



M30001

Preliminary

CMOS IC

PIR INFRARED REMOTE CONTROL CIRCUIT

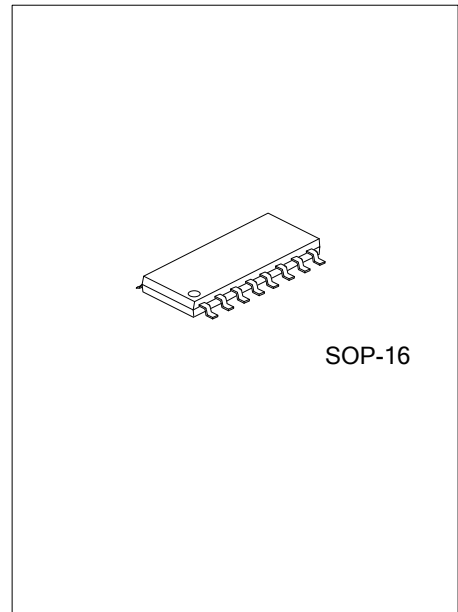
DESCRIPTION

The UTC **M30001** is a passive infra-red controller using analog mixing digital design technique and is manufactured by CMOS process.

The UTC **M30001** needs only few external components in application circuit. It can be applied in controller of light, electric switching, burglar alarm, and so on.

FEATURES

- * Low stand-by current < 50uA @ 3.0V
- * CMOS High Input Impedance Operational Amplifiers
- * Bi-Directional Level Detector / Excellent noise Immunity
- * Built-in Power up Disable & Output Pulse Control Logic
- * Dual Mode : Retriggerable & Non-Retriggerable

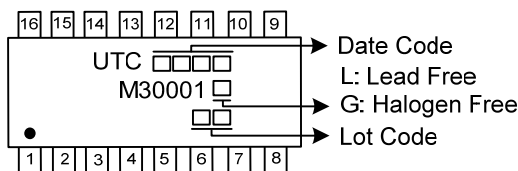


ORDERING INFORMATION

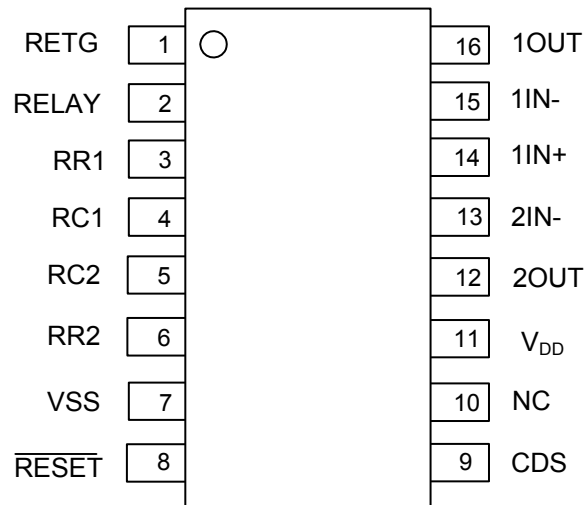
Ordering Number		Package	Packing
Lead Free	Halogen Free		
M30001L-S16-R	M30001G-S16-R	SOP-16	Tape Reel

<p>M30001G-S16-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) S16: SOP-16 (3) G: Halogen Free and Lead Free, L: Lead Free
--	--

