Dual-Output Digital Power Supply, 5 V and 12 V, 20 mA

Features

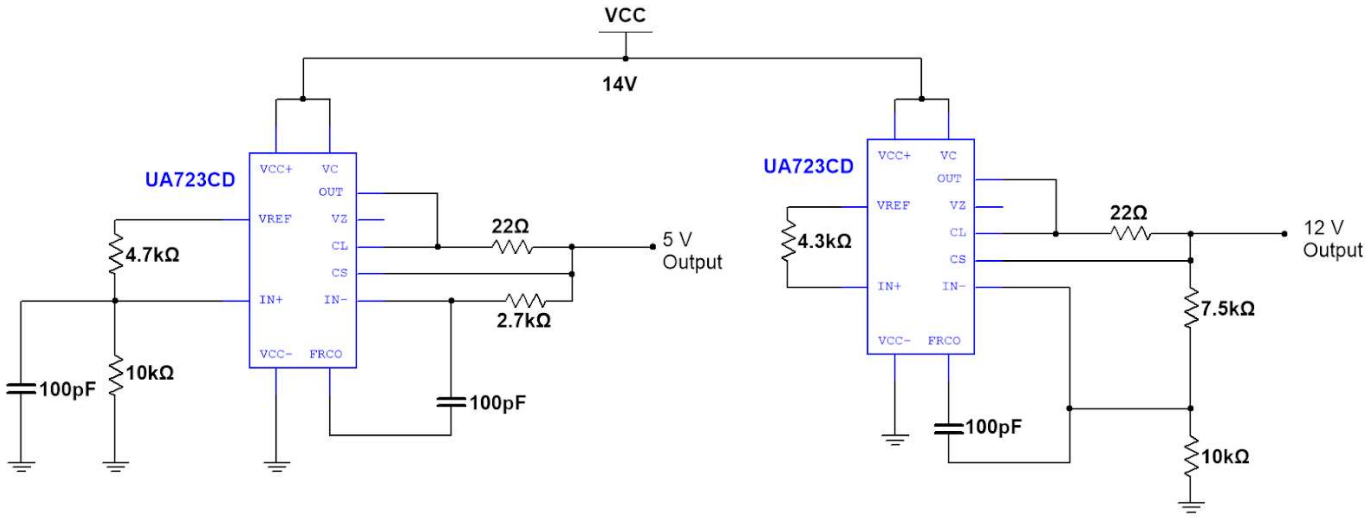
- Steady 5V output for 13.2V - 16.8V input voltage
- Steady 12V output for 13.2V - 16.8V input voltage
- Stable output current of 20mA on both outputs
- Maximum output short-circuit current of 30mA

Description

This device is a dual power supply that provides a steady 5V and 12V output with approximately 20mA current output when supplied with a 13.2V - 16.8V input voltage range. There is a short-circuit protection feature that provides a maximum of 30mA output current when under short-circuit conditions. The power supply operates within a temperature range of 0℃ to 70℃.

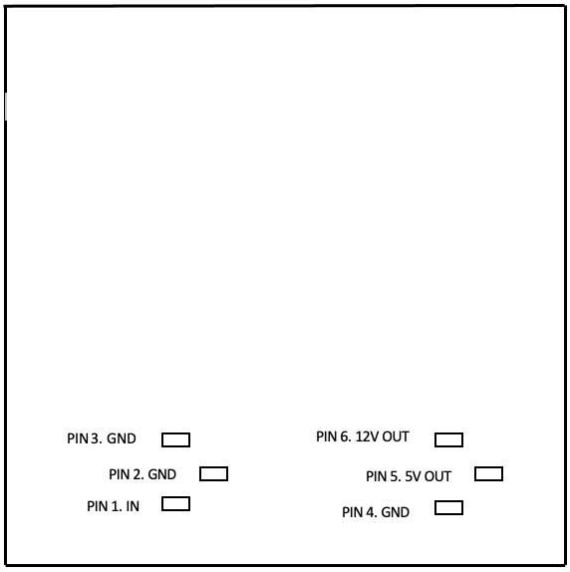
Circuit Diagrams

Voltage Regulator Circuit Schematic



5 V branch **12 V branch**

PCB Pin Layout and Functions



Pin Functions

Pin Number/ Name	Description
1/ IN	INPUT
2/ GND	GROUND
3/ GND	GROUND
4/ GND	GROUND
5/ 5V OUT	5V OUTPUT
6/ 12V OUT	12V OUTPUT

Recommended Operating Conditions

Parameter	Symbol	Value	Unit
Input Voltage	V_{in}	14	V
Specified Temperature	T	20	℃
Load Resistance	R_L	(For 5V) 253	Ω
		(For 12V) 611	

