Jameco Part Number 252620

50W Single Output Switching Power Supply

LPS-50 series

MODEL: LPS-50-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 23 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 21.6V~ 27.2 V (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	20.64V~28.17 V/230VAC 20.67V~ 281.8 V/115VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -1 %~ 1 % (Max)	I/P: 90 VAC / 264 VAC O/P:FULL/ 0 % LOAD Ta:25℃	V1: 0.02 %~ -0.02 %	P
4	LINE REGULATION	V1: -1 %~ 1 % (Max)	I/P: 90 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~ 0 %	P
5	LOAD REGULATION	V1: -1 %~ 1 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0 %~ 0.03 %	P
6	SET UP TIME	230 VAC/ 100 ms (Max) 115 VAC/ 100 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 51 ms 115 VAC/ 16 ms	P
7	RISE TIME	230 VAC/ 40 ms (Max) 115 VAC/ 40 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 9.8 ms 115 VAC/ 9.4 ms	P
8	HOLD UP TIME	230VAC/ 50 ms (Min) 115VAC/ 12 ms (Min)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 85 ms 115 VAC/ 18 ms	P
9	OVER/UNDERSHOOT TEST	＜±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 1200 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	567 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90 VAC~ 264 VAC (Typ)	I/P:TESTING O/P:FULL LOAD Ta:25℃	55V~ 264 V	P
			I/P: LOW-LINE-3V= 87 V HIGH-LINE+15%= 300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47 HZ ~ 63 HZ (Typ) NO DAMAGE OSC	I/P: 90 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	EFFICIENCY	85 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	86.6 %	P
4	INPUT CURRENT	230 V/ 0.8 A (Max) 115 V/ 1.2 A (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 0.54 A/ 230 VAC I = 0.88 A/ 115VAC	P
5	INRUSH CURRENT	230 V/ 35 A (Max) 115 V/ 25 A (Max) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 32.9 A/ 230 VAC I = 20 A/ 115 VAC	P
6	LEAKAGE CURRENT	< 1 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.54 mA N-FG: 0.54 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	122 %~ 160 %(Typ)	I/P: 230 VAC I/P: 115VAC O/P:TESTING Ta:25℃	148%/230VA 137%/115VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 27.6 V~ 32.4 V(Typ)	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	29V/230VAC 28.9V/115VAC Hiccup Model	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 267 VAC O/P: Full LOAD Ta:25℃	NO DAMAGE Hiccup Mode	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	Rc+ / Rc- 0 V~ 0.8 V POWER ON 4 V~ 10 V POWER OFF	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	0 V ~ 3 V POWER ON 3.6V ~ 10 V POWER OFF	P

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ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： LPS-50-24V
1. ROOM AMBIENT BURN-IN：2.5 HRS
I/P: 230 VAC O/P: 100% LOAD Ta= 28.8 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P: 230 VAC O/P: 100% LOAD Ta= 64.2 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 28.8℃</th><th>HIGH AMBIENT Ta=64.2 ℃</th></tr>
<tr><td>1</td><td>LF1</td><td>21070H</td><td>40.9℃</td><td>67.1℃</td></tr>
<tr><td>2</td><td>BD1</td><td>D3SB60 4A/600V</td><td>47.8℃</td><td>70.4℃</td></tr>
<tr><td>3</td><td>C5</td><td>100μ/400V 105℃ AXW</td><td>43.2℃</td><td>64.7℃</td></tr>
<tr><td>4</td><td>C12</td><td>22μ/50V 105℃ KY</td><td>47.3℃</td><td>70.8℃</td></tr>
<tr><td>5</td><td>Q1</td><td>2SK2645 9A/600V</td><td>65.4℃</td><td>93.9℃</td></tr>
<tr><td>6</td><td>U1</td><td>IC1203</td><td>46.3℃</td><td>68.6℃</td></tr>
<tr><td>7</td><td>D1</td><td>EGP20J 2A/600V</td><td>61.3℃</td><td>88.8℃</td></tr>
<tr><td>8</td><td>T1 COIL</td><td>TF900</td><td>57.4℃</td><td>80.7℃</td></tr>
<tr><td>9</td><td>T1 CORE</td><td>TF900</td><td>51.7℃</td><td>74.9℃</td></tr>
<tr><td>10</td><td>D51</td><td>BYQ28-200 10A/200V</td><td>58.0℃</td><td>83.7℃</td></tr>
<tr><td>11</td><td>C52</td><td>330U/35V 105℃YXG</td><td>47.5℃</td><td>72.1℃</td></tr>
<tr><td>12</td><td>R52</td><td>910Ω/2W R/MO</td><td>61.1℃</td><td>82.3℃</td></tr>
<tr><td>13</td><td>R11</td><td>0.39Ω/2W R/MO</td><td>50.1℃</td><td>74.6℃</td></tr>
<tr><td>14</td><td>R2</td><td>33KΩ/2W R/MO</td><td>63.7℃</td><td>87.1℃</td></tr>
<tr><td>15</td><td>R3</td><td>39KΩ/2W R/MO</td><td>58.2℃</td><td>81.4℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P: 152%
Ta:25℃</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 230 VAC
O/P: 100 % LOAD
Ta= -20 ℃</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 50℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 50 ℃
HUMIDITY= 95 %R.H</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.04 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>0.01 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set Operating at I/P: 230 VAC NO LOAD
(1) Waveform: Sine Wave
(2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle
(4) Acceleration:2G
(5) Test Time:1 hour in each axis (X.Y.Z)
(6) Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
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SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 3.85 mA I/P-FG: 4.1 mA O/P-FG: 2.23 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃	I/P-O/P: 29G Ω I/P-FG: 15G Ω O/P-FG: 29G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	30 A / 2min Ta:25℃	18 mΩ	P
4	APPROVAL	TUV: Certificate NO ：R50033909 UL: File NO ：E183223			P

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 52 IS THE MOST CRITICAL COMPONENT I/P:230VAC O/P:FULL LOAD Ta=25℃ LIFE TIME= 119659 HRS I/P:230VAC O/P:FULL LOAD Ta=50℃ LIFE TIME= 28706 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 341.7K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	Q 1 Rated K2645: 600 V 9 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 438 V (2) 462 V (3) 502 V	P
2	Diode Peak **Voltage**	D51 Rated BYQ28X-200 : 200 V 10 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 144 V (2) 160 V (3) 146 V	P
3	Clamp Diode Peak **Voltage**	D1 Rated EGP20J : 600 V 2 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25℃	(1) 456 V (2) 454 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2003/9/24	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2003/11/21	PRODUCT SAMPLE A310B03	PASS	VINCENT TSENG	MAX LIN
2004/3/12	PRODUCT SAMPLE A402B03	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023