

QUALITY & RELIABILITY ENGINEERING

FIT and MTTF Calculation Report

June 5, 2025

PN Family Series	TSCDF06065G1
Part Description	650V Silicon Carbide Schottky Diode
Package Type	ITO-220

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)	=	$(\text{Failure Rate @accelerated condition}) / (\text{AF})$	
	=	13	FIT
Mean Time to Failure (MTTF)	=	76291907.5	hours
	=	8709	years