

ZWS50C

RELIABILITY DATA

信頼性データ

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* 試験結果は、代表データではありますが、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.

1. MTBF計算値 Calculated Values of MTBF

MODEL : ZWS50C-12

(1) 算出方法 Calculating Method

JEITA (RCA-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 λ_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 (RCA-9102B).

Individual failure rates λ_G is given to each part and MTBF is calculated by the count of each part.

<算出式>

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

λ_{equip} : 全機器故障率 (故障数 / 10^6 時間)
Total Equipment Failure Rate (Failure / 10^6 Hours)

λ_G : i 番目の同属部品に対する故障率 (故障数 / 10^6 時間)
Generic Failure Rate for The ith Generic Part (Failure / 10^6 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の数
Number of Different Generic Part Categories

π_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

GF : 地上、固定 (Ground, Fixed)

RCA-9102B

$$MTBF \doteq \underline{\hspace{2cm}} 366,537 \quad \text{時間 (Hours)}$$

2. 部品ディレーティング Components Derating

MODEL : ZWS50C-5, ZWS50C-48

(1) 算出方法 Calculating Method

(a) 測定方法 Measuring method

取付方法 : 標準取付 : A Mounting method Standard mounting : A	周囲温度 : 50°C Ambient temperature
入力電圧 : 100, 200VAC Input voltage	出力電圧、電流 : 5V, Full load Output voltage & current

取付方法 : 標準取付 : A Mounting method Standard mounting : A	周囲温度 : 50°C Ambient temperature
入力電圧 : 100, 200VAC Input voltage	出力電圧、電流 : 48V, Full load Output voltage & current

(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

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

T_c : ディレーティ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_l : ディレーティ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_j(max): 最大接合点(チャンネル)損失
(P_{ch}(max)) Maximum Junction (channel) Dissipation

T_j(max): 最大接合点(チャンネル)温度
ch(max)) Maximum Junction (channel) Temperature

θ_{j-c} : 接合点(チャンネル)からケースまでの熱抵抗
(θ_{ch-c}) Thermal Impedance between Junction (channel) and Case

θ_{j-l} : 接合点(チャンネル)からリードまでの熱抵抗
(θ_{ch-l}) 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.	Vin = 100VAC Ta = 50°C	Vout = 5VDC Convection cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 1.00 W Tj = Tc + ((θj-c) × Pd) = 111.0 °C D.F. = 74.0 %	θj-c = 13 °C/W ΔTc = 48 °C	Tc = 98 °C
D51 STPS30H60CT STMICRO	Tj (max) = 175 °C Pd = 2.58 W Tj = Tc + ((θj-c) × Pd) = 134.1 °C D.F. = 76.6 %	θj-c = 0.8 °C/W ΔTc = 82 °C	Tc = 132 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.08 W Tj = Tc + ((θj-c) × Pd) = 100.3 °C D.F. = 66.9 %	θj-c = 16.6 °C/W ΔTc = 49 °C	Tc = 99 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.03 W Tj = Tc + ((θj-c) × Pd) = 91.9 °C D.F. = 61.3 %	θj-c = 30 °C/W ΔTc = 41 °C	Tc = 91 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 1.22 W Tch = Tc + ((θch-c) × Pch) = 107.8 °C D.F. = 71.9 %	θch-c = 3.12 °C/W ΔTc = 54 °C	Tc = 104 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 8 mW Tj = Tc + ((θj-c) × Pd) = 83.4 °C D.F. = 75.8 %	θj-c = 178.65 °C/W ΔTc = 32 °C	Tc = 82 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 93.9 °C D.F. = 62.6 %	θj-c = 45 °C/W ΔTc = 39 °C	Tc = 89 °C

部品番号 Location No.	Vin = 200VAC Ta = 50°C	Vout = 5VDC Convection cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.71 W Tj = Tc + ((θj-c) × Pd) = 108.2 °C D.F. = 72.1 %	θj-c = 13 °C/W ΔTc = 49 °C	Tc = 99 °C
D51 STPS30H60CT STMICRO	Tj (max) = 175 °C Pd = 3.15 W Tj = Tc + ((θj-c) × Pd) = 146.5 °C D.F. = 83.7 %	θj-c = 0.8 °C/W ΔTc = 94 °C	Tc = 144 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.09 W Tj = Tc + ((θj-c) × Pd) = 108.5 °C D.F. = 72.3 %	θj-c = 16.6 °C/W ΔTc = 57 °C	Tc = 107 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.04 W Tj = Tc + ((θj-c) × Pd) = 99.2 °C D.F. = 66.1 %	θj-c = 30 °C/W ΔTc = 48 °C	Tc = 98 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 2.26 W Tch = Tc + ((θch-c) × Pch) = 126.1 °C D.F. = 84.0 %	θch-c = 3.12 °C/W ΔTc = 69 °C	Tc = 119 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 8 mW Tj = Tc + ((θj-c) × Pd) = 86.4 °C D.F. = 78.6 %	θj-c = 178.65 °C/W ΔTc = 35 °C	Tc = 85 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 96.9 °C D.F. = 64.6 %	θj-c = 45 °C/W ΔTc = 42 °C	Tc = 92 °C

部品番号 Location No.	Vin = 100VAC Ta = 70°C	Vout = 5VDC Forced air cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 1.00 W Tj = Tc + ((θj-c) × Pd) = 107.0 °C D.F. = 71.3 %	θj-c = 13 °C/W ΔTc = 24 °C	Tc = 94 °C
D51 STPS30H60CT STMICRO	Tj (max) = 175 °C Pd = 2.58 W Tj = Tc + ((θj-c) × Pd) = 111.1 °C D.F. = 63.5 %	θj-c = 0.8 °C/W ΔTc = 39 °C	Tc = 109 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.08 W Tj = Tc + ((θj-c) × Pd) = 94.3 °C D.F. = 62.9 %	θj-c = 16.6 °C/W ΔTc = 23 °C	Tc = 93 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.03 W Tj = Tc + ((θj-c) × Pd) = 80.9 °C D.F. = 53.9 %	θj-c = 30 °C/W ΔTc = 10 °C	Tc = 80 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 1.22 W Tch = Tc + ((θch-c) × Pch) = 103.8 °C D.F. = 69.2 %	θch-c = 3.12 °C/W ΔTc = 30 °C	Tc = 100 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 8 mW Tj = Tc + ((θj-c) × Pd) = 76.4 °C D.F. = 69.5 %	θj-c = 178.65 °C/W ΔTc = 5 °C	Tc = 75 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 84.9 °C D.F. = 56.6 %	θj-c = 45 °C/W ΔTc = 10 °C	Tc = 80 °C

部品番号 Location No.	Vin = 200VAC Ta = 70°C	Vout = 5VDC Forced air cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.71 W Tj = Tc + ((θj-c) × Pd) = 101.2 °C D.F. = 67.5 %	θj-c = 13 °C/W ΔTc = 22 °C	Tc = 92 °C
D51 STPS30H60CT STMICRO	Tj (max) = 175 °C Pd = 3.15 W Tj = Tc + ((θj-c) × Pd) = 118.5 °C D.F. = 67.7 %	θj-c = 0.8 °C/W ΔTc = 46 °C	Tc = 116 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.09 W Tj = Tc + ((θj-c) × Pd) = 99.5 °C D.F. = 66.3 %	θj-c = 16.6 °C/W ΔTc = 28 °C	Tc = 98 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.04 W Tj = Tc + ((θj-c) × Pd) = 83.2 °C D.F. = 55.5 %	θj-c = 30 °C/W ΔTc = 12 °C	Tc = 82 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 2.26 W Tch = Tc + ((θch-c) × Pch) = 118.1 °C D.F. = 78.7 %	θch-c = 3.12 °C/W ΔTc = 41 °C	Tc = 111 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 8 mW Tj = Tc + ((θj-c) × Pd) = 77.4 °C D.F. = 70.4 %	θj-c = 178.65 °C/W ΔTc = 6 °C	Tc = 76 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 85.9 °C D.F. = 57.2 %	θj-c = 45 °C/W ΔTc = 11 °C	Tc = 81 °C

