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ZUP-400 SERIES

RELIABILITY DATA

DWG: IA549-79-01			
QA APPD	APPD	CHK	DWG
M.RACHBUCH oct-21-99	Doron Peled Oct-21-99	Oct/20/99 [illegible]	MICHAEL G. 20. 10. 1999

NEMIC-LAMBDA LTD.

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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.

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M.T.B.F.

MODEL: ZUP 6-66

1. Method of calculation according to EIAJ (RCR-9102) based on part count reliability projection of MIL-HDBK-217F. Individual failure rates is given to each part and M.T.B.F. is calculated by the count of each part.

$$MTBF = \frac{1}{\lambda \text{ equip}}$$

$$= \frac{1}{\sum_{i=1}^{n} Ni(\lambda_G \pi_Q)i} \times 10^6 (\text{Hours})$$

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. M.T.B.F. Values

G_F (GROUND, FIXED)

M.T.B.F. =78811 (HOURS)

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2. Component Derating

Model:ZUP 6-66

(1) Calculation method

(a) Condition

Input :	100Vac , 200Vac
Output :	6V 66A (100%)
Ambient temperature:	50℃
Mounting Method:	Standard Mounting

(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) Calculation method of thermal impedance

$$\Theta_{j\text{-}c} = \frac{Tj(max)-Tc}{Pc(max)} \qquad \Theta_{j\text{-}a} = \frac{Tj(max)-Ta}{Pc(max)} \qquad \Theta_{j\text{-}l} = \frac{Tj(max)-Tl}{Pc(max)}$$

Tc : Case Temperature at Start Point of Derating;25 C in General

Ta : Ambient Temperature at Start Point of Derating; 25 Cin General

Pc(max):Maximum Power Dissipation

T_j (max) :Maximum Junction temperature

$\Theta_{j\text{-}c}$: Thermal Impedance between Junction and Case

$\Theta_{j\text{-}a}$: Thermal Impedance between Junction and Air

$\Theta_{j\text{-}l}$: Thermal Impedance between Junction and lead

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Vin = 100Vac Load = 100% Ta=50°C

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Q101	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2699	P_d =	13	W	ΔT_c =	23.5	°C	T_c =	73.5 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				84.3	°C	D.F. =	56.2 %
Q102	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2699	P_d =	13	W	ΔT_c =	24.9	°C	Ta=	74.9 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				85.7	°C	D.F. =	57.1 %
Q103	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2611	P_d =	11	W	ΔT_c =	24.1	°C	T_c =	74.1 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				83.3	°C	D.F. =	55.5 %
Q104	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2611	P_d =	11	W	ΔT_c =	21.8	°C	T_c =	71.8 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				81.0	°C	D.F. =	54.0 %
Q105	T_{jmax}=	150	°C	θ_{j-a} =	667	°C/W	P_{max} =	0.15 W
2SA1162-Y	P_d =	0.5	mW	ΔT_a =	16	°C	Ta=	66.0 °C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				66.3	°C	D.F. =	44.2 %
D101	T_{jmax}=	150	°C	θ_{j-c} =	1	°C/W	P_{max} =	
D25XB60	P_d =	8	W	ΔT_c =	43.4	°C	T_c =	93.4 °C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				101.4	°C	D.F. =	67.6 %
D102	T_{jmax}=	150	°C	θ_{j-a} =	83.3	°C/W	P_{max} =	
U05NU44	P_d =	6	mW	ΔT_a =	13.7	°C	Ta =	63.7 °C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				64.2	°C	D.F. =	42.8 %
D104	T_{jmax}=	150	°C	θ_{j-c} =	1.5	°C/W	P_{max} =	
20GL2C41A	P_d =	2	W	ΔT_c =	11.6	°C	T_c =	61.6 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				64.6	°C	D.F. =	43.0 %
D105	T_{jmax}=	150	°C	θ_{j-c} =	1.5	°C/W	P_{max} =	
20GL2C41A	P_d =	2	W	ΔT_c =	9.6	°C	T_c =	59.6 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				62.6	°C	D.F. =	41.7 %
D107	T_{jmax}=	150	°C	θ_{j-c} =	37	°C/W	P_{max} =	
2NU41	P_d =	0.46	W	ΔT_c =	19.4	°C	T_c =	69.4 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				86.4	°C	D.F. =	57.6 %

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Vin = 100Vac Load = 100% Ta=50°C

ZUP- 400

D108	T_{jmax}=	150 °C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2 W	ΔTc =	42.8	°C	Tl =	92.8	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			96.4	°C	D.F. =	64.3	%
D109	T_{jmax}=	150 °C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2 W	ΔTc =	38.5	°C	Ta =	88.5	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			92.1	°C	D.F. =	61.4	%
D110	T_{jmax}=	150 °C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2 W	ΔTc =	37.2	°C	Ta =	87.2	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			90.8	°C	D.F. =	60.5	%
D111	T_{jmax}=	150 °C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2 W	ΔTc =	36.9	°C	Ta =	86.9	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			90.5	°C	D.F. =	60.3	%
D112	T_{jmax}=	150 °C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2 W	ΔTc =	37.2	°C	Tc =	87.2	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			90.8	°C	D.F. =	60.5	%
PC101-LED	T_{jmax}=	100 °C	θ_{j-a} =	667	°C/W	Ifmax =	80m	A
PS2561L1-1V	Pd=	1.6 mW	ΔTa =	4	°C	Tc =	54.0	°C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =			55	°C	D.F. =	55.0	%
PC101-DET	T_{jmax}=	100 °C	θ_{j-a} =	667	°C/W	Pmax =	0.15	W
PS2561L1-1V	Pd =	0.01 W	ΔTa =	4	°C	Ta =	54.0	°C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =			60.7	°C	D.F. =	60.7	%
A101	T_{jmax}=	150 °C	θ_{j-a} =	156.3	°C/W	Pmax =	0.8	W
HA17431UA-04-TL	Pd =	6 mW	ΔTa =	14	°C	Ta =	64.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =			65	°C	D.F. =	43.3	%
A102	T_{jmax}=	150 °C	θ_{j-c} =	27	°C/W	Pmax =	1.0	W
UC3854DW	Pd =	0.29 W	ΔTc =	15.4	°C	Ta =	65.4	°C
UNITRODE	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			73.2	°C	D.F. =	48.8	%
A104	T_{jmax}=	150 °C	θ_{j-a} =	83.3	°C/W	Pmax =	1.5	W
M51995AFP-600C	Pd =	0.31 W	ΔTa =	43.8	°C	Ta =	93.8	°C
MITSUBISHI	$T_j = T_a + (\theta_{j-a} \times P_d)$ =			119.6	°C	D.F. =	79.7	%

