

MODEL : USP-225-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 31mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 21.6V ~ 26.4 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	18.69V-27.29V / 230VAC 18.69V-27.29V / 115VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -2% ~ +2% (Max)	I/P: 264 VAC / 90 VAC O/P:FULL/ 0 % LOAD Ta:25°C	V1:0.02% ~ -0.02%	P
4	LINE REGULATION	V1: -0.5% ~ +0.5 % (Max)	I/P: 264 VAC ~ 90 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 % ~ 0.03 %	P
6	SET UP TIME	230 VAC/ 500 ms (Max) 115 VAC/ 1200 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC / 305ms 115 VAC / 418 ms	P
7	RISE TIME	230VAC/ 30 ms (Max) 115VAC/ 30 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 12 ms 115 VAC/ 12 ms	P
8	HOLD UP TIME	230VAC/ 20 ms (TYP) 115VAC/ 20 ms(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 30ms 115 VAC/ 30ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 2400mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	436mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	264VAC~ 90VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	65V ~ 264V	P
			I/P: LOW-LINE-3V= 87 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	47 HZ ~ 63 HZ NO DAMAGE OSC	I/P: 264 VAC ~ 90 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.93 / 230 VAC(TYP) 0.97 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.97/ 230VAC PF= 0.991/ 115VAC	P
4	EFFICIENCY	87% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	86.95%	P
5	INPUT CURRENT	230 V / 1.6 A(TYP) 115 V / 3.3 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I =1.2A/ 230VAC I =2.4A/ 115VAC	P
6	INRUSH CURRENT	230 V/ 30 A(TYP) 115 V/ 20 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I =26.9A/ 230 VAC I =15A/ 115 VAC	P
7	LEAKAGE CURRENT	< 3.5 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.52 mA N-FG: 0.52mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 % - 150 %	I/P: 230 VAC I/P: 115 VAC O/P: TESTING Ta: 25°C	115% / 230 VAC 115% / 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 26.4V - 32.4 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta: 25°C	30.4V / 230VAC 30.4V / 115VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: Rth2 > 95°C ± 5 °C O.T.P. NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	O.T.P. Active Shunt down o/p voltage recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Constant Current Limiting	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : USP-225-24 No Fan 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P: 230 VAC O/P: 65% LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 13 HRS I/P: 230 VAC O/P: 65% LOAD Ta= 25 °C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 120% Ta:25°C	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 100 % LOAD Ta= -21.1 °C	TEST : OK	P
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= 41.9 °C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	±0.03 %(0-50°C)	I/P: 230 VAC O/P: FULL LOAD	± 0.005 %(0-50°C)	P
6	VIBRATION TEST	1 Carton & 1 Set Operating at I/P: 230VAC NO LOAD (1) Waveform: Sine Wave (2) Frequency: 10-500Hz (3) Sweep Time: 10min/sweep cycle (4) Acceleration: 3G (5) Test Time: 1 hour in each axis (X.Y.Z) (6) Ta: 25°C		TEST : OK	P

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: 5.03mA I/P-FG: 4.03mA O/P-FG: 3.83 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	I/P-O/P: 15GΩ I/P-FG: 15GΩ O/P-FG: 10GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO : R50008514 UL: File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
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	P
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	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
7	Test By Certificate Lab & Test Report Prepare				



M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 111 IS THE MOST CRITICAL COMPONENT I/P:230 VAC O/P:65% LOAD Ta= 25 °C LIFE TIME= 255461 HRS I/P: 230 VAC O/P:65% LOAD Ta= 40 °C LIFE TIME=42699 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 220K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q2 Rated 2SK2850 : 900 V 6 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 484 V (2) 764 V (3) 760 V	P
2	Diode Peak Voltage	D101 Rated S20L20U : 200V : 20A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 106 V (2) 124 V (3) 123 V	P
3	Clamp Diode Peak Voltage	D 4 Rated BYV26E : 1K V 1 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 752 V (2) 756 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2003/5/20	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2003/09/04	PRODUCT SAMPLE A306C24	PASS	VINCENT TSENG	MAX LIN
2003/12/24	PRODUCT SAMPLE A311C24	PASS	VINCENT TSENG	MAX LIN
2004/3/15	PRODUCT SAMPLE A402D28	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023