MARKING



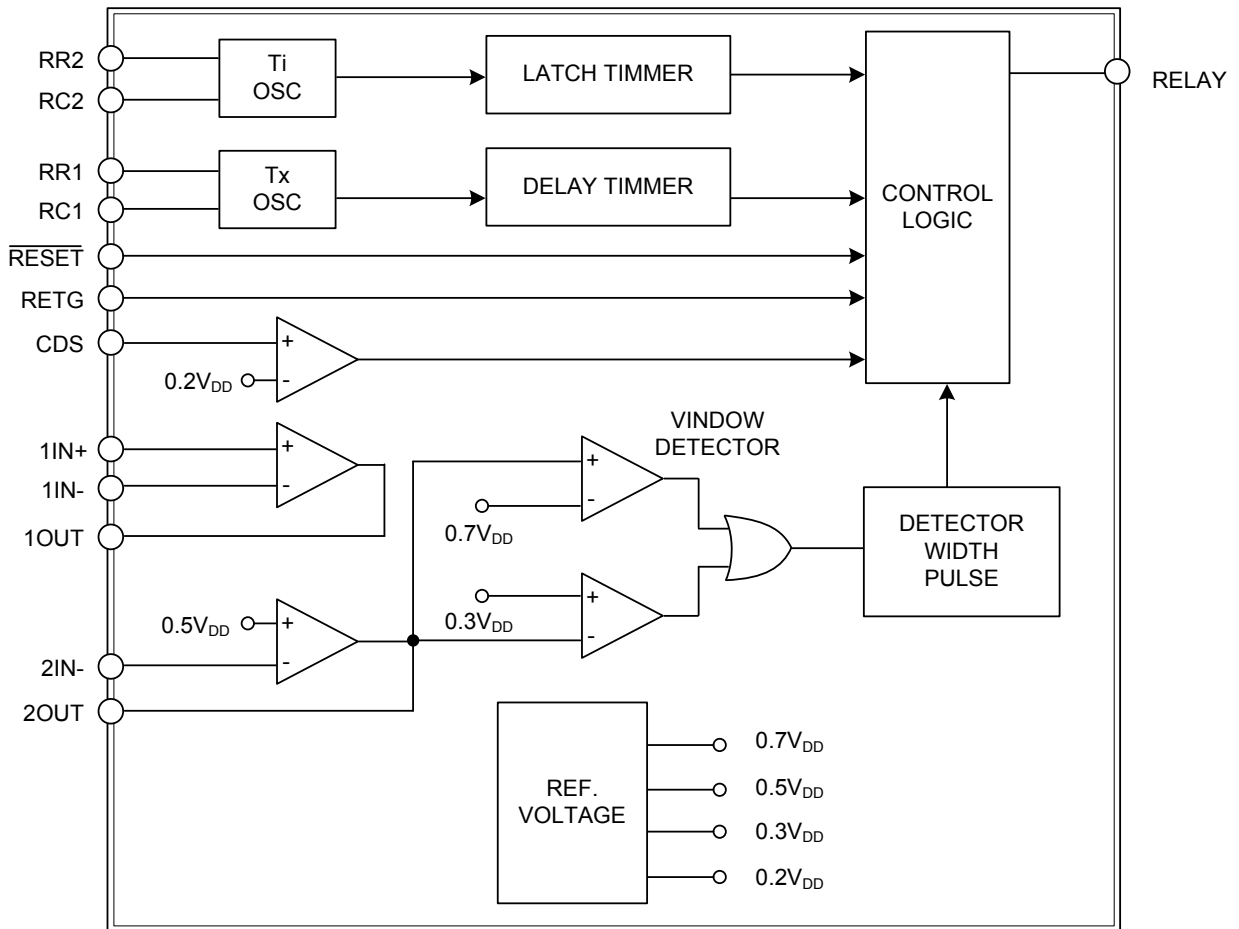
■ PIN CONFIGURATIONS



■ PIN DESCRIPTIONS

PIN NO.	PIN NAME	I/O	PIN DESCRIPTION
1	RETG	I	Trigger type selection VDD: Retrigger; VSS: Non-Retrigger
2	Relay	O	Relay driver output through external NPN transistor. Active high.
3, 4	RR1/ RC1	—	Delay timing oscillator connect to external RC to adjust output active duration when triggered. output active duration $T_x \approx 110000 \times R_{10} \times C_6$ °
5, 6	RC2/ RR2	—	Trigger latch timing oscillator connect to external RC to adjust latch active duration when triggered. latch active duration $T_i \approx 110 \times R_9 \times C_7$ °
7	VSS	—	Negative power supply
8	RESET	I	Normally connect to VDD, connect to VSS to reset Timer.
9	CDS	I	Connect to the CDS voltage divider for daytime/night auto detecting. When $V_{cds} < V_R$ daytime : When $V_{cds} > V_R$ night ($V_R \approx 0.2V_{DD}$)
11	V_{DD}	—	Positive power supply
12	2OUT	O	2 nd Stage Operation amplifier output
13	2IN-	I	2 nd Stage Operation amplifier negative input
14	1IN+	I	First Stage Operation amplifier positive input
15	1IN-	I	First Stage Operation amplifier negative input
16	1OUT	O	First Stage Operation amplifier output

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Power Supply V_{DD} With Respect to V_{SS}	$V_{DD} - V_{SS}$	6	V
Voltage On Any Pin		-0.3 ~ 6	V
Operating Temperature	Top	-20 ~ 70	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 ~ 150	$^\circ\text{C}$

