

Laser Flashlight Hack!!

by **Kipkay** on August 6, 2007

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intro: Laser Flashlight Hack!!

Turn a MiniMag flashlight into a powerful DVD laser pointer! This 245mw laser is powerful and fits real cozy in a MiniMag! See the video at the end for the Test Results!

NOTE: This Instructable WILL NOT WORK with any CD burner/player diodes or DVD player diodes!

See the FAQ on the last Step for common questions

[GET THE BURNING LASER DIODE HERE!](#)

[GET THE MINI-MAG FLASHLIGHT HERE](#)

UPDATE: If you want to use this as more than just a novelty item, a driver circuit is recommended. See the schematic for details.



Disclaimer: CAUTION! As you know...lasers can be dangerous. Never point them at any living object! This is not a toy, and this should not be used like a conventional laser pointer. In other words, don't use it in presentations, or to play with pets, or allow children to use it. It should only be operated by responsible persons who understand and respect the potential laser safety hazards.



step 1: What you need...

You will need the following items:

1. 16X DVD Burner. I used an LG burner I had as a spare.

or...

You can buy the Red LASER DIODE [HERE](#)



step 2: And...

2. A Mini-Mag Flashlight You can get one [HERE](#)
3. An AixiZ Laser Module. You can get one [HERE](#)
4. Small jewelers screwdrivers, X-Acto knife, metal snips, drill, round file and other small tools.

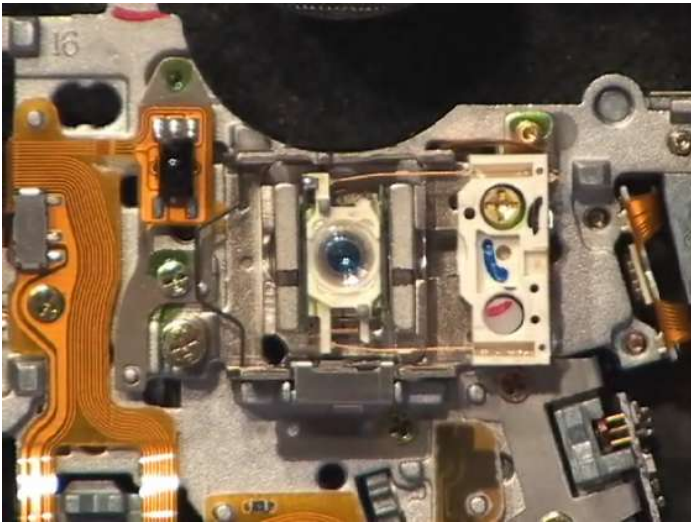


Image Notes

1. 650nm 5mw 12mm X 30mm

step 3: Extract the DVD Laser Diode

After removing all of the screws from the DVD burner, remove the cover and the DVD drawer. This will expose the laser carriage assembly.



step 4: Extract the Laser Diode..

While all DVD burners are a bit different, they all rely on 2 rails that the laser assembly moves on. Remove all screws and do whatever it takes to free up the rails so the laser assembly slides off. Disconnect or cut any cabling and flat connectors.

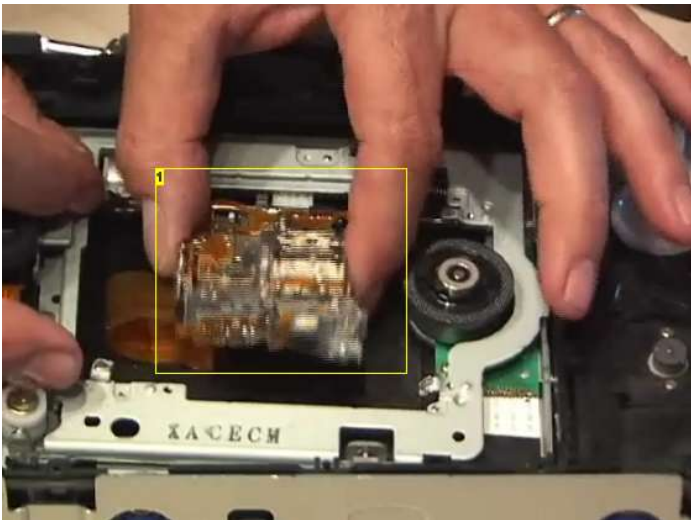


Image Notes

1. Laser Assembly

step 5: Continue extraction...

