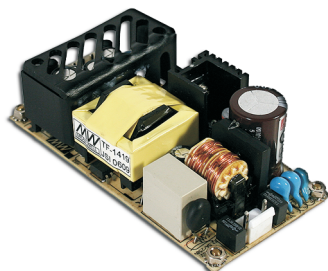




### 60W Triple Output Medical Type

### RPT-60 series



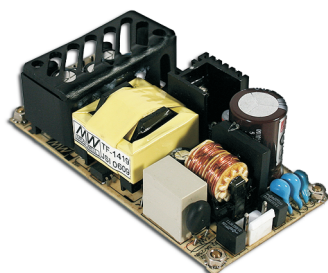
#### ■ Features :

- 4"x2" miniature size
- Universal AC input / Full range
- Low leakage current<200uA
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- UL60601-1/IEC60601-1/EN60601-1 medical safety approved
- UL60950-1/IEC60950-1/EN60950-1 ITE safety approved
- Fixed switch frequency at 100KHz
- 3 years warranty



#### SPECIFICATION

| MODEL                 |                              | RPT-60A                                                                                                      |            |             | RPT-60B                         |            |             | RPT-60C    |             |             |
|-----------------------|------------------------------|--------------------------------------------------------------------------------------------------------------|------------|-------------|---------------------------------|------------|-------------|------------|-------------|-------------|
| OUTPUT                | OUTPUT NUMBER                | CH1                                                                                                          | CH2        | CH3         | CH1                             | CH2        | CH3         | CH1        | CH2         | CH3         |
|                       | DC VOLTAGE                   | 5V                                                                                                           | 12V        | -5V         | 5V                              | 12V        | -12V        | 5V         | 15V         | -15V        |
|                       | RATED CURRENT                | 4A                                                                                                           | 2A         | 0.5A        | 4A                              | 2A         | 0.5A        | 4A         | 1.5A        | 0.5A        |
|                       | CURRENT RANGE                | 0.5 ~ 4.4A                                                                                                   | 0.1 ~ 2.2A | 0.1 ~ 0.55A | 0.5 ~ 4.4A                      | 0.1 ~ 2.2A | 0.1 ~ 0.55A | 0.5 ~ 4.4A | 0.1 ~ 1.65A | 0.1 ~ 0.55A |
|                       | RATED POWER                  | 46.5W                                                                                                        |            |             | 50W                             |            |             | 50W        |             |             |
|                       | PEAK LOAD(10sec.) Note.4     | 51.15W                                                                                                       |            |             | 55W                             |            |             | 55W        |             |             |
|                       | RIPPLE & NOISE (max.) Note.2 | 80mVp-p                                                                                                      | 80mVp-p    | 80mVp-p     | 80mVp-p                         | 80mVp-p    | 100mVp-p    | 80mVp-p    | 100mVp-p    | 150mVp-p    |
|                       | VOLTAGE TOLERANCE Note.3     | +3,-2%                                                                                                       | ±6.0%      | +9,-8%      | +3,-2%                          | ±6.0%      | +6,-10%     | +3,-2%     | ±6.0%       | ±8.0%       |
|                       | LINE REGULATION              | ±0.5%                                                                                                        | ±1.0%      | ±1.0%       | ±0.5%                           | ±1.0%      | ±2.0%       | ±0.5%      | ±2.0%       | ±2.0%       |
|                       | LOAD REGULATION              | ±1.5%                                                                                                        | ±2.0%      | +5,-7%      | ±1.5%                           | ±2.0%      | ±5.0%       | ±1.5%      | ±3.0%       | ±4.0%       |
| INPUT                 | SETUP, RISE TIME             | 200ms, 15ms/230VAC                                                                                           |            |             | 200ms, 15ms/115VAC at full load |            |             |            |             |             |
|                       | HOLD UP TIME (Typ.)          | 70ms/230VAC                                                                                                  |            |             | 15ms/115VAC at full load        |            |             |            |             |             |
|                       | VOLTAGE RANGE                | 90 ~ 264VAC                                                                                                  |            |             | 127 ~ 370VDC                    |            |             |            |             |             |
|                       | FREQUENCY RANGE              | 47 ~ 63Hz                                                                                                    |            |             |                                 |            |             |            |             |             |
|                       | EFFICIENCY (Typ.)            | 77%                                                                                                          |            |             | 78%                             |            |             | 79%        |             |             |
|                       | AC CURRENT (Typ.)            | 1.1A/115VAC                                                                                                  |            |             | 0.7A/230VAC                     |            |             |            |             |             |
| PROTECTION            | INRUSH CURRENT (Typ.)        | COLD START 60A/230VAC                                                                                        |            |             | 30A/115VAC                      |            |             |            |             |             |
|                       | LEAKAGE CURRENT              | For earth <200uA/264VAC, For patient <100uA/264VAC                                                           |            |             |                                 |            |             |            |             |             |
|                       | OVERLOAD                     | 115 ~ 150% rated output power                                                                                |            |             |                                 |            |             |            |             |             |
| ENVIRONMENT           | OVER VOLTAGE                 | CH1: 5.75 ~ 6.75V                                                                                            |            |             |                                 |            |             |            |             |             |
|                       | WORKING TEMP.                | -20 ~ +65°C (Refer to output load derating curve)                                                            |            |             |                                 |            |             |            |             |             |
|                       | WORKING HUMIDITY             | 20 ~ 90% RH non-condensing                                                                                   |            |             |                                 |            |             |            |             |             |
| SAFETY & EMC (Note 5) | STORAGE TEMP., HUMIDITY      | -40 ~ +85°C, 10 ~ 95% RH                                                                                     |            |             |                                 |            |             |            |             |             |
|                       | TEMP. COEFFICIENT            | ±0.03%/°C (0 ~ 45°C)                                                                                         |            |             |                                 |            |             |            |             |             |
|                       | VIBRATION                    | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                                      |            |             |                                 |            |             |            |             |             |
| OTHERS                | SAFETY STANDARDS             | UL60950-1, TUV EN60950-1, UL60601-1, TUV EN60601-1, IEC60601-1 approved                                      |            |             |                                 |            |             |            |             |             |
|                       | WITHSTAND VOLTAGE            | I/P-O/P:4KVAC I/P-FG:1.5KVAC O/P-FG:1.5KVAC                                                                  |            |             |                                 |            |             |            |             |             |
|                       | ISOLATION RESISTANCE         | I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC                                                                     |            |             |                                 |            |             |            |             |             |
|                       | EMI CONDUCTION & RADIATION   | Compliance to EN55011(CISPR11),EN55022 (CISPR22) Class B                                                     |            |             |                                 |            |             |            |             |             |
|                       | HARMONIC CURRENT             | Compliance to EN61000-3-2,-3                                                                                 |            |             |                                 |            |             |            |             |             |
| NOTE                  | EMS IMMUNITY                 | Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN60601-1-2, EN61204-3, medical level, criteria A |            |             |                                 |            |             |            |             |             |
|                       | MTBF                         | 677.8Khrs min. MIL-HDBK-217F (25°C)                                                                          |            |             |                                 |            |             |            |             |             |
|                       | DIMENSION                    | 101.6*50.8*29mm (L*W*H)                                                                                      |            |             |                                 |            |             |            |             |             |
| PACKING               |                              | 0.15Kg; 96pcs/15.4Kg/0.89CUFT                                                                                |            |             |                                 |            |             |            |             |             |
|                       |                              |                                                                                                              |            |             |                                 |            |             |            |             |             |



