

## Description

The function of this low reset Type IC is to accurately reset systems after detecting the supply voltage at the time of switching power on and instantaneous power off in various CPU and other logic system. Further, this IC, with its super low consumption current is most suited as a voltage check circuit for a number of products which use batteries.

## Features

- Super low current consumption ( $I_{CCL} = 1.0\mu A$  Typ.)
- High current of output transistor ( $I_{OL} = 20mA$  Typ.)
- Hysteresis circuit built in ( $\Delta V_S = 100mV$  Typ.)
- It has on delay function to supplement the constant of outer C and R.

## Applications

- Reset circuits for microcomputers, CPU and MPU.
- Reset circuit for logic circuitry.
- Battery voltage check circuit.
- Circuit for changing over to backup battery.
- Level detecting circuit.

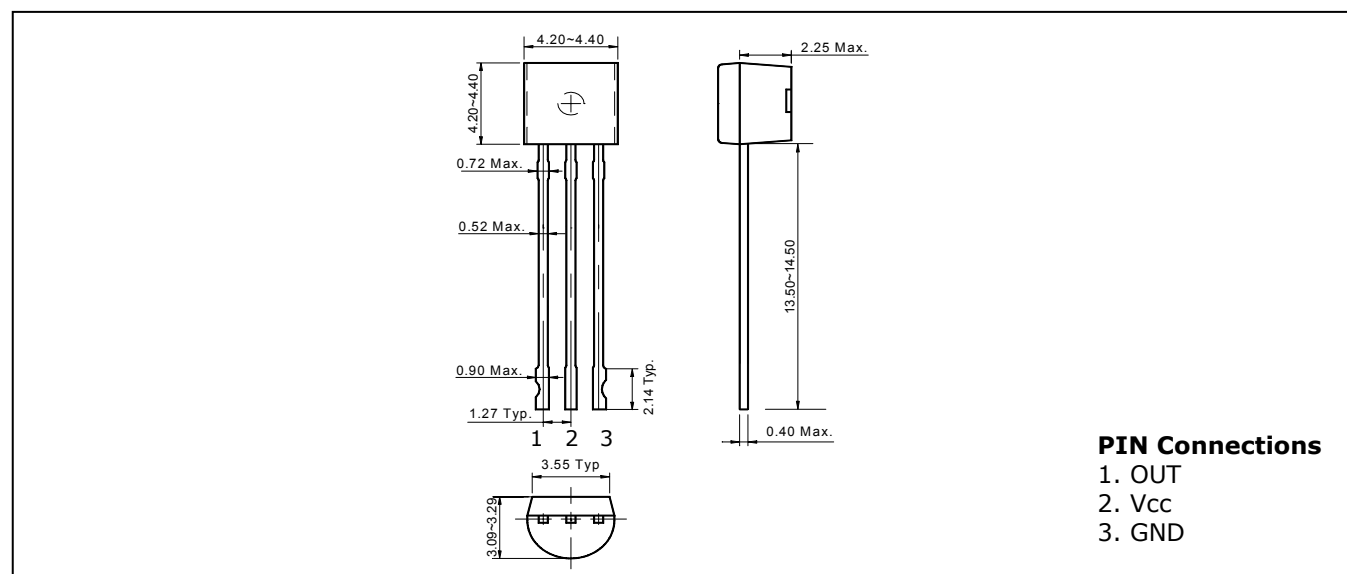
## Ordering Information

Type NO.	Marking	Package Code
S72NxxN	S72N□□	TO-92N

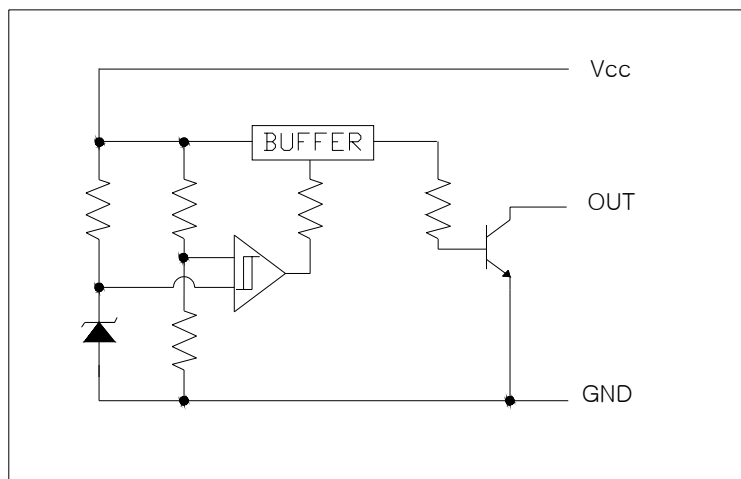
□□: Detecting Voltage Code

## Outline Dimensions

Unit : mm



## Equivalent Circuit Diagram



## Maximum ratings

(Ta=25°C)

