LS150

RELIABILITY DATA

DWG. No PA579-57-01		
APPD	CHK	DWG
30 May 08	30/May/08	

DENSEI-LAMBDA

I N D E X

※ The above data is typical value. As all units have nearly the same characteristics, the data to be considered as ability value.

1. Calculated values for MTBF

MODEL : LS150-5

1. Calculating Method

Calculated based on part count reliability projection of JEITA (RCR-9102).
Individual failure rates λ_G is given to each part and MTBF is calculated by the count of each part.

Formula :

$$MTBF = \frac{1}{\lambda equip} = \frac{1}{\sum_{i=1}^{n} Ni\,(\lambda_G \pi_Q)_i} \times 10^6 \text{ (HOURS)}$$

where :

$\lambda equip$ = Total Equipment Failure Rate (Failure / 106 Hours)

λ_G = Generic Failure Rate For The ith Generic Part (Failure / 106 Hours)

Ni = Quantity of ith Generic Part

n = Number of Different Generic Part Categories

π_Q = Generic Quality Factor for the ith Generic Part (π_Q = 1)

2. MTBF Values

G_F : (GROUND, FIXED)

MTBF = 505,393 (Hours)

2. Component derating

MODEL : LS150-5

(1) Calculating method

(a) Measuring Conditions

Input	:	115 , 230VAC	• Ambient temperature	:	50°C
Output	:	5V 26A(100%)	• Mounting method	:	Mounting A

(b) Semiconductors

Compared with maximum junction temperature and actual one which is calculated based on case temperature, power dissipation and thermal impedance.

(c) IC, Resistors, Capacitors, etc.

Ambient temperature, operating condition, power dissipation and so on are within derating criteria.

(d) Calculating Method of Thermal Impedance

$$\theta_{j-c} = \frac{T_{j(max)} - T_c}{P_{c(max)}} \qquad \theta_{j-a} = \frac{T_{j(max)} - T_a}{P_{c(max)}} \qquad \theta_{j-l} = \frac{T_{j(max)} - T_l}{P_{c(max)}}$$

T_c : Case temperature at start point of derating ; 25°C in general

T_a : Ambient temperature at start point of derating ; 25°C in general

T_j : Lead temperature at start point of derating ; 25°C in general

$P_{c(max)}$ ($P_{ch(max)}$) : Maximum collector(channel) dissipation

$T_{j(max)}$ ($T_{ch(max)}$) : Maximum junction(channel) temperature

(θ_{j-c}) (θ_{ch-c}) :Thermal impedance between junction(channel) and case

θ_{j-a} :Thermal impedance between junction and air

θ_{j-l} :Thermal impedance between junction and lead

(2) Component Derating List

Location No.	Vin = 115VAC Load = 100% Ta = 40°C	
Q1 2SK2611(F) TOSHIBA	Tchmax = 150°C, θ ch-c = 0.833°C/W, Pch = 3.43W, Δ Tc = 52.6°C, Tch = Tc + ((θ ch-c) × Pch) = 95.46°C D.F. = 63.64%	Pch(max) = 150W Tc = 92.6°C
D7 S30SC4M-7100 SHINDENGEN	Tjmax = 150°C, θj-c = 1.0°C/W, Pd = 6.72W, Δ Tc = 68.3°C, Tj = Tc + ((θ j-c) × Pd) = 115.02°C D.F. = 76.68%	Tc = 108.3°C
D8 S30SC4M-7100 SHINDENGEN	Tjmax = 150°C, θj-c = 1.0°C/W, Pd = 6.72W, Δ Tc = 65°C, Tj = Tc + ((θ j-c) × Pd) = 111.72°C D.F. = 74.48%	Tc = 105°C
D1 RS405M RECTRON	Tjmax = 150°C, θ j-c = 6.0°C/W Pd = 1.595W, Δ Tc = 53.0°C Tj = Tc + ((θ j-c) × Pd) = 102.57°C D.F. = 68.38%	Tc = 93.0°C
D2 CMF03(TE12L,Q) TOSHIBA	Tjmax = 125°C, θ j-l = 16.0°C/W Pd = 80mW, Δ Tl = 56.3°C Tj = Tl + ((θ j-l) × Pd) = 97.58°C D.F. = 78.06%	Tl = 96.3°C
D12 CMF03(TE12L,Q) TOSHIBA	Tjmax = 125°C, θ j-l = 16.0°C/W Pd = 80mW, Δ Tl = 56.3°C Tj = Tl + ((θ j-l) × Pd) = 97.58°C D.F. = 78.06%	Tl = 96.3°C
D5 CRH01 TOSHIBA	Tjmax = 150°C, θ j-l = 20.0°C/W Pd = 14mW, Δ Tl = 54.1°C Tj = Tl + ((θ j-l) × Pd) = 94.38°C D.F. = 62.92%	Tl = 94.1°C
PC1 PS2561BL1-1-A(D) (TRANSISTOR) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 3.6mW, Δ Tc = 42.5°C, Tj = Tc + ((θ j-c) × Pc) = 83.04°C D.F. = 66.43%	Pc(max) = 150mW Tc = 82.5°C
PC1 PS2561BL1-1-A(D) (LED) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 2.34mW, Δ Tc = 42.5°C, Tj = Tc + ((θ j-c) × Pc) = 82.85°C D.F. = 66.28%	Pc(max) = 150mW Tc = 82.5°C
PC2 PS2561BL1-1-A(D) (TRANSISTOR) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 0.0W, Δ Tc =42.5°C, Tj = Tc + ((θ j-c) × Pc) = 82.5°C D.F. = 66.0%	Pc(max) = 150mW Tc = 82.5°C
PC2 PS2561BL1-1-A(D) (LED) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 0W, Δ Tc = 42.5°C, Tj = Tc + ((θ j-c) × Pc) = 82.5°C D.F. = 66.0%	Pc(max) = 150mW Tc = 82.5°C
A1 FA13844N-D1-TE1 FUJI-ELEC.	Tjmax = 150°C, θ j-c = 72°C/W Pd = 75mW, Δ Tc = 55.3°C Tj = Tc + ((θ j-c) × Pd) = 100.7°C D.F. = 67.13%	Tc = 95.3°C

