

**RWS300B**

**RELIABILITY DATA**

**信頼性データ**

## INDEX

	PAGE
1. MTBF計算値 Calculated Values of MTBF .....	R-1
2. 部品デイレージング Component Derating .....	R-2~4
3. 主要部品温度上昇値 Main Components Temperature Rise $\Delta T$ List .....	R-5
4. 電解コンデンサ推定寿命計算値 Electrolytic Capacitor Lifetime .....	R-6
5. アブノーマル試験 Abnormal Test .....	R-7~8
6. 振動試験 Vibration Test .....	R-9
7. ノイズシミュレート試験 Noise Simulate Test .....	R-10
8. 熱衝撃試験 Thermal Shock Test .....	R-11
9. FAN期待寿命 Fan Life Expectancy.....	R-12

※ 試験結果は、代表データであります。全ての製品はほぼ同等な特性を示します。  
従いまして、以下の結果は参考値とお考え願います。

Test results are typical data. Nevertheless the following results are considered to be  
reference data because all units have nearly the same characteristics.

評価負荷条件 Load conditions

※ 入力電圧が100VACの場合、下記のとおり出力デイレージングが必要です。  
Output derating is needed when input voltage is 100VAC.

Output voltage : 12V, 24V, 48V

Vin	Iout : Full load	12V	24V	48V
110 - 265VAC	100%	25A	12.5A	6.3A
100VAC	92%	23A	11.5A	5.8A

## 1. MTBF計算値 Calculated Values of MTBF

MODEL : RWS300B-5

## (1) 算出方法 Calculating Method

JEITA (RCR-9102B)の部品点数法で算出されています。  
 それぞれの部品ごとに、部品故障率 $\lambda_G$ が与えられ、各々の点数によって決定されます。  
 Calculated based on part count reliability projection of JEITA (RCR-9102B).  
 Individual failure rates  $\lambda_G$  is given to each part and MTBF is calculated  
 by the count of each part.

&lt;算出式&gt;

$$MTBF = \frac{1}{\lambda_{equip}} \times 10^6 = \frac{1}{\sum_{i=1}^n n_i (\lambda_G \pi_Q)_i} \times 10^6 \text{ 時間(Hours)}$$

$\lambda_{equip}$  : 全機器故障率 (故障数/10<sup>6</sup>時間)  
 Total Equipment Failure Rate (Failure/10<sup>6</sup>Hours)

$\lambda_G$  : i番目の同属部品に対する故障率 (故障数/10<sup>6</sup>時間)  
 Generic Failure Rate for The ith Generic Part (Failure/10<sup>6</sup>Hours)

$n_i$  : i番目の同属部品の個数  
 Quantity of ith Generic Part

$n$  : 異なった同属部品のカテゴリーの数  
 Number of Different Generic Part Categories

$\pi_Q$  : i番目の同属部品に対する品質ファクタ ( $\pi_Q=1$ )  
 Generic Quality Factor for The ith Generic Part ( $\pi_Q=1$ )

## (2) MTBF値 MTBF Values

$G_F$  : 地上、固定 (Ground, Fixed)

RCR-9102B

MTBF ≒ 188,065 時間 (Hours)

(但し、MTBFにファンは含まれておりません。)  
 However MTBF Calculation for FAN isn't Included.

## 2. 部品デイレートイング Components Derating

MODEL : RWS300B-12

## (1) 算出方法 Calculating Method

## (a) 測定方法 Measuring method

・取付方法 Mounting method	: 標準取付 : A Standard mounting : A	・周囲温度 Ambient temperature	: 50°C
・入力電圧 Input voltage	: 100 , 200VAC	・出力電圧、電流 Output voltage & current	: 12V, Full load

