



DC PIR CONTROLLER

GENERAL DESCRIPTION 功能敘述

The M7615 is a low power PIR (passive infra-red) controller with hi level output , paired with M3766 for battery power door bell / relay /alarm application. With special noise immunity technique , M7615 is the most stable PIR controller you can find on the market. More than this , there are few components needed in its application circuit which can reduce material cost and increase competitive.

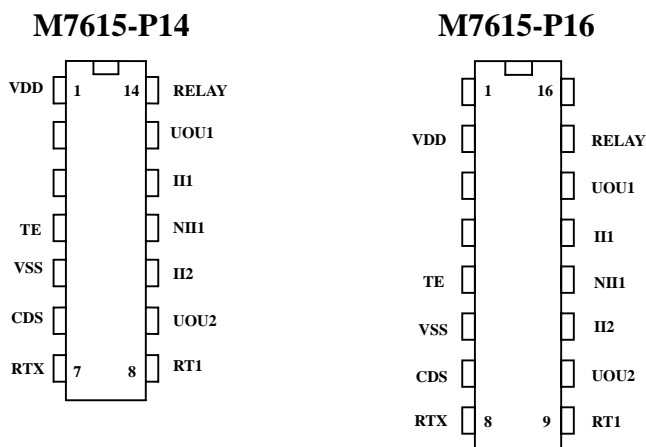
FEATURES 產品特長

- High noise immunity.
- Low stand-by current < 90uA
- Drive either Relay.
- Adjustable play on duration and latch duration.
- On-chip voltage regulator.
- 20 second warm-up.
- CDS input conditionally.
- 14 / 16 pin DIP or SOP package.

APPLICATIONS 產品應用

- PIR light controller , Motion Detector , Alarm system , Auto-door bell.

PIN ASSIGNMENT





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PIN DESCRIPTION

Pin Name	I/O	Description	Pin No.	
			14 Pin	16 Pin
VDD		Operation voltage: 5V, Stand by current: 80 ~ 90uA	1	2
TE	I	TE = 1M Ω	4	5
VSS		System ground.	5	6
CDS	I	Connect to a CDS for inhibit , when Vinhi = 0 disable , Vinhi = 1 enable trigger	6	7
RTX	I	Delay timer oscillator input The delay time of receiving PIR signal to trigger Encoder or a high signal to trigger relay. The range for: RTX=2 K Ω ~ 5 M Ω CTX=100P ~ 0.01UF FOR 100P or 0.01uf delay time=45000 R*C FOR 1000P delay time=35000 R*C Delay Time: 20 ms ~ 2250s Ex: CTX=100p, RTX=680K Ω , Delay Time=3.1s CTX=1000p, RTX=100K Ω , Delay Time=3.5s CTX=0.01uf, RTX=10K Ω , Delay Time=4.5s	7	8
RTI	I	Latch timer oscillator input The latch time of the range for: RTI=100 K Ω ~ 1 M Ω CTI=0.1UF(fix) Contain Time=35 R*C Contain time: > 0.5s ~ Ex: CTI=0.1uf, RTI=1M Ω , Contain Time=3.5s	8	9
UOU2	O	2 nd stage OP amp output.	9	10
II2	I	2 nd stage OP amp negative input.	10	11
NI1	I	1st stage OP amp positive input.	11	12
II1	I	1st stage OP amp negative input.	12	13
UOU1	I	1st stage OP amp output.	13	14
RELAY	O	To drive relay , active high.	14	15



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Delay timing and Latch timing oscillator input pin , connect to external RC to obtain desired delay duration.

Variable delay (latch) duration can be obtained by selecting various values of RC or using a variable resistor.

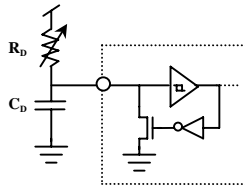


Fig.1 Timing Oscillator

The PIR signal amplifier needs a warm up period after power-on, so during this time the input should be disabled