A2 HA17431PA-TZ-E RENESAS	Tjmax = 150°C, Pd = 6.8mW, Tj = Tc + ((θ j-c) × Pd) = 63.58°C D.F. = 42.39%	θ j-c = 100°C/W, Δ Tc = 22.9°C,	Tc = 62.9°C
PD1 264-7GVD/S530-E2 EVERLIGHT	IF = 5.96mA, Allowable IF(max)= D.F. = 45.85%	Δ Tc = 22.6C 13mA(at Ta = 62.6°C)	Tc = 62.6°C

Component Derating List

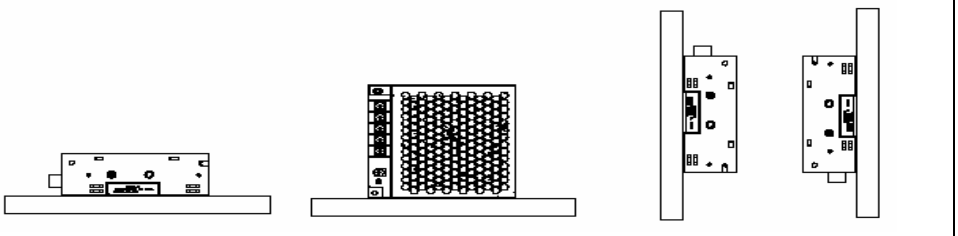
Location No.	Vin = 230VAC Load = 100% Ta = 40°C	
Q1 2SK2611(F) TOSHIBA	Tchmax = 150°C, θ ch-c = 0.833°C/W, Pch = 3.35W, Δ Tc = 47.6°C, Tch = Tc + ((θ ch-c) × Pch) = 90.39°C D.F. = 60.26%	Pch(max) = 150W Tc = 87.6°C
D7 S30SC4M-7100 SHINDENGEN	Tjmax = 150°C, θj-c = 1.0°C/W, Pd = 6.54W, Δ Tc = 67.1°C, Tj = Tc + ((θ j-c) × Pd) = 113.64°C D.F. = 75.76%	Tc = 107.1°C
D8 S30SC4M-7100 SHINDENGEN	Tjmax = 150°C, θj-c = 1.0°C/W, Pd = 6.54W Δ Tc = 64.2°C, Tj = Tc + ((θ j-c) × Pd) = 110.74°C D.F. = 73.83%	Tc = 104.2°C
D1 RS405M RECTRON	Tjmax = 150°C, θ j-c = 6.0°C/W Pd = 1.21W, Δ Tc = 47.8°C Tj = Tc + ((θ j-c) × Pd) = 95.06°C D.F. = 63.37%	Tc = 87.8°C
D2 CMF03(TE12L,Q) TOSHIBA	Tjmax = 125°C, θ j-l = 16°C/W Pd = 80mW, Δ Tl = 55.3°C Tj = Tl + ((θ j-l) × Pd) = 96.58°C D.F. = 77.26%	Tl = 95.3°C
D12 CMF03(TE12L,Q) TOSHIBA	Tjmax = 125°C, θ j-l = 16°C/W Pd = 80mW, Δ Tl = 55.3°C Tj = Tl + ((θ j-l) × Pd) = 96.58°C D.F. = 77.26%	Tl = 95.3°C
D5 CRH01 TOSHIBA	Tjmax = 150°C, θ j-l = 20.0°C/W Pd = 11mW, Δ Tl = 53.1°C Tj = Tl + ((θ j-l) × Pd) = 93.32°C D.F. = 62.21%	Tl = 93.1°C
PC1 PS2561BL1-1-A(D) (TRANSISTOR) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 3.6mW, Δ Tc = 41.7°C, Tj = Tc + ((θ j-c) × Pc) = 82.24°C D.F. = 65.79%	Pc(max) = 150mW Tc = 81.7°C
PC1 PS2561BL1-1-A(D) (LED) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 2.34mW, Δ Tc = 41.7°C, Tj = Tc + ((θ j-c) × Pc) = 82.05°C D.F. = 65.64%	Pc(max) = 150mW Tc = 81.7°C
PC2 PS2561BL1-1-A(D) (TRANSISTOR) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 0.0W, Δ Tc =41.7°C, Tj = Tc + ((θ j-c) × Pc) = 81.7°C D.F. = 65.36%	Pc(max) = 150mW Tc = 81.7°C
PC2 PS2561BL1-1-A(D) (LED) NEC	Tjmax = 125°C, θ j-c = 150°C/W, Pc = 0W, Δ Tc = 41.7°C, Tj = Tc + ((θ j-c) × Pc) = 81.7°C D.F. = 65.36%	Pc(max) = 150mW Tc = 81.7°C
A1 FA13844N-D1-TE1 FUJI-ELEC.	Tjmax = 150°C, θ j-c = 72°C/W Pd = 75mW, Δ Tc = 54.3°C Tj = Tc + ((θ j-c) × Pd) = 99.7°C D.F. = 66.47%	Tc = 94.3°C

