

MODEL: MPD-120A

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max) V2: 120 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 10 mVp-p (Max) V2: 15 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 4.75 V~ 5.5 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	4.22 V~ 5.9 V/ 230 VAC 4.22 V~ 5.9 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max) V2: 7 %~ -7 % (Max)	I/P: 115 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.15 %~ -0.15 % V2: 3 %~ -3 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max) V2: 2 %~ -2 % (Max)	I/P: 115 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~ 0 % V2: 0.7 %~ -0.7 %	P
5	LOAD REGULATION	V1: 0.5 %~ -0.5 % (Max) V2: 3.5 %~ -3.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0 %~ 0 % V2: 1.9 %~ -1.9 %	P
6	CROSS REGULATION	V1: 0.5 %~ -0.5 % (Max) V2: 3.5 %~ -3.5 % (Max)	I/P: 230 VAC O/P: Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25℃	V1: 0.15 %~ -0.15 % V2: 2.3 %~ -2.3 %	P
7	SET UP TIME	230VAC: 500 ms (Max) 115 VAC: 1200 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 237 ms 115VAC/ 587 ms	P
8	RISE TIME	230VAC: 20 ms (Max) 115VAC: 50 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 4 ms 115VAC/ 13 ms	P
9	HOLD UP TIME	230VAC: 50 ms (Min) 115VAC: 12 ms (Min)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 89 ms 115VAC/ 17 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
11	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	258 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC)	I/P: TESTING O/P: FULL LOAD Ta: 25°C	83V~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	47HZ ~63 HZ NO DAMAGE OSC	I/P: 90 VAC ~ 264 VAC O/P: FULL~MIN LOAD Ta: 25°C	TEST: OK	P
3	EFFICIENCY	75 % (TYP)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	75.6 %	P
4	INPUT CURRENT	230V/ 1.7 A (Max) 115V/ 2.9 A (Max)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 1.3 A/ 230 VAC I = 2.2 A/ 115 VAC	P
5	INRUSH CURRENT	230V/ 60 A (Max) 115V/ 35 A (Max) COLD START	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 31 A/ 230 VAC I = 15 A/ 115 VAC	P
6	LEAKAGE CURRENT	< 180 uA / 264 VAC	I/P: 264 VAC O/P: MIN LOAD Ta: 25°C	L-FG: 118 uA N-FG: 118 uA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	120 %~ 160 %	I/P: 230 VAC I/P: 115 VAC O/P: TESTING Ta: 25°C	134 %/ 230 VAC 137 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 5.75 V~ 6.75 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta: 25°C	6.24 V/ 230 VAC 6.24 V/ 115 VAC Shunt 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 Hiccup Mode	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : MPD-120A WITH FAN 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P: 230VAC O/P: FULL LOAD Ta= 31.8 °C 2. HIGH AMBIENT BURN-IN : 3 HRS I/P: 230VAC O/P: FULL LOAD Ta= 52 °C <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 31.8 °C</th><th>HIGH AMBIENT Ta= 52 °C</th></tr><tr><td>1</td><td>LF1</td><td>TF-485</td><td>41.1°C</td><td>62.8°C</td></tr><tr><td>2</td><td>BD1</td><td>D3SB80 4A/800V SHI</td><td>41.9°C</td><td>63.6°C</td></tr><tr><td>3</td><td>C6</td><td>150U/400V HP3 85°C</td><td>35.3°C</td><td>56.3°C</td></tr><tr><td>4</td><td>R3</td><td>15W/3W R/MO</td><td>50.2°C</td><td>71.1°C</td></tr><tr><td>5</td><td>T1 COIL</td><td>TF-1118</td><td>50.4°C</td><td>71.4°C</td></tr><tr><td>6</td><td>Q1</td><td>2SK2082 9A/800V FUJI</td><td>37.8°C</td><td>59.4°C</td></tr><tr><td>7</td><td>C10</td><td>47U/50V RUB YXF 105°C</td><td>32.1°C</td><td>50.8°C</td></tr><tr><td>8</td><td>D50</td><td>BYQ28X-200 10A/200V PH</td><td>43.8°C</td><td>65.3°C</td></tr><tr><td>9</td><td>U1</td><td>TI3842</td><td>35.5°C</td><td>56.9°C</td></tr><tr><td>10</td><td>D60</td><td>SBL3040PT 30A/40V LT</td><td>40.2°C</td><td>62.1°C</td></tr><tr><td>11</td><td>C51</td><td>2200U/16V NCC 105°C KY</td><td>40.2°C</td><td>61.6°C</td></tr><tr><td>12</td><td>C61</td><td>4700U/10V RUB ZLH 105°C</td><td>36.6°C</td><td>58.8°C</td></tr><tr><td>13</td><td>J4</td><td>180Ω /2W R/MO</td><td>64.1°C</td><td>84.1°C</td></tr><tr><td>14</td><td>D1</td><td>SF54028 3A/1KV</td><td>46.8°C</td><td>68.6°C</td></tr><tr><td>15</td><td></td><td></td><td>°C</td><td>°C</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 31.8 °C	HIGH AMBIENT Ta= 52 °C	1	LF1	TF-485	41.1°C	62.8°C	2	BD1	D3SB80 4A/800V SHI	41.9°C	63.6°C	3	C6	150U/400V HP3 85°C	35.3°C	56.3°C	4	R3	15W/3W R/MO	50.2°C	71.1°C	5	T1 COIL	TF-1118	50.4°C	71.4°C	6	Q1	2SK2082 9A/800V FUJI	37.8°C	59.4°C	7	C10	47U/50V RUB YXF 105°C	32.1°C	50.8°C	8	D50	BYQ28X-200 10A/200V PH	43.8°C	65.3°C	9	U1	TI3842	35.5°C	56.9°C	10	D60	SBL3040PT 30A/40V LT	40.2°C	62.1°C	11	C51	2200U/16V NCC 105°C KY	40.2°C	61.6°C	12	C61	4700U/10V RUB ZLH 105°C	36.6°C	58.8°C	13	J4	180Ω /2W R/MO	64.1°C	84.1°C	14	D1	SF54028 3A/1KV	46.8°C	68.6°C	15			°C	°C	P
NO	Position	P/N	ROOM AMBIENT Ta= 31.8 °C	HIGH AMBIENT Ta= 52 °C																																																																																	
1	LF1	TF-485	41.1°C	62.8°C																																																																																	
2	BD1	D3SB80 4A/800V SHI	41.9°C	63.6°C																																																																																	
3	C6	150U/400V HP3 85°C	35.3°C	56.3°C																																																																																	
4	R3	15W/3W R/MO	50.2°C	71.1°C																																																																																	
5	T1 COIL	TF-1118	50.4°C	71.4°C																																																																																	
6	Q1	2SK2082 9A/800V FUJI	37.8°C	59.4°C																																																																																	
7	C10	47U/50V RUB YXF 105°C	32.1°C	50.8°C																																																																																	
8	D50	BYQ28X-200 10A/200V PH	43.8°C	65.3°C																																																																																	
9	U1	TI3842	35.5°C	56.9°C																																																																																	
10	D60	SBL3040PT 30A/40V LT	40.2°C	62.1°C																																																																																	
11	C51	2200U/16V NCC 105°C KY	40.2°C	61.6°C																																																																																	
12	C61	4700U/10V RUB ZLH 105°C	36.6°C	58.8°C																																																																																	
13	J4	180Ω /2W R/MO	64.1°C	84.1°C																																																																																	
14	D1	SF54028 3A/1KV	46.8°C	68.6°C																																																																																	
15			°C	°C																																																																																	
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 135 % 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 500 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																
5	TEMPERATURE COEFFICIENT	± 0.04 %(0-50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.02 %(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:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST :	N/A																																																																																

SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 4 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 4.8 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 3.38 mA I/P-FG: 1.55 mA O/P-FG: 0.7 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℃	I/P-O/P: 11 GΩ I/P-FG: 6 GΩ O/P-FG: 16 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃	3 mΩ	P
4	APPROVAL	TUV: Certificate NO : UL: File NO :			N/A

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	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℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	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℃	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 C 51 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 1600281 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 ℃ LIFE TIME= 260279 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 262.1k 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	Q1 Rated 2SK2082 : 900 V 9 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) 464 V (2) 672 V (3) 792 V	P
2	Diode Peak Voltage	D60 Rated SBL3040PT : 40 V 30 A D50 Rated BYQ28X-200 : 200 V 10 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) 19.4 V (2) 31.1 V (3) 28.1 V (1) 27.6 V (2) 42.6 V (3) 40.8 V	P
3	Clamp Diode Peak Voltage	D1 Rated SF5408 : 1KV 3 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 650 V (2) 640 V	P
4	Input Capacitor Voltage	C 5 Rated : 150u / 400V/ 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) 386 V (2) 380 V (3) 366 V	P
5	Control IC Voltage Test	U1 Rated TL3842 : 30 V	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) 16.6 V (2) 16.3 V (3) 13.9 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2004/8/16	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2004/11/22	PRODUCT SAMPLE W0409B12	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023