Once you have the assembly off of the burner it's time to start disassembling it by removing all the screws you see. There will be many small screws so be patient. Cut any flat cabling off. There could be two diodes, one for the CD portion of the burner (IR diode) and the actual DVD burning diode (red). That is the one you want. There will be a 3-pin circuit board on the red diode that you want to CAREFULLY remove with a soldering iron revealing 3 pins. You can test the diode with 2-AA batteries and referring to the polarity chart (on the video). You will have to remove the diode from the housing and that will be on a case-by-case basis depending on the burner. The laser diode is fragile so take care in the final extraction process.

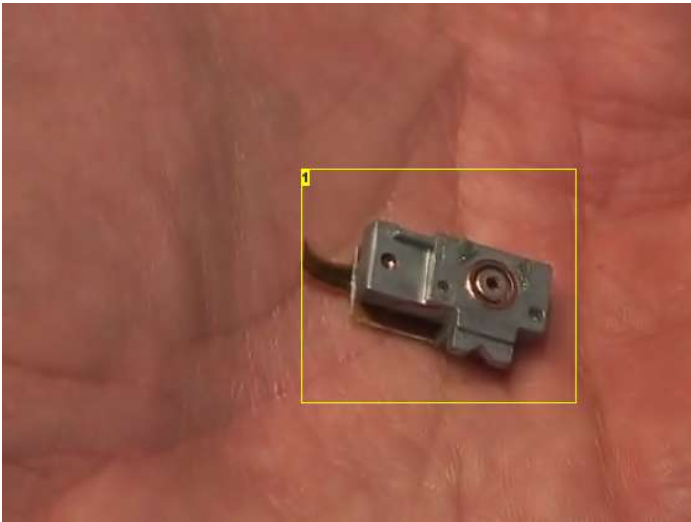


Image Notes

1. Typical laser diode assembly. They are usually all different.

step 6: The new DVD Laser Diode!

Here is what your extracting diode will look like!

You can get the burning LASER DIODE HERE



step 7: Preparing the AixiZ housing...

Remove the label from the AixiZ housing and unscrew the housing leaving a top and bottom portion of the housing. Inside the top housing is the original (5mw) laser diode that has to be removed. I used the bottom of an X-Acto knife and with a couple of sharp taps, the original diode will come out. It will likely be destroyed doing this but I have been successful in removing them before but using a very small screwdriver and tapping around the diode until it is freed up.

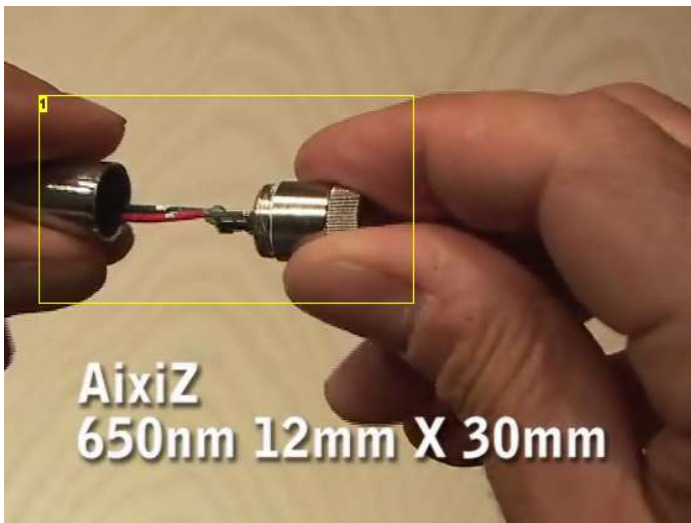


Image Notes

1. After removing the label, using pliers or vice grips, unscrew the housing.

step 8: Assembling the housing...

I used a little bit of Arctic Silver Thermal grease and slowly installed the new DVD diode in the AixiZ housing. Using a pair of pliers, I SLOWLY squeezed the edges of the diode down into the housing until it was flush. CAREFUL!

