

ZWS10C

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 : ZWS10C-12

(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 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 (RCR-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)

RCR-9102B

MTBF \doteq 389,511 時間 (Hours)

2. 部品ディレーティング Components Derating

MODEL : ZWS10C-5, ZWS10C-24

(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 : 55°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 : 55°C Ambient temperature
入力電圧 : 100, 200VAC Input voltage	出力電圧、電流 : 24V, 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) 部品デレーティング表 Component Derating List

部品番号 Location No.	$V_{in} = 100VAC$ $T_a = 55^{\circ}C$	$V_{out} = 5VDC$ Convection cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.39 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 94.8^{\circ}C$ D.F. = 63.2 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 30^{\circ}C$	$T_l = 85^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.14 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 102.3^{\circ}C$ D.F. = 58.5 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 45^{\circ}C$	$T_c = 100^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 72 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 87.2^{\circ}C$ D.F. = 49.8 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 31^{\circ}C$	$T_c = 86^{\circ}C$
D201 TSUP5M60SH TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.84 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 138.3^{\circ}C$ D.F. = 79.0 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 76^{\circ}C$	$T_l = 131^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.37 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 102.3^{\circ}C$ D.F. = 68.3 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 45^{\circ}C$	$T_c = 100^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 2 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 75.5^{\circ}C$ D.F. = 68.7 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 20^{\circ}C$	$T_c = 75^{\circ}C$

部品番号 Location No.	$V_{in} = 200VAC$ $T_a = 55^{\circ}C$	$V_{out} = 5VDC$ Convection cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.24 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 85.1^{\circ}C$ D.F. = 56.8 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 24^{\circ}C$	$T_l = 79^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.13 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 102.1^{\circ}C$ D.F. = 58.3 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 45^{\circ}C$	$T_c = 100^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 73 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 86.3^{\circ}C$ D.F. = 49.3 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 30^{\circ}C$	$T_c = 85^{\circ}C$
D201 TSUP5M60SH TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.84 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 142.0^{\circ}C$ D.F. = 81.2 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 79^{\circ}C$	$T_l = 134^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.45 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 108.0^{\circ}C$ D.F. = 72.0 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 50^{\circ}C$	$T_c = 105^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 2 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 76.5^{\circ}C$ D.F. = 69.6 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 21^{\circ}C$	$T_c = 76^{\circ}C$

部品番号 Location No.	$V_{in} = 100VAC$ $T_a = 70^{\circ}C$	$V_{out} = 5VDC$ Force air cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.39 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 92.8^{\circ}C$ D.F. = 61.9 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 13^{\circ}C$	$T_l = 83^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.14 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 86.3^{\circ}C$ D.F. = 49.3 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 14^{\circ}C$	$T_c = 84^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 72 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 79.2^{\circ}C$ D.F. = 45.3%	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 8^{\circ}C$	$T_c = 78^{\circ}C$
D201 TSUP5M60SH TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.84 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 130.0^{\circ}C$ D.F. = 74.3 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 52^{\circ}C$	$T_l = 122^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.37 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 89.5^{\circ}C$ D.F. = 59.7 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 17^{\circ}C$	$T_c = 87^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 2 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 73.5^{\circ}C$ D.F. = 66.9 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 3^{\circ}C$	$T_c = 73^{\circ}C$

部品番号 Location No.	$V_{in} = 200VAC$ $T_a = 70^{\circ}C$	$V_{out} = 5VDC$ Force air cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.24 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 85.3^{\circ}C$ D.F. = 56.8 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 10^{\circ}C$	$T_l = 80^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.13 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 86.5^{\circ}C$ D.F. = 49.4 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 15^{\circ}C$	$T_c = 85^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 73 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 79.3^{\circ}C$ D.F. = 45.3 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 9^{\circ}C$	$T_c = 79^{\circ}C$
D201 TSUP5M60SH TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.84 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 131.0^{\circ}C$ D.F. = 74.9 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 53^{\circ}C$	$T_l = 123^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.45 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 96.0^{\circ}C$ D.F. = 64.0 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 23^{\circ}C$	$T_c = 93^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 2 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 73.5^{\circ}C$ D.F. = 66.9 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 3^{\circ}C$	$T_c = 73^{\circ}C$

部品番号 Location No.	$V_{in} = 100VAC$ $T_a = 55^{\circ}C$	$V_{out} = 24VDC$ Convection cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.43 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 96.8^{\circ}C$ D.F. = 64.5 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 32^{\circ}C$	$T_l = 87^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 80 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 97.3^{\circ}C$ D.F. = 55.6 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 41^{\circ}C$	$T_c = 96^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 46 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 85.5^{\circ}C$ D.F. = 48.9 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 30^{\circ}C$	$T_c = 85^{\circ}C$
D201 TPMR6G TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.39 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 97.2^{\circ}C$ D.F. = 55.5 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 39^{\circ}C$	$T_l = 94^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.41 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 109.4^{\circ}C$ D.F. = 72.9 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 52^{\circ}C$	$T_c = 107^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 1 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 75.5^{\circ}C$ D.F. = 68.7 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 21^{\circ}C$	$T_c = 76^{\circ}C$

部品番号 Location No.	$V_{in} = 200VAC$ $T_a = 55^{\circ}C$	$V_{out} = 24VDC$ Convection cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.27 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 87.7^{\circ}C$ D.F. = 58.5 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 26^{\circ}C$	$T_l = 81^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 83 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 94.4^{\circ}C$ D.F. = 53.9 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 43^{\circ}C$	$T_c = 93^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 52 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 84.9^{\circ}C$ D.F. = 48.5 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 29^{\circ}C$	$T_c = 84^{\circ}C$
D201 TPMR6G TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.39 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 102.8^{\circ}C$ D.F. = 58.7 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 44^{\circ}C$	$T_l = 99^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.47 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 115.0^{\circ}C$ D.F. = 76.8 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 57^{\circ}C$	$T_c = 112^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 1 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 77.3^{\circ}C$ D.F. = 51.5 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 22^{\circ}C$	$T_c = 77^{\circ}C$

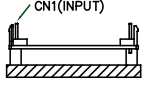
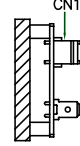
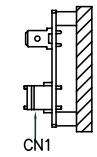
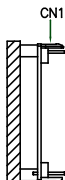
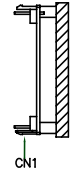
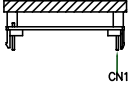
部品番号 Location No.	$V_{in} = 100VAC$ $T_a = 70^{\circ}C$	$V_{out} = 24VDC$ Force air cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.43 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 94.7^{\circ}C$ D.F. = 63.2 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 14^{\circ}C$	$T_l = 84^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 80 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 86.4^{\circ}C$ D.F. = 49.4 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 15^{\circ}C$	$T_c = 85^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 46 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 80.8^{\circ}C$ D.F. = 46.2 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 10^{\circ}C$	$T_c = 80^{\circ}C$
D201 TPMR6G TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.39 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 94.8^{\circ}C$ D.F. = 54.2 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 21^{\circ}C$	$T_l = 91^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.41 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 94.8^{\circ}C$ D.F. = 63.2 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 22^{\circ}C$	$T_c = 92^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 1 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 75.3^{\circ}C$ D.F. = 68.5 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 5^{\circ}C$	$T_c = 75^{\circ}C$

部品番号 Location No.	$V_{in} = 200VAC$ $T_a = 70^{\circ}C$	$V_{out} = 24VDC$ Force air cooling	Load = 100%
D101 D1UBA80-7062 SHINDENGEN	$T_j(\max) = 150^{\circ}C$ $P_d = 0.27 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 86.7^{\circ}C$ D.F. = 57.8 %	$\theta_{j-l} = 25^{\circ}C/W$ $\Delta T_l = 10^{\circ}C$	$T_l = 80^{\circ}C$
D102 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 83 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 87.4^{\circ}C$ D.F. = 49.9 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 16^{\circ}C$	$T_c = 86^{\circ}C$
D103 S1JLW TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 52 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 79.9^{\circ}C$ D.F. = 45.7 %	$\theta_{j-c} = 16.6^{\circ}C/W$ $\Delta T_c = 9^{\circ}C$	$T_c = 79^{\circ}C$
D201 TPMR6G TAIWAN SEMI	$T_j(\max) = 175^{\circ}C$ $P_d = 0.39 W$ $T_j = T_l + ((\theta_{j-l}) \times P_d) = 97.8^{\circ}C$ D.F. = 55.9 %	$\theta_{j-l} = 9.5^{\circ}C/W$ $\Delta T_l = 24^{\circ}C$	$T_l = 94^{\circ}C$
A1 ICE5AR4770BZS INFINEON	$T_j(\max) = 150^{\circ}C$ $P_d = 0.47 W$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 100.1^{\circ}C$ D.F. = 66.8 %	$\theta_{j-c} = 6.55^{\circ}C/W$ $\Delta T_c = 27^{\circ}C$	$T_c = 97^{\circ}C$
PC1 EL817(B)-VG EVERLIGHT	$T_j(\max) = 110^{\circ}C$ $P_d = 1 mW$ $T_j = T_c + ((\theta_{j-c}) \times P_d) = 75.3^{\circ}C$ D.F. = 68.5 %	$\theta_{j-c} = 245.68^{\circ}C/W$ $\Delta T_c = 5^{\circ}C$	$T_c = 75^{\circ}C$

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

MODEL : ZWS10C-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 Vin Input Voltage	100VAC / 200VAC					
出力電圧 Vout Output Voltage	5V					
出力電流 Iout Output Current	2A					

(2) 測定結果 Measuring Results

出力デレーティング Output Derating		ΔT Temperature Rise ($^{\circ}\text{C}$)					
		100VAC					
		Ta=55 $^{\circ}\text{C}$ 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	IPD	45	49	40	43	40	50
A201	CHIP IC	16	23	10	12	19	21
C3	E.CAP.	29	26	23	29	23	29
C4	E.CAP.	25	27	19	23	22	28
C54	E.CAP.	25	24	20	20	27	25
D101	BRIDGE DIODE	30	26	27	33	24	33
D102	DIODE	45	42	38	41	38	47
D103	DIODE	31	30	24	30	26	33
D201	S.B.D	76	64	72	68	65	87
T1	TRANSFORMER	46	43	41	41	43	47
L1	BALUN COIL	22	24	18	26	17	27
L51	CHOKE COIL	41	37	35	33	41	41
PC1	PHOTO COUPLER	20	27	15	17	22	27

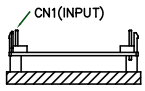
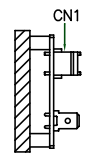
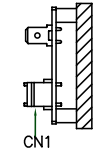
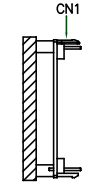
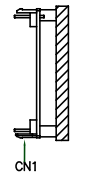
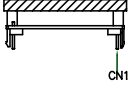
出力デレーティング Output Derating		ΔT Temperature Rise ($^{\circ}\text{C}$)					
		200VAC					
		Ta=55 $^{\circ}\text{C}$ Convection cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IPD	50	54	46	48	44	55
A201	CHIP IC	17	23	11	12	20	22
C3	E.CAP.	27	25	22	29	21	28
C4	E.CAP.	26	28	21	25	22	28
C54	E.CAP.	25	25	20	20	27	26
D101	BRIDGE DIODE	24	21	22	29	19	28
D102	DIODE	45	42	39	42	38	48
D103	DIODE	30	30	24	31	25	33
D201	S.B.D	79	66	74	69	67	89
T1	TRANSFORMER	47	45	43	43	44	49
L1	BALUN COIL	16	16	13	22	11	20
L51	CHOKE COIL	41	38	36	33	42	42
PC1	PHOTO COUPLER	21	28	16	18	22	28

出力ディレーティング Output Derating		ΔT Temperature Rise ($^{\circ}C$)					
		100VAC					
		Ta=70 $^{\circ}C$ 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	IPD	17	25	24	17	17	16
A201	CHIP IC	2	2	3	2	2	1
C3	E.CAP.	7	10	11	7	7	6
C4	E.CAP.	4	9	8	4	4	4
C54	E.CAP.	6	5	6	6	7	6
D101	BRIDGE DIODE	13	14	15	13	13	12
D102	DIODE	14	18	18	14	14	14
D103	DIODE	8	12	12	8	8	8
D201	S.B.D	52	52	49	52	53	52
T1	TRANSFORMER	16	20	21	16	16	14
L1	BALUN COIL	12	10	13	12	13	12
L51	CHOKE COIL	15	11	12	15	15	15
PC1	PHOTO COUPLER	3	8	7	3	3	2

出力ディレーティング Output Derating		ΔT Temperature Rise ($^{\circ}C$)					
		200VAC					
		Ta=70 $^{\circ}C$ 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	IPD	23	33	29	22	23	22
A201	CHIP IC	2	3	3	2	2	2
C3	E.CAP.	7	11	10	7	7	6
C4	E.CAP.	5	11	9	4	5	4
C54	E.CAP.	6	5	6	5	7	6
D101	BRIDGE DIODE	10	11	12	10	10	9
D102	DIODE	15	19	19	14	15	14
D103	DIODE	9	14	12	8	9	8
D201	S.B.D	53	52	51	54	44	53
T1	TRANSFORMER	18	23	23	17	18	16
L1	BALUN COIL	7	8	9	7	8	7
L51	CHOKE COIL	15	12	12	14	16	15
PC1	PHOTO COUPLER	3	10	7	3	3	3

MODEL : ZWS10C-24

(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 Vin Input Voltage	100VAC / 200VAC					
出力電圧 Vout Output Voltage	24V					
出力電流 Iout Output Current	0.5A					

(2) 測定結果 Measuring Results

出力デレーティング Output Derating		ΔT Temperature Rise (°C)					
		100VAC					
		Ta=55°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	IPD	52	52	44	46	46	54
A201	CHIP IC	17	22	14	14	23	22
C3	E.CAP.	31	30	25	29	26	30
C4	E.CAP.	25	27	20	23	24	27
C54	E.CAP.	13	15	11	10	17	15
D101	BRIDGE DIODE	32	33	29	31	26	33
D102	DIODE	41	43	37	36	37	43
D103	DIODE	30	33	25	29	26	33
D201	S.B.D	39	41	37	34	38	41
T1	TRANSFORMER	40	40	36	37	36	39
L1	BALUN COIL	31	31	28	34	26	31
L51	CHOKE COIL	19	20	16	14	23	20
PC1	PHOTO COUPLER	21	26	17	18	24	27

