GEN 2.4kW SERIES

RELIABILITY

DATA

DWG: IA669-79-01		
APPD	CHK	DWG
Aug 21-2008	21/08/08	Asher sh 21/08/08

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.

M.T.B.F.

MODEL: GEN8V-300A

(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.

$$M.T.B.F. = \frac{1}{\lambda_{equip}} \times 10^6 = \frac{1}{\sum_{i=1}^{n} N_i (\lambda_G \pi_Q)_i} \times 10^6 (hours)$$

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 i th 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. = 35,857 (HOURS)

2.COMPONENTS DERATING

GEN2.4kW SERIES

Calculation method

(1) Conditions

Input:	Nominal
Output:	Vout - 100%, Iout - 100%
Ambient temperature:	50℃
Mounting Method:	Standard Mounting

(2) Semiconductors

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

(3) IC, Resistors, Capasitors, etc.

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

(4) Calculation method of thermal impedance:

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

Tc : Case Temperature at Start Point of Derating; 25℃ i n General

Ta : Ambient Temperature at Start Point of Derating; 25°C in General

$Pc(\max)$: Maximum Power Dissipation

$Tj(\max)$: Maximum Junction temperature

Θ_{j-c} : Thermal Impedance between Junction and Case

Θ_{j-a} : Thermal Impedance between Junction and Air

Θ_{j-l} : Thermal Impedance between Junction and Lead

Vin = 170Vac Load = 100% Ta=50℃ DC/DC LV

D501	Tjmax=	150	℃	θj-c =	3.0	℃/W	Pmax = ---	W
STTH506DTI	Pd =	1.12	W	ΔTc =	11.8	℃	Tc = 61.8	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	65.2	℃	D.F. = 43.4	%
D502	Tjmax=	150	℃	θj-c =	3.0	℃/W	Pmax = ---	W
STTH506DTI	Pd =	1.12	W	ΔTc =	14.2	℃	Tc = 64.2	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	67.6	℃	D.F. = 45.0	%
D503	Tjmax=	150	℃	θj-c =	3.0	℃/W	Pmax = ---	W
STTH506DTI	Pd =	1.12	W	ΔTc =	15.0	℃	Tc = 65.0	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	68.4	℃	D.F. = 45.6	%
D504	Tjmax=	150	℃	θj-c =	3.0	℃/W	Pmax = ---	W
STTH506DTI	Pd =	1.12	W	ΔTc =	25.4	℃	Tc = 75.4	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	78.8	℃	D.F. = 52.5	%
D525~D532 (8V)	Tjmax=	150	℃	θj-c =	0.5	℃/W	Pmax = ---	W
S60SC4M-7000	Pd =	24	W	ΔTc =	64.7	℃	Tc = 114.7	℃
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =>			Tj =	126.7	℃	D.F. = 84.5	%
D525~D532 (60V)	Tjmax=	150	℃	θj-c =	1.5	℃/W	Pmax = ---	W
20DL2C41A(F)	Pd =	8	W	ΔTc =	20.0	℃	Tc = 70.0	℃
TOSHIBA	Tj = Tc + (θ j-c x Pd) =>			Tj =	82.0	℃	D.F. = 54.7	%
Q501	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	14.5	W	ΔTc =	27.6	℃	Tc = 77.6	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	84.0	℃	D.F. = 56.0	%
Q502	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	11.9	W	ΔTc =	24.2	℃	Tc = 74.2	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	79.4	℃	D.F. = 53.0	%
Q503	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	13.8	W	ΔTc =	34.8	℃	Tc = 84.8	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	90.9	℃	D.F. = 60.6	%
Q504	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	11.4	W	ΔTc =	38.7	℃	Tc = 88.7	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	93.7	℃	D.F. = 62.5	%

