

■ Features :

- Universal AC input / Full range
- Built-in active PFC function
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Overload / Over voltage
- Protections: Over temperature (optional)
- Cooling by free air convection
- 1U low profile 38mm
- Built-in remote ON-OFF control
- No load power consumption<0.5W
- All using 105°C long life electrolytic capacitors
- 5 years warranty

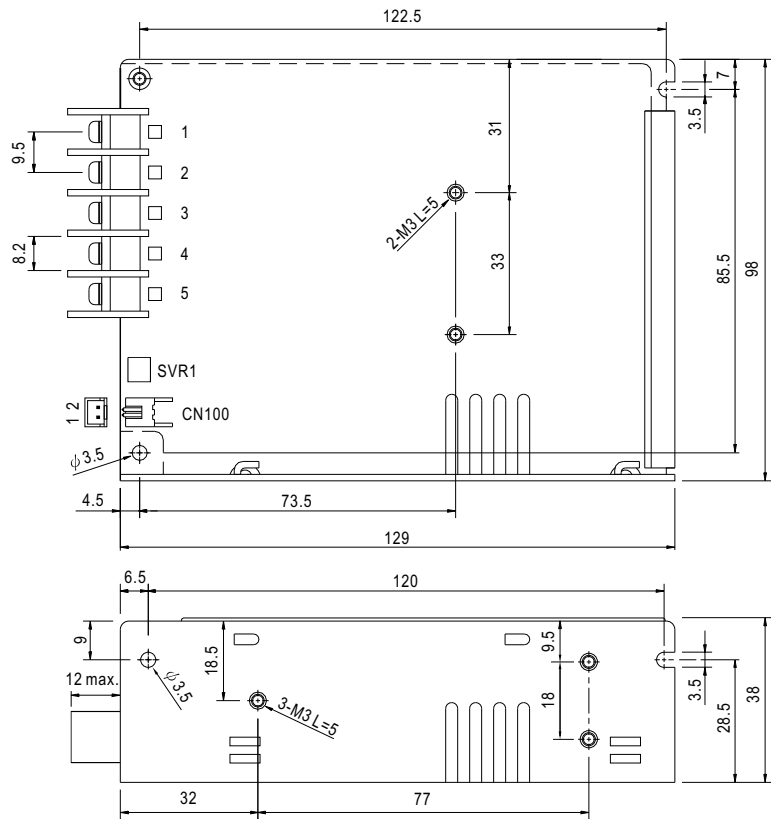


SPECIFICATION

| MODEL | HRP-75-3.3 | HRP-75-5 | HRP-75-7.5 | HRP-75-12 | HRP-75-15 | HRP-75-24 | HRP-75-36 | HRP-75-48 | |
|-----------------------|--|---|------------|-------------|--------------|--------------|------------|--------------|--------------|
| OUTPUT | DC VOLTAGE | 3.3V | 5V | 7.5V | 12V | 15V | 24V | 36V | 48V |
| | RATED CURRENT | 15A | 15A | 10A | 6.3A | 5A | 3.2A | 2.1A | 1.6A |
| | CURRENT RANGE | 0 ~ 15A | 0 ~ 15A | 0 ~ 10A | 0 ~ 6.3A | 0 ~ 5A | 0 ~ 3.2A | 0 ~ 2.1A | 0 ~ 1.6A |
| | RATED POWER | 49.5W | 75W | 75W | 75.6W | 75W | 76.8W | 75.6W | 76.8W |
| | RIPPLE & NOISE (max.) Note.2 | 80mVp-p | 80mVp-p | 100mVp-p | 120mVp-p | 150mVp-p | 150mVp-p | 200mVp-p | 240mVp-p |
| | VOLTAGE ADJ. RANGE | 3.1 ~ 3.8V | 4.7 ~ 5.8V | 7.1 ~ 9V | 11 ~ 13.8V | 14.2 ~ 18V | 21 ~ 28.8V | 32 ~ 39.6V | 45 ~ 55.2V |
| | VOLTAGE TOLERANCE Note.3 | ±2.5% | ±2.5% | ±2.5% | ±1.5% | ±1.5% | ±1.5% | ±1.5% | ±1.5% |
| | LINE REGULATION | ±1.0% | ±1.0% | ±1.0% | ±0.3% | ±0.3% | ±0.2% | ±0.2% | ±0.2% |
| | LOAD REGULATION | ±2.0% | ±1.5% | ±1.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | SETUP, RISE TIME | 1800ms, 25ms/230VAC 1800ms, 25ms/115VAC at full load | | | | | | | |
| HOLD UP TIME (Typ.) | 50ms/230VAC 20ms/115VAC at full load | | | | | | | | |
| INPUT | VOLTAGE RANGE Note.5 | 85 ~ 264VAC 120 ~ 370VDC | | | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | |
| | POWER FACTOR (Typ.) | PF>0.9/230VAC PF>0.95/115VAC at full load | | | | | | | |
| | EFFICIENCY (Typ.) | 77% | 82.5% | 84% | 87% | 88% | 88.5% | 89% | 89% |