出力デレーティング Output Derating		ΔT Temperature Rise (°C)					
		200VAC					
		Ta=55°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	IPD	57	56	49	51	49	59
A201	CHIP IC	18	23	15	15	23	23
C3	E.CAP.	30	29	24	29	23	29
C4	E.CAP.	26	28	21	24	23	27
C54	E.CAP.	15	16	12	11	18	16
D101	BRIDGE DIODE	26	27	23	27	19	27
D102	DIODE	43	44	38	38	37	44
D103	DIODE	29	32	23	29	24	32
D201	S.B.D	44	46	42	38	42	46
T1	TRANSFORMER	43	42	38	40	37	42
L1	BALUN COIL	20	20	17	24	15	20
L51	CHOKE COIL	20	22	17	15	24	22
PC1	PHOTO COUPLER	22	28	18	19	24	28

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	IPD	22	34	29	24	22	22
A201	CHIP IC	5	9	7	6	5	5
C3	E.CAP.	9	16	13	9	9	9
C4	E.CAP.	6	14	10	8	6	6
C54	E.CAP.	3	3	3	4	3	3
D101	BRIDGE DIODE	14	16	17	16	14	15
D102	DIODE	15	20	19	16	14	15
D103	DIODE	10	15	12	12	9	10
D201	S.B.D	21	21	21	21	21	22
T1	TRANSFORMER	16	25	23	17	16	16
L1	BALUN COIL	20	18	19	21	19	19
L51	CHOKE COIL	6	5	4	6	5	6
PC1	PHOTO COUPLER	5	12	8	6	4	4

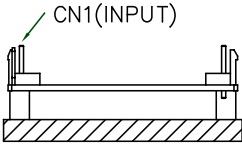
出力デレーティング Output Derating		ΔT Temperature Rise (°C)					
		200VAC					
		Ta=70°C Force air cooling					
部品番号 Location No.	部品名 Part name	取付方向					
		Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
A1	IPD	27	40	34	29	27	27
A201	CHIP IC	5	9	8	6	5	6
C3	E.CAP.	9	16	13	9	9	9
C4	E.CAP.	7	15	10	8	7	7
C54	E.CAP.	4	4	4	4	3	4
D101	BRIDGE DIODE	10	12	12	12	10	10
D102	DIODE	16	22	21	17	15	16
D103	DIODE	9	15	12	11	9	10
D201	S.B.D	24	24	24	24	24	24
T1	TRANSFORMER	18	27	25	19	18	18
L1	BALUN COIL	10	11	11	12	10	10
L51	CHOKE COIL	6	5	5	6	6	6
PC1	PHOTO COUPLER	5	13	9	6	5	5

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

MODEL : ZWS10C

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 : - - - -

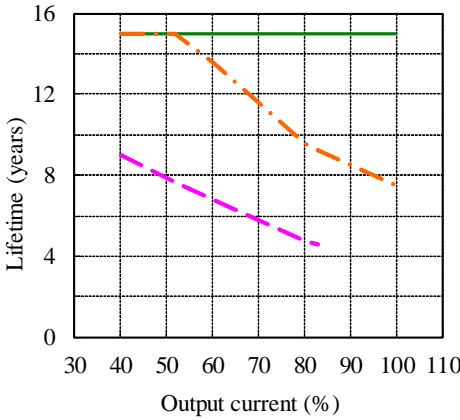
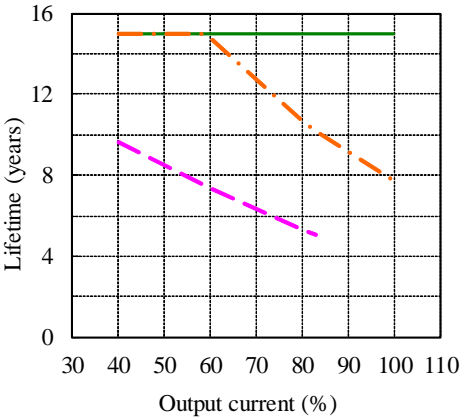
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.6
60%		15.0	14.8	7.4
80%		15.0	10.7	5.3
100%		15.0	7.7	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.0
60%		15.0	13.6	6.8
80%		15.0	9.5	4.8
100%		15.0	7.5	-



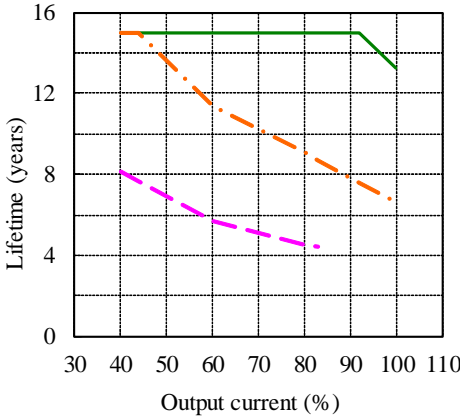
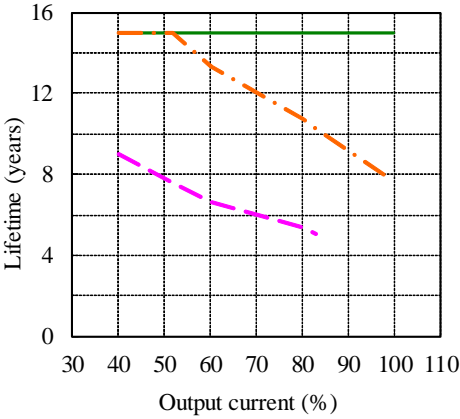
24V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.0
60%		15.0	13.3	6.7
80%		15.0	10.7	5.3
100%		15.0	7.7	-

Vin = 200VAC

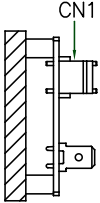
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.1
60%		15.0	11.3	5.7
80%		15.0	9.1	4.5
100%		13.3	6.6	-



MODEL : ZWS10C

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

取付方向 B
Mounting B

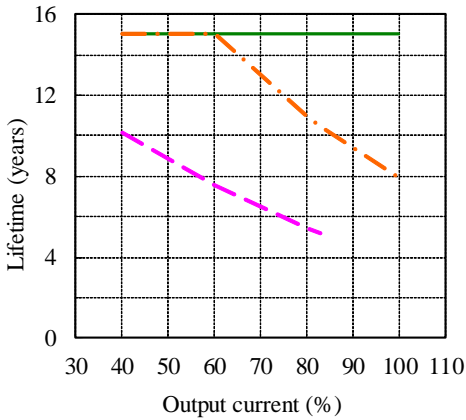


Conditions Ta 40°C : ———
50°C : - - - -
60°C : - - - -

5V

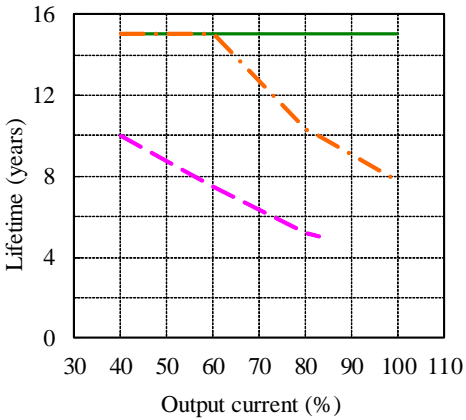
Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.1
60%		15.0	15.0	7.6
80%		15.0	10.9	5.5
100%		15.0	8.0	-