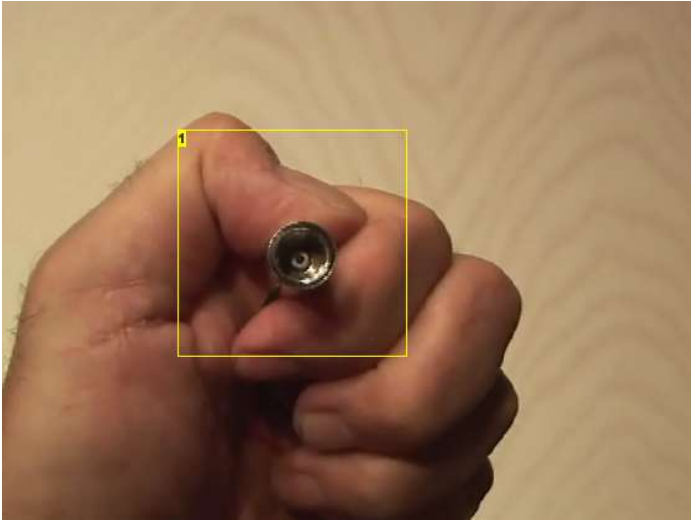


Image Notes

1. The new DVD laser installed in the AixiZ housing.

step 9: Installing it in your MiniMag!

After soldering two leads to the positive and negative diode connectors, it's time to install it in the MiniMag. After disassembling the MiniMag (remove the top, the reflector, lens and bulb) you will need to enlarge the MiniMag reflector using a reaming tool, round metal file or drill or a combination of all three.



step 10: Final Step!!

Be sure to remove the batteries from the MiniMag and after checking polarity, slip your new DVD Laser housing down into the top of the MiniMag where the bulb would go. Screw the top of the MiniMag on and slip the reflector over the Laser housing. You will not be using the plastic MiniMag lens.

UPDATE: If you intend to use this as more than just a novelty item, a driver circuit is recommended. Here is a basic driver circuit that can be built for this project which will regulate the voltage going to the diode.

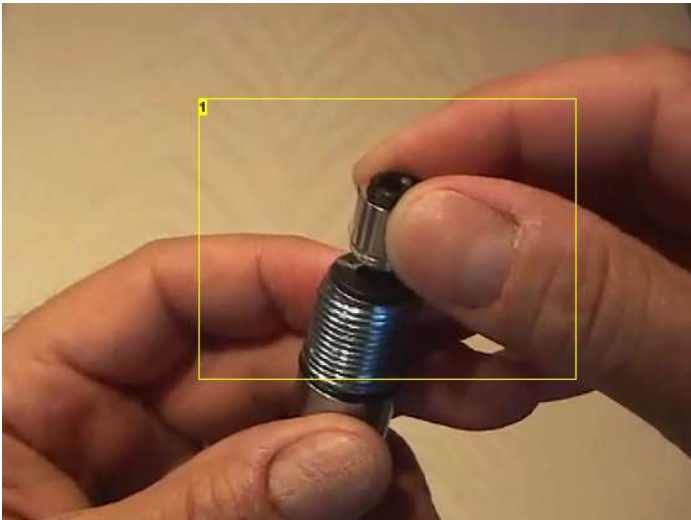
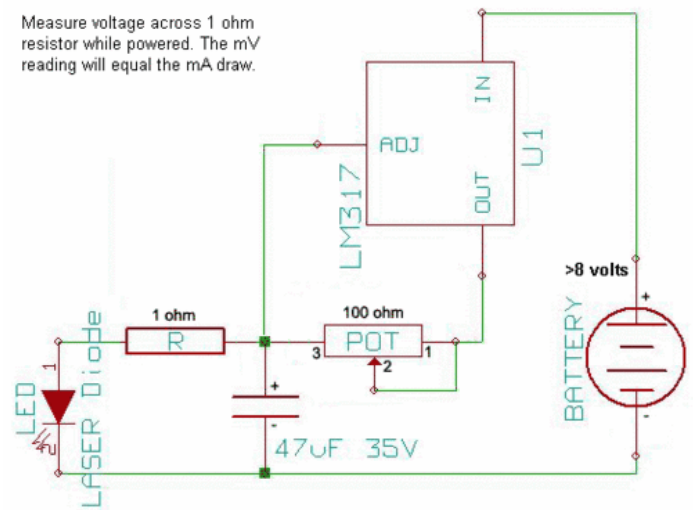


Image Notes

1. Be sure to double check the polarity of the diode before installing and powering it up! You may have to trim the leads. Also, note the adjustable lens to focus the beam



step 11: Test it out!!