| | AC CURRENT (Typ.) | 1.2A/115VAC 0.7A/230VAC | | | | | | | |
| | INRUSH CURRENT (Typ.) | 35A/115VAC 65A/230VAC | | | | | | | |
| | LEAKAGE CURRENT | <1mA / 240VAC | | | | | | | |
| PROTECTION | OVERLOAD | 105 ~ 135% rated output power Protection type : Constant current limiting, switch to hiccup mode for Vo<50% of rated voltage, recovers automatically after fault condition is removed | | | | | | | |
| | OVER VOLTAGE | 3.96 ~ 4.62V | 6 ~ 7V | 9.4 ~ 10.9V | 14.4 ~ 16.8V | 18.8 ~ 21.8V | 30 ~ 34.8V | 41.4 ~ 48.6V | 57.6 ~ 67.2V |
| | OVER TEMPERATURE (OPTIONAL) | 85°C ±5°C for 3.3V~15V; 80°C ±5°C for 24V~48V (TSW1 : detect on heatsink of power transistor) (optional) Protection type : Shut down o/p voltage, recovers automatically after temperature goes down | | | | | | | |
| FUNCTION | REMOTE CONTROL | RC+ / RC-: 0 ~ 0.8V = power on ; 4 ~ 10V = power off | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -20 ~ +70°C (Refer to output load derating curve) | | | | | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85°C, 10 ~ 95% RH | | | | | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | | | |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS | UL60950-1, TUV EN60950-1 approved | | | | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC | | | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH | | | | | | | |
| | EMI CONDUCTION & RADIATION | Compliance to 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, EN61000-6-2, heavy industry level, criteria A | | | | | | | |
| OTHERS | MTBF | 394.8K hrs min. MIL-HDBK-217F (25°C) | | | | | | | |
| | DIMENSION | 129*98*38mm (L*W*H) | | | | | | | |
| | PACKING | 0.47Kg; 30pcs/ 15Kg/ 0.97CUFT | | | | | | | |
| NOTE | <ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. 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. 5. Derating may be needed under low input voltages. Please check the derating curve for more details. 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

