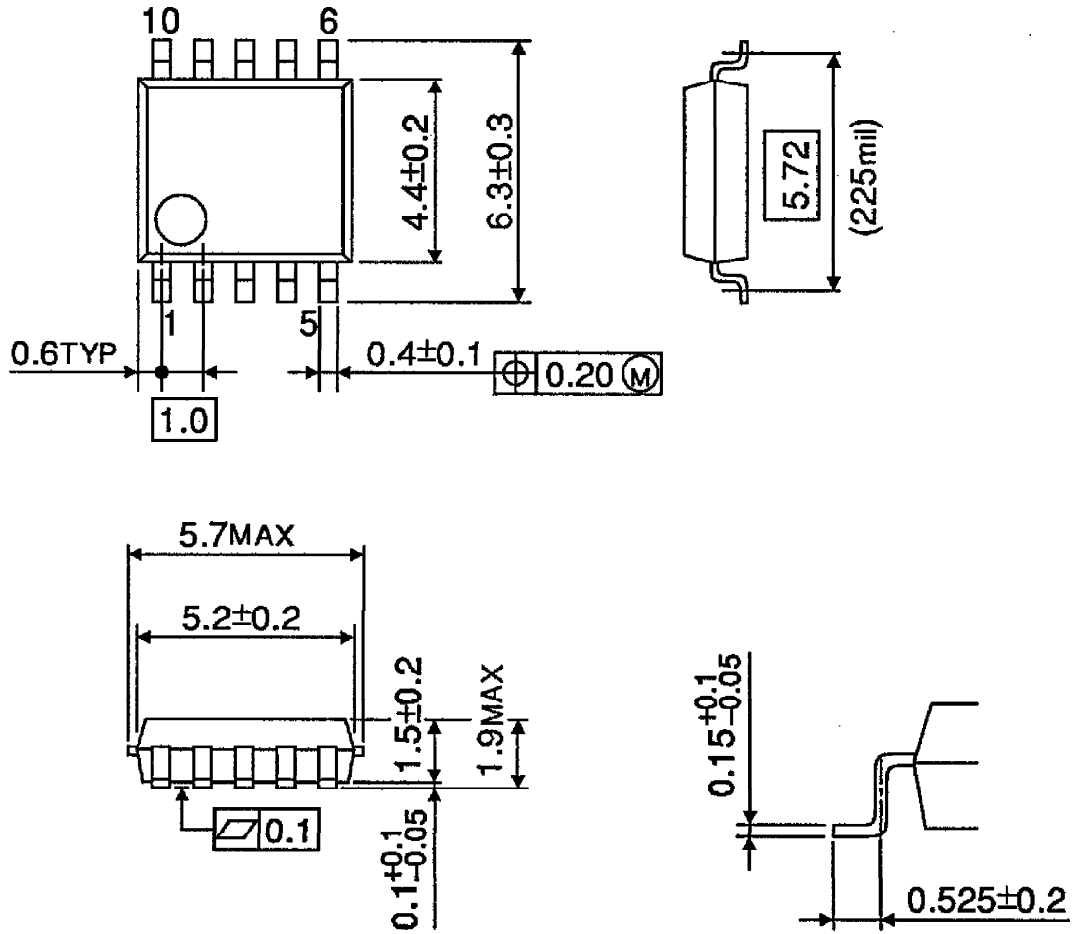
(2) 56-second timer (using DI1)



- ※ 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**  
SSOP10-P-225-1.00

Unit : mm



Weight : 0.10g (Typ.)