Characteristic	Symbol	Ratings	Unit
Supply Voltage	$V_{CC}$	-0.3 ~ +10	V
Power Dissipation	$P_D$	500	mW
Output Voltage	$V_{OUT}$	-0.3 ~ +10	V
Operating Temperature Range	$T_{OPR}$	-20 ~ +75	°C
Storage Temperature Range	$T_{STG}$	-40 ~ +125	°C

## Electrical Characteristics

(V<sub>CC</sub>=5V, Ta=25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min.	Typ.	Max.	Unit
Detecting Voltage	$V_S$	1	* See Table 1				
Hysteresis Voltage	$\Delta V_S$	1	$R_L=470\Omega, V_{CC}=L \rightarrow H \rightarrow L$	40	100	300	mV
Temperature Coefficient of Detecting Voltage	$V_S/\Delta T$	1	$R_L=470\Omega, T_a=-20\sim 75^\circ\text{C}$	-	$\pm 0.01$	-	%/°C
Low Level Output voltage	$V_{OL}$	1	$R_L=470\Omega, V_{CC}=V_S \text{ Min}$	-	0.1	0.4	V
Leakage Current When OFF	$I_{LEAK}$	1	$V_{CC}=10V, R_L=470\Omega$	-	-	0.1	$\mu\text{A}$
Circuit current at ON	$I_{CCL}$	1	$V_{CC}=V_S \text{ Min}$	-	100	180	$\mu\text{A}$
Circuit current at OFF	$I_{CCH}$	1	$V_{CC}=V_S \text{ Max} +0.1V$	-	1.0	2.5	$\mu\text{A}$
Operating Voltage	$V_{OPR}$	1	$R_L=4.7\text{ k}\Omega, V_{OL}\leq 0.4V$	-	1.4	1.6	V
Output Current at ON I	$I_{OL I}$	1	$R_L=0\Omega, V_{CC}=V_S \text{ Min}$	10	20	-	mA
Output Current at ON II	$I_{OL II}$	1	$R_L=0\Omega, V_{CC}=V_S \text{ Min}, T_a=-20\sim 75^\circ\text{C}$	5	-	-	mA
L→H Transmission delay time	$t_{PLH}$	2	$R_L=4.7\text{ k}\Omega, C_L=100\text{ pF}$	-	100	500	$\mu\text{s}$
H→L Transmission delay time	$t_{PHL}$	2	$R_L=4.7\text{ k}\Omega, C_L=100\text{ pF}$	-	10	20	$\mu\text{s}$

$V_S$ : Standard Detection Voltage

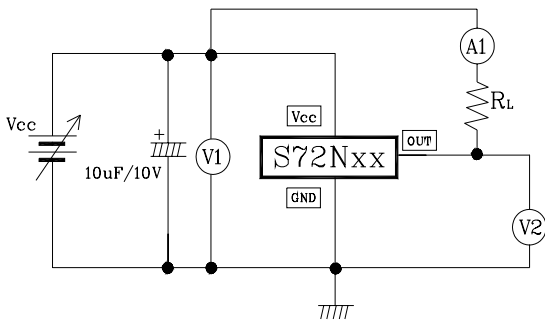
\* Table 1

## Electrical Characteristics

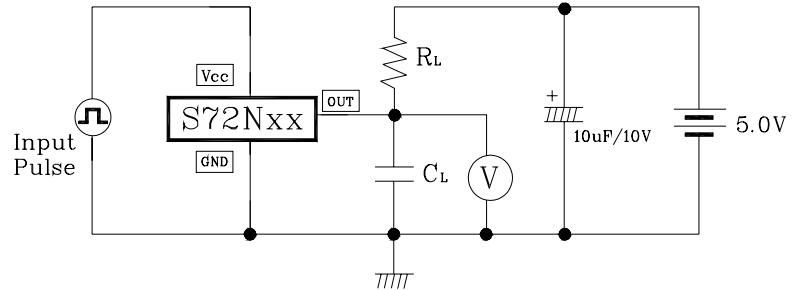
(V<sub>CC</sub>=5V, Ta=25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min.	Typ.	Max.	Unit	
Detecting voltage	V <sub>s</sub>	1	R <sub>L</sub> =470Ω V <sub>CC</sub> =H→L V <sub>OL</sub> ≤0.4V	S72N45N	4.30	4.50	4.70	V
				S72N42N	4.00	4.20	4.40	
				S72N39N	3.70	3.90	4.10	
				S72N36N	3.40	3.60	3.80	
				S72N33N	3.10	3.30	3.50	
				S72N31N	2.90	3.10	3.30	
				S72N29N	2.75	2.90	3.05	
				S72N27N	2.55	2.70	2.85	
				S72N25N	2.35	2.50	2.65	
				S72N23N	2.15	2.30	2.45	