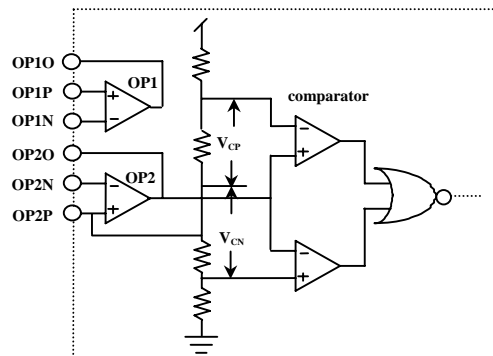
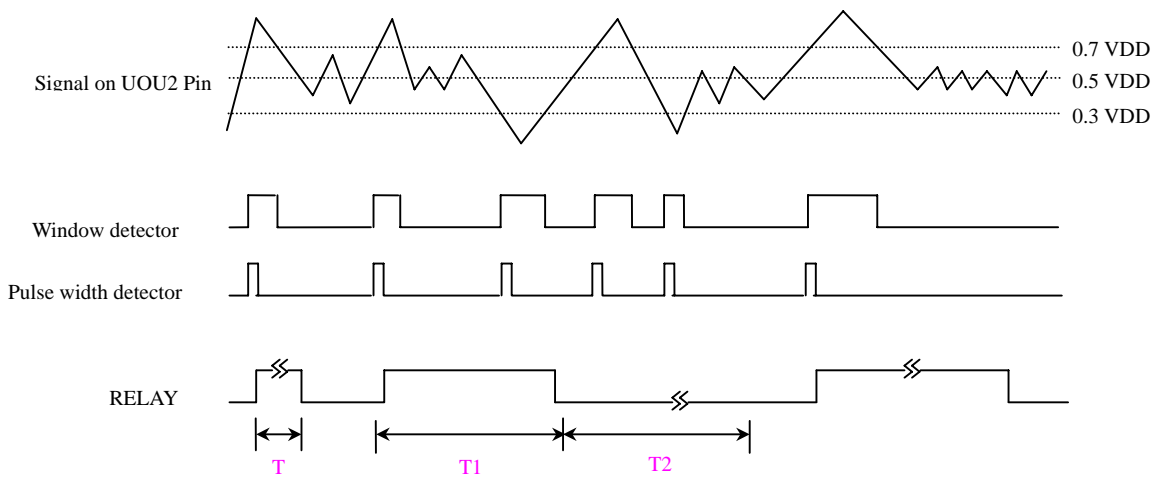


Fig.2 PIR Amplifier Block Diagram

TIMING RELATIONSHIP :



