



## UU4761

CMOS IC

### FLASHER IC

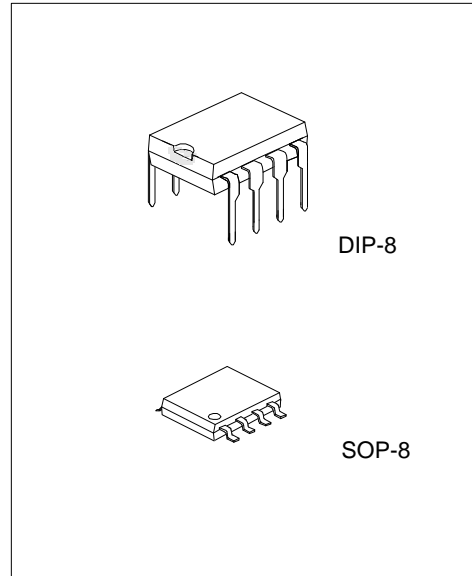
#### DESCRIPTION

The UTC **UU4761** is a microconductor integrated circuit designed for relay-controlled automotive flashers where a high level EMC is required.

Lamp outage is indicated by frequency doubling during hazard warning as well as direction mode.

#### FEATURES

- \* The static operating current < 5mA
- \* Wide operating voltage range
- \* Very low susceptibility to EMI



#### ORDERING INFORMATION

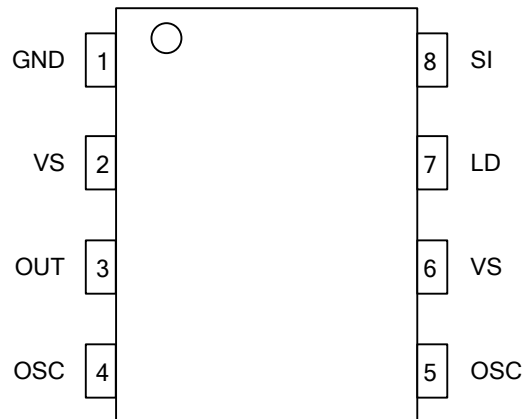
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UU4761L-D08-T	UU4761G-D08-T	DIP-8	Tube
UU4761L-S08-R	UU4761G-S08-R	SOP-8	Tape Reel

<p>UU4761G-D08-T</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel, T: Tube</li> <li>(2) D08: DIP-8, S08: SOP-8</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
--	--

#### MARKING

DIP-8	SOP-8

## ■ PIN CONFIGURATION



## ■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	GND	IC ground
2	VS	Supply voltage
3	OUT	Relay driver
4	OSC	C <sub>1</sub> Oscillator
5	OSC	R <sub>1</sub> Oscillator
6	VS	Supply voltage, Sense
7	LD	Lamp outage detection
8	SI	Start input (49a)

■ **ELECTRICAL CHARACTERISTICS** ( $V_{BATT}=13.5V$ ,  $T_A=25^{\circ}C$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	$V_{BATT}$	Pin 2 and 6	9.5	13	18	V
Supply Current	$I_{CC}$	R=2L (Note 1)		150		mA
		R=L (Note 1)		30		
Output Current	$I_{OH}$	$R_J=100\Omega$ , Pin4=GND, Pin7=GND (Note 2)		120	200	mA
	$I_{OL}$	$R_J=100\Omega$ , Pin4=GND, Pin7= $V_{CC}$ (Note 2)		10	100	$\mu A$
Flasher Frequency		R1=120K $\Omega$ , C1=3.3 $\mu F$ , R=2L (Note 1)	70	80	90	T/M
		R1=120K $\Omega$ , C1=3.3 $\mu F$ , R=1L (Note 1)	140	160	180	T/M
Control Signal Threshold	$V_{Pin2} \sim V_{Pin7}$	$V_{Pin2}=13.5V$ , R3=330 $\Omega$		51		mV

Notes: 1. L for lamp 12V/21W.

2.  $R_J$  for relay coil resistance 100 $\Omega$ .

## ■ FUNCTIONAL DESCRIPTION

### Pin 7, Lamp outage detection

The lamp current is monitored via an external shunt resistor  $R_S$  and an internal comparator  $K_1$  with its reference voltage of typ. 51 mV ( $V_{SS} = 12V$ ). The outage of one lamp out of two lamps is detected according to the following calculation:

Nominal current of 1 lamp:  $21W / (V_{SS} = 12V)$ :  $I_{lamp} = 1.75A$

Nominal current of 2 lamps:  $2 \times 21W / (V_{SS} = 12V)$ :  $I_{lamp} = 3.5A$ .

The detection threshold is recommended to be set in the middle of the current range:  $I_{outage} \approx 2.7A$ .

Thus the shunt resistor is calculated as:

$$R_S = V_T (K1) / I_{outage}$$

$$R_S = 51mV / 2.7A = 18.9m\Omega.$$

### Pin 4 and 5 Oscillator ( $C_1$ and $R_1$ )

Flashing frequency,  $f_1$ , is determined by the  $R_1 C_1$  components as follows (see Application Circuit):

$$f_1 \approx \frac{1}{R_1 \times C_1 \times 1.5} \text{ Hz}$$

where  $C_1 \leq 47\mu F$

$$R_1 = 6.8k\Omega \text{ to } 510k\Omega$$

In case of a lamp outage, the oscillator frequency is switched to the lamp outage frequency  $f_2$  with  $f_2 \approx 2.2 \times f_1$ .