Test Circuit 1

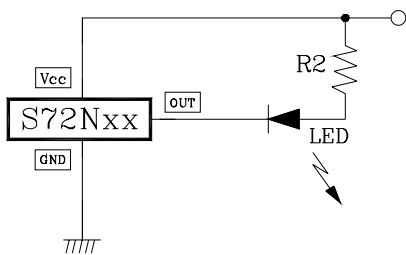


Test Circuit 2



Application Circuit

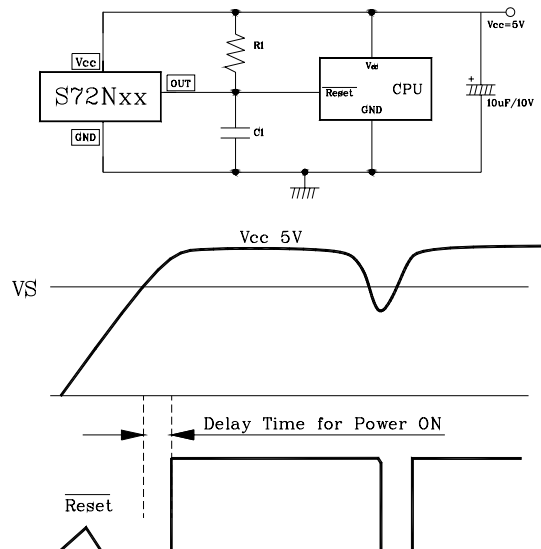
(1) Battery Low Indicator



Note 1.

: Connecting of LED and R2 obtains a voltage drop indicator.

(2) Resetting for CPU



Note 2.

: Connecting of C1 and selection of time constant with C1 and R1 set the power on delay time.