Vin = 200VAC

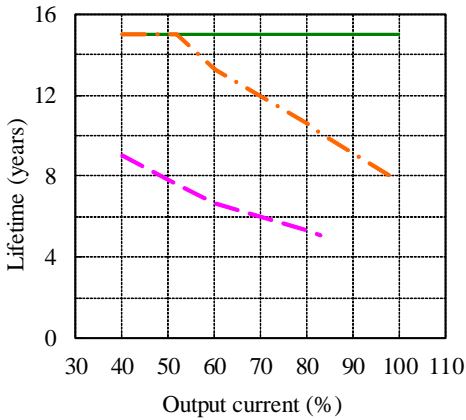
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.0
60%		15.0	14.9	7.5
80%		15.0	10.3	5.2
100%		15.0	7.7	-



24V

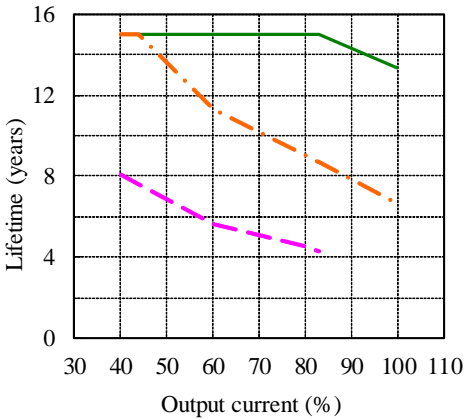
Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.1
60%		15.0	13.3	6.7
80%		15.0	10.6	5.3
100%		15.0	7.8	-



Vin = 200VAC

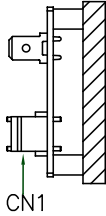
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.1
60%		15.0	11.3	5.7
80%		15.0	9.1	4.5
100%		13.4	6.7	-



MODEL : ZWS10C

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 : - - -

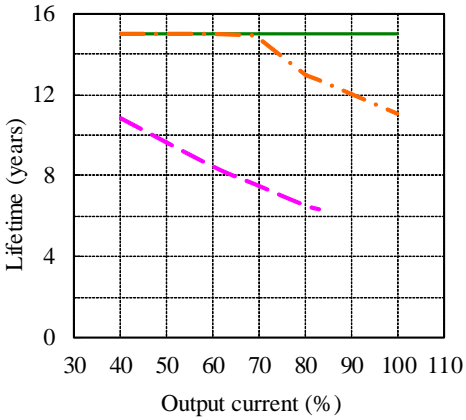
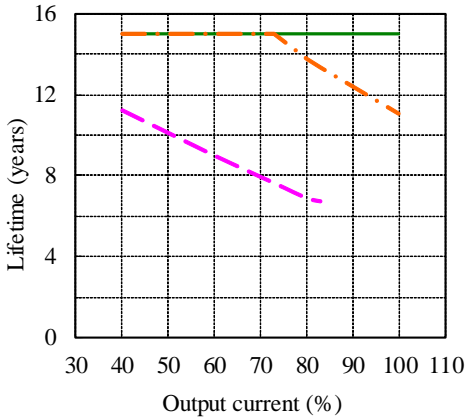
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	11.2
60%		15.0	15.0	9.0
80%		15.0	13.7	6.9
100%		15.0	11.0	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.8
60%		15.0	15.0	8.4
80%		15.0	13.0	6.5
100%		15.0	11.0	-



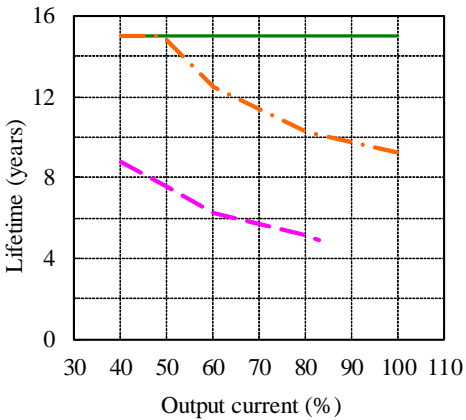
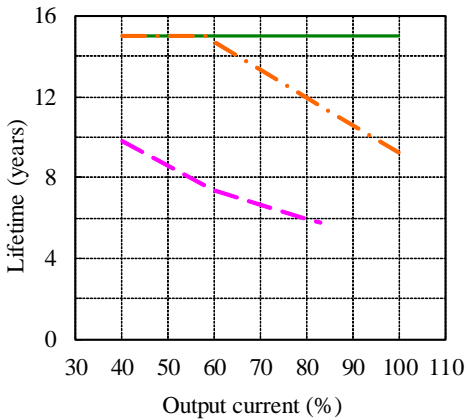
24V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.8
60%		15.0	14.7	7.4
80%		15.0	11.9	6.0
100%		15.0	9.2	-

Vin = 200VAC

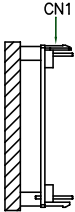
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.8
60%		15.0	12.5	6.3
80%		15.0	10.3	5.1
100%		15.0	9.2	-



MODEL : ZWS10C

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 : - - - -

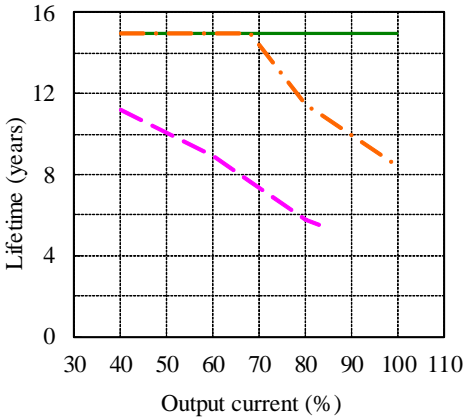
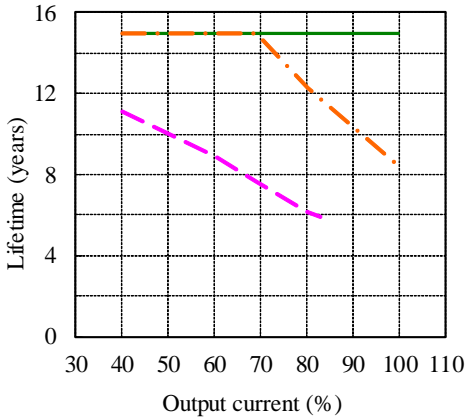
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	11.1
60%		15.0	15.0	8.9
80%		15.0	12.3	6.1
100%		15.0	8.4	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	11.2
60%		15.0	15.0	8.9
80%		15.0	11.5	5.7
100%		15.0	8.4	-



