

TOSHIBA

TD6347F

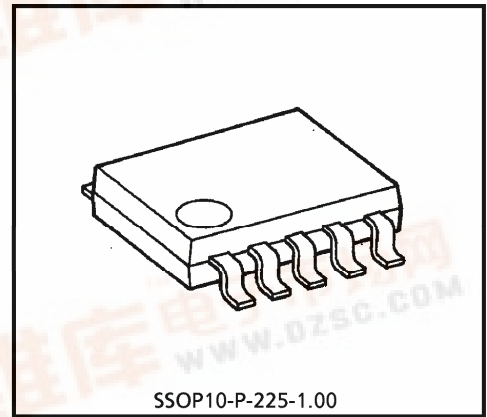
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD6347F

CONVENTIONAL TIMER

The TD6347F 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.

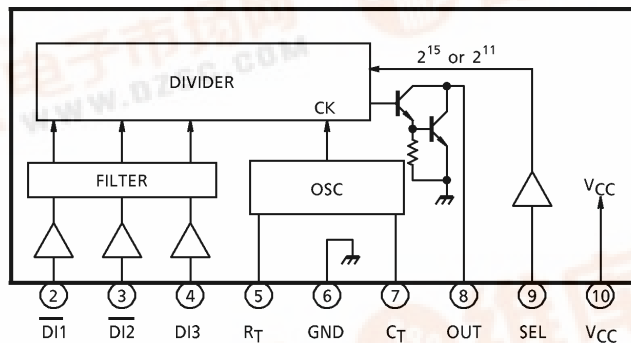


Weight : 0.10g (Typ.)

FEATURES

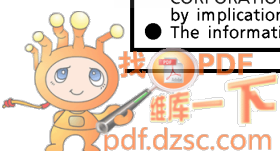
- Small standby current : 1mA
- 3 inputs : start/reset and two modes
- Power-on reset function incorporated
- Good voltage characteristics : ±0.05% / V
- Good temperature characteristics : ±0.02% / °C
- Output current/output withstand voltage : 250mA / 30V
- Small SSOP-10 pin

BLOCK DIAGRAM AND PIN LAYOUT

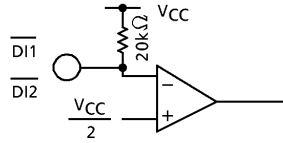
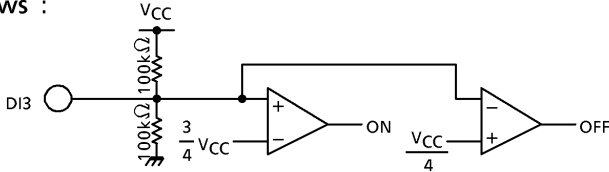
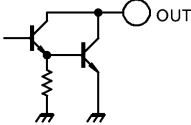
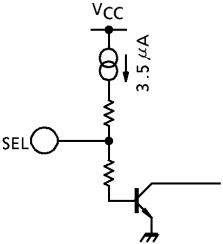


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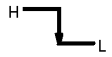



PIN DESCRIPTION

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 V_{CC}, 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 $\overline{DI1}$, $\overline{DI2}$, 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 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 :</p> 
10	V_{CC}	Power supply pin

TRUTH TABLE

(1) Input Switch

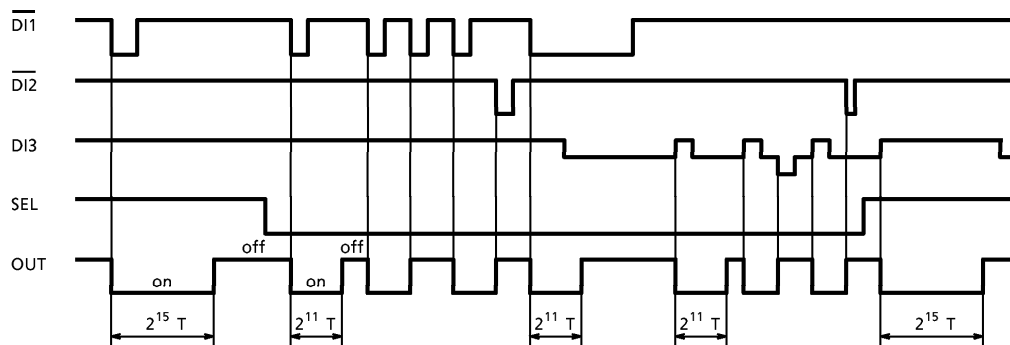
Input			Output
DI1	DI2	DI3	
H 	H	H or M	Inversion
H	H	M 	ON
H	H	L	OFF
don't care	L	don't care	OFF

(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)

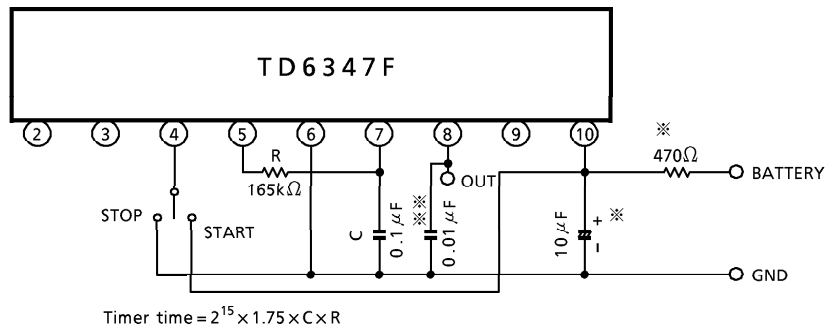
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	30	V
Output Current	I _{OUT}	250	mA
Output Voltage	V _{OUT}	30	V
Operating Voltage	V _{opr}	5 to 16	V
Power Dissipation	P _D	400	mW
Operating Temperature	T _{opr}	-40 to 85	°C
Storage Temperature	T _{stg}	-55 to 150	°C

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

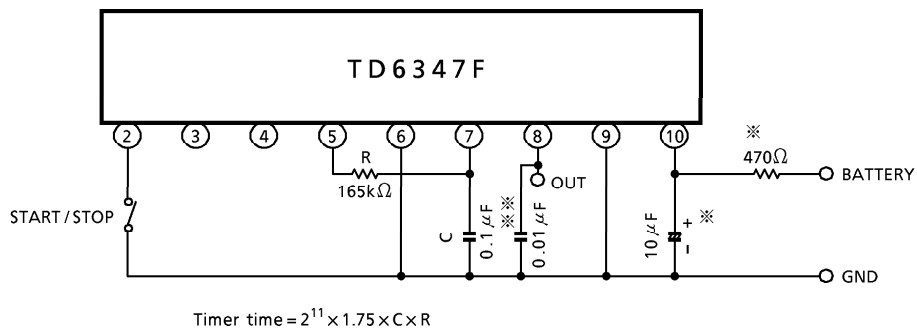
CHARACTERISTIC	SYMBOL	PIN	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Consumption	I _{CC}	V _{CC}	—	OUT = OFF	—	—	1.0	mA
Input Threshold Voltage	V _{TH}	$\overline{DI1}$	—	—	5.4	6	6.6	V
		$\overline{DI2}$	—	—	5.4	6	6.6	
		DI3	—	START mode	8.1	9	9.9	
			—	STOP mode	2.7	3	3.3	
Input Current	I _{IL}	$\overline{DI1}$	—	V _{IL} = 0V	—	—	-1.0	mA
		$\overline{DI2}$	—	V _{IL} = 0V	—	—	-1.0	
	I _{IH}	DI3	—	V _{IL} = 0V	—	—	-0.25	
			—	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)



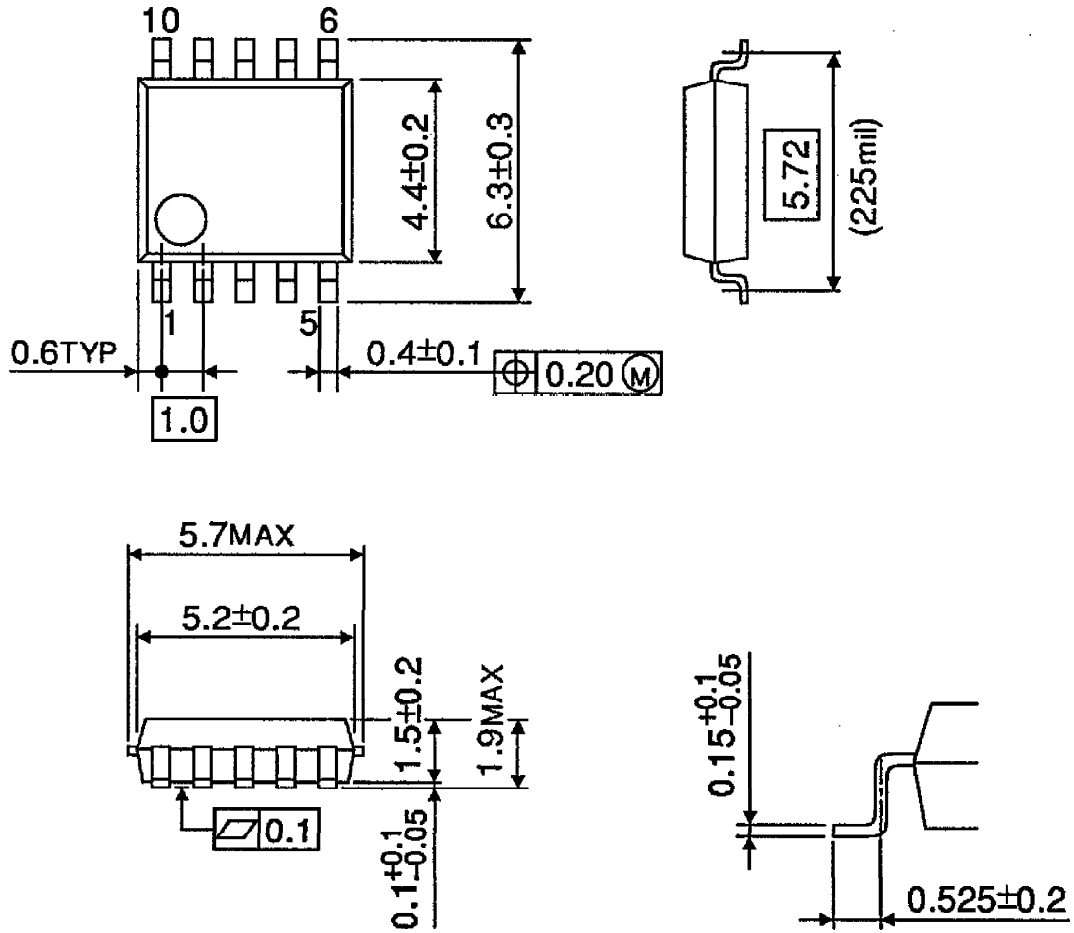
(2) 56-second timer (using $\overline{DI1}$)



- ※ 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.)