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Vin = 100Vac Load = 100% Ta=50°C

ZUP- 400

Q205	T_{jmax}=	150	°C	θ_{j-c} =	1	°C/W	P_{max} =	125.0	W
2SK1937	P_d =	4.9	W	ΔT_c =	28.7	°C	Tc=	78.7	°C
FUJI	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				83.6	°C	D.F. =	55.7	%
D201	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	4	°C	Tc =	54.0	°C
SHINDENGEN	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				60	°C	D.F. =	40.0	%
D202	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	4	°C	Tc =	54.0	°C
SHINDENGEN	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				60	°C	D.F. =	40.0	%
D221	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	80	mW	ΔT_a =	4	°C	Tc =	54.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				66.6	°C	D.F. =	44.4	%
D222	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	80	mW	ΔT_a =	4	°C	Tc =	54.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				66.6	°C	D.F. =	44.4	%
D229	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	4	°C	Tc =	54.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				60.0	°C	D.F. =	40.0	%
D230	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	2	°C	Tc =	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58	°C	D.F. =	38.6	%
D231	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	4	°C	Tc =	54.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				60	°C	D.F. =	40.0	%
D232	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	4	°C	Tc =	54.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				60	°C	D.F. =	40.0	%
A201	T_{jmax}=	125	°C	θ_{j-a} =	227	°C/W	P_{max} =	440m	W
UPC814G2	P_d =	0.036	W	ΔT_a =	11.6	°C	Tc =	61.6	°C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				69.7	°C	D.F. =	55.8	%

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Vin = 100Vac Load = 100% Ta=50°C

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A202	T_{jmax}=	125	°C	θ_{j-a} =	189	°C/W	P_{max} =	550m W
UPC324G2	P_d =	0.02	W	ΔT_a =	9.6	°C	Tc =	59.6 °C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				63.4	°C	D.F. =	50.7 %
A208	T_{jmax}=	150	°C	θ_{j-c} =	3	°C/W	P_{max} =	125.0 W
MIPO224SY	P_d =	0.55	W	ΔT_c =	19.2	°C	Tc =	69.2 °C
MATSUSHITA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				71.0	°C	D.F. =	47.3 %
A209	T_{jmax}=	150	°C	θ_{j-c} =	5	°C/W	P_{max} =	15.0 W
UPC7805AHF	P_d =	0.7	W	ΔT_c =	11.6	°C	Tc=	61.6 °C
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				65.1	°C	D.F. =	43.4 %
A210	T_{jmax}=	150	°C	θ_{j-c} =	5	°C/W	P_{max} =	15.0 W
UPC7805AHF	P_d =	0.51	W	ΔT_c =	5.9	°C	Tc =	55.9 °C
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				58.5	°C	D.F. =	39.0 %
A211	T_{jmax}=	150	°C	θ_{j-c} =	5	°C/W	P_{max} =	15.0 W
UPC7805AHF	P_d =	0.51	W	ΔT_c =	15.4	°C	Tc =	65.4 °C
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				68.0	°C	D.F. =	45.3 %
A212	T_{jmax}=	150	°C	θ_{j-c} =	5	°C/W	P_{max} =	15.0 W
UPC78M12AHF	P_d =	0.2	W	ΔT_c =	4	°C	Tc=	54.0 °C
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				55	°C	D.F. =	36.7 %
A213	T_{jmax}=	125	°C	θ_{j-a} =	27	°C/W	P_{max} =	15.0 W
AN79M12	P_d =	0.2	W	ΔT_a =	4	°C	Tc=	54.0 °C
MATSUSHITA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				59.4	°C	D.F. =	47.5 %
PC201-LED	T_{jmax}=	100	°C	ΔI_f/ °C	-0.7	mA/ °C	I_{fmax} =	60m A
TLP621(D4-GRH-LF4)	I_f =	1.5	mA	ΔT_a =	2	°C	Tc=	52.0 °C
TOSHIBA	If (Ta)=	50.9	mA				D.F. =	3.0 %
PC201-DET	T_{jmax}=	100	°C	θ_{j-a} =	400	°C/W	P_{max} =	0.15 W
TLP621(D4-GRH-LF4)	P_d =	1	mW	ΔT_a =	2	°C	Tc=	52.0 °C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				52.4	°C	D.F. =	52.4 %
PC202-LED	T_{jmax}=	100	°C	ΔI_f/ °C	-0.7	mA/ °C	I_{fmax} =	60m A
TLP621(D4-GRH-LF4)	I_f =	0	A	ΔT_a =	1.2	°C	Tc=	51.2 °C
TOSHIBA	If (Ta)=	51.5	mA		51.2	°C	D.F. =	0.0 %

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Vin = 100Vac Load = 100% Ta=50°C

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PC202-DET	T_{jmax}=	100	°C	θ_{j-a} =	400	°C/W	P_{max} =	0.15	W
TLP621(D4-GRH-LF4)	P_d =	0	W	ΔT_a =	1.2	°C	Tc=	51.2	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				51.2	°C	D.F. =	51.2	%
PC203-LED	T_{jmax}=	100	°C	ΔI_f/ °C	-0.7	mA/ °C	I_{fmax} =	60m	A
TLP621(D4-GRH-LF4)	I_f =	0	A	ΔT_a =	2	°C	Tc=	52.0	°C
TOSHIBA	If (Ta)=	51.5	mA		52.0	°C	D.F. =	0.0	%
PC203-DET	T_{jmax}=	100	°C	θ_{j-a} =	400	°C/W	P_{max} =	0.15	W
TLP621(D4-GRH-LF4)	P_d =	0	W	ΔT_a =	2	°C	Tc=	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				52.0	°C	D.F. =	52.0	%

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Vin = 200Vac Load = 100% Ta=50°C