Case No.903D Unit:mm



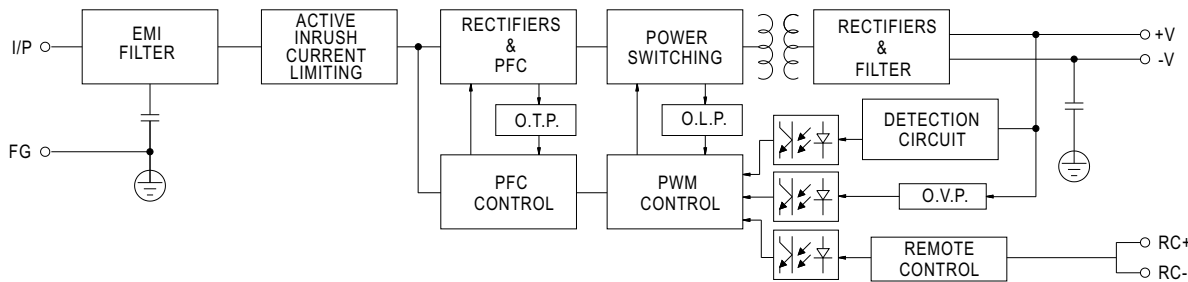
Terminal Pin No. Assignment

| Pin No. | Assignment | Pin No. | Assignment |
|---------|------------|---------|--------------|
| 1 | AC/L | 4 | DC OUTPUT -V |
| 2 | AC/N | 5 | DC OUTPUT +V |
| 3 | FG | | |

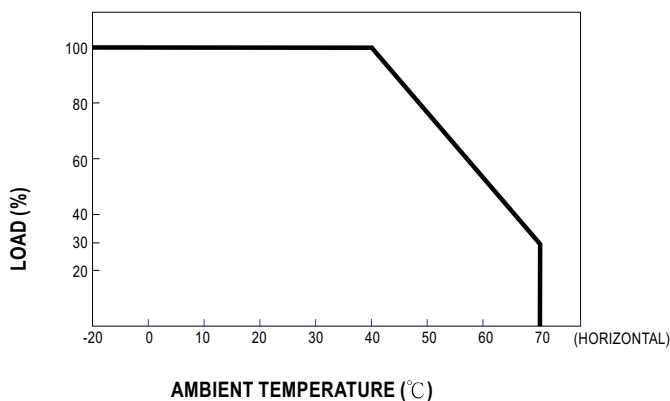
Remote ON/OFF (CN100) : JST B-XH or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|-----------------------|----------------------------|
| 1 | RC- | JST XHP or equivalent | JST SXH-001T or equivalent |
| 2 | RC+ | | |

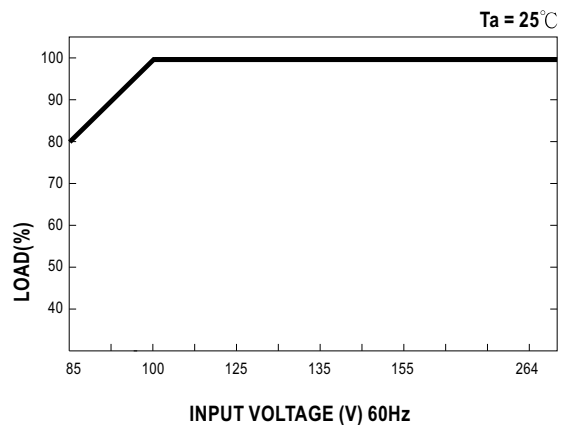
Block Diagram



Derating Curve



Output Derating VS Input Voltage





Test Report: HRP-75-12

75W Single Output with PFC Function

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST
OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------------|---|---|--|---------|
| 1 | RIPPLE & NOISE | V1 : 120 mVp-p (Max) | I/P : 230VAC O/P : FULL LOAD Ta : 25°C | V1 : 57 mVp-p (Max) | P |
| 2 | OUTPUT VOLTAGE ADJUST RANGE | CH1 : 11 V ~ 13.8 V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 10.759 V~ 14.945 V / 230 VAC 10.754 V~ 14.945 V / 115 VAC | P |
| 3 | OUTPUT VOLTAGE TOLERANCE | V1 : 1.5 %~ -1.5 % (Max) | I/P : 100 VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C | V1 : 0.47 %~ -0.47 % | P |
| 4 | LINE REGULATION | V1 : 0.3 %~ -0.3 % (Max) | I/P : 100 VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C | V1 : 0 %~ 0 % | P |
| 5 | LOAD REGULATION | V1 : 1 %~ -1 % (Max) | I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C | V1 : 0.47 %~ -0.42 % | P |
| 6 | SET UP TIME | 230VAC : 1800 ms (Max) 115 VAC : 1800 ms (Max) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 800 ms 115VAC/ 800 ms | P |
| 7 | RISE TIME | 230VAC : 25 ms (Max) 115VAC : 25 ms (Max) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 6.4 ms 115VAC/ 6.8 ms | P |
| 8 | HOLD UP TIME | 230VAC : 50 ms (TYP) 115VAC : 20 ms (TYP) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 89 ms 115VAC/ 36 ms | P |
| 9 | OVER/UNDERSHOOT TEST | < ±5% | I/P : 230 VAC O/P : FULL LOAD Ta : 25°C | TEST : < 5 % | P |
| 10 | DYNAMIC LOAD | V1 : 1200 mVp-p | I/P : 230 VAC O/P : FULL /Min LOAD 90%DUTY/ 1KHZ Ta : 25°C | 197 mVp-p | P |