T1 : Delay Time

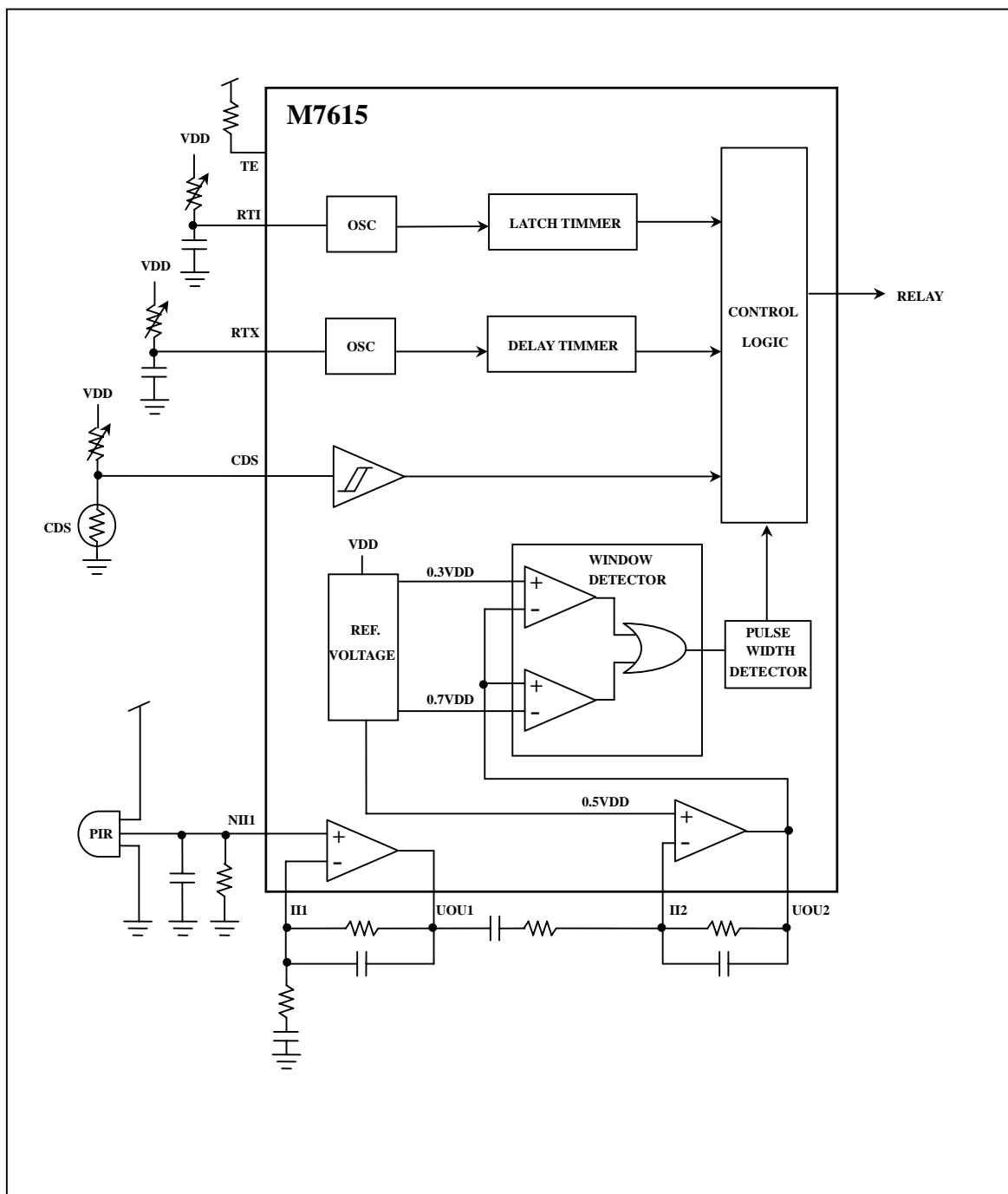
T2 : Latch (Contain)Time

T : Warm Up Time (≤20s)



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BLOCK DIAGRAM





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ABSOLUTE MAXIMUM RATING

(TA=25°C)

Parameter	Sym.	Rating	Unit
Power Supply V_{DD} With Respect to V_{SS}	$V_{DD} - V_{SS}$	5.6	V
Voltage On Any Pin		-0.3 to 5.6	V
Operating Temperature	Top	-20 to 70	°C
Storage Temperature		-65 to 150	°C

ELECTRICAL CHARACTERISTICS

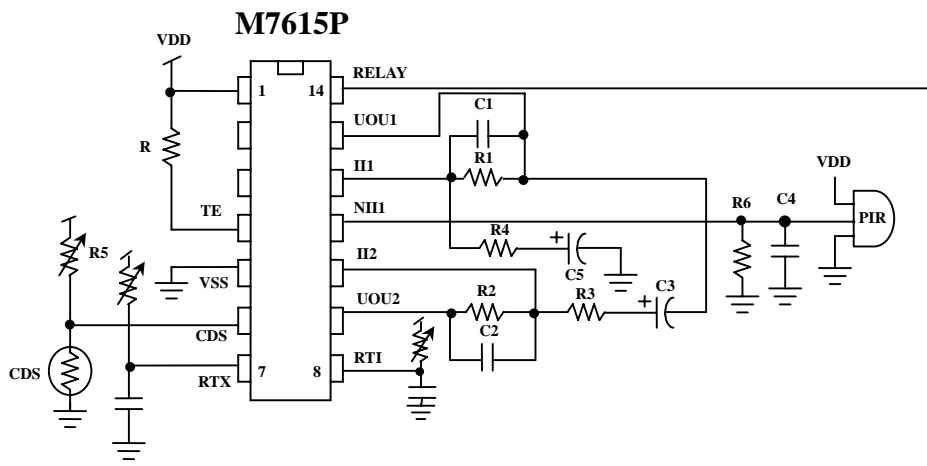
Characteristics	Sym.	Min.	Typ.	Max.	Unit	Conditions
Supply Voltage	V_{DD}	4.2	5	5.5	V	
Stand by Current	I_{ST}	—	—	100	uA	
Operating Current	I_{DD}	1.8	—	2.5	mA	
Stable Voltage	V_{REF}	2.1	2.5	2.75	V	$V_{DD} > 4.2V$
Source Current of V_{REF}	I_{REF}	200	—	—	uA	
Ripple of V_{REF}		—	—	0.5	mV	
Input and Output Regulation of V_{REF}		—	—	0.3%		
Time Delay Frequency	F_{RTX}	15	16	17	KHz	For Delay 3s
Time Latch Frequency	F_{RTI}	15	16	17	Hz	For Contain 3s
CDS Operating Trigger	V_{T+}	1.3	1.7	2.1	V	
CDS Operating Trigger	V_{T-}	0.6	0.9	1.1	V	
CDS Source Current	I_{CDS}	2.6	3.5	4.4	uA	
CDS Output Source Current	I_{SOURCE}	9	10.4	17.4	mA	
CDS Output Sink Current	I_{SINK}	11.6	13	21	mA	
Relay Source Current	I_{RS}	—	—	10	mA	
Relay Sink Current	I_{RSINK}	—	—	10	mA	
Relay Operating Voltage	V_{RO}	13.1	—	18.8	V	