## (b) 半導体 Semiconductors

ケース温度、消費電力、熱抵抗より使用状態の接合点温度を求め  
最大定格、接合点温度との比較を求めました。

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

## (c) IC、抵抗、コンデンサ等 IC, Resistors, Capacitors, etc.

周囲温度、使用状態、消費電力など、個々の値は設計基準内に入っています。

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

## (d) 熱抵抗算出方法 Calculating method of thermal impedance

$$\theta_{j-c} = \frac{T_j(\max) - T_c}{P_{ch}(\max)} \quad \theta_{j-l} = \frac{T_j(\max) - T_l}{P_{ch}(\max)}$$

T<sub>c</sub> : デイレートイングの始まるケース温度 一般に25°C  
Case Temperature at Start Point of Derating; 25°C in General

T<sub>l</sub> : デイレートイングの始まるリード温度 一般に25°C  
Lead Temperature at Start Point of Derating; 25°C in General

P<sub>ch</sub>(max) : 最大チャネル損失  
Maximum Channel Dissipation

T<sub>j</sub>(max) : 最大接合点(チャネル)温度  
(T<sub>ch</sub>(max)) Maximum Junction (channel) Temperature

θ<sub>j-c</sub> : 接合点(チャネル)からケースまでの熱抵抗  
(θ<sub>ch-c</sub>) Thermal Impedance between Junction (channel) and Case

θ<sub>j-l</sub> : 接合点(チャネル)からリードまでの熱抵抗  
(θ<sub>ch-l</sub>) Thermal Impedance between Junction (channel) and Lead

## (2) 部品ディレーティング表 Component Derating List

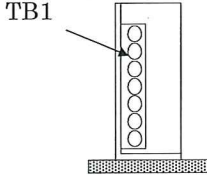
部品番号 Location No.	$V_{in} = 100VAC$	Load = Full load	$T_a = 50^{\circ}C$
Q1 FMH30N60S1 FUJI ELECTRIC	$T_{ch} (max) = 150^{\circ}C$ $P_{ch} = 6.5 W$ $T_{ch} = T_c + ((\theta_{ch-c}) \times P_{ch}) = 99.7^{\circ}C$ D.F. = 66.5 %	$\theta_{ch-c} = 0.57^{\circ}C/W$ $\Delta T_c = 46^{\circ}C$	$T_c = 96^{\circ}C$
Q2 FMH09N90E FUJI ELECTRIC	$T_{ch} (max) = 150^{\circ}C$ $P_{ch} = 11.5 W$ $T_{ch} = T_c + ((\theta_{ch-c}) \times P_{ch}) = 123.0^{\circ}C$ D.F. = 82.0 %	$\theta_{ch-c} = 0.61^{\circ}C/W$ $\Delta T_c = 66^{\circ}C$	$T_c = 116^{\circ}C$
D1 KBJ1006G LITE-ON	$T_j (max) = 150^{\circ}C$ $P_d = 7.6 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 124.2^{\circ}C$ D.F. = 82.8 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 59^{\circ}C$	$T_c = 109^{\circ}C$
D2 RFUS20TF6S ROHM	$T_j (max) = 150^{\circ}C$ $P_d = 1.2 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 98.4^{\circ}C$ D.F. = 65.6 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 46^{\circ}C$	$T_c = 96^{\circ}C$
D52 YG868C08R FUJI ELECTRIC	$T_j (max) = 150^{\circ}C$ $P_d = 5.7 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 106.4^{\circ}C$ D.F. = 70.9 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 45^{\circ}C$	$T_c = 95^{\circ}C$
D53 YG868C08R FUJI ELECTRIC	$T_j (max) = 150^{\circ}C$ $P_d = 5.7 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 106.4^{\circ}C$ D.F. = 70.9 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 45^{\circ}C$	$T_c = 95^{\circ}C$
D54 YG868C08R FUJI ELECTRIC	$T_j (max) = 150^{\circ}C$ $P_d = 6.1 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 105.2^{\circ}C$ D.F. = 70.1 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 43^{\circ}C$	$T_c = 93^{\circ}C$
D104 CRH01 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 15 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 91.5^{\circ}C$ D.F. = 61.0 %	$\theta_{j-l} = 30^{\circ}C/W$ $\Delta T_l = 41^{\circ}C$	$T_l = 91^{\circ}C$
D105 CRH01 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 15 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 87.5^{\circ}C$ D.F. = 58.3 %	$\theta_{j-l} = 30^{\circ}C/W$ $\Delta T_l = 37^{\circ}C$	$T_l = 87^{\circ}C$
D106 CMF05 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 10 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 89.2^{\circ}C$ D.F. = 59.5 %	$\theta_{j-l} = 16^{\circ}C/W$ $\Delta T_l = 39^{\circ}C$	$T_l = 89^{\circ}C$
D116 CRH01 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 7 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 84.2^{\circ}C$ D.F. = 56.1 %	$\theta_{j-l} = 30^{\circ}C/W$ $\Delta T_l = 34^{\circ}C$	$T_l = 84^{\circ}C$
PC101 PS2861B-1 (LED) RENESAS	$T_j (max) = 125^{\circ}C$ $P_d = 16 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 78.3^{\circ}C$ D.F. = 62.6 %	$\theta_{j-c} = 330^{\circ}C/W$ $\Delta T_c = 23^{\circ}C$	$T_c = 73^{\circ}C$

