



Test Report: GSM120B48-R7B

120W AC-DC Single Output Medical Adaptor

■ DESIGN VERIFY TEST

- Output Function Test
- Input Function Test
- Protection Function Test
- Control Function Test
- Component Stress Test

■ SAFETY & E.M.C. TEST

- Safety Test
- E.M.C. Test

■ RELIABILITY TEST

- ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 200 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 18.8 mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1: -2.5 %~ +2.5 % (Max)	I/P : 80 VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : -0.104 %~ 0.104 %	P
3	LINE REGULATION	V1 : -1 %~ +1 % (Max)	I/P : 100 VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0 %~ 0 %	P
4	LOAD REGULATION	V1: -2.5 %~ +2.5 % (Max)	I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : -0.104 %~ 0.104 %	P
5	SET UP TIME	230VAC : 1500 ms (Max) 115VAC : 2000 ms(Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 342.924 ms 115VAC/ 439.141 ms	P
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°C	230VAC/ 25.349 ms 115VAC/ 25.887 ms	P
7	HOLD UP TIME	230VAC : 40 ms (TYP) 115VAC : 24 ms (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 44.288 ms 115VAC/ 26.137 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : <5 %	P
9	DYNAMIC LOAD	V1 : 4800 mVp-p	I/P : 230 VAC (1).O/P : FULL /Min LOAD 90%DUTY/ 1KHZ (2).O/P : FULL /Min LOAD 90%DUTY/ 3KHZ (3).O/P : FULL /Min LOAD 90%DUTY/ 5KHZ (4).O/P : FULL /Min LOAD 50%DUTY/ 120HZ Ta : 25°C	(1) 672 mVp-p (2) 352 mVp-p (3) 358 mVp-p (4) 952 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	80VAC~264 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C I/P : LOW-LINE-3V= 77 V HIGH-LINE+15%=300 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	62.743 V~264V TEST : OK	P
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P : 80 VAC ~ 264 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= 0.940 230VAC PF= 0.990 115VAC	P
4	EFFICIENCY	91.5% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	91.98 %	P
5	INPUT CURRENT	230V/ 0.7 A (TYP) 115V/ 1.4 A (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 0.598 A/ 230 VAC I = 1.148 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 70 A (TYP) 115V 35 A(TYP) COLD START	I/P : 230 VAC I/P: 115VAC O/P : FULL LOAD Ta : 25°C	I = 44.875 A/ 230 VAC I = 29.349 A/115VAC	P
7	LEAKAGE CURRENT	< 100 uA / 264VAC For Touch	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-V: 90.2 μA N-V: 90.1 μA	P
8	NO LOAD CONSUMPTION	< 0.15 W	I/P : 240VAC O/P : NO LOAD Ta : 25°C	< 0.0791 W	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 % ~160 %	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	132.8 %/ 230 VAC 127.0 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1 : 50.4 V ~64.8V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	59.60 V/ 230 VAC 59.23 V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	NO DAMAGE Shut down o/p voltage, re-power on to recover	I/P : 230 VAC O/P : FULL LOAD	O.T.P. Active Shut down o/p voltage, re-power on to recover	P



120W AC-DC Single Output Medical Adaptor

GSM120B series

4	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
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CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	ERP STEP2 COMPLIANT	LEVEL V ≥89%	I/P: 230 VAC/115VAC O/P:100/75/50/25/% Ta:25°C	230V 91.224 % 115V 90.693 %	P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q32 Rated : 700 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) 600 V (2) 538 V (3) 594 V	P
2	Diode Peak Voltage	Q102 Rated : 300 V 20 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) 259 V (2) 291 V (3) 260 V	P
3	Input Capacitor Voltage	C 5 Rated : 120u /420V/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) 398 V (2) 402 V (3) 408 V	P
4	Control IC Voltage Test	U 1 Rated : 28 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) 18.6 V (2) 17.1 V (3) 18.8 V	P
5	CLAMP DIODE	D 30 Rated : 800 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) 506 V (2) 396 V (3) 500 V	P
6	Power Transistor (D to S) or (C to E) Peak Voltage	Q31 Rated : 600V	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) 426 V (2) 406 V (3) 418 V	P

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 4 KVAC/min	I/P-O/P : 4.2KVAC/min Ta : 25°C	I/P-O/P : 2.957 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ	I/P-O/P : 500 VDC Ta : 25°C/70%RH	I/P-O/P : 9999 MΩ NO DAMAGE	P