部品番号 Location No.	Vin = 100VAC Ta = 50°C	Vout = 48VDC Convection cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 1.59 W Tj = Tc + ((θj-c) × Pd) = 135.7 °C D.F. = 90.4 %	θj-c = 13 °C/W ΔTc = 65 °C	Tc = 115 °C
D51 SF20LC30M-5600 SHINDENGEN	Tj (max) = 150 °C Pd = 0.66 W Tj = Tc + ((θj-c) × Pd) = 98.1 °C D.F. = 65.4 %	θj-c = 1.7 °C/W ΔTc = 47 °C	Tc = 97 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.05 W Tj = Tc + ((θj-c) × Pd) = 96.8 °C D.F. = 64.6 %	θj-c = 16.6 °C/W ΔTc = 46 °C	Tc = 96 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.06 W Tj = Tc + ((θj-c) × Pd) = 91.8 °C D.F. = 61.2 %	θj-c = 30 °C/W ΔTc = 40 °C	Tc = 90 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 1.44 W Tch = Tc + ((θch-c) × Pch) = 121.5 °C D.F. = 81.0 %	θch-c = 3.12 °C/W ΔTc = 67 °C	Tc = 117 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 2 mW Tj = Tc + ((θj-c) × Pd) = 81.4 °C D.F. = 74.0 %	θj-c = 178.65 °C/W ΔTc = 31 °C	Tc = 81 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 97.9 °C D.F. = 65.2 %	θj-c = 45 °C/W ΔTc = 43 °C	Tc = 93 °C

部品番号 Location No.	Vin = 200VAC Ta = 50°C	Vout = 48VDC Convection cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 1.08 W Tj = Tc + ((θj-c) × Pd) = 108.1 °C D.F. = 72.1 %	θj-c = 13 °C/W ΔTc = 44 °C	Tc = 94 °C
D51 SF20LC30M-5600 SHINDENGEN	Tj (max) = 150 °C Pd = 0.79 W Tj = Tc + ((θj-c) × Pd) = 98.3 °C D.F. = 65.6 %	θj-c = 1.7 °C/W ΔTc = 47 °C	Tc = 97 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.06 W Tj = Tc + ((θj-c) × Pd) = 92.0 °C D.F. = 61.3 %	θj-c = 16.6 °C/W ΔTc = 41 °C	Tc = 91 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.06 W Tj = Tc + ((θj-c) × Pd) = 87.8 °C D.F. = 58.5 %	θj-c = 30 °C/W ΔTc = 36 °C	Tc = 86 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 1.55 W Tch = Tc + ((θch-c) × Pch) = 102.8 °C D.F. = 68.6 %	θch-c = 3.12 °C/W ΔTc = 48 °C	Tc = 98 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 2 mW Tj = Tc + ((θj-c) × Pd) = 77.4 °C D.F. = 70.3 %	θj-c = 178.65 °C/W ΔTc = 27 °C	Tc = 77 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 90.9 °C D.F. = 60.6 %	θj-c = 45 °C/W ΔTc = 36 °C	Tc = 86 °C

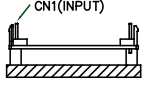
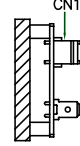
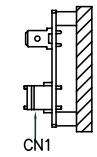
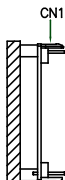
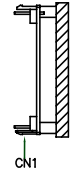
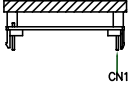
部品番号 Location No.	Vin = 100VAC Ta = 70°C	Vout = 48VDC Force air cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 1.59 W Tj = Tc + ((θj-c) × Pd) = 126.7 °C D.F. = 84.4 %	θj-c = 13 °C/W ΔTc = 36 °C	Tc = 106 °C
D51 SF20LC30M-5600 SHINDENGEN	Tj (max) = 150 °C Pd = 0.66 W Tj = Tc + ((θj-c) × Pd) = 88.1 °C D.F. = 58.7 %	θj-c = 1.7 °C/W ΔTc = 17 °C	Tc = 87 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.05 W Tj = Tc + ((θj-c) × Pd) = 90.8 °C D.F. = 60.6 %	θj-c = 16.6 °C/W ΔTc = 20 °C	Tc = 90 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.06 W Tj = Tc + ((θj-c) × Pd) = 81.8 °C D.F. = 54.5 %	θj-c = 30 °C/W ΔTc = 10 °C	Tc = 80 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 1.44 W Tch = Tc + ((θch-c) × Pch) = 112.5 °C D.F. = 75.0 %	θch-c = 3.12 °C/W ΔTc = 38 °C	Tc = 108 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 2 mW Tj = Tc + ((θj-c) × Pd) = 75.4 °C D.F. = 68.5 %	θj-c = 178.65 °C/W ΔTc = 5 °C	Tc = 75 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 87.9 °C D.F. = 58.6 %	θj-c = 45 °C/W ΔTc = 13 °C	Tc = 83 °C

部品番号 Location No.	Vin = 200VAC Ta = 70°C	Vout = 48VDC Convection cooling	Load = 100%
D1 KBPF205G TAIWAN SEMI	Tj (max) = 150 °C Pd = 1.08 W Tj = Tc + ((θj-c) × Pd) = 106.1 °C D.F. = 70.7 %	θj-c = 13 °C/W ΔTc = 22 °C	Tc = 92 °C
D51 SF20LC30M-5600 SHINDENGEN	Tj (max) = 150 °C Pd = 0.79 W Tj = Tc + ((θj-c) × Pd) = 90.3 °C D.F. = 60.2 %	θj-c = 1.7 °C/W ΔTc = 19 °C	Tc = 89 °C
D101 S1JLW TAIWAN SEMI	Tj (max) = 150 °C Pd = 0.06 W Tj = Tc + ((θj-c) × Pd) = 90.0 °C D.F. = 60.0 %	θj-c = 16.6 °C/W ΔTc = 19 °C	Tc = 89 °C
D103 CRH01(TE85L,Q) TOSHIBA	Tj (max) = 150 °C Pd = 0.06 W Tj = Tc + ((θj-c) × Pd) = 81.8 °C D.F. = 54.5 %	θj-c = 30 °C/W ΔTc = 10 °C	Tc = 80 °C
Q1 TK750A 60F TOSHIBA	Tch (max) = 150 °C Pch = 1.55 W Tch = Tc + ((θch-c) × Pch) = 101.8 °C D.F. = 67.9 %	θch-c = 3.12 °C/W ΔTc = 27 °C	Tc = 97 °C
PC101 EL1018(TA)-VG EVERLIGHT	Tj (max) = 110 °C Pd = 2 mW Tj = Tc + ((θj-c) × Pd) = 74.4 °C D.F. = 67.6 %	θj-c = 178.65 °C/W ΔTc = 4 °C	Tc = 74 °C
A 101 NCP1234BD100R2G ON SEMI	Tj (max) = 150 °C Pd = 0.11 W Tj = Tc + ((θj-c) × Pd) = 85.9 °C D.F. = 57.2 %	θj-c = 45 °C/W ΔTc = 11 °C	Tc = 81 °C

3. 主要部品温度上昇値 Main Components Temperature Rise ΔT List

MODEL : ZWS50C-5

(1) 測定条件 Measuring Conditions

取付方法 Mounting Method (標準取付 : A) (Standard Mounting : A)	Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
						
入力電圧 V_{in} Input Voltage	100VAC / 200VAC					
出力電圧 V_{out} Output Voltage	5V					
出力電流 I_{out} Output Current	6A / 7A					

(2) 測定結果 Measuring Results

出力デレーティング Output Derating		ΔT Temperature Rise ($^{\circ}C$)					
		100VAC					
		$T_a=50^{\circ}C$ Convection cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	39	37	33	38	33	43
C4	E.CAP.	34	33	31	36	32	35
C6	E.CAP.	32	34	29	36	31	36
C53	E.CAP.	37	43	36	37	40	42
C54	E.CAP.	33	40	32	32	37	39
C55	E.CAP.	27	34	27	24	31	30
D1	BRIDGE DIODE	48	47	48	54	44	53
D101	DIODE	49	41	51	47	47	54
D103	DIODE	41	40	36	40	38	45
D51	S.B.D	82	79	78	78	83	83
Q1	MOSFET	54	51	55	56	51	57
T1	TRANSFORMER	43	41	43	44	43	44
L1	BALUN COIL	36	34	32	41	30	39
L51	CHOKE COIL	38	44	38	36	42	42
PC101	PHOTO COUPLER	32	35	26	31	30	37