部品番号 Location No.	$V_{in} = 200VAC$	Load = Full load	$T_a = 50^{\circ}C$
Q1 FMH30N60S1 FUJI ELECTRIC	$T_{ch} (max) = 150^{\circ}C$ $P_{ch} = 4.3 W$ $T_{ch} = T_c + ((\theta_{ch-c}) \times P_{ch}) = 85.5^{\circ}C$ D.F. = 57.0 %	$\theta_{ch-c} = 0.57^{\circ}C/W$ $\Delta T_c = 33^{\circ}C$	$T_c = 83^{\circ}C$
Q2 FMH09N90E FUJI ELECTRIC	$T_{ch} (max) = 150^{\circ}C$ $P_{ch} = 12.1 W$ $T_{ch} = T_c + ((\theta_{ch-c}) \times P_{ch}) = 121.4^{\circ}C$ D.F. = 80.9 %	$\theta_{ch-c} = 0.61^{\circ}C/W$ $\Delta T_c = 64^{\circ}C$	$T_c = 114^{\circ}C$
D1 KBJ1006G LITE-ON	$T_j (max) = 150^{\circ}C$ $P_d = 4.1 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 88.2^{\circ}C$ D.F. = 58.8 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 30^{\circ}C$	$T_c = 80^{\circ}C$
D2 RFUS20TF6S ROHM	$T_j (max) = 150^{\circ}C$ $P_d = 1.2 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 88.4^{\circ}C$ D.F. = 58.9 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 36^{\circ}C$	$T_c = 86^{\circ}C$
D52 YG868C08R FUJI ELECTRIC	$T_j (max) = 150^{\circ}C$ $P_d = 6.2 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 112.4^{\circ}C$ D.F. = 74.9 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 50^{\circ}C$	$T_c = 100^{\circ}C$
D53 YG868C08R FUJI ELECTRIC	$T_j (max) = 150^{\circ}C$ $P_d = 6.2 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 112.4^{\circ}C$ D.F. = 74.9 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 50^{\circ}C$	$T_c = 100^{\circ}C$
D54 YG868C08R FUJI ELECTRIC	$T_j (max) = 150^{\circ}C$ $P_d = 6.7 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 112.4^{\circ}C$ D.F. = 74.9 %	$\theta_{j-c} = 2.0^{\circ}C/W$ $\Delta T_c = 49^{\circ}C$	$T_c = 99^{\circ}C$
D104 CRH01 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 15 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 78.5^{\circ}C$ D.F. = 52.3 %	$\theta_{j-l} = 30^{\circ}C/W$ $\Delta T_l = 28^{\circ}C$	$T_l = 78^{\circ}C$
D105 CRH01 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 15 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 76.5^{\circ}C$ D.F. = 51.0 %	$\theta_{j-l} = 30^{\circ}C/W$ $\Delta T_l = 26^{\circ}C$	$T_l = 76^{\circ}C$
D106 CMF05 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 10 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 89.2^{\circ}C$ D.F. = 59.5 %	$\theta_{j-l} = 16^{\circ}C/W$ $\Delta T_l = 39^{\circ}C$	$T_l = 89^{\circ}C$
D116 CRH01 TOSHIBA	$T_j (max) = 150^{\circ}C$ $P_d = 7 mW$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 86.2^{\circ}C$ D.F. = 57.5 %	$\theta_{j-l} = 30^{\circ}C/W$ $\Delta T_l = 36^{\circ}C$	$T_l = 86^{\circ}C$
PC101 PS2861B-1 (LED) RENESAS	$T_j (max) = 125^{\circ}C$ $P_d = 16 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 76.3^{\circ}C$ D.F. = 61.0 %	$\theta_{j-c} = 330^{\circ}C/W$ $\Delta T_c = 21^{\circ}C$	$T_c = 71^{\circ}C$