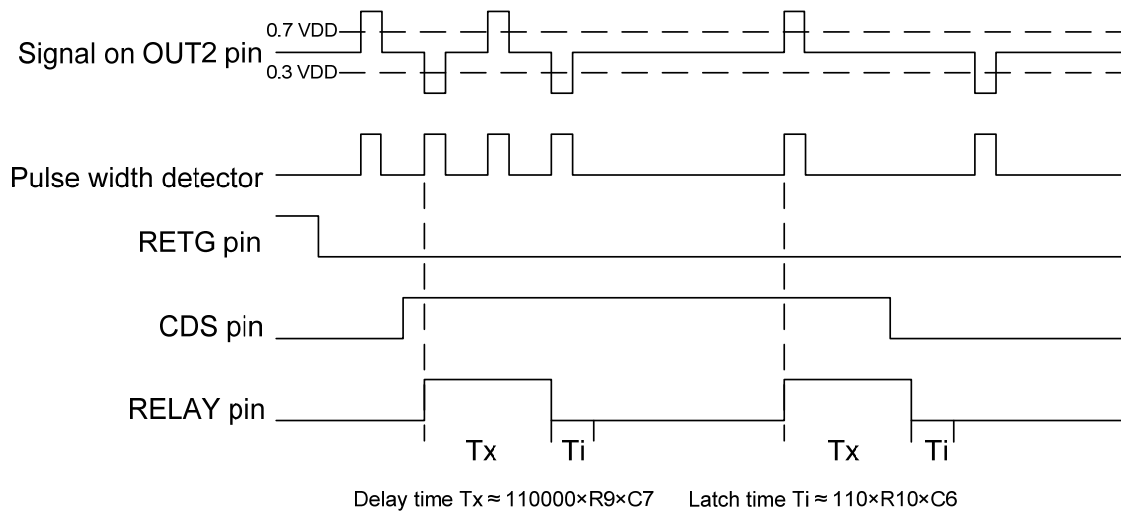
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{DD}		2.0	4.5	5.5	V
Operating Current	I_{DD}	No load @3.0V			50	μA
		No load @5.0V			70	
"H" Transfer Voltage	V_{IH}			$0.7 V_{DD}$		V
"L" Transfer Voltage	V_{IL}			$0.3 V_{DD}$	$0.3 V_{DD}$	V
OP Amp Open Loop Gain	A_{VO}	No load	60	80		dB
OP Amp Input Offset Voltage	V_{OS}	No load		10	35	mV
CDS "H" Transfer Voltage	V_{cds+}			$0.2 V_{DD}$		V
Relay Source Current	I_{RS}				10	mA