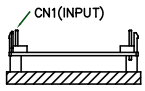
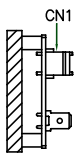
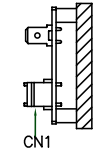
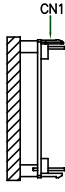
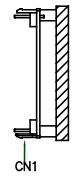
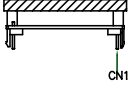
出力デレーティング Output Derating		ΔT Temperature Rise ($^{\circ}C$)					
		200VAC					
		$T_a=50^{\circ}C$ Convection cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	42	41	36	43	35	47
C4	E.CAP.	38	39	35	42	36	40
C6	E.CAP.	34	39	31	40	32	40
C53	E.CAP.	45	50	47	43	45	49
C54	E.CAP.	39	46	42	37	41	44
C55	E.CAP.	34	40	37	29	36	35
D1	BRIDGE DIODE	49	48	49	56	43	54
D101	DIODE	57	49	60	55	55	63
D103	DIODE	48	47	43	47	43	52
D51	S.B.D	94	90	95	89	95	95
Q1	MOSFET	69	65	70	71	64	72
T1	TRANSFORMER	51	49	52	52	50	52
L1	BALUN COIL	31	30	27	38	25	34
L51	CHOKE COIL	49	52	54	42	49	49
PC101	PHOTO COUPLER	35	39	30	35	31	42

出力ディレーティング Output Derating		ΔT Temperature Rise (°C)					
		100VAC					
		Ta=70°C Force air cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	10	17	16	11	9	10
C4	E.CAP.	10	16	16	11	10	9
C6	E.CAP.	6	15	14	7	6	6
C53	E.CAP.	11	20	19	11	11	11
C54	E.CAP.	9	18	17	9	8	8
C55	E.CAP.	5	11	12	7	5	5
D1	BRIDGE DIODE	24	31	33	24	22	21
D101	DIODE	23	24	25	26	22	21
D103	DIODE	10	18	17	12	9	10
D51	S.B.D	39	38	36	37	39	42
Q1	MOSFET	30	30	33	32	28	26
T1	TRANSFORMER	16	22	21	16	16	17
L1	BALUN COIL	14	23	22	14	14	13
L51	CHOKE COIL	11	19	20	14	11	11
PC101	PHOTO COUPLER	5	12	11	6	5	6

出力ディレーティング Output Derating		ΔT Temperature Rise (°C)					
		200VAC					
		Ta=70°C Force air cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	11	19	18	13	10	11
C4	E.CAP.	12	18	19	13	12	11
C6	E.CAP.	6	17	15	7	6	6
C53	E.CAP.	13	24	23	12	13	12
C54	E.CAP.	10	21	20	11	10	9
C55	E.CAP.	6	15	14	8	6	6
D1	BRIDGE DIODE	22	31	33	24	20	19
D101	DIODE	28	28	30	32	26	26
D103	DIODE	12	22	21	14	12	13
D51	S.B.D	46	44	43	43	46	49
Q1	MOSFET	41	40	45	44	39	36
T1	TRANSFORMER	20	28	27	20	21	21
L1	BALUN COIL	10	20	19	10	10	9
L51	CHOKE COIL	14	25	24	17	14	14
PC101	PHOTO COUPLER	6	14	13	7	6	6

MODEL : ZWS50C-48

(1) 測定条件 Measuring Conditions

取付方法 Mounting Method (標準取付 : A) (Standard Mounting : A)	Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
						
入力電圧 V_{in} Input Voltage	100VAC / 200VAC					
出力電圧 V_{out} Output Voltage	48V					
出力電流 I_{out} Output Current	1.10A / 1.25A					

(2) 測定結果 Measuring Results

出力ディレーティング Output Derating		ΔT Temperature Rise ($^{\circ}C$)					
		100VAC					
		$T_a=50^{\circ}C$ Convection cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	43	42	35	38	40	48
C4	E.CAP.	39	36	33	34	38	37
C6	E.CAP.	38	40	31	35	38	44
C53	E.CAP.	24	25	19	21	30	27
C54	E.CAP.	22	24	17	19	28	25
C55	E.CAP.	20	22	15	16	25	22
D1	BRIDGE DIODE	65	63	64	66	59	71
D101	DIODE	46	37	45	41	49	52
D103	DIODE	40	39	33	34	39	44
D51	S.B.D	47	41	42	43	53	47
Q1	MOSFET	67	62	66	64	65	70
T1	TRANSFORMER	41	37	37	37	43	41
L1	BALUN COIL	52	51	47	54	46	55
L51	CHOKE COIL	28	29	22	24	33	31
PC101	PHOTO COUPLER	31	34	22	26	31	37

出力ディレーティング Output Derating		ΔT Temperature Rise ($^{\circ}C$)					
		200VAC					
		$T_a=50^{\circ}C$ Convection cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	36	34	30	33	32	40
C4	E.CAP.	31	32	26	29	29	30
C6	E.CAP.	32	32	26	31	30	35
C53	E.CAP.	24	27	19	21	27	26
C54	E.CAP.	22	26	17	19	25	25
C55	E.CAP.	19	24	15	16	23	22
D1	BRIDGE DIODE	44	42	43	47	39	48
D101	DIODE	41	33	40	38	41	45
D103	DIODE	36	34	29	32	33	39
D51	S.B.D	47	42	42	44	51	47
Q1	MOSFET	48	44	49	48	46	50
T1	TRANSFORMER	42	38	39	40	41	42
L1	BALUN COIL	32	31	29	36	28	35
L51	CHOKE COIL	29	31	23	25	32	32
PC101	PHOTO COUPLER	27	29	20	24	25	32

出力デレーティング Output Derating		ΔT Temperature Rise (°C)					
		100VAC					
		Ta=70°C Force air cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	13	17	19	13	12	12
C4	E.CAP.	14	13	16	15	13	15
C6	E.CAP.	7	15	16	7	7	8
C53	E.CAP.	6	6	9	6	6	5
C54	E.CAP.	5	6	9	5	5	5
C55	E.CAP.	3	4	7	4	3	3
D1	BRIDGE DIODE	36	41	44	36	33	34
D101	DIODE	20	22	19	20	19	19
D103	DIODE	10	15	16	11	10	10
D51	S.B.D	17	19	14	16	14	18
Q1	MOSFET	38	39	37	41	37	40
T1	TRANSFORMER	15	15	18	16	15	15
L1	BALUN COIL	25	33	38	24	22	27
L51	CHOKO COIL	7	9	12	8	7	7
PC101	PHOTO COUPLER	5	8	11	5	4	5

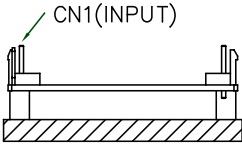
出力デレーティング Output Derating		ΔT Temperature Rise (°C)					
		200VAC					
		Ta=70°C Force air cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IC	11	16	17	12	10	11
C4	E.CAP.	10	11	13	11	9	10
C6	E.CAP.	6	13	14	7	5	6
C53	E.CAP.	6	6	10	6	5	6
C54	E.CAP.	5	7	10	6	5	5
C55	E.CAP.	4	5	8	4	3	4
D1	BRIDGE DIODE	22	27	29	23	21	20
D101	DIODE	19	22	18	19	16	18
D103	DIODE	10	14	15	11	9	10
D51	S.B.D	19	20	15	16	17	20
Q1	MOSFET	27	29	28	31	26	28
T1	TRANSFORMER	18	18	21	19	18	19
L1	BALUN COIL	13	19	23	14	12	13
L51	CHOKO COIL	8	10	13	8	7	8
PC101	PHOTO COUPLER	4	7	10	5	4	4