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------|--|---|--|---------|
| 1 | INPUT VOLTAGE RANGE | 85VAC~264 VAC | I/P : TESTING O/P : FULL LOAD Ta : 25°C | 74 V~264V | P |
| | | | I/P : LOW-LINE-3V= 97 V HIGH-LINE+15%=300 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE) | TEST : OK | |
| 2 | INPUT FREQUENCY RANGE | 47HZ ~63 HZ NO DAMAGE OSC | I/P : 100 VAC ~ 264 VAC O/P : FULL-MIN LOAD Ta : 25°C | TEST : OK | P |
| 3 | POWER FACTOR | 0.9 / 230 VAC(TYP) 0.95 / 115 VAC(TYP) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | PF= 0.91 / 230 VAC PF= 0.98 / 115 VAC | P |
| 4 | EFFICIENCY | 87% (TYP) | I/P : 230 VAC O/P : FULL LOAD Ta : 25°C | 89.6 % | P |
| 5 | INPUT CURRENT | 230V/ 0.7 A (TYP) 115V/ 1.2 A (TYP) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I = 0.39 A/ 230 VAC I = 0.74 A/ 115 VAC | P |
| 6 | INRUSH CURRENT | 230V/ 65 A (TYP) 115V/ 35 A (TYP) COLD START | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I = 53 A/ 230 VAC I = 27 A/ 115 VAC | P |
| 7 | LEAKAGE CURRENT | < 1 mA / 240 VAC | I/P : 264 VAC O/P : Min LOAD Ta : 25°C | L-FG : 0.43 mA N-FG : 0.31 mA | P |

PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-------------------------|--|---|---|---------|
| 1 | OVER LOAD PROTECTION | 105 %~ 135 % | I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C | 118%/ 230 VAC 118%/ 115 VAC Constant Current Limiting | P |
| 2 | OVER VOLTAGE PROTECTION | CH1 : 14.4 V~ 16.8 V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 15.22V/ 230 VAC 15.22V/ 115 VAC Shut down Re- power ON | P |
| 3 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P : 264 VAC O/P : FULL LOAD Ta : 25°C | NO DAMAGE Constant current limiting, recovers automatically after fault condition is removed | P |

CONTROL FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---------------------------|---|---|--|---------|
| 1 | REMOTE CONTROL | Rc+ / Rc- 0 V~ 0.8 V POWER ON 4 V~ 10 V POWER OFF | I/P : 230 VAC O/P : FULL LOAD Ta : 25°C | 0 V~1.7 V POWER ON 1.8 V~10 V POWER OFF | P |
| 2 | NO LOAD POWER CONSUMPTION | <0.5 W / 240VAC | I/P : 240 VAC O/P : NO LOAD Ta : 25°C | 0.4 W | P |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|--|------------------------------------|---|--|---------|
| 1 | Power Transistor (D to S) or (C to E) Peak Voltage | Q 3 Rated 2SK3673-01MR 10A/700V | I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short Ta : 25°C | (1) 626 V (2) 600 V | P |
| 2 | Diode Peak Voltage | Q101 Rated IRFB3607PBF 80A/75V | I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short Ta : 25°C | (1) 68 V (2) 64.4 V | P |
| 3 | PFC Transistor (D to S) or (C to E) Peak Voltage | Q1 Rated : 2SK4106 12A/500V | I/P : High-Line +3V = 267 V O/P : (1)Full Load (2)Output Short Ta : 25°C | (1) 490 V (2) 430 V | P |
| 4 | Input Capacitor Voltage | C5 Rated 100u/400V 105°C KMG | I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C | (1) 400 V (2) 377 V (3) 387 V | P |
| 5 | Control IC Voltage Test | U 2 Rated TEA 1751 14V~38V | I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C | (1) 27.7 V (2) 21.6 V (3) 27.7 V | P |

■ SAFETY & E.M.C. TEST

SAFETY TEST

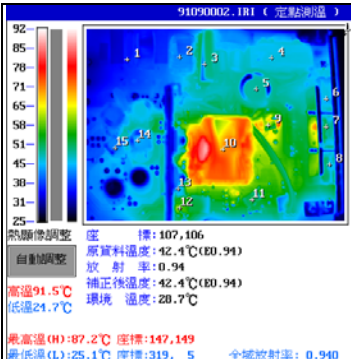
| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|----------------------|--|---|---|---------|
| 1 | WITHSTAND VOLTAGE | I/P-O/P : 3 KVAC/min I/P-FG : 1.5 KVAC/min O/P-FG : 0.5 KVAC/min | I/P-O/P : 3.6 KVAC/min I/P-FG : 1.8 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C | I/P-O/P : 4.56 mA I/P-FG : 3.26 mA O/P-FG : 2.139 mA NO DAMAGE | P |
| 2 | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ I/P-FG : 500VDC>100MΩ O/P-FG : 500VDC>100MΩ | I/P-O/P : 500 VDC I/P-FG : 500 VDC O/P-FG : 500 VDC Ta : 25°C /70%RH | I/P-O/P : 30 GΩ I/P-FG : 30 GΩ O/P-FG : 19.9 GΩ NO DAMAGE | P |
| 3 | GROUNDING CONTINUITY | FG(PE) TO CHASSIS OR TRACE < 100 mΩ | 40 A / 2min Ta : 25°C / 70%RH | 7 mΩ | P |
| 4 | APPROVAL | TUV : Certificate NO : R50163746 UL : File NO : E183223 | | | P |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|--|---|--|-------------------------------|---------|
| 1 | HARMONIC | EN61000-3-2 CLASS A CLASS D | I/P : 230/240/220 VAC/50HZ O/P : 100/75/50/25%LOAD Ta : 25°C | PASS | P |
| 2 | CONDUCTION | EN55022 EN55011 CLASS B | I/P: 230 VAC (50HZ)/115V60(HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab | P |
| 3 | RADIATION | EN55022 EN55011 CLASS B | I/P: 230 VAC (50HZ)/115V60(HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab | P |
| 4 | E.S.D | EN61000-4-2 INDUSTRY AIR : 8KV / Contact : 4KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 5 | E.F.T | EN61000-4-4 INDUSTRY INPUT : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 6 | SURGE | IEC61000-4-5 INDUSTRY L-N : 2KV L,N-PE : 4KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 7 | Test by certified Lab & Test Report PrepareP | | | | |

