LWT30H-*

RELIABILITY DATA

DWG. NO : PA786-79-01				
APPD.(NLJ QA)	APPD.(NLM QA)	APPROVED	CHECKED	ENGR.
J. Murayama 26/JAN./95	M.K.HO 28/10/94 28/OCT/94	27/10/94	24/10/94	24. OCT. 94

NEMIC-LAMBDA

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

M. T. B. F.

MODEL : LWT30H-5FF

1. Method of calculation

This calculation is by the components count method laid down by the DC Stabilized Power Supplies (Switching Mode) Committee of EIAJ.

The MTBF is determined by means of a fixed component failure rate λ_G given to each component and the number of component count of each type of component. λ_G is determined based on MIL-HDBK-217F.

Formula :

$$MTBF = \frac{1}{\lambda_{equip}}$$

$$= \frac{1}{\sum_{i=1}^{n} N_i (\lambda_G \pi_Q)_i} \times 10^6 \quad (HOURS)$$

where :

λ_{equip} = Total Equipment Failure Rate (Failures / 10^6 Hours)

λ_G = Generic Failure Rate For The ith Generic Part (Failure / 10^6 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

1. G_F : (GROUND, FIXED)

MTBF = 452980 (HOURS)

COMPONENTS DERATING

(At Nominal Line and Rated Load , Ambient Temperature 40°C)

Calculation Method

A . Semiconductors

The derating factor is taken as the ratio of the actual operating junction temperature taking into consideration operating ambient temperature , power loss and thermal resistance to the maximum rated junction temperature specifications of the components .

B . IC , Resistors , Capacitors etc .

Operating ambient temperature , operating condition , power loss for each individual component are all designed to meet the requirements of Nemic-Lambda's design standard .

C . Thermal Resistance Calculation

$$\theta_{j-c} = \frac{T_{j(max)} - T_c}{P_{c(max)}} \quad , \quad \theta_{j-a} = \frac{T_{j(max)} - T_a}{P_{c(max)}}$$

T_c : Case Temperature (Normally 25°C)

T_a : Ambient Temperature (Normally 25°C)

$P_{c(max)}$: Maximum Power Loss

$T_{j(max)}$: Maximum Junction Temperature

θ_{j-c} : Junction To Case Thermal Resistance

θ_{j-a} : Junction To Ambient Thermal Resistance

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT30H-5FF

VIN – AC 100V LOAD – 100% Ta – 40°C

Q1 2SK903 FUJI	Tchmax =	150	°C	Θch-c =	3.125	°C/W	Pdmax =	40.0 W
	Pd =	2.91	W	Δ Tc =	45.3	°C	Tc =	85.3 °C
	Tch = Tc + (Θch-c)*Pd =				94.4	°C		
	D.F. =	62.9	%					
Q2 2SC3425 TOSHIBA	Tjmax =	150	°C	Θj-c =	12.5	°C/W	Pdmax =	10 W
	Pd =	0.1	W	Δ Tc =	33.1	°C	Tc =	73.1 °C
	Tj = Tc + (Θj-c)*Pd =				74.4	°C		
	D.F. =	49.6	%					
Q3 2SA1315(Y) TOSHIBA	Tjmax =	150	°C	Θj-c =	139	°C/W	Pdmax =	0.9 W
	Pd =	0.002	W	Δ Tc =	30.9	°C	Tc =	70.9 °C
	Tj = Tc + (Θj-c)*Pd =				71.2	°C		
	D.F. =	47.5	%					
A2 UPC24A15HF N.E.C	Tjmax =	150	°C	Θj-c =	5	°C/W	Pdmax =	20 W
	Pd =	4.8	W	Δ Tc =	40.4	°C	Tc =	80.4 °C
	Tj = Tc + (Θj-c)*Pd =				104.4	°C		
	D.F. =	69.6	%					
A3 TA7815S TOSHIBA	Tjmax =	150	°C	Θj-c =	5	°C/W	Pdmax =	15 W
	Pd =	2.4	W	Δ Tc =	48.9	°C	Tc =	88.9 °C
	Tj = Tc + (Θj-c)*Pd =				100.9	°C		
	D.F. =	67.3	%					
A4 AN1431T MATSUSHITA	Tjmax =	150	°C	Θj-c =	156	°C/W	Pdmax =	0.55 W
	Pd =	0.006	W	Δ Tc =	23.0	°C	Tc =	63.0 °C
	Tj = Tc + (Θj-c)*Pd =				63.9	°C		
	D.F. =	42.6	%					
A50 UC2842ADW UNITRODE	Tjmax =	150	°C	Θj-c =	70	°C/W	Pdmax =	0.725 W
	Pd =	0.4	W	Δ Tc =	32.5	°C	Tc =	72.5 °C
	Tj = Tc + (Θj-c)*Pd =				100.5	°C		
	D.F. =	67.0	%					

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT30H-5ГГ

VIN – AC 100V LOAD = 100% Ta = 40°C

D1 D2SB60 SHINDENGEN	Tjmax =	150	°C	Θj-l =	10	°C/W	Pdmax =	12.5 W
	Pd =	0.56	W	Δ Tl =	36.6	°C	T(lead) =	76.6 °C
	Tj = Tl + (Θj-l)*Pd =				82.2	°C		
	D.F. =	54.8	%					
D2 1SS178 TOSHIBA	Tjmax =	125	°C	Θj-l =	500	°C/W	Pdmax =	0.3 W
	Pd =	0	W	Δ Tl =	38.2	°C	T(lead) =	78.2 °C
	Tj = Tl + (Θj-l)*Pd =				78.2	°C		
	D.F. =	62.6	%					
D3 1NU41 TOSHIBA	Tjmax =	150	°C	Θj-l =	34	°C/W	Pdmax =	3.7 W
	Pd =	0.06	W	Δ Tl =	50.6	°C	T(lead) =	90.6 °C
	Tj = Tl + (Θj-l)*Pd =				92.6	°C		
	D.F. =	61.8	%					
D5 1SS178 TOSHIBA	Tjmax =	125	°C	Θj-l =	500	°C/W	Pdmax =	0.3 W
	Pd =	0.002	W	Δ Tl =	30.0	°C	T(lead) =	70.0 °C
	Tj = Tl + (Θj-l)*Pd =				71.0	°C		
	D.F. =	56.8	%					
D6 1NU41 TOSHIBA	Tjmax =	150	°C	Θj-l =	34	°C/W	Pdmax =	3.7 W
	Pd =	0.05	W	Δ Tl =	33.1	°C	T(lead) =	73.1 °C
	Tj = Tl + (Θj-l)*Pd =				74.8	°C		
	D.F. =	49.9	%					
D7 D10SC6M SHINDENGEN	Tjmax =	125	°C	Θj-l =	3.3	°C/W	Pdmax =	5.8 W
	Pd =	1.8	W	Δ Tl =	55.0	°C	T(lead) =	95.0 °C
	Tj = Tl + (Θj-l)*Pd =				100.9	°C		
	D.F. =	80.8	%					
D9 5FL2CZ41A TOSHIBA	Tjmax =	150	°C	Θj-l =	3.8	°C/W	Pdmax =	33 W
	Pd =	0.33	W	Δ Tl =	38.8	°C	T(lead) =	78.8 °C
	Tj = Tl + (Θj-l)*Pd =				80.1	°C		
	D.F. =	53.4	%					

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT30H-5FF

VIN = AC 100V LOAD = 100% Ta = 40°C

D10 1N4001 G.I.	Tjmax =	175	°C	Θj-l =	26	°C/W	Pdmax =	5.8 W
	Pd =	0	W	Δ Tl =	29.2	°C	T(lead) =	69.2 °C
	Tj = Tl + (Θj-l)*Pd =				69.2	°C		
	D.F. =	39.5	%					
D11 5FL2CZ41A TOSHIBA	Tjmax =	150	°C	Θj-l =	3.8	°C/W	Pdmax =	33 W
	Pd =	0.26	W	Δ Tl =	43.8	°C	T(lead) =	83.8 °C
	Tj = Tl + (Θj-l)*Pd =				84.8	°C		
	D.F. =	56.5	%					
D13 1N4001 G.I.	Tjmax =	175	°C	Θj-l =	26	°C/W	Pdmax =	5.8 W
	Pd =	0	W	Δ Tl =	32.6	°C	T(lead) =	72.6 °C
	Tj = Tl + (Θj-l)*Pd =				72.6	°C		
	D.F. =	41.5	%					
ZD1 1N4746A MOTOROLA	Tjmax =	200	°C	Θj-l =	175	°C/W	Pdmax =	1 W
	Pd =	0	W	Δ Tl =	35.8	°C	T(lead) =	75.8 °C
	Tj = Tl + (Θj-l)*Pd =				75.8	°C		
	D.F. =	37.9	%					
ZD2 1N4746A MOTOROLA	Tjmax =	200	°C	Θj-l =	175	°C/W	Pdmax =	1 W
	Pd =	0	W	Δ Tl =	31.4	°C	T(lead) =	71.4 °C
	Tj = Tl + (Θj-l)*Pd =				71.4	°C		
	D.F. =	35.7	%					
ZD3 1N4735A MOTOROLA	Tjmax =	200	°C	Θj-l =	175	°C/W	Pdmax =	1 W
	Pd =	0	W	Δ Tl =	40.6	°C	T(lead) =	80.6 °C
	Tj = Tl + (Θj-l)*Pd =				80.6	°C		
	D.F. =	40.3	%					
ZD4 HZS5.1NB2-TA HITACHI	Tjmax =	150	°C	Θj-l =	438	°C/W	Pdmax =	0.4 W
	Pd =	0	W	Δ Tl =	32.7	°C	T(lead) =	72.7 °C
	Tj = Tl + (Θj-l)*Pd =				72.7	°C		
	D.F. =	48.5	%					