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

MODEL : ZWS50C

空冷条件: 自然空冷 Cooling condition: Convection cooling

取付方向 A
Mounting A



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

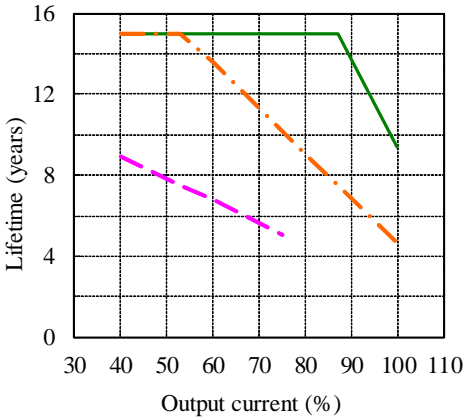
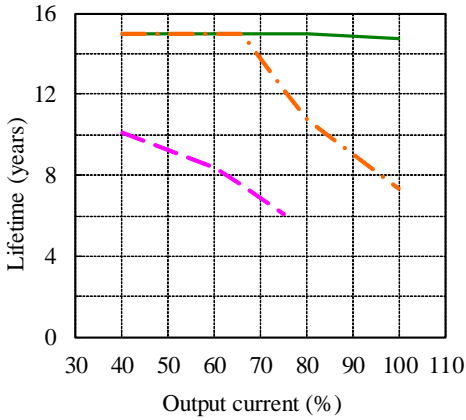
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.1
60%		15.0	15.0	8.4
80%		15.0	10.7	-
100%		14.8	7.4	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.9
60%		15.0	13.6	6.8
80%		15.0	9.0	-
100%		9.4	4.7	-



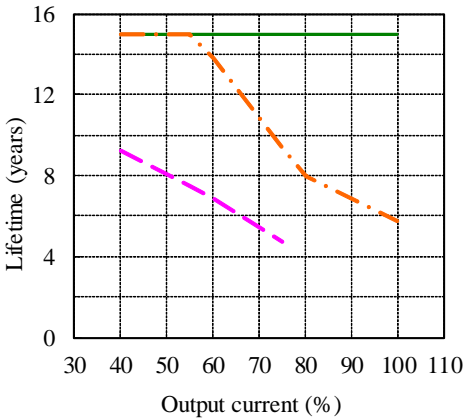
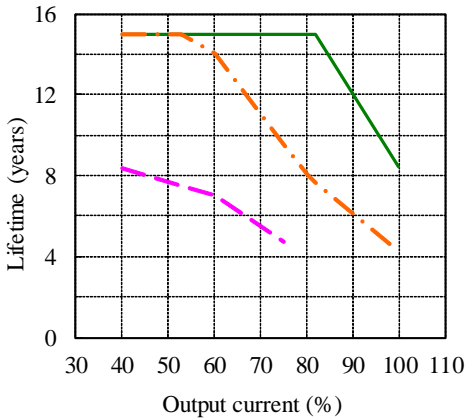
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.3
60%		15.0	14.1	7.0
80%		15.0	8.0	-
100%		8.5	4.2	-

Vin = 200VAC

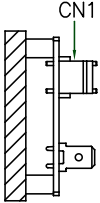
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.3
60%		15.0	13.8	6.9
80%		15.0	8.0	-
100%		15.0	5.8	-



MODEL : ZWS50C

空冷条件：自然空冷 Cooling condition: Convection cooling

取付方向 B
Mounting B



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

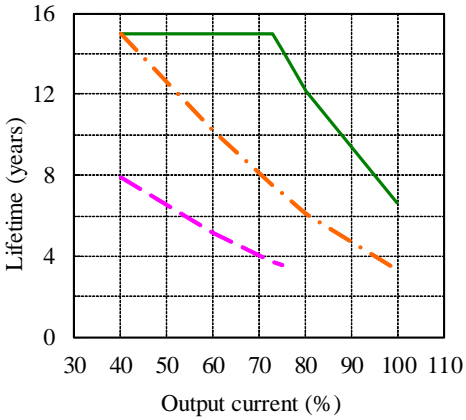
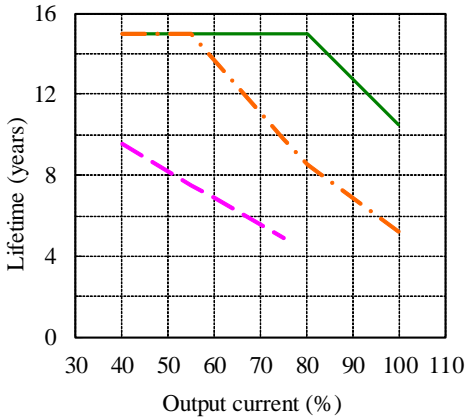
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.5
60%		15.0	13.7	6.8
80%		15.0	8.5	-
100%		10.5	5.2	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	7.9
60%		15.0	10.2	5.1
80%		12.2	6.1	-
100%		6.6	3.3	-



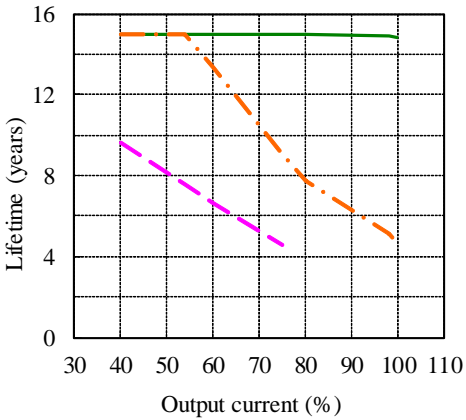
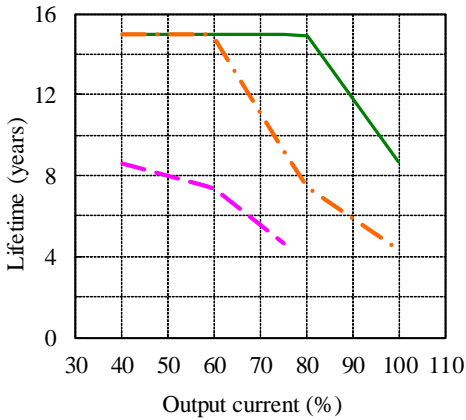
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.6
60%		15.0	14.7	7.4
80%		14.9	7.4	-
100%		8.6	4.3	-

Vin = 200VAC

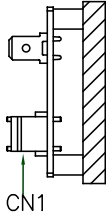
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.6
60%		15.0	13.3	6.7
80%		15.0	7.7	-
100%		14.8	4.7	-



MODEL : ZWS50C

空冷条件：自然空冷 Cooling condition: Convection cooling

取付方向 C
Mounting C



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

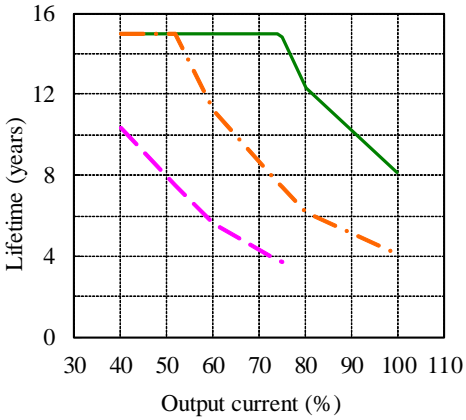
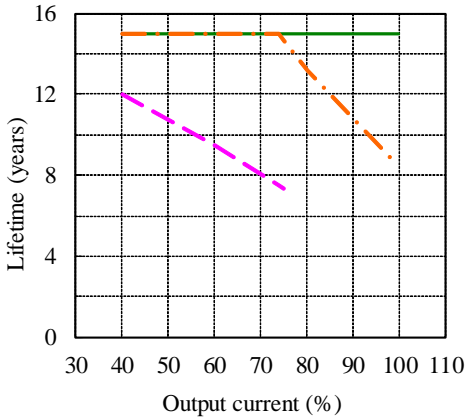
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	12.0
60%		15.0	15.0	9.5
80%		15.0	13.2	-
100%		15.0	8.4	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.3
60%		15.0	11.2	5.6
80%		12.3	6.2	-
100%		8.2	4.1	-



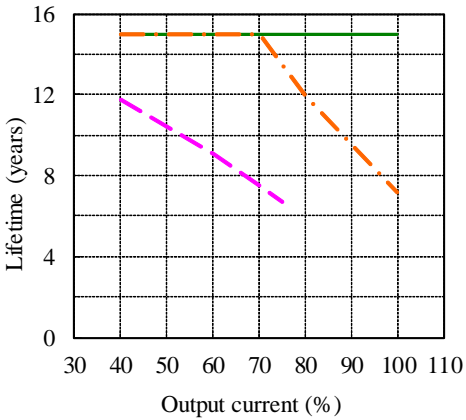
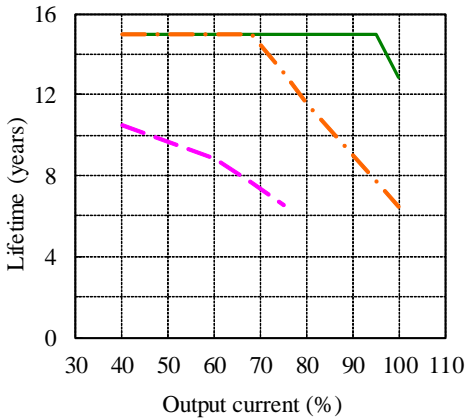
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.5
60%		15.0	15.0	8.9
80%		15.0	11.5	-
100%		12.9	6.4	-

Vin = 200VAC

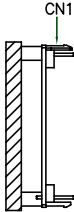
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	11.7
60%		15.0	15.0	9.0
80%		15.0	11.9	-
100%		15.0	7.2	-



MODEL : ZWS50C

空冷条件：自然空冷 Cooling condition: Convection cooling

取付方向 D
Mounting D



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

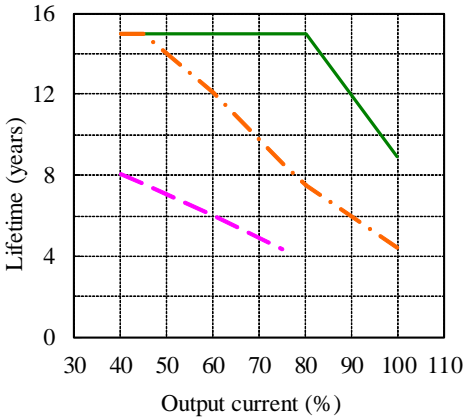
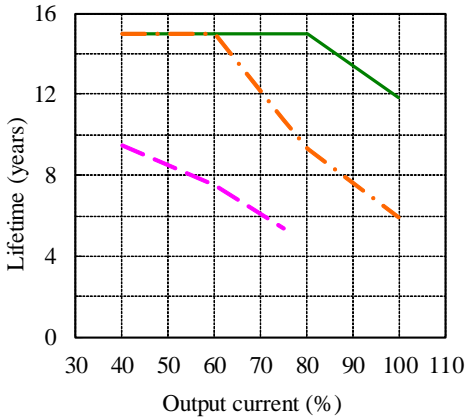
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.5
60%		15.0	15.0	7.5
80%		15.0	9.3	-
100%		11.8	5.9	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.1
60%		15.0	12.1	6.0
80%		15.0	7.5	-
100%		8.9	4.5	-



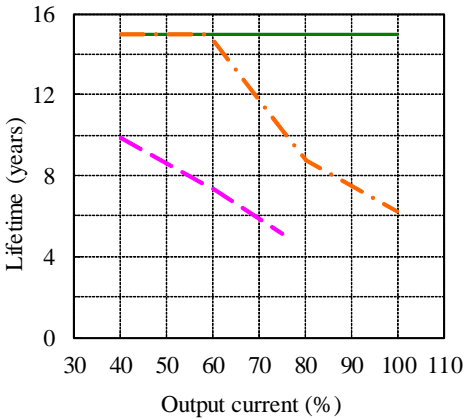
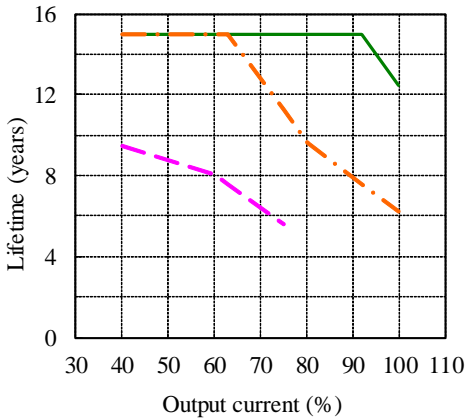
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.4
60%		15.0	15.0	8.1
80%		15.0	9.7	-
100%		12.4	6.2	-

Vin = 200VAC

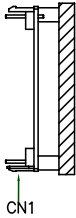
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.9
60%		15.0	14.6	7.3
80%		15.0	8.8	-
100%		15.0	6.2	-



MODEL : ZWS50C

空冷条件：自然空冷 Cooling condition: Convection cooling

取付方向 E
Mounting E



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

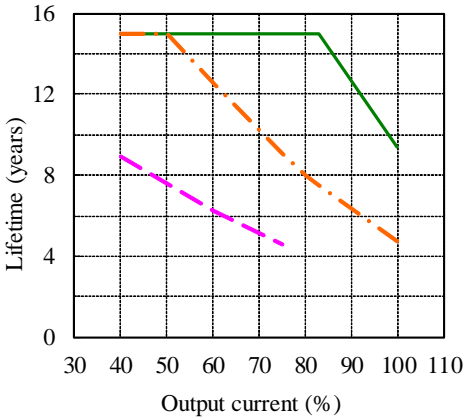
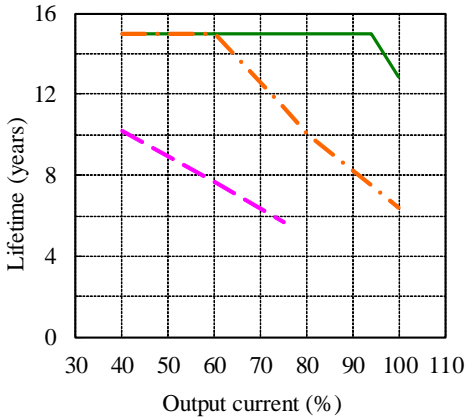
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.2
60%		15.0	15.0	7.7
80%		15.0	10.0	-
100%		12.8	6.4	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.9
60%		15.0	12.5	6.3
80%		15.0	8.0	-
100%		9.4	4.7	-



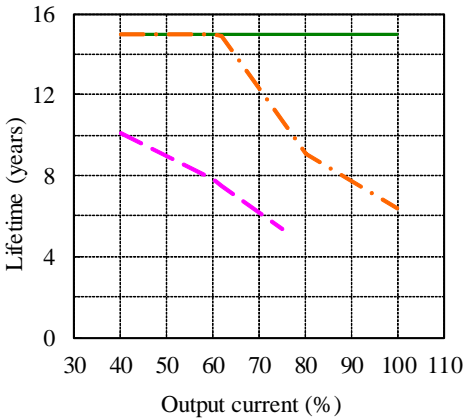
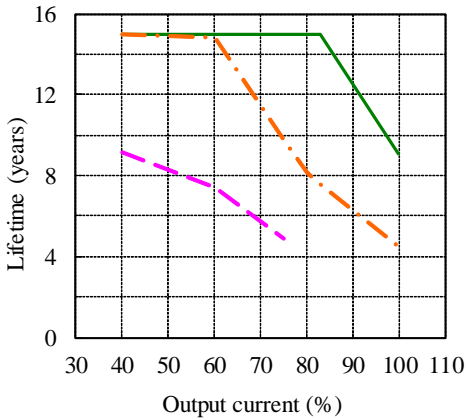
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.2
60%		15.0	14.9	7.4
80%		15.0	8.1	-
100%		9.1	4.5	-

Vin = 200VAC

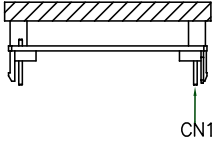
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.1
60%		15.0	15.0	7.8
80%		15.0	9.1	-
100%		15.0	6.4	-



MODEL : ZWS50C

空冷条件：自然空冷 Cooling condition: Convection cooling

取付方向 F
Mounting F



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

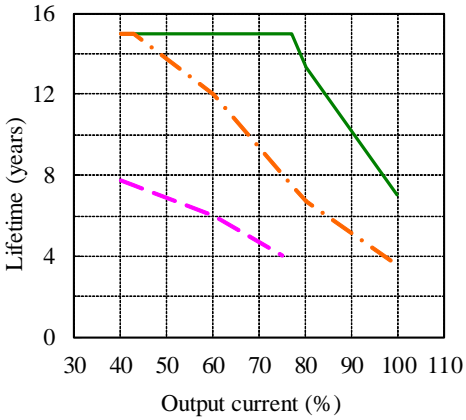
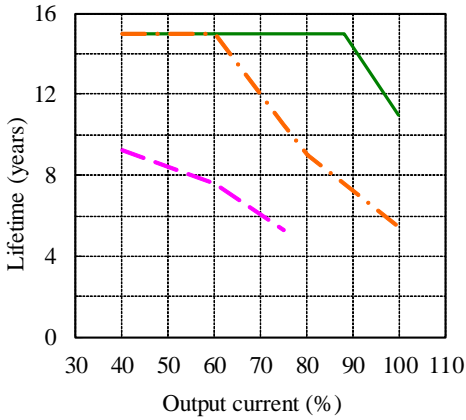
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.3
60%		15.0	15.0	7.6
80%		15.0	9.0	-
100%		11.0	5.5	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	7.8
60%		15.0	12.0	6.0
80%		13.4	6.7	-
100%		7.1	3.5	-



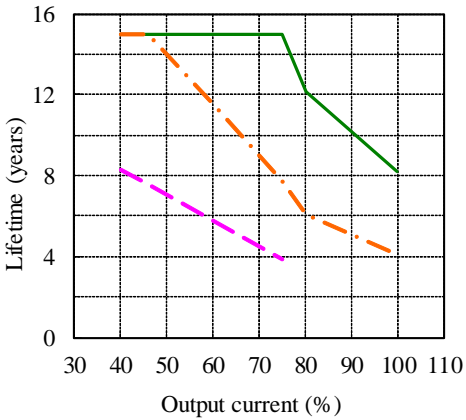
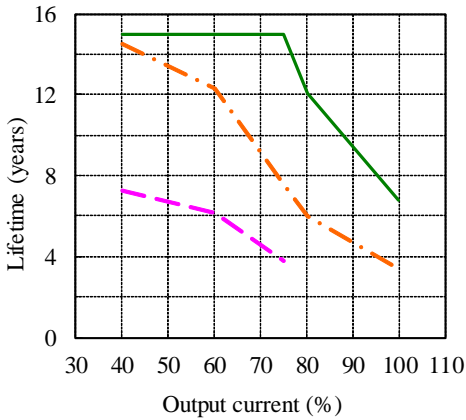
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	14.5	7.3
60%		15.0	12.3	6.1
80%		12.1	6.0	-
100%		6.8	3.4	-

Vin = 200VAC

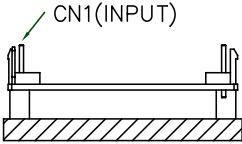
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.3
60%		15.0	11.5	5.8
80%		12.2	6.1	-
100%		8.2	4.1	-



MODEL : ZWS50C

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

取付方向 A
Mounting A



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

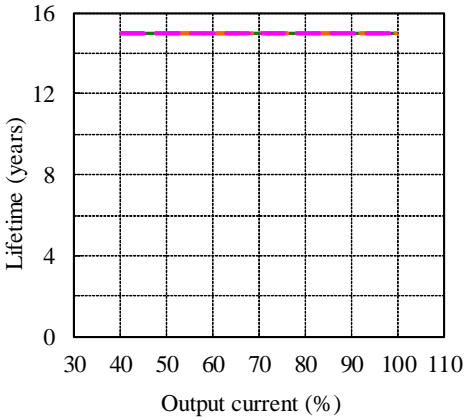
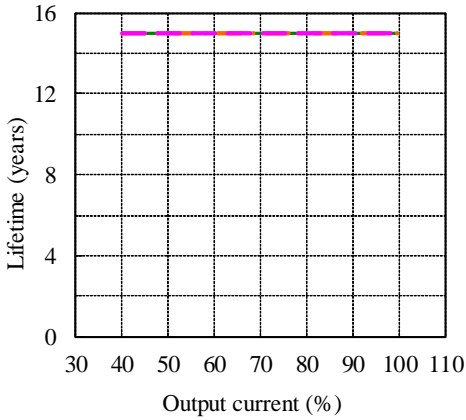
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



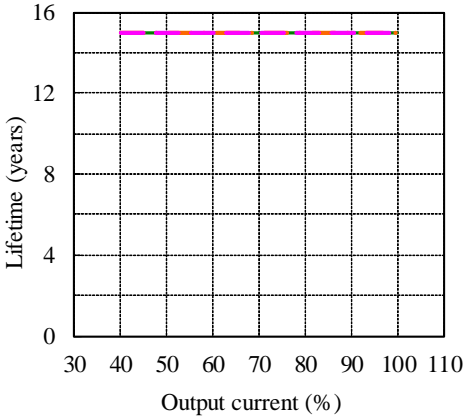
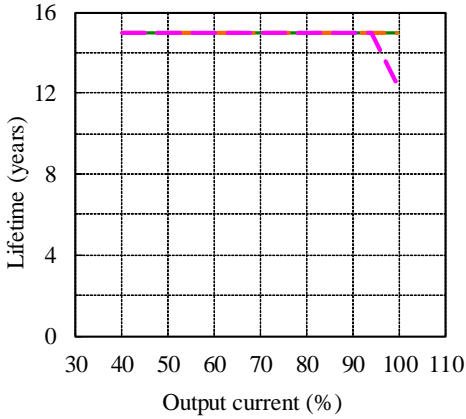
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	12.3

Vin = 200VAC

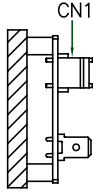
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



MODEL : ZWS50C

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

取付方向 B
Mounting B



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

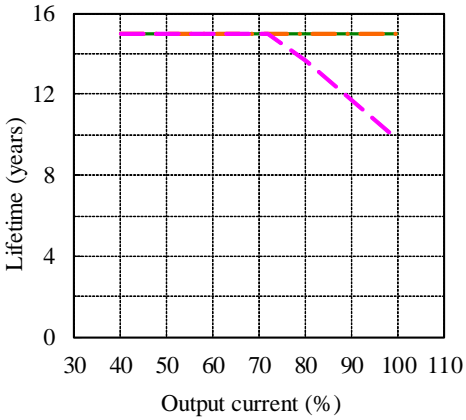
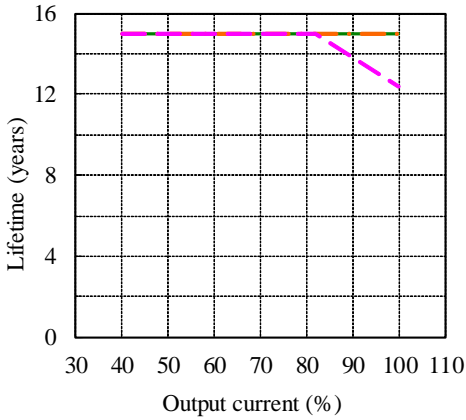
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.4
100%		15.0	15.0	12.4

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	13.6
100%		15.0	15.0	9.8



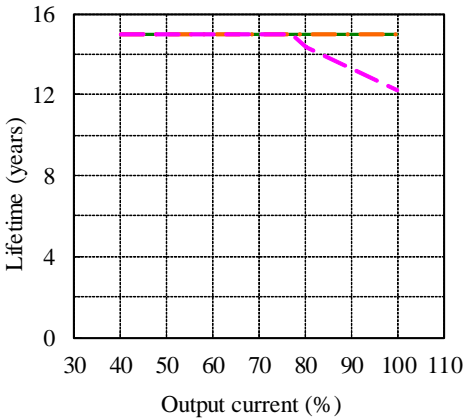
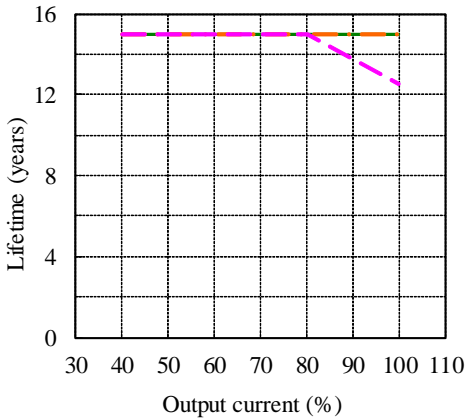
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	12.5

Vin = 200VAC

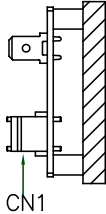
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	14.4
100%		15.0	15.0	14.0



