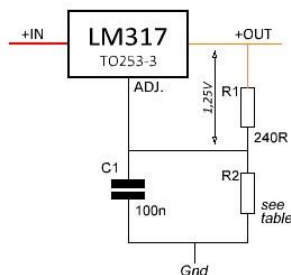


VR-317/337c Voltage Regulator modules, TO-220 size

In millions of circuits the well-known 78xx/79xx voltage regulator IC's are used, despite their tending to oscillate and poor dynamic regulating behaviour. Cheap though! Since this regulator is part of the audio chain, this device influences the sound of the total, just like capacitors, etc. do. Especially at higher frequencies they tend to "scream", meaning way to sharp S and T sounds, "tinging" instead of "singing" cymbals, etc., simply because the impedance of the supply chain rises at higher load frequencies while using those. With the regulating IC's we use sound will become more natural, just like changing an Opamp somewhere.



The [LM317](#) (pos.) and [LM337](#) (neg.) voltage regulator IC's are champions in regulating behaviour for many years, capable of delivering up to 1500mA in TO220 variants. In the replacement modules we present here, we use small and hard to find SMD TO253-3 types.



Our modules have about the same size as 78xx/79xx, being 11x17x6mm.

Unlike 78xx/79xx they can be "programmed" by the values of two resistors.

Regulating is done by keeping 1,25V over R1. Since R1 is a fixed value here, the value of R2 defines the output voltage. $R2 = (V_{out} - 1,25) / 0,0052$. A capacitor C1 is added for better behaviour, soft start, less noise, etc.

These devices are overcurrent, safe operating area and thermal protected. We use a double sided board in order to be able to mount and connect all required parts and convert the pinning. The whole board acts a bit as a cooling surface, capable of dissipating around 2W in free air (3,5W cooled), meaning that the max. current flowing is strongly depending on the cooling of the IC and the Vdiff. over the IC. So, $I_{max} = 2 / V_{diff}$. free air. You can solder contact pins on either side of the PCB or solder it vertical on the PCB where it is mounted on.

Floating device

These LM's are specified as regulating from 1,5 up to 37V everywhere. This is **not completely correct** though! Unlike the 78xx/79xx series, the LM317/337 are so called "floating" devices (just as f.e. a transistor, free from ground contacts), meaning that you can regulate even high voltages, as long as the **difference** (Vdiff) between input and output voltages doesn't exceed 37V. F.e. with a 30V output, Vin could be up to 67V max.

You can extend this 37V difference while using a Zener diode (matching the current taken!) in series (in front) with this device, f.e. a 24V Zener extends Vdiff to $37 + 24 = 61V$. Best is to calculate with Vdiff aprox 10V then.

Our modules have a ground connection indeed, which is used as reference ground, connected to R2/C1 only. Actually, the only restrictions in the supply voltage are the space between the tracks and the max. working voltage of capacitor C1 and resistor R2. We use 100Vdc types, so being the max. possible output voltage. In our ordering process you can select most common voltages. Other voltages (3,3 – 100V) on request.

Remarks

For proper functioning, a load of at least 5mA is required. With lower loads the output voltage will rise! Our VR-317c / VR-337c modules have no mounting hole. Instead, you can glue the **IC side to a heat sink**, so having the three SMD parts in view. The pinning function is printed on the PCB at both sides as help. Of course our modules are pin-compatible with the 78xx/79xx types, so just exchange them. The IC's need at least 2,5V difference between input and output in order to regulate properly !