RELIABILITY TEST

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|--------------------------------------|--|--|---|----------|----------|------|-----------------------------|---------------------------|-----|----------|-------------|--------|--------|----------|-------------|--------|--------|--------|-------------|-----|----------------------|--------|-------------|----|----|-----------------|-------------|--------|----|------------|-------------|--------|--------|-------------|-------------|--------------------------|--------|------------|-------------|----|--------------------|--------|-------------|-----|---------|------------------|-------------|--------|-----|---------|-----------------------|--------|--------|---------|-------------|---------------------------|--------|-------------|-------------|-----|----------------------|-----------|-------------|-----|------|---------------------------|-------------|--------|----|----|-----------------|--------|--------|----|----|----------|--------|--------|----|------|-------------------------|--------|--------|----|------|------------------|--------|--------|----|-----|------------|--------|--------|----|------|------------------------------|--------|--------|----|------|-------------------|--------|--------|---|
| 1. | THERMO TRACER TEST (ROOM AMBIENT) | MODEL:HRP-75-12  | | <table border="1"> <thead> <tr> <th>Position</th> <th>P/N</th> <th>Temp</th> <th>VERDICT</th> </tr> </thead> <tbody> <tr><td>P1</td><td>LF1</td><td>TR733-R3</td><td>35.8°C PASS</td></tr> <tr><td>P2</td><td>LF2</td><td>TR653-R2</td><td>41.5°C PASS</td></tr> <tr><td>P3</td><td>BD1</td><td>D3SB80</td><td>45.3°C PASS</td></tr> <tr><td>P4</td><td>L3-CORE</td><td>TF1906</td><td>46.1°C PASS</td></tr> <tr><td>P5</td><td>C5</td><td>100u/400V 105°C</td><td>48.4°C PASS</td></tr> <tr><td>P6</td><td>D1</td><td>BYV29X-600</td><td>43.7°C PASS</td></tr> <tr><td>P7</td><td>Q1</td><td>FET 2SK4106</td><td>51.2°C PASS</td></tr> <tr><td>P8</td><td>Q3</td><td>SPA11N65C3</td><td>45.4°C PASS</td></tr> <tr><td>P9</td><td>D2</td><td>1N5406</td><td>61.1°C PASS</td></tr> <tr><td>P10</td><td>T1-core</td><td>TF1901-R1</td><td>70.4°C PASS</td></tr> <tr><td>P11</td><td>C18</td><td>47u/50V</td><td>52.1°C PASS</td></tr> <tr><td>P12</td><td>C150</td><td>47u/50V</td><td>59.6°C PASS</td></tr> <tr><td>P13</td><td>Q101</td><td>IRFB3607PBF</td><td>42.9°C PASS</td></tr> <tr><td>P14</td><td>C105</td><td>1200u/16V</td><td>43.5°C PASS</td></tr> <tr><td>P15</td><td>L100</td><td>RB010E-R2</td><td>41.1°C PASS</td></tr> </tbody> </table> | Position | P/N | Temp | VERDICT | P1 | LF1 | TR733-R3 | 35.8°C PASS | P2 | LF2 | TR653-R2 | 41.5°C PASS | P3 | BD1 | D3SB80 | 45.3°C PASS | P4 | L3-CORE | TF1906 | 46.1°C PASS | P5 | C5 | 100u/400V 105°C | 48.4°C PASS | P6 | D1 | BYV29X-600 | 43.7°C PASS | P7 | Q1 | FET 2SK4106 | 51.2°C PASS | P8 | Q3 | SPA11N65C3 | 45.4°C PASS | P9 | D2 | 1N5406 | 61.1°C PASS | P10 | T1-core | TF1901-R1 | 70.4°C PASS | P11 | C18 | 47u/50V | 52.1°C PASS | P12 | C150 | 47u/50V | 59.6°C PASS | P13 | Q101 | IRFB3607PBF | 42.9°C PASS | P14 | C105 | 1200u/16V | 43.5°C PASS | P15 | L100 | RB010E-R2 | 41.1°C PASS | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Position | P/N | Temp | VERDICT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P1 | LF1 | TR733-R3 | 35.8°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P2 | LF2 | TR653-R2 | 41.5°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P3 | BD1 | D3SB80 | 45.3°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P4 | L3-CORE | TF1906 | 46.1°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P5 | C5 | 100u/400V 