



全漢企業股份有限公司
FSP TECHNOLOGY INC.

台灣桃園市建國東路22號
No. 22, Jianguo East Road., Taoyuan City, Taiwan, R.O.C.
TEL:+886-3-375-9888
FAX:+886-3-375-6966

統一編號：84239055
Website : www.FSP-group.com
Email : sales@fsp-group.com.tw

SPECIFICATION



ESD08068867

FSP038-2L01

Released Date:2009/3/19-19:27:24



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FSP Electronic Co.,Ltd.

台灣 桃園市建國東路 22 號

NO.22,jianguo E,Rd.,Taoyuan City, Taiwan,R.O.C.

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SPECIFICATION

FSP038-2L01

R&D	CHECK	APPROVED	REV.
Bear	HG	M.H	1.0

1. SCOPE

The FSP038-2L01 comprises a 38 watts multi-outputs, full range switching power supply and a DC to AC inverter that for AUO M185XW01 V0,18.5"/ 2 lamp color TFT-LCD TV module backlight system.

2. FEATURE

All products including samples delivered will meet all the requirements as outlined in the document. The basic requirements of the design features are listed below:

- * Two output voltages: +5.15V, +12.5V
- * Build in DC-AC inverter .
- * Short circuit protection / power limiting
- * Simple construction - easy assembly and service /repair
- * High reliability

3. MECHANICAL REQUIREMENTS

3.1 Power Supply Dimension Constraints

147.0 mm (L)*110.0 mm (W)* 20.0 mm (H)

3.2 Power Supply Connectors

3.2.1 AC Input Connector

CN100--- JOWLE/A3963WV2 or equivalent

3.2.2 DC output Connector

Pin assignment of connector on power output

CN502---JOWLE/A2001WV2-6P or equivalent

Pin number	Output Name
1,2	+12V
3	DIM /ADJ (0V~5.0Vdc) 0V brightness max.
4	BLON(5V:on, 0V:off)
5,6	GND

CN503---JOWLE/A2501WV2-4P or equivalent

Pin number	Output Name
1,2	GND
3,4	+5V

4. Electrical Requirements

4.1 Input AC

4.1.1 Input Voltage

Minimum	Nominal	Maximum	
90	110/240	264	VAC

4.1.2 Input Frequency

Minimum	Nominal	Maximum	
47	50/60	63	Hz

4.2 Output Voltages And Loads

They are measured at the load end of connected cables.

Table.1 SMPS load limits

Signal Name	Voltage (Volts)			Current (mA)			
	Min	Typ	Max	I max.	I normal	I min.	I standby
+5.0V	4.9	5.15	5.4	1500	----	500	50
+12V	11.8	12.5	13.8	1500	----	500	0
+12V(for inverter)	11.8	12.5	13.8	1200	1000	0	0

Note: 1 The output voltage shall remain within the following the output regulation under I max. , I normal, I min. at any AC input condition; +12V output load regulation is within the -5%~+20% tolerance at I standby load.

Note: 2. Load regulation is within the spec of output tolerance. Load regulation measurement is done by changing the measured output load $\pm 40\%$ from 60% rated load, and keep others output at 60% rated load.

4.2.1 Power Saving

I standby load at 240Vac/50Hz., Input power should be less than 1.0W.

4.2.2 Overshoot

Any overshoot at turn on or turn off should be less than 10%

4.2.3 Dynamic Load Limitation

Dynamic load: max. load to 50% load ,min. load to 50% load should meet the regulations with slew rate 2.5A/us.

4.3 Ripple And Noise

4.3.1 Ripple and Noise Required Specification

Table.3 lists the Ripple and Noise limitations of switching power supply unit only under all operating conditions including the input line voltage range and over all the full load range.

Table.3 Ripple and Noise Limitations

Signal Name	Ripple & Noise (mV)
+5V	100
+12V	240

Note:

1. The measuring is done by 20MHz band width limited oscilloscope and terminated each output with a 10uF capacitor in parallel with a 0.1uF capacitor.
2. While test ripple noise of the output the probe shall avoid any coupling from other circuit or equipment .or the test result will not show power supply's actual ripple/noise .

4.4 Protection

The switching power supply will be auto recovery while the fault is removed.

4.4.1 Short Circuit Protection

Each DC output shall have short circuit protection. A short condition on any of DC outputs shall cause no damage to the power supply. The unit shall recover and function automatically as soon as the short condition is removed.

4.4.2 Fuse Protection

The fuse inside the power supply shall open when the AC input current is over the rated current of fuse. This fuse protection will cause switching power supply to fail.