#### ■ Features :

- 4"x2" miniature size
- Universal AC input / Full range
- Low leakage current<200uA
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- UL60601-1/IEC60601-1/EN60601-1 medical safety approved
- UL60950-1/IEC60950-1/EN60950-1 ITE safety approved
- Fixed switch frequency at 100KHz
- 3 years warranty

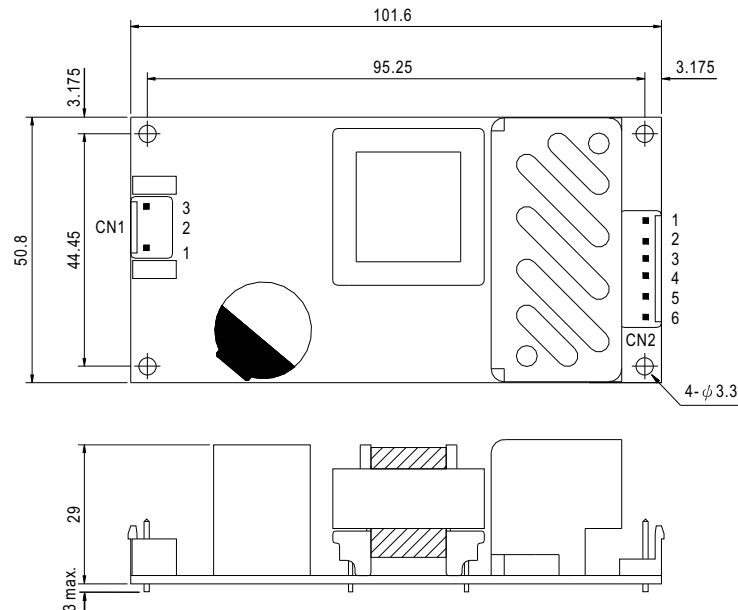


#### SPECIFICATION

| MODEL                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | RPT-60D                                                                                                                 |            |             | RPT-6003   |                  |             |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------|-------------|------------|------------------|-------------|
| OUTPUT                | OUTPUT NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CH1                                                                                                                     | CH2        | CH3         | CH1        | CH2              | CH3         |
|                       | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5V                                                                                                                      | 24V        | 12V         | 3.3V       | 5V               | 12V         |
|                       | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3.5A                                                                                                                    | 1A         | 0.5A        | 5A         | 3A               | 0.7A        |
|                       | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.5 ~ 3.85A                                                                                                             | 0.1 ~ 1.1A | 0.1 ~ 0.55A | 0.5 ~ 5.5A | 0.3 ~ 3.3A       | 0.1 ~ 0.77A |
|                       | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 47.5W                                                                                                                   |            |             | 39.9W      |                  |             |
|                       | PEAK LOAD(10sec.)    Note.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 52.25W                                                                                                                  |            |             | 43.9W      |                  |             |
|                       | RIPPLE & NOISE (max.)    Note.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 80mVp-p                                                                                                                 | 150mVp-p   | 80mVp-p     | 80mVp-p    | 80mVp-p          | 80mVp-p     |
|                       | VOLTAGE TOLERANCE    Note.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | +3,-2%                                                                                                                  | ±6.0%      | ±8.0%       | +3,-2%     | ±8.0%            | +6,-10%     |
|                       | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ±0.5%                                                                                                                   | ±2.0%      | ±2.0%       | ±0.5%      | ±1.0%            | ±2.0%       |
|                       | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ±1.5%                                                                                                                   | ±3.0%      | ±4.0%       | ±1.5%      | ±2.0%            | +5.5,-5%    |
|                       | SETUP, RISE TIME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 200ms, 15ms/230VAC      200ms, 15ms/115VAC at full load                                                                 |            |             |            |                  |             |
|                       | HOLD UP TIME (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 70ms/230VAC      15ms/115VAC at full load                                                                               |            |             |            |                  |             |
| INPUT                 | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 90 ~ 264VAC      127 ~ 370VDC                                                                                           |            |             |            |                  |             |
|                       | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 47 ~ 63Hz                                                                                                               |            |             |            |                  |             |
|                       | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 79%                                                                                                                     |            |             |            | 75%              |             |
|                       | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.1A/115VAC      0.7A/230VAC                                                                                            |            |             |            |                  |             |
|                       | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | COLD START 60A/230VAC      30A/115VAC                                                                                   |            |             |            |                  |             |
|                       | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | For earth <200uA/264VAC, For patient <100uA/264VAC                                                                      |            |             |            |                  |             |
| PROTECTION            | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 115 ~ 150% rated output power<br>Protection type : Hiccup mode, recovers automatically after fault condition is removed |            |             |            |                  |             |
|                       | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CH1: 5.75 ~ 6.75V<br>Protection type : Shut down o/p voltage, re-power on to recover                                    |            |             |            | CH1: 3.8 ~ 4.45V |             |
|                       | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -20 ~ +65℃ (Refer to output load derating curve)                                                                        |            |             |            |                  |             |
| ENVIRONMENT           | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 20 ~ 90% RH non-condensing                                                                                              |            |             |            |                  |             |
|                       | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -40 ~ +85℃, 10 ~ 95% RH                                                                                                 |            |             |            |                  |             |
|                       | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ±0.03%/℃ (0 ~ 45℃)                                                                                                      |            |             |            |                  |             |
|                       | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                                                 |            |             |            |                  |             |
| SAFETY & EMC (Note 5) | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | UL60950-1, TUV EN60950-1, UL60601-1, TUV EN60601-1, IEC60601-1 approved                                                 |            |             |            |                  |             |
|                       | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | I/P-O/P:4KVAC    I/P-FG:1.5KVAC    O/P-FG:1.5KVAC                                                                       |            |             |            |                  |             |
|                       | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC                                                                                |            |             |            |                  |             |
|                       | EMI CONDUCTION & RADIATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Compliance to EN55011(CISPR11),EN55022 (CISPR22) Class B                                                                |            |             |            |                  |             |
|                       | HARMONIC CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Compliance to EN61000-3-2,-3                                                                                            |            |             |            |                  |             |
|                       | EMS IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN60601-1-2, EN61204-3, medical level, criteria A            |            |             |            |                  |             |
| OTHERS                | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 677.8Khrs min.    MIL-HDBK-217F (25℃)                                                                                   |            |             |            |                  |             |
|                       | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 101.6*50.8*29mm (L*W*H)                                                                                                 |            |             |            |                  |             |
|                       | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.15Kg; 96pcs/15.4Kg/0.89CUFT                                                                                           |            |             |            |                  |             |
| NOTE                  | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.<br>5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.<br>6. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time. |                                                                                                                         |            |             |            |                  |             |