ZUP- 400

Q101	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2699	P_d =	6	W	ΔT_c =	7.7	°C	T_c =	57.7 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				62.7	°C	D.F. =	41.8 %
Q102	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2699	P_d =	6	W	ΔT_c =	8.5	°C	Ta=	58.5 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				63.5	°C	D.F. =	42.3 %
Q103	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2611	P_d =	11	W	ΔT_c =	21.5	°C	T_c =	71.5 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				80.6	°C	D.F. =	53.8 %
Q104	T_{jmax}=	150	°C	θ_{j-c} =	0.833	°C/W	P_{max} =	150.0 W
2SK2611	P_d =	11	W	ΔT_c =	19.8	°C	T_c =	69.8 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				79.0	°C	D.F. =	52.6 %
Q105	T_{jmax}=	150	°C	θ_{j-a} =	667	°C/W	P_{max} =	0.15 W
2SA1162-Y	P_d =	0.5	mW	ΔT_a =	10	°C	Ta=	60.0 °C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				60.3	°C	D.F. =	40.2 %
D101	T_{jmax}=	150	°C	θ_{j-c} =	1	°C/W	P_{max} =	
D25XB60	P_d =	4	W	ΔT_c =	21.2	°C	T_c =	71.2 °C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				75.2	°C	D.F. =	50.1 %
D102	T_{jmax}=	150	°C	θ_{j-a} =	83.3	°C/W	P_{max} =	
U05NU44	P_d =	1.2	mW	ΔT_a =	8.1	°C	Ta =	58.1 °C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58.1	°C	D.F. =	38.7 %
D104	T_{jmax}=	150	°C	θ_{j-c} =	1.5	°C/W	P_{max} =	
20GL2C41A	P_d =	1.8	W	ΔT_c =	4	°C	Tl =	54.0 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				56.7	°C	D.F. =	37.8 %
D105	T_{jmax}=	150	°C	θ_{j-c} =	1.5	°C/W	P_{max} =	
20GL2C41A	P_d =	1.8	W	ΔT_c =	2	°C	T_c =	52.0 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				54.7	°C	D.F. =	36.4 %
D107	T_{jmax}=	150	°C	θ_{j-c} =	37	°C/W	P_{max} =	
2NU41	P_d =	0.46	W	ΔT_c =	15.9	°C	T_c =	65.9 °C
TOSHIBA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				82.9	°C	D.F. =	55.3 %

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Vin = 200Vac Load = 100% Ta=50°C

ZUP- 400

D108	T_{jmax}=	150	°C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2	W	ΔT_c =	41.2	°C	Tl =	91.2	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				94.8	°C	D.F. =	63.2	%
D109	T_{jmax}=	150	°C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2	W	ΔT_c =	37	°C	Ta =	87.0	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				90.6	°C	D.F. =	60.4	%
D110	T_{jmax}=	150	°C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2	W	ΔT_c =	35.6	°C	Ta =	85.6	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				89.2	°C	D.F. =	59.5	%
D111	T_{jmax}=	150	°C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2	W	ΔT_c =	35.3	°C	Ta =	85.3	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				88.9	°C	D.F. =	59.3	%
D112	T_{jmax}=	150	°C	θ_{j-c} =	0.5	°C/W	Pmax =		
S60SC4M	Pd =	7.2	W	ΔT_c =	35.7	°C	Tc =	85.7	°C
SHINDENGEN	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				89.3	°C	D.F. =	59.5	%
PC101-LED	T_{jmax}=	100	°C	θ_{j-a} =	667	°C/W	Ifmax =	80m	A
PS2561L1-1V	Pd =	1.6	mW	ΔT_a =	4	°C	Tc =	54.0	°C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				55	°C	D.F. =	55.0	%
PC101-DET	T_{jmax}=	100	°C	θ_{j-a} =	667	°C/W	Pmax =	0.15	W
PS2561L1-1V	Pd =	0.01	W	ΔT_a =	4	°C	Ta =	54.0	°C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				60.7	°C	D.F. =	60.7	%
A101	T_{jmax}=	150	°C	θ_{j-a} =	156.3	°C/W	Pmax =	0.8	W
HA17431UA-04-TL	Pd =	6	mW	ΔT_a =	4	°C	Ta =	54.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				55	°C	D.F. =	36.6	%
A102	T_{jmax}=	150	°C	θ_{j-c} =	27	°C/W	Pmax =	1.0	W
UC3854DW	Pd =	0.29	W	ΔT_c =	13.5	°C	Ta =	63.5	°C
UNITRODE	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				71.3	°C	D.F. =	47.6	%
A104	T_{jmax}=	150	°C	θ_{j-a} =	83.3	°C/W	Pmax =	1.5	W
M51995AFP-600C	Pd =	0.31	W	ΔT_a =	38.2	°C	Ta =	88.2	°C
MITSUBISHI	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				114	°C	D.F. =	76.0	%

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Vin = 200Vac Load = 100% Ta=50°C

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Q205	T_{jmax}=	150	°C	θ_{j-c} =	1	°C/W	P_{max} =	125.0	W
2SK1937	P_d =	4.9	W	ΔT_c =	24.9	°C	Tc=	74.9	°C
FUJI	$T_j = T_c + (\theta_{j-c} \times P_d)$ =				79.8	°C	D.F. =	53.2	%
D201	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	2	°C	Tc =	52.0	°C
SHINDENGEN	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58	°C	D.F. =	38.7	%
D202	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	2	°C	Tc =	52.0	°C
SHINDENGEN	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58	°C	D.F. =	38.7	%
D221	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	80	mW	ΔT_a =	4	°C	Tc =	54.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				66.6	°C	D.F. =	44.4	%
D222	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	80	mW	ΔT_a =	2	°C	Tc =	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				64.6	°C	D.F. =	43.0	%
D229	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	2	°C	Tc =	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58.0	°C	D.F. =	38.7	%
D230	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	2	°C	Tc =	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58	°C	D.F. =	38.7	%
D231	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	2	°C	Tc =	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58	°C	D.F. =	38.7	%
D232	T_{jmax}=	150	°C	θ_{j-a} =	157	°C/W	P_{max} =		W
D1FL20U	P_d =	38	mW	ΔT_a =	2	°C	Tc =	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				58	°C	D.F. =	38.7	%
A201	T_{jmax}=	125	°C	θ_{j-a} =	227	°C/W	P_{max} =	440m	W
UPC814G2	P_d =	0.036	W	ΔT_a =	9.6	°C	Tc =	59.6	°C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				67.8	°C	D.F. =	54.2	%

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Vin = 200Vac Load = 100% Ta=50°C