Duty cycle in normal flashing mode: 50%

Duty cycle in lamp outage mode: 40% (bright phase)

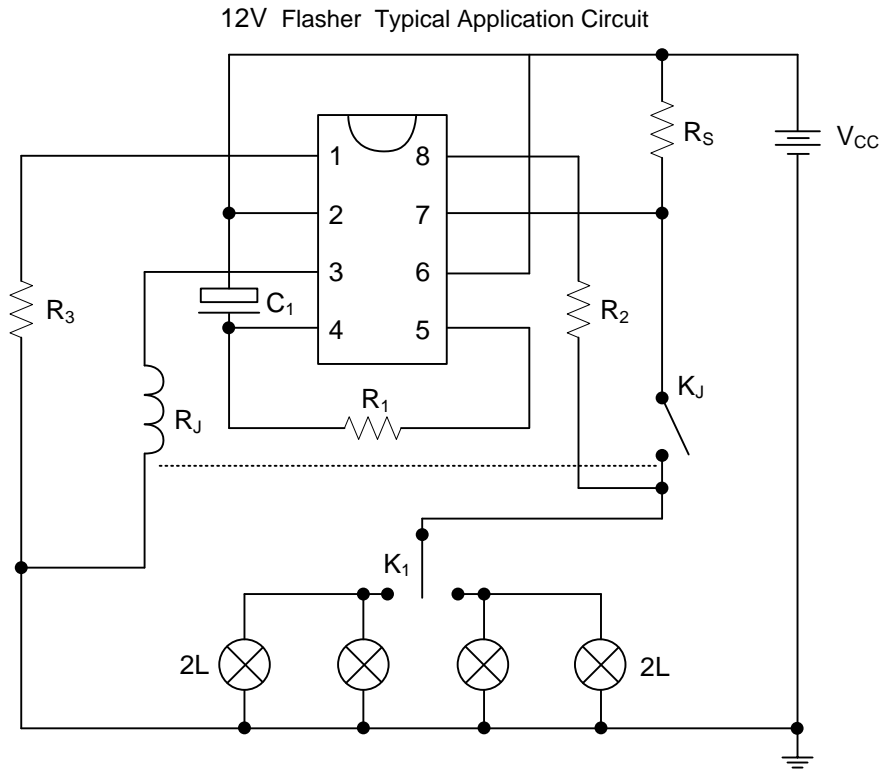
## ■ TYPICAL APPLICATION CIRCUIT

### 12V Flasher

$R_1=91K\Omega$ ~ $120K\Omega$ ,  $R_2=3.0K\Omega$ ,  $R_3=330\Omega$ ,  $R_s=0.019\Omega$

$R_J$ ,  $K_J$  for relay, Coil resistance  $R_J=100\Omega$

L for lamp 12V/21W



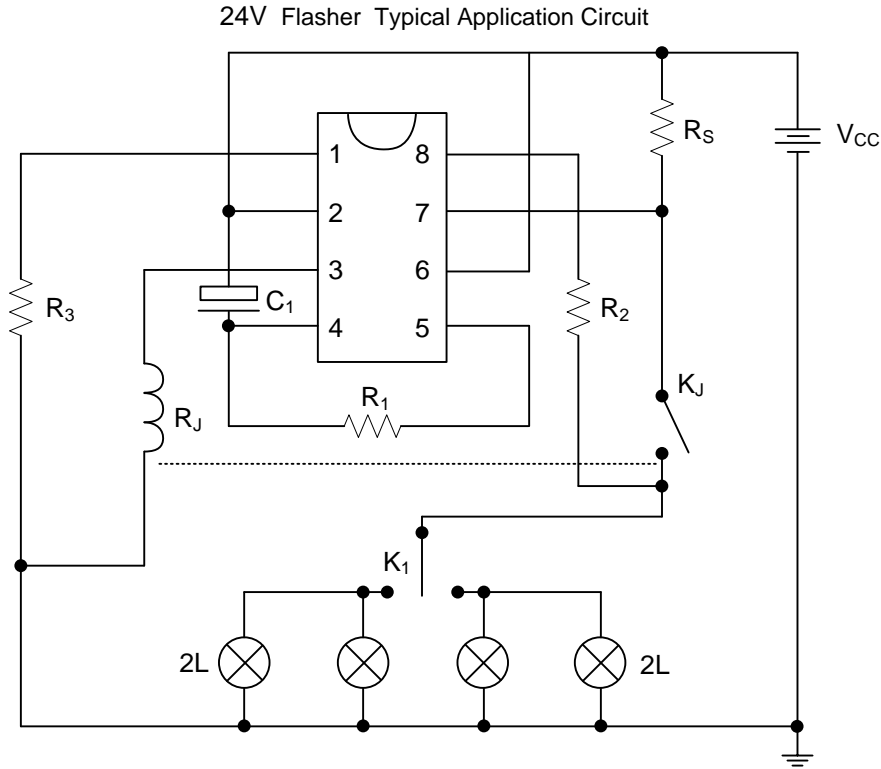
■ **TYPICAL APPLICATION CIRCUIT (Cont.)**

**24V Flasher**

$R_1=91K\Omega$ ~ $120K\Omega$ ,  $R_2=3.0K\Omega$ ,  $R_3=1.2K\Omega$ ,  $R_s=0.038\Omega$

$R_J$ ,  $K_J$  for relay, Coil resistance  $R_J=300\Omega$ ~ $360\Omega$

L for lamp 24V/21W



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.