FPS1000 - 12
RELIABILITY
DATA

DWG: IA659-79-01		
APPD	CHK	DWG
21.05.07	21.05.07	21.05.07

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.

1. M.T.B.F

1.1 Method of calculation according to JEITA (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.

$$\mathrm{MTBF} = \frac{1}{\lambda_{equip}} = \frac{1}{\sum_{i=1}^{n} N_i (\lambda_G \pi_Q) i} \times 10^6 (\mathrm{Hours})$$

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)
- N_i = Quantity of ith Generic Part
- n = Number of Different Generic Part Categories
- π_Q = Generic Quality factor for the Generic Part (π_Q = 1)

1.2 M.T.B.F Values

G_F (GROUND,FIXED)

M.T.B.F = 75344 (HOURS)

1.3 Method of calculation according to JEITA (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.

$$\mathrm{MTBF} = \frac{1}{\lambda_{equip}} = \frac{1}{\sum_{i=1}^{n} N_i \left(\lambda_G \pi_Q\right)i} \times 10^6 \,(\mathrm{Hours})$$

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)
N_i = Quantity of ith Generic Part
n = Number of Different Generic Part Categories
π_Q = Generic Quality factor for the Generic Part ($\pi_Q = 1$)

1.4 M.T.B.F Values

GF (GROUND,FIXED)

M.T.B.F = 72682 (HOURS)

1.5 Method of calculation according to JEITA (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.

$$\mathrm{MTBF} = \frac{1}{\lambda_{equip}} = \frac{1}{\sum_{i=1}^{n} N_i (\lambda_G \pi_Q) i} \times 10^6 (\mathrm{Hours})$$

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)
N_i = Quantity of ith Generic Part
n = Number of Different Generic Part Categories
π_Q = Generic Quality factor for the Generic Part (π_Q = 1)

1.6 M.T.B.F Values

GF (GROUND,FIXED)

M.T.B.F = 75025 (HOURS)

1.7 Method of calculation according to JEITA (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.

$$\mathrm{MTBF} = \frac{1}{\lambda_{equip}} = \frac{1}{\sum_{i=1}^{n} N_i (\lambda_G \pi_Q) i} \times 10^6 (\mathrm{Hours})$$

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)
N_i = Quantity of ith Generic Part
n = Number of Different Generic Part Categories
π_Q = Generic Quality factor for the Generic Part (π_Q = 1)

1.8 M.T.B.F Values

G_F (GROUND,FIXED)

M.T.B.F = 72385 (HOURS)

1.9 Method of calculation according to BELLCORE calculation method:
Limited Stress - Method I, Case 3
Individual failure rates is given to each part and M.T.B.F is calculated by the count of each part

$$\lambda = \sum_{i=1}^{n} \lambda_i \qquad MTBF = \frac{1}{\lambda}$$

where:

λ_i failure rate of I's item

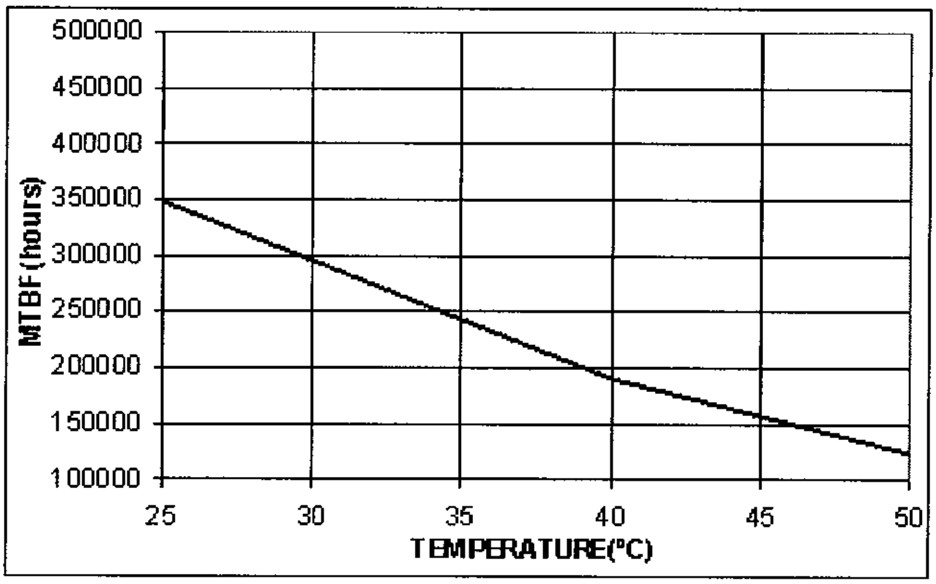
n number of item

1.10 M.T.B.F Values for 25°C

GB (GROUND,FIXED)

