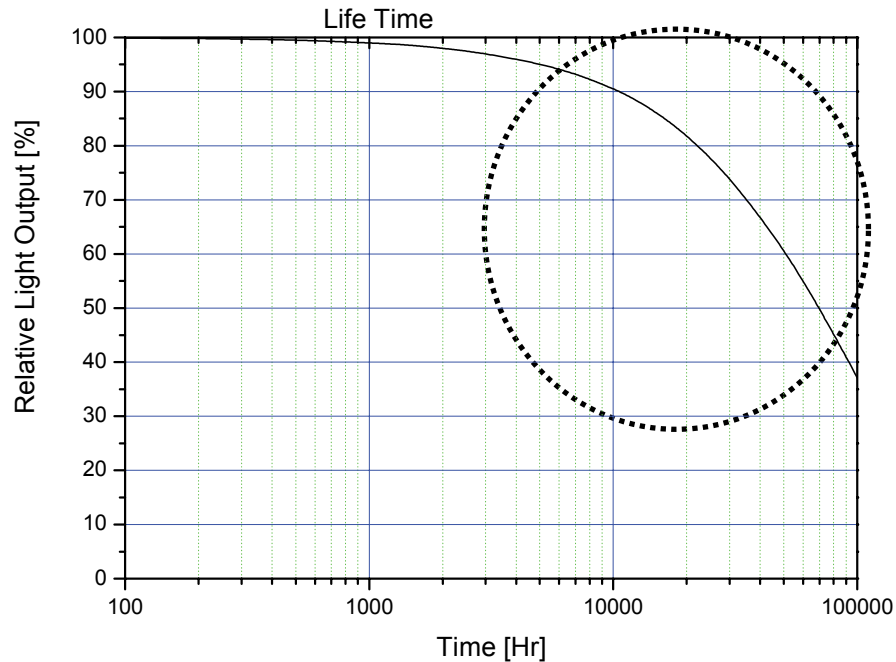
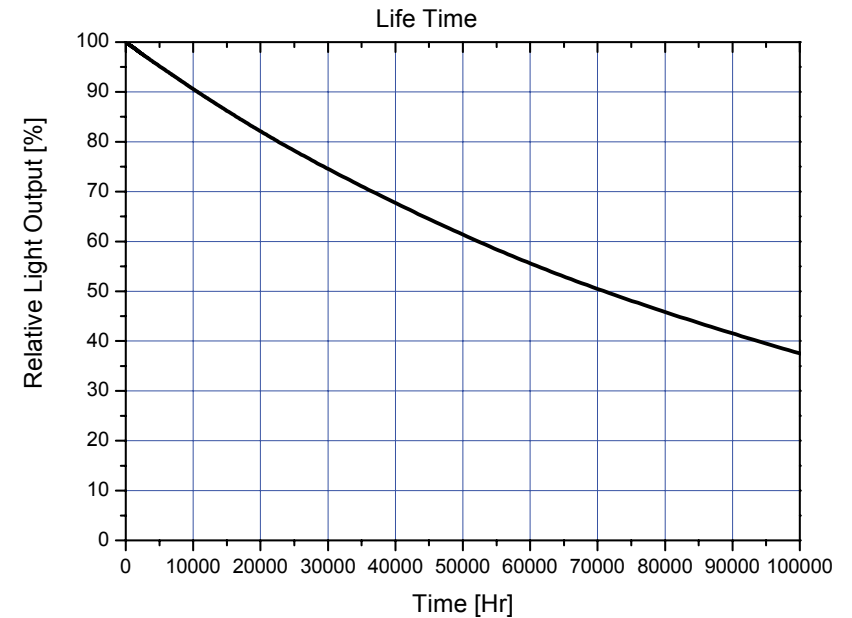


Life Time Graph of P4 1W Pure White for $T_J = 90\text{ }^\circ\text{C}$ (@350mA)



