

E2A-M08 short body length MTTF (Reliability prediction)

Parts name	Kind	Failure rate $\lambda \times 10^{-6}$		Quality factor πQ	Use QTY pcs	Failure rate Subtotal $n\lambda \times 10^{-6}$	
		GF	GM			GF	GM
Transistor	PNP Silicon	0.0011	0.0017	5.5	0	0	0
Diode	Tsenadiode	0.024	0.039	5.5	0	0	0
	Analog	0.028	0.049	5.5	0	0	0
	LED	0.0012	0.0056	5.5	2	0.0132	0.0616
Capacitor	Ceramic	0.0074	0.034	10.0	6	0.444	2.04
Resistance	Film fixation	0.0027	0.011	10.0	5	0.135	0.55
	Thermistor	0.024	0.039	10.0	1	0.24	0.39
	Film power	0.025	0.13	10.0	1	0.25	1.3
IC	Custom	0.041	0.065	5.35	2	0.4387	0.6955
PWB		0.003772	0.013202	-	2	0.007544	0.026404
Soldering	Reflow	0.000138	0.000483	-	44	0.006072	0.021252
	Hand solder	0.0052	0.018	-	14	0.0728	0.252
Coil	Fixed	0.0073	0.023	10.0	1	0.073	0.23
Total						1.680316	5.566756

GF MTTF $1/n\lambda \times 10^{-6}$ = around 595126 (hour)
 (For the ground fixation) 24797 (day)
 67.9 (year)

GM MTTF $1/n\lambda \times 10^{-6}$ = around 179638 (hour)
 (For the ground movable) 7485 (day)
 20.5 (year)

* Calculation standard: MIL-HDBK-217F

rev.C

16th May 2003 Prepared: K,Tanase

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Parts name	Kind	Failure rate $\lambda \times 10^{-6}$		Quality factor πQ	Use QTY pcs	Failure rate Subtotal $n\lambda \times 10^{-6}$	
		GF	GM			GF	GM
Transistor	PNP Silicon	0.0011	0.0017	5.5	0	0	0
Diode	Tsenadiode	0.024	0.039	5.5	0	0	0
	Analog	0.028	0.049	5.5	0	0	0
	LED	0.0012	0.0056	5.5	2	0.0132	0.0616
Capacitor	Ceramic	0.0074	0.034	10.0	8	0.592	2.72
Resistance	Film fixation	0.0027	0.011	10.0	5	0.135	0.55
	Thermistor	0.024	0.039	10.0	1	0.24	0.39
	Film power	0.025	0.13	10.0	1	0.25	1.3
IC	Custom	0.041	0.065	5.35	2	0.4387	0.6955
PWB		0.003772	0.013202	-	2	0.007544	0.026404
Soldering	Reflow	0.000138	0.000483	-	59	0.008142	0.028497
	Hand solder	0.0052	0.018	-	14	0.0728	0.252
Coil	Fixed	0.0073	0.023	10.0	1	0.073	0.23
Total						1.830386	6.254001

GF MTTF $1/n\lambda \times 10^{-6}$ = around 546333 (hour)
 (For the ground fixation) 22764 (day)
 62.4 (year)

GM MTTF $1/n\lambda \times 10^{-6}$ = around 159898 (hour)
 (For the ground movable) 6662 (day)
 18.3 (year)

* Calculation standard: MIL-HDBK-217F

rev.C

16th May 2003 Prepared: K,Tanase

E2A-M12 M18 M30 short body length MTTF (Reliability prediction)

Parts name	Kind	Failure rate $\lambda \times 10^{-6}$		Quality factor πQ	Use QTY pcs	Failure rate Subtotal $n\lambda \times 10^{-6}$	
		GF	GM			GF	GM
Transistor	PNP Silicon	0.0011	0.0017	5.5	0	0	0
Diode	Tsenadiode	0.024	0.039	5.5	0	0	0
	Analog	0.028	0.049	5.5	1	0.154	0.2695
	LED	0.0012	0.0056	5.5	2	0.0132	0.0616
Capacitor	Ceramic	0.0074	0.034	10.0	8	0.592	2.72
Resistance	Film fixation	0.0027	0.011	10.0	8	0.216	0.88
	Thermistor	0.024	0.039	10.0	1	0.24	0.39
	Film power	0.025	0.13	10.0	1	0.25	1.3
IC	Custom	0.041	0.065	5.35	2	0.4387	0.6955
PWB		0.003772	0.013202	-	2	0.007544	0.026404
Soldering	Reflow	0.000138	0.000483	-	67	0.009246	0.032361
	Hand solder	0.0052	0.018	-	14	0.0728	0.252
Coil	Fixed	0.0073	0.023	10.0	1	0.073	0.23
Total						2.06649	6.857365

GF MTTF $1/n\lambda \times 10^{-6}$ = around 483912 (hour)
 (For the ground fixation) 20163 (day)
 55.2 (year)

GM MTTF $1/n\lambda \times 10^{-6}$ = around 145829 (hour)
 (For the ground movable) 6076 (day)
 16.6 (year)

* Calculation standard: MIL-HDBK-217F

rev.C

16th May 2003 Prepared: K,Tanase

E2A-M12 M18 M30 long body length MTTF (Reliability prediction)

Parts name	Kind	Failure rate $\lambda \times 10^{-6}$		Quality factor πQ	Use QTY pcs	Failure rate Subtotal $n\lambda \times 10^{-6}$	
		GF	GM			GF	GM
Transistor	Power	0.042	0.069	5.5	1	0.231	0.3795
Diode	Tsenadiode	0.024	0.039	5.5	3	0.396	0.6435
	Analog	0.028	0.049	5.5	1	0.154	0.2695
	LED	0.0012	0.0056	5.5	2	0.0132	0.0616
Capacitor	Ceramic	0.0074	0.034	10.0	8	0.592	2.72
Resistance	Film fixation	0.0027	0.011	10.0	9	0.243	0.99
	Thermistor	0.024	0.039	10.0	1	0.24	0.39
	Film power	0.025	0.13	10.0	1	0.25	1.3
IC	Custom	0.041	0.065	5.35	2	0.4387	0.6955
PWB		0.003772	0.013202	-	2	0.007544	0.026404
Soldering	Reflow	0.000138	0.000483	-	77	0.010626	0.037191
	Hand solder	0.0052	0.018	-	14	0.0728	0.252
Coil	Fixed	0.0073	0.023	10.0	1	0.073	0.23
Total						2.72187	7.995195

GF MTTF $1/n\lambda \times 10^{-6}$ = around 367394 (hour)
 (For the ground fixation) 15308 (day)
 41.9 (year)

GM MTTF $1/n\lambda \times 10^{-6}$ = around 125075 (hour)
 (For the ground movable) 5211 (day)
 14.3 (year)

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