Reinstall the 2-AA batteries and slowly unscrew the top of the MiniMag, turning on your new Laser Flashlight! Caution!! Laser diodes are dangerous and should never be pointed at any living thing. Thanks and I hope you enjoyed this Instructable!



step 12: FAQ

Here are the answers to common questions about this project.

Q. Can I use a CD player/burner or DVD player Diode.

A. No. Only a DVD burner diode 16x or faster will work.

Q. Do I need the Aixiz Housing?

A. Yes. It serves as a heatsink for the high-power diode and also the focusing element is essential.

Q. What happens to the existing circuit board that is inside the Aixiz housing?

A. It is not used for this project. You can keep it for a lower mA diode like a standard red laser pointer diode or just discard it.

Q. What's with the 'pins' you used?

A. The 'pins' are snippings from old resistors. You can use any sturdy wire. They are soldered to the diode and then inserted in the mini-mag plastic fitting that original held the mini-mag lightbulb.

Q. Can I use a regular laser pointer from the dollar store as the housing.

A. See the previous Question/Answer

Q. Can I use another type of flashlight?

A. Not sure. This project is based on the mini-mag.

Q. My diode is not burning anything. What did I do wrong?

A. In order for the diode to 'burn' it needs to be focused to a fine point and also the object needs to be black or marked black with a Sharpie.

Q. Why can't I see the beam like I can see in the video?

A. I used smoke to make the beam visible.

Q. Should I use a driver circuit?

A. The basis for this project was to show that you could use a diode from a DVD burner and put it in a flashlight and make it 'burn'. This is a novelty item and not designed for long-term or regular use. If you want to do that, a driver circuit is highly recommended.

For answers to any laser related questions, check with one of the popular forums like www.laserpointerforums.com

FAQ

Related Instructables



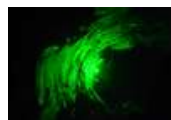
New 007 Laser Weapon - Revealed! by Kipkay



Blu-Ray Laser Phaser! by Kipkay



Extracting Blue Laser Diode from Xbox 360 HD-DVD Player (slideshow) by migetman121



Lasers (guide) by TimAnderson



How to make a high power burning blu-ray laser! Easy,cheap and focusable! by LaserRain



DIY Laser Projector - New Laser Mod (video) by pyro222



Pocket-Sized Do-it-all multi-tool Shiny Light (aka Laser) by cinnamon



\$100 Super Bright Flashlight for under \$10! by Kipkay

Comments

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112251919112 says:

What is the difference between a driver diode and a cd/dvd doide? is it more powerful? does it work better? is it hotter?

Jul 20, 2009. 12:08 PM [REPLY](#)



BSmitty358 says:

It takes a lot more power to burn a dvd rather than read it

Jul 23, 2009. 5:36 PM [REPLY](#)



bigern1990 says:

Hey Kipkay.

I plan on using my laser all the time. My friends and I are really into lasers like this. Would I be able to take the laser driver that is in the laser housing I purchased from mfgcn.com and use that as the driver for this diy? If so, that'd be great. If not, are there any "pre-made" drivers online I can use, or is it possible to use a driver from a \$1 store laser pen :p

Any help is greatly appreciated, if it weren't for your video I wouldn't be doing this in the first place.

Jul 22, 2009. 9:55 PM [REPLY](#)



heimo says:

Hello kipkay would that driver circuit you have posted in step 10 work for this laser diode

<http://za.rs-online.com/web/search/searchBrowseAction.html?method=getProduct&R=6541866>

Thanks

Jul 22, 2009. 6:13 AM [REPLY](#)



EdelRitter says:

How about a CD/DVD RW drive, will that work?

Jul 15, 2009. 10:34 AM [REPLY](#)



twjmiller says:

hey is there anywhere to buy the laser housing at a store or something? or a substitute that works in a store (no Internet buying :()

Mar 10, 2009. 4:39 PM [REPLY](#)



Kipkay says:

Not that I am aware of.

