



Specification

AC INPUT VOLTAGE

90~264 VAC, 47~440Hz / 127~370VDC.

POWER FACTOR (Typ.)

PF>0.95/230VAC PF>0.98/115VAC at full load

AC INPUT CURRENT (Typ.)

Maximum input current 3.5A at 115VAC, 60Hz or 1.6A at 230VAC, 60Hz with 100% output load.

INRUSH CURRENT (Typ.)

Inrush current is less than 25A at 115VAC or less than 40A at 230VAC under cold start conditions. Limiting provided by internal thermistors.

SETUP, RISE TIME

1000ms, 20ms / 230VAC at full load
3000ms, 20ms / 115VAC at full load

HOLD-UP TIME (Typ.)

16ms / 230VAC at full load
16ms / 115VAC at full load

LEAKAGE CURRENT

Leakage current is less than 180 μ A at 264VAC for earth leakage current
Leakage current is less than 100 μ A at 264VAC for patient leakage current

DC OUTPUT ADJ. RANGE

DC output voltage (or CH1 of multiple output models) can be adjusted between -5%~+10% rated output voltage by potential meter.

OVERLOAD PROTECTION

Fully protected against short circuit and output overload. The hiccup type protection will be activated at 120~160% rated load and recovers automatically after fault condition is removed.

OVER VOLTAGE PROTECTION

Provided on output channel 1 only at 115%~135% rated output voltage. Output will be shut down when this protection is activated.

OVER TEMPERATURE PROTECTION

When the temperature of TSW1 which detect on heat sink of power transistor reaches 95 $^{\circ}$ C, This protection is activated. Then output will be shut down and recovers automatically after temperature goes down.

POWER GOOD / FAIL SIGNAL

TTL logic high for power good and TTL low for power fail. When the output voltage reaches 90% of rated value, a +5V TTL signal will be sent out with a 10~500ms delay; At least 1ms before the output voltage goes below 90% of the rated value, the TTL signal will be turned off.

* MPS-200-3.3 does not have this function.

REMOTE CONTROL

RC+/RC-:0 ~ 0.8V=power on; 4 ~ 10V=power off sink current<4~10mA

Features

- Universal AC input / Full range
- Low leakage current <180 μ A
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Free air convection for 140W and forced air convection for 200W
- UL60601-1 medical safety approved
- With power good and fail signal output
- Built-in remote ON-OFF control
- Built-in remote sense function
- Fixed switching frequency at 100KHz
- 3 years warranty



WORKING TEMP.

Whole series can operate from -20~70 $^{\circ}$ C. Please refer to the derating curves.

WORKING HUMIDITY

20~90% RH non-condensing.

STORAGE TEMP., HUMIDITY

-40~+85 $^{\circ}$ C, 10~90% RH

TEMP. COEFFICIENT

$\pm 0.04\%/^{\circ}$ C on all outputs at full load between 0~50 $^{\circ}$ C of ambient temperature.

VIBRATION

2G of acceleration, vibrating frequency adjust from 10Hz ~500Hz within a 10-minute cycle. 6 testing cycles (60 minutes) each along X, Y, Z axes.

SAFETY STANDARDS

Medical : UL60601-1, TUV EN60601-1, IEC60601-1 approved
Commercial : Also design refer to UL60950-1, TUV EN60950-1

WITHSTAND VOLTAGE

4000VAC between input and output
1500VAC between input and F.G.
1500VAC between output and F.G.

ISOLATION RESISTANCE

>100M Ohms for I/P-O/P, I/P-FG, O/P-FG by using 500VDC test voltage.

