

mega-fabs Drive (MD-36-S) MTBF  
HIWIN P/N:FD000MD11001

MTBF CALCULATION PER MIL-HDBK-217F PARTS COUNT RELIABILITY PREDICTION METHOD

ITEM	QUANTITY	FAILURE RATE PER 10 <sup>6</sup> HOURS	QUALITY FACTOR	TOTAL FAILURE RATE PER 10 <sup>6</sup> HOURS
CAPACITOR, CERAMIC	225	0.00360	3.0	2.4300
CAPACITOR, ELECTROLYTIC	5	0.02400	3.0	0.3600
CAPACITOR, METALLIZED PAPER	7	0.00290	3.0	0.0609
CAPACITOR, TANTALUM	1	0.00150	3.0	0.0045
CONNECTOR	17	0.00540	2.0	0.1836
DIODE, GENERAL PURPOSE	12	0.00360	5.5	0.2376
DIODE, LIGHT EMITTING	2	0.00047	8.0	0.0075
DIODE, SCHOTTKY	1	0.02700	5.5	0.1485
DIODE, ZENER	4	0.00330	5.5	0.0726
FET, SILICON	11	0.01400	8.0	1.2320
IC, BIPOLAR LINEAR	30	0.00950	2.0	0.5700
IC, DIGITAL CMOS	1	0.00570	3.1	0.0177
IC, REGULATOR	7	0.00950	8.0	0.5320
IGBT	4	0.01400	8.0	0.4480
INDUCTOR, MOLDED	3	0.01700	4.0	0.2040
OPTO-ISOLATOR	13	0.01300	8.0	1.3520
OSCILLATOR, CRYSTAL	1	0.03200	2.1	0.0672
RECTIFIER, POWER	8	0.00280	3.0	0.0672
RELAY	1	0.43000	3.0	1.2900
RESISTOR, METAL FILM	293	0.00120	3.0	1.0548
RESISTOR, METAL FILM POWER	4	0.01200	8.0	0.3840
TANSFORMER FLYBACK	1	0.02300	3.0	0.0690
TANSIENT VOLTAGE SUPPRESSOR	9	0.00290	5.5	0.1436
THERMISTOR	1	0.06500	3.0	0.1950
TRANSISTOR, BIPOLAR	2	0.00015	5.5	0.0017
SOLDERED CONNECTIONS	1326	0.00007	1.0	0.0928
			<b>TOTAL</b>	<b>11.2261</b>
			<b>MTBF(HRS)</b>	<b>89078</b>
			<b>MTBF(YRS)</b>	<b>10.17</b>

mega-fabs Drive (MD-36-S2) MTBF  
 HIWIN P/N:FD000MD11002

MTBF CALCULATION PER MIL-HDBK-217F PARTS COUNT RELIABILITY PREDICTION METHOD

ITEM	QUANTITY	FAILURE RATE PER 10 <sup>6</sup> HOURS	QUALITY FACTOR	TOTAL FAILURE RATE PER 10 <sup>6</sup> HOURS
CAPACITOR, CERAMIC	225	0.00360	3.0	2.4300
CAPACITOR, ELECTROLYTIC	5	0.02400	3.0	0.3600
CAPACITOR, METALLIZED PAPER	7	0.00290	3.0	0.0609
CAPACITOR, TANTALUM	1	0.00150	3.0	0.0045
CONNECTOR	17	0.00540	2.0	0.1836
DIODE, GENERAL PURPOSE	12	0.00360	5.5	0.2376
DIODE, LIGHT EMITTING	2	0.00047	8.0	0.0075
DIODE, SCHOTTKY	1	0.02700	5.5	0.1485
DIODE, ZENER	4	0.00330	5.5	0.0726
Display, LCD	1	0.00300	8.0	0.0240
FET, SILICON	11	0.01400	8.0	1.2320
IC, BIPOLAR LINEAR	30	0.00950	2.0	0.5700
IC, DIGITAL CMOS	1	0.00570	3.1	0.0177
IC, REGULATOR	7	0.00950	8.0	0.5320
IGBT	4	0.01400	8.0	0.4480
INDUCTOR, MOLDED	3	0.01700	4.0	0.2040
OPTO-ISOLATOR	13	0.01300	8.0	1.3520
OSCILLATOR, CRYSTAL	1	0.03200	2.1	0.0672
RECTIFIER, POWER	8	0.00280	3.0	0.0672
RELAY	1	0.43000	3.0	1.2900
RESISTOR, METAL FILM	293	0.00120	3.0	1.0548
RESISTOR, METAL FILM POWER	4	0.01200	8.0	0.3840
SWITCH	4	0.00100	8.4	0.0336
TANSFORMER FLYBACK	1	0.02300	3.0	0.0690
TANSIENT VOLTAGE SUPPRESSOR	9	0.00290	5.5	0.1436
THERMISTOR	1	0.06500	3.0	0.1950
TRANSISTOR, BIPOLAR	2	0.00015	5.5	0.0017
SOLDERED CONNECTIONS	1336	0.00007	1.0	0.0935
			<b>TOTAL</b>	<b>11.2844</b>
			<b>MTBF(HRS)</b>	<b>88618</b>
			<b>MTBF(YRS)</b>	<b>10.12</b>