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A202	T_{jmax}=	125 °C	θ_{j-a} =	189	°C/W	P_{max} =	550m	W
UPC324G2	P_d =	0.02 W	ΔT_a =	7.8	°C	Tc =	57.8	°C
NEC	$T_j = T_a + (\theta_{j-a} \times P_d)$ =			61.6	°C	D.F. =	49.3	%
A208	T_{jmax}=	150 °C	θ_{j-c} =	3	°C/W	P_{max} =	125.0	W
MIPO224SY	P_d =	0.55 W	ΔT_c =	17.4	°C	Tc =	67.4	°C
MATSUSHITA	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			69.0	°C	D.F. =	46.0	%
A209	T_{jmax}=	150 °C	θ_{j-c} =	5	°C/W	P_{max} =	15.0	W
UPC7805AHF	P_d =	0.7 W	ΔT_c =	9.6	°C	Tc=	59.6	°C
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			63.1	°C	D.F. =	42.0	%
A210	T_{jmax}=	150 °C	θ_{j-c} =	5	°C/W	P_{max} =	15.0	W
UPC7805AHF	P_d =	0.51 W	ΔT_c =	5.9	°C	Tc =	55.9	°C
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			58.5	°C	D.F. =	39.0	%
A211	T_{jmax}=	150 °C	θ_{j-c} =	5	°C/W	P_{max} =	15.0	W
UPC7805AHF	P_d =	0.51 W	ΔT_c =	11.6	°C	Tc =	61.6	°C
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			64.2	°C	D.F. =	42.7	%
A212	$T_j = T_c$	150 °C	θ_{j-c} =	5	°C/W	P_{max} =	15.0	W
UPC78M12AHF	*P_d =*	*0.2 W*	*ΔT_c =*	*2*	*°C*	*Tc=*	*52.0*	*°C*
NEC	$T_j = T_c + (\theta_{j-c} \times P_d)$ =			55	°C	D.F. =	36.7	%
A213	T_{jmax}=	125 °C	θ_{j-a} =	27	°C/W	P_{max} =	15.0	W
AN79M12	P_d =	0.2 W	ΔT_a =	2	°C	Tc=	52.0	°C
MATSUSHITA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =			57.4	°C	D.F. =	45.9	%
PC201-LED	T_{jmax}=	100 °C	ΔI_f/ °C	-0.7	mA/ °C	I_{fmax} =	60m	A
TLP621(D4-GRH-LF4)	I_f =	2.5 mA	ΔT_a =	2	°C	Ic=	52.0	°C
TOSHIBA	I_f (Ta)=	50.9 mA				D.F. =	4.9	%
PC201-DET	T_{jmax}=	100 °C	θ_{j-a} =	400	°C/W	P_{max} =	0.15	W
TLP621(D4-GRH-LF4)	P_d =	1 mW	ΔT_a =	2	°C	Tc=	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =			52.4	°C	D.F. =	52.4	%
PC202-LED	T_{jmax}=	100 °C	ΔI_f/ °C	-0.7	mA/ °C	I_{fmax} =	60m	A
TLP621(D4-GRH-LF4)	I_f =	0 A	ΔT_a =	1.2	°C	Tc=	51.2	°C
TOSHIBA	I_f (Ta)=	51.5 mA		51.2	°C	D.F. =	0.0	%

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Vin = 200Vac Load = 100% Ta=50°C

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PC202-DET	T_{jmax}=	100	°C	θ_{j-a} =	400	°C/W	P_{max} =	0.15	W
TLP621(D4-GRH-LF4)	P_d =	0	W	ΔT_a =	1.2	°C	Tc=	51.2	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				51.2	°C	D.F. =	51.2	%
PC203-LED	T_{jmax}=	100	°C	ΔIf/ °C	-0.7	mA/ °C	I_{fmax} =	60m	A
TLP621(D4-GRH-LF4)	If =	0	A	ΔT_a =	2	°C	Tc=	52.0	°C
TOSHIBA	If (Ta)=	51.5	mA		52.0	°C	D.F. =	0.0	%
PC203-DET	T_{jmax}=	100	°C	θ_{j-a} =	400	°C/W	P_{max} =	0.15	W
TLP621(D4-GRH-LF4)	P_d =	0	W	ΔT_a =	2	°C	Tc=	52.0	°C
TOSHIBA	$T_j = T_a + (\theta_{j-a} \times P_d)$ =				52.0	°C	D.F. =	52.0	%

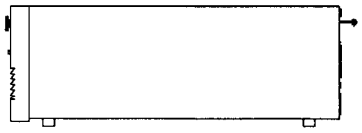
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3.MAIN COMPONENTS TEMPERATURE RISE

Model:ZUP 6-66

Location No.	Parts Name	DT Temperature Rise (°C)
		Standard Mounting
Q102	MOSFET	24.9
Q103	MOSFET	24.1
Q205	MOSFET	28.7
D101	BRIDGE	43.4
D104	DIODE	11.6
D107	DIODE	19.4
D108	DIODE	42.8
T101	TRANSFORMER	54.4
T201	TRANSFORMER	11.6
C114	ELEC.CAP.	5.9
C153	ELEC.CAP.	24.6
L102	BALUN COIL	17.4
L103	BALUN COIL	28.9
L105	CHOKE COIL	45.2
L106	CHOKE COIL	56.7
L107	CHOKE COIL.	53.8
A102	IC	15.4
A104	IC	43.8

Conditions:

Standard Mounting	
Input Voltage	100VAC
Output Voltage	6V
Output Current	66A

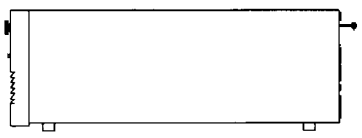
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3.MAIN COMPONENTS TEMPERATURE RISE

Model:ZUP 6-66

Location No.	Parts Name	DT Temperature Rise (°C)
		Standard Mounting
Q102	MOSFET	8.5
Q103	MOSFET	21.5
Q205	MOSFET	24.9
D101	BRIDGE	21.2
D104	DIODE	4
D107	DIODE	15.9
D108	DIODE	41.2
T101	TRANSFORMER	50.9
T201	TRANSFORMER	5.9
C114	ELEC.CAP.	4
C153	ELEC.CAP.	21.1
L102	BALUN COIL	8.4
L103	BALUN COIL	12.2
L105	CHOKE COIL	19.2
L106	CHOKE COIL	51
L107	CHOKE COIL.	53
A102	IC	13.5
A104	IC	38.2

Conditions:

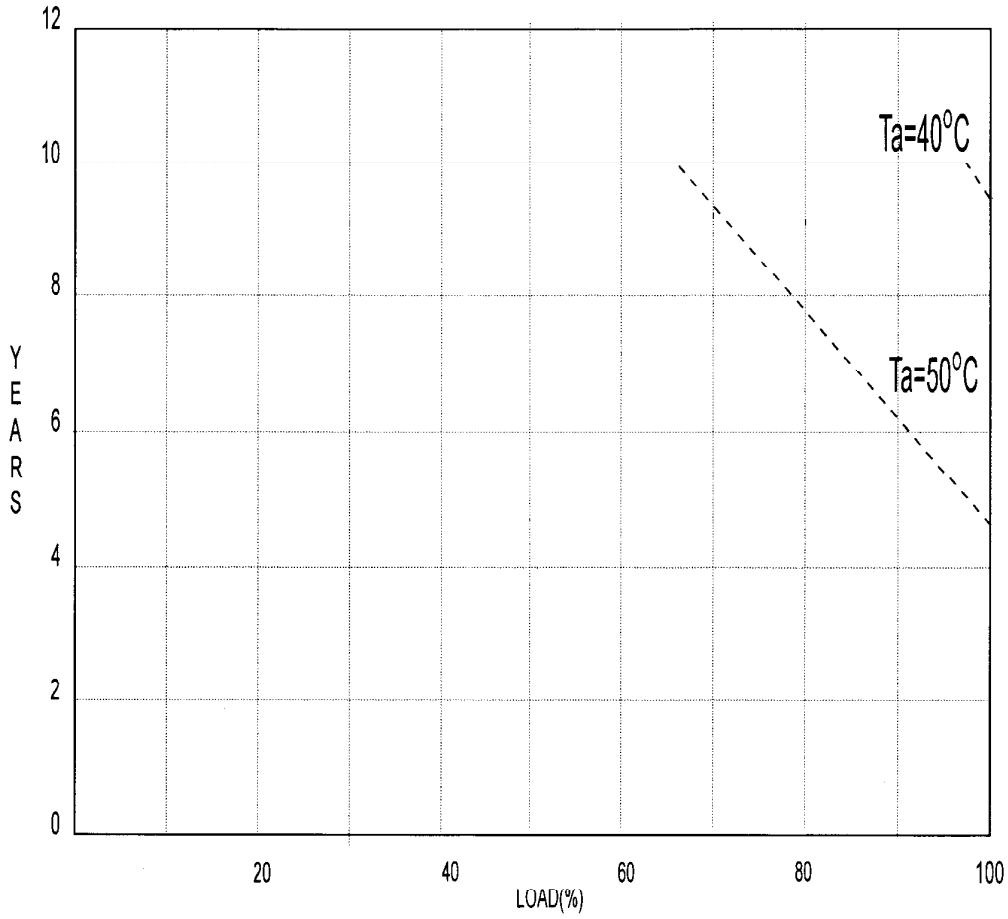
Standard Mounting	
Input Voltage	200VAC
Output Voltage	6V
Output Current	66A

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4. E-CAP LIFETIME VERSUS LOAD

Model:ZUP 6-66

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

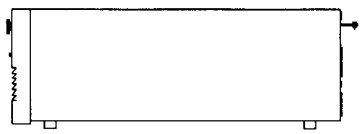


FORMULA: $L=Lo \times 2^{\frac{105-Tc}{10}}$ (years)

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

Lo- Guarantee life for Elec.capacitor

Tc- Case temperature of Elec. capacitor

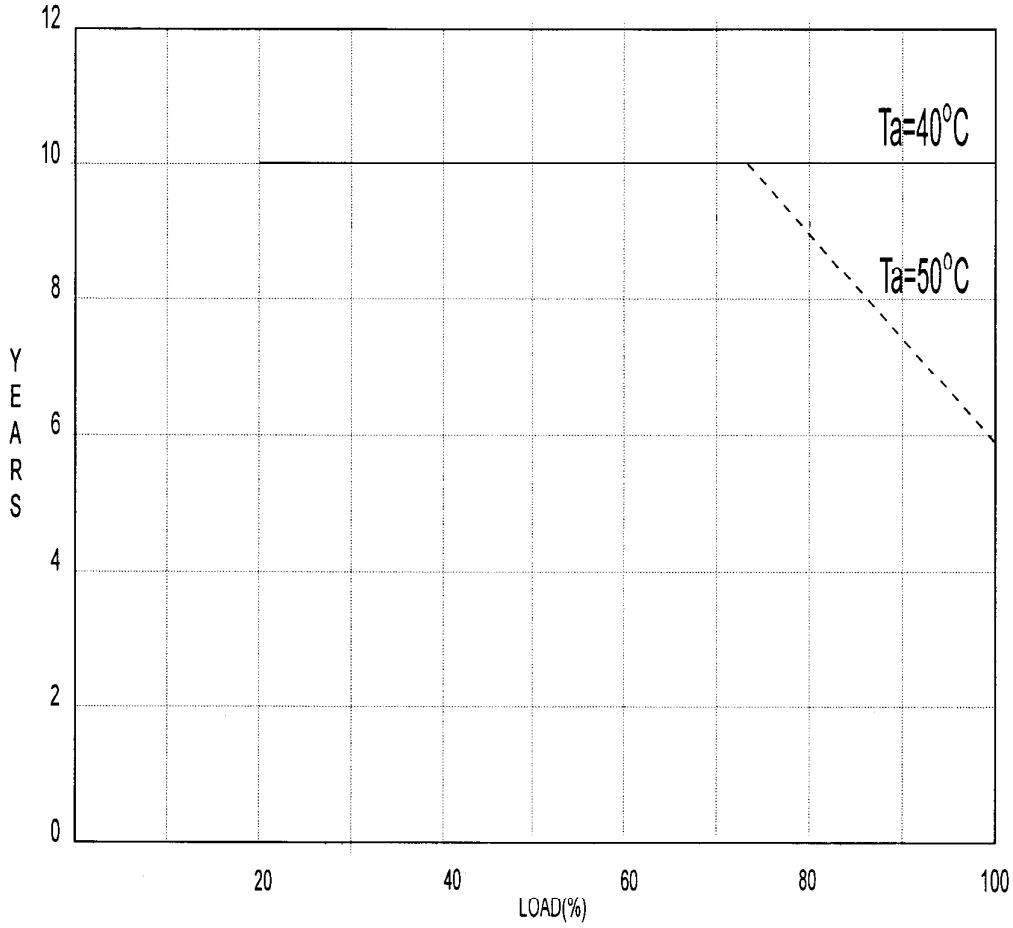
Standard Mounting	
Input Voltage	100VAC
Output Voltage	6V
Output Current	66A

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4. E-CAP LIFETIME VERSUS LOAD

Model:ZUP 6-66

GRAPH OF ELECTROLYTIC CAPACITOR LIFETIME VERSUS LOAD

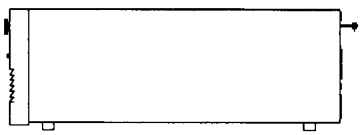


FORMULA: $L = Lo \times 2^{\frac{105-Tc}{10}}$ (years)