EMI COMPLIANCE

EMI Specifications
Conducted & Radiation

Compliance Level
EN55011, Class B
EN55022, Class B
EN61000-3-2
EN61000-3-3

Harmonic distortion
Voltage flicker

EMS COMPLIANCE

EMS Specification
ESD air
ESD contact
RF field susceptibility

Compliance Level
EN61000-4-2, Level 3, 8KV
EN61000-4-2, Level 2, 4KV
EN61000-4-3, Level 2, 3V/m
Level 3, 10V/m
EN61000-4-4, Level 2, 1KV/5KHz
Level 3, 2KV/5KHz
EN61000-4-5, Level 4, 2KV/Line-Line
4KV/Line-Earth
EN61000-4-6, Level 2, 3Vrms/m
Level 3, 10Vrms/m
EN61000-4-8, Level 2, 3A/m
Level 3, 10A/m
EN61000-4-11, Compliance
ENV50204, Level 2, 3V/m, 900MHz
Level 3, 10A/m, 900MHz

EFT(Electrical Fast Transient)/Burst

Lightning/Surge

Conducted RF susceptibility

Magnetic field immunity

Voltage dip, interruption

Digital phone carrier immunity

MTBF

262,100 hours min. at full load and 25 $^{\circ}$ C of ambient temperature, calculated per MIL-HDBK-217F.

DIMENSION (L*W*H)

177.8x107.2x35.5mm or 7"x4.22"x1.4"

PACKING

0.66Kg; 24pcs/16.8Kg/0.99CUFT



1~4 Output Medical Type

200W Medical series

Output Chart

MODEL	OUTPUT VOLTAGE	RATED CURRENT	OUTPUT CURRENT				RIPPLE & NOISE (Max.) (Note 2)	VOLTAGE TOLERANCE (Note 3)	LINE REGULATION	LOAD REGULATION	EFFICIENCY (typ.)
			MINIMUM LOAD	CONVECTION (max.)	WITH FAN (25CFM)	PEAK LOAD WITH 25CFM FAN (Note 4)					
MPS-200-3.3	3.3V	40A	0A	28A	40A	48A	80mVp-p	±2.0%	±0.5%	±1.0%	77%
MPS-200-5	5V	40A	0A	28A	40A	48A	80mVp-p	±2.0%	±0.5%	±1.0%	81%
MPS-200-12	12V	16.7A	0A	11.7A	16.7A	20A	100mVp-p	±2.0%	±0.5%	±1.0%	84%
MPS-200-15	15V	13.4A	0A	9.4A	13.4A	16A	100mVp-p	±2.0%	±0.5%	±1.0%	85%
MPS-200-24	24V	8.4A	0A	5.9A	8.4A	10A	150mVp-p	±1.0%	±0.5%	±1.0%	86%
MPS-200-48	48V	4.2A	0A	3A	4.2A	5A	200mVp-p	±1.0%	±0.5%	±1.0%	87%
MPD-200A	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	82%
	12V	8A	0.8A	5.4A	8A	9.6A	120mVp-p	+8,-5%	±1.0%	±4.0%	
MPD-200B	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	83%
	24V	4A	0.4A	2.7A	4A	4.8A	180mVp-p	±6.5%	±1.0%	+4,-6%	
MPT-200A	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	80%
	12V	7.5A	0.8A	5A	7.5A	9A	120mVp-p	±8.0%	±1.0%	±5.0%	
	-5V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPT-200B	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	80%
	12V	6A	0.6A	4.4A	6A	7.2A	120mVp-p	±8.0%	±1.0%	±5.0%	
	-12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPT-200C	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	80%
	15V	4.7A	0.5A	3.3A	4.7A	5.6A	150mVp-p	±8.0%	±1.0%	±5.0%	
	-15V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPT-200D	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	81%
	24V	3A	0.3A	2.2A	3A	3.6A	180mVp-p	±8.0%	±1.0%	±5.0%	
	12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200B	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	78%
	12V	7A	0.7A	5.3A	7A	8.4A	120mVp-p	±8.0%	±1.0%	±5.0%	
	-5V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200C	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	78%
	15V	5A	0.5A	4A	5A	6A	150mVp-p	±6.0%	±1.0%	±5.0%	
	-5V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-15V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200D	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	79%
	24V	3A	0.3A	2.3A	3A	3.6A	180mVp-p	±8.0%	±1.0%	±5.0%	
	12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200F	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	81%
	24V	2.7A	0.3A	2.1A	2.7A	3.3A	180mVp-p	±8.0%	±1.0%	±5.0%	
	15V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-15V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	

- Notes :
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor.
 3. Tolerance : includes set up tolerance, line regulation and load regulation.
 4. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.
 5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.
 6. Derating may be needed under low input voltages. Please check the derating curve for more details.