mega-fabs Drive (MD-36-SR) MTBF

HIWIN P/N:FD000MD41002

MTBF CALCULATION PER MIL-HDBK-217F PARTS COUNT RELIABILITY PREDICTION METHOD

ITEM	QUANTITY	FAILURE RATE PER 10 <sup>6</sup> HOURS	QUALITY FACTOR	TOTAL FAILURE RATE PER 10 <sup>6</sup> HOURS
CAPACITOR, CERAMIC	243	0.00360	3.00	2.6244
CAPACITOR, ELECTROLYTIC	6	0.02400	3.00	0.4320
CAPACITOR, METALLIZED PAPER	7	0.00290	3.00	0.0609
CAPACITOR, TANTALUM	2	0.00150	3.00	0.0090
CONNECTOR	17	0.00540	2.00	0.1836
DIODE, GENERAL PURPOSE	10	0.00360	5.50	0.1980
DIODE, LIGHT EMITTING	1	0.00047	8.00	0.0038
DIODE, SCHOTTKY	2	0.02700	5.50	0.2970
DIODE, ZENER	4	0.00330	5.50	0.0726
Display, LCD	1	0.00300	8.00	0.0240
FET, SILICON	12	0.01400	8.00	1.3440
IC, BIPOLAR LINEAR	32	0.00950	2.00	0.6080
IC, DIGITAL CMOS	1	0.00570	3.10	0.0177
IC, REGULATOR	8	0.00950	8.00	0.6080
IGBT	4	0.01400	8.00	0.4480
INDUCTOR, MOLDED	5	0.01700	4.00	0.3400
OPTO-ISOLATOR	13	0.01300	8.00	1.3520
OSCILLATOR, CRYSTAL	1	0.03200	2.10	0.0672
RECTIFIER, POWER	10	0.00280	3.00	0.0840
RELAY	1	0.43000	3.00	1.2900
RESISTOR, METAL FILM	277	0.00120	3.00	0.9972
RESISTOR, METAL FILM POWER	4	0.01200	8.00	0.3840
SWITCH	4	0.00100	8.40	0.0336
TANSFORMER FLYBACK	1	0.02300	3.00	0.0690
TANSIENT VOLTAGE SUPPRESSOR	9	0.00290	5.50	0.1436
THERMISTOR	1	0.06500	3.00	0.1950
TRANSISTOR, BIPOLAR	2	0.00015	5.50	0.0017
SOLDERED CONNECTIONS	1356	0.00007	1.00	0.0949
			<b>TOTAL</b>	<b>11.9831</b>
			<b>MTBF(HRS)</b>	<b>83451</b>
			<b>MTBF(YRS)</b>	<b>9.53</b>