Electrical Characteristics (At 20℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Input Voltage	V_{in}	13.2	14.0	16.8	V
Input Current	I_{in}	0.52	0.53	0.53	mA
Output Voltage	V_{out_5}	5.05	5.05	5.06	V
	V_{out_12}	11.2	12.0	12.9	
Output Current	I_{out_5} (For R_L =253 Ω)	19.73	19.73	19.75	mA
	I_{out_12} (For R_L =611 Ω)	18.34	19.60	21.17	
Efficiency	$\eta_{\_5}$	~	27.4	~	%
	$\eta_{\_12}$		64.6		
	$\eta_{\_overall}$		46.0		
Short-Circuit Current	I_{sc_5}	~	28.8	30	mA
	I_{sc_12}		27.1		

Environmental Characteristics

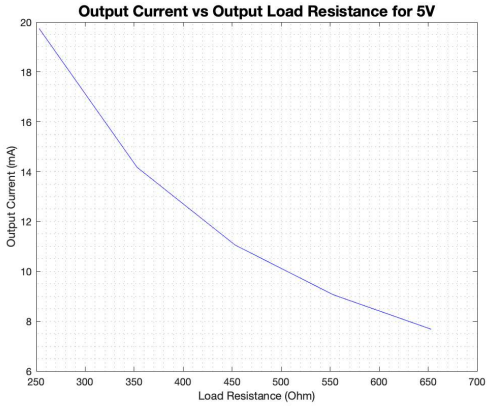
PARAMETER	MIN	TYP	MAX	UNIT
Operating Temperature	0	25	70	℃
Storing Temperature	-40	25	70	℃

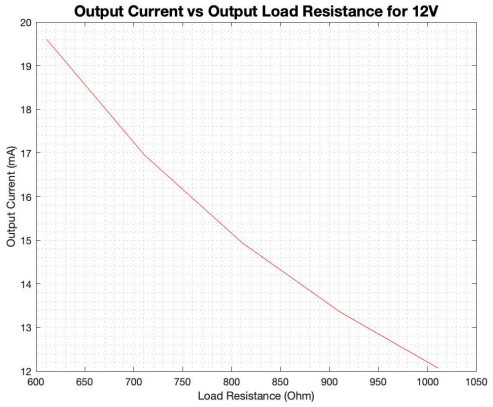
Dimensions and Weight

SECTION	WEIGHT (g)	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)
PCB	5	48	48	1

Typical Characteristics

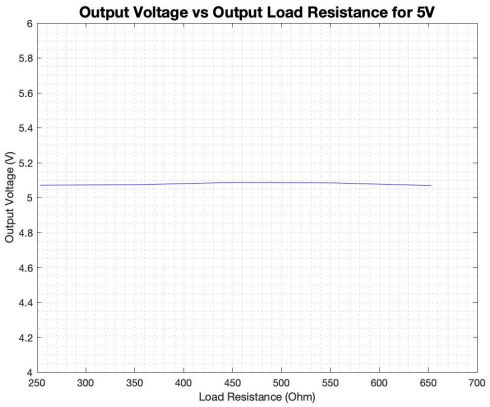
Output Current vs Output Load Resistance

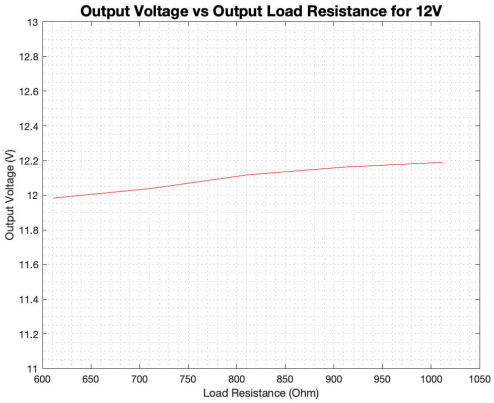




5 V branch **12 V branch**

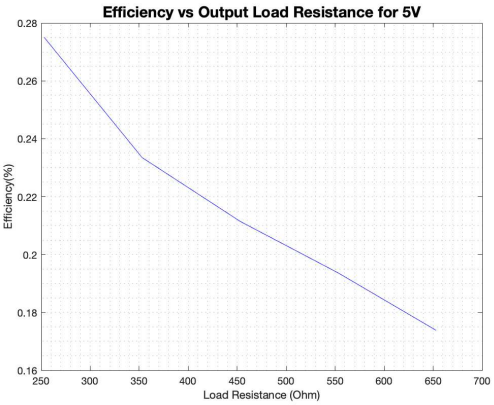
Output Voltage vs Output Load Resistance