Mar 11, 2009. 5:54 AM [REPLY](#)



dr4g0nbre4th says:

Hey I live in new Zealand and I can't find most of the stuff I need and I can't buy things online so I don't know how I'm going to make a laser because they look so AWESOME

Jul 12, 2009. 11:13 PM [REPLY](#)




sukinmaru says:

Where on earth do I hook the driver up to (I made my own)?

I also bought a 200mw diode off eBAY along with an appropriet moduel. If this does'nt scotch a hole in a baloon or incinerate a match nothing will.

Someone skilled with electronics please tell me how to assemble this! I AM DESPERATE!!!

Jul 11, 2009. 8:16 PM [REPLY](#)


 **Stillphotog** says: Oct 17, 2007. 6:23 PM [REPLY](#)

Here's my variation on the final looks/mounting. Instead of relying on the reflector, and leaving the connections exposed more or less.

First off, I've used the original mag lens as a retaining ring. I cut a hole in it and expanded it out with a file until the laser lens fit through. This allows for a sturdy mount since the diode pins are held against the socket they're plugged into.

That means no more twist on /off, so I added a nice kroll tailswitch. Thick rubber cover, and you can press down slightly for momentary, or all the way to lock it on.



 **sukinmaru** says: Jul 11, 2009. 7:32 PM [REPLY](#)

Very nice. YOU could do an instructable

 **sukinmaru** says: Jul 11, 2009. 4:00 PM [REPLY](#)

I'm guessing that the diode will burn-out if used too much without the proper driver?

 **fcampbe4** says: Jul 9, 2009. 4:07 PM [REPLY](#)

Do you guys think you could take the diode just out of a regular cd player?

 **arturomc** says: Jul 9, 2009. 2:01 PM [REPLY](#)


if i use a cd player diode.... can i make a laser (that it's not a burning one) or it wouldnt work

 **Fizzxwizz** says: Jul 8, 2009. 8:04 PM [REPLY](#)

Will this light a fuse?

 **Telecredible** says: Jul 8, 2009. 4:56 AM [REPLY](#)

In one of your video,you mention that instead of destroying a xbox360 you can use a broken one. what do you mean by broken ones?how do you make sure that the laer diode is not damaged when getting a broken xbox360?thank you for your help?Pls reply

 **Telecredible** says: Jul 8, 2009. 4:50 AM [REPLY](#)

Will a blue colour laser diode work?if it does how to get one without destroying a a hdd drive or how to get one in singapore?Help will be appreciated.pls reply thanks.


 **TOCO** says: Jul 1, 2009. 1:04 PM [REPLY](#)

hey kipay i am a huge fan!!!
I have a Que!Fire 12x10x32x cdrw and I was wondering if it would work for this project.

If not what other amazing thing can I do with it?

 **yrogerg77** says: Mar 19, 2009. 5:19 PM [REPLY](#)

Wow... construct my own driver? This is getting a little too advanced for me, does anyone know if there is anywhere you can buy a driver for this type of project for pretty cheap? I already broke one laser diode trying to get this thing to work, and I'm not sure how much more money I'm willing to spend. This is a really cool idea for a \$20 and under project... but if I'm going to end up spending \$50 or so on some home-made novelty item, then no thanks...

 **batteryacid** says: Jun 29, 2009. 6:43 PM [REPLY](#)

This one is REALLY cheap, probably not very good, but I'm going to try it. http://www.o-like.com/b2b_cpinfo.asp?id=987 if the link doesn't work then search "2pcs CC power supply driver" on their site.



batteryacid says:

Jun 29, 2009. 6:15 PM [REPLY](#)

I got my laser with a housing from this site for \$27. <http://stonetek.org/shop/>

I was pleased with the service although shipping was a little slow. They sell a good driver for \$20. To me this seems a little steep but its a driver.