M.T.B.F = 347406 (HOURS)

TEMPERATURE CURVE



1.11 Method of calculation according to BELLCORE calculation method:
Limited Stress - Method I, Case 3
Individual failure rates is given to each part and M.T.B.F is calculated by the count of each part

$$\lambda = \sum_{i=1}^{n} \lambda_i \qquad MTBF = \frac{1}{\lambda}$$

where:

λ_i failure rate of I's item

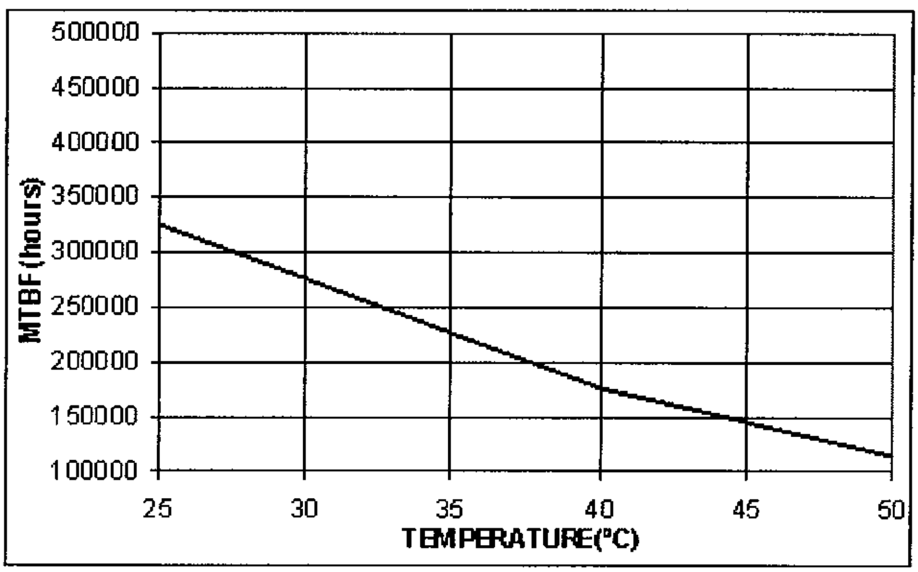
n number of item

1.12 M.T.B.F Values for 25˚C

GB (GROUND,FIXED)

M.T.B.F = 325668 (HOURS)

TEMPERATURE CURVE



1.13 Method of calculation according to BELLCORE calculation method:
Limited Stress - Method I, Case 3
Individual failure rates is given to each part and M.T.B.F is calculated by the count of each part

$$\lambda = \sum_{i=1}^{n} \lambda_i \qquad MTBF = \frac{1}{\lambda}$$

where:

λ_i failure rate of I's item

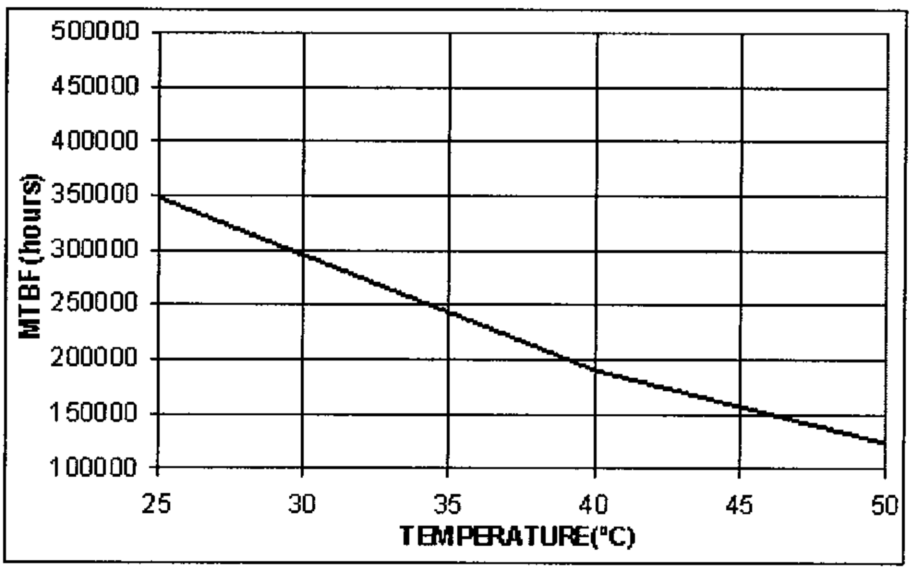
n number of item

1.14 M.T.B.F Values for 25˚C

GB (GROUND,FIXED)

M.T.B.F = 347254 (HOURS)

TEMPERATURE CURVE



1.15 Method of calculation according to BELLCORE calculation method:
Limited Stress - Method I, Case 3
Individual failure rates is given to each part and M.T.B.F is calculated by the count of each part

$$\lambda = \sum_{i=1}^{n} \lambda_i \qquad MTBF = \frac{1}{\lambda}$$

where:

λ_i failure rate of I's item

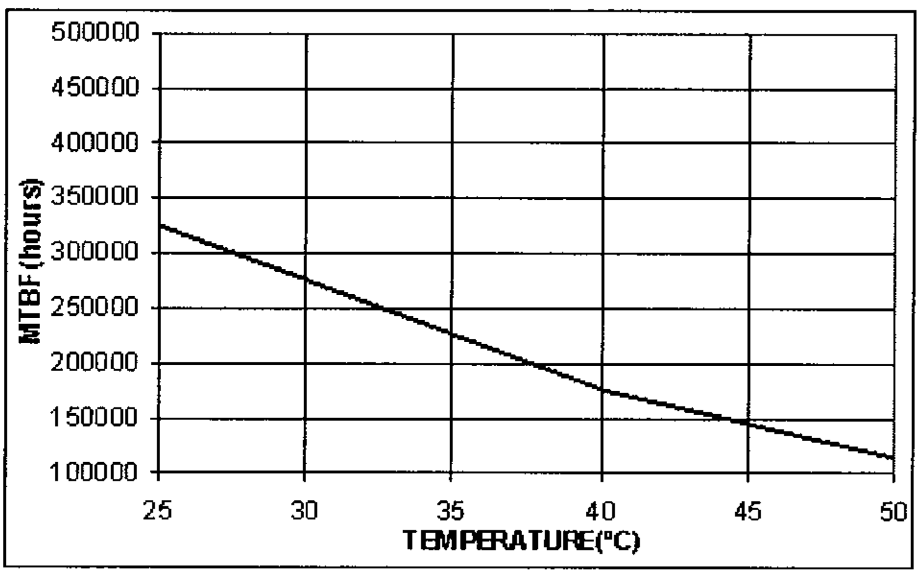
n number of item

1.16 M.T.B.F Values for 25˚C

GB (GROUND,FIXED)

<u>M.T.B.F = 325535 (HOURS)</u>

TEMPERATURE CURVE



2.COMPONENT DERATING

(1) Calculation method

(a) Condition

Input:	100Vac
Output:	Vout - 100%,Iout - 80,100%
Ambient temperature:	50,60°C
Mounting Method:	Standard (horizontal) mounting

(b) Semiconductors

Compared with maximum junction temperature and actual one which is calculated 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°C in General
Pc(max):	Maximum Power Dissipation
Tj(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

Vin = 100Vac Load = 100% Ta=50°C

D101	Tjmax=	150	°C	θj-c =	1.0	°C/W	Pmax =	125.0	W
D25XB60H	Pd =	17	W	ΔTc =	48.0	°C	Tc =	98.0	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				115.0	°C	D.F. =	76.7	%
D102	Tjmax=	150	°C	θj-c =	3.5	°C/W	Pmax =	35.7	W
YG902C3R	Pd =	2.7	W	ΔTc =	21.0	°C	Tc =	71.0	°C
FUJI	Tj = Tc + (θ j-c x Pd) =				80.5	°C	D.F. =	53.6	%
D104	Tjmax=	150	°C	θj-c =	3.5	°C/W	Pmax =	35.7	W
YG902C3R	Pd =	2.7	W	ΔTc =	28.0	°C	Tc =	78.0	°C
FUJI	Tj = Tc + (θ j-c x Pd) =				87.5	°C	D.F. =	58.3	%
D125	Tjmax=	150	°C	θj-c =	0.50	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	10	W	ΔTc =	44.5	°C	Tc =	94.5	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				99.5	°C	D.F. =	66.3	%
D126	Tjmax=	150	°C	θj-c =	0.50	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	8	W	ΔTc =	54.5	°C	Tc =	104.5	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				108.5	°C	D.F. =	72.3	%
D127	Tjmax=	150	°C	θj-c =	0.50	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	8	W	ΔTc =	48.9	°C	Tc =	98.9	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				102.9	°C	D.F. =	68.6	%
D128	Tjmax=	150	°C	θj-c =	0.5	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	10	W	ΔTc =	60.0	°C	Tc =	110.0	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				115.0	°C	D.F. =	76.7	%
D130	Tjmax=	150	°C	θj-c =	0.5	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	10	W	ΔTc =	55.5	°C	Tc =	105.5	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				110.5	°C	D.F. =	73.7	%
Q101	Tjmax=	150	°C	θj-c =	0.440	°C/W	Pmax =	284.0	W
SPW32N50C3	Pd =	12	W	ΔTc =	43.3	°C	Tc =	93.3	°C
INFINEON	Tj = Tc + (θ j-c x Pd) =				98.6	°C	D.F. =	65.7	%
Q103	Tjmax=	150	°C	θj-c =	0.833	°C/W	Pmax =	150.0	W
2SK2611	Pd =	9.0	W	ΔTc =	48.3	°C	Tc =	98.3	°C
TOSHIBA	Tj = Tc + (θ j-c x Pd) =				105.8	°C	D.F. =	70.5	%
Q105	Tjmax=	150	°C	θj-c =	0.833	°C/W	Pmax =	150.0	W
2SK2611	Pd =	9.0	W	ΔTc =	28.4	°C	Tc =	78.4	°C
TOSHIBA	Tj = Tc + (θ j-c x Pd) =				85.9	°C	D.F. =	57.3	%

Vin = 100Vac Load = 100% Ta=50°C

Q126	Tjmax=	175	°C	θj-c =	1.0	°C/W	Pmax =	150.0	W
IPP03N03LA	Pd =	2	W	ΔTc =	65.8	°C	Tc =	115.8	°C
INFINEON	Tj = Tc + (θ j-c x Pd) =				117.8	°C	D.F. =	67.3	%
Q127	Tjmax=	175	°C	θj-c =	1.0	°C/W	Pmax =	150.0	W
IPP03N03LA	Pd =	2	W	ΔTc =	61.4	°C	Tc =	111.4	°C
INFINEON	Tj = Tc + (θ j-c x Pd) =				113.4	°C	D.F. =	64.8	%
Q110	Tjmax=	175	°C	θj-c =	83.3	°C/W	Pmax =	1.5	W
2SD1624S	Pd =	0.24	W	ΔTc =	30.0	°C	Tc =	80.0	°C
SANYO	Tj = Tc + (θ j-c x Pd) =				100.0	°C	D.F. =	57.1	%
Q118	Tjmax=	175	°C	θj-c =	250.0	°C/W	Pmax =	0.5	W
2SD1624S	Pd =	0.046	W	ΔTc =	20.0	°C	Tc =	70.0	°C
SANYO	Tj = Tc + (θ j-c x Pd) =				81.5	°C	D.F. =	46.6	%
Q2	Tjmax=	150	°C	θj-c =	250.0	°C/W	Pmax =	0.5	W
2SB1123S	Pd =	0.1	W	ΔTc =	10.5	°C	Tc =	60.5	°C
SANYO	Tj = Tc + (θ j-c x Pd) =				85.5	°C	D.F. =	57.0	%
A102	Tjmax=	150	°C	θj-c =	3.0	°C/W	Pmax =	41.6	W
MIP0224SY	Pd =	0.7	W	ΔTc =	22.3	°C	Tc =	72.3	°C
MATSUSHITA	Tj = Tc + (θ j-c x Pd) =				74.4	°C	D.F. =	49.6	%
A104	Tjmax=	150	°C	θj-c =	27.0	°C/W	Pmax =	1	W
UCC2806DW	Pd =	0.04	W	ΔTc =	13.7	°C	Tc =	63.7	°C
TEXAS INSTR.	Tj = Tc + (θ j-c x Pd) =				64.8	°C	D.F. =	43.2	%
A105	Tjmax=	125	°C	θj-a =	180.0	°C/W	Pmax =	0.6	W
LM78L05ACM	Pd =	0.03	W	ΔTa =	33.9	°C	Ta =	83.9	°C
NEC	Tj = Ta + (θ j-a x Pd) =				89.3	°C	D.F. =	71.4	%
A106	Tjmax=	150	°C	θj-c =	7.0	°C/W	Pmax =	17.8	W
uPC7805AHF	Pd =	1.5	W	ΔTc =	33.5	°C	Tc =	83.5	°C
NEC	Tj = Tc + (θ j-c x Pd) =				94.0	°C	D.F. =	62.7	%
A109	Tjmax=	150	°C	θj-c =	7.0	°C/W	Pmax =	17.8	W
uPC78M05AHF	Pd =	1.3	W	ΔTc =	36.3	°C	Tc =	86.3	°C
NEC	Tj = Tc + (θ j-c x Pd) =				95.4	°C	D.F. =	63.6	%
A1	Tjmax=	150	°C	θj-c =	50.0	°C/W	Pmax =	0.65	W
FA5502M	Pd =	0.074	W	ΔTc =	17.2	°C	Tc =	67.2	°C
FUJI	Tj = Tc + (θ j-c x Pd) =				70.9	°C	D.F. =	47.3	%