## Electrical Characteristic Curves

Fig. 1  $V_O - V_{CC}$

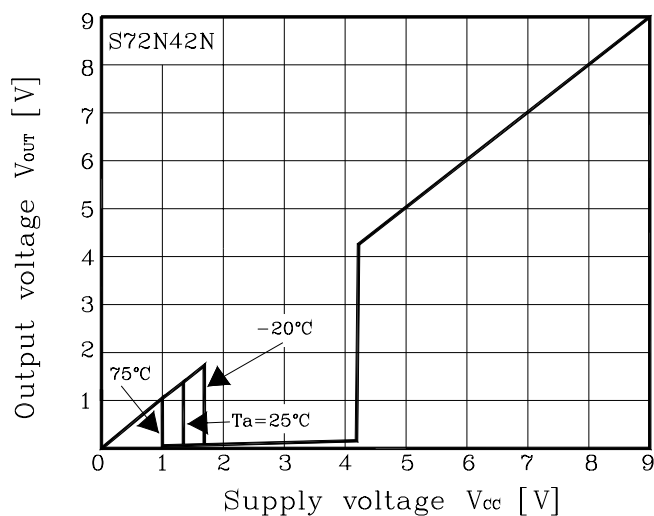


Fig. 2  $I_{CC} - V_{CC}$

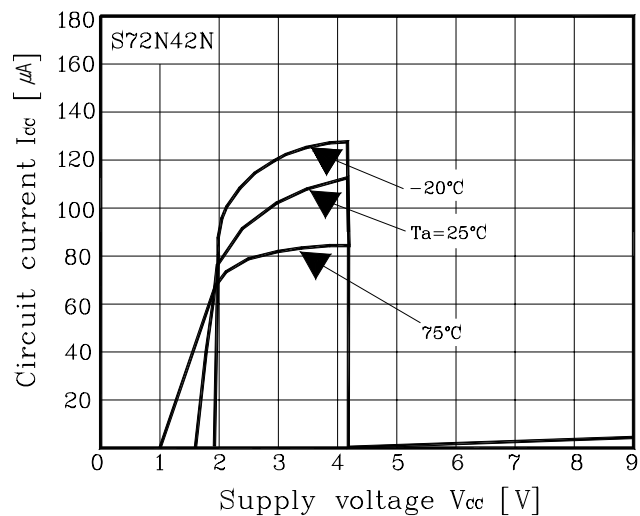


Fig. 3  $\Delta V_S - T_a$

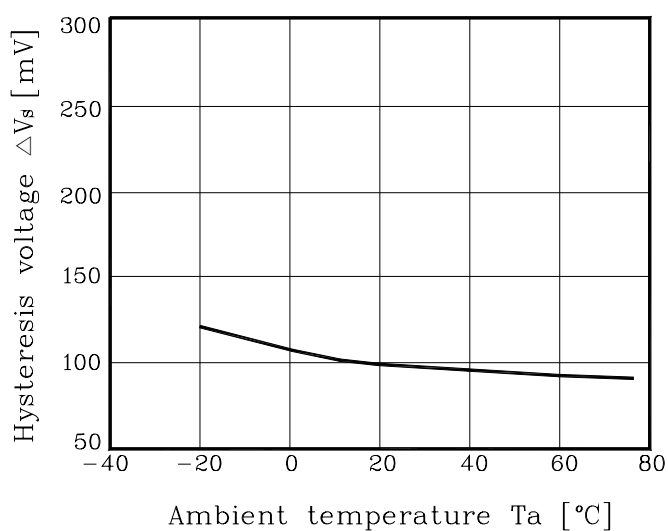


Fig. 4  $V_S - T_a$

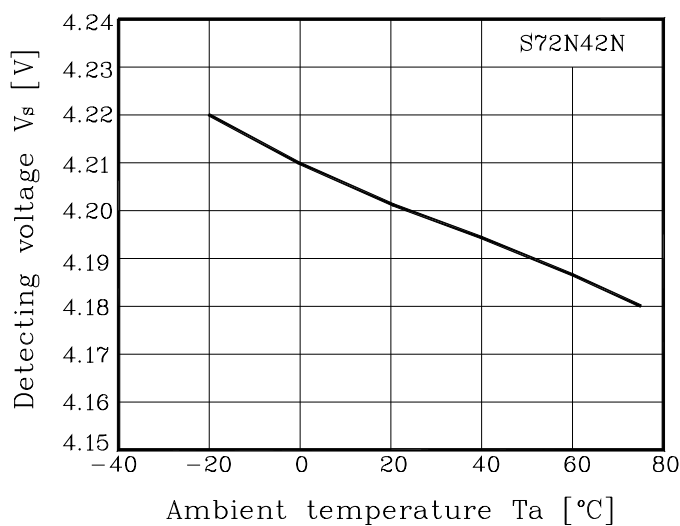


Fig. 5  $I_{CCL} - T_a$