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT30H-5FF

VIN = AC 100V LOAD = 100% Ta = 40°C

PC1 (SCR) TLP647G TOSHIBA	Tjmax =	100	°C	Θj-c =	500	°C/W	Pdmax =	0.15 W
	Pd =	0	W	Δ Tc =	25.9	°C	Tc =	65.9 °C
	Tj = Tc + (Θj-c)*Pd =				65.9	°C		
	D.F. =	65.9	%					
PC1 (LED) TLP647G TOSHIBA	Tjmax =	125	°C	Θj-c =	–	°C/W	Pdmax =	– W
	If = 0 mA			Δ Tc =	25.9	°C	Tc =	65.9 °C
	If (max) = 42 mA (at Ta = 65.9 °C)							
	D.F. =	0	%					
PC2 (TRANSISTOR) TLP732 TOSHIBA	Tjmax =	125	°C	Θj-c =	667	°C/W	Pdmax =	0.15 W
	Pd =	0.004	W	Δ Tc =	25.0	°C	Tc =	65.0 °C
	Tj = Tc + (Θj-c)*Pd =				67.7	°C		
	D.F. =	54.1	%					
PC2 (LED) TLP732 TOSHIBA	Tjmax =	125	°C	Θj-c =	–	°C/W	Pdmax =	– W
	If = 1.43 mA			Δ Tc =	25.0	°C	Tc =	65.0 °C
	If (max) = 43 mA(at Ta = 65.0 °C)							
	D.F. =	3.3	%					

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT30H-5ΓΓ

VIN = AC 200V LOAD = 100% Ta = 40°C

Q1 2SK903 FUJI	Tchmax =	150	°C	Θch-c =	3.125	°C/W	Pdmax =	40.0 W
	Pd =	3.03	W	∧ Tc =	39.8	°C	Tc =	79.8 °C
	Tch = Tc + (Θch-c)*Pd =				89.3	°C		
	D.F. =	59.5	%					
Q2 2SC3425 TOSHIBA	Tjmax =	150	°C	Θj-c =	12.5	°C/W	Pdmax =	10 W
	Pd =	0.1	W	∆ Tc =	32.5	°C	Tc =	72.5 °C
	Tj = Tc + (Θj-c)*Pd =				73.8	°C		
	D.F. =	49.2	%					
Q3 2SA1315(Y) TOSHIBA	Tjmax =	150	°C	Θj-c =	139	°C/W	Pdmax =	0.9 W
	Pd =	0.002	W	∆ Tc =	33.0	°C	Tc =	73.0 °C
	Tj = Tc + (Θj-c)*Pd =				73.3	°C		
	D.F. =	48.9	%					
A2 UPC24A15HF N.E.C	Tjmax =	150	°C	Θj-c =	5	°C/W	Pdmax =	20 W
	Pd =	4.8	W	∆ Tc =	40.3	°C	Tc =	80.3 °C
	Tj = Tc + (Θj-c)*Pd =				104.3	°C		
	D.F. =	69.5	%					
A3 TA7815S TOSHIBA	Tjmax =	150	°C	Θj-c =	5	°C/W	Pdmax =	15 W
	Pd =	2.4	W	∆ Tc =	49.5	°C	Tc =	89.5 °C
	Tj = Tc + (Θj-c)*Pd =				101.5	°C		
	D.F. =	67.7	%					
A4 AN1431T MATSUSHITA	Tjmax =	150	°C	Θj-c =	156	°C/W	Pdmax =	0.55 W
	Pd =	0.006	W	∆ Tc =	23.1	°C	Tc =	63.1 °C
	Tj = Tc + (Θj-c)*Pd =				64.0	°C		
	D.F. =	42.7	%					
A50 UC2842ADW UNITRODE	Tjmax =	150	°C	Θj-c =	70	°C/W	Pdmax =	0.725 W
	Pd =	0.4	W	∆ Tc =	33.3	°C	Tc =	73.3 °C
	Tj = Tc + (Θj-c)*Pd =				101.3	°C		
	D.F. =	67.5	%					

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT3011-SFF

VIN – AC 200V LOAD – 100% Ta – 40°C

D1 D2SB60 SHINDENGEN	Tjmax =	150	°C	Θj-l =	10	°C/W	Pdmax =	12.5 W
	Pd =	0.42	W	Δ Tl =	25.7	°C	T(lead) =	65.7 °C
	Tj = Tl + (Θj-l)*Pd =				69.9	°C		
	D.F. =	46.6	%					
D2 1SS178 TOSHIBA	Tjmax =	125	°C	Θj-l =	500	°C/W	Pdmax =	0.3 W
	Pd =	0	W	Δ Tl =	38.2	°C	T(lead) =	78.2 °C
	Tj = Tl + (Θj-l)*Pd =				78.2	°C		
	D.F. =	62.6	%					
D3 1NU41 TOSHIBA	Tjmax =	150	°C	Θj-l =	34	°C/W	Pdmax =	3.7 W
	Pd =	0.05	W	Δ Tl =	43.8	°C	T(lead) =	83.8 °C
	Tj = Tl + (Θj-l)*Pd =				85.5	°C		
	D.F. =	57.0	%					
D5 1SS178 TOSHIBA	Tjmax =	125	°C	Θj-l =	500	°C/W	Pdmax =	0.3 W
	Pd =	0.002	W	Δ Tl =	30.8	°C	T(lead) =	70.8 °C
	Tj = Tl + (Θj-l)*Pd =				71.8	°C		
	D.F. =	57.4	%					
D6 1NU41 TOSHIBA	Tjmax =	150	°C	Θj-l =	34	°C/W	Pdmax =	3.7 W
	Pd =	0.02	W	Δ Tl =	31.7	°C	T(lead) =	71.7 °C
	Tj = Tl + (Θj-l)*Pd =				72.4	°C		
	D.F. =	48.3	%					
D7 D10SC6M SHINDENGEN	Tjmax =	125	°C	Θj-l =	3.3	°C/W	Pdmax =	5.8 W
	Pd =	1.6	W	Δ Tl =	55.6	°C	T(lead) =	95.6 °C
	Tj = Tl + (Θj-l)*Pd =				100.9	°C		
	D.F. =	80.7	%					
D9 5FL2CZ41A TOSHIBA	Tjmax =	150	°C	Θj-l =	3.8	°C/W	Pdmax =	33 W
	Pd =	0.33	W	Δ Tl =	39.8	°C	T(lead) =	79.8 °C
	Tj = Tl + (Θj-l)*Pd =				81.1	°C		
	D.F. =	54.0	%					

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT30H-5FF

VIN = AC 200V LOAD = 100% Ta = 40°C

D10 1N4001 G.I.	Tjmax =	175 °C	Θj-l =	26 °C/W	Pdmax =	5.8 W
	Pd =	0 W	△Tl =	29.7 °C	T(lead) =	69.7 °C
	Tj = Tl + (Θj-l)*Pd =			69.7 °C		
	D.F. =	39.8 %				
D11 5FL2CZ41A TOSHIBA	Tjmax =	150 °C	Θj-l =	3.8 °C/W	Pdmax =	33 W
	Pd =	0.26 W	△Tl =	44.7 °C	T(lead) =	84.7 °C
	Tj = Tl + (Θj-l)*Pd =			85.7 °C		
	D.F. =	57.1 %				
D13 1N4001 G.I.	Tjmax =	175 °C	Θj-l =	26 °C/W	Pdmax =	5.8 W
	Pd =	0 W	△Tl =	33.6 °C	T(lead) =	73.6 °C
	Tj = Tl + (Θj-l)*Pd =			73.6 °C		
	D.F. =	42.1 %				
ZD1 1N4746A MOTOROLA	Tjmax =	200 °C	Θj-l =	175 °C/W	Pdmax =	1 W
	Pd =	0 W	△Tl =	35.0 °C	T(lead) =	75.0 °C
	Tj = Tl + (Θj-l)*Pd =			75.0 °C		
	D.F. =	37.5 %				
ZD2 1N4746A MOTOROLA	Tjmax =	200 °C	Θj-l =	175 °C/W	Pdmax =	1 W
	Pd =	0 W	△Tl =	29.0 °C	T(lead) =	69.0 °C
	Tj = Tl + (Θj-l)*Pd =			69.0 °C		
	D.F. =	34.5 %				
ZD3 1N4735A MOTOROLA	Tjmax =	200 °C	Θj-l =	175 °C/W	Pdmax =	1 W
	Pd =	0 W	△Tl =	37.3 °C	T(lead) =	77.3 °C
	Tj = Tl + (Θj-l)*Pd =			77.3 °C		
	D.F. =	38.7 %				
ZD4 HZS5.1NB2-TA HITACHI	Tjmax =	150 °C	Θj-l =	438 °C/W	Pdmax =	0.4 W
	Pd =	0 W	△Tl =	33.4 °C	T(lead) =	73.4 °C
	Tj = Tl + (Θj-l)*Pd =			73.4 °C		
	D.F. =	48.9 %				