You could also get a nice driver for \$26 here: http://hacylon.case.edu/ebay/laser_diode/Micro_FlexDrive.php or their cheaper driver here: http://hacylon.case.edu/ebay/laser_diode/LavaDrive1.php

I'm with you on the cost which is why i'm going to try to build this driver: <http://fr.trueveo.com/DIY-How-To-Make-A-Laser-Diode-Driver-Circuit/id/157974391>

Good luck!



badboy007 says:

Jun 11, 2009. 6:31 AM [REPLY](#)

anyone want to build me one. i will buy it for 60 bucks or make me an offer trade an ipod or whatever's clever :)



CameraBoy9 says:

Jun 11, 2009. 7:11 AM [REPLY](#)

you can buy one pre assembled on deal extreme thats where i got mine here are 3 links. one for the laser 1 for lithium ion batteries and one for the charger for the lithium ion batteries. i recommend it. mine is amazing.

laser

<http://www.dealextreme.com/details.dx/sku.11315>

battery cr2

<http://www.dealextreme.com/details.dx/sku.932>

battery charger

<http://www.dealextreme.com/details.dx/sku.2031>



thoraxe says:

Jun 27, 2009. 11:45 AM [REPLY](#)

awww man no shipping in the U.S.A. :(



Melancholy43920 says:

Jun 27, 2009. 10:28 AM [REPLY](#)

OK this is the part I have ordered to install into a mini Maglite. It does not come with a driver circuit and I was under the impression a driver circuit was not needed if you were only building a casual toy such as this one. I mean this isn't a laser I am going to be running scientific experiments with that require precise outputs for hours at a time so I was just curious as to what would happen if I ran it via a 9V battery instead of a pair of AAs.



11richie21 says:

Jun 25, 2009. 10:41 PM [REPLY](#)

does this work with a dvd player?



Darter76 says:

Jun 12, 2009. 7:15 PM [REPLY](#)

anyone know where i can get a driver circuit? what the laser housing do? does it just hold the laser or just attach the laser the the power source?



nomooremr.niceguy says:

Jun 13, 2009. 8:38 PM [REPLY](#)

If you look around there are other Instructables that have schematics for driver circuits. Kipkay has one for his 007 laser weapon unleashed project, and there is one project claiming lasers to be better than duct tape that you might also look into. The housing is used as a heat sink and holds your focusing lens. Otherwise it comes out as a line instead of a dot, and you can't do a whole lot with a line except scan bar codes. If you want to make it easy on yourself, when you purchase your housing it should come with a diode and driver circuit installed. Just use your diode to replace the one already on the circuit. It should drive your diode fine. It may under drive it (not use it's full potential) but it should last longer that way. If you scroll down this page, someone posted a really useful youtube video link of someone doing the project. I would recommend watching that. I hope that was helpful. Happy tweaking.



Darter76 says:

Jun 14, 2009. 7:47 AM [REPLY](#)

does the axis laser housing listed in this instructable come with a driver circuit?



nomooremr.niceguy says:

Jun 15, 2009. 3:34 PM [REPLY](#)

It should come with a driver circuit with a laser diode attached (It should come with a diode and driver circuit, but that may also depend on where you purchase the housing. I can't promise anything. But I do believe it does. To be on the safe side, see if it says on the website you get it from, or call their customer service and ask). You will have to remove the diode that comes with the housing and solder your diode into place the same way the original diode was mounted (more or less). I'm sure you already know to take note of which lead is positive and which is negative before you remove the diode. Is that what ou were looking for?



Darter76 says:

Jun 15, 2009. 6:58 PM [REPLY](#)

this will work with a blue laser diode right?



11richie21 says:
yea kipkay has a different vid on it so yea

Jun 25, 2009. 10:37 PM [REPLY](#)



nomooremr.niceguy says:
Honestly I don't know. When you get your housing in and you take the diode off, you should use your multimeter (Assuming you have a multimeter.) to check the voltage on the output terminals of the driver circuit. If it has the proper output it should work. I would also recommend attaching a capacitor to the output terminals along with the laser diode to dampen any spikes from the battery. The driver circuit should be stable enough, but I don't know exactly how stable it is. I haven't used it before. You might even try running an L.E.D off it for a while and monitoring the light to see how it will function for an extended period of time. But if you're wanting a blue laser diode you could look on laserpointer forums.com. I've heard there is a sort of all purpose driver circuit on there. I just haven't had time to look for it yet. I also read that there was someone working on an instructable for a driver circuit superior to the one Kipkay has on his 007 laser weapon project. I think I'll give that a try if it comes out soon. Is there anything else?

