

Available for these models with lower speed and same physical structure. All model may be followed by Rxx or Fxx series suffixes. This test report applies to <b>BFB50x50x20 mm</b> series as the right table	BFB0512HHD			
	BFB0512HD			
	BFB0512MD			
	BFB0512LD			

**Representative Test P/N : BFB0512VHD-F00**

**Equipment: 1.Oven: E24-F0030** On/Off Cycles: Every 500 hours

☉ **L<sub>10</sub> Expectancy: 50,000 hours minimum @ fan rated voltage and the temperature of 40°C**

According to the equation for **Weibull distribution**, **MTTF ≐ 7×L<sub>10</sub> = 350,000 hours**

And we rely on a zero failure Weibull test strategy and accelerated testing technique, to determine the total test time (t) for verifying the above life estimation by the equations,

$$t = 1.036 \times \text{MTTF} \times [(B_{r;c}) \div n]^{0.91 \div A_F}, \text{ and } A_F = 2^{(T_s - T_u)/10}$$

where, (B<sub>r;c</sub>) is Poisson distribution factor with the failure number of r equal to 0 and the decimal confidence level of c equal to 0.90(90%).

Stress/Elevated Temperature Ts (°C) (Actual Test Temperature)	Unstress Temperature Tu (°C)	Acceleration Factor A <sub>F</sub>	Quantity of Test Devices n (pcs)	Poisson Distribution Factor B <sub>r;c</sub>	Required test time with zero failure t (hours)	Actual test time with zero failure t (hours)	Verified MTTF 40 °C (hours)	Verified L <sub>10</sub> 40 °C (hours)
<b>70</b>	<b>40</b>	<b>8.00</b>	<b>56</b>	<b>2.303</b>	<b>2,484</b>	<b>2,484.0</b>	<b>349,982</b>	<b>49,997</b>

### Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
<b>2003/12/18 5:00 PM</b>	<b>2004/4/8 5:07 PM</b>	<input type="checkbox"/> In process	<input checked="" type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	<b>2484.0</b>

Herewith, we could assume as right on the basis of above test result. Besides, if the actual test time exceed the required, it comes out that those fans' L<sub>10</sub> expectancy and MTTF are greater than the warrant. (MTTF: means Mean Time To Failures, it should be used in a non-repairable system setting. Now we show the MTTF in our life report, that's because we will not repair the failed fans during life experiment. MTBF: means Mean Time Between failures, it should be used in a repairable system setting. Basically, MTBF is equal to MTTF, they use same formula to work out a life data.)

Temperature for MTTF Estimation (°C)	Acceleration Factor A <sub>F</sub>	Estimated MTTF (hours)	Estimated L <sub>10</sub> (hours)
25	22.63	989,898	141,414
30	16.00	699,964	99,995
40	8.00	349,982	49,997
50	4.00	174,991	24,999
60	2.00	87,495	12,499
<b>70</b>	<b>1.00</b>	<b>43,748</b>	<b>6,250</b>

Fan permission criteria for the measurement after test :

1. For current, the limit is less than spec.(max.).
2. For speed, the allowable decrease is less than 15%.
3. For noise, the limit is less than spec.(max.). + 3 dB

**Test Result**

**Accept**

**Reject**

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
<b>DG03FNL212</b>	<b>204.00</b>	<b>2004/4/8 5:00 PM</b>	<b>Huiling.Fu</b>	<b>Even.Liu</b>

Note: The test sample equivalent to STD, Part number: BFB0512VHD-F00.



# DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

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BFB0512HHD			
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BFB0512MD			
BFB0512LD			

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
2,484	2003/12/18 5:00 PM	2004/4/8 5:07 PM	56	0	2484.0

Representative Test P/N :BFB0512VHD-F00	<b>Current Test Status</b>	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input type="checkbox"/> Termination
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Equipment: 1.Oven: E24-F0030 On/Off Cycles: Every 500 hours