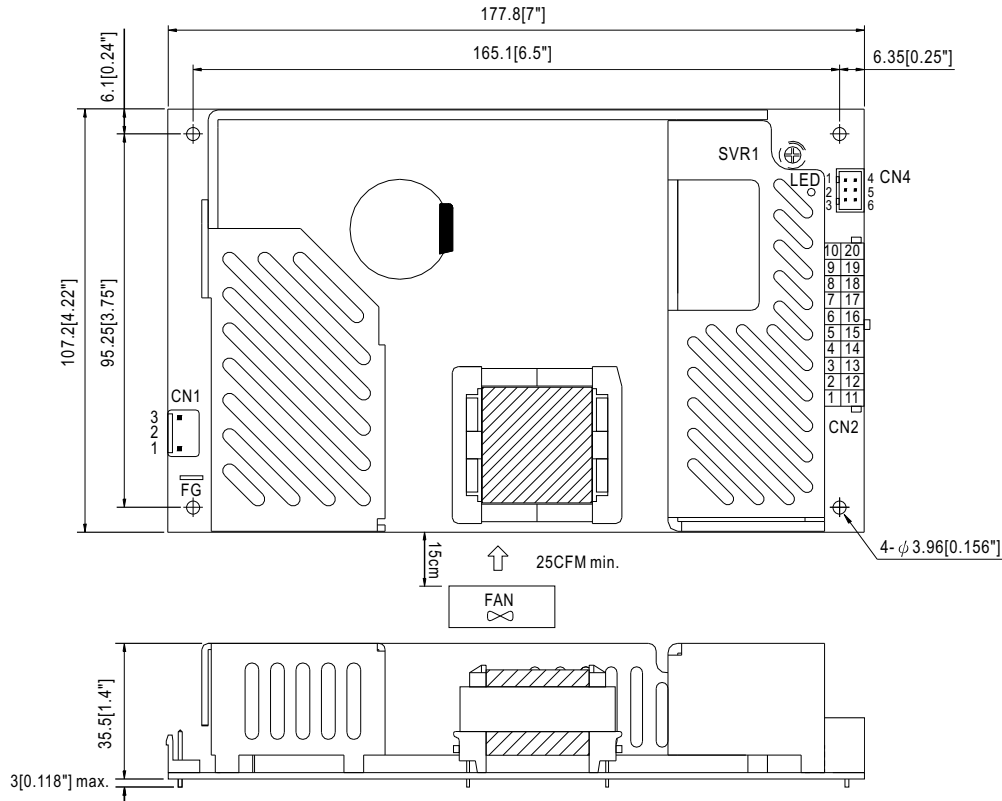


1~4 Output Medical Type

200W Medical series

Mechanical Specification(MPS-200)

Unit:mm



AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

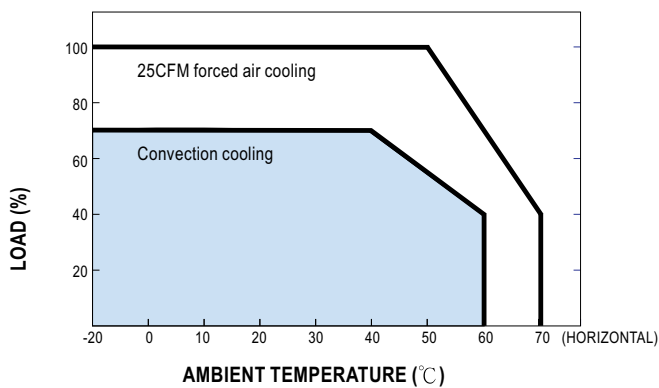
DC Output Connector (CN2) : MOLEX 5566-20 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1~5, 11~15	DC OUTPUT -V	MOLEX 5557 or equivalent	MOLEX 5556 or equivalent
6~10, 16~20	DC OUTPUT +V		