105°C | 48.4°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P6 | D1 | BYV29X-600 | 43.7°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P7 | Q1 | FET 2SK4106 | 51.2°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P8 | Q3 | SPA11N65C3 | 45.4°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P9 | D2 | 1N5406 | 61.1°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P10 | T1-core | TF1901-R1 | 70.4°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P11 | C18 | 47u/50V | 52.1°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P12 | C150 | 47u/50V | 59.6°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P13 | Q101 | IRFB3607PBF | 42.9°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P14 | C105 | 1200u/16V | 43.5°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P15 | L100 | RB010E-R2 | 41.1°C PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | TEMPERATURE RISE TEST | MODEL : HRP-75-5 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 30 °C 2. HIGH AMBIENT BURN-IN : 2.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 40.7 °C | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 24.2 °C</th> <th>HIGH AMBIENT Ta= 41 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>TR-733</td><td>55.1°C</td><td>63.3°C</td></tr> <tr><td>2</td><td>LF2</td><td>TR-653</td><td>60.1°C</td><td>68.5°C</td></tr> <tr><td>3</td><td>BD1</td><td>4A/800V GLASS D3SB80</td><td>64.2°C</td><td>72.6°C</td></tr> <tr><td>4</td><td>L1</td><td>TR623-R3</td><td>55.0°C</td><td>63.9°C</td></tr> <tr><td>5</td><td>L3</td><td>TF1906</td><td>62.4°C</td><td>71.1°C</td></tr> <tr><td>6</td><td>C5</td><td>100u/400V 105°C 18*25 KM</td><td>69.6°C</td><td>78.6°C</td></tr> <tr><td>7</td><td>D1</td><td>BYV29X-600 7A/600V</td><td>59.3°C</td><td>68.0°C</td></tr> <tr><td>8</td><td>Q1</td><td>2SK4106 12A/500V</td><td>63.6°C</td><td>72.3°C</td></tr> <tr><td>9</td><td>Q3</td><td>2SK3673-01MR 10A/700V</td><td>72.1°C</td><td>81.2°C</td></tr> <tr><td>10</td><td>C61</td><td>47u/50V UL10Kh 6.3*11 YXM</td><td>67.4°C</td><td>77.2°C</td></tr> <tr><td>11</td><td>T1</td><td>TF1899 PQ-2625 155°C</td><td>102.2°C</td><td>112.3°C</td></tr> <tr><td>12</td><td>C18</td><td>47u/50V UL10Kh 6.3*11 YXM</td><td>75.3°C</td><td>84.3°C</td></tr> <tr><td>13</td><td>D2</td><td>SBYV26C 1A/600V</td><td>78.7°C</td><td>87.6°C</td></tr> <tr><td>14</td><td>U1</td><td>TEA1751T</td><td>82.1°C</td><td>90.3°C</td></tr> <tr><td>15</td><td>C150</td><td>47u/50V L5Kh 6.3*11 YXF</td><td>87.3°C</td><td>95.3°C</td></tr> <tr><td>16</td><td>Q102</td><td>IRF1405Z 75A/55V</td><td>79.2°C</td><td>88.0°C</td></tr> <tr><td>17</td><td>CN2</td><td>ST-22 95°C</td><td>65.1°C</td><td>74.1°C</td></tr> <tr><td>18</td><td>C106</td><td>3900u/10V UL10Kh 12.5*25 ZLH</td><td>79.3°C</td><td>87.3°C</td></tr> <tr><td>19</td><td>L100</td><td>RB-COIL RB010E-R2</td><td>78.3°C</td><td>86.7°C</td></tr> </tbody> </table> | NO | Position | P/N | ROOM AMBIENT Ta= 24.2 °C | HIGH AMBIENT Ta= 41 °C | 1 | LF1 | TR-733 | 55.1°C | 63.3°C | 2 | LF2 | TR-653 | 60.1°C | 68.5°C | 3 | BD1 | 4A/800V GLASS D3SB80 | 64.2°C | 72.6°C | 4 | L1 | TR623-R3 | 55.0°C | 63.9°C | 5 | L3 | TF1906 | 62.4°C | 71.1°C | 6 | C5 | 100u/400V 105°C 18*25 KM | 69.6°C | 78.6°C | 7 | D1 | BYV29X-600 7A/600V | 59.3°C | 68.0°C | 8 | Q1 | 2SK4106 12A/500V | 63.6°C | 72.3°C | 9 | Q3 | 2SK3673-01MR 10A/700V | 72.1°C | 81.2°C | 10 | C61 | 47u/50V UL10Kh 6.3*11 YXM | 67.4°C | 77.2°C | 11 | T1 | TF1899 PQ-2625 155°C | 102.2°C | 112.3°C | 12 | C18 | 47u/50V UL10Kh 6.3*11 YXM | 75.3°C | 84.3°C | 13 | D2 | SBYV26C 1A/600V | 78.7°C | 87.6°C | 14 | U1 | TEA1751T | 82.1°C | 90.3°C | 15 | C150 | 47u/50V L5Kh 6.3*11 YXF | 87.3°C | 95.3°C | 16 | Q102 | IRF1405Z 75A/55V | 79.2°C | 88.0°C | 17 | CN2 | ST-22 95°C | 65.1°C | 74.1°C | 18 | C106 | 3900u/10V UL10Kh 12.5*25 ZLH | 79.3°C | 87.3°C | 19 | L100 | RB-COIL RB010E-R2 | 78.3°C | 86.7°C | P |
