PT8A2516 Simple Timer
Application Note

Introduction

PT8A2516 is a mixed signal CMOS IC designed for simple timer application. The device's timing can be adjusted by the external R/C.

Figure 1 shows a typical application diagram, where U1 is the control IC PT8A2516, R and C are the key components for the RC oscillation circuit. Adjusting the R and C values will result in different timer-out values.

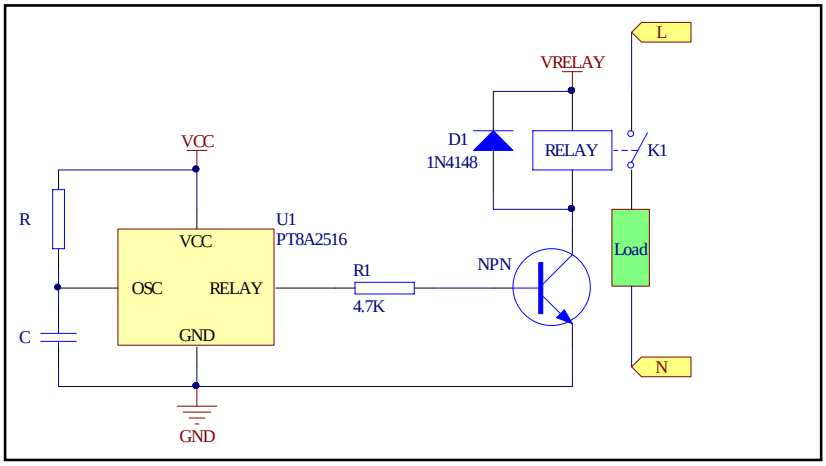

Figure 1: PT8A2516 application diagram

R/C for Timer

Table 1: R/C application for timer

Timer	30 minutes	1 hour	2 hours	3 hours	4 hours	8 hours	16 hours
R(KΩ)	25	50	100	150	200	400	800
C	3.3nF						
VCC	5.0V						

Timer and R/C oscillation frequency:

PT8A2516 has one integrated timer chain. The relationship between the timing and the RC oscillation frequency is shown as follows.

Timer (S) = 29486400 / F_{OSC} , F_{OSC} is RC oscillation frequency

Timing accuracy

Timing accuracy depends on the R/C oscillation frequency accuracy. And R/C oscillation frequency accuracy depends on R/C and IC accuracy. R/C oscillation frequency calculation formula is shown below.

$F_{osc} = k/RC$

R is Resistance value, C is Capacitance value, and K is the parameter of IC.

Note: Please use high precision resistors (1% accuracy) and polyester capacitors for the application.

Measure the R/C oscillation frequency

It is suggested that the measurement circuit is connected by the frequency of the oscillation. This can reduce the measurement error for the oscillation frequency accuracy.

Note: Please do not measure the OSC pin directly.

Figure 2 shows a typical R/C oscillation frequency test circuit.

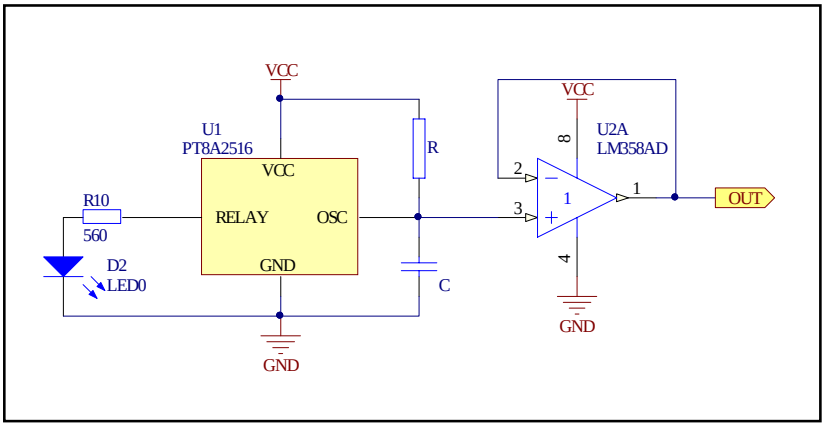

Figure 2: R/C oscillation frequency test circuit diagram

Table 2: shows R/C oscillation frequency for timer

Condition	VCC=5.0V，C=3.3nF，25℃						
R(KΩ)	10	15	20	24	27	30	36
F_{OSC}(Hz)	40366.9	27010.4	20298.6	16917.8	15088.0	13579.3	11297.3
Timer	12m10s	18m12s	24m13s	29m3s	32m34s	36m11s	43m30s
R(KΩ)	47	51	56	62	68	75	81
F_{OSC}(Hz)	8663.9	7977.3	7278.1	6566.9	6006.4	5436.0	5035.8
Timer	56m43s	1h1m36s	1h7m31s	1h14m50s	1h21m49s	1h30m24s	1h37m35s
R(KΩ)	90	100	110	120	150	160	180
F_{OSC}(Hz)	4534.0	4073.0	3708.0	3403.6	2722.1	2554.3	2270.0
Timer	1h48m23s	2h0m39s	2h12m32s	2h24m23s	3h0m32s	3h12m24s	3h36m30s
R(KΩ)	200	240	270	300	360	430	470
F_{OSC}(Hz)	2045.0	1704.6	1516.2	1364.8	1137.3	952.8	871.8
Timer	4h0m19s	4h48m18s	5h24m7s	6h0m5s	7h12m6s	8h35m48s	9h23m43s
R(KΩ)	510	560	680	750	810	900	1000
F_{OSC}(Hz)	804.0	732.2	603.1	547.2	506.8	455.5	411.0
Timer	10h11m13s	11h11m10s	13h34m49s	14h58m40s	16h9m44s	17h58m59s	19h55m37s

Note: Timer is calculated according to the R/C oscillation frequency formula.