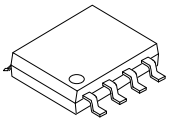
VOLTAGE DETECTING, SYSTEM RESETTING IC



SOP-8

■ DESCRIPTION

UTC **86N1C**, which has the feature of setting the detection voltage by adding external resistance is semiconductor integrated circuit for resetting of all types of logic circuits such as CPUs.

It includes a built-in delay circuit to get the desired retardation time simply by adding an external capacitor.

It is well-suited to extensive applications, including battery checking circuit, waveform shaping circuit and level detecting circuit.

■ FEATURES

* Few external parts
* Low threshold operating voltage (Supply voltage to keep low-state at low supply voltage): 0.6V (Typ) at R_L=22kΩ
* Large delay time with a capacitor of small capacitance
* Wide application range
* Wide supply voltage range: 2V~17V

■ ORDERING INFORMATION

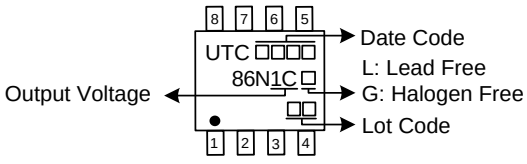
Ordering Number		Package	Packing
Lead Free	Halogen Free		
86N1CL-S08-R	86N1CG-S08-R	SOP-8	Tape Reel

Note: xx: Output Voltage, refer to Marking Information.

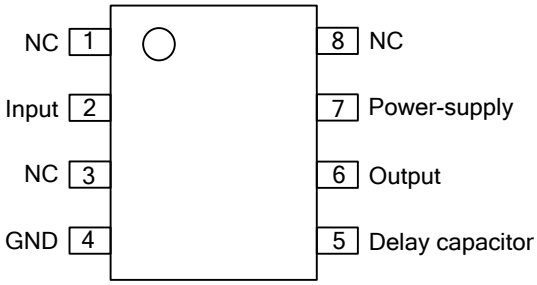
86N1CG-S08-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) S08: SOP-8
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free
(4)Output Voltage Code	(4) 1C: 1.25V

■ MARKING



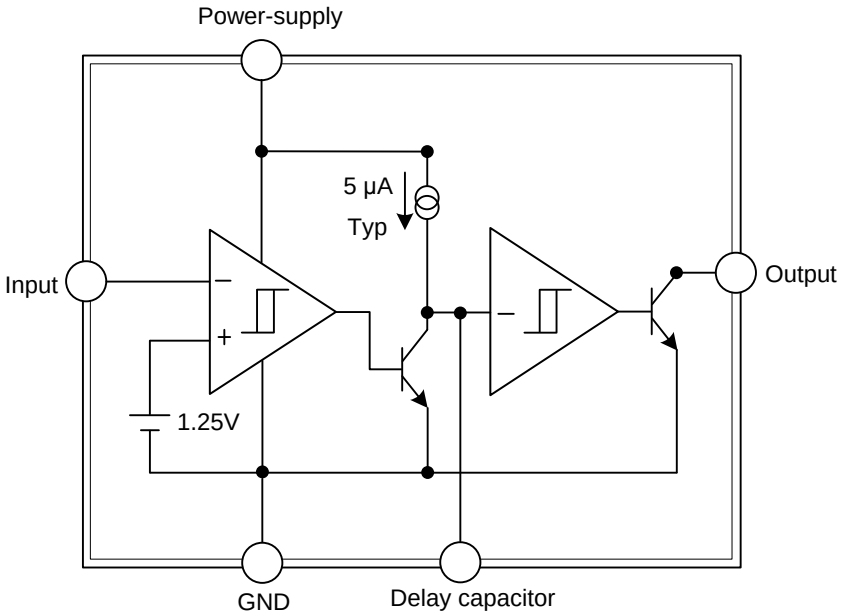
■ PIN CONFIGURATION



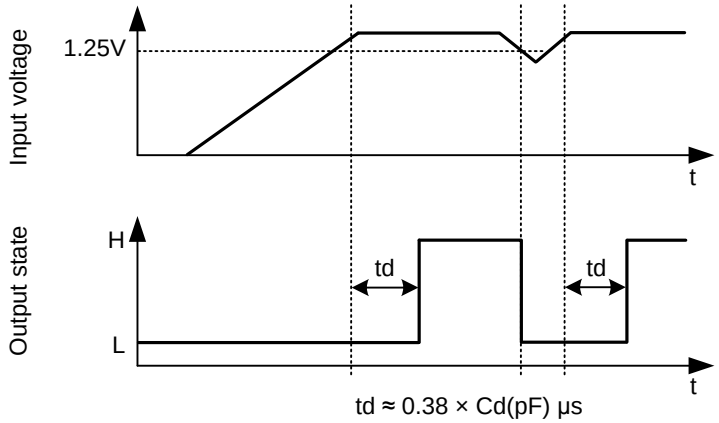
■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1, 3, 8	NC	No Connection
2	Input	Input Voltage
4	GND	Ground
5	Delay capacitor	External Delay Capacitor
6	Output	Output
7	Power-supply	Supply Voltage

