MODEL：APV-12-5

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 100 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 18 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE TOLERANCE	V1: -5 %~ +5 % (Max)	I/P: 100VAC / 264 VAC O/P:FULL/ 0% LOAD Ta:25℃	V1: -0.954%~ 1.562 %	PASS
3	LINE REGULATION	V1: -1 %~ +1 % (Max)	I/P: 100 VAC ~ 264VAC O/P:FULL LOAD Ta:25℃	V1: -0.008 %~ 0 %	PASS
4	LOAD REGULATION	V1: -2 %~ +2 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -0.296 %~ 0.304 %	PASS
5	SET UP TIME	230VAC/ 1500 ms (Max) 115VAC/ 1500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 468.15 ms 115 VAC/ 559.97 ms	PASS
6	RISE TIME	230VAC/ 30 ms (Max) 115VAC/ 30 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 15.94 ms 115 VAC/ 16.64 ms	PASS
7	HOLD TIME	230VAC/ 20 ms (Typ) 115VAC/ 15 ms (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 94.37 ms 115 VAC/ 19.21 ms	PASS
8	OVER/UNDERSHOOT TEST	< ±5 %	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: ±1.569%	PASS
9	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230 VAC O/P: (1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 50%DUTY/120HZ Ta:25℃	(1) 420 mVp-p (2) 560 mVp-p	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90 VAC~ 264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	90 V~ 264 V	PASS
			(1)I/P: LOW-LINE-3V= 87 V HIGH-LINE+15%= 300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (2) I/P:230VAC ON: 0.5 Sec . OFF: 0.5 Sec 20MIN (AC POWER ON/OFF NO DAMAGE)	TEST: (1) OK (2) OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 90 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	PASS
3	EFFICIENCY	76 % (Typ)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	79.49 %	PASS
4	INPUT CURRENT	230 V/ 0.2 A (Typ) 115 V/ 0.35 A (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I =0.146A/ 230VAC I =0.215A/ 115VAC	PASS
5	INRUSH CURRENT	230 V/ 70 A 115 V/ 35 A COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I =59.58 A/ 230VAC I =27.34 A/ 115VAC	PASS

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	Above 105% RATED OUTPUT POWER	I/P: 264 VAC I/P: 230 VAC I/P: 100 VAC O/P:TESTING Ta:25℃	150 %/264VAC 143 %/ 230VAC 125 %/ 100 VAC Hiccup Mode	PASS
2	OVER VOLTAGE PROTECTION	CH1: 5.75 V~ 6.75 V	I/P: 264 VAC I/P: 230 VAC I/P: 90 VAC O/P:MIN LOAD Ta:25℃	6.25 V/264VAC 6.25 V/ 230VAC 6.25 V/ 90VAC Shut off O/P voltage, clamping by zener diode	PASS
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: FULL LOAD Ta:25℃	NO DAMAGE Hiccup Mode	PASS

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： APV-12-5
1. ROOM AMBIENT BURN-IN： 2 HRS
I/P: 230 VAC O/P: 100% LOAD Ta= 21.7 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P: 230 VAC O/P: 100% LOAD Ta= 43.4 ℃
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 21.7 ℃</th><th>HIGH AMBIENT Ta= 43.4 ℃</th></tr>
<tr><td>1</td><td>BD1</td><td>KBP208G</td><td>44.0℃</td><td>64.9℃</td></tr>
<tr><td>2</td><td>L1</td><td>DRGZ001D</td><td>43.8℃</td><td>64.7℃</td></tr>
<tr><td>3</td><td>D1</td><td>1N4007</td><td>60.7℃</td><td>81.0℃</td></tr>
<tr><td>4</td><td>R5</td><td>1/2W 150KΩ</td><td>64.8℃</td><td>84.2℃</td></tr>
<tr><td>5</td><td>U1</td><td>SD4843</td><td>60.3℃</td><td>80.4℃</td></tr>
<tr><td>6</td><td>T1</td><td>TF6327</td><td>66.8℃</td><td>85.9℃</td></tr>
<tr><td>7</td><td>D10</td><td>SB540</td><td>72.1℃</td><td>90.9℃</td></tr>
<tr><td>8</td><td>D2</td><td>FR104</td><td>55.9℃</td><td>75.9℃</td></tr>
<tr><td>9</td><td>C5</td><td>12uF/400V 105℃ KM</td><td>40.8℃</td><td>61.9℃</td></tr>
<tr><td>10</td><td>C6</td><td>12uF/400V 105℃ KM</td><td>51.7℃</td><td>72.0℃</td></tr>
<tr><td>11</td><td>C9</td><td>22uF/50V L5Kh KY</td><td>50.7℃</td><td>71.3℃</td></tr>
<tr><td>12</td><td>C15</td><td>470uF/16V UL8Kh ZLH</td><td>62.1℃</td><td>80.9℃</td></tr>
<tr><td>13</td><td>C17</td><td>470uF/16V UL8Kh ZLH</td><td>54.9℃</td><td>74.8℃</td></tr>
</table></td><td>PASS</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P: 142% LOAD
Ta:25℃</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 264 VAC/100 VAC
O/P: 100% LOAD
Ta= -30 ℃</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 40 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 40 ℃
HUMIDITY= 95 %R.H</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.010 %(0~50℃)</td><td>PASS</td></tr>
<tr><td>6</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">1. Thermal shock Temperature： -45℃~ +85 ℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：5 CYCLE
5. Input/Output condition： STATIC</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>7.</td><td>THERMAL SHOCK TEST</td><td colspan="2">1. Thermal shock Temperature： - 35 ℃~ + 45 ℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：10 CYCLE
5. Input/Output condition： 230VAC/Full Load 58SEC ON/2SEC OFF</td><td>TEST： OK</td><td>PASS</td></tr>
<tr><td>8</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set
(1) Waveform: Sine Wave
(2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle
(4) Acceleration:2G
(5) Test Time:1 hour in each axis (X.Y.Z)
(6) Ta:25℃</td><td>TEST： OK</td><td>PASS</td></tr>
</table>