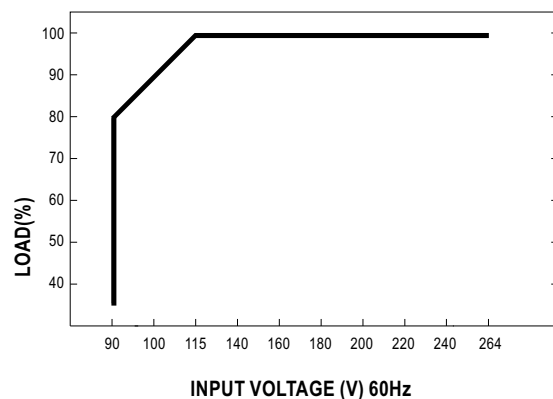
DC Output Connector (CN4) : JS-2008-03*2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	PG	JS-2007-03*2 or equivalent	JS-2007-T or equivalent
2	RS-		
3	GND		
4	RC+		
5	RS+		
6	RC-		

Derating Curve (MPS-200)



Static Characteristics (MPS-200)



MODEL: MPT-200B

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max) V2: 120 mVp-p (Max) V3: 80 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 26 mVp-p (Max) V2: 48 mVp-p (Max) V3: 28 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℃	4.51 V~ 5.62 V/ 230 VAC 4.51 V~ 5.62 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max) V2: 8 %~ -8 % (Max) V3: 5 %~ -5 % (Max)	I/P: 115 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.4 %~ -0.4 % V2: 4 %~ -4 % V3: 0.3 %~ -0.3 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max) V2: 1 %~ -1 % (Max) V3: 0.5 %~ -0.5 % (Max)	I/P: 115 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~ 0 % V2: 0.05 %~ -0.05 % V3: 0.1 %~ -0.1 %	P
5	LOAD REGULATION	V1: 1 %~ -1 % (Max) V2: 5 %~ -5 % (Max) V3: 1 %~ -1 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.24 %~ -0.24 % V2: 1.4 %~ -1.4 % V3: 0.3 %~ -0.3 %	P
6	CROSS REGULATION	V1: 1 %~ -1 % (Max) V2: 5 %~ -5 % (Max) V3: 1 %~ -1 % (Max)	I/P: 230 VAC O/P: Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25℃	V1: 0.12 %~ -0.12 % V2: 2.7 %~ -2.7 % V3: 0.05 %~ -0.05 %	P
7	SET UP TIME	230VAC: 1000 ms (Max) 115 VAC: 3000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 664 ms 115VAC/ 1929 ms	P
8	RISE TIME	230VAC: 20 ms (Max) 115VAC: 20 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 16 ms 115VAC/ 14 ms	P
9	HOLD UP TIME	230VAC: 16 ms(TYP) 115VAC: 16 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 18 ms 115VAC/ 18 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℃	328 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℃	73 V~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 ~440HZ NO DAMAGE OSC	I/P: 90 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	POWER FACTOR	0.95/ 230 VAC(TYP) 0.98/1150 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	PF= 0.97 /230 VAC. PF= 0.99 /115 VAC	P
4	EFFICIENCY	80% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	80.7 %	P
5	INPUT CURRENT	230V/ 1.6 A (TYP) 115V/ 3.5 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 1.1 A/ 230 VAC I = 2.3 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 40 A(TYP) 115V/ 25 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 26 A/ 230 VAC I = 13 A/ 115 VAC	P
7	LEAKAGE CURRENT a. For earth leakage current b. For patient leakage current	a. <180 uA / 264 VAC b. <100 uA / 264 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	a. 74 uA b. 38 uA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	120 %~ 160 %	I/P: 230 VAC I/P: 115 VAC O/P: TESTING Ta: 25°C	137 %/ 230 VAC 136 %/ 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	6.1 V/ 230 VAC 6.1 V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 95 ± 5°C O.T.P. NO DAMAGE	I/P: 230 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 Hiccup Mode	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	Rc+ / Rc- 0V~ 0.8V POWER ON 4V~ 10V POWER OFF	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	0V ~ 2.5 V POWER ON 2.6 V ~ 10 V POWER OFF	P