■ BLOCK DIAGRAM



■ OPERATING WAVEFORM



td ≈ 0.38 × Cd(pF) μs

■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	18	V
Input Voltage Range	V_{CC}≤7V	V_{IN}	-0.3 ~ V_{CC}	V
	V_{CC}>7V		-0.3 ~ +7	V
Output Sink Current		I_{sink}	6	mA
Output Voltage		V_O	18	V
Power Dissipation		P_D	400	mW
Thermal Derating		Kθ	4.4	mW/°C
Operating Temperature		T_{OPR}	-40 ~ +85	°C
Storage Temperature		T_{STG}	-55 ~ +125	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Detecting Voltage	V_S			1.20	1.25	1.30	V
Hysteresis Voltage	Δ V_S	V_{CC}=5V		9	15	23	mV
Detecting Voltage Temperature Coefficient	V_S/△T				0.01		%/°C
Supply Voltage Range	V_{CC}			2		17	V
Input Voltage Range	V_{IN}	V_{CC}≤ 7V		-0.3		V_{CC}	V
		V_{CC}>7V		-0.3		7.0	V
Input Current	I_{IN}	V_{IN}=1.25V			100	500	nA
Circuit Current	I_{CC}	V_{CC}=5V			270	540	μA
Delay Time	t_{pd}	Cd=0.01μF (Note)		1.6	3.8	7.0	ms
Constant Current	I_{pd}	V_{CC}=5V		-8	-5	-3	μA
Output Saturation Voltage	V_{sat}	V_{CC}=5V, V_{IN}<1.2V, Isink=4mA			0.25	0.4	V
Threshold Operating Voltage	V_{OPL}	minimum supply voltage for IC operation	R_L=2.2kΩ, V_{SAT} ≤ 0.4V		0.67	0.8	V
			R_L=100kΩ, V_{SAT} ≤ 0.4V		0.55	0.7	V
Output Leakage Current	I_{OH}					30	nA

Note: Please set the desired delay time by attaching capacitor of the range between 4700pF and 10μF.

■ TYPICAL APPLICATION CIRCUIT

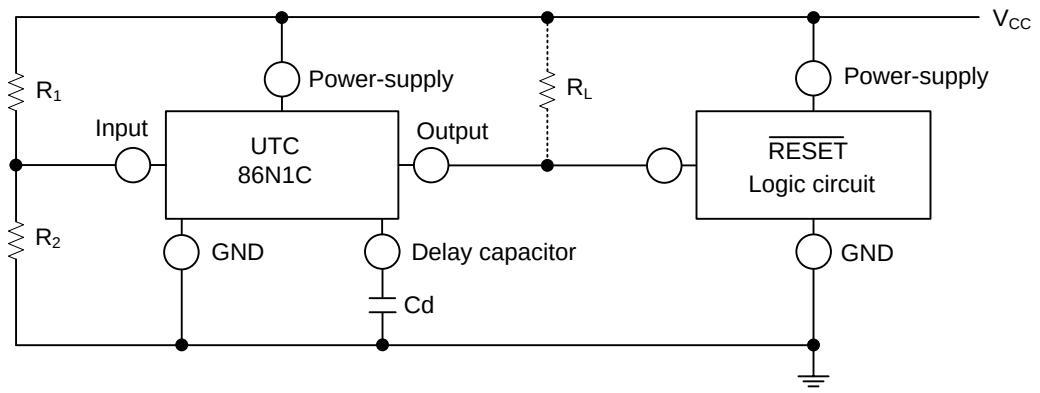


Figure 1 Reset Circuit of UTC 86N1C

Notes: 1. The detecting supply voltage is $V_S \times (R_1 + R_2)/R_2$ (V) approximately. V_S=1.25V (Typ)
The detecting supply voltage can be set between 2V and 15V.
2. The delay time is about 0.38×Cd (pF) μs.
3. The logic circuit preferably should not have a pull-down resistor, but if one is present, add load resistor R_L to overcome the pull-down resistor.
4. When a negative supply voltage is used, the supply voltage side of UTC **86N1C** and the GND side are connected to negative supply voltage respectively.