Vin = 170Vac Load = 100% Ta=50℃ DC/DC HV

D605~D620 (150V)	Tjmax=	150	℃	θj-c =	0.8	℃/W	Pmax =	---	W
YG911S3R	Pd =	2.4	W	ΔTc =	34.8	℃	Tc =	84.8	℃
FUJI	Tj = Tc + (θ j-c x Pd) =>			Tj =	86.7	℃	D.F. =	57.8	%
D605~D620 (600V)	Tjmax=	150	℃	θj-c =	0.57	℃/W	Pmax =	---	W
STTH506DTI	Pd =	3	W	ΔTc =	29.7	℃	Tc =	79.7	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	81.4	℃	D.F. =	54.3	%
Q601	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax =	160.0	W
2SK2372-A	Pd =	18	W	ΔTc =	36.2	℃	Tc =	86.2	℃
NEC	Tj = Tc + (θ j-c x Pd) =>			Tj =	94.1	℃	D.F. =	62.7	%
Q602	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax =	160.0	W
2SK2372-A	Pd =	18	W	ΔTc =	46.2	℃	Tc =	96.2	℃
NEC	Tj = Tc + (θ j-c x Pd) =>			Tj =	104.1	℃	D.F. =	69.4	%
Q603	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax =	160.0	W
2SK2372-A	Pd =	18	W	ΔTc =	39.4	℃	Tc =	89.4	℃
NEC	Tj = Tc + (θ j-c x Pd) =>			Tj =	97.3	℃	D.F. =	64.9	%
Q604	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax =	160.0	W
2SK2372-A	Pd =	18	W	ΔTc =	49.8	℃	Tc =	99.8	℃
NEC	Tj = Tc + (θ j-c x Pd) =>			Tj =	107.7	℃	D.F. =	71.8	%

Vin = 170Vac Load = 100% Ta=50℃ PFC

D604	Tjmax=	150	℃	θj-c =	1.3	℃/W	Pmax = ---	W
STTH806DTI	Pd =	10	W	ΔTc =	34.5	℃	Tc = 84.5	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	97.5	℃	D.F. = 65.0	%
D605	Tjmax=	150	℃	θj-c =	1.3	℃/W	Pmax = ---	W
STTH806DTI	Pd =	10	W	ΔTc =	33.0	℃	Tc = 83.0	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	96.0	℃	D.F. = 64.0	%
D606	Tjmax=	150	℃	θj-c =	1.3	℃/W	Pmax = ---	W
STTH806DTI	Pd =	10	W	ΔTc =	41.0	℃	Tc = 91.0	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	104.0	℃	D.F. = 69.3	%
D607	Tjmax=	150	℃	θj-c =	1.3	℃/W	Pmax = ---	W
STTH806DTI	Pd =	10	W	ΔTc =	34.9	℃	Tc = 84.9	℃
ST	Tj = Tc + (θ j-c x Pd) =>			Tj =	97.9	℃	D.F. = 65.3	%
D608	Tjmax=	150	℃	θj-c =	1.0	℃/W	Pmax = ---	W
D25XB60-7000	Pd =	14	W	ΔTc =	47.9	℃	Tc = 97.9	℃
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =>			Tj =	111.9	℃	D.F. = 74.6	%
D609	Tjmax=	150	℃	θj-c =	1.0	℃/W	Pmax = ---	W
D25XB60-7000	Pd =	14	W	ΔTc =	44.7	℃	Tc = 94.7	℃
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =>			Tj =	108.7	℃	D.F. = 72.5	%
Q603	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	9.3	W	ΔTc =	32.5	℃	Tc = 82.5	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	86.6	℃	D.F. = 57.7	%
Q604	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	9.3	W	ΔTc =	31.5	℃	Tc = 81.5	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	85.6	℃	D.F. = 57.1	%
Q607	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	9.3	W	ΔTc =	38.4	℃	Tc = 88.4	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	92.5	℃	D.F. = 61.7	%
Q608	Tjmax=	150	℃	θj-c =	0.44	℃/W	Pmax = 284.0	W
SPW32N50C3	Pd =	9.3	W	ΔTc =	43.2	℃	Tc = 93.2	℃
INFINEON	Tj = Tc + (θ j-c x Pd) =>			Tj =	97.3	℃	D.F. = 64.9	%