### Mechanical Specification

Unit:mm



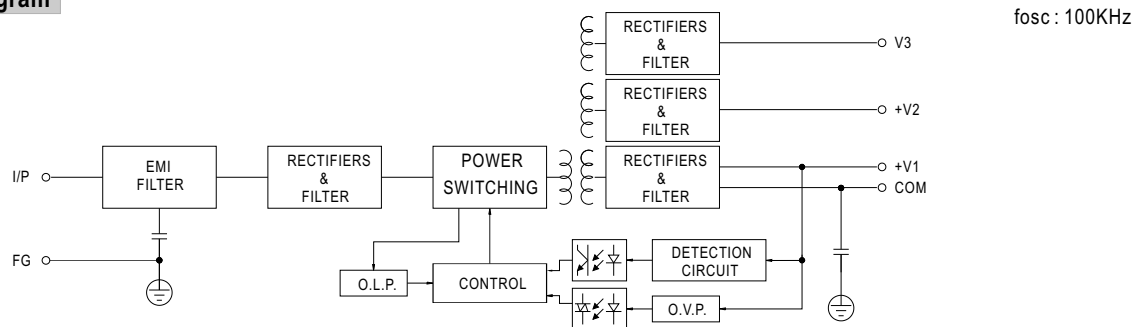
AC Input Connector (CN1) : JST B3P-VH or equivalent

| Pin No. | Assignment | Mating Housing        | Terminal                       |
|---------|------------|-----------------------|--------------------------------|
| 1       | AC/N       | JST VHR or equivalent | JST SVH-21T-P1.1 or equivalent |
| 2       | No Pin     |                       |                                |
| 3       | AC/L       |                       |                                |

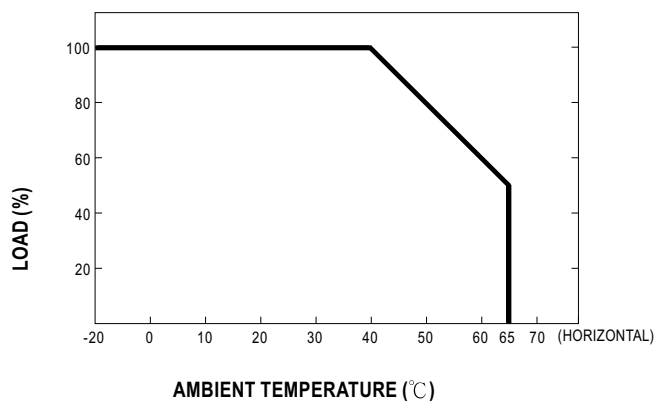
DC Output Connector (CN2) : JST B6P-VH or equivalent

| Pin No. | Assignment | Mating Housing        | Terminal                       |
|---------|------------|-----------------------|--------------------------------|
| 1,2     | V1         | JST VHR or equivalent | JST SVH-21T-P1.1 or equivalent |
| 3,4     | COM        |                       |                                |
| 5       | V2         |                       |                                |
| 6       | V3         |                       |                                |

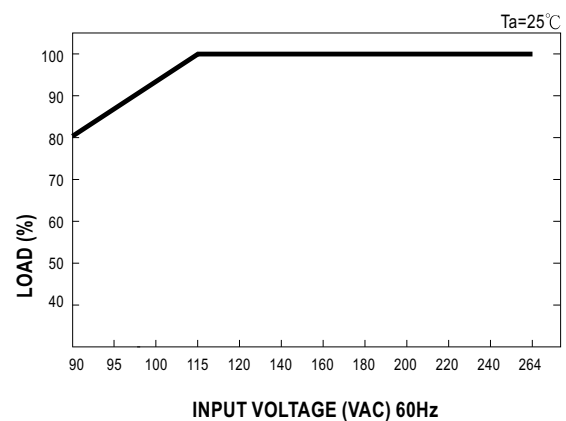
### Block Diagram



### Derating Curve



### Output Derating VS Input Voltage



MODEL : RPT-6003

## OUTPUT FUNCTION TEST

| NO | TEST ITEM                | SPECIFICATION                                                           | TEST CONDITION                                                                     | RESULT                                                            | VERDICT |
|----|--------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------|
| 1  | RIPPLE & NOISE           | V1: 80 mVp-p (Max )<br>V2: 80 mVp-p (Max )<br>V3: 80 mVp-p (Max )       | I/P: 230VAC<br>O/P:FULL LOAD<br>Ta:25°C                                            | V1: 39 mVp-p (Max )<br>V2: 13 mVp-p (Max )<br>V3: 36 mVp-p (Max ) | P       |
| 2  | OUTPUT VOLTAGE TOLERANCE | V1: 3 %~ -2 % (Max)<br>V2: 8 %~ -8 % (Max)<br>V3: 8 %~ -8 % (Max)       | I/P: 115 VAC / 264 VAC<br>O/P:FULL/ MIN LOAD<br>Ta:25°C                            | V1: 0.2 %~ 0 %<br>V2: 2.4 %~ -2.4 %<br>V3: 4.2 %~ -4.2 %          | P       |
| 3  | LINE REGULATION          | V1: 0.5 %~ -0.5 % (Max)<br>V2: 1 %~ -1 % (Max)<br>V3: 2 %~ -2 % (Max)   | I/P: 115 VAC ~ 264 VAC<br>O/P:FULL LOAD<br>Ta:25°C                                 | V1: 0 %~ 0 %<br>V2: 0.4 %~ -0.4 %<br>V3: 0.5 %~ -0.5 %            | P       |
| 4  | LOAD REGULATION          | V1: 1.5 %~ -1.5 % (Max)<br>V2: 2 %~ -2 % (Max)<br>V3: 5.5 %~ -5 % (Max) | I/P: 230 VAC<br>O/P:FULL ~MIN LOAD<br>Ta:25°C                                      | V1: 0.2 %~ -0.2 %<br>V2: 0.5 %~ -0.5 %<br>V3: 2.9 %~ -1.5 %       | P       |
| 5  | CROSS REGULATION         | V1: 1.5 %~ -1.5 % (Max)<br>V2: 2 %~ -2 % (Max)<br>V3: 5.5 %~ -5 % (Max) | I/P: 230 VAC<br>O/P: Testing O/P 60%LOAD<br>Other O/P 40%LOAD<br>Change<br>Ta:25°C | V1: 0 %~ 0 %<br>V2: 1.9 %~ -1.9 %<br>V3: 3.5 %~ -1 %              | P       |
| 6  | SET UP TIME              | 230VAC: 200 ms (Max)<br>115 VAC: 200 ms (Max)                           | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:FULL LOAD<br>Ta:25°C                           | 230VAC/ 158 ms<br>115VAC/ 156 ms                                  | P       |
| 7  | RISE TIME                | 230VAC: 15 ms (Max)<br>115VAC: 15 ms (Max)                              | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:FULL LOAD<br>Ta:25°C                           | 230VAC/ 6 ms<br>115VAC/ 5 ms                                      | P       |
| 8  | HOLD UP TIME             | 230VAC: 70 ms (TYP)<br>115VAC: 14 ms (TYP)                              | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:FULL LOAD<br>Ta:25°C                           | 230VAC/ 97 ms<br>115VAC/ 17.3 ms                                  | P       |
| 9  | OVER/UNDERSHOOT TEST     | < ±5%                                                                   | I/P: 230 VAC<br>O/P:FULL LOAD<br>Ta:25°C                                           | TEST: <5 %                                                        | P       |
| 10 | DYNAMIC LOAD             | V1: 660 mVp-p                                                           | I/P: 230 VAC<br>O/P:FULL /Min LOAD<br>90%DUTY/1KHZ<br>Ta:25°C                      | 138 mVp-p                                                         | P       |

## INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECICATION                                       | TEST CONDITION                                                                                                                          | RESULT                                     | VERDICT |
|----|-----------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------|
