

ST250-300

MTBF Prediction Report

Rev. 1.0

Prepared By: Chain Yang

Reviewed By: Danny Chen

Oct. 25, 2021

1. Prediction Objective

MTBF stands for Mean Time Between Failures. MTBF is the inverse of the failure rate. This prediction result shows the random failure rate (in FITs) information for the device. The random failure rate indicates the probability of failures associated with a flat graph in bathtub curve representing the constant failure rate during the steady-state of a device's operating life.

2. Prediction Procedure

- 1) Open the MTBF Calculator program.
- 2) Select Component Family、Type and method. Set appropriate Environment、Temperature and required characteristics such as technology type and quality level for each component.
- 3) Component supplier's failure rate can be filled in if available.
- 4) Get started to calculate MTBF under specified operation temperature, environment by Telcordia.

3. Calculation Method

Telcordia Issue 3 is one of calculation method of MTBF Calculator program which is based on the Telcordia technical document, Reliability Prediction Procedure for Electronic Equipment, Technical Reference SR-332. This standard is originally developed by AT&T Bell Lab as the Bellcore model.

4. Failure Rate Description

- 1) Method I assumes that no reliability data is available on the device for which a prediction is to be made. The prediction is based on generic reliability parameters. In most case, this is the most commonly used method.
- 2) The Parts Count prediction for a device computes the mean steady-state failure rate is:

$$\lambda_{ss} = \pi_E \sum_{i=1}^m (N_i \lambda_{SSi})$$

m: number of different type component

λ_{SS} : device failure rate at steady-state

N_i : i type component quantity in device

λ_{SSi} : failure rate for i type component at steady-state

π_E : device environment factor

5. Other Critical Parameter Settings

- 1) Environment : GB, GC - Ground Benign, Controlled
- 2) Quality Level: 0

6. Test Location

APACER Environmental & Reliability LAB.

7. Test Result

The Mean Time Between Failure(MTBF) and failure rate(FITs) are :

Temperature(°C)	MTBF(Hours)	FITs(10^9 /hours)
30	4.76×10^6	209.99