Vin = 170Vac Load = 100% Ta=50℃ BIAS

A403	Tjmax=	150	℃	θj-c =	5.0	℃/W	Pmax =	20.0 W
UPC24A05HF-AZ	Pd =	1.59	W	ΔTc =	25.5	℃	Tc =	75.5 ℃
NEC	Tj = Tc + (θ j-c x Pd) =>			Tj =	83.5	℃	D.F. =	55.6 %
A405	Tjmax=	150	℃	θj-c =	180.0	℃/W	Pmax =	0.5 W
LM78L15ACM NOPB	Pd =	0.16	W	ΔTc =	33.3	℃	Tc =	83.3 ℃
NATIONAL	Tj = Tc + (θ j-c x Pd) =>			Tj =	112.1	℃	D.F. =	74.7 %
A406	Tjmax=	150	℃	θj-c =	2.0	℃/W	Pmax =	--- W
MIP0225SY	Pd =	4.33	W	ΔTc =	40.8	℃	Tc =	90.8 ℃
MATSUSHITA	Tj = Tc + (θ j-c x Pd) =>			Tj =	99.5	℃	D.F. =	66.3 %
A407	Tjmax=	150	℃	θj-c =	4.3	℃/W	Pmax =	15.0 W
KA78R15CTU	Pd =	1.6	W	ΔTc =	39.3	℃	Tc =	89.3 ℃
FAIRCHILD	Tj = Tc + (θ j-c x Pd) =>			Tj =	96.2	℃	D.F. =	64.1 %
A413	Tjmax=	150	℃	θj-c =	6.25	℃/W	Pmax =	14.0 W
TA58L05S(Q)	Pd =	3.2	W	ΔTc =	20.7	℃	Tc =	70.7 ℃
TOSHIBA	Tj = Tc + (θ j-c x Pd) =>			Tj =	90.7	℃	D.F. =	60.5 %
A414	Tjmax=	150	℃	θj-c =	6.25	℃/W	Pmax =	14.0 W
TA58L15S(Q)	Pd =	1.6	W	ΔTc =	26.9	℃	Tc =	76.9 ℃
TOSHIBA	Tj = Tc + (θ j-c x Pd) =>			Tj =	86.9	℃	D.F. =	57.9 %
D407	Tjmax=	150	℃	θj-c =	6.5	℃/W	Pmax =	--- W
S3L20U-5004P15	Pd =	1.6	W	ΔTc =	48.5	℃	Tc =	98.5 ℃
SHINDENGEN	Tj = Tc + (θ j-c x Pd) =>			Tj =	108.9	℃	D.F. =	72.6 %
D409	Tjmax=	150	℃	θj-c =	30.0	℃/W	Pmax =	--- W
CUS04(TE85L,Q)	Pd =	0.2	W	ΔTc =	23.6	℃	Tc =	73.6 ℃
TOSHIBA	Tj = Tc + (θ j-c x Pd) =>			Tj =	79.6	℃	D.F. =	53.1 %
Q408	Tjmax=	150	℃	θj-c =	0.833	℃/W	Pmax =	150.0 W
2SK2611(F)	Pd =	7	W	ΔTc =	49.7	℃	Tc =	99.7 ℃
TOSHIBA	Tj = Tc + (θ j-c x Pd) =>			Tj =	105.5	℃	D.F. =	70.4 %
Q409	Tjmax=	150	℃	θj-c =	0.833	℃/W	Pmax =	150.0 W
2SK2611(F)	Pd =	7	W	ΔTc =	48.8	℃	Tc =	98.8 ℃
TOSHIBA	Tj = Tc + (θ j-c x Pd) =>			Tj =	104.6	℃	D.F. =	69.8 %

