



## WLD3343: Calculating the Safe Operating Area

January 26, 2004

Page 1 of 2

To determine if the operating parameters fall within the safe operating area (SOA) of the device, the maximum voltage drop across the driver and the maximum current must be plotted on the SOA curves.

These values are used for the example SOA determination:

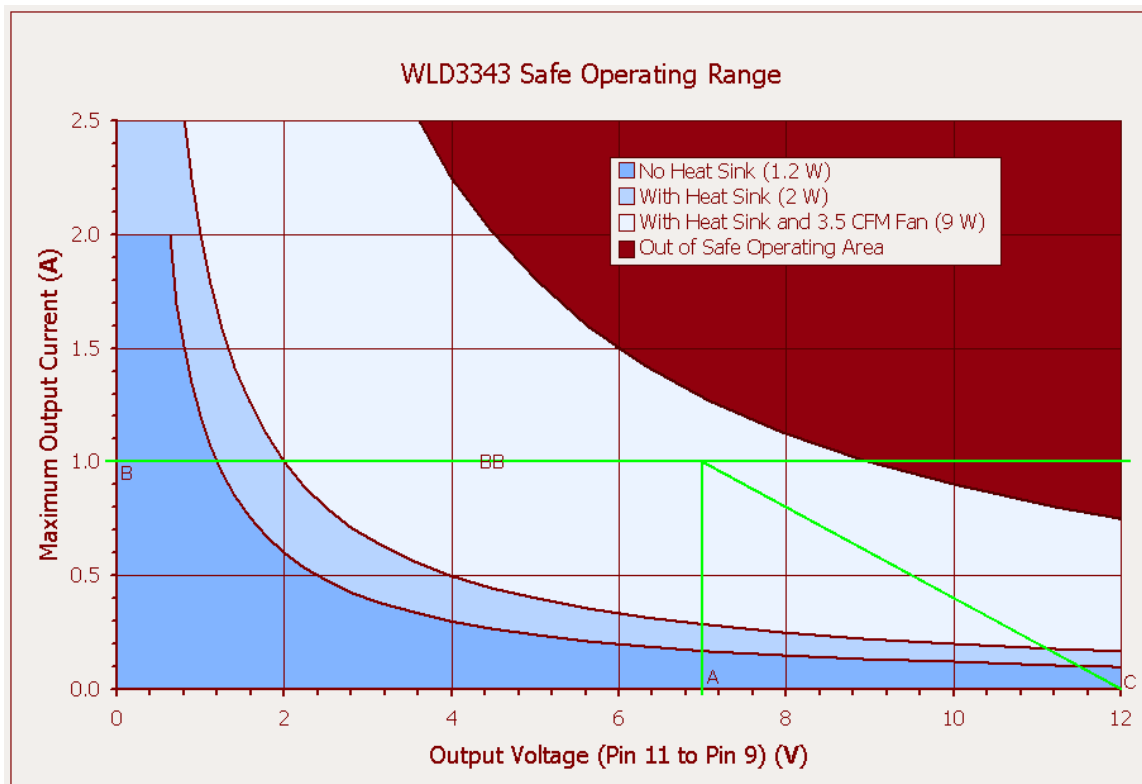
(Vload and ILoad are determined from the specifications of the laser or LED.)

Voltage of laser supply	Vs= 12V
Voltage drop across load	Vload = 5V
Current flowing through load	ILoad = 1A

Follow these steps:

1. Determine the maximum voltage drop across the driver,  $V_s - V_{load}$ , and mark on the X-axis. ( $12V - 5V = 7V$ , Point A)
2. Determine the maximum current, ILoad, through the driver and mark on the Y-axis: (1A, Point B)
3. Draw a horizontal line through Point B across the chart. (Line BB)
4. Draw a vertical line from Point A to the maximum current line indicated by Line BB.
5. Mark Vs on the X-axis. (Point C)
6. Draw the Load Line from where the vertical line from point A intersects Line BB down to Point C.

Refer to the chart shown below and note that the Load Line is not in the Safe Operating Areas for use without a heatsink (dark blue) or the heatsink alone (lighter blue), but is in the Safe Operating Area for use with heatsink and fan (lightest blue).



Two charts are provided below for your use in determining the SOA for your application.

