

Reliability Calculation

Assumptions for the Prediction

1. Most failure rates are taken from MIL-HDBK-217, Rev. F, Notice 2
2. Detector MTBF is not included.
3. MTBF for dc-dc converters provided by Lydia Lee at GSFC
4. Discrete semiconductors are MIL-PRF-19500, JTXV or better
5. Resistors are surface mount chip per MIL-PRF-55342, level R or better
6. Ceramic capacitors are surface mount chip per MIL-PRF-55681, level R or better
7. Tantalum capacitors are surface mount chip per MIL-PRF-55365, level R or better
8. Microcircuits are per Standard Microcircuit Drawings (SMDs)
9. Hybrids are per MIL-PRF-38535.

Probability of Mission Success P_s

$$P_s = e^{-\lambda t}$$
$$P_s = e^{-0.0363801}$$
$$P_s = .96464$$

Where:

$$\lambda = 3.569477 \times 10^{-6} \text{ hours}$$
$$t = 10,192 \text{ hours (14 Mos.)}$$
$$\lambda t = .0363801$$
$$e = 2.71828$$

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