

110W DC/DC POWER SUPPLY FOR AUTOMOBILE

1 Function Description

DC/DC ATX power supply for automobile application, 6-30VDC input, +5V,+12V,+3.3V,-12V,+5VSB and PG (power good signal) outputs.

2 Operation Environment

Item	Unit	Minimum	Typical	Maximum	Test Conditon
Temperature	°C	-20		50	
RH	%RH	40		90	No Condensation

3 Technique Requirement

3.1 Input Characteristic

Item	Unit	Minimum	Typical	Maximum	Test Conditon
DC INPUT	Vdc	6	12/24	30	
Input Current	A		5/10		

3.2 Output Characteristic

3.2.1 Output Voltage Regulation

Output	Min. Load	Max. Load	Peak Load	Output Voltage range	Ripple (pk-pk) (rated load、20MHz limit) *
+5V	0.5A	6A		4.75~5.25V	50mV
+12V	0.3A	5A		11.40~12.60V	120mV
+3.3V	0.5A	6A		3.14~3.55V	50mV
-12V	0A	0.05A		-11.0~-13.2V	120mV
+5VSB	0.1A	1A		4.75~5.25V	100mV

*: Need 0.5m/s air flow fan cooling .

3.2.2 Others Output Characteristics

Item	Unit	Minimum	Typical	Maximum	Test Conditon
Output Power	W		110		DC output power
Efficiency	%		90		Rated load
Turn on Overshoot	%			10	
Rise Time	ms		20		Output voltage up from 0% to 95%, rated load
Hold up Time	ms		2		Rated load

3.3 EMC Requirement

Item	Request	Standard	Judgement Grade
Conducted interference	CLASS B, 3dB margin	EN55022	Ensure system pass the CLASS B and have 3dB margin
Radiation interference	CLASS B, 3dB margin	EN55022	Ensure system pass the CLASS B and have 3dB margin

3.4 Protection Function

Item	Unit	Yes/No	Minimum	Typical	Maximum	Recovery Characteristic
Input inversion protection		Yes				
+5V OVP	V	Yes	5.8		6.8	Latched, need to re-apply DC input to recovery
+12V OVP	V	Yes	13.2		15.6	Latched
+3.3V OVP	V	Yes	3.9		4.3	Latched
Short CircuitProtection (+5V,+12V,+3.3V)		Yes				Lached

4 Signal Control

4.1 Process Sequence

Item	Name	Characteristic										
1	Controlled motherboard signal (PS-ON)	PS-ON is to control motherboard ON/OFF switch for 'soft' start/stop sequence.. PS-ON is activated 5s after the ignition circuit is turned on and 10s after the ignition turned off.										
2	Power good signal (PG)	<p>The PG signal comes from the No. pin8 of the 20pin output connector, it indicate the power supply working condition, this 'TTL' signal is the result of "AND" relationship with DC output and DC input voltage . On working condition, if the DC input voltage is well within it's operation range, then the PG signal is sent out (PG is in H logic) after 100-500ms delay. If the DC input voltage down and below to 11V, or the one of DC output voltage out of it's normal range, then send out Power Fall signal (that is: PG is in L logic). The Power Fall signal fall to below 0.3V, should have 1ms (at least) before the +5V output down to 4.5V,. And the PG signal's slop during the rise up and fall down</p> <p>Should be smooth and no any oscillation happened. PG signal should have the capacity to drive 6 standard TTL loading.</p> <p>Following is the under voltage level of each output:</p> <table border="1"> <thead> <tr> <th>Output</th> <th>+5V</th> <th>+12V</th> <th>+3.3V</th> <th>-12V</th> </tr> </thead> <tbody> <tr> <td>UVP level</td> <td>+4.5V</td> <td>+10.8V</td> <td></td> <td>-10.4V</td> </tr> </tbody> </table>	Output	+5V	+12V	+3.3V	-12V	UVP level	+4.5V	+10.8V		-10.4V
Output	+5V	+12V	+3.3V	-12V								
UVP level	+4.5V	+10.8V		-10.4V								
3	Sleeping mode control (ON/OFF)	<p>The ON/OFF signal comes from the No. pin14 of the 20pin output connector, is to control the power supply's working state. (Be active in 'L' level). If the ON/OFF signal is in floating, the power supply will have no output (except 5VSB) and in sleeping mode . The 5VSB should be within</p>										

		the range of 4.75-5.25V under 1.5A loading condition, and no any audible noise can be heard. If the ON/OFF signal is shorted to ground, the power supply will be in normal working condition and have normal output voltage.
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4.2 PG signal Sequence

Parameter	Value Request			Test Condition		Figure
	Name	Minimum	Typical	Maximum	Input voltage	
tp.G	100ms		500ms	24VDC	100%	FIG1
tp.F	0.5ms	1ms		24VDC	100%	FIG2
tr		5ns	50 μ s	24VDC	100%	FIG3
tf		500ns	10 μ s	24VDC	100%	FIG4