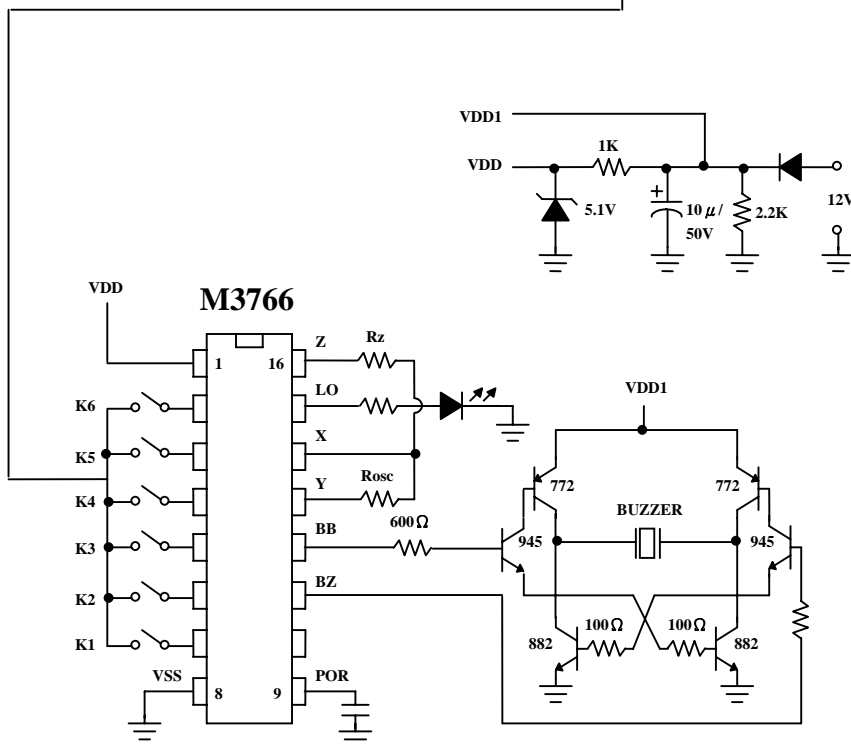
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APPLICATION DIAGRAM 參考電路圖

(A)



C1	0.033uF	R1	820KΩ
C2	0.033uF	R2	820KΩ
C3	33uF/16V	R3	15KΩ
C4	0.01uF	R4	15KΩ
C5	33uF/16V	R5	680KΩ
R	1MΩ	R6	47 KΩ

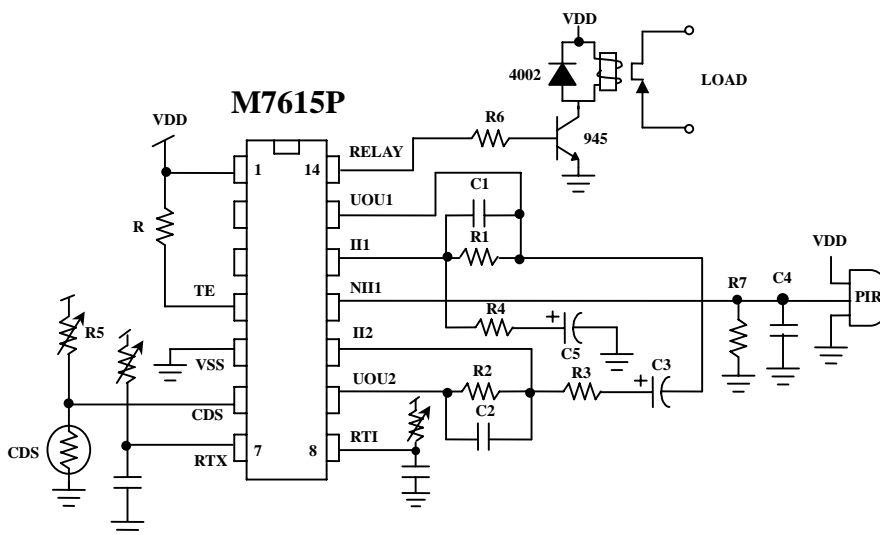


*ALARM : M3766



DC PIR CONTROLLER

(B)



C1	0.033uF	R1	820KΩ
C2	0.033uF	R2	820KΩ
C3	33uF/16V	R3	15KΩ
C4	0.01uF	R4	15KΩ
C5	33uF/16V	R5	680KΩ
R	1MΩ	R6	22 KΩ
		R7	47 KΩ

* All specs and applications shown above subject to change without prior notice.
(以上電路及規格僅供參考,本公司得逕行修正)