Detail



*This calculation can be done using the Arrhenius Model as shown below

$$R(t) = \exp(-\lambda t)$$

where

$R(t)$ = Probability that unit will operate at time t

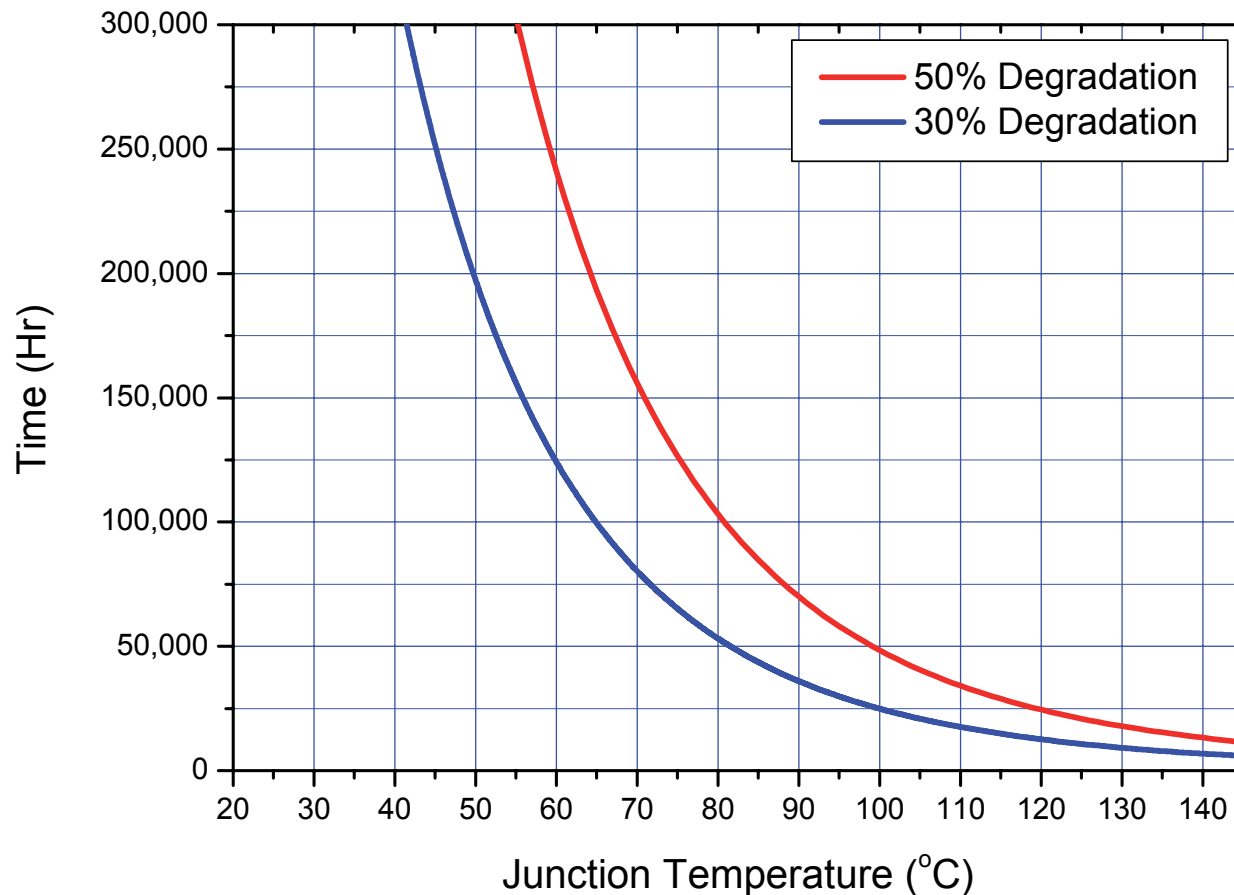
λ = failure rate

t = Time component is on

70,000hr 50% degradation

Tj vs. Life Time Graph of Z-Power P4 1W Pure White Series

50% & 30% Degradation graph of Luminous output



*This calculation can be done using the Arrhenius Model as shown below

$$R(t) = \exp(-\lambda t)$$

$$\lambda_2 = \lambda_1 \exp\left[\frac{E_A}{k} \left(\frac{1}{T_1} - \frac{1}{T_2}\right)\right]$$

where

$R(t)$ = Probability that unit will operate at time t

λ = failure rate

t = Time component is on

λ_1 = failure rate at junction temperature T_1

λ_2 = failure rate at junction temperature T_2

E_A = activation energy, in units eV

k = Boltzmann's constant ($8.617 \times 10^{-5} \text{ eV/}^\circ\text{K}$)

T = junction temperature in $^\circ\text{K}$ ($^\circ\text{K} = ^\circ\text{C} + 273$)