2	POWER GOOD SIGNAL	DELAY 10ms ~ 500ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	292 ms/ 230 VAC 291 ms/ 115 VAC	P
3	POWER FAIL SIGNAL	> 1ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	6 ms/ 230 VAC 5 ms/ 115 VAC	P
4	REMOTE SENSE	> 0.25V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	> 0.25V	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : MPQ-200B WITH FAN 1. ROOM AMBIENT BURN-IN : 2HRS I/P: 230VAC O/P: FULL LOAD Ta= 28.8 °C 2. HIGH AMBIENT BURN-IN : 2HRS I/P: 230VAC O/P: FULL LOAD Ta= 50.7 °C <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 28.8°C</th><th>HIGH AMBIENT Ta= 50.7 °C</th></tr><tr><td>1</td><td>LF2</td><td>LF-104</td><td>52.5°C</td><td>74.5°C</td></tr><tr><td>2</td><td>D23</td><td>31DF6 3A/600V</td><td>38.2°C</td><td>60.1°C</td></tr><tr><td>3</td><td>Q20</td><td>IRFP450 14A/500V</td><td>45.7°C</td><td>68.0°C</td></tr><tr><td>4</td><td>T1 COIL</td><td>TF-1171</td><td>45.3°C</td><td>66.3°C</td></tr><tr><td>5</td><td>D100</td><td>SBL3040PT 30A/40V LT</td><td>80.3°C</td><td>100.6°C</td></tr><tr><td>6</td><td>D200</td><td>S20LC20U 20A/200V SHI</td><td>57.9°C</td><td>79.1°C</td></tr><tr><td>7</td><td>D300</td><td>F10SC6 10A/60V SHI</td><td>57.9°C</td><td>78.8°C</td></tr><tr><td>8</td><td>RG70</td><td>R05PI 3A/35V KEC</td><td>58.6°C</td><td>79.3°C</td></tr><tr><td>9</td><td>BD1</td><td>D3SB60 4A/600V SHI</td><td>48.4°C</td><td>71.8°C</td></tr><tr><td>10</td><td>C5</td><td>150U/400V RUB 105°C</td><td>40.6°C</td><td>60.2°C</td></tr><tr><td>11</td><td>L2</td><td>TR-570</td><td>66.3°C</td><td>84.8°C</td></tr><tr><td>12</td><td>Q1</td><td>IRFP460A 20A/500V</td><td>63.6°C</td><td>84.4°C</td></tr><tr><td>13</td><td>U1</td><td>ML4800CP</td><td>45.2°C</td><td>66.7°C</td></tr><tr><td>14</td><td>L100</td><td>TR-523</td><td>69.3°C</td><td>91.7°C</td></tr><tr><td>15</td><td>C110</td><td>2200U/6.3V RUB 105°C</td><td>47.0°C</td><td>69.9°C</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 28.8°C	HIGH AMBIENT Ta= 50.7 °C	1	LF2	LF-104	52.5°C	74.5°C	2	D23	31DF6 3A/600V	38.2°C	60.1°C	3	Q20	IRFP450 14A/500V	45.7°C	68.0°C	4	T1 COIL	TF-1171	45.3°C	66.3°C	5	D100	SBL3040PT 30A/40V LT	80.3°C	100.6°C	6	D200	S20LC20U 20A/200V SHI	57.9°C	79.1°C	7	D300	F10SC6 10A/60V SHI	57.9°C	78.8°C	8	RG70	R05PI 3A/35V KEC	58.6°C	79.3°C	9	BD1	D3SB60 4A/600V SHI	48.4°C	71.8°C	10	C5	150U/400V RUB 105°C	40.6°C	60.2°C	11	L2	TR-570	66.3°C	84.8°C	12	Q1	IRFP460A 20A/500V	63.6°C	84.4°C	13	U1	ML4800CP	45.2°C	66.7°C	14	L100	TR-523	69.3°C	91.7°C	15	C110	2200U/6.3V RUB 105°C	47.0°C	69.9°C	P
NO	Position	P/N	ROOM AMBIENT Ta= 28.8°C	HIGH AMBIENT Ta= 50.7 °C																																																																																	
1	LF2	LF-104	52.5°C	74.5°C																																																																																	
2	D23	31DF6 3A/600V	38.2°C	60.1°C																																																																																	
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5	D100	SBL3040PT 30A/40V LT	80.3°C	100.6°C																																																																																	
6	D200	S20LC20U 20A/200V SHI	57.9°C	79.1°C																																																																																	