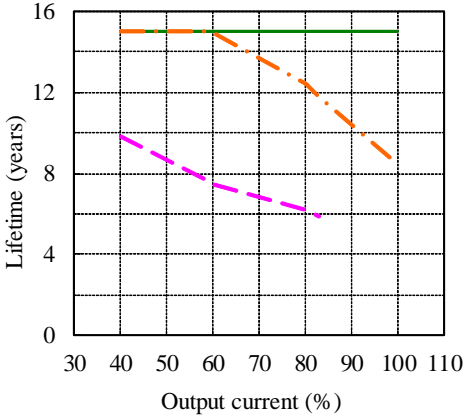
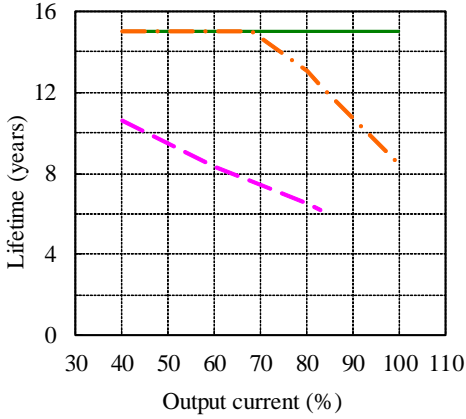
24V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	10.6
60%		15.0	15.0	8.3
80%		15.0	13.0	6.5
100%		15.0	8.5	-

Vin = 200VAC

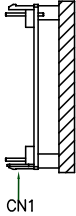
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.8
60%		15.0	14.9	7.5
80%		15.0	12.4	6.2
100%		15.0	8.5	-



MODEL : ZWS10C

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 : - - - -

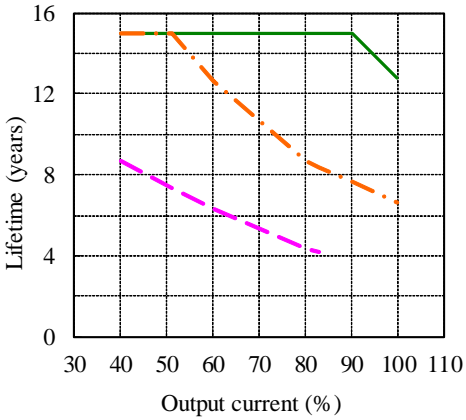
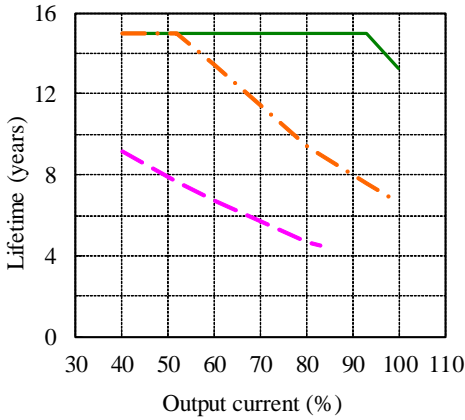
5V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.2
60%		15.0	13.4	6.7
80%		15.0	9.4	4.7
100%		13.2	6.6	-

Vin = 200VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.7
60%		15.0	12.6	6.3
80%		15.0	8.7	4.4
100%		12.8	6.6	-



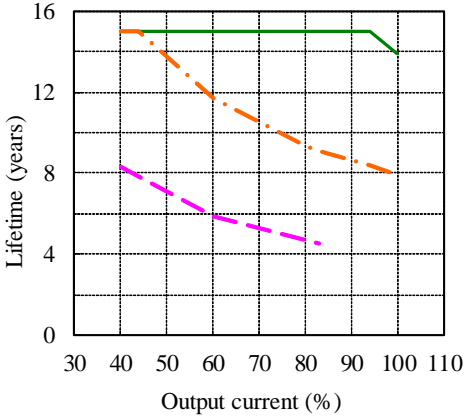
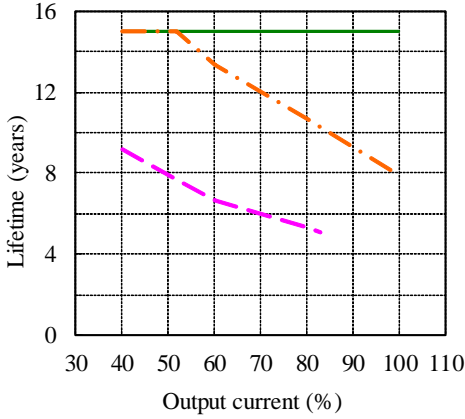
24V

Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.2
60%		15.0	13.4	6.7
80%		15.0	10.7	5.3
100%		15.0	7.9	-

Vin = 200VAC

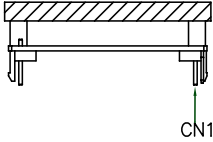
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.3
60%		15.0	11.7	5.9
80%		15.0	9.3	4.7
100%		13.9	7.9	-



MODEL : ZWS10C

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

取付方向 F
Mounting F

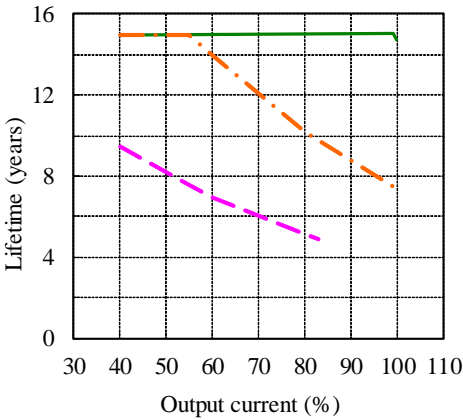


Conditions Ta 40°C : —
50°C : - - -
60°C : - - -

5V

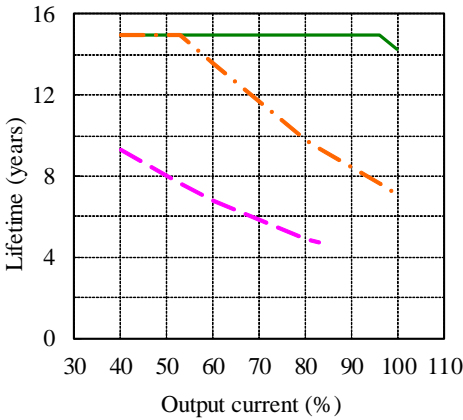
Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.4
60%		15.0	13.9	7.0
80%		15.0	10.2	5.1
100%		14.8	7.4	-



Vin = 200VAC

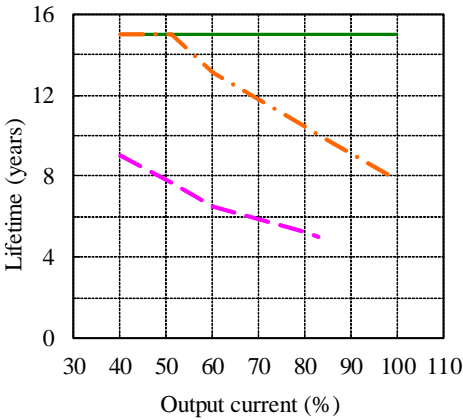
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.3
60%		15.0	13.6	6.8
80%		15.0	9.8	4.9
100%		14.3	7.1	-



24V

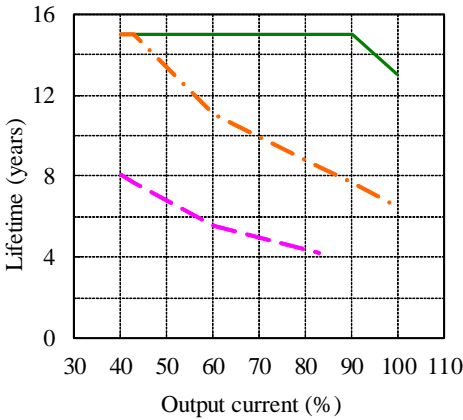
Vin = 100VAC

Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	9.0
60%		15.0	13.1	6.5
80%		15.0	10.5	5.2
100%		15.0	7.8	-



