

MTBF Prediction Report

Project Name	SFD25H1-M
Part No.	APS25H12032G-HTM1W
Stage	EVT
Document Version	1.0
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A. Scope

This document describes product mean time between failure (MTBF) on engineering verification test (EVT) phase.

B. Purpose

Provide a life time prediction value for product.

C. Method Description

- 1) This MTBF prediction report adopts “*Telcordia Technologies Special Report, SR-332, issue2*” prediction method (method 1, black box).
- 2) Assume device failure rate could use sum every component failure rate to calculate its value.
- 3) The steady-state failure rate can express by below equation:

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

m: number of different type component

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

N_i : i type component quantity in device

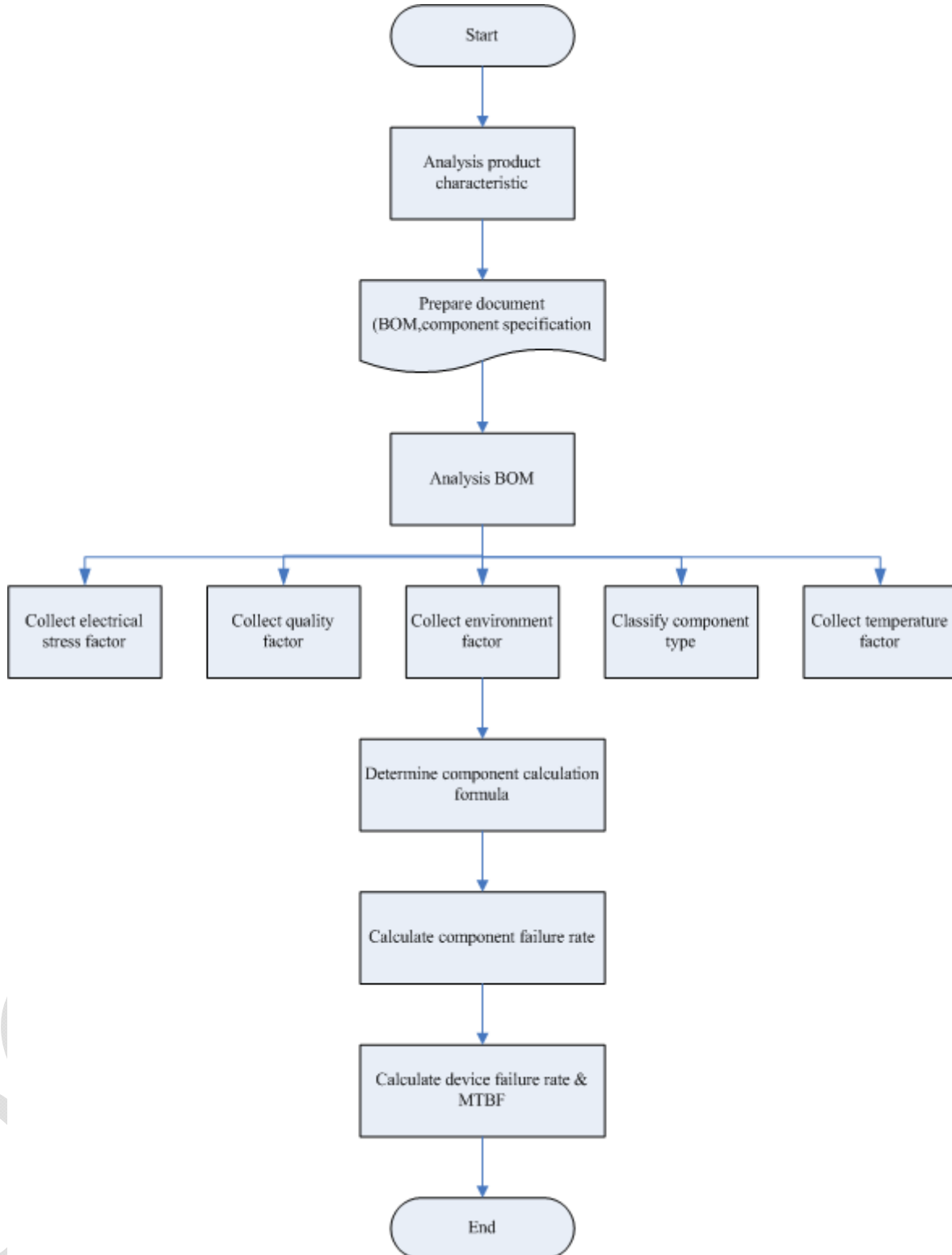
λ_{ss_i} : failure rate for i type component at steady-state

