**Differential input to the PGA**

$$\frac{\frac{\left(AVDD-AVSS\right)}{2}}{PGAgain}=I∙\left(Rrtd+RL\right)-I∙\left(Rcomp-RL\right)=I∙\left(Rrtd-Rcomp\right)=\frac{\frac{5V-0V}{2}}{16}$$

$$I=\frac{0.15625V}{93.25Ω}=1.675mA$$

$$IDAC=1.5mA$$

**Maximum differential input to the PGA**

$$\left(Vinp-Vinn\right)=IDAC∙\left(Rrtd+RL\right)-IDAC∙\left(Rcomp-RL\right)=IDAC∙\left(Rrtd-Rcomp\right)=1.5mA∙93.25Ω=139.875mV$$

$$Vref\geq \left(Vinp-Vinn\right)∙PGAgain= 139.875mV∙16\geq 2.238V$$

$$Rbias\geq \frac{Vref}{2∙IDAC}\geq \frac{2.238}{3mA}\geq 746Ω$$

$$Rbias=806Ω$$

$$Vref=2∙IDAC∙Rbias=3mA∙806Ω=2.418V$$

**Vcmi maximum value**

$$(AVSS+0.1V+VIN∙\frac{VIN∙PGAgain}{2}\leq Vcmi\leq (AVDD-0.1V-\frac{VIN∙PGAgain}{2})$$

$$(0+0.1V+139.875mV∙\frac{16}{2})\leq Vcmi\leq (5V-0.1V-139.875mV∙\frac{16}{2})$$

$$1.219V\leq Vcmi\leq 3.781V$$

**Vcmi value**

$$Vcmi=IDAC∙Rl+IDAC∙\frac{Rrtd+Rcom}{2}+2∙IDAC∙\left(Rl+Rbias\right)$$

$$Vcmi=1.5mA∙15Ω+1.5mA∙\frac{453.25}{2}+3mA∙\left(821Ω\right)=2.8254V \left(RTDmax\right)$$

$$Vcmi=1.5mA∙15Ω+1.5mA∙\frac{260.75}{2}+3mA∙\left(821Ω\right)=2.681V (RTDmin)$$