Vin = 200VAC

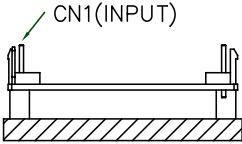
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	8.1
60%		15.0	11.0	5.5
80%		15.0	8.8	4.4
100%		13.0	6.5	-



MODEL : ZWS10C

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 : - - -

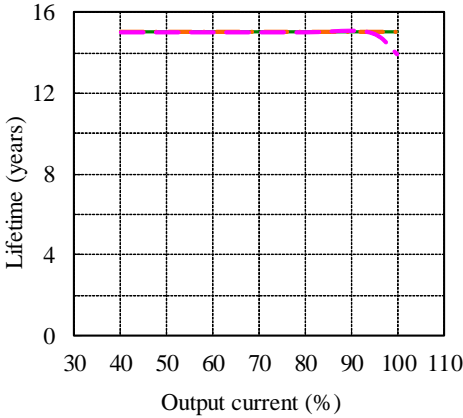
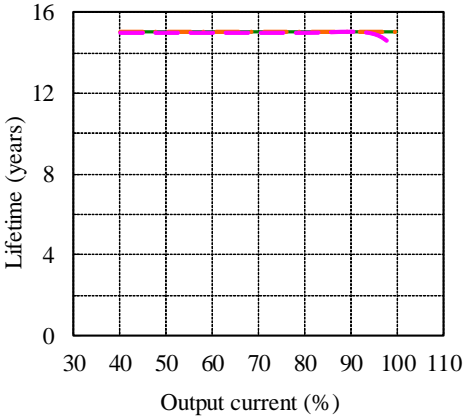
5V

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	14.3

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	13.9



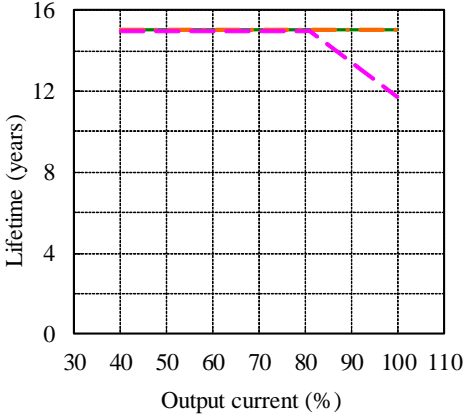
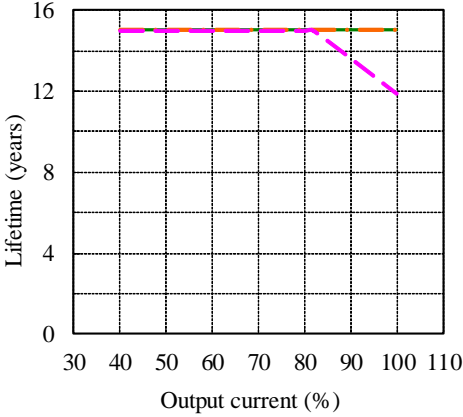
24V

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	11.9

Vin = 200VAC

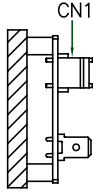
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	11.7



MODEL : ZWS10C

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 : - · - · -

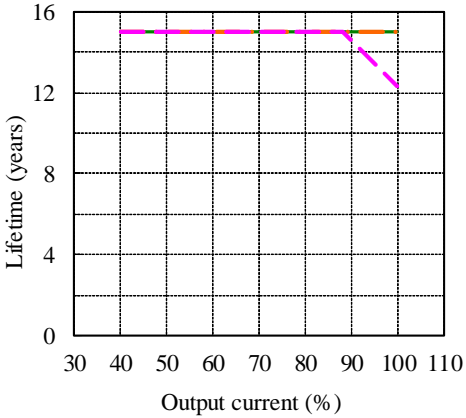
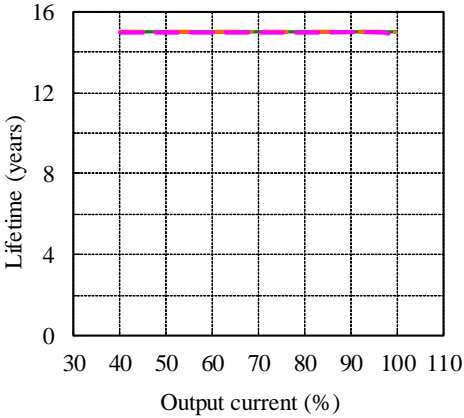
5V

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	15.0
100%		15.0	15.0	14.7

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	12.3



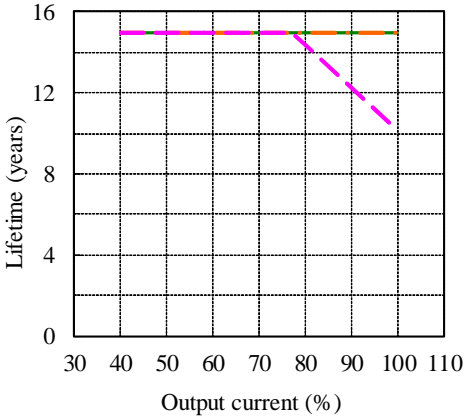
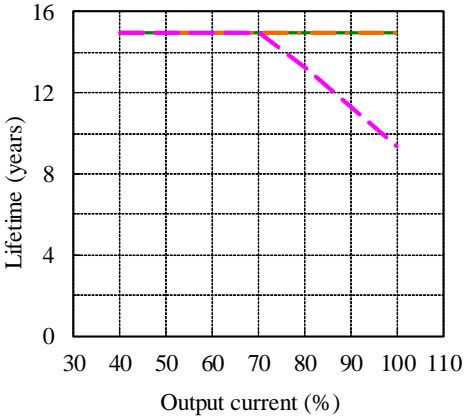
24V

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	13.3
100%		15.0	15.0	9.4

Vin = 200VAC

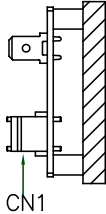
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	14.3
100%		15.0	15.0	10.1



MODEL : ZWS10C

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

取付方向 C
Mounting C



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

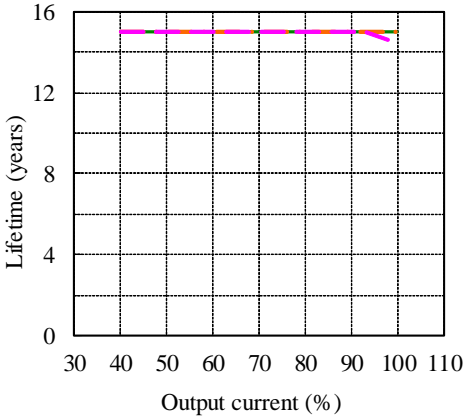
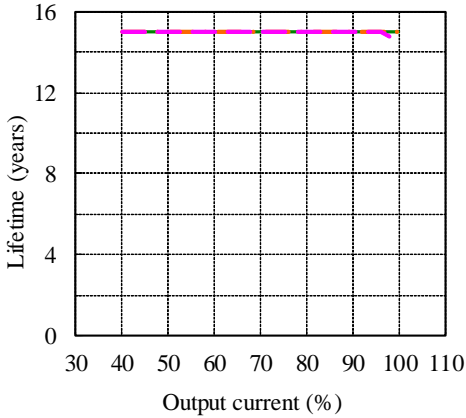
5V

