

# 60W DC/DC POWER SUPPLY FOR AUTOMOBILE

## 1 Function Description

DC/DC ATX power supply for automobile application, 6-20VDC 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	20	
Input Current	A		6		

### 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	4.5A		4.75~5.25V	50mV
+12V	0.2A	1.0A		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	1.0A		4.75~5.25V	100mV

\*: Need to add 47 $\mu$ F tantalum capacitor and 0.1 $\mu$ F high frequency capacitor on test point when testing.

### 3.2.2 Others Output Characteristics

Item	Unit	Minimum	Typical	Maximum	Test Conditon
Output Power	W		60		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 Circuit Protection (+5V,+12V,+3.3V)		Yes				Latched

## 4 Monitoring ,Signal Control

### 4.1 PG signal Sequence

Parameter	Value Request			Test Condition		Figure
	Name	Minimum	Typical	Maximum	Input voltage	
tp.G	100ms		500ms	12VDC	100%	
tp.F	0.5ms	1ms		12VDC	100%	
tr		5ns	50 $\mu$ s	12VDC	100%	
tf		500ns	10 $\mu$ s	12VDC	100%	

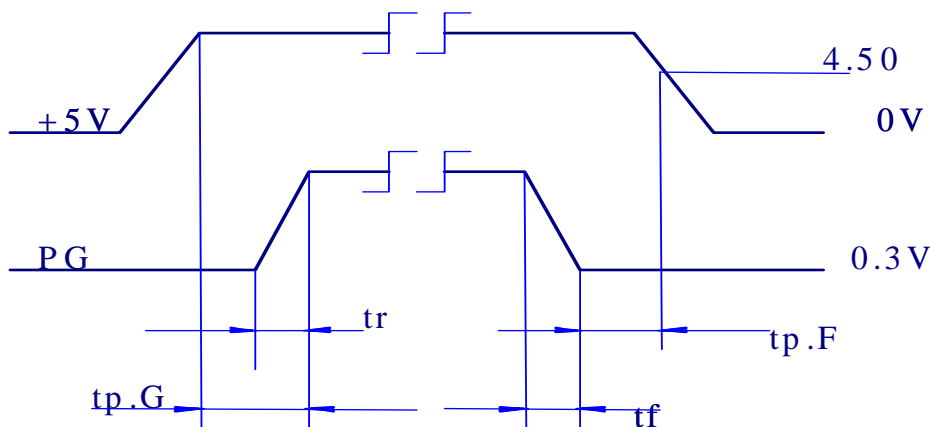
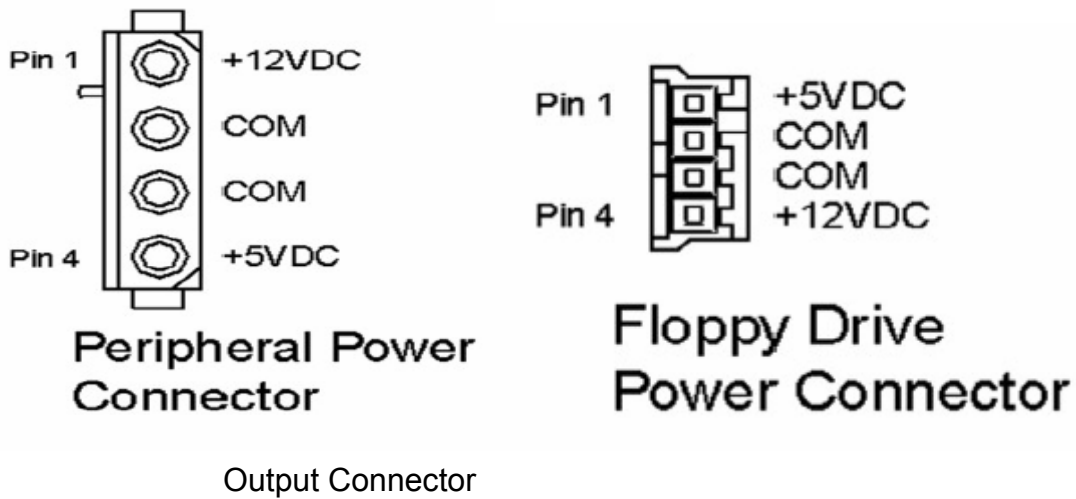
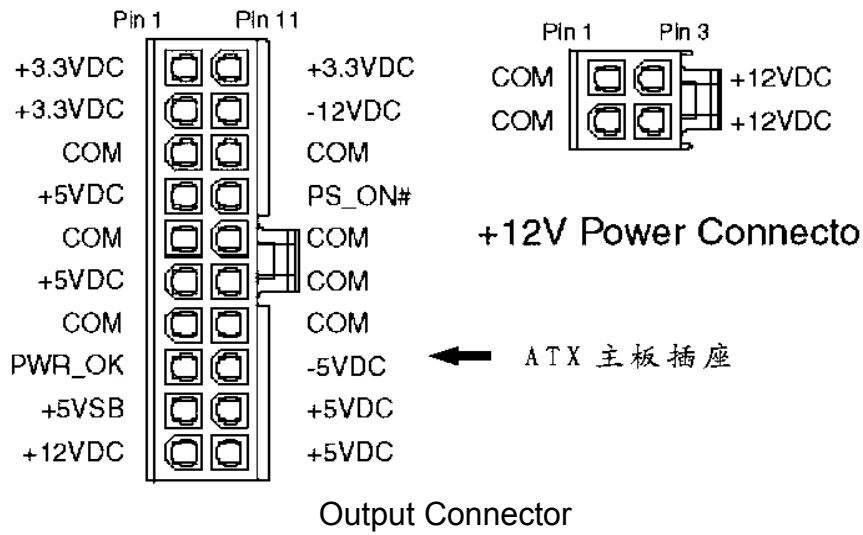


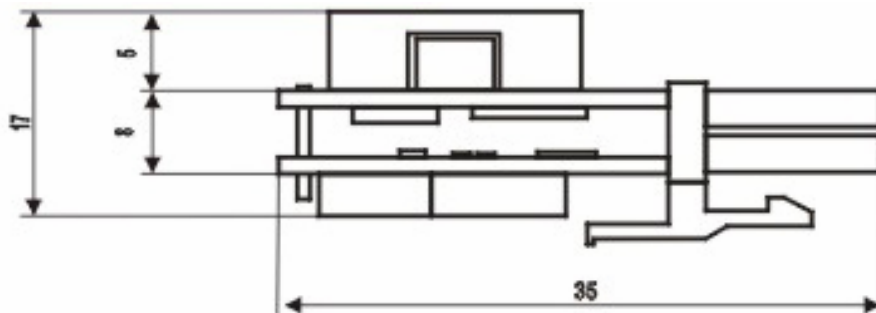
FIG1

## 5 Mechanical Requirement

### 5.1 Outline and Connection



## 5.2 Dimension



## 5.3 Label

standard