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

Lo- Guarantee life for Elec.capacitor

Tc- Case temperature of Elec. capacitor

Standard Mounting	
Input Voltage	200VAC
Output Voltage	6V
Output Current	66A

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ZUP-400

Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
1	Q101	D-S	o								o			o			
2		D-G	o							o	o			o			Da:Q101,Q102,ZD101-short,R110 - open.
3		G-S	o											o			
4		D		o											o		
5		S		o											o		
6		G		o						o	o			o			Da:Q101,Q102,ZD101-short.
7	Q102	D-S	o								o			o			
8		D-G	o							o	o			o			Da:Q101,Q102,ZD101-short,R110-open.
9		G-S	o											o			
10		D		o											o		
11		S		o											o		
12		G		o						o	o			o			Da:Q101,Q102,ZD101-short.
13	Q103	D-S	o							o	o			o			Da:ZD106,ZD108,-short.
14		D-G	o							o	o			o			Da:Q103,Q104,ZD102,R116-open,ZD106,ZD108-short.
15		G-S	o											o			
16		D		o											o		
17		S		o											o		
18		G		o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
19	Q104	D-S	o							o	o			o			Da:ZD106,ZD108-short.
20		D-G	o							o	o			o			Da:Q103,Q104,ZD102,R116-open,ZD106,ZD108-short.
21		G-S	o											o			
22		D		o											o		
23		S		o											o		
24		G		o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
25	D101	AC-AC	o								o			o			
26		AC-DC	o								o			o			
27		AC		o										o			
28		DC		o										o			
29	D102		o											o			
30				o										o			
31	D104		o												o		
32				o						o	o			o			Da:Q101,Q102-open.
33	D105		o												o		
34				o						o	o			o			Da:Q101,Q102-open.
35	D107		o								o			o			
36				o											o		
37	D108		o											o			
38				o											o		

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Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Oulput	No Change	Others	Note
39	D109		o											o			
40				o											o		
41	D110		o											o			
42				o											o		
43	D111		o											o			
44				o											o		
45	D112		o											o			
46				o											o		
47	PC101	1-2	o									o		o			
48		3-4	o											o			
49		1		o								o		o			
50		3		o								o		o			
51	C109		o							o				o			Da:FR101-open.
52				o										o			
53	C110		o												o		
54				o											o		
55	C111		o												o		
56				o											o		
57	C112		o							o							Da:R112-open.
58				o											o		
59	C113		o								o			o			
60				o											o		
61	C114		o								o			o			
62				o											o		
63	C115		o							o							Da:R114-open.
64				o											o		
65	C116		o												o		
66				o											o		
67	C117		o							o							Da:R121-open.
68				o											o		
69	C118		o							o							Da:R122-open.
70				o											o		
71	C119		o												o		
72				o											o		
73	C122		o												o		
74				o											o		
75	C125		o											o			
76				o											o		

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Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
77	C128		o												o		
78				o											o		
79	C136		o											o			
80				o												o	Vo not stable
81	C145		o											o			
82				o											o		
83	C146		o											o			
84				o											o		
85	C147		o										o	o			
86				o											o		
87	C148		o										o	o			
88				o											o		
89	C152		o											o			
90				o											o		
91	C153		o											o			
92				o											o		
93	FR101			o										o			
94	R103			o												o	Vo not stable
95	R104			o												o	Vo not stable
96	R107			o											o		
97	R108			o											o		
98	R110			o						o	o			o			Da:Q101,Q102,ZD101-short.
99	R111			o						o	o			o			Da:Q101,Q102,ZD101-short.
100	R112			o											o		
101	R116			o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
102	R117			o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
103	R120			o										o			
104	R121			o											o		
105	R122			o											o		
106	R123			o										o			
107	R124			o										o			
108	R125			o										o			
109	R130			o										o			
110	R133			o								o		o			
111	R134			o											o		
112	R142			o										o			
113	R143			o										o			
114	R144			o										o			
115	R151			o											o		

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ZUP-400

Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
116	R160			o										o			
117	R161			o										o			
118	R162			o										o			
119	R171			o											o		
120	R179			o										o			
121	R180			o										o			
122	R181			o										o			
123	R185			o										o			
124	Q107	C - E	o												o		
125		C - B	o							o	o			o			Da:Q101,Q102-short.
126		B - E	o												o		
127		C		o											o		
128		E		o										o			
129		B - E		o										o			
130	Q108	C - E	o											o			
131		C - B	o											o			
132		B - E	o												o		
133		C		o										o			
134		E		o						o	o			o			Da:Q101,Q102,R111-open.
135		B		o						o	o			o			Da:Q101,Q102,R111-open.
136	T101	4 - 6	o											o			
137		13 - 14	o											o			
138		1 - 3	o											o			
139		4		o											o		
140		13		o										o			
141		1		o										o			
142	L105		o							o	o			o			Da:Q101,Q102,ZD101-short,F101-open.
143				o										o			
144	L106		o													o	Vo not stable
145				o										o			

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Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
146	A208	D - S	o							o				o			Da:R105,R106-open.
147		D - C	o							o				o			R105,R106,ZD214,A208-open.
148		C - S	o											o			
149		D		o										o			
150		S		o										o			
151		G		o										o			
152	Q201	B - E	o												o		
153		B - C	o											o			
154		C - E	o											o			
155		B		o											o		
156		C		o											o		
157		E		o											o		
158	Q202	B - E	o												o		
159		B - C	o											o			
160		C - E	o											o			
161		B		o											o		
162		C		o											o		
163		E		o											o		
164	Q203	D - S	o												o		
165		D - G	o												o		
166		G - S	o												o		
167		D		o											o		
168		S		o											o		
169		G		o											o		
170	Q204	D - S	o												o		
171		D - G	o												o		
172		G - S	o												o		
173		D		o											o		
174		S		o											o		
175		G		o											o		
176	Q205	D - S	o											o			
177		D - G	o											o			
178		G - S	o												o		
179		D		o											o		
180		S		o											o		
181		G		o											o		
182	Q206	B - E	o												o		
183		B - C	o												o		

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ZUP-400

Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OCP	OCP	No Output	No Change	Others	Note
184	Q206	C - E	o												o		
185		B		o											o		
186		C		o											o		
187		E		o											o		
188	D201		o											o			
189				o											o		
190	D204		o												o		
191				o								o		o			
192	D205		o									o		o			
193				o											o		
194	D207		o											o			
195				o											o		
196	D221		o													o	HICC-UP
197				o											o		
198	D227		o												o		
199				o						o				o			Da:A102,R111,Q102,R105,R106-open.
200	D228		o												o		
201				o											o		
202	D229		o											o			
203				o											o		
204	D231		o													o	HICC-UP
205				o											o		
206	D233		o												o		
207				o											o		
208	D235		o											o			
209				o											o		
210	PC201	1 - 2	o												o		
211		3 - 4	o												o		
212		1		o										o			
213		3		o										o			
214	PC202	1 - 2	o												o		
215		3 - 4	o											o			
216		1		o											o		
217		3		o											o		
218	PC203	1 - 2	o												o		
219		3 - 4	o											o			
220		1		o											o		
221		3		o											o		

