

MODEL: MP1K0-CCEEHHH

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max) V2: 80 mVp-p (Max) V3: 150 mVp-p (Max) V4: 150 mVp-p (Max) V5: 150 mVp-p (Max) V6: 150 mVp-p (Max) V7: 150 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 31 mVp-p (Max) V2: 34 mVp-p (Max) V3: 26 mVp-p (Max) V4: 30 mVp-p (Max) V5: 46 mVp-p (Max) V6: 29 mVp-p (Max) V7: 40 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 4 V~ 6 V CH2: 4 V~ 6 V CH3: 9 V~ 13.2 V CH4: 9 V~ 13.2 V CH5: 20 V~ 26.4 V CH6: 20 V~ 26.4 V CH7: 20 V~ 26.4 V	I/P: 230 VAC O/P:MIN LOAD Ta:25°C	3.91 V~ 6.58 V 3.85 V~ 6.66 V 8.31 V~ 14.16 V 8.45 V~ 14.14 V 18.38 V~ 28.8 V 18.1 V~ 28.7 V 17.88 V~ 28.8 V	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max) V2: 2 %~ -2 % (Max) V3: 1 %~ -1 % (Max) V4: 1 %~ -1 % (Max) V5: 1 %~ -1 % (Max) V6: 1 %~ -1 % (Max) V7: 1 %~ -1 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.4 %~ -0.4 % V2: 0.4 %~ -0.4 % V3: 0.25 %~ -0.25 % V4: 0.25 %~ -0.25 % V5: 0.15 %~ -0.15 % V6: 0.15 %~ -0.15 % V7: 0.15 %~ -0.15 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max) V2: 0.5 %~ -0.5 % (Max) V3: 0.3 %~ -0.3 % (Max) V4: 0.3 %~ -0.3 % (Max) V5: 0.2 %~ -0.2 % (Max) V6: 0.2 %~ -0.2 % (Max) V7: 0.2 %~ -0.2 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.12 %~ -0.12 % V2: 0.12 %~ -0.12 % V3: 0.05 %~ -0.05 % V4: 0.05 %~ -0.05 % V5: 0.03 %~ -0.03 % V6: 0.03 %~ -0.03 % V7: 0.03 %~ -0.03 %	P
5	LOAD REGULATION	V1: 1 %~ -1 % (Max) V2: 1 %~ -1 % (Max) V3: 0.5 %~ -0.5 % (Max) V4: 0.5 %~ -0.5 % (Max) V5: 0.5 %~ -0.5 % (Max) V6: 0.5 %~ -0.5 % (Max) V7: 0.5 %~ -0.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.4 %~ -0.4 % V2: 0.4 %~ -0.4 % V3: 0.15 %~ -0.15 % V4: 0.15 %~ -0.15 % V5: 0.15 %~ -0.15 % V6: 0.15 %~ -0.15 % V7: 0.15 %~ -0.15 %	P
6	SET UP TIME	230VAC: 1500 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 678 ms	P
7	RISE TIME	230VAC: 50 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 17 ms	P
8	HOLD UP TIME	230VAC: 20 ms (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 20.7 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: 1000 mVp-p V2: 1000 mVp-p V3: 1200 mVp-p V4: 1200 mVp-p V5: 2400 mVp-p V6: 2400 mVp-p V7: 2400 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	469 mVp-p 529 mVp-p 648 mVp-p 576 mVp-p 499 mVp-p 527 mVp-p 527 mVp-p	P

## INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	100VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	86 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: 85 VAC ~ 264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.95 / 230 VAC (Min) 0.98 / 115 VAC (Min)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.99 / 230 VAC	P
				PF= 0.99 / 115 VAC	
4	EFFICIENCY	84 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	84.5 %	P
5	INPUT CURRENT	230V/ 6.7 A (Max) 115V/ 13.5 A (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 5.4 A/ 230 VAC	P
				I = 11.3 A/ 115 VAC	
6	INRUSH CURRENT	230V/ 50 A (Max) 115V/ 20 A (Max) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 38 A/ 230 VAC	P
				I = 14 A/ 115 VAC	
7	LEAKAGE CURRENT	< 1.5 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.98 mA N-FG: 0.98 mA	P

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	CH1: 121 %~ 150 % CH2: 121 %~ 150 % CH3: 116 %~ 150 % CH4: 116 %~ 150 % CH5: 116 %~ 150 % CH6: 116 %~ 150 % CH7: 116 %~ 150 %	I/P: 230 VAC O/P: TESTING Ta: 25°C	CH1: 124 % CH2: 132 % CH3: 123 % CH4: 128 % CH5: 134 % CH6: 133 % CH7: 135 % Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 6.1 V~ 7.5 V CH2: 6.1 V~ 7.5 V CH3: 13.3 V~ 18 V CH4: 13.3 V~ 18 V CH5: 26.5 V~ 35 V CH6: 26.5 V~ 35 V CH7: 26.5 V~ 35 V	I/P: 230 VAC  O/P: MIN LOAD Ta: 25°C	CH1: 6.7 V CH2: 6.8 V CH3: 16.2 V CH4: 16 V CH5: 29.1 V CH6: 29 V CH7: 29.2 V Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: 85 ± 5°C O.T.P. NO DAMAGE	I/P: 264 VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down	P
4	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	P

### CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	FAN SPEED CONTROL	-----	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	Fan Voltage= 11.92V	P
2	REMOTE CONTROL	Rc+ / Rc- short or 0V~0.8V POWER ON open or 4V~12V POWER OFF	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	short or 0V ~ 3V POWER ON open or 3.1 ~ 12V POWER OFF	P

## ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : MP1K0-CCEEHHH 1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 230VAC O/P: FULL LOAD Ta= 30.7°C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 51.1 °C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: 120 % LOAD 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= -20°C	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0-50°C)	P
6	VIBRATION TEST	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:2G (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: 7.04 mA I/P-FG: 7.92 mA O/P-FG: 14.58 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: 4 GΩ I/P-FG: 8 GΩ O/P-FG: 3 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	20 mΩ	P
4	APPROVAL	TUV: Certificate NO : R50059543 UL: File NO :			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 certified Lab & Test Report Prepare				



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

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C236 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 487929 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 108442 HRS			P

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 12 Rated SPP20N60C3 : 650 V 20.7 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) 414 V (2) 432 V (3) 408 V	P
2	<b>Input Capacitor Voltage</b>	C 5 Rated : 330u / 450V/ 105°C	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) 438 V (2) 438 V (3) 430 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2004/12/31	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2005/3/8	PRODUCT SAMPLE W0501D44	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023