SEMICONDUCTOR DERATING

DATE : 24-FEB-94

MODEL : LWT30H-5FF

VIN = AC 200V LOAD = 100% Ta = 40°C

PC1 (SCR) TLP647G TOSHIBA	Tjmax =	100 °C	Θj-c =	500	°C/W	Pdmax =	0.15	W
	Pd =	0 W	ΔTc =	25.7	°C	Tc =	65.7	°C
	Tj = Tc + (Θj-c)*Pd =			65.7	°C			
	D.F. =	65.7 %						
PC1 (LED) TLP647G TOSHIBA	Tjmax =	125 °C	Θj-c =	–	°C/W	Pdmax =	–	W
	If = 0 mA		ΔTc =	25.7	°C	Tc =	65.7	°C
	If (max) = 42 mA (at Ta = 65.7 °C)							
	D.F. =	0 %						
PC2 (TRANSISTOR) TLP732 TOSHIBA	Tjmax =	125 °C	Θj-c =	667	°C/W	Pdmax =	0.15	W
	Pd =	0.004 W	ΔTc =	24.5	°C	Tc =	64.5	°C
	Tj = Tc + (Θj-c)*Pd =			67.2	°C			
	D.F. =	53.7 %						
PC2 (LED) TLP732 TOSHIBA	Tjmax =	125 °C	Θj-c =	–	°C/W	Pdmax =	–	W
	If = 1.43 mA		ΔTc =	24.5	°C	Tc =	64.5	°C
	If (max) = 43 mA (at Ta = 64.5 °C)							
	D.F. =	3.3 %						

LWT30H-5FF

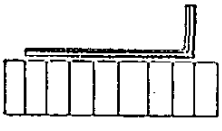
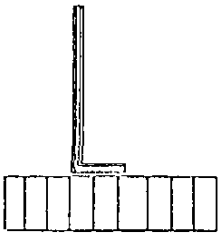
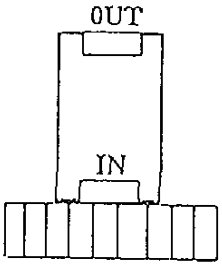
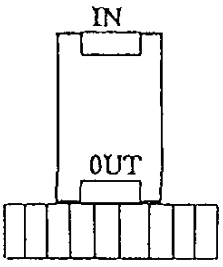
△T TEMPERATURE RISE

MODEL : LWT30H-5FF

Ta : 40°C

Sym.	Parts Name	△T Temperature Rise (°C)			
		Mounting A	Mounting B	Mounting C	Mounting D
Q1	MOSFET	45.3	52.6	17.6	19.8
D1	BRIDGE DIODE	36.6	39.2	20.3	24.9
D7	S.B.D	55.0	48.6	21.4	16.9
T1	TRANS., PULSE	43.8	37.4	23.1	24.8
L1	BALUN COIL	47.8	41.7	18.6	22.8
C7	E.CAP	16.3	21.3	9.3	13.0
C14	E.CAP	26.8	33.8	19.0	15.5

Conditions

	(A)	(B)	(C)	(D)
Mounting Method (Standard Mounting : A)				
Input Voltage	100VAC	100VAC	100VAC	100VAC
Output Voltage	5FF	5FF	5FF	5FF
Output Current	100%	100%	50%	50%

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

MODEL : LWT30H-5FF

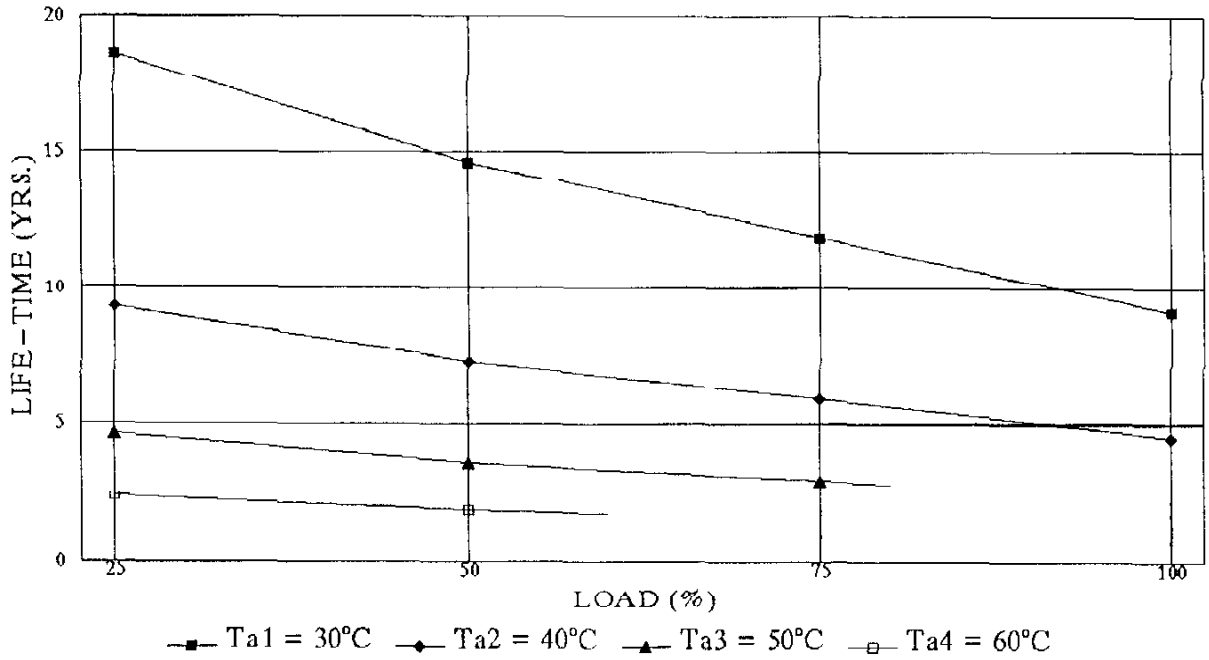
Vin : 100VAC

MOUNTING POSITION: A

Iout (100%) = CH1 : 4A
CH2 : 0.45A
CH3 : 0.22A

LOAD (100%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	18.6	9.3	4.7	2.3
50	14.6	7.3	3.7	1.8
75	11.9	5.9	3.0	—
100	9.1	4.6	—	—

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. AL. Elec. capacitor

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad (Yrs)$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

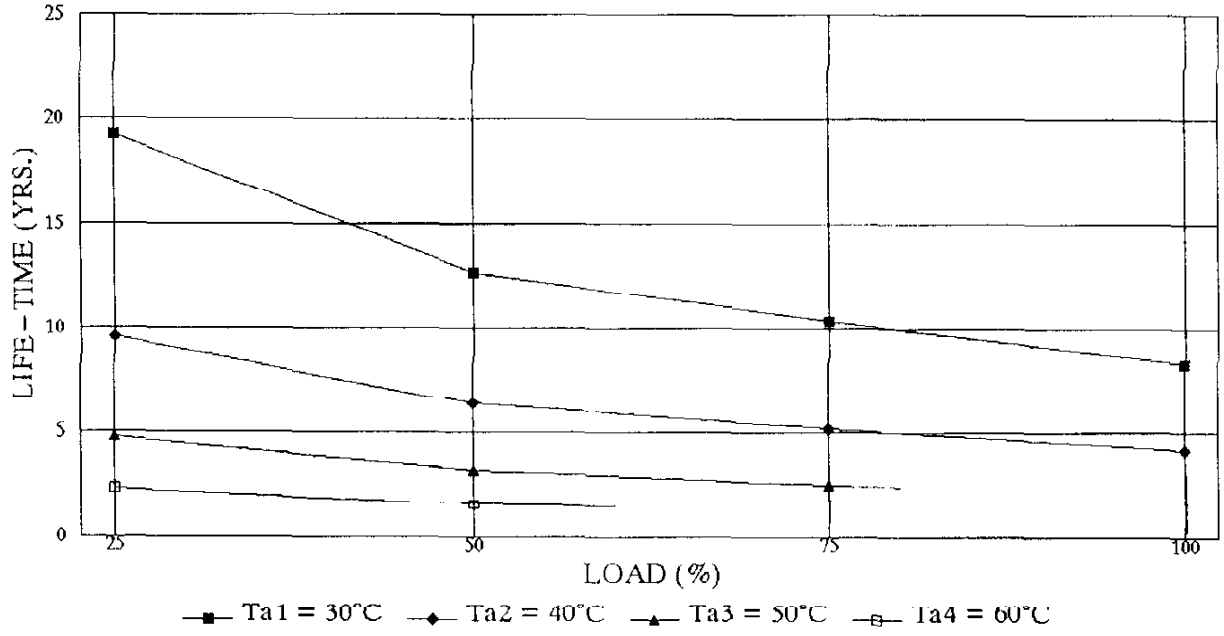
MODEL : LWT30H-5FF

Vin : 100VAC

MOUNTING POSITION: B
Iout (100%) = CH1 : 4A
CH2 : 0.45A
CH3 : 0.22A

LOAD (%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	19.3	9.6	4.8	2.4
50	12.7	6.4	3.2	1.6
75	10.3	5.2	2.6	–
100	8.4	4.2	–	–

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. AL. Elec. capacitor

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad (Yrs)$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

