

Re: Any ideas for driving an array of discrete LED's without running into heat problems?

| so 104 of them running full tilt would be 7.8 watts.

| 7.8 watts from the LED's and 2.5 watts from the Allegros.... just too
| much heat. The prototype works, but I have to throttle back the LED's
| to more like 10mA, and even then they get pretty hot... but not overly
| hot – it's still the Allego chips that get toasty warm.

| Of course, I know the problem is too much power dissipation, but I am
| trying to end up with the BRIGHTEST display possible, while keeping
| heat in check. Any comments? (bear in mind I am not an expert at
| design – still learning)

| 1) Are there other LED's that are substantially more efficient and
| produce less heat in an 0603 package? Others that I have checked are
| even higher than 75mW!

| 2) I could multiplex the display, but whenever I have done this, I
| have always noticed a decrease in brightness (a substantial
| decrease). Despite the manufacturer saying maybe .1ms pulse at 200mA
| is OK, at 1/10th duty cycle, I always find that to be substantially
| dimmer. Have you also found that to be the case?

| 3) I could mount the top array of LED's on a metal core board and
| thermally couple that to the housing. I am not sure if I could get
| away with maybe 5W of dissipation if I were to do that? Any
| thoughts? On a 1.5" diameter 0.062" PCB?

| 4) I could change the strings of 3 LED's to strings of 4 LEDs which
| would result in less power dissipation in the Allegro chips... then
| reduce the current overall to produce a manageable heat level on the
| display PCB

| Any other suggestions? Any tips and experience with building high-
| brightness high-density displays made from discrete LED's??? As I
| said, it has to be visible in daytime full sunlight, so brightness is
| paramount.

The A6278 seems to be limited to 45ma on one and only output. You could
also use the 90ma limit divided by 16, which gives ~6ma. I would
calculate out what the max per output would be using the Ambient temp
and the 165c shutoff. That would give you the max dissipation per device.
You are definitely driving too much current for the device to handle. I
would use the ULN2003 peripheral drivers at the currents your working with.

Cheers

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