| 1  | INPUT VOLTAGE RANGE   | 90VAC~264 VAC                                     | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25°C                                                                                                 | 71 V~264V                                  | P       |
|    |                       |                                                   | I/P:<br>LOW-LINE-3V= 87V<br>HIGH-LINE+15%=300 V<br>O/P:FULL/MIN LOAD<br>ON: 30 Sec . OFF: 30 Sec 10MIN<br>( AC POWER ON/OFF NO DAMAGE ) | TEST: OK                                   |         |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE OSC                      | I/P: 90VAC ~ 264 VAC<br>O/P:FULL~MIN LOAD<br>Ta:25°C                                                                                    | TEST: OK                                   | P       |
| 3  | EFFICIENCY            | 75% (TYP)                                         | I/P: 230 VAC<br>O/P:FULL LOAD<br>Ta:25°C                                                                                                | 75.3 %                                     | P       |
| 4  | INPUT CURRENT         | 230V/ 0.7 A (TYP)<br>115V/ 1.1 A (TYP)            | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:FULL LOAD<br>Ta:25°C                                                                                | I = 0.54 A/ 230 VAC<br>I = 0.83 A/ 115 VAC | P       |
| 5  | INRUSH CURRENT        | 230V/ 60 A (TYP)<br>115V/ 30 A(TYP)<br>COLD START | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:FULL LOAD<br>Ta:25°C                                                                                | I = 55 A/ 230 VAC<br>I = 27 A/ 115 VAC     | P       |
| 6  | LEAKAGE CURRENT       | < 200 uA / 264 VAC                                | I/P: 264 VAC<br>O/P:Min LOAD<br>Ta:25°C                                                                                                 | L-FG: 105 uA<br>N-FG: 105 uA               | P       |
|    |                       | < 100 uA/264 VAC<br>for patient                   | I/P: 264 VAC<br>O/P:Min LOAD<br>Ta:25°C                                                                                                 | L-FG: 34 uA<br>N-FG 34 uA                  | P       |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM               | SPECICATION                            | TEST CONDITION                                          | RESULT                                                      | VERDICT |
|----|-------------------------|----------------------------------------|---------------------------------------------------------|-------------------------------------------------------------|---------|
| 1  | OVER LOAD PROTECTION    | 115%~ 150%                             | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:TESTING<br>Ta:25°C  | 143 %/ 230 VAC<br>135 %/ 115 VAC<br>Hiccup Mode             | P       |
| 2  | OVER VOLTAGE PROTECTION | CH1: 3.8V~ 4.45V                       | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:MIN LOAD<br>Ta:25°C | 4.1 V/ 230 VAC<br>4.2 V/ 115 VAC<br>Shunt down Re- power ON | P       |
| 3  | SHORT PROTECTION        | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P: 264 VAC<br>O/P:FULL LOAD<br>Ta:25°C                | NO DAMAGE<br>Hiccup Mode                                    | P       |