3.MAIN COMPONENTS TEMPERATURE RISE

GEN8-300 1Φ 230

Location No.		Parts Name	ΔT Temperature Rise (℃) Standard Mounting
INPUT 1PH	C301	FILM CAPACITOR	29.5
	C302	FILM CAPACITOR	28.6
	C305	FILM CAPACITOR	28.6
	CN301	CONNECTOR	26.3
	L301	COMMON CHOKE	43.9
	L302	COMMON CHOKE	35.8
	F302	FUSE	34.8
PFC	A601	CHIP PFC IC	38.0
	C611	ELEC. CAPACITOR	16.7
	C618	FILM CAPACITOR	27.8
	C623	FILM CAPACITOR	26.3
	C625	FILM CAPACITOR	24.1
	D606	DIODE	41.0
	D608	BRIDGE	47.9
	D611	DIODE	21.8
	L603	PF CHOKE	80.0
	L605	PF CHOKE	63.7
	Q608	MOSFET	43.2
	R655	CHIP RESISTOR	23.1
BIAS	A403	5V LINEAR REGULATOR	25.7
	A405	15V LINEAR REGULATOR	33.2
	A406	TOP SWITCH	41.4
	A407	15V LINEAR REGULATOR	36.2
	A413	5V LINEAR REGULATOR	24.6
	A414	15V LINEAR REGULATOR	28.9
	C409	ELEC. CAPACITOR	25.2
	C410	ELEC. CAPACITOR	26.0
	C419	ELEC. CAPACITOR	29.7
	C426	ELEC. CAPACITOR	24.1
	C432	ELEC. CAPACITOR	25.8
	C437	ELEC. CAPACITOR	27.4
	C447	ELEC. CAPACITOR	25.9
	D407	DIODE	48.6
	D409	DIODE	32.3
	F402	FUSE	38.2
	PC406	OPTOCOUPLER	32.0
	Q408	MOSFET	33.7
	R419	CHIP RESISTOR	45.5
	T401	TRANSFORMER	46.6

Conditions:

Standard Mounting	
Input Voltage	170~265Vrms
Output Voltage	8V
Output Current	300A

3.MAIN COMPONENTS TEMPERATURE RISE

GEN8-300 1Φ 230

Location No.		Parts Name	ΔT Temperature Rise (℃) Standard Mounting
DC/DC	C501	ELEC. CAPACITOR	7.2
	C524	ELEC. CAPACITOR	31.7
	C527	FILM CAPACITOR	48.1
	D529	DIODE	64.2
	L501	CHOKE	63.6
	L504	CHOKE	59.6
	PC501	OPTOCOUPLER	16.4
	Q504	MOSFET	38.7
	R520	CHIP RESISTOR	47.6
	R528	CHIP RESISTOR	14.8
	R536	CHIP RESISTOR	66.4
	T501	TRANSFORMER	67.7
	T502	TRANSFORMER	8.0
	T503	TRANSFORMER	11.6
	TS501	THERMAL GUARD	40.5
CONTROL	A101	PWM IC	35.0
	A114	CHIP OP. AMP.	26.8
	A117	RS-485 TRANSCEIVER	33.9
	A119	MICROCONTROLLER	28.5
	A124	D FLIP-FLOP	26.5
	A128	VOLT REF.	25.4
	A132	CHIP ADC	25.5
	A135	BUFFER	25.4
	PC105	OPTOCOUPLER	31.4
OUTPUT FILTER	C41	ELEC. CAPACITOR	46.8
	C44	ELEC. CAPACITOR	42.7
	C46	ELEC. CAPACITOR	44.0
	L41	CHOKE	35.4
	R41	SHUNT	67.2

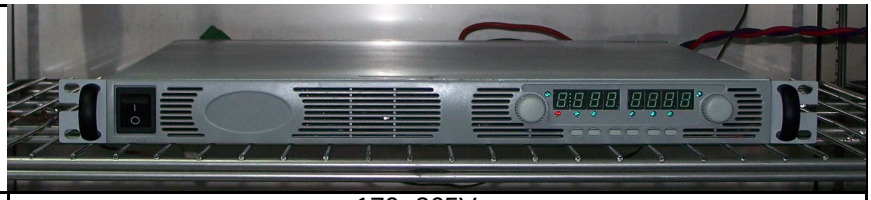
Conditions:

Standard Mounting	
Input Voltage	170~265Vrms
Output Voltage	8V
Output Current	300A