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	14.6

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	14.5



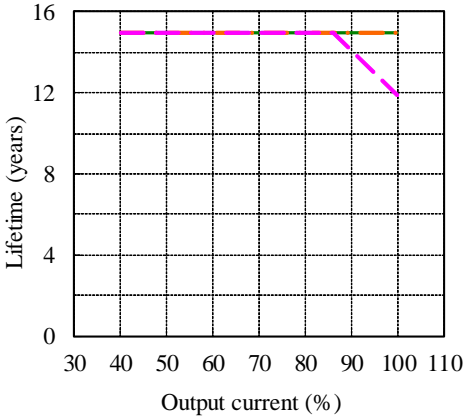
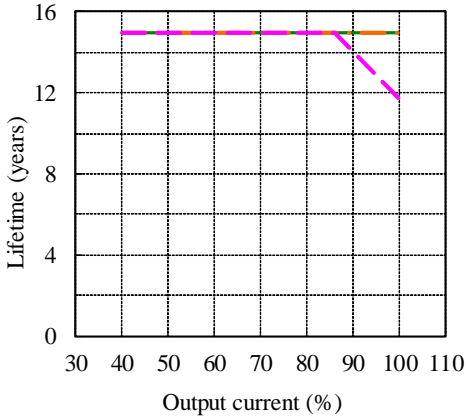
24V

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	11.7

Vin = 200VAC

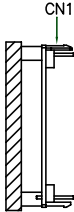
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	11.9



MODEL : ZWS10C

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

取付方向 D
Mounting D



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

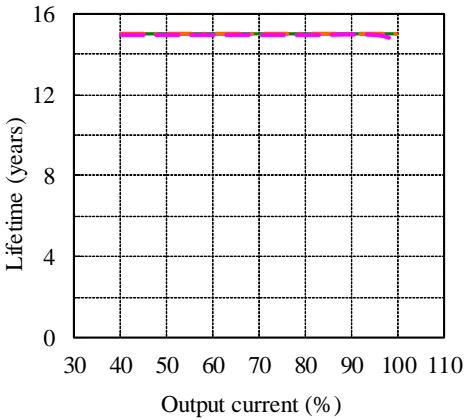
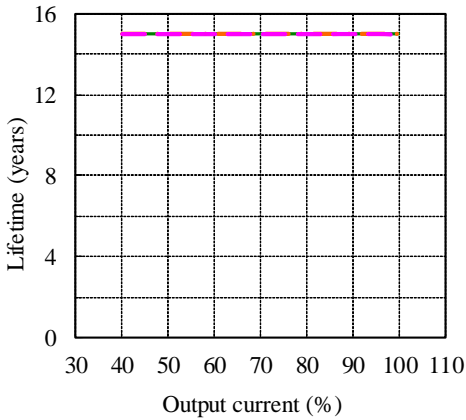
5V

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	14.9

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	14.7



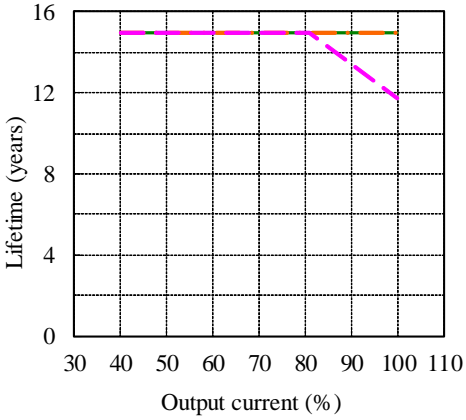
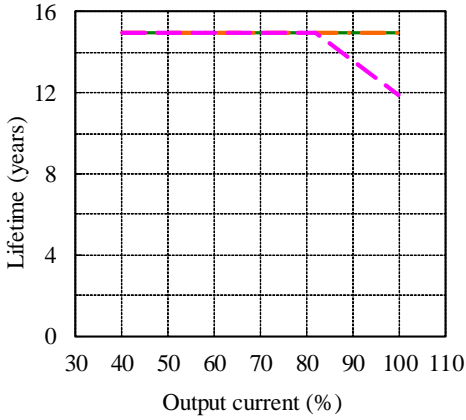
24V

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	11.9

Vin = 200VAC

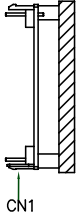
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	11.7



MODEL : ZWS10C

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 : - - - -

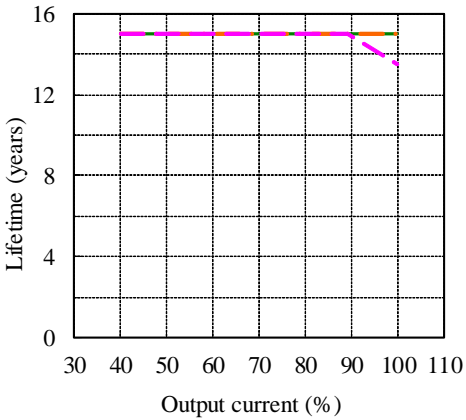
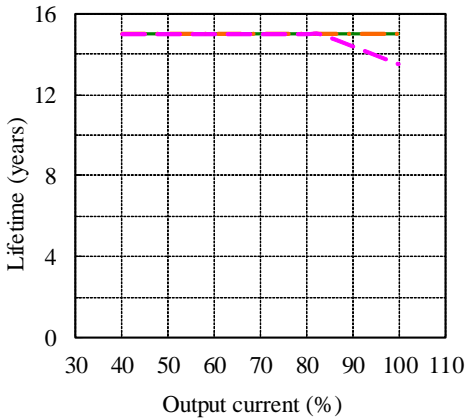
5V

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	13.5

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	15.0
100%		15.0	15.0	13.5



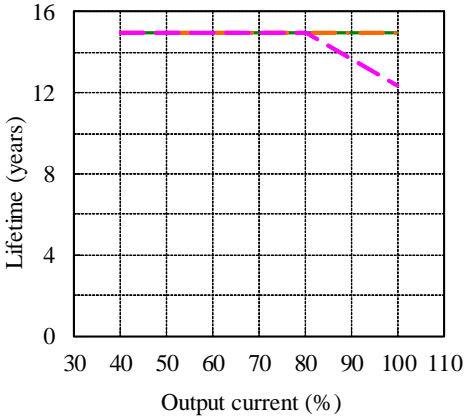
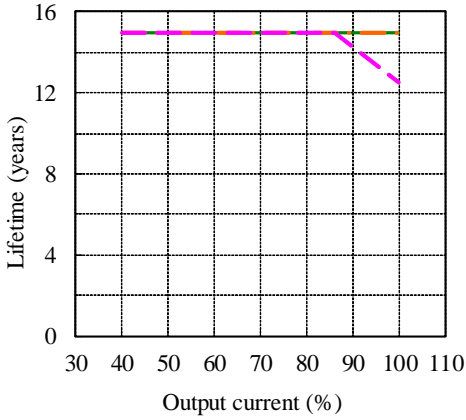
24V