9	CAPACITOR LIFE CYCLE	APV-12-5: SUPPOSE C15 IS THE MOST CRITICAL COMPONENT (1) I/P: 230 VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 136679 HRS (2) I/P: 230 VAC O/P:FULL LOAD Ta= 40 ℃ LIFE TIME= 59116 HRS (3) I/P: 230 VAC O/P:75% LOAD Ta= 40 ℃ LIFE TIME= 102861 HRS (4) I/P: 230 VAC O/P:50% LOAD Ta= 40 ℃ LIFE TIME= 176646 HRS	PASS
10	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 1145.7K HRS	PASS
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 20,000 hours @ Tcase 65℃， 50,000 hours @ Tcase 50℃for 5v 20,000 hours @ Tcase 70℃， 50,000 hours @ Tcase 55℃or 12v~24v	PASS

SAFETY TEST

1	WITHSTAND VOLTAGE	I/P-O/P: 3.75 KVAC/min EN 60950	I/P-O/P: 4.2 KVAC/min Ta:25℃	I/P-O/P: 1.460 mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25℃	I/P-O/P: ＞9999 MΩ NO DAMAGE	PASS
3	LEAKAGE CURRENT	< 0.25 mA / 240VAC EN 60950	I/P: 264 VAC O/P:NO LOAD Ta:25℃	L-FG: 2.2 uA N-FG: 2.2 uA	PASS

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 220V/230V/240V AC 50HZ O/P:100%/75%/50%/25% LOAD Ta:25℃	PASS	PASS
2	CONDUCTION	EN55015	I/P:230 VAC (50HZ) /115V(60HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	PASS
3	RADIATION	EN55015	I/P: 230 VAC (50HZ)/115V(60HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	PASS
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	PASS
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	PASS
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N :2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	PASS
7	Test by certified Lab & Test Report Prepare				

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	U1 Rated SD4843 : 650 V 11 A	I/P:High-Line +3V =267 V O/P: (1)Full Load input on/off (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (4)Dynamic Load 50% Load/ Min. Load 50%Duty/120Hz I/P:Low-Line -3V = 87 V O/P: (1)Full Load input on/off (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (4)Dynamic Load 50% Load/ Min. Load 50%Duty/120Hz Ta:25℃	 (1) 516 V (2) 450 V (3) 492 V (4) 470 V (1) 248 V (2) 233 V (3) 267 V (4) 237 V	PASS
2	Diode **Peak Voltage**	D10 Rated SB540 : 40 V 5 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load input on/off (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (4)Dynamic Load 50% Load/ Min. Load 50%Duty/120Hz I/P:Low-Line -3V = 87 V O/P: (1)Full Load input on/off (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (4)Dynamic Load 50% Load/ Min. Load 50%Duty/120Hz Ta:25℃	 (1) 30.0 V (2) 25.2 V (3) 30.2 V (4) 29.5 V (1) 12.4 V (2) 7.96 V (3) 13.2 V (4) 13.0 V	PASS
3	Clamp Diode Peak **Voltage**	D 1 Rated 1N4007 : 1000 V 1 A	I/P:High-Line +3V = 267 V O/P: (1)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (2)Dynamic Load 50% Load/ Min. Load 50%Duty/120Hz Ta:25℃	 (1) 526 V (2) 504 V	PASS
4	**Input Capacitor Voltage**	C 6 Rated CAPXON : 12 u / 400 V 105℃ / KM Series	I/P:High-Line +3V =267 V O/P: (1)Full Load input on/off (2)Min load input on /Off (3)Burn-IN 1Hour Ta:25℃	 (1) 396 V (2) 392 V (3) 370 V	PASS
5	**Control IC Voltage Test**	U 1 Rated SD4843 : 21 V	I/P:High-Line +3V = 267 V O/P:(1).FULL LOAD (2).Output Short (3).O.L.P (4).O.V.P. (5).NO LOAD LOW LINE Ta:25℃	 (1) 14.8 V (2) 12.6 V (3) 14.8 V (4) 12.6 V (5) 12.4 V	PASS

2007/11/26 A50-G058

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2010/12/29	RD SAMPLE	PASS	SKY	HOWAY
2011/6/10	PRODUCT SAMPLE (W1106A191)	PASS	SKY	HOWAY
2011/8/20	PRODUCT SAMPLE (W1108E121)	PASS	SKY	HOWAY