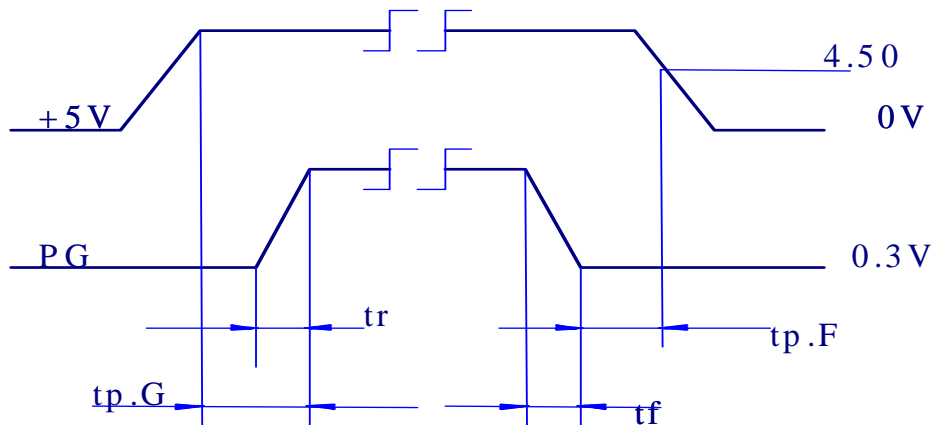
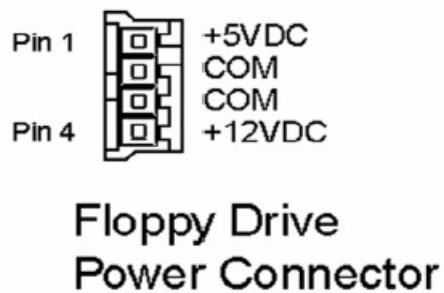
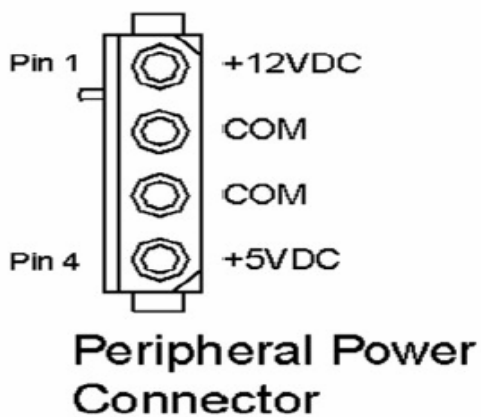
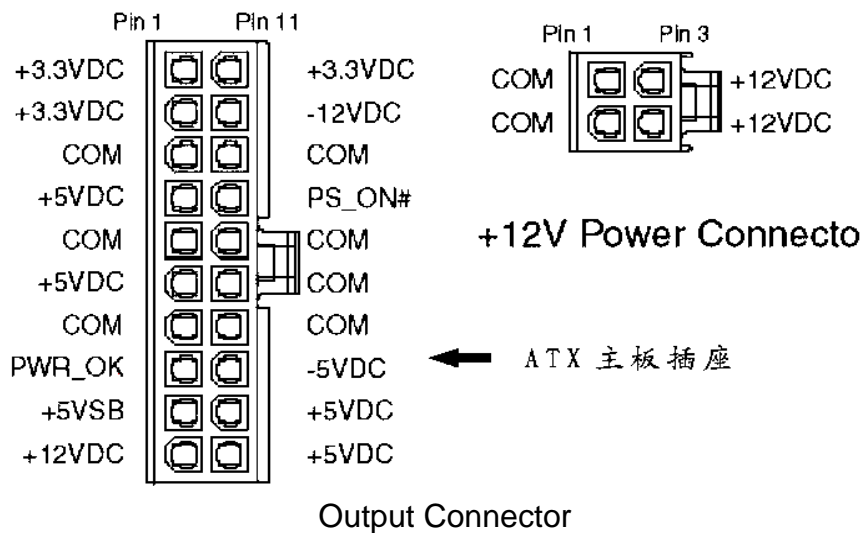


FIG1

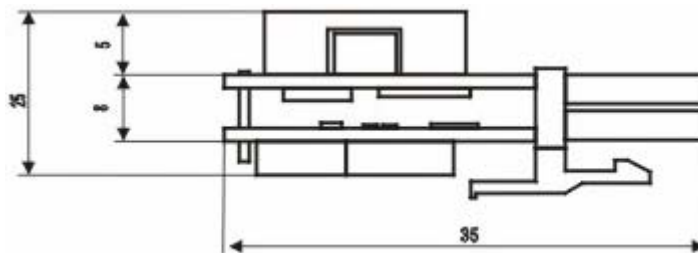
5 Mechanical Requirement

5.1 Outline and Connection



Output Connector (J7)

5.2 Dimension



5.3 Label

standard