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ZUP-400

Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
222	C218		o											o			
223				o											o		
224	C219		o											o			
225				o											o		
226	C221		o											o			
227				o											o		
228	C222		o													o	OTP
229				o											o		
230	C223		o												o		
231				o											o		
232	C224		o													o	HICC-UP
233				o											o		
234	C225		o												o		
235				o											o		
236	C227		o											o			
237				o											o		
238	C228		o											o			
239				o											o		
240	C230		o													o	HICC-UP
241				o											o		
242	C231		o													o	OTP
243				o											o		
244	C233		o													o	HICC-UP
245				o											o		
246	C234		o											o			
247				o											o		
248	C236		o							o				o			Da:D233-short
249				o											o		
250	C261		o							o				o			Da:D224-short.
251				o											o		
252	R201			o								o		o			
253	R202			o											o		Max Io=0A.
254	R206			o											o		
255	R208			o										o			
256	R211			o												o	Vo=3.9V.
257	R213			o												o	Vo=3.5V
258	R220			o								o		o			
259	R227			o												o	Vo=4V.
260	R231			o												o	P.S. in C.C. MODE

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ZUP-400

Model: ZUP6-66
Condition:
Input:100VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
261	R241			o											o		
262	R243			o										o			
263	R253			o										o			
264	R263			o											o		
265	R290			o											o		
266	R291			o											o		
267	R292			o								o		o			
268	R293			o											o		
269	R294			o											o		
270	ZD204		o											o			
271	ZD205		o											o			
272	T201	1 - 3	o											o			
273		5 - 6	o											o			
274		7 - 8	o											o			
275		8 - 9	o											o			
276		8 - 10	o											o			
277		11 - 12	o											o			
278		13 - 14	o												o		
279		3		o										o			
280		5		o										o			
281		7		o										o			
282		9		o												o	OTP
283		10		o										o			
284		11		o											o		
285		13		o											o		

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ZUP-400

Model: ZUP6-66
Condition:
Input:200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
1	Q101	D-S	o								o			o			
2		D-G	o							o	o			o			Da:Q101,Q102,ZD101-short,R110 - open.
3		G-S	o											o			
4		D		o											o		
5		S		o											o		
6		G		o						o	o			o			Da:Q101,Q102,ZD101-short.
7	Q102	D-S	o								o			o			
8		D-G	o							o	o			o			Da:Q101,Q102,ZD101-short,R110-open.
9		G-S	o											o			
10		D		o											o		
11		S		o											o		
12		G		o						o	o			o			Da:Q101,Q102,ZD101-short.
13	Q103	D-S	o							o	o			o			Da:ZD106,ZD108,-short.
14		D-G	o							o	o			o			Da:Q103,Q104,ZD102,R116-open,ZD106,ZD108-short.
15		G-S	o											o			
16		D		o											o		
17		S		o											o		
18		G		o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
19	Q104	D-S	o							o	o			o			Da:ZD106,ZD108-short.
20		D-G	o							o	o			o			Da:Q103,Q104,ZD102,R117-open,ZD106,ZD108-short.
21		G-S	o											o			
22		D		o											o		
23		S		o											o		
24		G		o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
25	D101	AC-AC	o								o			o			
26		AC-DC	o								o			o			
27		AC		o										o			
28		DC		o										o			
29	D102		o											o			
30				o										o			
31	D104		o												o		
32				o						o	o			o			Da:Q101,Q102-short.
33	D105		o												o		
34				o						o	o			o			Da:Q101,Q102-short.
35	D107		o								o			o			
36				o											o		
37	D108		o											o			
38				o											o		

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ZUP-400

Model: ZUP6-66
Condition:
Input:200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
39	D109		o											o			
40				o											o		
41	D110		o											o			
42				o											o		
43	D111		o											o			
44				o											o		
45	D112		o											o			
46				o											o		
47	PC101	1-2	o									o		o			
48		3-4	o											o			
49		1		o								o		o			
50		3		o								o		o			
51	C109		o							o				o			Da:FR101-open.
52				o										o			
53	C110		o												o		
54				o											o		
55	C111		o												o		
56				o											o		
57	C112		o							o							Da:R112-open.
58				o											o		
59	C113		o								o			o			
60				o											o		
61	C114		o								o			o			
62				o											o		
63	C115		o							o							Da:R114-open.
64				o											o		
65	C116		o												o		
66				o											o		
67	C117		o							o							Da:R121-open.
68				o											o		
69	C118		o							o							Da:R122-open.
70				o											o		
71	C119		o												o		
72				o											o		
73	C122		o												o		
74				o											o		
75	C125		o												o		
76				o											o		

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ZUP-400

Model: ZUP6-66
Condition:
Input:200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
77	C128		o												o		
78				o											o		
79	C136		o											o			
80				o												o	Vo not stable
81	C145		o											o			
82				o											o		
83	C146		o											o			
84				o											o		
85	C147		o										o	o			
86				o											o		
87	C148		o										o	o			
88				o											o		
89	C152		o											o			
90				o											o		
91	C153		o											o			
92				o											o		
93	FR101			o										o			
94	R103			o												o	Vo not stable
95	R104			o												o	Vo not stable
96	R107			o											o		
97	R108			o											o		
98	R110			o						o	o			o			Da:Q101,Q102,ZD101-short.
99	R111			o						o	o			o			Da:Q101,Q102,ZD101-short.
100	R112			o											o		
101	R116			o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
102	R117			o						o	o			o			Da:Q103,Q104,ZD106,ZD108-short.
103	R120			o										o			
104	R121			o											o		
105	R122			o											o		
106	R123			o											o		
107	R124			o											o		
108	R125			o											o		
109	R130			o											o		
110	R133			o								o		o			
111	R134			o											o		
112	R142			o												o	Vo not stable
113	R143			o												o	Vo not stable
114	R144			o												o	Vo not stable
115	R151			o											o		