MODEL : ZWS50C

空冷条件：强制空冷 Cooling condition: Force air cooling

取付方向 C
Mounting C



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

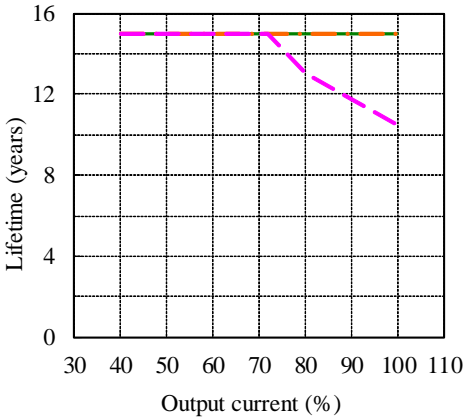
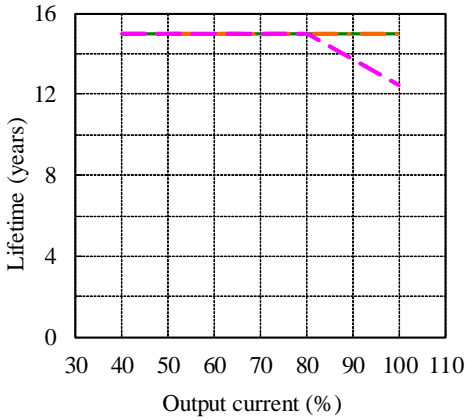
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	12.5

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	13.0
100%		15.0	15.0	10.5



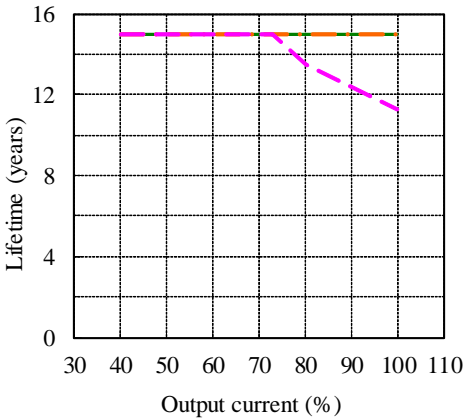
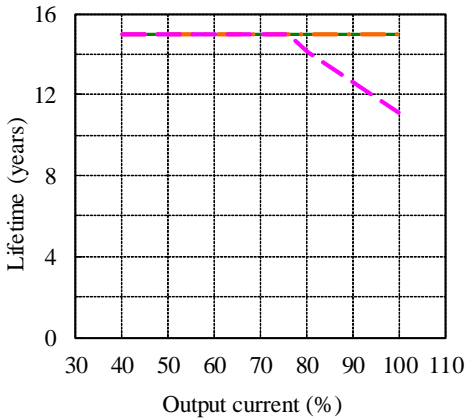
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	14.1
100%		15.0	15.0	11.1

Vin = 200VAC

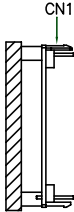
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	13.5
100%		15.0	15.0	12.9



MODEL : ZWS50C

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

取付方向 D
Mounting D



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

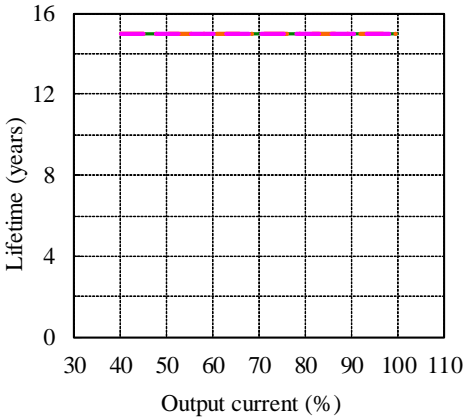
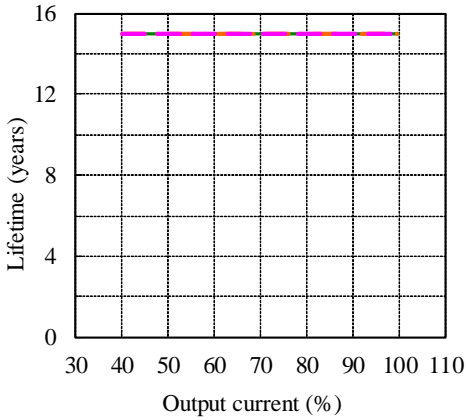
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



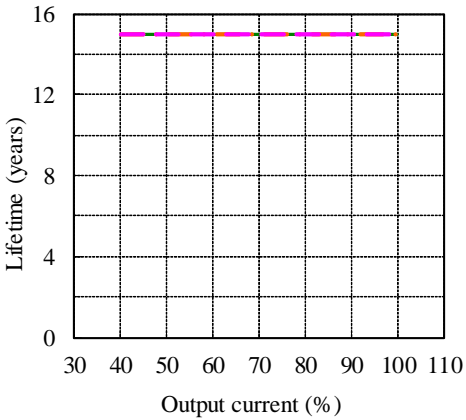
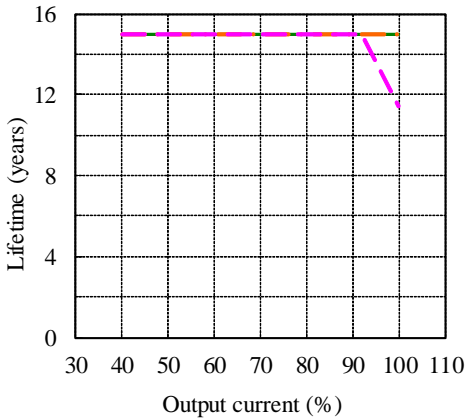
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	11.4

Vin = 200VAC

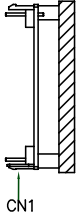
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



MODEL : ZWS50C

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

取付方向 E
Mounting E



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

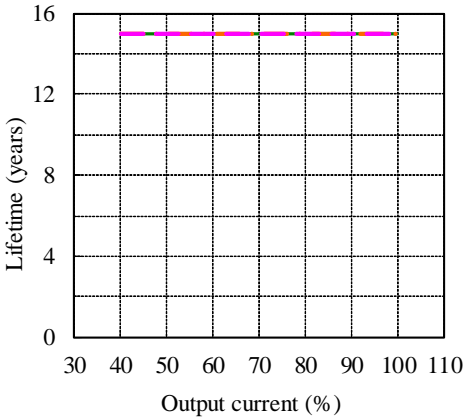
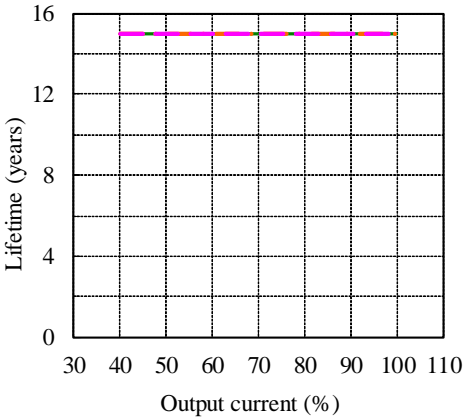
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



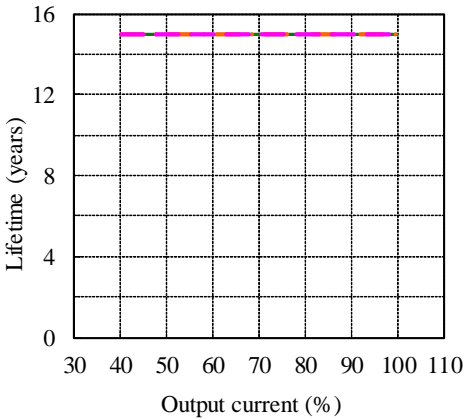
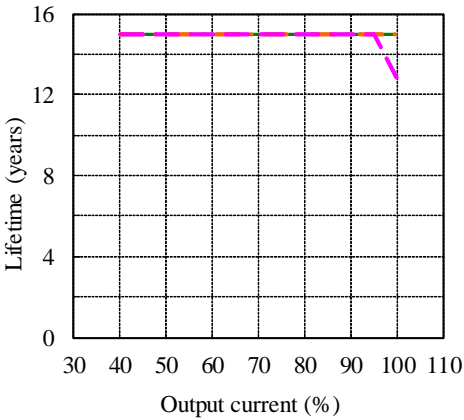
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	12.9

Vin = 200VAC

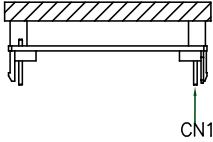
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



MODEL : ZWS50C

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

取付方向 F
Mounting F



Conditions Ta 40°C : — (solid green)
50°C : - - - (dashed orange)
60°C : - - - (dashed magenta)