7	D300	F10SC6 10A/60V SHI	57.9°C	78.8°C																																																																																	
8	RG70	R05PI 3A/35V KEC	58.6°C	79.3°C																																																																																	
9	BD1	D3SB60 4A/600V SHI	48.4°C	71.8°C																																																																																	
10	C5	150U/400V RUB 105°C	40.6°C	60.2°C																																																																																	
11	L2	TR-570	66.3°C	84.8°C																																																																																	
12	Q1	IRFP460A 20A/500V	63.6°C	84.4°C																																																																																	
13	U1	ML4800CP	45.2°C	66.7°C																																																																																	
14	L100	TR-523	69.3°C	91.7°C																																																																																	
15	C110	2200U/6.3V RUB 105°C	47.0°C	69.9°C																																																																																	
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: V1@20A V2@9A V3@2.4A V4@2.4A Ta:25°C	TEST : OK	P																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 80 % 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	± 0.04 %(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 (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	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: 1.5 KVAC/min	I/P-O/P: 4.2 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 1.8 KVAC/min Ta:25℃	I/P-O/P: 1.98 mA I/P-FG: 1.18 mA O/P-FG: 1.57 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: 22 GΩ I/P-FG: 30 GΩ O/P-FG: 30 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃	18 mΩ	P
4	APPROVAL	TUV: Certificate NO : TA50069957 UL: File NO : E227340			P

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 C110 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 437900 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 ℃ LIFE TIME= 72238 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	Q20 Rated IRFP450 : 500 V 14A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 390 V (2) 390 V (3) 390 V	P
2	Diode Peak Voltage	D100 Rated SBL3040PT : 40 V 30 A D200 Rated S20LC20U : 200 V 20 A D300 Rated FMX-12S : 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℃	(1) 21.7 V (2) 18.8 V (3) 22 V (1) 50.6 V (2) 41 V (3) 50.6 V (1) 62.2 V (2) 53.2 V (3) 63.4 V	P
3	Input Capacitor Voltage	C 5 Rated : 150u / 400V/ 105℃	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℃ (4)Burn in 1hr	(1) 388 V (2) 388 V (3) 394 V (4) 390 V	P
4	Control IC Voltage Test	U1 Rated ML4800 : 18 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℃	(1) 14.8 V (2) 14.8 V (3) 15.1 V	P
5	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated IRFP460A : 500 V 20A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 390 V (2) 408 V (3) 388 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/5/17	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2005/9/3	PRODUCT SAMPLE W0507B20	PASS	VINCENT TSENG	MAX LIN
2006/4/11	PRODUCT SAMPLE W0603C35	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023