GEN8-300 3Φ 230

Location No.		Parts Name	ΔT Temperature Rise (℃) Standard Mounting
INPUT 3PH	C322	FILM CAPACITOR	23.1
	C323	FILM CAPACITOR	23.9
	CN321	CONNECTOR	20.9
	L321-1	COMMON CHOKE	47.6
	L321-2	COMMON CHOKE	48.6
	L322-3	COMMON CHOKE	42.4
	F322	FUSE	39.6
PFC	A601	CHIP PFC IC	38.0
	C611	ELEC. CAPACITOR	14.7
	C618	FILM CAPACITOR	17.4
	C623	FILM CAPACITOR	23.2
	C625	FILM CAPACITOR	15.1
	D607	DIODE	31.6
	D609	BRIDGE	39.5
	D611	DIODE	18.2
	L603	PF CHOKE	79.7
	L606	PF CHOKE	33.1
	Q608	MOSFET	30.2
	R655	CHIP RESISTOR	12.1
BIAS	A403	5V LINEAR REGULATOR	24.5
	A405	15V LINEAR REGULATOR	33.2
	A406	TOP SWITCH	47.5
	A407	15V LINEAR REGULATOR	39.8
	A413	5V LINEAR REGULATOR	28.3
	A414	15V LINEAR REGULATOR	37.3
	C409	ELEC. CAPACITOR	22.0
	C410	ELEC. CAPACITOR	26.0
	C419	ELEC. CAPACITOR	27.1
	C426	ELEC. CAPACITOR	24.1
	C432	ELEC. CAPACITOR	20.3
	C437	ELEC. CAPACITOR	23.9
	C447	ELEC. CAPACITOR	21.2
	D407	DIODE	50.5
	D409	DIODE	27.9
	F102	FUSE	33.5
	PC406	OPTOCOUPLER	28.3
	Q408	MOSFET	31.4
	R419	CHIP RESISTOR	62.4
	T401	TRANSFORMER	61.6

Conditions:

Standard Mounting	
Input Voltage	170~265Vrms
Output Voltage	8V
Output Current	300A

3.MAIN COMPONENTS TEMPERATURE RISE

GEN600-4 1Φ 230

Location No.		Parts Name	ΔT Temperature Rise (℃) Standard Mounting
INPUT 1PH	C301	FILM CAPACITOR	26.8
	C302	FILM CAPACITOR	27.4
	C305	FILM CAPACITOR	17.7
	CN301	CONNECTOR	25.6
	L301	COMMON CHOKE	41.1
	L302	COMMON CHOKE	34.6
	F302	FUSE	33.1
PFC	A601	CHIP PFC IC	35.6
	C611	ELEC. CAPACITOR	16.5
	C618	FILM CAPACITOR	29.7
	C625	FILM CAPACITOR	22.1
	D606	DIODE	40.4
	D609	BRIDGE	53.0
	L603	PF CHOKE	80.1
	L605	PF CHOKE	60.1
	Q608	MOSFET	41.7
BIAS	A403	5V LINEAR REGULATOR	25.5
	A405	15V LINEAR REGULATOR	33.3
	A406	TOP SWITCH	40.8
	A407	15V LINEAR REGULATOR	39.3
	A413	5V LINEAR REGULATOR	20.8
	A414	15V LINEAR REGULATOR	26.9
	C409	ELEC. CAPACITOR	22.0
	C410	ELEC. CAPACITOR	26.0
	C419	ELEC. CAPACITOR	31.2
	C426	ELEC. CAPACITOR	24.1
	C432	ELEC. CAPACITOR	21.0
	C437	ELEC. CAPACITOR	29.2
	C447	ELEC. CAPACITOR	21.1
	C450	ELEC. CAPACITOR	21.6
	D407	DIODE	48.5
	D409	DIODE	23.7
	F402	FUSE	40.0
	PC406	OPTOCOUPLER	37.5
	Q408	MOSFET	49.7
	R419	CHIP RESISTOR	46.3
	T401	TRANSFORMER	45.1

Conditions:

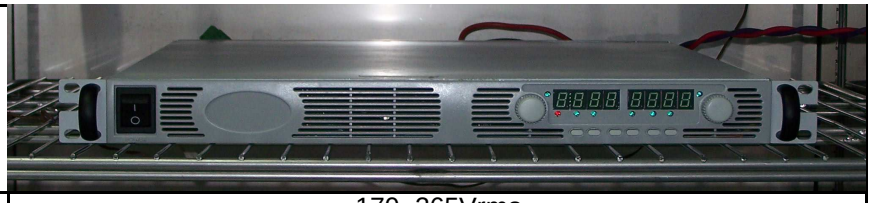
Standard Mounting	
Input Voltage	170~265Vrms
Output Voltage	600V
Output Current	4A

3.MAIN COMPONENTS TEMPERATURE RISE

GEN600-4 1Φ 230

Location No.		Parts Name	ΔT Temperature Rise (℃) Standard Mounting
DC/DC	C601	ELEC. CAPACITOR	6.6
	C628	ELEC. CAPACITOR	10.9
	D613	DIODE	29.3
	L601	CHOKE	74.8
	Q604	MOSFET	50.9
	R624	CHIP RESISTOR	48.4
	R631	CHIP RESISTOR	28.3
	T601	TRANSFORMER	59.5
	T602	TRANSFORMER	10.1
	T603	TRANSFORMER	8.7
	TS601	THERMAL GUARD	41.3
CONTROL	A101	PWM IC	19.0
	A114	CHIP OP. AMP.	13.6
	A117	RS-485 TRANSCEIVER	19.0
	A119	MICROCONTROLLER	17.1
	A124	D FLIP-FLOP	12.2
	A128	VOLT REF.	14.0
	A132	CHIP ADC	15.3
	A135	BUFFER	13.1
	PC105	OPTOCOUPLER	21.5
OUTPUT FILTER	C83	ELEC. CAPACITOR	17.2
	CN81	CONNECTOR	17.0
	L81	CHOKE	18.4
	R85	SHUNT	19.5

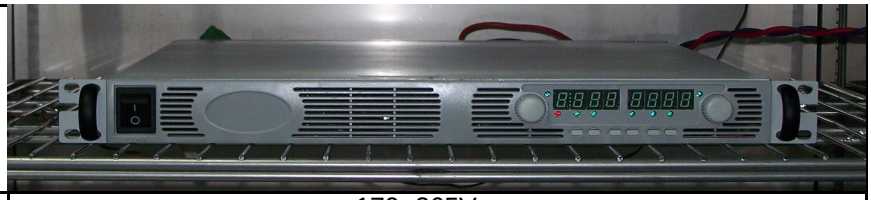
Conditions:

Standard Mounting	
Input Voltage	170~265Vrms
Output Voltage	600V
Output Current	4A

GEN600-4 3Φ 230

Location No.		Parts Name	ΔT Temperature Rise (℃) Standard Mounting
INPUT 3PH	C322	FILM CAPACITOR	29.3
	C323	FILM CAPACITOR	28.4
	CN321	CONNECTOR	20.8
	L321-1	COMMON CHOKE	48.9
	L321-2	COMMON CHOKE	44.5
	L322-3	COMMON CHOKE	42.3
	F322	FUSE	40.1
PFC	A601	CHIP PFC IC	35.6
	C611	ELEC. CAPACITOR	13.1
	C618	FILM CAPACITOR	24.2
	C625	FILM CAPACITOR	13.1
	D606	DIODE	37.2
	D609	BRIDGE	49.3
	L603	PF CHOKE	60.9
	L605	PF CHOKE	43.1
	Q608	MOSFET	49.9
BIAS	A403	5V LINEAR REGULATOR	26.2
	A405	15V LINEAR REGULATOR	32.9
	A406	TOP SWITCH	48.6
	A407	15V LINEAR REGULATOR	37.5
	A413	5V LINEAR REGULATOR	26.9
	A414	15V LINEAR REGULATOR	35.5
	C409	ELEC. CAPACITOR	21.7
	C426	ELEC. CAPACITOR	26.0
	C432	ELEC. CAPACITOR	20.0
	C437	ELEC. CAPACITOR	27.2
	D407	DIODE	54.8
	D409	DIODE	20.0
	F102	FUSE	35.2
	PC406	OPTOCOUPLER	33.2
	Q408	MOSFET	51.4
	R419	CHIP RESISTOR	49.2
	T401	TRANSFORMER	42.4

Conditions:

Standard Mounting	
Input Voltage	170~265Vrms
Output Voltage	600V
Output Current	4A

4.ELECTROLYTIC CAPACITORS LIFE TIME ESTIMATION

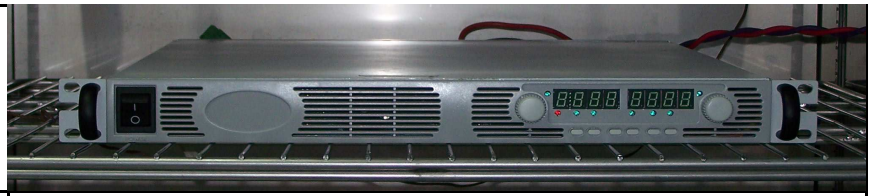
MODEL	COMPUTED LIFE (year) at T(ambient)		
	30℃	40℃	50℃
GEN8-300	10.19	5.09	2.55
GEN60-40	17.04	7.78	3.89
GEN150-16	15.55	7.78	3.89
GEN600-4	15.55	7.78	3.89

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	Nom.
Output Voltage	100%
Output Current	100%

5. ABNORMAL TEST

MODEL: **GEN2.4kW**

BOARD: PFC

Condition: Ta: 25°C
Vin: 230 VAC
Vout: 100%
Iout: 100%

No.	Test Position		Test Mode		Test Result												
	Location No.	Test Point	Short	Open	1 Fire	2 Smoke	3 Burst	4 Smell	5 Red Hot	6 Damaged	7 Fuse Open	8 OVP	9 OTP	10 No Output	11 No Change	12 Others	Note
1	Q604	D-S	●								●			●			F322;323
2		G-S	●												●		
3		D-G	●							●	●			●			F321;322;Q604;606;ZD601;R651-654
4		D		●											●		
5		S		●											●		
6		G		●						●	●			●			F322;323;Q604
7	D604	A-K	●							●	●			●			F322;323;Q604
8		A		●											●		
9	D605	A-K	●							●	●			●			F322;323;Q603
10		A		●											●		
11	D601	A-K	●												●		
12		A		●											●		
13	L601		●												●		
14				●											●		
15	L605		●							●	●			●			F321-;323;Q603;604
16				●											●		
17	R626			●												●	VCF-300V;V out reduced by 10%
18	C619		●								●			●			F322;323
19				●											●		
20	D608	1-2	●								●			●		●	F321;AC fall
21		2-4		●							●			●			F321;323
22	D609	1-2	●								●			●		●	F322;AC fall
23		2-4		●							●			●			F322;323
24	D603	A-K	●							●				●			R613-616
25	D610	A-K	●							●	●			●			F321;322;R613-616;Q603;604;607;608
26		A		●											●		
27	D613	A-K	●												●		
28		A		●											●		

5. ABNORMAL TEST

MODEL: **GEN2.4kW**

BOARD: DCDC 8V

Condition: Ta: 25°C
Vin: 230 VAC
Vout: 100%
Iout: 100%

No.	Test Position		Test Mode		Test Result												
	Location No.	Test Point	Short	Open	1 Fire	2 Smoke	3 Burst	4 Smell	5 Red Hot	6 Damaged	7 Fuse Open	8 OVP	9 OCP	10 No Output	11 No Change	12 Others	Note
29	Q504	D-S	●							●	●			●			F321;322;Q502;503;513;R513;518
30		G-S	●							●				●		●	Q503;504;R513;514;518;519;528; Vout;Iout not stable (3.8~4.4V.216~226A)
31		G-D	●							●	●			●			F322;323;Q502-504;511;512
32		D		●						●	●			●			F321-323;Q501-504;R522;523;508
33		S		●						●	●			●			F321-323;Q503;504508;516;R522-524;518;531
34		G		●						●	●			●			F322;323;Q501-504;R508;509;513;518;523
35	Q507	C-E	●							●	●			●			F321;322Q501;504;R528
36				●						●	●			●			F321;R613-616;Q501;504;509;510;515;516; R508;523
37	D505	A-K	●							●	●			●			F322;R613-616;Q501-504;R507;508;513;523
38				●						●	●			●			F321;R613-616;Q501;504;509;510;515;516;
39	D532	A-K	●							●							D532
40				●											●		
41	D528	A-K	●							●							D528
42				●											●		
43	C521	+/-	●													●	V out -0.2V;Pin-0.7kW
44				●											●		
45	L501		●								●			●			Noise acustic; Pin above 100W
46	T501		●													●	V out drop to 4.2V
47	T503	A		●						●	●			●			F321;R613-616;Q501;502;504;509;511; R508;513;523
48	C501	+/-	●								●			●			F322;323
49				●											●		