Vin = 100Vac   Load = 80%   Ta=60°C

D101	Tjmax=	150	°C	θj-c =	1.0	°C/W	Pmax =	125.0	W
D25XB60H	Pd =	13.6	W	ΔTc =	34.2	°C	Tc =	94.2	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				107.8	°C	D.F. =	71.9	%
D102	Tjmax=	150	°C	θj-c =	3.5	°C/W	Pmax =	35.7	W
YG902C3R	Pd =	2.2	W	ΔTc =	17.7	°C	Tc =	77.7	°C
FUJI	Tj = Tc + (θ j-c x Pd) =				85.4	°C	D.F. =	56.9	%
D104	Tjmax=	150	°C	θj-c =	3.5	°C/W	Pmax =	35.7	W
YG902C3R	Pd =	2.2	W	ΔTc =	24.4	°C	Tc =	84.4	°C
FUJI	Tj = Tc + (θ j-c x Pd) =				92.1	°C	D.F. =	61.4	%
D125	Tjmax=	150	°C	θj-c =	0.85	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	8	W	ΔTc =	32.4	°C	Tc =	92.4	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				99.2	°C	D.F. =	66.1	%
D126	Tjmax=	150	°C	θj-c =	0.55	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	6.4	W	ΔTc =	42.7	°C	Tc =	102.7	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				106.2	°C	D.F. =	70.8	%
D127	Tjmax=	150	°C	θj-c =	0.85	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	6.4	W	ΔTc =	37.7	°C	Tc =	97.7	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				103.1	°C	D.F. =	68.8	%
D128	Tjmax=	150	°C	θj-c =	0.5	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	8	W	ΔTc =	43.9	°C	Tc =	103.9	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				107.9	°C	D.F. =	71.9	%
D130	Tjmax=	150	°C	θj-c =	0.5	°C/W	Pmax =	250.0	W
S60SC4M-7100	Pd =	8	W	ΔTc =	40.4	°C	Tc =	100.4	°C
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =				104.4	°C	D.F. =	69.6	%
Q101	Tjmax=	150	°C	θj-c =	0.440	°C/W	Pmax =	284.0	W
SPW32N50C3	Pd =	9.6	W	ΔTc =	35.8	°C	Tc =	95.8	°C
INFINEON	Tj = Tc + (θ j-c x Pd) =				100.0	°C	D.F. =	66.7	%
Q103	Tjmax=	150	°C	θj-c =	0.833	°C/W	Pmax =	150.0	W
2SK2611	Pd =	7.2	W	ΔTc =	38.5	°C	Tc =	98.5	°C
TOSHIBA	Tj = Tc + (θ j-c x Pd) =				104.5	°C	D.F. =	69.7	%
Q105	Tjmax=	150	°C	θj-c =	0.833	°C/W	Pmax =	150.0	W
2SK2611	Pd =	7.2	W	ΔTc =	20.9	°C	Tc =	80.9	°C
TOSHIBA	Tj = Tc + (θ j-c x Pd) =				86.9	°C	D.F. =	57.9	%

