AN802: MTTF for Dataforth Signal Conditioning Modules

Application Note: Failure Rate Calculation and Prediction

Failure rate calculations for the DSCA, SCM5B, SCM7B, and 8B modules are derived from MIL-HDBK-217F, *Reliability Prediction of Electronic Equipment*.

The “Part Stress Analysis” method is used at a ground benign environment, +30°C temperature, and quality level B-2 to D-1 depending on the component. The specified humidity level is 95% RH noncondensing.

All DSCA, SCM5B, SCM7B, and 8B modules undergo a 48 hour burn-in at +85°C before final calibration and shipment. This “preconditioning” serves to minimize field failures by stabilizing components and causing “infant failures,” if any, to occur.

The failure rates presented below apply to modules under normal operating conditions.

DSCA Modules

Model	Failures/10^6 Hrs	MTTF (Hrs)
DSCA30/31/32/37/40/41	1.74	575,000
DSCA33/38/42/43/47	2.15	465,000
DSCA34/36	1.92	520,000
DSCA39/49	1.82	550,000
DSCA45	2.24	445,000

SCM7B Modules and Accessories

Model	Failures/10^6 Hrs	MTTF (Hrs)
SCM7B21	1.41	706,000
SCM7B22	1.80	553,000
SCM7B30	1.38	727,000
SCM7B31	1.37	728,000
SCM7B32	1.45	691,000
SCM7B33	1.38	727,000
SCM7B34	1.48	676,000
SCM7B35	1.65	607,000
SCM7B36	1.46	683,000
SCM7B37	1.43	697,000
SCM7B39	1.62	609,000
SCM7B40	1.38	727,000
SCM7B41	1.37	728,000
SCM7B47	1.85	540,000
SCM7BP01 (-DIN)	0.92	10,834,000
SCM7BP02 (-DIN)	0.15	6,477,000
SCM7BP04 (-DIN)	0.28	3,594,000
SCM7BP08 (-DIN)	0.47	2,150,000
SCM7BP16 (-DIN)	0.83	1,206,000

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SCM5B Modules and Accessories

Model	Failures/10^6 Hrs	MTTF (Hrs)
SCM5B30/31/32/37/392-xx	1.54	650,000
SCM5B33-xx	2.14	468,000
SCM5B40/41-xx	1.46	680,000
SCM5B38/39/42/43/49-xx	1.35	740,000
SCM5B34/35/36-xx	1.48	675,000
SCM5B45-xx	1.84	545,000
SCM5B47-xx	1.50	670,000
SCMPB01, 05	1.83	546,000
SCMPB02, 06	2.16	463,000
SCMPB03	0.19	5,150,000
SCMPB04	0.23	4,430,000
SCMPB07	1.11	900,000

8B Modules and Accessories

Model	Failures/10^6 Hrs	MTTF (Hrs)
8B30/31/40/41/50/51-xx	1.68	596,000
8B32-xx/37x	1.71	585,000
8B47x-xx	1.92	520,000
8BP02	0.40	2,500,000
8BP04	0.48	2,100,000
8BP08	0.53	1,870,000
8BP16	0.72	1,380,000

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