3. 主要部品温度上昇値 Main Components Temperature Rise  $\Delta T$  List

MODEL : RWS300B-12

## (1) 測定条件 Measuring Conditions

取付方法 Mounting Method  (標準取付 : A) (Standard Mounting : A)	Mounting A	
		
入力電圧 $V_{in}$ Input Voltage	100VAC	200VAC
出力電圧 $V_{out}$ Output Voltage	12VDC	
出力電流 $I_{out}$ Output Current	Full load	

## (2) 測定結果 Measuring Results

出力デレーティング Output Derating		$\Delta T$ Temperature Rise ( $^{\circ}C$ )	
		100VAC	200VAC
部品番号 Location No.		部品名 Part name	
		Ta=50 $^{\circ}C$	
		取付方向 Mounting A	
Q1	MOS FET	46	33
Q2	MOS FET	66	64
D1	BRIDGE DIODE	59	30
D2	DIODE	46	36
D52	S.B.D.	45	50
D53	S.B.D.	45	50
D54	S.B.D.	43	49
A101	CHIP IC	24	25
A102	CHIP IC	22	16
A201	CHIP IC	7	7
T1	TRANS	39	44
L1	BALUN	30	12
L2	BALUN	27	11
L3	CHOKE COIL	55	33
L51	CHOKE COIL	32	29
C6	E.CAP.	20	18
C51	E.CAP.	13	13
C52	E.CAP.	15	15
C53	E.CAP.	10	10
C58	E.CAP.	13	13
PC101	PHOTO COUPLER	23	21

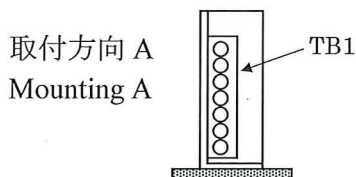
※ 取付方向B, C, Dでも同様の値となります。

It becomes the same value also for Mounting B, C, and D.