π_E : device environment factor

D. Procedure Description

- 1) Collect characteristic data for product.
- 2) Document preparation:
 - (1) Bill of material (BOM)
 - (2) Component specification
 - (3) Analysis BOM & collect component parameter
 - (4) Determine calculation equation for every component
 - (5) Calculate failure rate for every component
 - (6) Get device failure rate and mean time between failure

E. Implementation Procedure Flow Chart



F. MTBF Prediction Value

Based on above method to calculate SFD25H1-M device that its mean time between failure(MTBF) is : 1.23×10^6 (hrs), the failure rate is 811.39(FITS).

※ The environment condition : temperature is 30(°C), 50% operation stress, 90% C.L,
Ground Benign, Ground Controlled.

G. Component's F.R Data

Part Number	Category	Ref Des	Failure Rate, Unit	Quantity	Failure Rate
30-T0LA02P047	Integrated Circuit		21.789271	8.00	174.314168
00-00S0000000	Resistor		0.500000	16.00	8.000000
00-00S0000013	Resistor		0.500000	1.00	0.500000
00-00S0000045	Resistor		0.500000	4.00	2.000000
00-00S0000059	Resistor		0.500000	2.00	1.000000
00-00S0000064	Resistor		0.500000	1.00	0.500000
00-00S0000066	Resistor		0.500000	1.00	0.500000
00-00S0000076	Resistor		0.500000	1.00	0.500000
00-00S0000089	Resistor		0.500000	2.00	1.000000
00-00S0000092	Resistor		0.500000	1.00	0.500000
00-00S0000188	Resistor		0.500000	2.00	1.000000
00-01S0000010	Resistor		0.500000	1.00	0.500000
00-10S0000000	Capacitor		1.000000	1.00	1.000000
00-10S0000006	Capacitor		1.000000	17.00	17.000000
00-10S0000037	Capacitor		1.000000	14.00	14.000000
00-10S0000049	Capacitor		1.000000	3.00	3.000000
00-10S0000050	Capacitor		1.000000	1.00	1.000000
00-10S0000054	Capacitor		1.000000	1.00	1.000000
00-10S0000056	Capacitor		1.000000	3.00	3.000000
00-10S0000061	Capacitor		1.000000	2.00	2.000000
00-10S0000062	Capacitor		1.000000	1.00	1.000000
00-10S0000063	Capacitor		1.000000	2.00	2.000000
00-10S0000066	Capacitor		1.000000	67.00	67.000000
00-10S0000067	Capacitor		1.000000	11.00	11.000000
00-20S0000005	Inductor		0.500000	2.00	1.000000
00-30S0000034	Inductor		0.500000	3.00	1.500000
00-40S0000027	Semiconductor		6.000000	1.00	6.000000
00-50S0000008	Miscellaneous		0.500000	1.00	0.500000
01-00S0000059	Miscellaneous		25.000000	1.00	25.000000
02-R0S0000001	Semiconductor		60.000000	2.00	120.000000
06-00S0000090	Integrated Circuit		84.379324	3.00	253.137972
18-A053000000	Connection		8.000000	1.00	8.000000
04-01S0000017	Connection		0.000000	1.00	0.000000
22-09S9BB10JE	Integrated Circuit		82.942156	1.00	82.942156