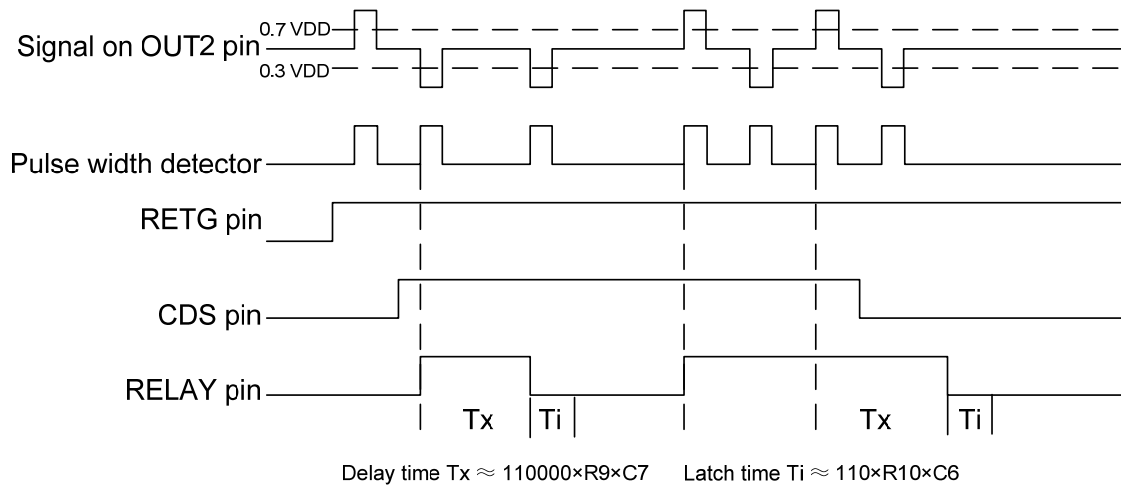
■ FUNCTIONAL DESCRIPTIONS

1. Non-Retriggerable mode



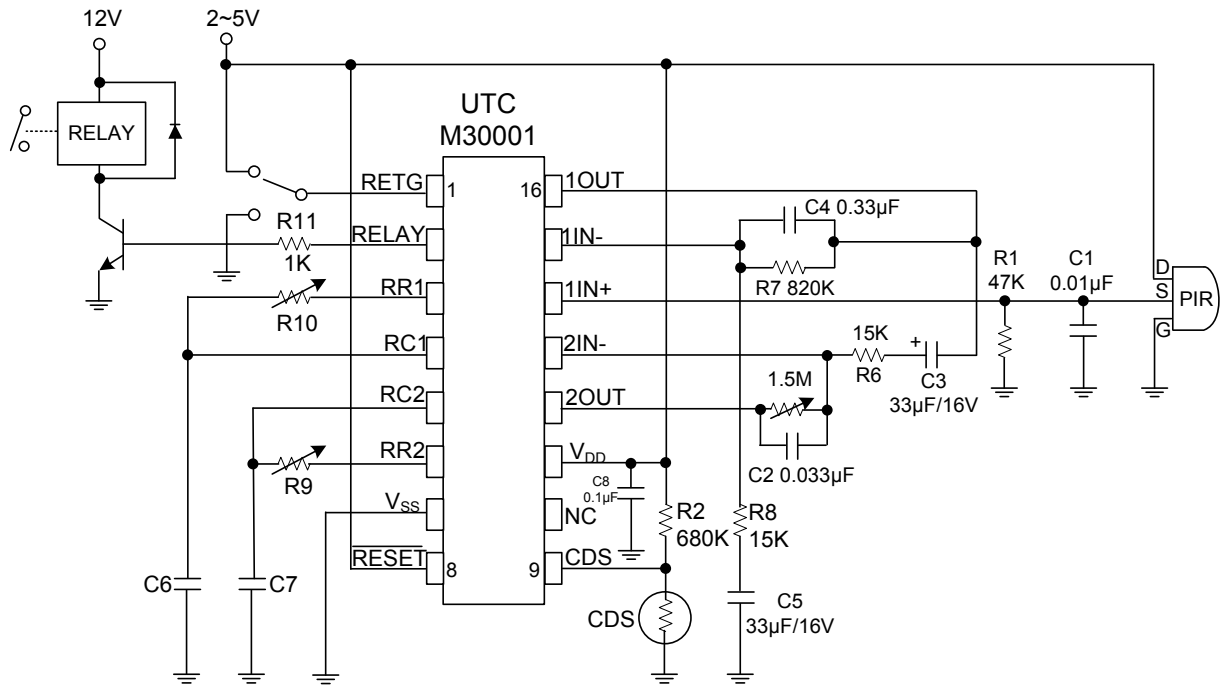
Non-Retriggerable Waveform

2. Re-Triggerable Mode



Retriggerable Waveform

■ TYPICAL APPLICATIONS CIRCUIT



Delay Time

C6=100pF			R10=360KΩ		
R10	F _{TX}	T _X	C6	F _{TX}	T _X
820 KΩ	5.8 KHz	9 sec	250 pF	5.6 KHz	9 sec
750 KΩ	6.3 KHz	8 sec	200 pF	6.3 KHz	8 sec
680 KΩ	6.8 KHz	7.5 sec	180 pF	7.2 KHz	7 sec
560 KΩ	8.3 KHz	6 sec	150 pF	8.4 KHz	6 sec
430 KΩ	10.6 KHz	5 sec	120 pF	10.2 KHz	5 sec
300 KΩ	15.4 KHz	3.5 sec	82 pF	14.7 KHz	4 sec
270 KΩ	16.9 KHz	3 sec	68 pF	17.9 KHz	3 sec
180 KΩ	25.0 KHz	2 sec	47 pF	25.8 KHz	2 sec
100 KΩ	48.8 KHz	1.5 sec	33 pF	37.3 KHz	1.5 sec

Latch Time

C7=0.1uF		
R9	F _{TI}	T _I
820 KΩ	6 Hz	9 sec
750 KΩ	6.4 Hz	7.5 sec
680 KΩ	6.8 Hz	6 sec
560 KΩ	8.4 Hz	5 sec
430 KΩ	11.1 Hz	4 sec
270 KΩ	17.8 Hz	2 sec

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.