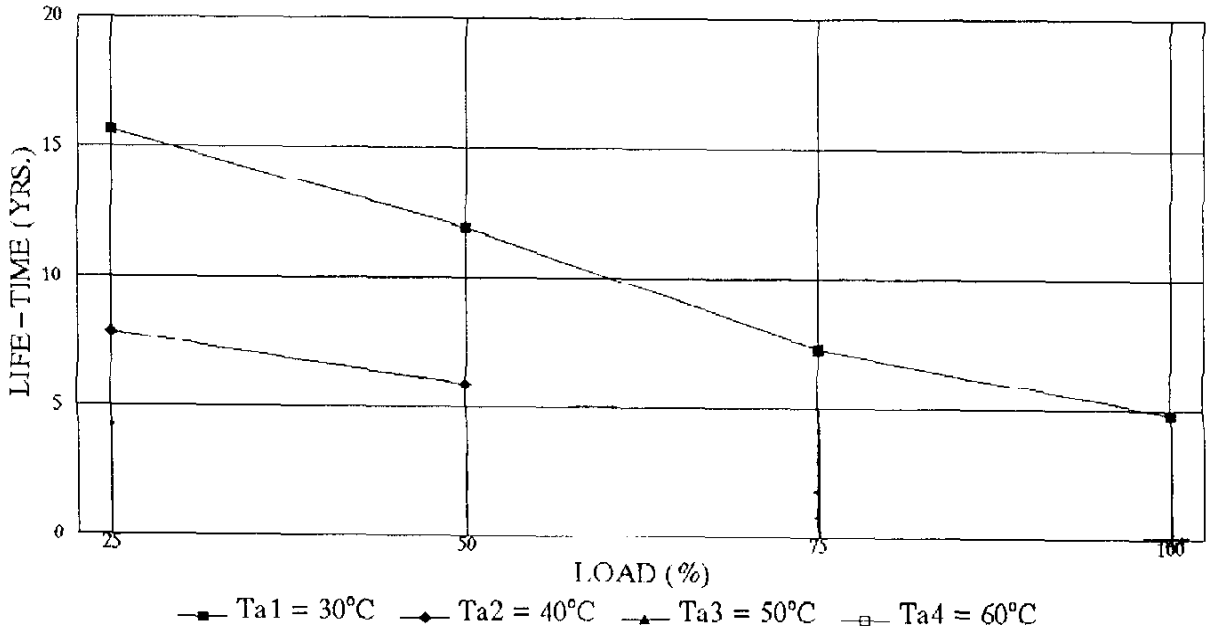
MODEL : LWT30H-5FF

Vin : 100VAC

MOUNTING POSITION: C
Iout (100%) = CH1 : 4A
CH2 : 0.45A
CH3 : 0.22A

LOAD (%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	15.7	7.8	–	–
50	11.9	5.9	–	–
75	7.3	–	–	–
100	4.8	–	–	–

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. AL. Elec. capacitor

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad (Yrs)$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

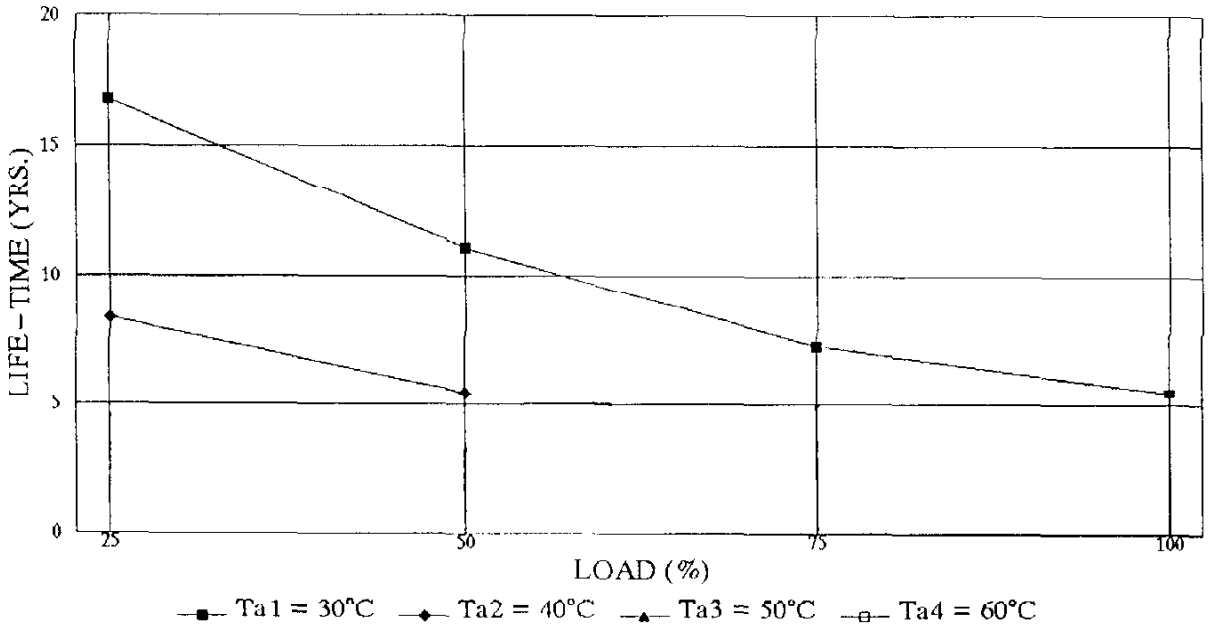
MODEL : LWT30H-5FF

Vin : 100VAC

MOUNTING POSITION : D
Iout (100%) = CH1 : 4A
CH2 : 0.45A
CH3 : 0.22A

LOAD (%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	16.8	8.4	-	-
50	11.1	5.5	-	-
75	7.3	-	-	-
100	5.5	-	-	-

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. AL. Elec. capacitor

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad (Yrs)$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

MODEL : LWT30H-5FF

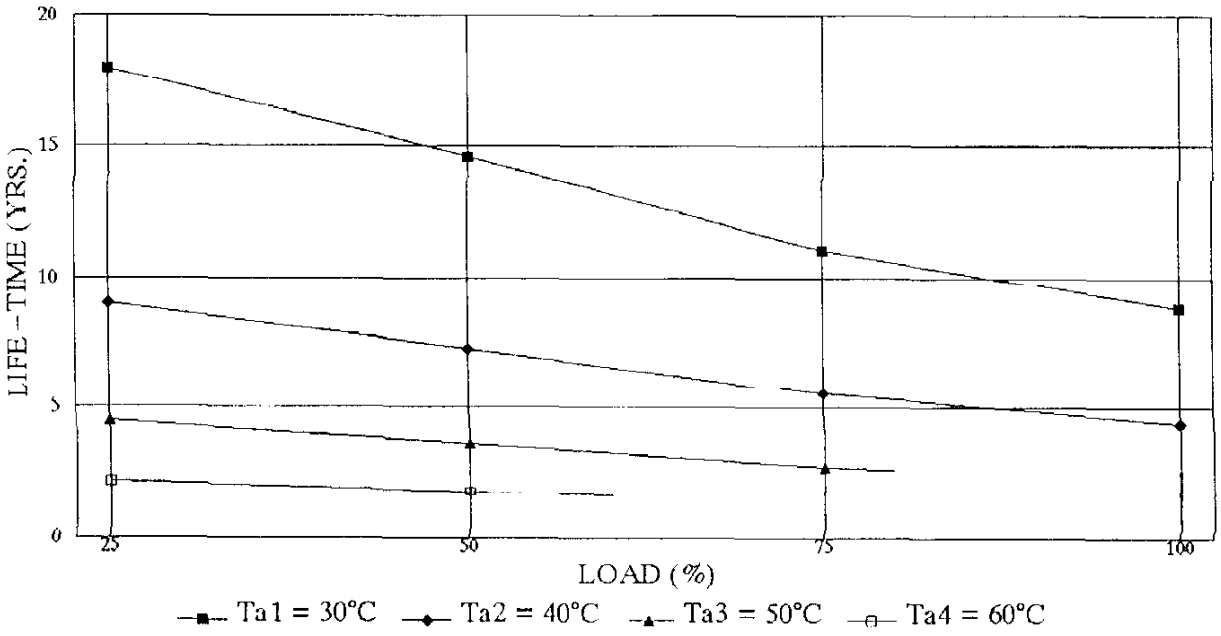
MOUNTING POSITION : A

Iout (100%) = CH1 : 4A
CH2 : 0.45A
CH3 : 0.22A

Vin : 200VAC

LOAD (%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	18.0	9.0	4.5	2.2
50	14.6	7.3	3.7	1.8
75	11.1	5.5	2.8	-
100	8.8	4.4	-	-

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. AL. Elec. capacitor

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad (Yrs)$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

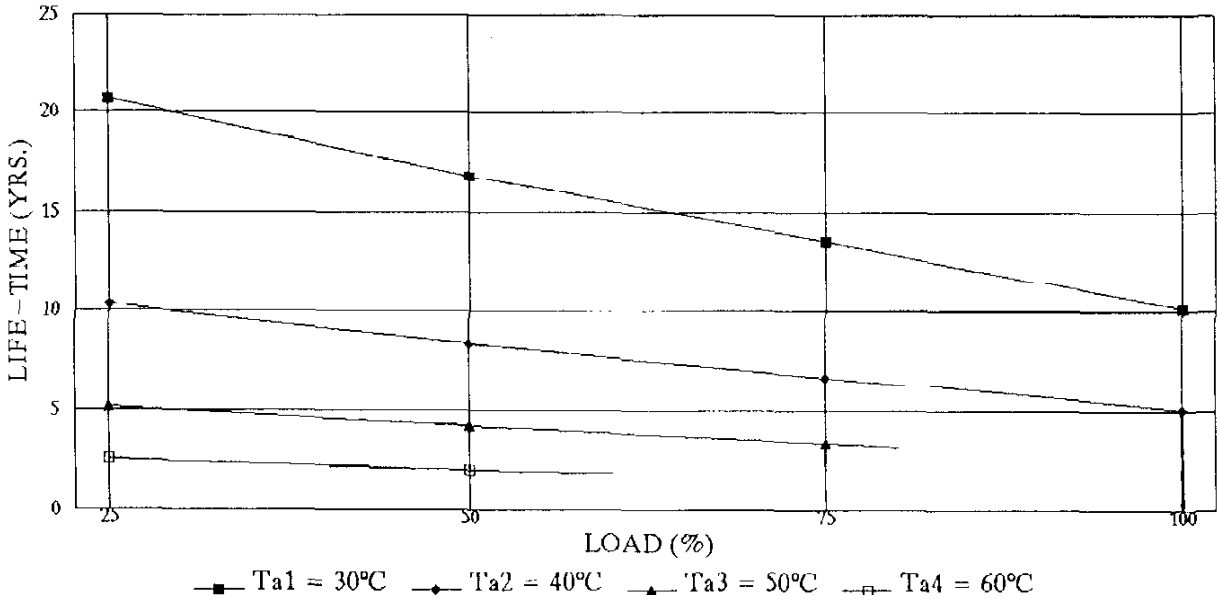
MODEL : LWT30H-5FF

Vin : 200VAC

MOUNTING POSITION : B
Iout (100%) = CH1 : 4A
CH2 : 0.45A
CH3 : 0.22A

LOAD (%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	20.7	10.3	5.2	2.6
50	16.8	8.4	4.2	2.1
75	13.6	6.8	3.4	–
100	10.1	5.1	–	–