### Test Data Between Initial Test and Final Test

Sample No.	Initial Test Current Spec. (A)	Final Test Current Spec. (A)	Deviation (%)	Initial Test Speed Spec. (RPM)	Final Test Speed Spec. (RPM)	Deviation (%)	Initial Test Noise Spec. (dB A)	Final Test Noise Spec. (dB A)	Deviation (%)
	0.28Max.	0.28Max.		4876-5724	4876-5724		42.5Max	42.5Max	
1	0.21	0.20	-4.8	5686	5720	0.6	40.6	41.1	1.2
2	0.21	0.21	0.0	5608	5711	1.8	40.9	40.8	-0.2
3	0.21	0.21	0.0	5675	5712	0.7	40.7	40.9	0.5
4	0.21	0.21	0.0	5722	5694	-0.5	40.7	41.1	1.0
5	0.21	0.21	0.0	5653	5716	1.1	40.8	41.7	2.2
6	0.21	0.21	0.0	5703	5649	-0.9	40.6	40.5	-0.2
7	0.21	0.21	0.0	5675	5717	0.7	41.1	40.6	-1.2
8	0.21	0.21	0.0	5677	5709	0.6	40.7	40.9	0.5
9	0.21	0.21	0.0	5622	5694	1.3	41.3	40.8	-1.2
10	0.21	0.21	0.0	5667	5715	0.8	40.6	40.8	0.5
11	0.21	0.21	0.0	5644	5714	1.2	40.8	40.6	-0.5
12	0.21	0.21	0.0	5687	5692	0.1	40.8	40.5	-0.7
13	0.21	0.21	0.0	5682	5686	0.1	40.5	40.4	-0.2
14	0.21	0.21	0.0	5697	5692	-0.1	40.9	40.9	0.0
15	0.21	0.21	0.0	5689	5676	-0.2	41.0	41.0	0.0
16	0.21	0.21	0.0	5638	5689	0.9	40.4	41.2	2.0
17	0.21	0.21	0.0	5692	5694	0.0	40.7	40.8	0.2
18	0.21	0.21	0.0	5692	5690	0.0	41.2	40.9	-0.7
19	0.21	0.21	0.0	5680	5692	0.2	40.8	41.0	0.5
20	0.21	0.21	0.0	5630	5673	0.8	40.5	41.2	1.7
21	0.21	0.21	0.0	5652	5692	0.7	40.7	40.8	0.2
22	0.21	0.21	0.0	5689	5693	0.1	40.6	40.9	0.7
23	0.21	0.21	0.0	5717	5702	-0.3	40.6	41.0	1.0
24	0.21	0.21	0.0	5671	5703	0.6	40.5	40.8	0.7
25	0.21	0.21	0.0	5626	5714	1.6	40.8	40.7	-0.2
26	0.21	0.21	0.0	5661	5716	1.0	40.6	40.9	0.7
27	0.21	0.21	0.0	5651	5716	1.2	40.7	41.0	0.7
28	0.21	0.21	0.0	5657	5656	0.0	40.7	41.1	1.0
29	0.21	0.21	0.0	5654	5691	0.7	40.6	40.8	0.5
30	0.21	0.21	0.0	5603	5697	1.7	40.7	40.8	0.2
31	0.21	0.21	0.0	5705	5709	0.1	40.6	40.5	-0.2
32	0.21	0.21	0.0	5703	5672	-0.5	40.8	40.6	-0.5
33	0.21	0.21	0.0	5713	5713	0.0	40.3	40.5	0.5
34	0.21	0.21	0.0	5673	5592	-1.4	40.5	40.4	-0.2
35	0.21	0.21	0.0	5693	5676	-0.3	40.4	40.7	0.7

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG03FNL212	204.00	2004/4/8 5:00 PM	Huiling.Fu	Even.Liu



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Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)
2,484	2003/12/18 5:00 PM	2004/4/8 5:07 PM	56	0	2484.0

Representative Test P/N :BFB0512VHD-F00	<b>Current Test Status</b>	<input checked="" type="checkbox"/> In process	<input checked="" type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination
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Equipment: 1.Oven: E24-F0030	On/Off Cycles: Every 500 hours
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### Test Data Between Initial Test and Final Test

Sample No.	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)
	Current Spec.	Current Spec.		Speed Spec.	Speed Spec.		Noise Spec.	Noise Spec.	
	( A ) 0.28Max.	( A ) 0.28Max.		( RPM ) 4876-5724	( RPM ) 4876-5724		( dB A ) 42.5Max	( dB A ) 42.5Max	
36	0.21	0.21	0.0	5662	5663	0.0	40.8	40.8	0.0
37	0.21	0.21	0.0	5678	5633	-0.8	40.8	40.8	0.0
38	0.21	0.21	0.0	5672	5685	0.2	41.0	41.0	0.0
39	0.21	0.21	0.0	5645	5719	1.3	41.1	41.1	0.0
40	0.21	0.21	0.0	5714	5720	0.1	40.7	40.7	0.0
41	0.21	0.21	0.0	5685	5708	0.4	40.9	40.8	-0.2
42	0.21	0.21	0.0	5716	5771	1.0	40.8	40.8	0.0
43	0.21	0.21	0.0	5702	5492	-3.7	40.7	40.8	0.2
44	0.21	0.21	0.0	5685	5576	-1.9	40.6	40.9	0.7
45	0.21	0.21	0.0	5701	5762	1.1	40.9	40.8	-0.2
46	0.21	0.21	0.0	5712	5572	-2.5	40.8	41.1	0.7
47	0.21	0.21	0.0	5647	5678	0.5	40.9	40.8	-0.2
48	0.21	0.21	0.0	5655	5796	2.5	41.0	40.5	-1.2
49	0.21	0.21	0.0	5720	5801	1.4	40.7	40.4	-0.7
50	0.21	0.21	0.0	5652	5796	2.5	41.1	41.1	0.0
51	0.21	0.21	0.0	5658	5859	3.6	40.9	40.8	-0.2
52	0.21	0.21	0.0	5683	5732	0.9	40.8	40.9	0.2
53	0.21	0.21	0.0	5657	5849	3.4	41.0	40.7	-0.7
54	0.21	0.21	0.0	5718	5472	-4.3	40.8	41.0	0.5
55	0.21	0.21	0.0	5705	5849	2.5	40.7	40.8	0.2
56	0.21	0.21	0.0	5684	5749	1.1	40.9	40.9	0.0
X-Bar	0.210	0.210	-	5675.9	5699.0	-	40.76	40.83	-
σ	0.000	0.001	-	29.231	70.340	-	0.202	0.235	-

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