4.4.3 Over Voltage Protection

+12V:Output max. \leq 18.0V , +5V :Output max. \leq 8.0V, Shall be protection at I normal (Auto – recovery)

4.5 Efficiency

78%min. It will be measured at the maximum load and nominal line (115V/60Hz)

4.6 Hold-up Time

The power supply shall maintain voltage regulation within the specified limits in table 1 for at least 8 milliseconds (one cycle drop) after losing of input voltage under the following conditions:

Input voltage: 115Vac

Loading: max. output load

That's mean the power supply shall cover the AC one cycle without any impairment to the power supply output's regulations.

4.7 Mean Time Between Failure (MTBF)

50,000 hrs at 25 Degrees centigrade when calculated using MIL-HDBK-217F. The vender can use agreed upon F.I.T. (failure – in - time) number in place of MTBF.

4.8 Inverter Electrical Spec

4.8.1 Inverter input characteristics use CCFL load (With AUO M185XW01 V0 LCD Panel)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Rremark
Input voltage	Vin	11.8	12.5	13.5	V	
Input current	Iin	--	1.0	1.2	A	Vin=12.5V,Von/off=5V Vadj=0V, Load=panel
Input power	Pin	--	12.5	15.0	W	Vin=12.5V,Von/off=5V Vadj=0V, Load=panel
Input voltage	Von/off	0	--	1.0	V	Off state
		2.5	--	5.0		On state
Adjust voltage	Vadj	0	--	5.0	V	Vadj=0V , Max brightness
Efficiency	η	75	--	--	%	Vin=12.5V,Von/off=5V Vadj=0V, Load=panel

4.8.2 Inverter output characteristics use CCFL load (With AUO M185XW01 V0 LCD Panel)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Rremark	
Lamp current	IL	7.0	7.5	8.0	mA	Vin=12.5V,Von/off=5V Vadj=0V, Load=panel	
Lamp current	IL	2.8	3.3	4.0	mA	Vin=12.5V,Von/off=5V Vadj=5V, Load=panel	
Lamp voltage	VL	--	700	--	Vrms	Vin=12.5V,Von/off=5V Vadj=0V, Load=panel	
Frequency	FL	40	50	60	KHz	Vin=12.5V,Von/off=5V Vadj=0V, Load=panel	
Output open voltage	Vs	1650	--	--	Vrms	Vin=12.5V,Von/off=5V Vadj=0V, Load = ∞	
Output open	VL	LATCH					Vin=12.5V,Von/off=5V Vadj=0V, Load = ∞

4.8.3 Inverter output characteristics use resistor load (RL=100KΩ// 15P(3KV) to GND)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Rremark
Lamp current	IL	6.8	7.5	8.0	mA	Vin=12.5V,Von/off=5V Vadj=0V, Load =RL
Lamp current	IL	2.8	3.3	4.0	mA	Vin=12.5V,Von/off=5V Vadj=5V, Load =RL
Lamp voltage	VL	--	700	--	Vrms	Vin=12.5V,Von/off=5V Vadj=0V, Load =RL
Frequency	FL	40	50	60	KHz	Vin=12.5V,Von/off=5V Vadj=0V, Load =RL
Output open voltage	Vs	1650	--	--	Vrms	Vin=12.5V,Von/off=5V Vadj=0V, Load =∞
Output open	VL	LATCH				Vin=12.5V,Von/off=5V Vadj=0V, Load =∞

4.8.4 Inverter ac output connector pin define

Location: CN2,CN3

Pin No	Symbol	Description
1	Vout-H	High voltage
2	Vout-L	Return

Note: Test equipment:(1)Oscilloscope--Tektronix TDS3012B(2)High voltage probe--Tektronix P6015A
(3)Multi-meter--FLUKE45(4)Current-amplifer--Tektronix TCP300(5)Current-probe--Tektronix TCP312 30ADC

5. ENVIRONMENTAL REQUIREMENTS

5.1 Operating Temperature

Operating	0 to + 40°C
Storage	0 to + 70°C

Note :

Thermal test must be done at nominal AC and at I max. load.

5.2 Humidity (Non-condensing)

Operating	20% to 85% RH
Storage	10% to 95% RH

5.3 Hi-pot Test

100% Hi-pot tested,

Primary to secondary: 3000VAC 1second, Working current \leq 10mA

5.4 Insulation Test

Insulation resistance: Primary to secondary: 500Vdc, 25 M ohms min.

5.5 Leakage Current Test

Leakage current: Measured at 264Vac,50Hz, 0.5mA max.

6. INTERNATIONAL STANDARDS

6.1 EMI Standards

Designed to meet the following conducted & radiation limits:

CISPR 22 Class B

6.2 EMS Standards

6.2.1 Electrostatic Discharge Immunity Test: IEC-61000-4-2 8KV, Criteria B

6.2.2 EFT/Burst Immunity Test: IEC-61000-4-4 1KV, Criteria B

6.2.3 Surge Immunity Test: IEC-61000-4-5 2KV, Criteria B

6.3 Safety Compliance (+CE)

Class II design.

Design to meet:

IEC60950

CE