4. 電解コンデンサ推定寿命計算値 Electrolytic Capacitor Lifetime

MODEL : RWS300B

空冷条件 : 強制空冷 Cooling condition : Forced air cooling



Conditions Ta 40°C : ———  
50°C : - - - -  
60°C : - · - · -

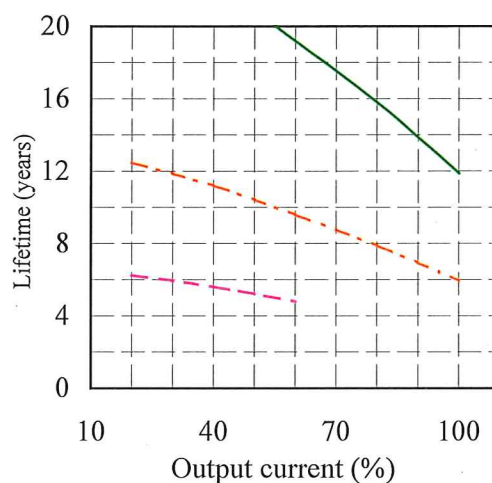
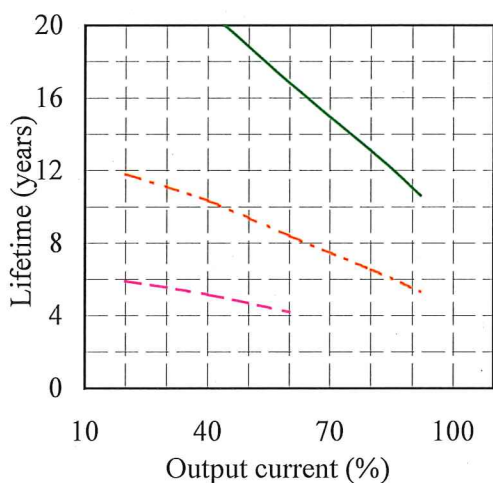
12V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
20%		20.0	11.8	5.9
40%		20.0	10.4	5.2
60%		16.8	8.4	4.2
80%		13.1	6.6	-
92%		10.6	5.3	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
20%		20.0	12.5	6.2
40%		20.0	11.2	5.6
60%		19.2	9.6	4.8
80%		15.8	7.9	-
100%		11.9	5.9	-



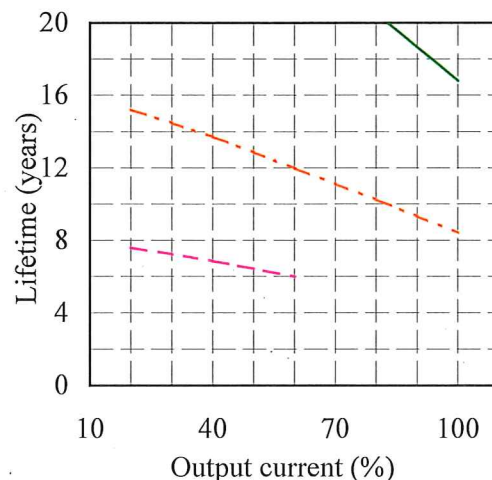
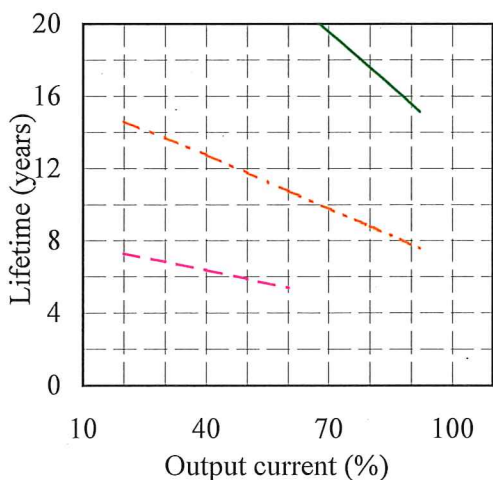
24V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
20%		20.0	14.6	7.3
40%		20.0	12.7	6.4
60%		20.0	10.8	5.4
80%		17.6	8.8	-
92%		15.2	7.6	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
20%		20.0	15.2	7.6
40%		20.0	13.7	6.9
60%		20.0	12.0	6.0
80%		20.0	10.2	-
100%		16.8	8.4	-



上記推定寿命は、弊社計算方法により算出した値であり、封口ゴムの劣化等の影響を含めておりません。  
The lifetime is calculated based on our method and doesn't include the seal rubber degradation effect etc.  
取付方向B, C, Dでも同様の寿命となります。

It becomes the same lifetime also for Mounting B, C, and D.