A2 HA17431PA-TZ-E RENESAS	Tjmax = 150°C, Pd = 6.8mW, Tj = Tc + ((θ j-c) × Pd) = 63.28°C D.F. = 42.19%	θ j-c = 100°C/W, Δ Tc = 22.6°C,	Tc = 62.6°C
PD1 264-7GVD/S530-E2 EVERLIGHT	IF = 5.96mA, Allowable IF(max)= D.F. = 45.85%	Δ Tc = 23.7C 13mA(at Ta = 63.7°C)	Tc = 63.7°C

3. Main components temperature rise ΔT list

MODEL : LS150-5

Condition:

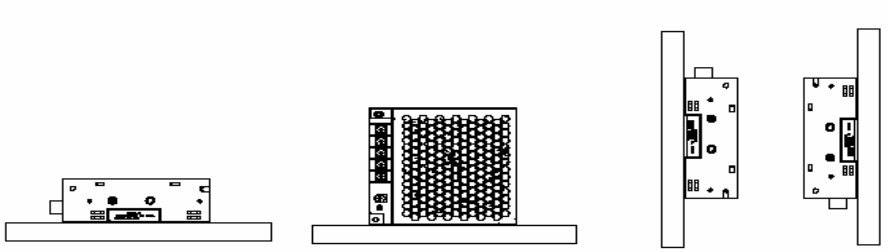
Standard Mounting (Mounting Method (A)	(A)
	 Mounting A Mounting B Mounting C Mounting D
Input Voltage (VAC)	115
Output Voltage (VDC)	5
Output Current (A)	26

			ΔT Temperature rise (°C)		
Output Derating Ta = 40°C		Io=100%	Io=85%	Io=85%	Io=85%
Location No	Parts Name	Mounting (A)	Mounting (B)	Mounting (C)	Mounting (D)
Q1	MOSFET	52.6	39.9	35.7	45.9
D1	BRIDGE DIODE	53.0	45.5	48.4	41.5
D7	F.R. DIODE	68.3	56	57.5	57.7
D8	F.R. DIODE	65	52.7	54.2	54.4
A1	CHIP IC	55.3	41.6	39.2	50.9
A2	CHIP SHUNT REGULATOR	22.9	33	43.1	27.7
PC1	CHIP PHOTOCOUPLER	42.5	33.7	32.5	46.6
T1	TRANS. PULSE	72	46.9	45	55.3
L1	BALUN COIL	61.4	46.7	50.1	40.9
L2	CHOKE COIL	50.4	45.9	37.6	48.2
L7	CHOKE COIL	87.6	56.5	53.6	54
L13	BALUN COIL	58.1	45.7	51.3	37
C5	CAP. ELECT.	34.1	36.2	30.5	40.1
C6	CAP. ELECT.	32.2	34.2	29	40.8
C26	CAP. ELECT.	55.3	42.4	54.2	37.9
C27	CAP. ELECT.	60.5	44.6	56.2	40.3
C28	CAP. ELECT.	61.1	49.6	56.1	46.4
C29	CAP. ELECT.	66.7	48.3	53.8	37.9

