

MODEL : APV-12E-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 150 mVp-p (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	V1 : 26 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE TOLERANCE	V1 : -5 %~ +5 % (Max)	I/P : 180VAC / 264 VAC O/P : FULL/ NO LOAD Ta : 25°C	V1: -0.65%~ 0.75 %	PASS
3	LINE REGULATION	V1 : -1 %~ +1 % (Max)	I/P : 190 VAC ~ 264VAC O/P : FULL LOAD Ta : 25°C	V1: -0.008 %~ 0.004 %	PASS
4	LOAD REGULATION	V1 : -2 %~ +2 % (Max)	I/P : 230 VAC O/P : FULL ~NO LOAD Ta : 25°C	V1: -0.033 %~ 0.046 %	PASS
5	SET UP TIME	230VAC/ 500 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230 VAC/ 348 ms	PASS
6	RISE TIME	230VAC/ 30 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230 VAC/ 14.93 ms	PASS
7	HOLD TIME	230VAC/ 20 ms(Typ)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230 VAC/ 83.30 ms	PASS
8	OVER/UNDERSHOOT TEST	< ±5 %	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : ±1.646%	PASS
9	DYNAMIC LOAD	V1 : 2400 mVp-p	I/P : 230 VAC O/P: (1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 50%DUTY/120HZ Ta : 25°C	(1) 340 mVp-p (2) 1320 mVp-p	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180 VAC~ 264 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	180 V~ 264 V	PASS
			(1)I/P : LOW-LINE-3V= 177 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 : 180 VAC ~264 VAC O/P : FULL~NO LOAD Ta : 25°C	TEST : OK	PASS
3	EFFICIENCY	83 % (Typ)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	83.11%	PASS
4	INPUT CURRENT	230 V/ 0.2 A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I =0.165A/ 230VAC	PASS
5	LEAKAGE CURRENT	< 0.25mA / 240 VAC	I/P : 240 VAC O/P : NO LOAD Ta : 25°C	L-FG : 0.0022 mA N-FG : 0.0022 mA	PASS
6	INRUSH CURRENT	230V/ 70A Twidth =120 us measured at 50% Ipeak COLD START(Typ)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 57.90 A/ 230VAC Twidth =92us	PASS
7	NO LOAD POWER CONSUMPTION	< 0.5W	I/P : 230VAC O/P : NO LOAD Ta : 25°C	0.36W	PASS
8	POWER FACTOR	> 0.5/ 230VAC(Typ)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.5428	PASS

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	Above 105% RATED OUTPUT POWER	I/P : 264 VAC I/P : 230 VAC I/P : 190 VAC O/P : TESTING Ta : 25°C	138 %/264VAC 138 %/ 230VAC 136 %/ 190 VAC Hiccup Mode , recovers automatically after fault condition is removed	PASS
2	OVER VOLTAGE PROTECTION	CH1 : 27.6 V~ 32.4 V	I/P : 264 VAC I/P : 230 VAC I/P : 180 VAC O/P : NO LOAD Ta : 25°C	29.94 V/264VAC 29.72 V/ 230VAC 29.64 V/ 180VAC 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°C	NO DAMAGE Hiccup Mode , recovers automatically after fault condition is removed	PASS

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 650 V/11 A	I/P : High-Line +3V =267 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1)580V (2)542V (3)557V	PASS
2	Diode Peak Voltage	D10 Rated 200 V/3 A	I/P : High-Line +3V = 267 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1)179V (2)169V (3)167V	PASS
3	Input Capacitor Voltage	C 6 Rated 12 u /400 V	I/P : High-Line +3V =267 V O/P : (1) Full Load input on/off (2) NO load input on /Off (3) Full Load /NO load Change Ta : 25°C	(1) 396V (2) 372V (3) 368V	PASS
4	Control IC Voltage Test	U 1 Rated 21 V	I/P : High-Line +3V = 267 V O/P : (1) Full Load input on/off (2) NO load input on /Off (3) Full Load /NO load Change Ta : 25°C	(1)13.6V (2)12.4V (3)12.4V	PASS

SAFETY TEST

1	WITHSTAND VOLTAGE	I/P-O/P : 3.75 KVAC/min	I/P-O/P : 4.2 KVAC/min Ta : 25°C	I/P-O/P : 1.487 mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ	I/P-O/P : 500 VDC Ta : 25°C	I/P-O/P : >9999 MΩ NO DAMAGE	PASS

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P : 230VAC/50HZ O/P : FULL LOAD Ta : 25°C	PASS	PASS
2	CONDUCTION	EN55015	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab	PASS
3	RADIATION	EN55015	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	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°C	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°C	CRITERIA A	PASS
6	SURGE	EN61000-4-5 INDUSTRY L-N : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	PASS
7	Test by certified Lab & Test Report Prepare				

ENVIRONMENT TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT	
1	TEMPERATURE RISE TEST	MODEL : APV-12E-24 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230 VAC O/P : 100% LOAD Ta= 21.7 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230 VAC O/P : 100% LOAD Ta= 43.4 °C			PASS	
		NO	Position	ROOM AMBIENT Ta= 21.7 °C		HIGH AMBIENT Ta= 43.4 °C
		1	BD1	43.0°C		65.2°C
		2	L1	44.2°C		66.8°C
		3	D1	58.5°C		81.6°C
		4	R5	62.2°C		84.1°C
		5	U1	57.8°C		83.3°C
		6	T1	65.4°C		86.6°C
		7	D10	64.8°C		85.0°C
		8	D2	52.9°C		75.9°C
		9	C5	40.3°C		62.4°C
		10	C6	52.2°C		74.8°C
		11	C9	48.6°C		72.0°C
		12	C15	53.4°C		73.9°C
		13	C17	51.3°C		71.7°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 142% LOAD Ta : 25°C	TEST : OK	PASS	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264 VAC/190 VAC O/P : FULL LOAD Ta= -35 °C	TEST : OK	PASS	
4	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	PASS	
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.003 %(0~50°C)	PASS	
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C~ +85°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		TEST : OK	PASS	
7.	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35 °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 58SEC ON/2SEC OFF		TEST : OK	PASS	
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60 min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	PASS	



12W Single Output Switching Power Supply

APV-12E series

9	CAPACITOR LIFE CYCLE	APV-12E-24: SUPPOSE C15 IS THE MOST CRITICAL COMPONENT (1) I/P: 230 VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 241285 HRS (2) I/P: 230 VAC O/P:FULL LOAD Ta= 45 °C LIFE TIME= 65581 HRS (3) I/P: 230 VAC O/P:75% LOAD Ta= 45 °C LIFE TIME= 96633 HRS (4) I/P: 230 VAC O/P:50% LOAD Ta= 45 °C LIFE TIME= 125818 HRS	PASS
10	MTBF	MIL-HDBK-217F NOTICE 2 STRESS ANALYSIS TOTAL FAILURE RATE : 1145.7K HRS (25°C)	PASS
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) 20,000 hours @ Tcase 70°C	PASS

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY