

## QUALITY & RELIABILITY ENGINEERING

### FIT and MTTF Calculation Report

November 6, 2023

<b>PN Family Series</b>	<b>TSCR400CX6H</b>
<b>Part Description</b>	Linear Constant Current Regulated LED Driver
<b>Package Type</b>	SOT-26

#### Test Variables:

Stress Test	=	<b>HTOL</b>	
No. of failures	=	0	<b>units</b>
Sample Size	=	231	<b>units</b>
Test Duration	=	1000	<b>hours</b>
Total device hours	=	231000	<b>hours</b>
Accelerated Temp (Ta)	=	125	<b>° C</b>
Operating Temp (Tu)	=	55	<b>° C</b>
Activation Energy (Ea)	=	0.7	<b>eV</b>
Confidence Level	=	90	<b>%</b>
Boltzman's Constant (k)	=	8.617E-05	<b>eV / °K</b>

#### Calculations:

Chi squared value = **4.60517** @ 90% Confidence Level

Failure Rate (@accelerated condition) =  $\frac{(\text{Chi squared value})}{2 * (\text{Sample Size}) * (\text{Test Duration})}$   
= **9967.90** **FIT**

Acceleration Factor, AF =  $e^{(Ea/k)(1/Tu - 1/Ta)}$   
= **77.94097874**

#### Results:

**Failure Rate** (@operating condition) = (Failure Rate @accelerated condition) / (AF)  
= **128** **FIT**

**Mean Time to Failure (MTTF)** = **7819197** **hours**  
= **893** **years**