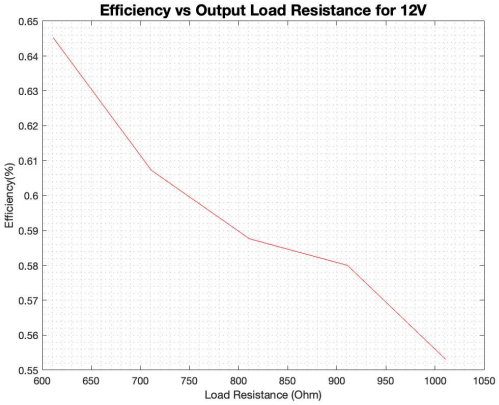




5 V branch **12 V branch**

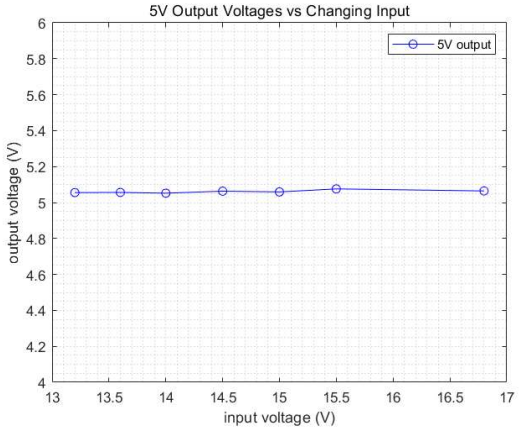
Efficiency vs Output Load Resistance



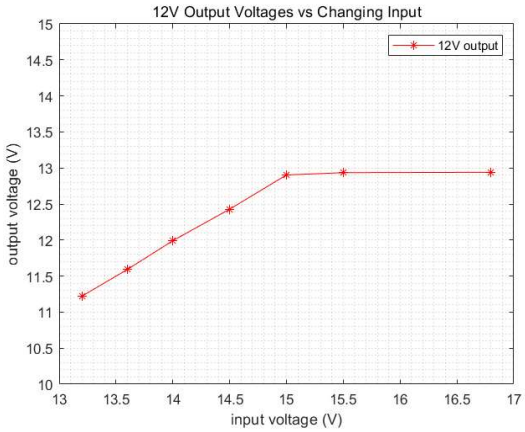


5 V branch **12 V branch**

Output Voltage vs Input Voltage

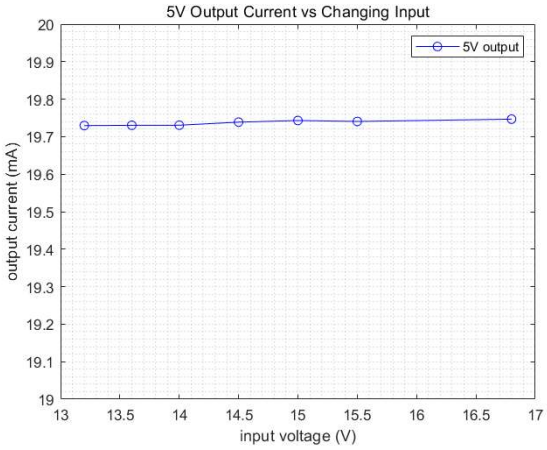


5 V branch

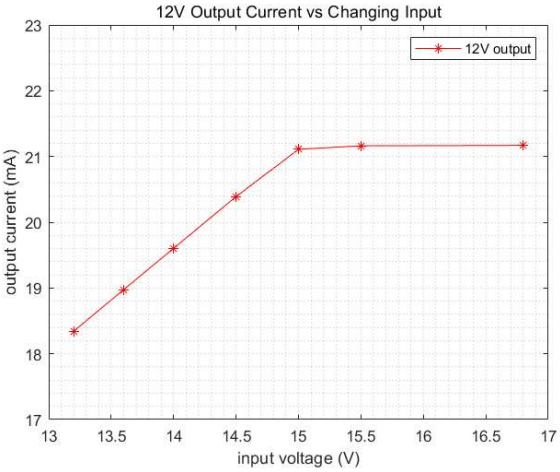


12 V branch

Output Current vs Input Voltage

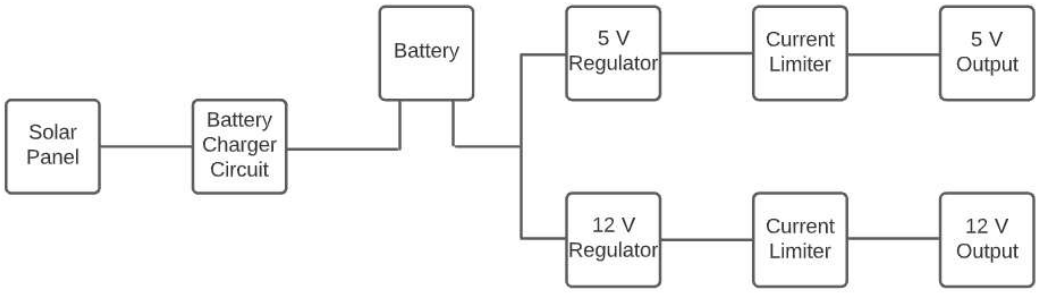


5 V branch