3. Main components temperature rise ΔT list

MODEL : LS150-5

Condition:

Standard Mounting (Mounting Method (A)	(A)  Mounting A Mounting B Mounting C Mounting D
Input Voltage (VAC)	230
Output Voltage (VDC)	5
Output Current (A)	26

			ΔT Temperature rise (°C)		
Output Derating Ta = 40°C		Io=100%	Io=85%	Io=85%	Io=85%
Location No	Parts Name	Mounting (A)	Mounting (B)	Mounting (C)	Mounting (D)
Q1	MOSFET	47.6	39.6	31.3	45.4
D1	BRIDGE DIODE	47.8	42.7	42.8	36.6
D7	F.R. DIODE	67.1	55.8	57.8	57.2
D8	F.R. DIODE	64.2	52.5	54.5	53.9
A1	CHIP IC	54.3	41.8	39.8	50.8
A2	CHIP SHUNT REGULATOR	22.6	33	42.9	28.1
PC1	CHIP PHOTOCOUPLER	41.7	33.3	32.5	45.9
T1	TRANS. PULSE	68	46.9	45.3	54.4
L1	BALUN COIL	39	36.5	37.9	28.4
L2	CHOKE COIL	37.9	39.5	30.9	38.5
L7	CHOKE COIL	83	56.1	53.5	53.5
L13	BALUN COIL	36.9	35.5	38.7	25.8
C5	CAP. ELECT.	29.4	35.7	26.4	32.1
C6	CAP. ELECT.	28.1	30.2	25.5	33.3
C26	CAP. ELECT.	53.4	41.6	52.3	34.9
C27	CAP. ELECT.	59.4	43.7	54.1	37.9
C28	CAP. ELECT.	59.4	48.4	54.2	43.7
C29	CAP. ELECT.	65	47.7	52	24.4

4. Electrolytic capacitor lifetime

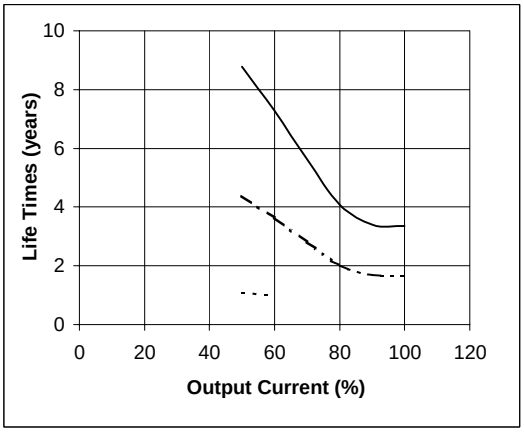
MODEL : LS150-5

Ta = 40°C
= 50°C
= 70°C

Mounting A

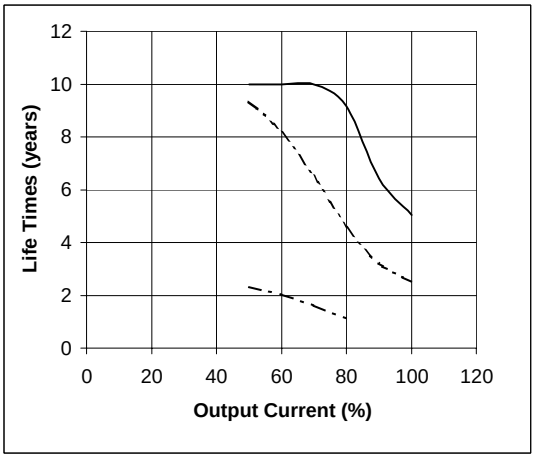
Vin = 115VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	8.8	4.4	1.1
60	7.3	3.6	1.0
70	5.6	2.8	—
80	4.1	2.0	—
90	3.4	1.7	—
100	3.3	1.7	—



Vin = 230VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	10.0	9.3	2.3
60	10.0	8.2	2.0
70	10.0	6.5	1.6
80	9.2	4.6	1.1
90	6.4	3.2	—
100	5.0	2.5	—

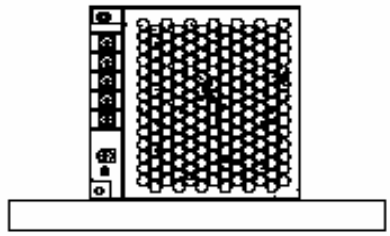


Note : E-cap life calculation is based on 8hrs/day operation.