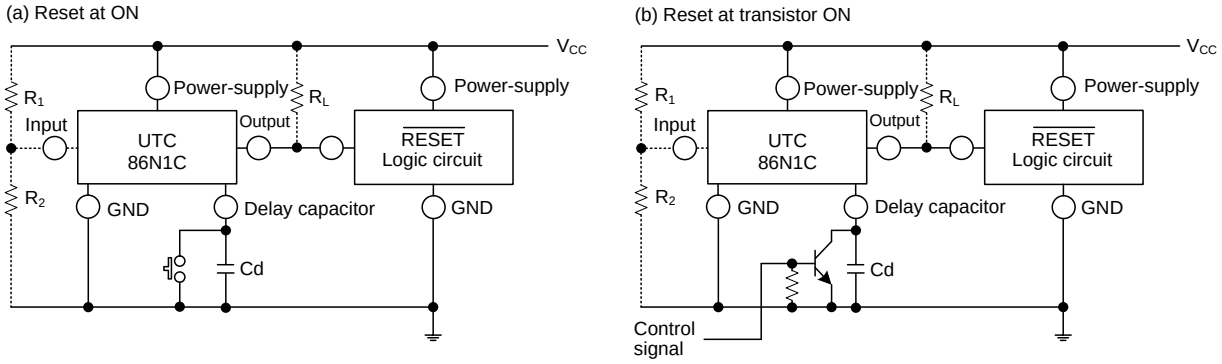


Figure 2 Case of Using Reset Signal except Supply Voltage in the UTC 86N1C

■ TYPICAL APPLICATION CIRCUIT (Cont.)

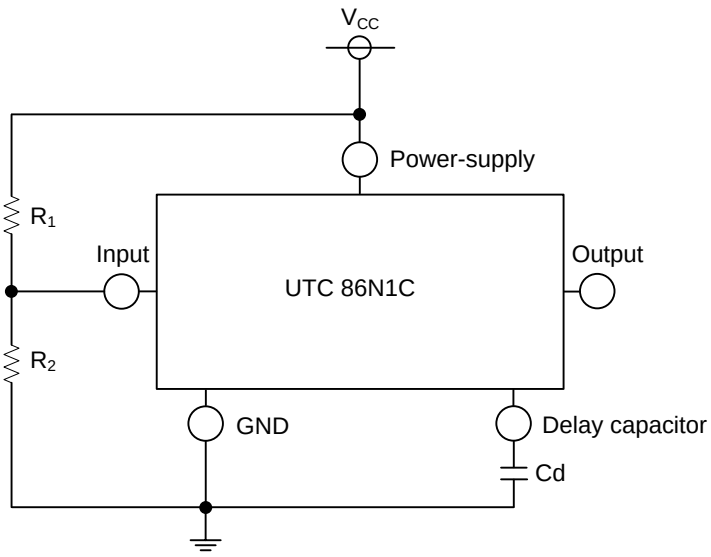
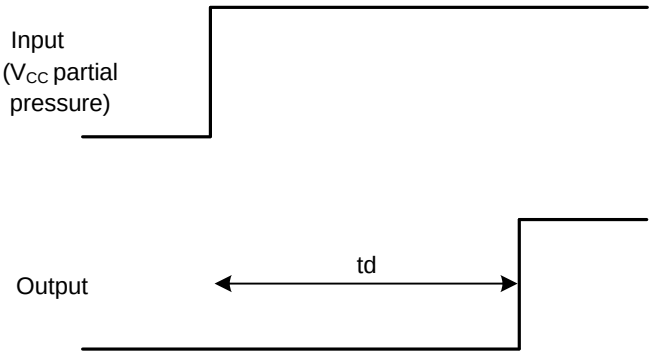


Figure 3 Delay Waveform Generating Circuit

Note: 1. When UTC **86N1C** are used, a waveform with a large delay time can generate only by adding a small capacitor.

