1

a

Line Reg @ FL = 1.66%

Load reg @ Vin = 15V .33%

b

Power dissipation = 9.22V \* 1.5A = 13.83W  
Max Case Temp = ~130C  
Heat sink size = (130C-50C)/13.83W = 5.78 C/W

c

Power dissipation = 10.871 V \* 1.6877 A = 18.3 W (short circuit)

Max Case Temp = ~130 °C

Heat sink size = (130 °C – 50 °C)/18.3 W = 4.37 C°/W

Short Circuit Current = 1.678 A

d

Dropout voltage (full load): 10.3V

Differential dropout Voltage (full load): 10.3/8.7 = 1.18

Dropout voltage (no load): 10.7V

Differential dropout Voltage (no load): 10.7/8.97 = 1.19

e

No load quiescent current: 53.5mA (15Vin)

Decreasing R3 from 68 Ω to 43 Ω DID improve load regulation. At no load, output voltage was 8.51 V, but dropped to 8.50 V with a 473 mA load, and to 8.45 V with a 1.0 A load. With the 43 Ω resistance instead, no load output voltage was 8.6 V, with a 488 mA load, it was 8.57 V, and with a 1.0 A load, 8.54 V.

f

Isc = 2.124A  
V = 1.56V

Power Dissipation = 2.04A \* (18V – 1.56V) = 33.54W   
Max Case Temp = ~90C  
Heat sink size = (90C-50C)/33.54W = 1.19 C/W

2

VACinmin = 115V