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ZUP-400

Model: ZUP6-66
Condition:
Input:200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
116	R160			o										o			
117	R161			o										o			
118	R162			o										o			
119	R171			o											o		
120	R179			o										o			
121	R180			o										o			
122	R181			o										o			
123	R185			o										o			
124	Q107	C - E	o												o		
125		C - B	o							o	o			o			Da:Q101,Q102-short.
126		B - E	o												o		
127		C		o											o		
128		E		o										o			
129		B - E		o										o			
130	Q108	C - E	o											o			
131		C - B	o											o			
132		B - E	o												o		
133		C		o										o			
134		E		o						o	o			o			Da:Q101,Q102,R111-open.
135		B		o						o	o			o			Da:Q101,Q102,R111-open.
136	T101	4 - 6	o											o			
137		13 - 14	o											o			
138		1 - 3	o											o			
139		4		o											o		
140		13		o										o			
141		1		o										o			
142	L105		o							o	o			o			Da:Q101,Q102,ZD101-short,F101-open.
143				o										o			
144	L106		o													o	Vo not stable
145				o										o			

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ZUP-400

Model: ZUP6-66
Condition:
Input: 200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
146	A208	D - S	o							o				o			Da:R105,R106-open.
147		D - C	o							o				o			Da:R105,R106,ZD214,A208-open.
148		C - S	o											o			
149		D		o										o			
150		S		o										o			
151		C		o										o			
152	Q201	B - E	o												o		
153		B - C	o											o			
154		C - E	o											o			
155		B		o											o		
156		C		o											o		
157		E		o											o		
158	Q202	B - E	o												o		
159		B - C	o											o			
160		C - E	o											o			
161		B		o											o		
162		C		o											o		
163		E		o											o		
164	Q203	D - S	o												o		
165		D - G	o												o		
166		G - S	o												o		
167		D		o											o		
168		S		o											o		
169		G		o											o		
170	Q204	D - S	o												o		
171		D - G	o												o		
172		G - S	o												o		
173		D		o											o		
174		S		o											o		
175		G		o											o		
176	Q205	D - S	o											o			
177		D - G	o											o			
178		G - S	o												o		
179		D		o											o		
180		S		o											o		
181		G		o											o		
182	Q206	B - E	o												o		
183		B - C	o												o		

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ZUP-400

Model: ZUP6-66
Condition:
Input: 200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
184	Q206	C - E	o												o		
185		B		o											o		
186		C		o											o		
187		E		o											o		
188	D201		o											o			
189				o											o		
190	D204		o												o		
191				o								o		o			
192	D205		o									o		o			
193				o											o		
194	D207		o											o			
195				o											o		
196	D221		o													o	HICC-UP
197				o											o		
198	D227		o												o		
199				o						o				o			Da:A102,R111,Q102,R105,R106-open.
200	D228		o												o		
201				o											o		
202	D229		o											o			
203				o											o		
204	D231		o													o	HICC-UP
205				o											o		
206	D233		o												o		
207				o											o		
208	D235		o											o			
209				o											o		
210	PC201	1 - 2	o												o		
211		3 - 4	o												o		
212		1		o										o			
213		3		o										o			
214	PC202	1 - 2	o												o		
215		3 - 4	o											o			
216		1		o											o		
217		3		o											o		
218	PC203	1 - 2	o												o		
219		3 - 4	o											o			
220		1		o											o		
221		3		o											o		

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ZUP-400

Model: ZUP6-66
Condition:
Input: 200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
222	C218		o											o			
223				o											o		
224	C219		o											o			
225				o											o		
226	C221		o											o			
227				o											o		
228	C222		o													o	OTP
229				o											o		
230	C223		o												o		
231				o											o		
232	C224		o													o	HICC-UP
233				o											o		
234	C225		o												o		
235				o											o		
236	C227		o											o			
237				o											o		
238	C228		o											o			
239				o											o		
240	C230		o													o	HICC-UP
241				o											o		
242	C231		o													o	OTP
243				o											o		
244	C233		o													o	HICC-UP
245				o											o		
246	C234		o											o			
247				o											o		
248	C236		o							o				o			Da:D233-open.
249				o											o		
250	C261		o							o				o			Da:D224-open.
251				o											o		
252	R201			o								o		o			
253	R202			o											o		Max Io=0A.
254	R206			o											o		
255	R208			o										o			
256	R211			o												o	Vo=3.9V
257	R213			o												o	Vo=3.5V.
258	R220			o								o		o			
259	R227			o												o	Vo=4V .
260	R231			o												o	P.S. in C.C. MODE.

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ZUP-400

Model: ZUP6-66
Condition:
Input: 200VAC Output:6V 66A Ta:25°C 70%RH Da: Damaged

No	Test Position		Test Mode		Test Result												
					1	2	3	4	5	6	7	8	9	10	11	12	
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
261	R241			o											o		
262	R243			o										o			
263	R253			o										o			
264	R263			o											o		
265	R290			o											o		
266	R291			o											o		
267	R292			o								o		o			
268	R293			o											o		
269	R294			o											o		
270	ZD204		o											o			
271	ZD205		o											o			
272	T201	1 - 3	o											o			
273		5 - 6	o											o			
274		7 - 8	o											o			
275		8 - 9	o											o			
276		8 - 10	o											o			
277		11 - 12	o											o			
278		13 - 14	o												o		
279		3		o										o			
280		5		o										o			
281		7		o										o			
282		9		o												o	OTP
283		10		o										o			
284		11		o											o		
285		13		o											o		

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6. VIBRATION TEST

Model:ZUP 6-66

(1) Vibration test class

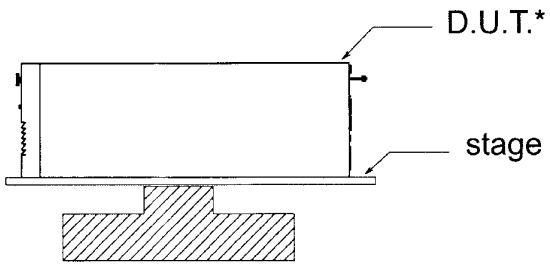
Frequency variable endurance test

(2) Equipment used

Controller: GENRAD-2503.

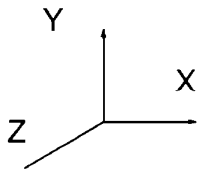
Vibrator: ULHOLTZ-DICKIE TA1000.

(3) Testing method



Test condition:

Sweep frequency	10~55HZ
Sweep time	1min.
Acceleration	2G const.
Direction	X,Y,Z.
Test time	1H. each



D.U.T. Direction

*D.U.T. is fixed to vibrator surface by mounting screws

(4) Test Result

Vin=100Vac;Iout=66A OK NG

Check item	Vout	Ripple (mVp-p)	D.U.T.state
Initial / Directions	6.019	33	O.K.
X	6.019	33	O.K.
Y	6.019	33	O.K.
Z	6.019	33	O.K.

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