5. ABNORMAL TEST

MODEL: **GEN2.4kW**

BOARD: DCDC 600V

Condition: Ta: 25°C
Vin: 230 VAC
Vout: 100%
Iout: 100%

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 Open	OVP	OCP	No Output	No Change	Others	Note
50	Q603	D-S	●							●	●			●			F322;323;Q601;602;604;609;611;R605;620
51		G-S	●														F322;323;Q601;602;604;609-611;R605;620;610;612
52		G-D	●							●	●			●			F322;323;Q601-604;609-611;R615;612
53		D		●						●	●			●			F322;323;Q601;603;604;R615;620
54		S		●						●	●			●			F322;323;Q601-604;R615
55		G		●						●	●			●			F322;323;Q601-604;609;611;R605;620;610
56	D611	A-K	●												●		
57		A		●												●	V out=374V;Iout=4A
58	D601	A-K	●							●	●			●			F322;(R613-616 PFC);Q601-604;609-612; R605;610;615;620
59				●						●	●			●			F322;323;Q601-604;609-612;R605;610;615;620
60	Q605	K-E	●											●			
61	D617	A-K	●												●		
62		A		●											●		
63	C627	+/-	●									●		●			
64				●											●		
65	L601		●							●	●			●			F322-323;Q601-603;D605;607;614;616;R605;615
66				●						●	●			●			F322;323;(Q601-604;R605;620 SLAVE)
67	T603	14		●						●	●			●			F321;(R613-616 PFC);Q601;603;604;609;611;612; R605;616;615;620;D624
68	T601	8-10		●						●	●			●			F322;323;(Q601-604;R605;620 SLAVE)
69	C601	+/-	●								●			●			F322;323
70				●											●		

6.VIBRATION TEST

MODEL: GEN8-300

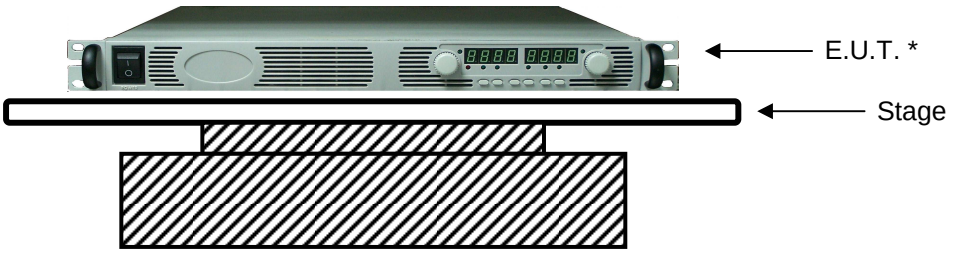
(1) Vibration test class

Frequency variable endurance test

(2) Equipment used

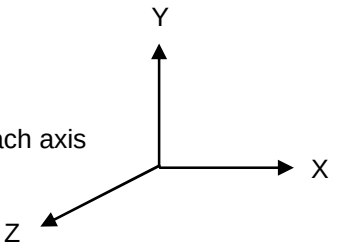
Name	Manufacturer	Model
PC Computer SCENIC LI-815 P3 1000,RAM 256MB, HD 20GB	Yanir Systems	
Laser Shaker Control System	DACTRON	LASER
Accelerometer, I-TEDS, 100 mV/g	Endevco	752A12
Cable 18 GHz, 3m, SMA-SMA	Gore	NA

(3) Testing method



Test condition:

Sweep frequency: 10~500Hz
Acceleration: 1.04G const.
Direction: X, Y, Z
Test time: 1 hour per each axis



*E.U.T. is fixed to vibrator surface by mounting straps

(4)Test Result (OK) NG

Check item	Output Voltage	Ripple (mVp-p)	E.U.T. state
Before test / Direction	7.9961	30	O.K.
X	7.9958	32	O.K.
Y	7.9962	30	O.K.
Z	7.9965	30	O.K.