## 5. アブノーマル試験 Abnormal Test

MODEL : RWS300B-48

## (1) 試験条件 Test Conditions

Input : 265VAC Output : 48V, Full load Ta : 25°C

## (2) 試験結果 Test Results

( Da : Damaged )

No.	Test position		Test mode		Test result											記事 Note	
	部品No. Location No.	試験端子 Test point	ショート Short	オープン Open	a 発火 Fire	b 発煙 Smoke	c 破裂 Burst	d 異臭 Smell	e 赤熱 Red hot	f 破損 Damaged	g ヒューズ断 Fuse blown	h OVP	I OCP	j 出力断 No output	k 変化なし No change		l その他 Others
1	Q1	D-S	○							○	○			○			Da : D1, D101
2		D-G	○							○	○			○			Da : Q1, D1, D101
3		G-S	○													○	力率低下 Power factor low
4		D		○												○	力率低下 Power factor low
5		S		○												○	力率低下 Power factor low
6		G		○						○	○			○			Da : Q1
7	Q2	D-S	○							○	○			○			Da : D1, D2, D101
8		D-G	○							○	○			○			Da : Q2, D1, D2, Z101
9		G-S	○											○			
10		D		○										○			
11		S		○										○			
12		G		○										○			
13	D52	A-K	○											○			
14		A/K		○												○	出力電圧低下 Output voltage low
15	D54	A-K	○													○	出力電圧低下 Output voltage low
16		A/K		○										○			
17	C6		○							○	○			○			Da : D1
18				○												○	出力リップル増加 Output ripple increase
19	C51		○											○			
20				○												○	出力リップル増加 Output ripple increase
21	D1	AC-AC	○								○			○			
22		DC-DC	○							○	○			○			Da : D1
23		AC-DC	○							○	○			○			Da : D1
24		AC		○										○			
25		DC		○										○			

( Da : Damaged )

No.	Test position		Test mode		Test result											記事 Note		
	部品No.	試験端子	ショート	オープン	a	b	c	d	e	f	g	h	I	j	k		l	
	Location No.	Test point	Short	Open	発火	発煙	破裂	異臭	赤熱	破損	ヒューズ断	OVP	OCP	出力断	変化なし	その他		
					Fire	Smoke	Burst	Smell	Red hot	Damaged	Fuse blown			No output	No change	Others		
26	D2	A-K	○							○	○			○			Da : Q1, D1, A101, D101	
27		K		○							○	○			○			Da : Q1, A101
28	T1	1-3	○								○	○					Da : Q2	
29		5-6	○													○	間欠発振動作 Hiccup	
30		9-10	○												○			
31		1		○											○			
32		2		○												○		
33		3		○											○			
34		5		○													○	間欠発振動作 Hiccup
35		6		○													○	間欠発振動作 Hiccup
36		8,9		○											○			
37		10,11		○											○			
38	L51	4-9	○													○	出力電圧低下 Output voltage low ファン停止 Fan stop	
39		13-14	○											○		○	ファン停止後出力断 No output after fan stop	
40		13		○										○		○	ファン停止後出力断 No output after fan stop	
41		14		○										○		○	ファン停止後出力断 No output after fan stop	
42		3,4		○										○				
43		9,10		○										○				