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. *AL. Elec. capacitor*

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad \text{(Yrs)}$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

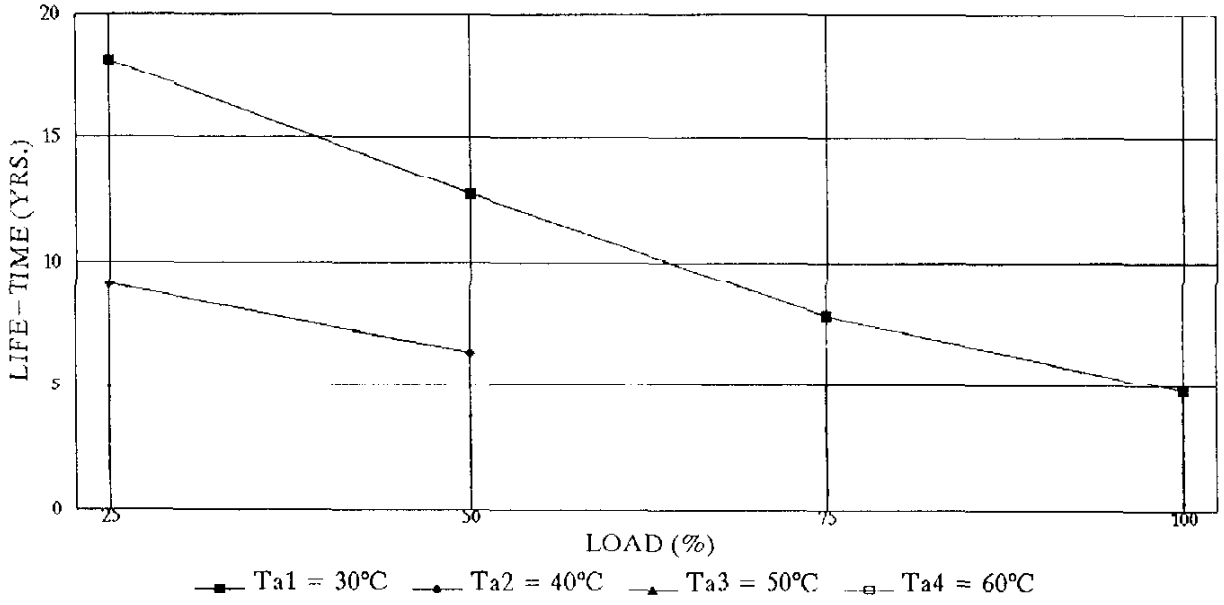
MODEL : LWT30H-5FF

Vin : 200VAC

MOUNTING POSITION : C
Iout (100%) = CH1 : 4A
CH2 . 0.45A
CH3 : 0.22A

LOAD (%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	18.1	9.1	–	–
50	12.7	6.4	–	–
75	7.8	–	–	–
100	4.8	–	–	–

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. AL. Elec. capacitor

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad (Yrs)$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

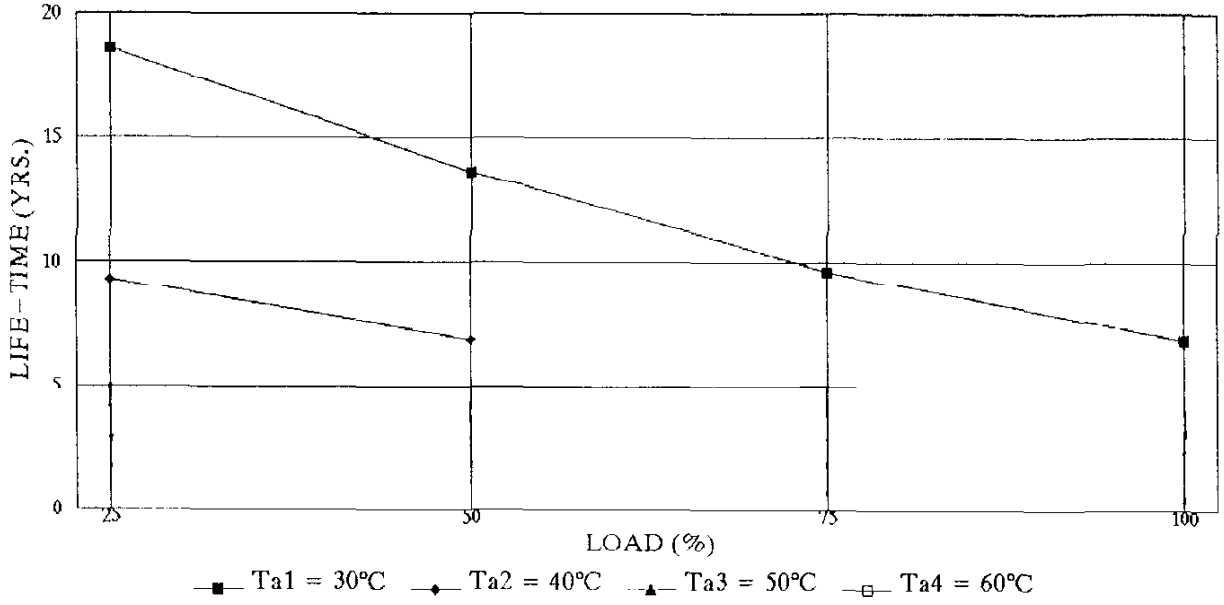
MODEL : LWT30H-5FF

Vin : 200VAC

MOUNTING POSITION : D
Iout (100%) = CH1 : 4A
CH2 : 0.45A
CH3 : 0.22A

LOAD (%)	LIFETIME (YRS.)			
	Ta1 = 30°C	Ta2 = 40°C	Ta3 = 50°C	Ta4 = 60°C
25	18.6	9.3	-	-
50	13.6	6.8	-	-
75	9.6	-	-	-
100	6.8	-	-	-

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD



FORMULA :

1. AL. Elec. capacitor

$$L = Lo \times 2^{\frac{105-Tc}{10}} \quad (Yrs)$$

L : Elec. capacitor computed life
(24 hours per day, 365 days operation)

Lo : Guarantee life for Elec. capacitor

Tc : Case temperature of Elec. capacitor

MODE_ : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS					APPROVED BY	TESTED BY		
															LOAD = 100% TYPICAL		Vin = 200VAC Ta = 25°C			Ramesh.M	C T LEE		
			TEST MODE																				
	FARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE ELCWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	MOSFET	Q1	D-G	Y								Y	Y						Q1,A50,ZD2,ZD3	Y		
2	2SK903		D-S	Y								Y	Y						ZD3	Y		
3			G-S	Y												Y				Y		
4			D		Y											Y				Y		
5			S		Y											Y				Y		
6			G		Y							Y	Y						Q1,ZD3	Y		
7																						
8	TRANSISTOR	Q2	C-E	Y			Y				Y	Y							R8 RED HOT & OPENS	Y		
9	2SC3425		C-B	Y			Y				Y	Y							R8 RED HOT & OPENS	Y		
10			B-E	Y													Y			Y		
11			C		Y												Y			Y		
12			E		Y												Y			Y		
13			B		Y												Y			Y		
14																						
15	TRANSISTOR	Q3	C-E	Y												Y				Y		
16	2SA1315 (Y)		C-B	Y												Y				Y		
17			B-E	Y													Y			Y		
18			C		Y												Y			Y		
19			E		Y												Y			Y		
20			B		Y												Y			Y		
21																						
22	HIC	A1	1-2	Y													Y			Y		
23	AB712		2-3	Y											Y					Y		
24			3-4	Y												Y				Y		
25			4-5	Y												Y				Y		

*** A : SLIGHT B : PRO_ONGED

MODEL : LWT30H-5FF	ABNORMAL TESTING	TEST CONDITIONS	APPROVED BY	TESTED BY
		LOAD = 100% TYPICAL / Vin = 200VAC Ta = 25°C	Ramesh.m	CTLEE

	PARTS NAME	PART NO.	TEST MODE	SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	HIC	A1	5-6	Y												Y				Y		
2	AB712		6-7	Y										Y						Y		
3			7-8	Y										Y						Y		
4			8-9	Y												Y				Y		
5			1		Y													Y	HICCUP	Y		
6			2		Y												Y			Y		
7			3		Y											Y				Y		
8			4		Y											Y				Y		
9			5		Y												Y			Y		
10			6		Y											Y				Y		
11			7		Y												Y			Y		
12			8		Y												Y			Y		
13			9		Y											Y				Y		
14																						
15	3T-REGULATOR	A2	1-2	Y										Y						Y		
16	UPC24A15HF		2-3	Y										Y						Y		
17			1-3	Y														Y	CH2 OUTPUT 19V	Y		
18			1		Y											Y			CH2	Y		
19			2		Y											Y			CH2	Y		
20			3		Y											Y			CH2	Y		
21																						
22																						
23																						
24																						
25																						