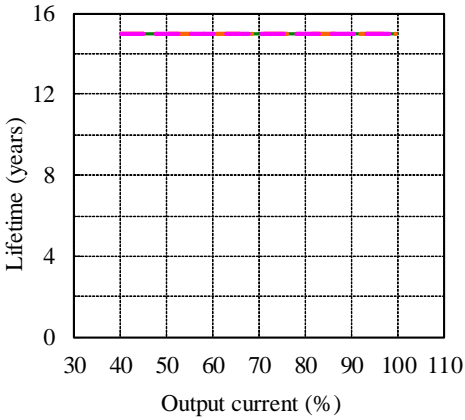
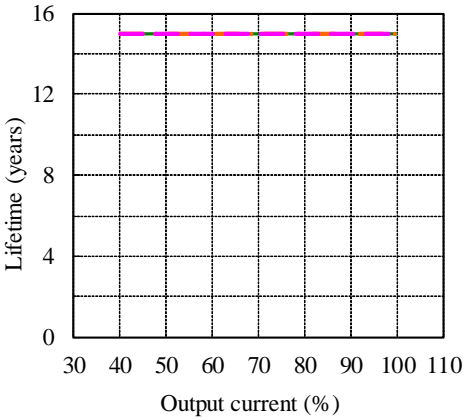
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



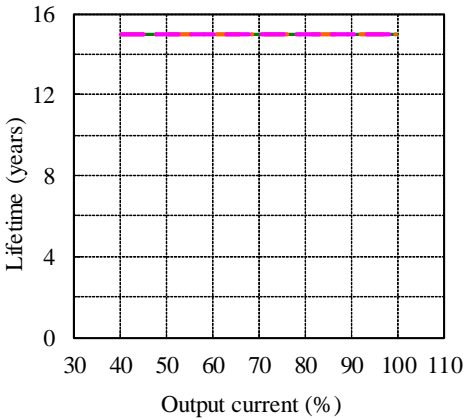
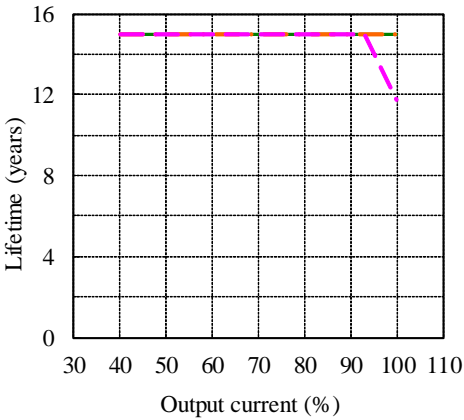
48V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	11.8

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	15.0



5. アブノーマル試験 Abnormal Test

MODEL : ZWS50C-5

(1) 試験条件 Test Conditions

Input : 265VAC Output : 5V, 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	b	c	d	e	f	g	h	I	j	k		l
					発火 Fire	発煙 Smoke	破裂 Burst	異臭 Smell	赤熱 Red hot	破損 Damaged	ヒューズ断 Fuse blown	OVP	OCP	出力断 No output	変化なし No change		その他 Others
1	C4		○								○			○			
2				○										○			
3	C6		○											○			
4				○												○	Hiccup
5	D1	DC-DC	○								○			○			
6		AC-"AC"	○								○			○			
7		AC-"DC"	○								○			○			
8		DC+		○										○			
9		DC-		○										○			
10		AC-"+"		○										○			
11		AC-"-"		○										○			
12	D101	A-K	○											○			
13		A/K		○											○		
14	D103	A-K	○											○			
15		A/K		○										○			
16	D51	A-K	○											○			
17		A/K		○										○			
18	A101	1-2	○											○			
19		2-3	○											○			
20		3-4	○											○			
21		5-6	○											○			
22		6-8	○											○			
23		1		○										○			
24		2		○										○			
25		3		○										○			
26		4		○										○			
27		5		○										○			
28		6		○										○			
29		8		○										○			

(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
					発火	発煙	破裂	異臭	赤熱	破損	ヒューズ断	OV P	OC P	出力断	変化なし		その他
Location No.	Test point	Short	Open	Fire	Smoke	Burst	Smell	Red hot	Damaged	Fuse blown			No output	No change	Others		
30	T1	2-3	○											○			
31		3-5	○											○			
32		6-7	○											○			
33		8,9-10,11	○											○			
34		2		○										○			
35		3		○										○			
36		5		○										○			
37		6		○										○			
38		7		○										○			
39		8,9		○										○			
40		10,11		○										○			
41		L1	1-3	○								○			○		
42	2-4		○								○			○			
43	1			○										○			
44	2			○										○			
45	3			○										○			
46	4			○										○			
47	Q1	D-S	○							○	○			○		Da : Z101	
48		G-S	○											○			
49		G-D	○								○	○			○	Da : Z101, Q1	
50		D		○										○			
51		G		○										○			
52		S		○										○			

6. 振動試験 Vibration Test

MODEL : ZWS50C-5 / ZWS50C-48

(1) 振動試験種類 Vibration Test Class

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

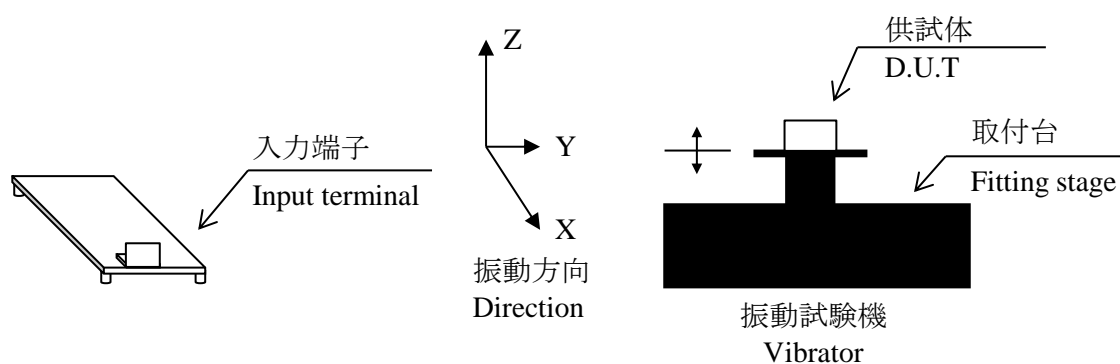
(2) 使用振動試験装置 Equipment Used

IMV (株) 製 EM2201
IMV CORP.

(3) 試験条件 Test Conditions

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

(4) 試験方法 Test Method



(5) 判定条件 Acceptable Conditions

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

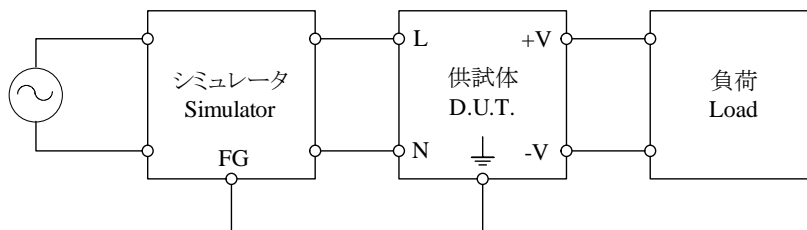
(6) 試験結果 Test Results

合格 OK

7. ノイズシミュレート試験 Noise Simulate Test

MODEL : ZWS50C-5 / ZWS50C-48

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



シミュレータ : INS-4040 (ノイズ研究所)
 Simulator (Noise Laboratory Co.,LTD)

(2) 試験条件 Test Conditions

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

(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

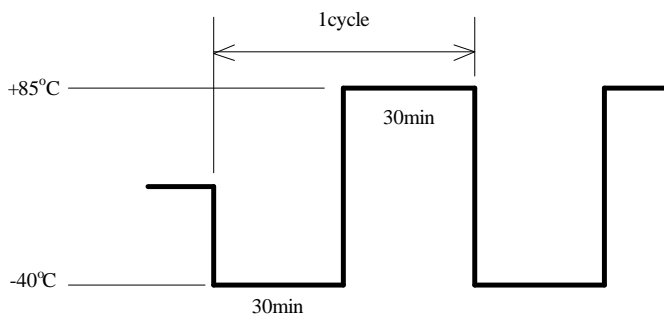
MODEL : ZWS50C-5 / ZWS50C-48

(1) 使用冷熱衝撃装置 Equipment Used (Thermal Shock Chamber)

HITACHI(株) 製 ES-71LH
HITACHI CORP.

(2) 試験条件 Test Conditions

- ・ 電源周囲温度 : -40°C ⇔ 85°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 voltage after test.

(5) 試験結果 Test Results

合格 OK