## 6. 振動試験 Vibration Test

MODEL : RWS300B-24

## (1) 振動試験種類 Vibration Test Class

掃引振動数耐久試験 Frequency variable endurance test

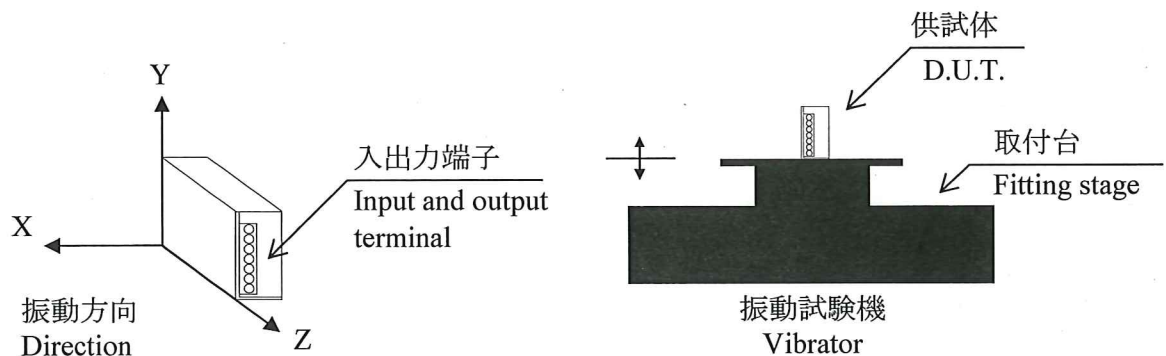
## (2) 使用振動試験装置 Equipment Used

EMIC (株) 製 F-16000BDH/LA16AW  
EMIC CORP

## (3) 試験条件 Test Conditions

・周波数範囲 Sweep frequency	: 10~55Hz	・振動方向 Direction	: X, Y, Z
・掃引時間 Sweep time	: 1.0分間 1.0min	・試験時間 Sweep count	: 各方向共 1時間 1 hour each
・加速度 Acceleration	: 一定 19.6m/s <sup>2</sup> (2G) Constant		

## (4) 試験方法 Test Method



## (5) 判定条件 Acceptable Conditions

1. 破壊しない事  
Not to be broken.
2. 試験後の出力に異常がない事  
No abnormal output after test.

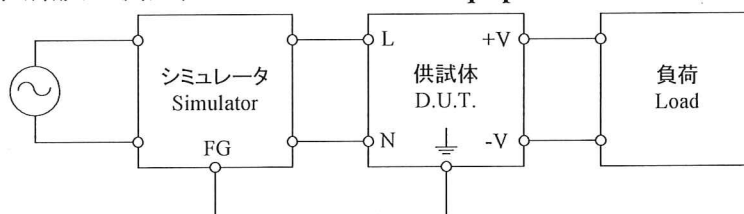
## (6) 試験結果 Test Results

合格 OK

## 7. ノイズシミュレート試験 Noise Simulate Test

MODEL : RWS300B-48

## (1) 試験回路及び測定器 Test Circuit and Equipment



シミュレータ : INS-4320(A) (ノイズ研究所)  
 Simulator (Noise Laboratory Co.,LTD)

## (2) 試験条件 Test Conditions

・入力電圧 Input voltage	: 100, 230VAC	・ノイズ電圧 Noise level	: 0~2kV
・出力電圧 Output voltage	: 定格 Rated	・位相 Phase	: 0~360 deg
・出力電流 Output current	: 0%, Full load	・極性 Polarity	: +, -
・周囲温度 Ambient temperature	: 25°C	・印加モード Mode	: コモン、ノーマル Common, Normal
・パルス幅 Pulse width	: 50~1000ns	・トリガ選択 Trigger select	: Line

## (3) 判定条件 Acceptable Conditions

1. 試験中、5%を超える出力電圧の変動のない事  
The regulation of output voltage must not exceed 5% of initial value during test.
2. 試験後の出力電圧は初期値から変動していない事  
The output voltage must be within the regulation of specification after the test.
3. 発煙・発火のない事  
Smoke and fire are not allowed.

## (4) 試験結果 Test Results

合格 OK

## 8. 熱衝撃試験 Thermal Shock Test

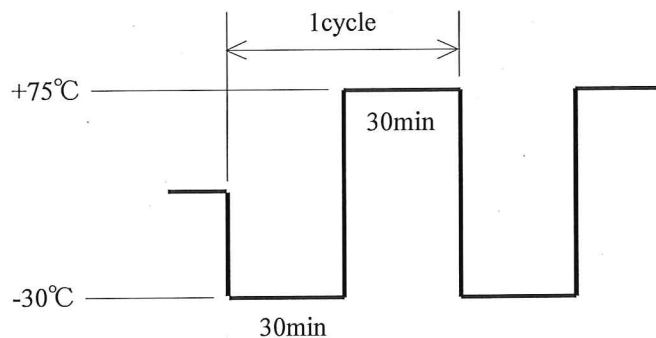
MODEL : RWS300B-24

## (1) 使用計測器 Equipment Used

TSA-72ES-A : ESPEC

## (2) 試験条件 Test Conditions

- ・電源周囲温度 : -30°C ⇔ 75°C  
Ambient Temperature
- ・試験時間 : 図参照  
Test Time Refer to Dwg.
- ・試験サイクル : 100 サイクル  
Test Cycle 100 Cycles
- ・非動作  
Not Operating