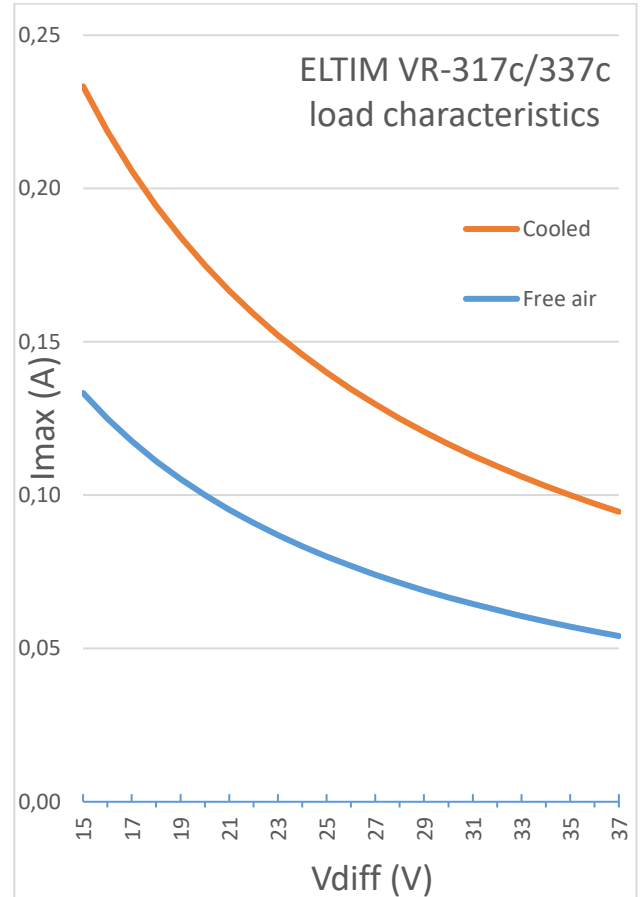
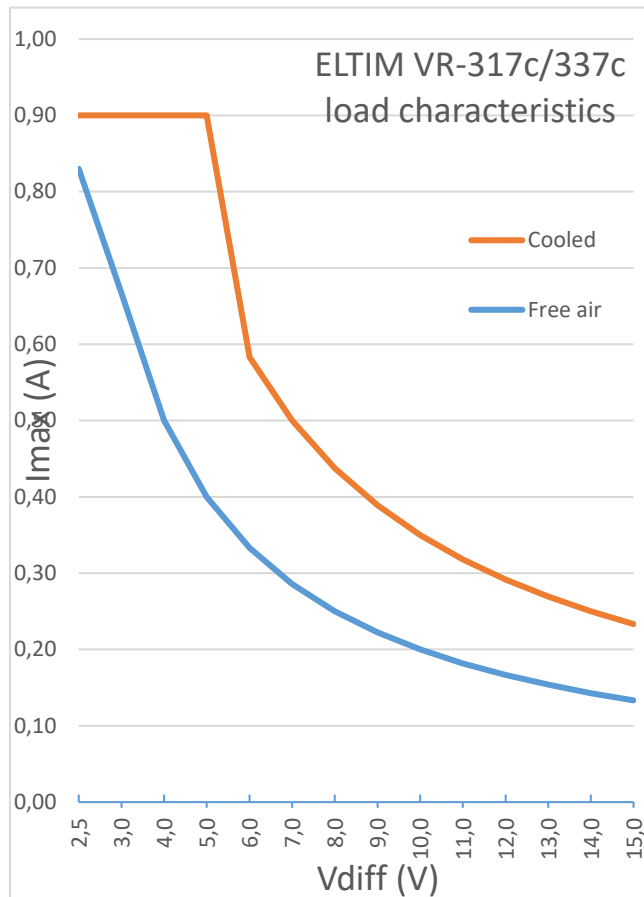
[Check our website for ordering](#)

OEM and dealers are most [welcome](#).

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www.eltim.eu

ELTIM VR-317c/337c specifications



Typical data for VR-317C. For VR-337c, all values are negative values.
Data is long term measured with a +10V type, where the T_{max} protection is just not in action.

Vdiff. definition:	Difference between input- and regulated output voltage.
Vdiff. minimal:	2,5V, floating
Vdiff. maximal:	37V, floating
Regulating voltage range:	1,25 – 100V to ground
Available standard voltages:	3,3V; 3,6V; 5V; 6V; 8V; 10V; 12V; 15V; 18V; 24V; 30V Any other output voltage on request, up to 100V.
I _{max} :	Depending on Vdiff. and type of cooling, see tables
Protection:	T _{max} (180°C), SOA and shortcut protections
Connections:	Pin/size compatible with 78xx / 79xx TO220 voltage regulator IC's
Size:	11 x 17 x 6 mm

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