Vin = 100Vac Load = 80% Ta=60°C

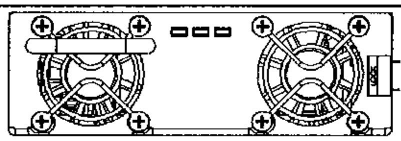
Q126	Tjmax=	175	°C	θj-c =	1.0	°C/W	Pmax =	150.0	W
IPP03N03LA	Pd =	1.6	W	ΔTc =	47.3	°C	Tc =	107.3	°C
INFINEON	Tj = Tc + (θ j-c x Pd) =				108.9	°C	D.F. =	62.2	%
Q127	Tjmax=	175	°C	θj-c =	1.0	°C/W	Pmax =	150.0	W
IPP03N03LA	Pd =	1.6	W	ΔTc =	44.1	°C	Tc =	104.1	°C
INFINEON	Tj = Tc + (θ j-c x Pd) =				105.7	°C	D.F. =	60.4	%
Q110	Tjmax=	150	°C	θj-c =	83.3	°C/W	Pmax =	0.9	W
2SC2655	Pd =	0.24	W	ΔTc =	25.0	°C	Tc =	85.0	°C
TOSHIBA	Tj = Tc + (θ j-c x Pd) =				105.0	°C	D.F. =	70.0	%
Q118	Tjmax=	150	°C	θj-c =	250.0	°C/W	Pmax =	0.5	W
2SB1123T	Pd =	0.046	W	ΔTc =	18.6	°C	Tc =	68.6	°C
SANYO	Tj = Tc + (θ j-c x Pd) =				80.1	°C	D.F. =	53.4	%
Q2	Tjmax=	150	°C	θj-c =	250.0	°C/W	Pmax =	0.5	W
2SB1123T	Pd =	0.1	W	ΔTc =	9.2	°C	Tc =	69.2	°C
SANYO	Tj = Tc + (θ j-c x Pd) =				94.2	°C	D.F. =	62.8	%
A102	Tjmax=	150	°C	θj-c =	3.0	°C/W	Pmax =	41.6	W
MIP0224SY	Pd =	0.7	W	ΔTc =	19.8	°C	Tc =	79.8	°C
MATSUSHITA	Tj = Tc + (θ j-c x Pd) =				81.9	°C	D.F. =	54.6	%
A104	Tjmax=	150	°C	θj-c =	27.0	°C/W	Pmax =	1.0	W
UCC2806DW	Pd =	0.04	W	ΔTc =	10.8	°C	Tc =	70.8	°C
TEXAS INSTR.	Tj = Tc + (θ j-c x Pd) =				71.9	°C	D.F. =	47.9	%
A105	Tjmax=	125	°C	θj-a =	180.0	°C/W	Pmax =	0.6	W
LM78L05ACM	Pd =	0.03	W	ΔTa =	28.7	°C	Ta =	88.7	°C
NEC	Tj = Ta + (θ j-a x Pd) =				94.1	°C	D.F. =	75.3	%
A106	Tjmax=	150	°C	θj-c =	7.0	°C/W	Pmax =	17.8	W
uPC7805AHF	Pd =	1.5	W	ΔTc =	33.5	°C	Tc =	93.5	°C
NEC	Tj = Tc + (θ j-c x Pd) =				104.0	°C	D.F. =	69.3	%
A109	Tjmax=	150	°C	θj-c =	7.0	°C/W	Pmax =	17.8	W
uPC78M05AHF	Pd =	1.04	W	ΔTc =	32.8	°C	Tc =	92.8	°C
NEC	Tj = Tc + (θ j-c x Pd) =				100.1	°C	D.F. =	66.7	%
A1	Tjmax=	150	°C	θj-c =	50.0	°C/W	Pmax =	0.65	W
FA5502M	Pd =	0.074	W	ΔTc =	16.6	°C	Tc =	76.6	°C
FUJI	Tj = Tc + (θ j-c x Pd) =				80.3	°C	D.F. =	53.5	%