## (3) 試験方法 Test Method

初期測定の後、供試品を試験槽に入れ、上記サイクルで試験を行う。100サイクル後に、供試品を常温常湿下に1時間放置し、出力に異常がない事を確認する。

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

## (4) 判定条件 Acceptable Conditions

試験後の出力に異常がない事  
No abnormal output after test.

## (5) 試験結果 Test Results

合格 OK

## 9. FAN期待寿命 Fan Life Expectancy

MODEL : RWS300B

## (1) 使用製品名 Part Name

1608VL-04W-B60 (Minebea Moter Manufacturing Corporation)

## (2) 期待寿命 Life Expectancy

メーカーによるファン単体の期待寿命データを示す(残存率90%)。  
また、ファン排気温度測定箇所は、Fig. 1に示す。

The data shows fan life expectancy for fan only by manufacture(90% survival rate).  
Fig. 1 shows measuring point of fan exhaust temperature.

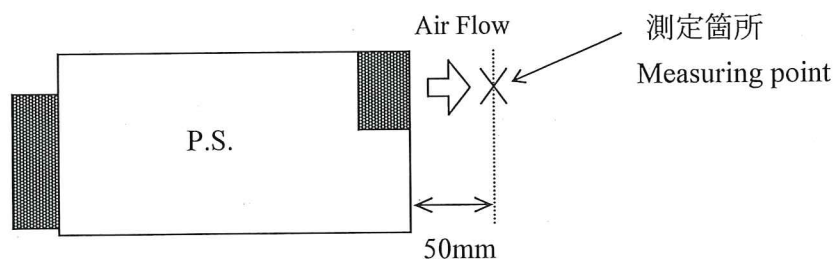
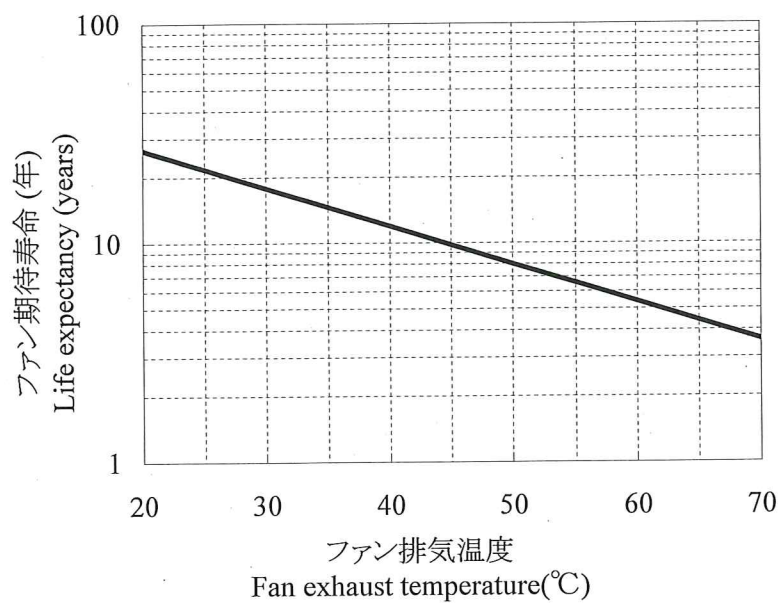


Fig. 1 ファン排気温度測定箇所  
Measuring point of fan exhaust temperature.

※電源の吸排気温度差はFull loadで約5°Cです。

The difference between the intake temperature and the exhaust temperature of the power supply is about 5°C at Full load.