E.M.C TEST

c	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	EN55011 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab	P
3	RADIATION	EN55011 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 MEDICAL AIR:8KV / Contact:6KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 MEDICAL INPUT: 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 MEDICAL 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				

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																				
1	TEMPERATURE RISE TEST	MODEL : GSM120B24-R7B 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta=23.9°C 2. HIGH AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta=37.5°C	<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=23.9°C</th> <th>HIGH AMBIENT Ta=37.5°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>59.5°C</td><td>70.3°C</td></tr> <tr><td>2</td><td>LF2</td><td>59.4°C</td><td>70.5°C</td></tr> <tr><td>3</td><td>LF3</td><td>61.4°C</td><td>72.5°C</td></tr> <tr><td>4</td><td>C12</td><td>61.9°C</td><td>73.0°C</td></tr> <tr><td>5</td><td>D6</td><td>63.4°C</td><td>74.4°C</td></tr> <tr><td>6</td><td>L2</td><td>62.6°C</td><td>73.6°C</td></tr> <tr><td>7</td><td>C5</td><td>63.4°C</td><td>74.4°C</td></tr> <tr><td>8</td><td>C52</td><td>70.3°C</td><td>81.2°C</td></tr> <tr><td>9</td><td>RTH30</td><td>64.6°C</td><td>75.8°C</td></tr> <tr><td>10</td><td>D30</td><td>72.5°C</td><td>83.5°C</td></tr> <tr><td>11</td><td>Q32</td><td>67.8°C</td><td>79.2°C</td></tr> <tr><td>12</td><td>D1</td><td>63.4°C</td><td>74.6°C</td></tr> <tr><td>13</td><td>Q31</td><td>63.4°C</td><td>74.9°C</td></tr> <tr><td>14</td><td>BD1</td><td>62.8°C</td><td>73.9°C</td></tr> <tr><td>15</td><td>T1</td><td>75.6°C</td><td>86.4°C</td></tr> <tr><td>16</td><td>C110</td><td>66.3°C</td><td>77.1°C</td></tr> <tr><td>17</td><td>Q102</td><td>72.8°C</td><td>84.1°C</td></tr> <tr><td>18</td><td>U2</td><td>65.2°C</td><td>76.4°C</td></tr> <tr><td>19</td><td>C1</td><td>58.7°C</td><td>69.6°C</td></tr> <tr><td>20</td><td>C2</td><td>59.1°C</td><td>70.2°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=23.9°C	HIGH AMBIENT Ta=37.5°C	1	LF1	59.5°C	70.3°C	2	LF2	59.4°C	70.5°C	3	LF3	61.4°C	72.5°C	4	C12	61.9°C	73.0°C	5	D6	63.4°C	74.4°C	6	L2	62.6°C	73.6°C	7	C5	63.4°C	74.4°C	8	C52	70.3°C	81.2°C	9	RTH30	64.6°C	75.8°C	10	D30	72.5°C	83.5°C	11	Q32	67.8°C	79.2°C	12	D1	63.4°C	74.6°C	13	Q31	63.4°C	74.9°C	14	BD1	62.8°C	73.9°C	15	T1	75.6°C	86.4°C	16	C110	66.3°C	77.1°C	17	Q102	72.8°C	84.1°C	18	U2	65.2°C	76.4°C	19	C1	58.7°C	69.6°C	20	C2	59.1°C	70.2°C		P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 132% LOAD Ta : 25°C	TEST : OK	P																																																																																				
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -30 °C	TEST : OK	P																																																																																				
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL °C NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta=40°C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																				
5	TEMPERATURE COEFFICIENT	±0.03%/°C (0-50°C)	I/P : 230 VAC O/P : FULL LOAD	±0.003%/°C (0-50°C)	P																																																																																				
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40°C~ +80°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		OK	P																																																																																				



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GSM120B series

7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -30°C ~ +60°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 AC ON/OFF TEST turn on 58sec ; turn off 2sec	OK	P
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK	P
9	CAPACITOR LIFE CYCLE	SUPPOSE C110 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta=25°C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta=40°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=40°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=40°C LIFE TIME	(1) 146746HRS (2) 63030HRS (3) 105917HRS (4) 159417HRS	P
10	MTBF	MIL-HDBK-217F NOTICE S2 PARTS COUNT TOTAL FAILURE RATE : 372KHRS		P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50°C		P

SAMPLE	TEST RESULT	TESTER	APPROVAL
PRODUCT SAMPLE	PASS	Frank	WangDZ