3.MAIN COMPONENTS TEMPERATURE RISE

a) Output voltage: 10.5V

Location No.	Parts Name	Temperature Rise (°C)
A1	IC	18.0
A102	IC	23.0
A104	IC	15.0
A106	IC	35.0
A109	IC	38.0
C101	FILM CAP	19.2
C102	FILM CAP	20.7
C110	ELEC. CAP.	9.3
C143	ELEC. CAP.	49.1
D101	BRIDGE	44.5
D126	DIODE	57.3
D128	DIODE	57.3
D130	DIODE	47.1
L101	CHOKE	28.3
L104	CHOKE	48.2
L136	CHOKE	65.7
Q101	MOSFET	37.9
Q102	MOSFET	26.4
Q103	MOSFET	44.3
Q105	MOSFET	24.1
Q126	MOSFET	64.7
Q127	MOSFET	60.9
T101	TRANSFORMER	66.3
T102	TRANSFORMER	49.9
T103	TRANSFORMER	18.1

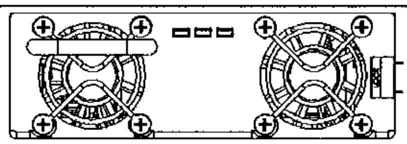
Conditions:

Standard Mounting	
Ta	50°C
Input Voltage	100VAC
Output Voltage	10.5V
Output Current	72A

b) Output voltage: 12V

Location No.	Parts Name	Temperature Rise (°C)
A1	IC	19.0
A102	IC	23.5
A104	IC	16.0
A106	IC	35.5
A109	IC	38.0
C101	FILM CAP	22.9
C102	FILM CAP	28.1
C110	ELEC. CAP.	11.2
C143	ELEC. CAP.	49.6
D101	BRIDGE	48.0
D126	DIODE	54.5
D128	DIODE	60.0
D130	DIODE	55.5
L101	CHOKE	37.1
L104	CHOKE	54.7
L136	CHOKE	63.4
Q101	MOSFET	43.3
Q102	MOSFET	29.5
Q103	MOSFET	48.3
Q105	MOSFET	28.4
Q126	MOSFET	65.8
Q127	MOSFET	61.4
T101	TRANSFORMER	67.6
T102	TRANSFORMER	49.7
T103	TRANSFORMER	18.3

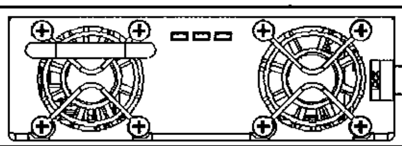
Conditions:

Standard Mounting	
Ta	50˚C
Input Voltage	100VAC
Output Voltage	12V
Output Current	72A

c) Output voltage: 13.2V

Location No.	Parts Name	Temperature Rise (°C)
A1	IC	19.0
A102	IC	23.5
A104	IC	16.0
A106	IC	35.5
A109	IC	38.0
C101	FILM CAP	20.6
C102	FILM CAP	23.0
C110	ELEC. CAP.	9.7
C143	ELEC. CAP.	44.0
D101	BRIDGE	48.0
D126	DIODE	51.5
D128	DIODE	55.1
D130	DIODE	47.6
L101	CHOKE	32.4
L104	CHOKE	51.3
L136	CHOKE	59.9
Q101	MOSFET	42.4
Q102	MOSFET	29.6
Q103	MOSFET	42.8
Q105	MOSFET	27.8
Q126	MOSFET	57.3
Q127	MOSFET	54.0
T101	TRANSFORMER	64.1
T102	TRANSFORMER	48.8
T103	TRANSFORMER	17.9

Conditions:

Standard Mounting	
Ta	50˚C
Input Voltage	100VAC
Output Voltage	13.2V
Output Current	66A