4. Electrolytic capacitor lifetime

MODEL : LS150-5

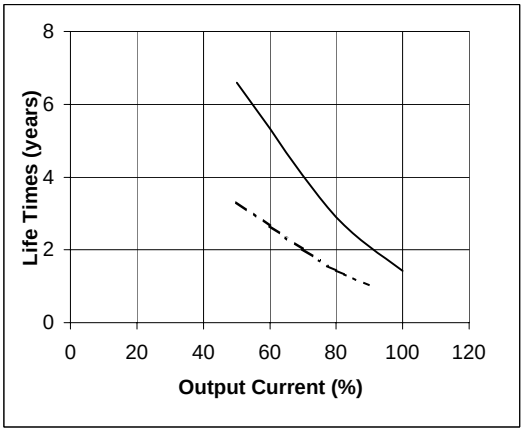
Mounting B



Ta = 40°C
= 50°C
= 70°C

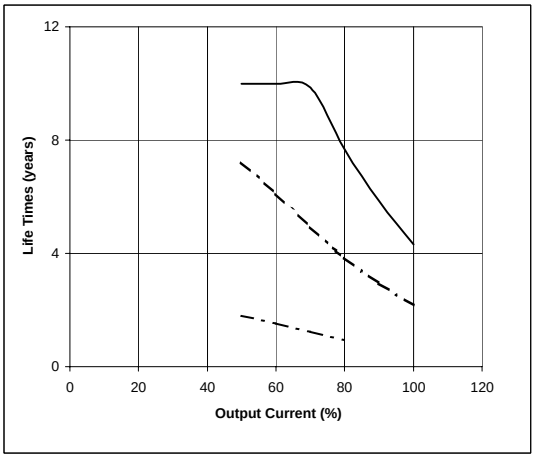
Vin = 115VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	6.6	3.3	—
60	5.3	2.7	—
70	4.0	2.0	—
80	2.9	1.4	—
90	2.1	1.0	—
100	1.4	—	—



Vin = 230VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	10.0	7.2	1.8
60	10.0	6.1	1.5
70	9.9	4.9	1.2
80	7.7	3.8	1.0
90	5.9	2.9	—
100	4.3	2.2	—

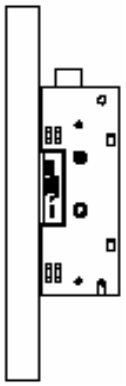


Note : E-cap life calculation is based on 8hrs/day operation.

4. Electrolytic capacitor lifetime

MODEL : LS150-5

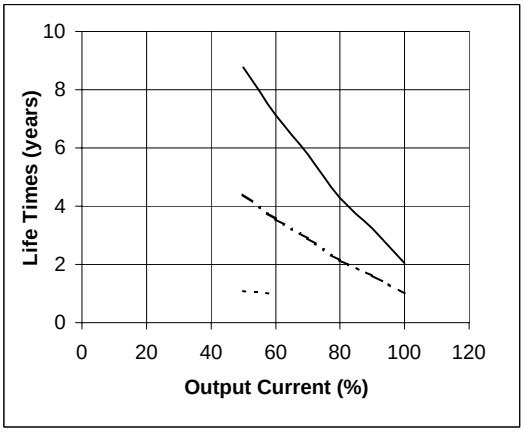
Mounting C



Ta = 40°C
= 50°C
= 70°C

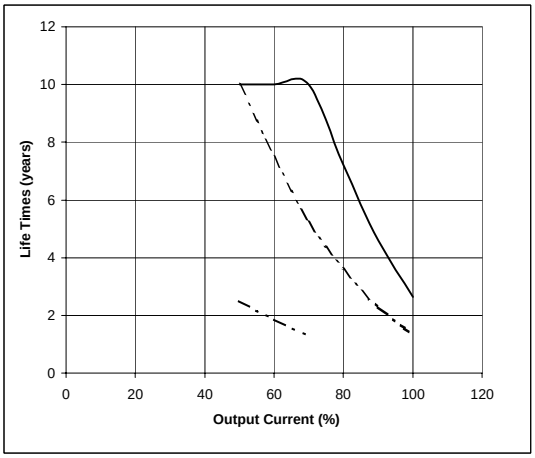
Vin = 115VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	8.8	4.4	1.1
60	7.1	3.6	1.0
70	5.8	2.9	—
80	4.3	2.1	—
90	3.2	1.6	—
100	2.0	1.0	—