Jun 15, 2009. 8:30 PM [REPLY](#)



Darter76 says:
yes thank you

Jun 15, 2009. 4:59 PM [REPLY](#)



Melancholy43920 says:
I realize that this tutorial recommends installing this in a 2AA Mini Maglite (3V) but since the diode comes out of a DVD burner that is powered by 12V inside a PC would it be safe to run 12V through this diode without overloading it? And would that in fact make the laser more powerful? Because I was thinking of hooking this to a 9V battery instead of two AAs.

Jun 25, 2009. 8:32 PM [REPLY](#)



Junk Mail says:
What is a driver circuit?

Jun 23, 2009. 5:44 PM [REPLY](#)



Dartgunman says:
I was also wondering what the aixiz housing do and I have a different dvd burner diode and I don't know if it will fit into the aixiz housing. Can you help please?

Jun 21, 2009. 8:31 PM [REPLY](#)



Dartgunman says:
is mfgcn.com reliable because I don't want to get screwed

Jun 21, 2009. 7:36 PM [REPLY](#)



djpat26 says:
Hi, I remove a laser diode (at least I think it's that) and i wanna know if i'm on the money or really far from a laser diode. I removed this from a LG dvd burner gsa-h55n. And do a multimeter can send enough current to test it?

Jun 17, 2009. 7:50 PM [REPLY](#)



taosif.an says:
Hello,
I am also interested in the photo transistor (the device that receives the reflected light), how can i extract it? and about the led, are the anode and cathode distinguishable and does anybody know the power rating of the diode (both burning and IR?)

Jun 17, 2009. 11:34 AM [REPLY](#)

Thanks



jimkash says:
i dont knw what for evry1 liked this instructable.. i simply got a pointer laser for less than 1\$ whats special to break a burner and do all this y not simply get 1 which is so cheap

Jun 12, 2009. 8:10 PM [REPLY](#)



flakman says:
Your \$1 laser will not be strong enough to do anything but burn out someone's retina. The DVD burner diode will produce enough heat to actually cause some etching in material. I wouldn't break a working burner to do this. There are plenty of bad burners to take apart for this.

Jun 15, 2009. 4:40 PM [REPLY](#)



nomooremr.niceguy says:
I'm severely new to all this tweaking, but I'm learning. So I was wondering, would a blu-ray laser work? I read the instructions and know about the cd/dvd PLAYER dilemma, but I wasn't sure about the blu-ray lasers. Thanks.

Jun 10, 2009. 4:32 PM [REPLY](#)



jamesly123 says:
Can i use a Enzer E5488 laser diode?

Jun 5, 2009. 11:49 PM [REPLY](#)



madkid45 says:

Jun 5, 2009. 4:48 PM [REPLY](#)

i just removed the laser diode from my "light scribe" dvd burner but it looks nothing like the one you have. and all of the prongs are in a strait line what do i do?



ryguy425425 says:

Apr 11, 2009. 1:51 PM [REPLY](#)

I have (had) a panasonic dvd recorder (for recording tv) that conveniently broke randomly right after the warranty expired. I now have the laser diode completely extracted without using a soldering iron. It was held together by screws and some kind of glue that looks like latex calking. When I ran out of screws I pried it out with a mini screwdriver. I can't believe I got it out! Panasonic (the one I have) works great (so far), now to move on to the next step when I get the parts conveniently located on the other side of the world. Thanks Kip Kay for teaching us noobs how to do cool stuff!



scozzahisee says:

Jun 4, 2009. 12:35 PM [REPLY](#)

I'm afraid that's how a lot of warranties work. The companies test their products to see how long they last and then make the warranty just a little shorter.



noreply0000 says:

Jun 3, 2009. 10:12 AM [REPLY](#)

Kiss my donkey, Thanks ya! <http://cgi.ebay.com.my/ws/eBayISAPI.dll?ViewItem&ssPageName=STRK:MEWAX:IT&item=120420962900> can i use the laser module to modify on other flashlight? can the dvd laser work with AAA battery? Thanks.!



youknowwhoiam says:

May 31, 2009. 4:18 PM [REPLY](#)

Cool. And don't forget, You can burn images on bread with this (and sell your Toast of Turin for maybe \$20)



Robert L says:

May 30, 2009. 1:44 PM [REPLY](#)

That would burn out someones retnas.

[view all 2096 comments](#)