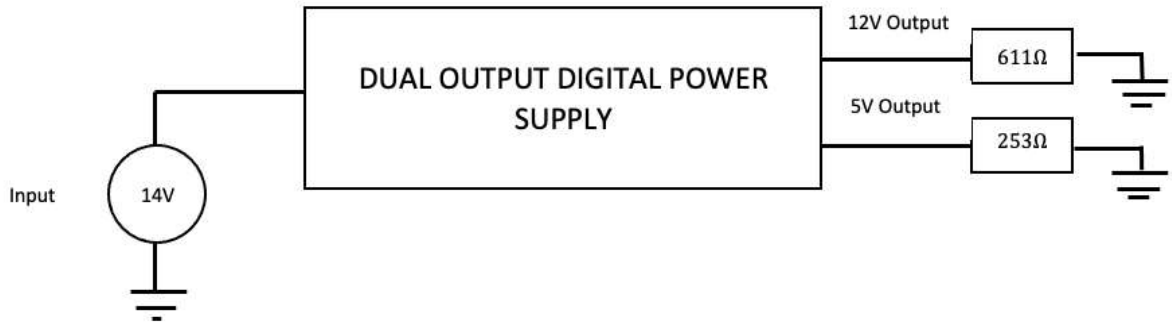


12 V branch

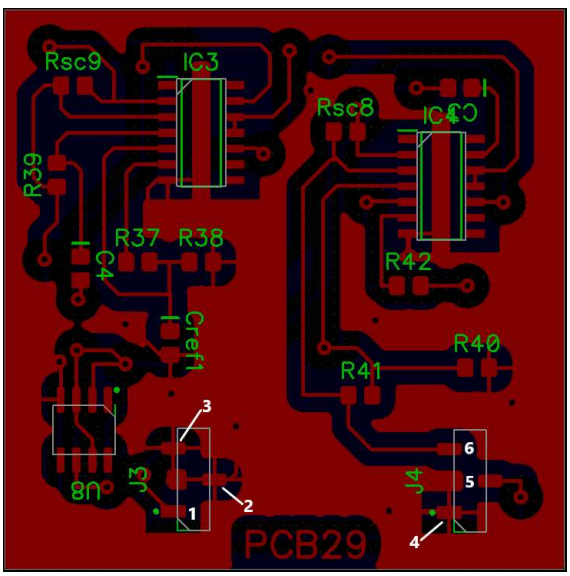
Functional Block Diagram



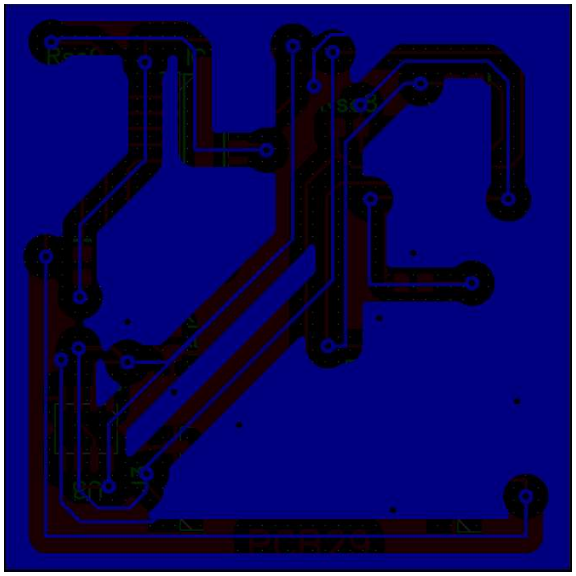
Typical Application



PCB Layout



TOP VIEW



BOTTOM VIEW

Component Description

COMPONENT	DESCRIPTION
IC3	UA723CD (Adjustable linear regulator)
IC4	UA723CD (Adjustable linear regulator)
C3	100pF
C4	100pF
Cref1	100pF
Rsc8	22Ω
Rsc9	22Ω
R37	4.7kΩ
R38	10kΩ
R39	2.7kΩ
R40	10kΩ
R41	7.5kΩ
R42	4.3kΩ

PCB Board Dimensions