mega-fabs Drive (MD-18-D) MTBF  
 HIWIN P/N:FD000MD12002

MTBF CALCULATION PER MIL-HDBK-217F PARTS COUNT RELIABILITY PREDICTION METHOD

ITEM	QUANTITY	FAILURE RATE PER 10 <sup>6</sup> HOURS	QUALITY FACTOR	TOTAL FAILURE RATE PER 10 <sup>6</sup> HOURS
CAPACITOR, CERAMIC	208	0.00360	3.0	2.2464
CAPACITOR, ELECTROLYTIC	3	0.02400	3.0	0.2160
CAPACITOR, METALLIZED PAPER	7	0.00290	3.0	0.0609
CAPACITOR, TANTALUM	1	0.00150	3.0	0.0045
CONNECTOR	17	0.00540	2.0	0.1836
DIODE, GENERAL PURPOSE	12	0.00360	5.5	0.2376
DIODE, LIGHT EMITTING	1	0.00047	8.0	0.0038
DIODE, SCHOTTKY	1	0.02700	5.5	0.1485
DIODE, ZENER	4	0.00330	5.5	0.0726
Display, LCD	1	0.00300	8.0	0.0240
FET, SILICON	11	0.01400	8.0	1.2320
IC, BIPOLAR LINEAR	27	0.00950	2.0	0.5130
IC, DIGITAL CMOS	1	0.00570	3.1	0.0177
IC, REGULATOR	8	0.00950	8.0	0.6080
IGBT	4	0.01400	8.0	0.4480
INDUCTOR, MOLDED	3	0.01700	4.0	0.2040
OPTOCOPLER/ISOPATOR	13	0.01300	8.0	1.3520
OSCILLATOR, CRYSTAL	1	0.03200	2.1	0.0672
RECTIFIER, POWER	8	0.00280	3.0	0.0672
RELAY	1	0.43000	3.0	1.2900
RESISTOR, METAL FILM	252	0.00120	3.0	0.9072
RESISTOR, METAL FILM POWER	4	0.01200	8.0	0.3840
SWITCH	4	0.00100	8.4	0.0336
TANSFORMER FLYBACK	1	0.02300	3.0	0.0690
TANSIENT VOLTAGE SUPPRESSOR	9	0.00290	5.5	0.1436
THERMISTOR	1	0.06500	3.0	0.1950
TRANSISTOR, BIPOLAR	2	0.00015	5.5	0.0017
SOLDERED CONNECTIONS	1210	0.00007	1.0	0.0847
			<b>TOTAL</b>	<b>10.8156</b>
			<b>MTBF(HRS)</b>	<b>92459</b>
			<b>MTBF(YRS)</b>	<b>10.55</b>

mega-fabs Drive (D2-0423-S-B(F)) MTBF  
 HIWIN P/N:FD000MD22001

MTBF CALCULATION PER MIL-HDBK-217F PARTS COUNT RELIABILITY PREDICTION METHOD

ITEM	QUANTITY	FAILURE RATE PER 10 <sup>6</sup> HOURS	QUALITY FACTOR	TOTAL FAILURE RATE PER 10 <sup>6</sup> HOURS
CAPACITOR, CERAMIC	231	0.00360	3.00000	2.4948
CAPACITOR, ELECTROLYTIC	10	0.02400	3.00000	0.7200
CAPACITOR, METALLIZED PAPER	5	0.00290	3.00000	0.0435
CAPACITOR, TANTALUM	1	0.00150	3.00000	0.0045
CONNECTOR	10	0.00540	2.00000	0.1080
DIODE, GENERAL PURPOSE	11	0.00360	5.50000	0.2178
DIODE, LIGHT EMITTING	1	0.00047	8.00000	0.0038
DIODE, ZENER	3	0.00330	5.50000	0.0545
Display, LCD	1	0.00300	8.00000	0.0240
FET, SILICON	5	0.01400	8.00000	0.5600
FUSE	1	0.01000	8.00000	0.0800
IC, BIPOLAR LINEAR	32	0.00950	2.00000	0.6080
IC, DIGITAL CMOS	1	0.00570	3.10000	0.0177
IC, REGULATOR	6	0.00950	8.00000	0.4560
IGBT	4	0.01400	8.00000	0.4480
INDUCTOR, MOLDED	5	0.01700	4.00000	0.3400
OPTO-ISOLATOR	23	0.01300	8.00000	2.3920
OSCILLATOR, CRYSTAL	1	0.03200	2.10000	0.0672
SWITCH	4	0.00100	8.40000	0.0336
RECTIFIER, POWER	3	0.00280	3.00000	0.0252
RELAY	1	0.43000	3.00000	1.2900
RESISTOR, METAL FILM	310	0.00120	3.00000	1.1160
RESISTOR, METAL FILM POWER	2	0.01200	8.00000	0.1920
TANSFORMER FLYBACK	1	0.02300	3.00000	0.0690
TANSIENT VOLTAGE SUPPRESSOR	3	0.00290	5.50000	0.0479
THERMISTOR	2	0.06500	3.00000	0.3900
TRANSISTOR, BIPOLAR	4	0.00015	5.50000	0.0033
SOLDERED CONNECTIONS	1362	0.00007	1.00000	0.0953
			<b>TOTAL</b>	<b>11.9020</b>
			<b>MTBF(HRS)</b>	<b>84020</b>
			<b>MTBF(YRS)</b>	<b>9.59</b>