Automated Databook for Failure Rates and Failure Modes

Description

- There are three major sources for failure rate and failure mode data, namely: (1) Modeling and analysis of the item's actual exposure and failure history, (2) Handbooks and calculators, and (3) Expert elicitation.
- The Quanterion Automated Databook (**QuAD**) is an electronic and searchable source of handbook data. Handbook data is an efficient and consistent source when data is not readily available or does not exist.
- The QuAD is a Windows compatible tool that includes query capability.
- The QuAD consists of three data sets and are described in the table below.

Electronic Parts Reliability Data (EPRD)-2014 EPRD update See next page	**EPRD-2014**, an update to the 1997 Edition, provides reliability data on commercial and military electronic components. It contains failure rate data on integrated circuits, discrete semiconductors (diodes, transistors, optoelectronic devices), resistors, capacitors, and inductors/transformers, all of which were obtained from the field usage of electronic components. Data includes part descriptions, quality level, application environments, point estimates of failure rate, data sources, number of failures, total operating hours, miles, or cycles, and detailed part characteristics.
Nonelectronic Parts Reliability Data (NPRD)-2016 NPRD update See next page	**NPRD-2016**, an update to the 2011 Edition, provides failure rate data for a wide variety of component types including mechanical, electromechanical, and electronic assemblies in a consistent format both at the summary and detailed levels sorted by part type, quality level, environment, and data source. The data is a compilation of field experience in military, commercial, and industrial applications and concentrates on items not covered by MIL-HDBK-217, "Reliability Prediction of Electronic Equipment." Data includes part descriptions, quality level, application environments, point estimates of failure rate, data sources, number of failures, total operating hours, miles, or cycles, and detailed part characteristics.
Failure Mode / Mechanism Distributions (FMD)-2016	**FMD-2016**, an update to the 2013 Edition, provides field failure mode and mechanism distribution data on a variety of electrical, mechanical, and electromechanical parts and assemblies. Knowledge of an item's failure mode support reliability analyses—especially the Failure Modes and Effects Analysis (FMEA). Quantification of the relative probability of occurrence for each potential failure mode (failure mode distribution) for a given part type is essential for producing a Failure Mode, Effects, and Criticality Analysis (FMECA).

License

- The Quanterion Automated Databook (QuAD) is licensed for use by any NASA employee or contractor. Do not release the QuAD software to any party outside of NASA.

NASA Point of Contact

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Updates are …

- Called the Reliability Online Automated Databook System (**ROADS**).
- Available as an annual subscription.
- Available with a government discount.
  - Visit GSA Advantage
  - Search on "ROADS – DATASET"
  - Tip: Confirm if the purchase provides both EPRD and NPRD or just one to be specified.

Information from the Vendor

- Product details:
  - **EPRD-2024**: https://www.quanterion.com/eprd-2024/
  - **NPRD-2023**: https://www.quanterion.com/nprd-2023/