## ENVIRONMENT TEST

| NO | TEST ITEM                                                         | SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TEST CONDITION                                                 | RESULT                      | VERDICT |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
|----|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------|---------|----------|-----|-----------------------------|-----------------------------|---|-----|-------|--------|--------|---|-----|------------------|--------|--------|---|----|---------------------|--------|--------|---|---------|------------|--------|--------|---|-----|-----------------------|--------|--------|---|-----|--------------|--------|--------|---|----|---------------------|--------|---------|---|----|--------------------|--------|--------|---|----|-------|--------|--------|----|------|----------------------|---------|---------|----|------|-------------------------|--------|---------|----|------|----------------|--------|---------|----|------|-------------------------|--------|--------|----|------|------------------------|--------|--------|----|------|-----------------------|--------|--------|---|
| 1  | TEMPERATURE RISE TEST                                             | <div>MODEL : RPT-60A</div> <div>1. ROOM AMBIENT BURN-IN : 1HRS</div> <div>I/P: 230VAC O/P: FULL LOAD Ta= 29.5 °C</div> <div>2. HIGH AMBIENT BURN-IN : 2 HRS</div> <div>I/P: 230VAC O/P: FULL LOAD Ta= 39.6°C</div> <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT<br/>Ta= 29.5 °C</th><th>HIGH AMBIENT<br/>Ta= 39.6 °C</th></tr><tr><td>1</td><td>LF1</td><td>LF158</td><td>56.5°C</td><td>66.6°C</td></tr><tr><td>2</td><td>BD1</td><td>US4K 4A/800V SHI</td><td>59.3°C</td><td>68.6°C</td></tr><tr><td>3</td><td>C5</td><td>100U/400V NCC 105°C</td><td>57.3°C</td><td>67.8°C</td></tr><tr><td>4</td><td>T1 COIL</td><td>TF-1419 LS</td><td>76.4°C</td><td>87.3°C</td></tr><tr><td>5</td><td>C36</td><td>47U/50V RUB 105°C YXF</td><td>68.4°C</td><td>79.2°C</td></tr><tr><td>6</td><td>ZD1</td><td>P6KE100A PAN</td><td>73.7°C</td><td>84.4°C</td></tr><tr><td>7</td><td>Q1</td><td>2SK2545 6A/600V TOS</td><td>95.4°C</td><td>106.2°C</td></tr><tr><td>8</td><td>D1</td><td>EGP20J 2A/600V ZOW</td><td>86.4°C</td><td>97.6°C</td></tr><tr><td>9</td><td>U1</td><td>1230D</td><td>63.0°C</td><td>76.2°C</td></tr><tr><td>10</td><td>D100</td><td>MBR20H100CT 20A/100V</td><td>102.6°C</td><td>112.6°C</td></tr><tr><td>11</td><td>D200</td><td>YG805C10R 20A/100V FUJI</td><td>93.8°C</td><td>103.0°C</td></tr><tr><td>12</td><td>D300</td><td>31DQ10 3A/100V</td><td>93.4°C</td><td>101.6°C</td></tr><tr><td>13</td><td>C105</td><td>1800U/10V RUB 105°C ZLH</td><td>81.1°C</td><td>91.6°C</td></tr><tr><td>14</td><td>C205</td><td>390U/35V RUB 105°C ZLH</td><td>83.9°C</td><td>94.4°C</td></tr><tr><td>15</td><td>C305</td><td>470U/16V NCC 105°C KY</td><td>72.6°C</td><td>84.4°C</td></tr></table> |                                                                |                             | NO      | Position | P/N | ROOM AMBIENT<br>Ta= 29.5 °C | HIGH AMBIENT<br>Ta= 39.6 °C | 1 | LF1 | LF158 | 56.5°C | 66.6°C | 2 | BD1 | US4K 4A/800V SHI | 59.3°C | 68.6°C | 3 | C5 | 100U/400V NCC 105°C | 57.3°C | 67.8°C | 4 | T1 COIL | TF-1419 LS | 76.4°C | 87.3°C | 5 | C36 | 47U/50V RUB 105°C YXF | 68.4°C | 79.2°C | 6 | ZD1 | P6KE100A PAN | 73.7°C | 84.4°C | 7 | Q1 | 2SK2545 6A/600V TOS | 95.4°C | 106.2°C | 8 | D1 | EGP20J 2A/600V ZOW | 86.4°C | 97.6°C | 9 | U1 | 1230D | 63.0°C | 76.2°C | 10 | D100 | MBR20H100CT 20A/100V | 102.6°C | 112.6°C | 11 | D200 | YG805C10R 20A/100V FUJI | 93.8°C | 103.0°C | 12 | D300 | 31DQ10 3A/100V | 93.4°C | 101.6°C | 13 | C105 | 1800U/10V RUB 105°C ZLH | 81.1°C | 91.6°C | 14 | C205 | 390U/35V RUB 105°C ZLH | 83.9°C | 94.4°C | 15 | C305 | 470U/16V NCC 105°C KY | 72.6°C | 84.4°C | P |
| NO | Position                                                          | P/N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ROOM AMBIENT<br>Ta= 29.5 °C                                    | HIGH AMBIENT<br>Ta= 39.6 °C |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 1  | LF1                                                               | LF158                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 56.5°C                                                         | 66.6°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 2  | BD1                                                               | US4K 4A/800V SHI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 59.3°C                                                         | 68.6°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 3  | C5                                                                | 100U/400V NCC 105°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 57.3°C                                                         | 67.8°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 4  | T1 COIL                                                           | TF-1419 LS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 76.4°C                                                         | 87.3°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 5  | C36                                                               | 47U/50V RUB 105°C YXF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 68.4°C                                                         | 79.2°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 6  | ZD1                                                               | P6KE100A PAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 73.7°C                                                         | 84.4°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 7  | Q1                                                                | 2SK2545 6A/600V TOS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 95.4°C                                                         | 106.2°C                     |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 8  | D1                                                                | EGP20J 2A/600V ZOW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 86.4°C                                                         | 97.6°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 9  | U1                                                                | 1230D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 63.0°C                                                         | 76.2°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 10 | D100                                                              | MBR20H100CT 20A/100V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 102.6°C                                                        | 112.6°C                     |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 11 | D200                                                              | YG805C10R 20A/100V FUJI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 93.8°C                                                         | 103.0°C                     |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 12 | D300                                                              | 31DQ10 3A/100V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 93.4°C                                                         | 101.6°C                     |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 13 | C105                                                              | 1800U/10V RUB 105°C ZLH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 81.1°C                                                         | 91.6°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 14 | C205                                                              | 390U/35V RUB 105°C ZLH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 83.9°C                                                         | 94.4°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 15 | C305                                                              | 470U/16V NCC 105°C KY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 72.6°C                                                         | 84.4°C                      |         |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I/P: 230 VAC<br>O/P: V1=5.7A V2=2.5A V3=0.55A<br>Ta:25°C       | TEST : OK                   | P       |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 3  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I/P: 230 VAC<br>O/P: 100% LOAD<br>Ta= -20°C                    | TEST : OK                   | P       |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 4  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 40°C<br>NO DAMAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | I/P: 272 VAC<br>O/P:FULL LOAD<br>Ta= 40°C<br>HUMIDITY= 95 %R.H | TEST : OK                   | P       |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 5  | TEMPERATURE<br>COEFFICIENT                                        | ± 0.03 %(0~50°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | I/P: 230 VAC<br>O/P:FULL LOAD                                  | ± 0.01%(0~50°C)             | P       |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |
| 6  | VIBRATION TEST                                                    | 1 Carton & 1 Set<br>(1) Waveform: Sine Wave<br>(2) Frequency:10~500Hz<br>(3) Sweep Time:10min/sweep cycle<br>(4) Acceleration:2G<br>(5) Test Time:1 hour in each axis (X.Y.Z)<br>(6) Ta:25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                | TEST : OK                   | P       |          |     |                             |                             |   |     |       |        |        |   |     |                  |        |        |   |    |                     |        |        |   |         |            |        |        |   |     |                       |        |        |   |     |              |        |        |   |    |                     |        |         |   |    |                    |        |        |   |    |       |        |        |    |      |                      |         |         |    |      |                         |        |         |    |      |                |        |         |    |      |                         |        |        |    |      |                        |        |        |    |      |                       |        |        |   |

## SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION                                                       | TEST CONDITION                                                                   | RESULT                                                             | VERDICT |
|----|----------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P: 4 KVAC/min<br>I/P-FG: 1.5 KVAC/min<br>O/P-FG: 1.5 KVAC/min | I/P-O/P: 4.2 KVAC/min<br>I/P-FG: 1.8 KVAC/min<br>O/P-FG: 1.8 KVAC/min<br>Ta:25°C | I/P-O/P: 2.13 mA<br>I/P-FG: 1.5 mA<br>O/P-FG: 1.52 mA<br>NO DAMAGE | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ<br>I/P-FG: 500VDC>100MΩ<br>O/P-FG:500VDC>100MΩ | I/P-O/P: 500 VDC<br>I/P-FG: 500 VDC<br>O/P-FG: 500 VDC<br>Ta:25°C                | I/P-O/P: 30 GΩ<br>I/P-FG: 30 GΩ<br>O/P-FG: 30 GΩ<br>NO DAMAGE      | P       |
| 3  | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ                              | 40 A / 2min<br>Ta:25°C                                                           | 3 mΩ                                                               | P       |
| 4  | APPROVAL             | TUV: Certificate NO : R 50112371<br>UL: File NO : E227340           |                                                                                  |                                                                    | P       |

## E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                     | TEST CONDITION                                      | RESULT                        | VERDICT |
|----|---------------------------------------------|---------------------------------------------------|-----------------------------------------------------|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS A                            | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C       | PASS                          | P       |
| 2  | CONDUCTION                                  | EN55022 EN55011<br>CLASS B                        | I/P: 230 VAC (50HZ)<br>O/P:FULL/50% LOAD<br>Ta:25°C | PASS<br>Test by certified Lab | P       |
| 3  | RADIATION                                   | EN55022 EN55011<br>CLASS B                        | I/P: 230 VAC (50HZ)<br>O/P:FULL LOAD<br>Ta:25°C     | PASS<br>Test by certified Lab | P       |
| 4  | E.S.D                                       | EN61000-4-2<br>MEDICAL<br>AIR:8KV / Contact:6KV   | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C       | CRITERIA A                    | P       |
| 5  | E.F.T                                       | EN61000-4-4<br>MEDICAL<br>INPUT: 2KV              | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C       | CRITERIA A                    | P       |
| 6  | SURGE                                       | IEC61000-4-5<br>MEDICAL<br>L-N :1KV<br>L,N-PE:2KV | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C       | CRITERIA A                    | P       |
| 7  | Test by certified Lab & Test Report Prepare |                                                   |                                                     |                               |         |

## M.T.B.F & LIFE CYCLE CALCULATION

| NO | TEST ITEM               | SPECIFICATION                                                                                                                                                       | TEST CONDITION | RESULT | VERDICT |
|----|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------|---------|
| 1  | CAPACITOR<br>LIFE CYCLE | SUPPOSE C105 IS THE MOST CRITICAL COMPONENT<br>I/P: 230VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 77256 HRS<br>I/P: 230VAC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 26543 HRS |                |        | P       |
| 2  | MTBF                    | MIL-HDBK-217F NOTICES2 PARTS COUNT<br>TOTAL FAILURE RATE: 677.8K HRS                                                                                                |                |        | P       |

## COMPONENT STRESS TEST

| NO | TEST ITEM                                                     | SPECICATION                                                                                                     | TEST CONDITION                                                                                                                       | RESULT                                                                         | VERDICT |
|----|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------|
| 1  | Power Transistor<br>( D to S) or (C to E) <b>Peak Voltage</b> | Q1 Rated<br>K2545 : 600V 6 A                                                                                    | I/P:High-Line +3V = 267 V<br>O/P: (1)Full Load Turn on<br>(2) Output Short<br>Ta:25°C                                                | (1) 550 V<br>(2) 562 V                                                         | P       |
| 2  | Diode Peak <b>Voltage</b>                                     | D100 Rated<br>MBR1545CT : 45V 15A<br><br>D200 Rated<br>SF10SC4 : 40V 10 A<br><br>D300 Rated<br>HER305 : 400V 3A | I/P:High-Line +3V = 267 V<br>O/P: (1)Full Load Turn on<br>(2)Output Short<br>Ta:25°C                                                 | (1) 40 V<br>(2) 38 V<br><br>(1) 19 V<br>(2) 17 V<br><br>(1) 160 V<br>(2) 166 V | P       |
| 3  | Clamp Diode Peak <b>Voltage</b>                               | D1 Rated<br>EGP20J : 600V 2A                                                                                    | I/P:High-Line +3V = 267 V<br>O/P: (1) Dynamic Load<br>90%Duty/1KHz<br>Ta:25°C                                                        | (1) 444 V                                                                      | P       |
| 4  | Input Capacitor <b>Voltage</b>                                | C5 Rated<br>: 100u / 400V/ 105°C                                                                                | I/P:High-Line +3V = 267 V<br>O/P: (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load Change<br>Ta:25°C | (1) 380 V<br>(2) 384 V<br>(3) 380 V                                            | P       |
| 5  | Control IC <b>Voltage Test</b>                                | U1 Rated<br>1230D : 18V                                                                                         | I/P:High-Line +3V = 267 V<br>O/P: (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load Change<br>Ta:25°C | (1) 14 V<br>(2) 13.3 V<br>(3) 14.2 V                                           | P       |

| DATE      | SAMPLE                     | TEST RESULT | TESTER        | APPROVAL |
|-----------|----------------------------|-------------|---------------|----------|
| 2006/4/3  | RD SAMPLE                  | PASS        | VINCENT TSENG | MAX LIN  |
| 2006/6/2  | PRODUCT SAMPLE<br>W0605A33 | PASS        | VINCENT TSENG | MAX LIN  |
| 2006/8/16 | PRODUCT SAMPLE<br>W0607C20 | PASS        | VINCENT TSENG | MAX LIN  |

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