Description

ApogeeLAB has created a family of discrete, negative voltage regulators, designed to replace regulators normally in use, such as the classic 79xx. They are available with an extremely ergonomic and adaptable PCB in all mechanical mounting conditions. The Pin-Out available is compatible with the standard in use. They are available in a wide output voltage range from -3.3Vdc to -15Vdc, with 1 Amp Max of available output current.

Product Features

- **Output Current of 1 Amp max, with proper heat sinking**
- **Stable with Ceramic and Low ESR Output Capacitor**
- **Available in Positive and Negative Fixed Output**
- **Fully Discrete Design, Including The Error Amplifier**
- **Voltage Drop-out <2V**
- **Precision Thin-Film Resistors, with 0.1% Tolerance**
- **Output Voltage Accuracy +/-1.5%**
- **Available: -3.3Vdc, -5Vdc, -6.3Vdc, -8Vdc, -9Vdc, -12Vdc, -15Vdc**

General Description

The design of these devices allows the use of a very low ESR electrolytic capacitor, which eliminates the need to add an external one. The error amplifier of the device is also completely discrete and is based on the use of two transistors in a special configuration, which compares a feedback voltage with a reference voltage and controls the output in turn, ensuring a voltage and current stable. The internal reference voltage is assigned to an extremely fast zener diode, with a post-RC filter to guarantee optimal response performance.
Discrete devices have a PCB measuring 16mm x 35mm. They are extremely versatile and small enough to be mounted on any type of electronics and heatsink in use. They are supplied with a power transistor unsoldered from the PCB. The output pin out, is the same in use for the classic voltage regulators on the market, with a standard pitch of 2.54mm. It is therefore not necessary to make particular mechanical rotations, to match inputs, output and reference.

Absolute Maximum Ratings

Symbol	Parameter	Condition	Rating	Unit	Notes
Vin	Input Voltage	DCVR79XX	-27	V	
Io	Output Current – Short to GND	DCVR79XX	-1	A	1
Pdiss	Total Power Dissipation	Tc ≤ 25°C	40	W	2
RTHJ - C	Thermal Resistance, Junction to Case		3.12	°C/W	MAX
RTHJ - A	Thermal Resistance, Junction to Ambient		100	°C/W	MAX
Tj	Operating Junction Temperature		150	°C	
Tstg	Storage Temperature		-65 to 150°C		

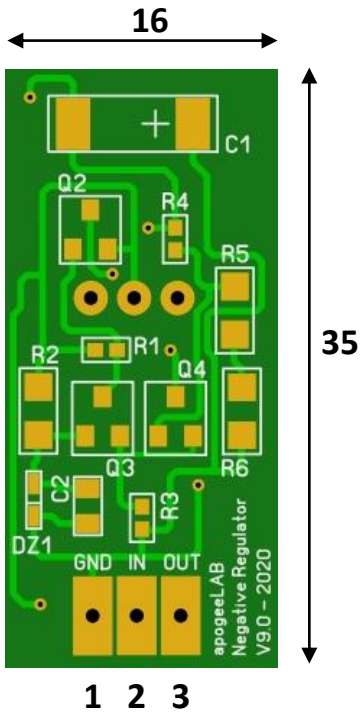
Note:
1 - The output current is internally limited
2 - This specification assumes adequate heatsinking

Performance Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Vin	Input Voltage	DCVR79XX	-14	-25		V
Iomin	Minimum Output Current	DCVR79XX		0		mA
Vo	Output Voltage Accuracy		-1.5	0	1.5	%
Vdrop	Dropout Voltage	1 Amp output current		1.7	2	V
Io	Maximum Output Current			1		A

Mechanical Information

All dimensions are in millimeters.



Pin Configuration

Pin No.	Label
1	GND
2	V - IN
3	V - OUT

Voltage Regulator Replacement Guide with Discrete Components

The replacement of these devices is extremely simple. Once the regulator to be replaced has been unsoldered, it is necessary to check which category it belongs to (positive, negative regulator, etc.) and to check the voltage referred to by the regulation. Fix the power transistor to the heatsink without using any type of thermal PAD. If the replacement requires a heatsink, use the one provided by the electronics being modified. If there is not heat sink, do not add it.

Insert the supplied transistor, downloading the datasheet from **www.apogeelab.it**. Make a note of the nomenclature of each pin on the datasheet, then respect the above mentioned one when soldering directly on the PCB.

The regulators in question, are equipped with a protection circuit that intervenes in case the load has a short circuit. A green LED will show the correct functioning of the module and its correct supply in voltage and current. A short circuit will be signaled by turning off the green LED and turning on a red LED.

Important Notice

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