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS						APPROVED BY	TESTED BY		
															LOAD = 100% TYPICAL						Vin = 230VAC Ta = 25°C			
			TEST MODE																					
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN		O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	3T-REGULATOR	A3	1-2	Y											Y						Y		
2	TA7815S		2-3	Y											Y						Y		
3			1-3	Y															Y	CH3 OUTPUT 19V	Y		
4			1		Y												Y			CH3	Y		
5			2		Y												Y			CH3	Y		
6			3		Y												Y			CH3	Y		
7																							
8																							
9	IC	A4	K-A	Y															Y	HICCUP, VOUT LOW	Y		
10	AN1431T		K-R	Y															Y	HICCUP, VOUT LOW	Y		
11			R-A	Y												Y					Y		
12			K		Y											Y					Y		
13			A		Y											Y					Y		
14			R		Y											Y					Y		
15																							
16	CHIP IC	A50	1-2	Y														Y			Y		
17	UC2842ADW		2-3	Y														Y			Y		
18			3-4	Y													Y				Y		
19			4-5	Y								Y								Q1, A50, ZD3	Y		
20			5-6	Y													Y				Y		
21			6-7	Y														Y			Y		
22			7-8	Y														Y			Y		
23			9-10	Y														Y			Y		
24			10-11	Y														Y			Y		
25			11-12	Y													Y				Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS					APPROVED BY	TESTED BY			
															LOAD = 100% TYPICAL					Vin = 200VAC Ta = 25°C				
			TEST MODE																					
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN		O.C.P.	C.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1		A50	12-13	Y													Y				Y		
2			13-14	Y														Y			Y		
3			14-15	Y													Y				Y		
4			15-16	Y														Y			Y		
5			1		Y													Y			Y		
6			2		Y													Y			Y		
7			3		Y											Y					Y		
8			4		Y												Y				Y		
9			5		Y												Y				Y		
10			6		Y												Y				Y		
11			7		Y													Y			Y		
12			8		Y													Y			Y		
13			9		Y													Y			Y		
14			10		Y														Y	HICCUP	Y		
15			11		Y							Y	Y							Q1, A50, ZD3	Y		
16			12		Y												Y				Y		
17			13		Y												Y				Y		
18			14		Y												Y				Y		
19			15		Y														Y	SWITCHING FREQ .OW, VOUT LOW	Y		
20			16		Y													Y			Y		
21																							
22	BRIDGE DODE	D1	AC	Y									Y								Y		
23	D2SB60		AC		Y												Y				Y		
24			DC	Y									Y								Y		
25			DC		Y												Y				Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS				APPROVED BY	TESTED BY			
			TEST MODE												LOAD = 100% TYPICAL				Vin = 200VAC Ta = 25°C	Raveph.m	CTLEE		
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN		O.C.P.	C.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	FRD	D2	A-K	Y														Y			Y		
2	1SS178		A-K		Y													Y			Y		
3																							
4	FRD	D3	A-K	Y															Y	HICCUP	Y		
5	1NU41		A-K		Y													Y			Y		
6																							
7	NOT ASSIGNED	D4																					
8																							
9																							
10	FRD	D5	A-K	Y														Y			Y		
11	1SS178		A-K		Y												Y				Y		
12																							
13	FRD	D6	A-K	Y													Y				Y		
14	1NU41		A-K		Y														Y	HICCUP	Y		
15																							
16	SBD	D7	A-K	Y															Y	HICCUP	Y		
17	D10SC6M		A-K		Y														Y	HICCUP	Y		
18																							
19	NOT ASSIGNED	D8																					
20																							
21	FRD	D9	A-K	Y															Y	HICCUP	Y		
22	5FL2C41A		A-K		Y														Y	HICCUP	Y		
23																							
24	FRD	D10	A-K	Y											Y					HICCUP	Y		
25	1N4001		A-K		Y													Y			Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING														TEST CONDITIONS						APPFOVED BY	TESTED BY		
																LCAD = 100% TYPICAL		Vin = 200VAC Ta = 25°C							
			TEST MODE																						
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	C.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	FRD	D11	A-K	Y														Y	HICCUP	Y		
2	5FL2C41A		A-K		Y													Y	HICCUP	Y		
3																						
4	NO NEED	D12																				
5																						
6	FRD	D13	A-K	Y										Y						Y		
7	1N4001		A-K		Y												Y			Y		
8																						
9	FRD	D50	A-K	Y													Y			Y		
10	1SS193-TE85L		A-K		Y												Y			Y		
11																						
12	ZENER DIODE	ZD1	A-K	Y												Y				Y		
13	1N4746A		A-K		Y												Y			Y		
14																						
15	ZENER DIODE	ZD2	A-K	Y												Y				Y		
16	1N4746A		A-K		Y												Y			Y		
17																						
18	ZENER DIODE	ZD3	A-K	Y								Y	Y						Q1 DAMAGED	Y		
19	1N4735A		A-K		Y												Y			Y		
20																						
21	ZENER DIODE	ZD4	A-K	Y											Y					Y		
22	HZS5.1NB2		A-K		Y												Y			Y		
23																						
24	CAP.,FILM	C1		Y									Y							Y		
25	ECQ-U2A474MX				Y												Y			Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF	ABNORMAL TESTING	TEST CONDITIONS	APPROVED BY	TESTED BY
		LCAD = 100% TYPICAL / Vin = 200VAC Ta = 25°C	Ravedra	CTLEE

	PARTS NAME	PART NO.	TEST MODE	SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	CAP.,FILM	C2		Y									Y							Y		
2	ECQ-U2A473MT				Y												Y			Y		
3																						
4	CAP., CERAMIC	C3		Y													Y			Y		
5	CD-19E2GA472MYAS				Y												Y			Y		
6																						
7	NOT ASSIGNED	C4																				
8																						
9																						
10	CAP., CERAMIC	C5		Y													Y			Y		
11	CD-19E2GA472MYAS				Y												Y			Y		
12																						
13	CAP., CERAMIC	C6		Y													Y			Y		
14	CD-19E2GA472MYAS				Y												Y			Y		
15																						
16	CAP., ELECT	C7		Y									Y							Y		
17	LGQ2G181MLRZ				Y											Y				Y		
18																						
19	NOT ASSIGNED	C8																				
20																						
21	CAP., ELECT	C9		Y			Y				Y	Y							R8 RED HOT & OPENS	Y		
22	UPR2G010MPH				Y												Y			Y		
23																						
24	CAP.,FILM	C10		Y														Y	HICCUP	Y		
25	MMHF-103K630				Y												Y			Y		

*** A: SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS						APPROVED BY	TESTED BY		
															LOAD = 100% TYPICAL									
			TEST MODE												Vin = 200VAC Ta = 25°C									
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	CHIP CAP., CERAMIC	C11		Y													Y			Y		
2	GRM42-6R103K50PT				Y												Y			Y		
3																						
4	CAP., ELECT	C12		Y														Y	HICCUP	Y		
5	LXF35VB150				Y													Y	HICCUP	Y		
6																						
7	CHIP CAP., CERAMIC	C13		Y										Y					HICCUP	Y		
8	GRM42-6W5R332K100PT				Y												Y			Y		
9																						
10	CAP., ELECT	C14		Y										Y					HICCUP	Y		
11	LXF10VB1800				Y												Y			Y		
12																						
13	CAP., ELECT	C15		Y										Y					HICCUP	Y		
14	LXF10VB1800				Y												Y			Y		
15																						
16	CAP., ELECT	C16		Y										Y					HICCUP	Y		
17	LXF10VB1800				Y												Y			Y		
18																						
19	NOT ASSIGNED	C17																				
20																						
21	CAP., ELECT	C18		Y										Y					HICCUP	Y		
22	LXF10VB1800				Y												Y			Y		
23																						
24	CAP., FILM	C19		Y													Y			Y		
25	MMHF-333K630				Y												Y			Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS						APPROVED BY	TESTED BY		
															LOAD = 100% TYPICAL						Vin = 200VAC Ta = 25°C	Ramesh.M	CTLEE		
			TEST MODE																					
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN		O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD	
1	CAP., FILM	C20		Y														Y			Y			
2	MMHF-333K630				Y													Y			Y			
3																								
4	CHIP CAP., CERAMIC	C21		Y											Y					HICCUP	Y			
5	GRM42-6R104K50PT				Y													Y			Y			
6																								
7	CHIP CAP., CERAMIC	C22		Y														Y			Y			
8	CM21W5R331K200BT				Y													Y			Y			
9																								
10	CAP., ELECT	C23		Y											Y					HICCUP	Y			
11	LXF35VB1000				Y													Y			Y			
12																								
13	CAP., ELECT	C24		Y											Y					HICCUP	Y			
14	LXF35VB150				Y													Y			Y			
15																								
16	CHIP CAP., CERAMIC	C25		Y											Y					HICCUP	Y			
17	GRM42-6R104K50PT				Y													Y			Y			
18																								
19	CAP., ELECT	C26		Y											Y						Y			
20	LXF35VB330				Y													Y			Y			
21																								
22	CAP., ELECT	C27		Y											Y						Y			
23	LXF35VB150				Y													Y			Y			
24																								
25																								

