

Re: How to design an infra-red circuit to detect small obstacle (e.g. finger) ?

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2005-02/3566.html>

From: Brian (brian_at_w3gate.com)

Date: 02/14/05

Date: Mon, 14 Feb 2005 01:56:01 -0600

I think Holtek makes IR transmitter ic's that would work well too.

"Larry Brasfield" <donotspam_larry_brasfield@hotmail.com> wrote in message news:D8RPd.479\$Kd4.1654@news.uswest.net...

> "anwar" <anwar09@yahoo.com> wrote in message
> news:1108333459.965812.199980@o13g2000cwo.googlegroups.com...
>> Larry,
>> - I do need a narrow detection indeed. So if I have a 2 feet
>> separation and there is a narrow beam where if someone place a finger
>> or pass his finger thru the narrow beam quickly it should detect that.
>>
>> - As per level of gain- I need to make a sound of a certain frequency
>> when the obstacle is detected.
>>
>> So, if you can please provide me details on how to make a circuit like
>> that it will be wonderful.
>
> I'm not going to do the detail design or any simulation
> on this. I have built similar circuits and used the NE567
> in this manner, so I can assure you that this technique
> will work with appropriate design and adjustments for
> your specific application.
>
> The NE567 provides these functional blocks:
> 1. An RC oscillator with a useful semi-digital output on
> pin 5. This can drive a low-power LED directly or, with
> an extra transistor, as much as your LED can take.
> 2. A synchronous demodulator, multiplying the signal on
> pin 3 to produce filtered baseband on pin 1. You can
> set the demodulator bandwidth according to how fast
> you want detection to happen versus how much out-of-
> band noise you wish to reject.
> 3. A reference and comparator to detect when the level
> on pin 3 exceeds a threshold, producing an open-collector
> output on pin 8.
>

sci.electronics.design: Re: How to design an infra-red circuit to detect small obstacle (e.g. finger) ?

> You most likely need to provide some gain between the
> photocurrent signal and pin 3 of the NE567. The net
> response of that stage, from photo-current to pin 3,
> should have 90 degrees of phase shift to work well
> with the NE567 demodulator. (That might be 270
> degrees, so the LED might have to be turned around
> or the polarity of its BJT driver inverted.) For modest
> gain, a phototransistor can be used in a circuit with the
> following topology to provide this function:
>
> VCC
> +
> |
> .-.
> ||
> ||
> ':'
> .-----o
> |||
> .-. o-----||- PhotoRx
> |||
> |||
> |||
> '-'|
> ||/
> o-----|
> .-----o |>
> |||
> ---- .-. o----.
> --- |||
> |||.-.|
> |'-'| |----
> |||----
> '-----o '-'|
> |o----'
> ||
> ==== ===
> GND GND
> (created by AACircuit v1.28.4 beta 13/12/04 www.tech-chat.de)
>
> This can be done with a very compact layout near the
> receiving phototransistor to minimize noise pickup. The
> LED can be driven by some twisted pair.
>
> As for making a tone when pin 8 is driven low by
> detection of the beam, (or opened by interruption
> of the beam), I will leave that problem to you.
>
> --
> --Larry Brasfield
> email: donotspam_larry_brasfield@hotmail.com
> Above views may belong only to me.

Re: How to design an infra-red circuit to detect small obstacle (e.g. finger) ?

sci.electronics.design: Re: How to design an infra-red circuit to detect small obstacle (e.g. finger) ?

>
>