Vin = 230VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	10.0	10.0	2.5
60	10.0	7.5	1.9
70	10.0	5.2	1.3
80	7.2	3.6	—
90	4.6	2.3	—
100	2.6	1.3	—

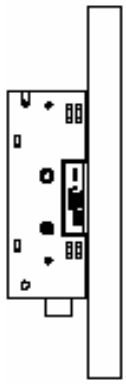


Note : E-cap life calculation is based on 8hrs/day operation.

4. Electrolytic capacitor lifetime

MODEL : LS150-5

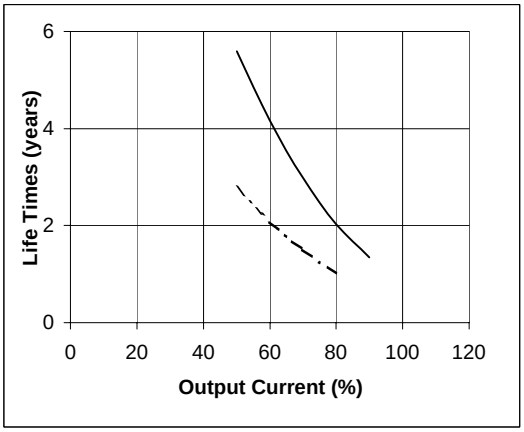
Mounting D



Ta = 40°C
= 50°C
= 70°C

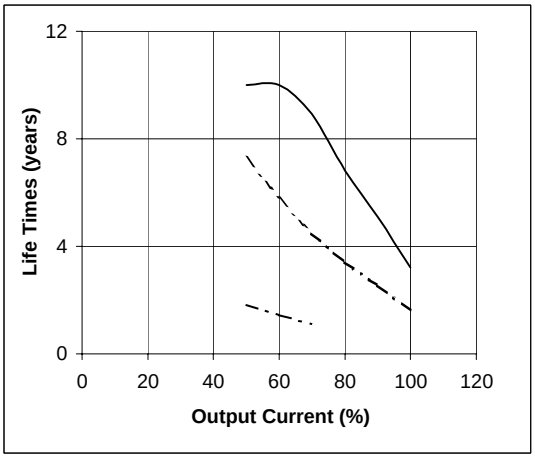
Vin = 115VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	5.6	2.8	—
60	4.2	2.1	—
70	3.0	1.5	—
80	2.0	1.0	—
90	1.3	—	—
100	—	—	—



Vin = 230VAC

Load (%)	Ta = 40°C	Ta = 50°C	Ta = 70°C
50	10.0	7.3	1.8
60	10.0	5.8	1.5
70	8.9	4.5	1.1
80	6.8	3.4	—
90	5.1	2.5	—
100	3.2	1.6	—



Note : E-cap life calculation is based on 8hrs/day operation.

5. Vibration Test

MODEL : LS150-5

(1) Vibration Test Class

Frequency Variable Endurance Test

(2) Equipment Used

Controller	:	F-400-BM-E47 (EMIC CORP.)
Vibrator	:	905-FN (EMIC CORP.)
Serial no.	:	22965

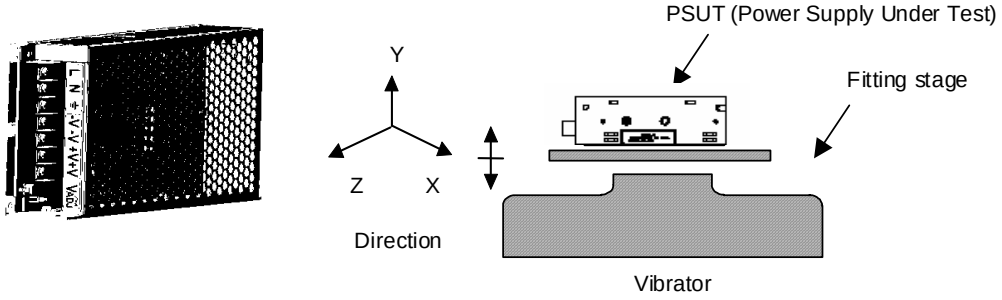
(3) The Number Of D.U.T. (Device Under Test)

1 Unit

(4) Test Conditions

Sweep Frequency	:	10 - 55Hz	Direction	:	X, Y, Z
Sweep Time	:	1 minute	Test Time	:	1 hour each axis
Acceleration	:	2G	Non-operation		
Mounting	:	A and B			

(5) Test Method



Fix the PSUT on the universal plate via two M3 tapped holes on the chassis of the power supply.
Standard mounting position as per test specification.

(6) Test results - OK

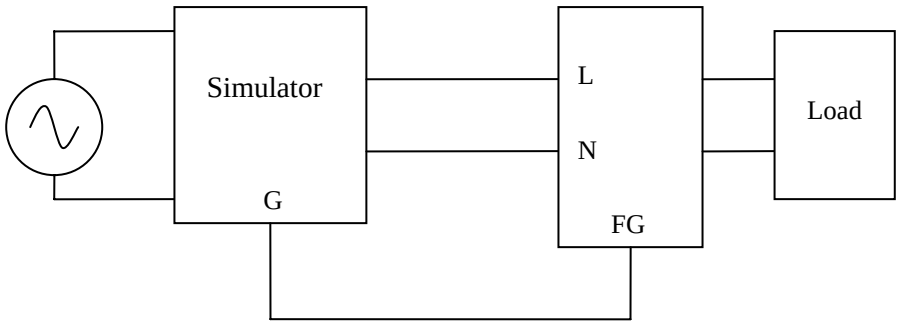
Test Conditions : Vin = 230 Vac Load Condition :
Ambient Temp. = +25 °C Full Load

Check Item		Output Voltage (V)	PSUT State
Before Test		Vo1	
		5.046	
After test	X	5.046	OK
	Y	5.046	OK
	Z	5.046	OK

6. Noise simulate test

MODEL : LS150-5

(1) Test circuit and equipment



Simulator : INS-400L Noise Laboratory Co.,LTD

(2) Test conditions

• Input voltage	:	115, 230VAC	• Noise level	:	0V~2.4kV
• Output voltage	:	Rated	• Phase shift	:	0° ~ 360°
• Output current	:	0%, 100%	• Polarity	:	+, -
• Ambient temperature	:	25°C	• Mode	:	Normal Common
• Pulse Width	:	0ns ~ 1000ns	• Trigger select	:	Line

(3) Acceptable conditions

1. Not to be broken.
2. No output shutdown.
3. No other out of order.

(4) Test result O K

7. Abnormal test

MODEL : LS150-5

(1) Test Condition

Input Voltage : 230VAC Output Current : 100% Ta : 25°C, 70% RH

(2) Test Results

(Da: Damaged)

No.	Test Position		Test Mode		Test Results												NOTE
	LOCATION	TEST POINT	SHORT	OPEN	1 FIRE	2 SMOKE	3 BURST	4 SMELL	5 RED HOT	6 DAMAGE	7 FUSE BLOW	8 O.C.P.	9 O.V.P.	10 NO OUTPUT	11 NO CHANGE	12 OTHER	
1	D1	1 - 4	•							•	•			•			Da : F1
		2 - 3	•							•	•			•			Da : F1
2	D2		•							•	•			•			Da : F1
				•											•		
3	D3		•												•		
				•											•		
4	D4		•														
				•											•		
5	D5		•													•	Hiccup
				•												•	Hiccup
6	D6		•												•		
				•											•		
7	D7	1-2	•													•	Hiccup
		2-3	•													•	Hiccup
		1-2		•											•		
		2-3		•											•		
8	D8	1-2	•													•	Hiccup
		2-3	•													•	Hiccup
		1-2		•											•		
		2-3		•											•		
9	D11		•												•		
				•											•		
10	D12		•							•	•			•			Da : F1
				•											•		
11	Q1	D - S	•							•	•			•			Da : F1
		D - G	•							•	•			•			Da : F1, Q1, Z3, Z4, A1
		G - S	•											•			
12	Q2	3 - 4	•											•		•	Latch
				•											•		
		1 - 6	•											•		•	Latch
				•											•		
		3 - 5	•											•		•	Latch
				•											•		
		6 - 2	•											•		•	Latch
				•											•		
13	Q3	C-E	•												•		
		C-B	•													•	Hiccup
		B-E	•													•	Hiccup
14	Q4	C-E	•											•			
		C-B	•											•			
		B-E	•												•		
15	Q5	C-E	•												•		
		C-B	•												•		
		B-E	•												•		
16	Z1		•							•							Da : C6
				•											•		

7. Abnormal test

MODEL : LS150-5

(1) Test Condition

Input Voltage : 230VAC Output Current : 100% Ta : 25°C, 70% RH

(2) Test Results

(Da: Damaged)

No.	Test Position		Test Mode		Test Results												NOTE
	LOCATION	TEST POINT	SHORT	OPEN	1 FIRE	2 SMOKE	3 BURST	4 SMELL	5 RED HOT	6 DAMAGE	7 FUSE BLOW	8 O.C.P.	9 O.V.P.	10 NO OUTPUT	11 NO CHANGE	12 OTHER	
17	Z3		•											•			
				•											•		
18	Z4		•												•		
				•											•		
19	Z5		•											•			
				•											•		
20	Z6		•										•			•	Latch
				•											•		
21	A1	Vcc - GND	•											•			
		Vref - GND	•											•			
		Isense - GND	•												•	•	Hissing Noise
		RtCt - GND	•											•			
		FB - GND	•												•		
		Comp - GND	•											•			
		Out - GND	•											•			
22	A2	A - K	•											•			
		R - K	•													•	Vo = 3.68V
		R - A	•											•		•	Latch
23	PC1	1 - 2	•										•	•			Latch
		3 - 4	•											•			
		1 - 2		•									•	•			Latch
		3 - 4		•										•			
24	PC2	1 - 2	•												•		
		3 - 4	•											•			
		1-2		•											•		
		3-4		•											•		
25	PD1		•												•		
				•											•		
26	T1	8 - 7	•													•	
		4 - 6	•													•	
		13,14,15,16 - 9,10,11,12	•							•				•	•		Da : F1, Q1
		1 - 2	•													•	
27	L1		•												•		
				•										•			
28	L2		•												•		
				•										•			
29	L3		•												•		
				•										•			
30	L7		•													•	Hiccup
				•										•			
31	L13		•												•		
				•										•			
32	R8		•												•		
				•								•					
33	R13		•												•		
				•								•					

7. Abnormal test

MODEL : LS150-5

(1) Test Condition

Input Voltage : 230VAC Output Current : 100% Ta : 25°C, 70% RH

(2) Test Results

(Da: Damaged)

No.	Test Position		Test Mode		Test Results												
	LOCATION	TEST POINT	SHORT	OPEN	1 FIRE	2 SMOKE	3 BURST	4 SMELL	5 RED HOT	6 DAMAGE	7 FUSE BLOW	8 O.C.P.	9 O.V.P.	10 NO OUTPUT	11 NO CHANGE	12 OTHER	NOTE
34	R29		•											•			
				•											•		
35	R32,R33,R34,R35,R54,R55		•												•		
36	R32/ R33/ R34/ R35/ R54/ R55			•											•		
37	R36,R37,R38,R73,R75,R97,R99,R101		•												•		
38	R36/ R37/ R38/ R73/ R75/ R97/ R99/ R101			•											•		
39	R39,R56,R57,R74,R76,R98,R100,R102		•												•		
40	R39/ R56/ R57/ R74/ R76/ R98/ R100/ R102			•											•		
41	R50		•										•			•	Latch
				•									•			•	Latch
42	C5		•							•							Da : C6
				•											•		
43	C6		•							•	•						Da : Z1, F1
				•											•		

8. Thermal shock test

MODEL : LS150

(1) Equipment Used

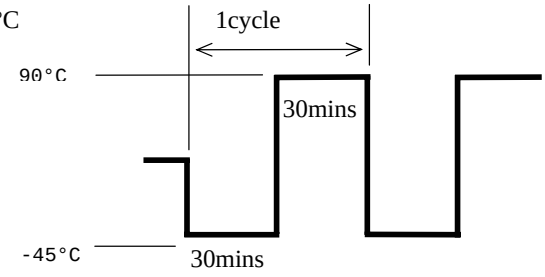
THERMAL SHOCK CHAMBER TSA-101S-W (ESPEC CORP.)

(2) The Number Of D.U.T.(Device Under Test)

1 unit

(3) Test Conditions

- Ambient temperature : -45°C ⟷ 90°C
- Test time : 30 mins each temp.
- Test cycle : 100 cycles
- Not operating



(4) Test Method

Before testing, check if there is no abnormal output, then put the D.U.T. in testing chamber, and test it according to the above cycle. 100 cycles later, leave it for 1 hour at the room temperature, then check if there is no abnormal output.

(5) Test Results OK

Vin : 230VAC Io : 100%			48V			
			From		To	
Ripple&Spike noise		mV	30.4		32	
Line regulation	Full load	mV	15		21	
Load regulation	Vin:115V	mV	16		21	
Efficiency	Pin	W	180.1	87.78%	180.12	87.81%
	Vout	V	47.899		47.928	
	Iout	A	3.3		3.3	
Solder condition • etc.			———		OK	