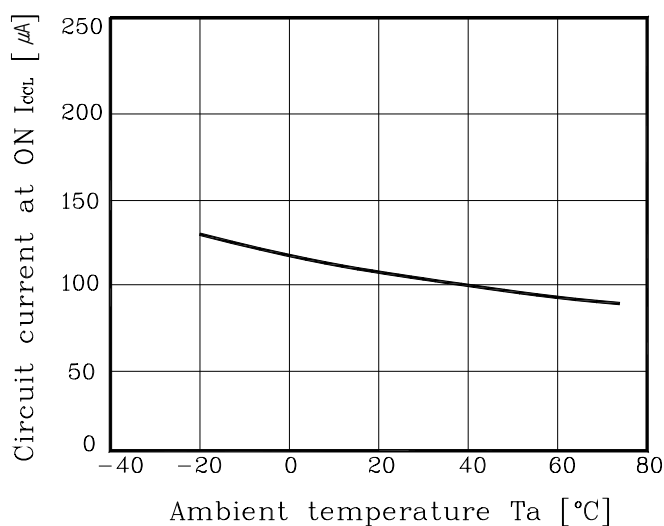


Fig. 6  $V_{OL} - T_a$

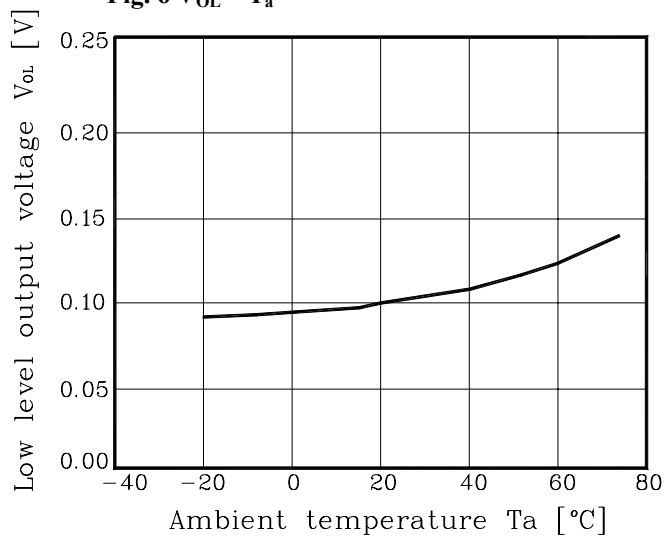


Fig. 7  $I_{OL} - T_a$

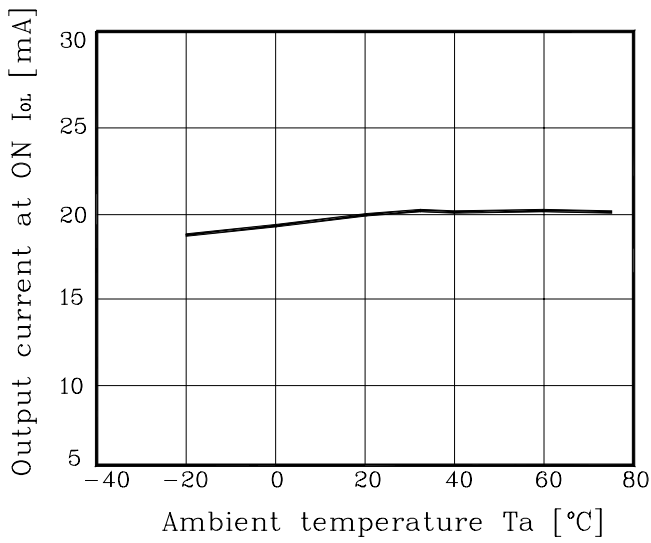


Fig. 8  $I_{CCH} - T_a$

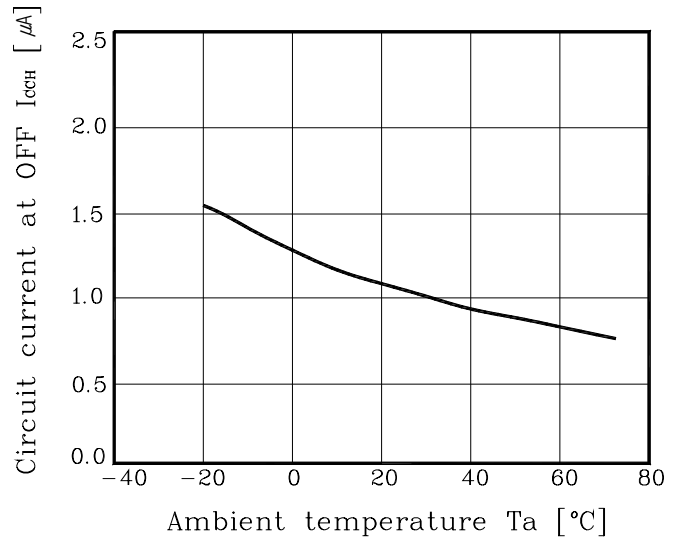
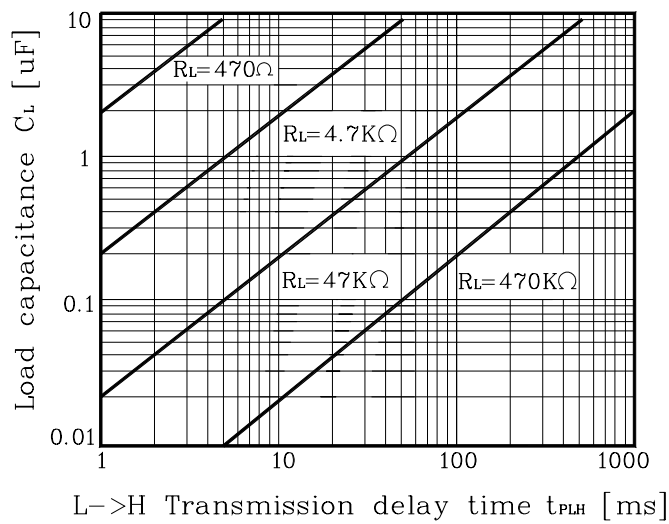


Fig. 9  $C_L - t_{PLH}$



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