

QUALITY & RELIABILITY ENGINEERING

FIT and MTTF Calculation Report

PN Family Series	PUUP10J
Part Description	600V Ultra Fast Surface Mount Rectifier
Package Type	SMPC4.6U

Test Variables:

Stress Test	=	HTRB	
No. of failures	=	0	units
Sample Size	=	231	units
Test Duration	=	1000	hours
Total device hours	=	231000	hours
Accelerated Temp (Ta)	=	175	° C
Operating Temp (Tu)	=	55	° C
Activation Energy (Ea)	=	0.7	eV
Confidence Level	=	90	%
Boltzman's Constant (k)	=	8.617E-05	eV / °K

Calculations:

Chi squared value = **4.60517019** @ 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 = $e^{(Ea/k)(1/Tu - 1/Ta)}$
= **760.4701686**

Results:

Failure Rate (@operating condition)	=	(Failure Rate @accelerated condition) / (AF)
	=	13 FIT
Mean Time to Failure (MTTF)	=	76291907.5 hours
	=	8709 years