4.ELECTROLYTIC CAPACITORS LIFE TIME ESTIMATION

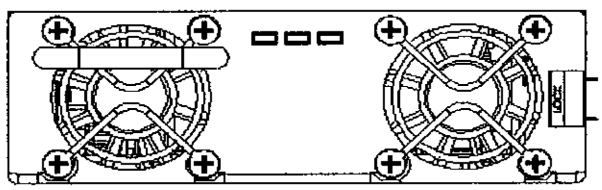
MODEL	COMPUTED LIFE (years) at Ta			
	30°C	40°C	50°C	60°C
FPS1000 - 12	6.68	4.11	1.75	2.15
Load(%)	100	100	100	80

FORMULA: $$L = L_0 \times 2^{\frac{105 - T_C}{10}}$$ (years)

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

Lo: Guaranteed life for Elec.capacitor

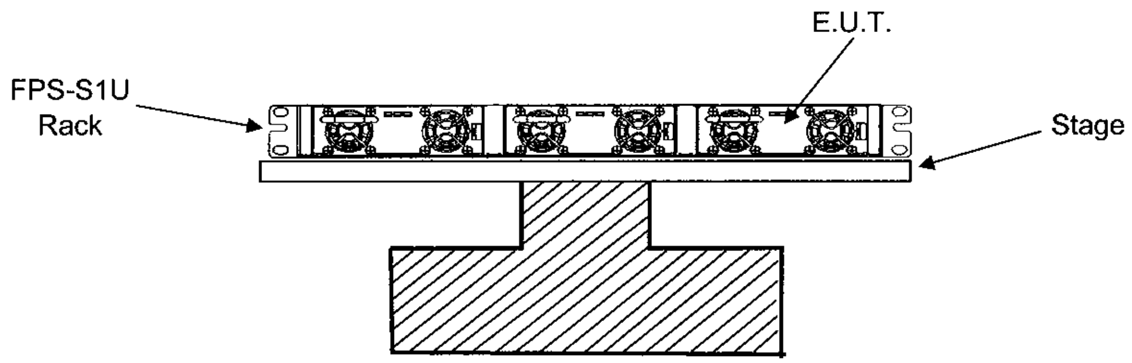
Tc: Case temperature of Elec.capacitor

Standard Mounting	
Input Voltage	100VAC
Output Voltage	12V

6.VIBRATION TEST

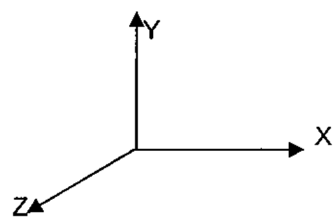
1) Vibration test class
   Frequency variable endurance test
2) Equipment used
   Controller: GENRAD-2503
   Vibrator: ULHOLTZ-DICKIE TA1000

3) Testing method
   FPS1000-12 installed in FPS-S1U Rack



Test condition:

A) Vibration Test with Frequency Sweep



Sinusoidal Vibration in Freq.: 5 - 500 Hz
Test level: 1.5G
Test time: 1 oct/min, 20 sweeps Per axis
Test performed in Axes x-y-z

B) Mech. Shock

Test level: half sine, 30G 11ms
3 mech.shocks in all of the 3 axes at each direction.

(4)Test Result

Pass

5. ABNORMAL TEST

FPS1000 - 12

Model:12V
Input:230VAC

Ta:25°C

Vout=12V
Iout=72A

No	Test Position		Test Mode		Test Result												
	Location No.	Test Point	Short	Open	Fire	Smoke	Burst	Smell	Red Hot	Damaged	Fuse Blown	OVP	OCP	No Output	No Change	Others	Note
1	D125		•							•	•			•			F102 open approx after 5 min, Q103, Q104-shorted
				•											•		
2	D126		•							•	•			•			F102 open approx after 5 min, Q103, Q104-shorted
				•											•		
3	T101	1-3	•							•	•			•			F102 open approx after 2 sec, Q103, Q104, D138 and D139-shorted
		H-G	•							•	•			•			F102 open approx after 2 sec, Q103, Q104, D138 and D139-shorted
		1		•											•		
		H		•												•	Vout~8.5V, Pin down to ~700W
		5		•												•	Vout~8.5V, Pin down to ~700W
4	L136		•							•	•			•			F102 open after approx 12 min, D125-shorted
				•										•			
5	C138		•							•							R184 open
				•											•		
6	C139		•							•							R185, R197 open
				•											•		
7	C141		•							•							F102 open
				•											•		
8	C148		•										•				
				•											•		