

# Re: High-output, low-duty cycle LED strobe circuit

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On May 4, 3:31 am, <[castlebravo...@xxxxxxxx](mailto:castlebravo...@xxxxxxxx)> wrote:

"mj" <[eluc...@xxxxxxxx](mailto:eluc...@xxxxxxxx)> wrote in message

[news:dda2ac06-f0ff-4535-9de3-68576e4a8651@xx](mailto:news:dda2ac06-f0ff-4535-9de3-68576e4a8651@xx)

I'm looking for ideas on how to make an LED flash so brightly at a low duty cycle that it's reasonably bright—maybe even close to what it would be if it were on DC.

I'm building a project where I need to flash white LEDs very brightly 30–50 times a second at about a 0.4% duty cycle. (I'm strobing a spinning disk, and want to freeze images near the LED—too high a duty cycle, and the image blurs.) 0.4% is not much time for an LED to be on. I've heard that you can drive LEDs to up to 10x their normal forward current without damage (though I guess lifetime is shortened) if you keep duty cycle to  $\leq 1\%$ .

To try to get a bright enough flash, I got some 0.5W white LEDs that can take a max DC forward current of 150 mA, and have about a ~3.6 forward drop, producing an intensity of 130k mcd. (Not too clear on the mcd part.) And dem suckers is bright when you're pumping even 100 mA through them. Like squint-to-look-at-it bright. They're in a standard 5mm package (T-1 3/4, what is up with that package name?), though it's sturdier than most you've probably seen. The LED looks like it's been lifting weights, and the leads are shorter and fatter.

Anyway, I have two 2n2222's hooked up as a Darlington, with +5 Vcc, driving the front Q's base with ~15mA (with a microcontroller pin). There's NO current-limiting resistor on the back end, where the second transistor's collector is attached to +5v, and the emitter goes

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through the LED to ground.

Since the LED is only on 0.4% of the time, max, it still simply isn't very bright. The strobe works—I can see the frozen image on the spinning disk—but the light is simply anemic.

So, I'm wondering if anyone here knows how to design a circuit that can dump an amp and a half through an LED for, say, 200 microseconds at a time or less, at 20–50 Hz. Or if anyone else has ideas about how to make LEDs look bright even if they're only on half a percent of the time.

I'm hoping I won't have to dump the LED idea and go with tiny xenon strobes—not really into figuring how to design a 50Hz photo strobe at the moment.

Thanks for anyone that wants to provide some ideas.

how about some of those phillips 1,3 or 5 watt leds used for maglight replacement with a high current driver.

<http://www.luxeonstar.com/>

Bob

Those are nice, but they're kind of expensive. I'm actually doing a dozen of these LEDs. And the .5W ones are *\*really\** bright at 100mA. If I can't get the 0.5 W ones to work, I'm going to look into tiny xenon strobes.

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