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF	ABNORMAL TESTING													TEST CONDITIONS				APPROVED BY	TESTED BY
														LOAD = 100% TYPICAL		Vin = 200VAC Ta = 25°C		Rawchi.m	CT LEE
		TEST MODE																	
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NCTE	OK.	RETEST	NO GOOD
1	CAP., FILM	C28		Y													Y			Y		
2	MMHF-333K630				Y												Y			Y		
3																						
4	CHIP CAP.,CERAMIC	C29		Y										Y						Y		
5	GRM42-6R104K50PT				Y												Y			Y		
6																						
7	CHIP CAP.,CERAMIC	C30		Y										Y						Y		
8	GRM42-6R104K50PT				Y												Y			Y		
9																						
10	CHIP CAP.,CERAMIC	C31		Y										Y						Y		
11	GRM42-6R104K50PT				Y												Y			Y		
12																						
13	CHIP CAP.,CERAMIC	C32		Y										Y						Y		
14	GRM42-6R104K50PT				Y												Y			Y		
15																						
16	CHIP CAP.,CERAMIC	C33		Y										Y						Y		
17	GRM42-6R104K50PT				Y												Y			Y		
18																						
19	CHIP CAP.,CERAMIC	C50		Y												Y				Y		
20	GRM42-6R104K50PT				Y												Y			Y		
21																						
22	CHIP CAP.,CERAMIC	C51		Y												Y				Y		
23	GRM42-6R104K50PT				Y												Y			Y		
24																						
25																						

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS						APPROVED BY	TESTED BY		
															LOAD = 100% TYPICAL						Vin = 200VAC Ta = 25°C			
			TEST MODE																					
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN		O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE		OK	RETEST	NO GOOD
1	CHIP CAP.,CERAMIC	C52		Y													Y					Y		
2	GRM40SLJ101K50PT				Y													Y					Y		
3																								
4	CHIP CAP.,CERAMIC	C53		Y													Y					Y		
5	GRM40R222J50PT				Y												Y					Y		
6																								
7	CHIP CAP.,CERAMIC	C54		Y														Y				Y		
8	GRM40SLJ101K50PT				Y													Y				Y		
9																								
10	CHIP CAP.,CERAMIC	C55		Y														Y				Y		
11	GRM42-6R1C4K50PT				Y													Y				Y		
12																								
13																								
14	CHIP RESISTOR	R1		Y														Y				Y		
15	RK73B2HTE244J				Y													Y				Y		
16																								
17	CHIP RESISTOR	R2		Y														Y				Y		
18	RK73B2HTE244J				Y													Y				Y		
19																								
20	CHIP RESISTOR	R3		Y											Y					HICCUP		Y		
21	RK73B2HTE564J				Y													Y				Y		
22																								
23.	CHIP RESISTOR	R4		Y											Y					HICCUP		Y		
24	RK73B2HTE244J				Y													Y				Y		
25																								

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF	ABNORMAL TESTING	TEST CONDITIONS	APPROVED BY	TESTED BY
		LOAD = 100% TYPICAL / Vin = 200VAC Ta = 25°C	Rawshin	CTLEE

	PARTS NAME	PART NO.	TEST MODE	SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	CHIP RESISTOR	R5		Y													Y			Y		
2	RK73B2HTE244J				Y												Y			Y		
3																						
4	CHIP RESISTOR	R6		Y										Y					HICCUP	Y		
5	RK73B2HTE244J				Y												Y			Y		
6																						
7	CHIP RESISTOR	R7		Y													Y			Y		
8	RK73B2HTE244J				Y												Y			Y		
9																						
10	RES.,FUSE	R8		Y								Y	Y						A50	Y		
11	FMR2B432J				Y												Y			Y		
12																						
13	CHIP RESISTOR	R9		Y												Y				Y		
14	CR1/10W273JV				Y												Y			Y		
15																						
16	CHIP RESISTOR	R10		Y														Y	HICCUP	Y		
17	RK73B3ATE203J				Y												Y			Y		
18																						
19	CHIP RESISTOR	R11		Y													Y			Y		
20	CR1/10W273JV				Y												Y			Y		
21																						
22	NOT ASSIGNED	R12																				
23																						
24	RES.,MO	R13		Y													Y			Y		
25	RSF-1B-R51J				Y												Y			Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF	ABNORMAL TESTING	TEST CONDITIONS	APPROVED BY	TESTED BY
		LOAD = 100% TYPICAL / Vin = 200VAC Ta = 25°C	Ramesh.m	CTLEE

	PARTS NAME	PART NO.	TEST MODE	SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HCT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	NOT ASSGNED	R14																				
2																						
3	NOT ASSGNED	R15																				
4																						
5	NOT ASSGNED	R16																				
6																						
7	CHIP RESISTOR	R17		Y													Y			Y		
8	RK73B2HTE240J				Y												Y			Y		
9																						
10	CHIP RESISTOR	R18		Y													Y			Y		
11	RK73B3ATE150J				Y												Y			Y		
12																						
13	NOT ASSGNED	R19																				
14																						
15	CHIP RESISTOR	R20		Y													Y			Y		
16	RK73B3ATE510J				Y												Y			Y		
17																						
18	CHIP RESISTOR	R21		Y										Y					HICCUP	Y		
19	RK73B2HTE562J				Y												Y			Y		
20																						
21	CHIP RESISTOR	R22		Y										Y					HICCUP	Y		
22	RK73B2HTE562J				Y												Y			Y		
23																						
24	CHIP RESISTOR	R23		Y										Y					HICCUP	Y		
25	RK73B2HTE562J				Y												Y			Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS						APPROVED BY	TESTED BY		
															LOAD = 100% TYPICAL		Vin = 200VAC Ta = 25°C							
			TEST MODE																					
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN		O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD	
1	CHIP RESISTOR	R24		Y														Y			Y			
2	CR1/10W430JV				Y													Y			Y			
3																								
4	CHIP RESISTOR	R25		Y															Y	HICCUP	Y			
5	ERJ8GEYJ202V				Y													Y			Y			
6																								
7	CHIP RESISTOR	R26		Y												Y					Y			
8	ERJ8GEYJ102V				Y													Y			Y			
9																								
10	CHIP RESISTOR	R27		Y												Y					Y			
11	CR1/10W362JV				Y													Y			Y			
12																								
13	CHIP RESISTOR	R28		Y														Y			Y			
14	CR1/10W330JV				Y													Y			Y			
15																								
16	CHIP RESISTOR	R29		Y														Y			Y			
17	CR1/10W150JV				Y													Y			Y			
18																								
19	CHIP RESISTOR	R50		Y													Y				Y			
20	CR1/10W202JV				Y													Y			Y			
21																								
22	CHIP RESISTOR	R51		Y													Y				Y			
23	CR1/10W682JV				Y												Y				Y			
24																								
25																								

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS					APPROVED BY	TESTED BY
															LOAD = 100% TYPICAL		Vin = 200VAC Ta = 25°C				
			TEST MODE																		
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	CHIP RESISTOR	R52		Y													Y			Y		
2	ERJ8GEYJ100V				Y											Y				Y		
3																						
4	CHIP RESISTOR	R53		Y													Y			Y		
5	ERJ8GEYJ300V				Y											Y				Y		
6																						
7	CHIP RESISTOR	R54		Y										Y						Y		
8	CR1/10W102JV				Y												Y			Y		
9																						
10	CHIP RESISTOR	R55		Y													Y			Y		
11	CR1/10W182JV				Y												Y			Y		
12																						
13	CHIP RESISTOR	R56		Y													Y			Y		
14	CR1/10W362JV				Y												Y			Y		
15																						
16	RES.,VARIABLE	VR1	1-2	Y											Y					Y		
17	CT-6P-202		1-3	Y											Y					Y		
18			2-3	Y													Y			Y		
19			1		Y												Y			Y		
20			2		Y												Y			Y		
21			3		Y												Y			Y		
22																						
23	THERMISTOR	TH1		Y													Y			Y		
24	8D-13				Y											Y				Y		
25																						

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF		ABNORMAL TESTING													TEST CONDITIONS						APPROVED BY	TESTED BY		
															LOAD = 100% TYPICAL						Vin = 200VAC Ta = 25°C			
			TEST MODE																					
	PARTS NAME	PART NO.		SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN		O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK,	RETEST	NO GOOD
1	TRANSFORMER	T1	1-2	Y															Y	HICCUP	Y		
2	PA78601		4-5	Y													Y				Y		
3			7-8	Y											Y						Y		
4			8-9	Y											Y						Y		
5			9-10	Y											Y						Y		
6			11-12	Y											Y						Y		
7			1		Y												Y				Y		
8			2		Y														Y	HICCUP	Y		
9			4		Y												Y				Y		
10			5		Y												Y				Y		
11			7		Y												Y			CH3	Y		
12			8		Y												Y			CH3	Y		
13			9		Y												Y			CH2	Y		
14			10		Y												Y			CH2	Y		
15			11		Y												Y				Y		
16			12		Y												Y				Y		
17																							
18	BALUN COIL	L1	1-2	Y														Y			Y		
19	ELF-180214		3-4	Y														Y			Y		
20			1-4	Y									Y								Y		
21			2-3	Y									Y								Y		
22			1		Y												Y				Y		
23			2		Y												Y				Y		
24			3		Y												Y				Y		
25			4		Y												Y				Y		

*** A : SLIGHT B : PROLONGED

MODEL : LWT30H-5FF	ABNORMAL TESTING	TEST CONDITIONS	APPROVED BY	TESTED BY
		LOAD = 100% TYPICAL / Vin = 200VAC Ta = 25°C	Ramesh. M	CTLEC