| NO | Position | P/N | ROOM AMBIENT Ta= 24.2 °C | HIGH AMBIENT Ta= 41 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | LF1 | TR-733 | 55.1°C | 63.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | LF2 | TR-653 | 60.1°C | 68.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | BD1 | 4A/800V GLASS D3SB80 | 64.2°C | 72.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | L1 | TR623-R3 | 55.0°C | 63.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | L3 | TF1906 | 62.4°C | 71.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | C5 | 100u/400V 105°C 18*25 KM | 69.6°C | 78.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | D1 | BYV29X-600 7A/600V | 59.3°C | 68.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Q1 | 2SK4106 12A/500V | 63.6°C | 72.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Q3 | 2SK3673-01MR 10A/700V | 72.1°C | 81.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | C61 | 47u/50V UL10Kh 6.3*11 YXM | 67.4°C | 77.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | T1 | TF1899 PQ-2625 155°C | 102.2°C | 112.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | C18 | 47u/50V UL10Kh 6.3*11 YXM | 75.3°C | 84.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | D2 | SBYV26C 1A/600V | 78.7°C | 87.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | U1 | TEA1751T | 82.1°C | 90.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | C150 | 47u/50V L5Kh 6.3*11 YXF | 87.3°C | 95.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | Q102 | IRF1405Z 75A/55V | 79.2°C | 88.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | CN2 | ST-22 95°C | 65.1°C | 74.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | C106 | 3900u/10V UL10Kh 12.5*25 ZLH | 79.3°C | 87.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | L100 | RB-COIL RB010E-R2 | 78.3°C | 86.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 230 VAC O/P : 122 % LOAD Ta : 25°C | TEST : OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|----|---|--|--|---------------------------------|---|
| 4 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 230 VAC O/P : 100 % LOAD Ta= -25 °C | TEST : OK | P |
| 5 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 40 °C NO DAMAGE | I/P : 272 VAC O/P : FULL LOAD Ta= 40 °C HUMIDITY= 95 %R.H | TEST : OK | P |
| 6 | TEMPERATURE COEFFICIENT | ± 0.03 %(0~50°C) | I/P : 230 VAC O/P : FULL LOAD | ± 0.01 %(0~50°C) | P |
| 7 | STORAGE TEMPERATURE TEST | 1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC | | OK | P |
| 8. | THERMAL SHOCK TEST | 1. Thermal shock Temperature : -25°C~ +45°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC/Full Load | | OK | P |
| 9 | VIBRATION TEST | 1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 5G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C | | TEST : OK | P |
| 10 | CAPACITOR LIFE CYCLE | HRP-75-5 : SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 40 °C LIFE TIME | | (1) 103152HRS (2) 43962.4HRS | P |
| 11 | MTBF | MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 394.8 HRS | | | P |

| DATE | SAMPLE | TEST RESULT | TESTER | APPROVAL |
|-----------|----------------------------|-------------|------------|---------------|
| 2009/6/16 | RD SAMPLE | PASS | SANFORD SU | VINCENT TSENG |
| 2009/7/31 | PRODUCT SAMPLE W0907C32 | PASS | SANFORD SU | VINCENT TSENG |
| 2009/10/5 | PRODUCT SAMPLE W0909C38 | PASS | SANFORD SU | VINCENT TSENG |

2003/12/12 A50-F023