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

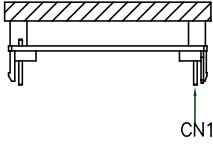
Load	Ta	Lifetime (years)		
		40°C	50°C	60°C
40%		15.0	15.0	15.0
60%		15.0	15.0	15.0
80%		15.0	15.0	15.0
100%		15.0	15.0	12.4



MODEL : ZWS10C

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)

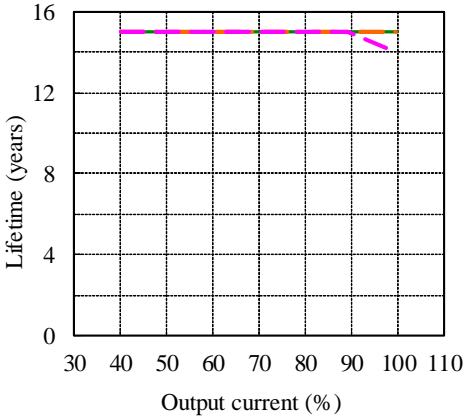
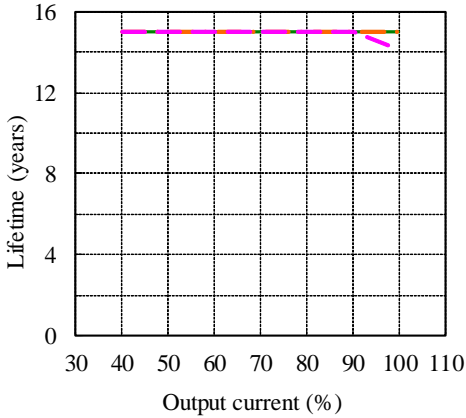
5V

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	14.2

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	14.0



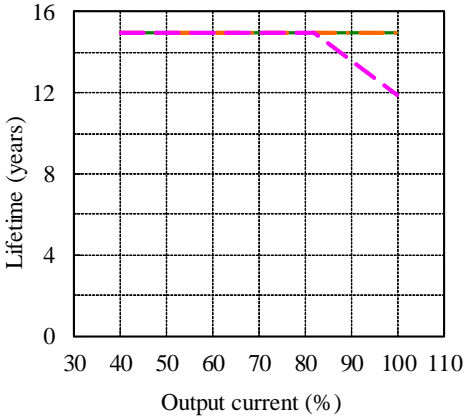
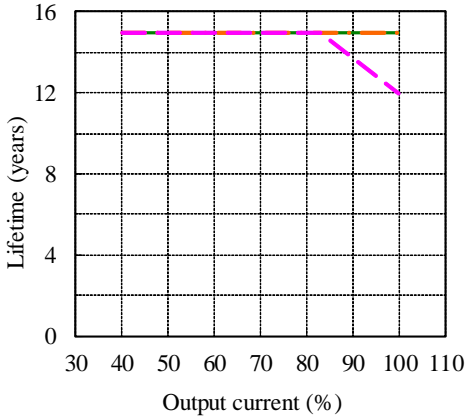
24V

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	12.0

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	11.9



5. アブノーマル試験 Abnormal Test

MODEL : ZWS10C-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 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	C3		O							O	O			O			Da : D101
2				O										O			
3	C4		O											O			
4				O												O	Hiccup
5	D101	DC-DC	O							O	O			O			Da : A1
6		AC-"+"	O								O			O			
7		DC"+"		O										O			
8		DC"-"		O										O			
9		AC		O										O			
10	D102	A-K	O													O	Hiccup
11			A/K		O										O		
12	D103	A-K	O											O			
13			A/K		O											O	Hiccup
14	D201	A-K	O													O	Hiccup
15			A/K		O									O			
16	A1	1-2	O											O			
17		2-3	O											O			
18		3-4	O											O			
19		7-8	O											O			
20		1		O											O		
21		2		O											O		
22		3		O											O		
23		4		O											O		
24		5		O											O		
25		7		O											O		
26	8		O											O			

(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	
27	T1	1-3	O											O			
28		4-5	O													O	Hiccup
29		9-7	O												O		
30		1		O											O		
31		3		O											O		
32		4		O												O	Hiccup
33		5		O												O	Hiccup
34		7		O											O		
35		9		O											O		
36		L1	1-3	O								O			O		
37	2-4		O								O			O			
38	1			O										O			
39	2			O										O			
40	3			O										O			
41	4			O										O			

6. 振動試験 Vibration Test

MODEL : ZWS10C-5 / ZWS10C-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

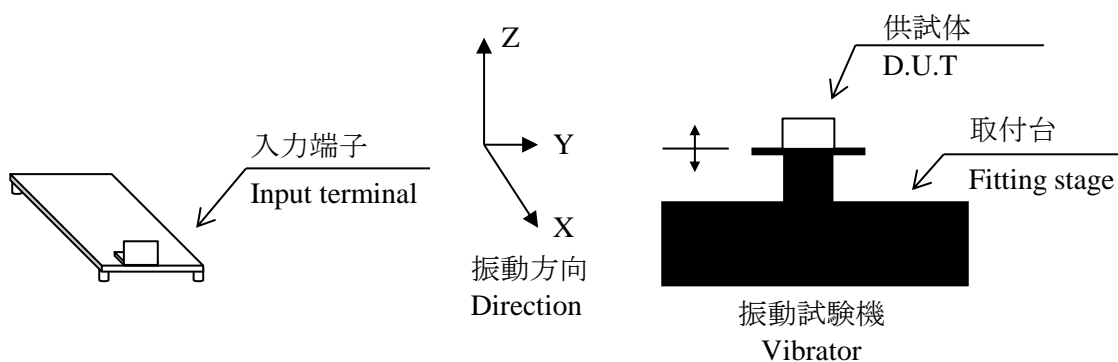
IMV (株) 製 EM2201

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

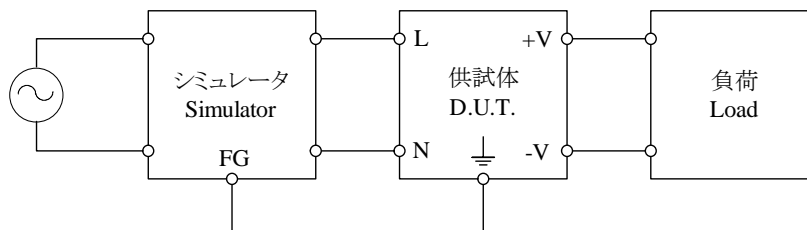
(6) 試験結果 Test Results

合格 OK

7. ノイズシミュレート試験 Noise Simulate Test

MODEL : ZWS10C-5 / ZWS10C-24

(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

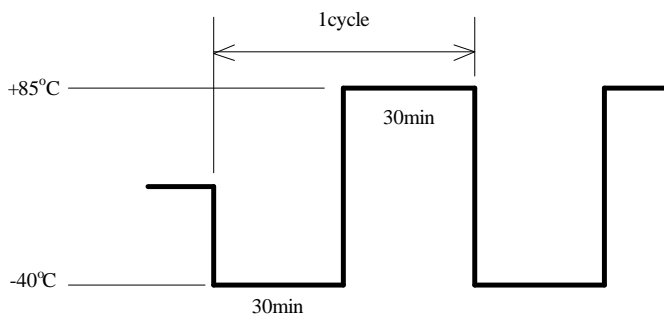
MODEL : ZWS10C-5 / ZWS10C-24

(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℃ ⇔ 85℃
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