	PARTS NAME	PART NO.	TEST MODE	SHORT	OPEN	FIRE	SMOKE A	SMOKE B	BURST	SMELL	RED HOT	DAMAGE	FUSE BLOWN	O.C.P.	O.V.P.	NO OUTPUT	NO CHANGE	OTHERS	NOTE	OK	RETEST	NO GOOD
1	NOT ASSIGNED	L2																				
2																						
3	CHOKE COIL	L3		Y													Y			Y		
4	RD810A3F				Y											Y				Y		
5																						
6	FUSE	F1		Y													Y			Y		
7	FGLMT250V3A				Y											Y				Y		
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						

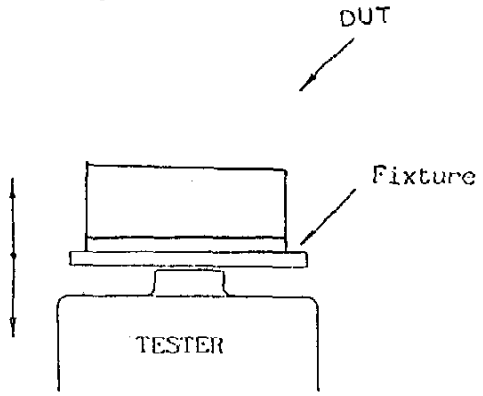
*** A : SLIGHT B : PROLONGED

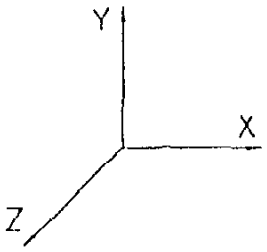
VIBRATION TEST

Type of vibration test : A) Oscillator frequency sweep

Equipment used : Vibration test system F-400-BM-E47 (EMIC CORP.)
Vibration generator 905-FN (EMIC CORP.)

Procedure :





DUT Direction

A) Vibration test with frequency sweep

Sweep frequency	:	10～55Hz
Sweep time	:	1min.
Acceleration	:	Fixed (2G)
Direction	:	X , Y , Z .
Duration	:	1 hour for each direction .

Test point :

1) Output voltage (Apply some shock when checking the output voltage , and observe any abnormalities.)
2) Ripple voltage (At nominal input and output)
3) Mechanical condition (No breakage)

認・APPD	CONGO. 23・10・94	設 計 ENGR	Ramesh.m 20・10・94	図面番号 DWG—No.
検 図 CHK	23・10・94	製 図 DWG	Ramesh.m 20・10・94	—

TEST RESULTS :
(after vibration)

A)

TEST POINT	OUTPUT VOLTAGE (V)			RIPPLE VOLTAGE (mV)			MECHANICAL CONDITION	NOTE
	CH1	CH2	CH3	CH1	CH2	CH3		
BEFORE TEST DIRECTION	5.014	11.896	12.045	60	60	60	O.K.	
X	5.014	11.896	12.045	60	60	60	O.K.	
Y	5.014	11.896	12.045	60	60	60	O.K.	
Z	5.014	11.896	12.045	60	60	60	O.K.	

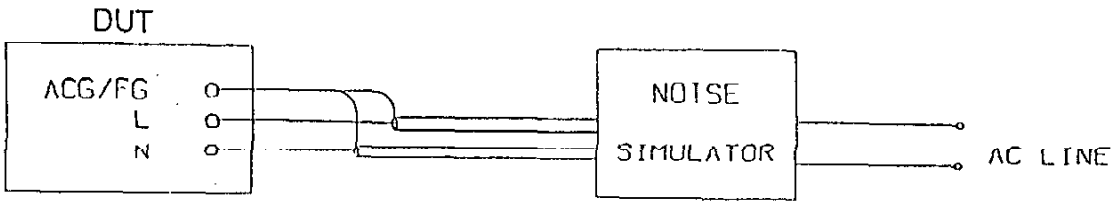
EVALUATION RESULT : (PASS) / FAIL

VISUAL INSPECTION RESULT : (PASS) / FAIL

認 APPD	ACNBO 23 · 10 · 94	設 計 ENGR	Ramesh.M 20 · 10 · 94	図面番号 DWG – No.
検 図 CHK	23 · 10 · 94	製 図 DWG	Ramesh.M 20 · 10 · 94	–

NOISE SIMULATION TEST

Circuit for measurement and equipment used :



MODEL : ENS-24X (SANKI)

Test conditions :

Input voltage	:	100VAC
Output voltage	:	Rated
Output current	:	ML , 100%
Ambient temp.	:	25°C

Settings :

MODE	Normal , Common
TRIG SELECT	Line or Ext (Line)
PULSE WIDTH	50 , 200 , 800 , 1000nS
PHASE SHIFT	0°～360°
POLARITY	+ , -
NOISE LEVEL	0～2KV

Acceptance criteria :

1) No damage of DUT .
2) No output failure .

3) Check any abnormalities . (e.g. noise)

Evaluation result : (PASS) / FAIL

認・APPD	[illegible] 23・10・94	設計 ENGR	Ramesh.A 20・10・94	図面番号 DWG—No.
検図 CHK	[illegible] 23・10・94	製図 DWG	Ramesh.A 20・10・94	

ELECTROSTAIC DISCHARGE TEST

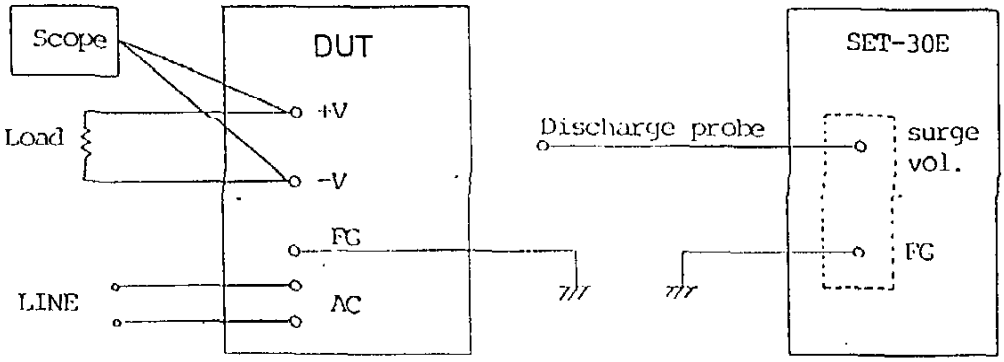
Equipment used : SET-30E (SANKI ELECTRONIC)
Discharge resistor : 250 ohm
Capacitor unit : 200 pF

Test conditions :
Input voltage	:	100 VAC
Output voltage	:	Rated
Output current	:	100%
Ambient temp.	:	25°C
Applied voltage	:	+3KV , +5KV , +10KV , +15KV

Procedure : The DUT should be in a good working condition.
Disharge the applied voltage to the touchable parts of the DUT (*Chassis* , *Input Terminals* , Output Terminals , FG Terminal , ACG Terminal) and check any abnormalities.

Each point to be tested 3 times with different polarity.
Voltage should be applied from 3KV to 15KV.

Test circuit :



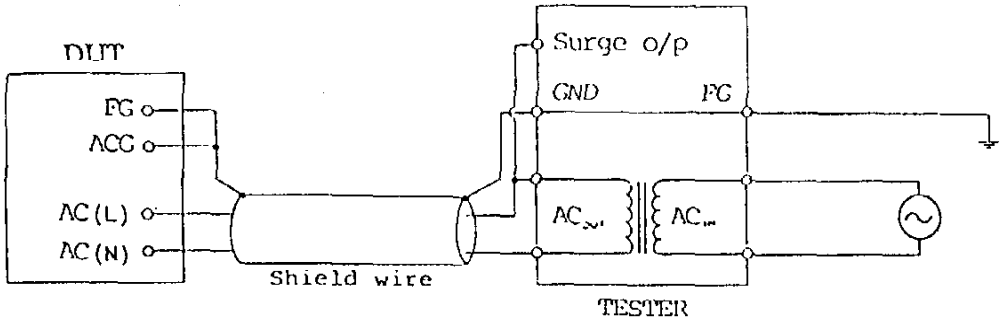
Acceptance criteria
1) No damage of DUT .
2) No output failure .
3) No abnormalities .

Evaluation result : (PASS) / FAIL

認・APPD	RCNG-E 23・10・94	設 計 ENGR	Ramesh.m 20・10・94	図面番号 DWG—No.
検 図 CHK	Sadhu 23・10・94	製 図 DWG	Ramesh.m 20・10・94	—

LIGHTNING SURGE TEST

Test circuit , Test equipment

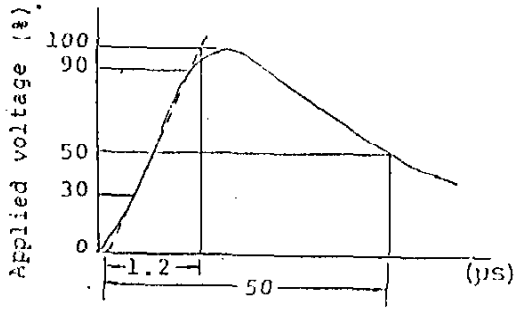


MODEL : LSG - 12K - E (SANKI)

Test conditions :

Input voltage	:	100VAC
Output voltage	:	Rated
Output current	:	Rated
Ambient temp.	:	25°C
Applied voltage	:	From 3KV in steps of 0.5KV Check the max. withstand voltage
Applied point	:	Between FG - AC
Number of test	:	Each voltage 3 times
Polarity	:	+ , -

Applied voltage waveform :



Acceptance criteria
1) No damage of DUT .
2) No output failure .
3) No abnormalities .

Evaluation result : 4.0KV (PASS) / FAIL

認・APPD	CCNG・ 21・10・94	設計 ENGR	Ramesh.N 20・10・94	図面番号 DWG—No.
検図 CHK	23・10・94	製図 DWG	Ramesh.N 20・10・94	—