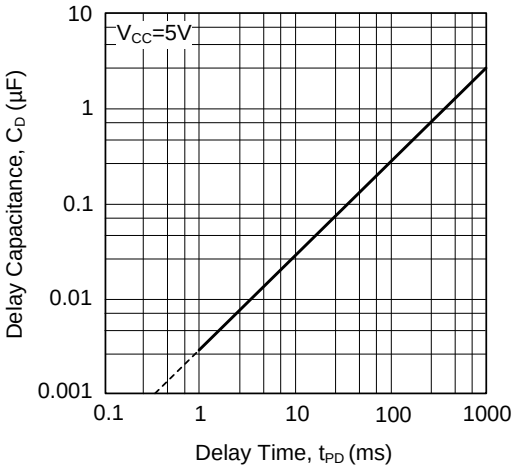


$td \approx 0.38 \times Cd(pF)\ \mu s$

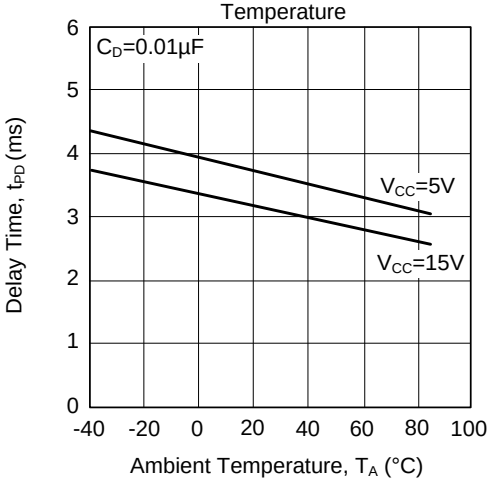
Figure 4 Operating Waveform

■ TYPICAL CHARACTERISTICS

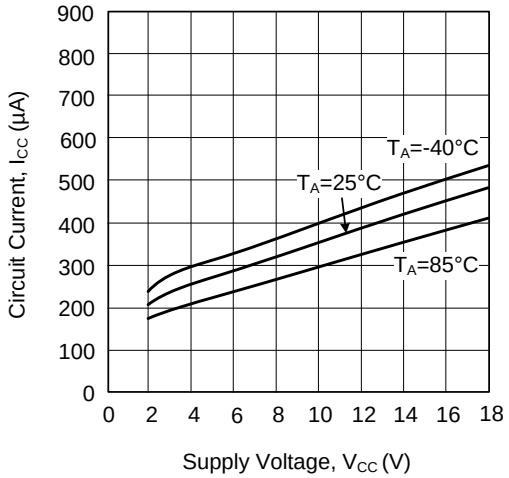
Delay Capacitance vs. Delay Time



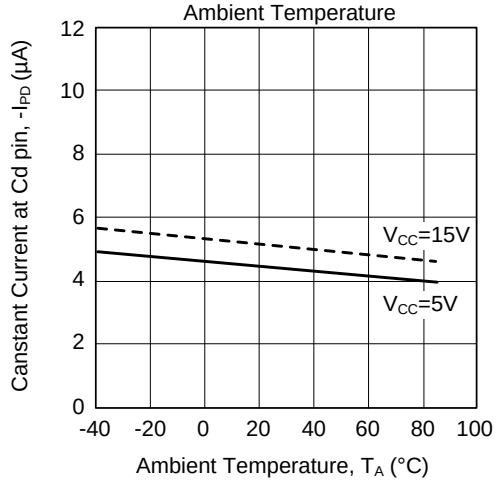
Delay Time vs. Ambient Temperature



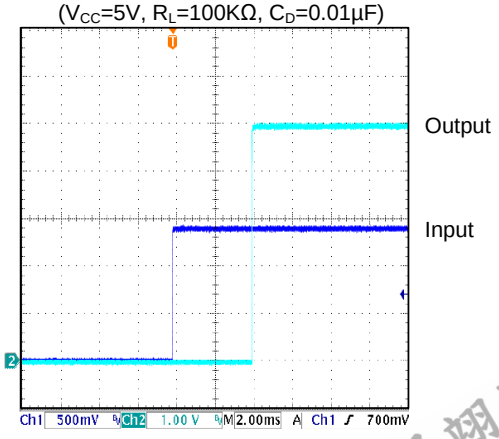
Circuit Current vs. Supply Voltage



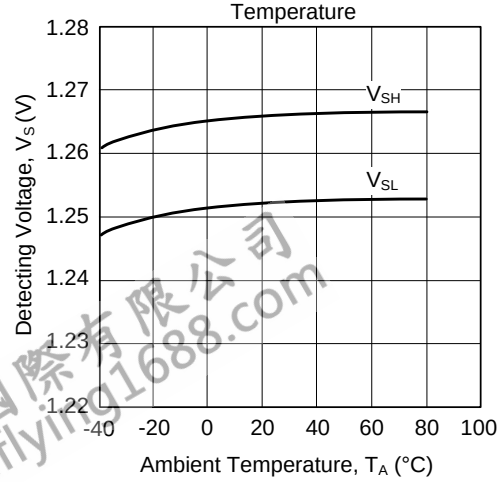
Canstant Current at Cd pin vs. Ambient Temperature



Delay Time
(V_{CC}=5V, R_L=100KΩ, C_D=0.01μF)



Detecting Voltage vs. Ambient Temperature



■ TYPICAL CHARACTERISTICS