

# Calculating the Input Current of the LDO

Asked 10 months ago Modified 10 months ago Viewed 563 times

▲ I have an LDO with output specification of 1.8V and 0.45A of load current.

1 Input voltage is 3.3V. To find out the input current, is my below calculation correct?

▼ Input Current =  $(1.8V * 0.45A) / 3.3V = 0.245A$ . Am I correct?



But the LDO just has a pass through element inside it right? It can't be 0.245A as the input current? What mistake am I making here?

I tried to search and found this [link](#). The answers mention about ground pin current. Can someone also explain me what is ground pin current and how we need to consider it in the calculation?

voltage	power	dc-dc-converter	ldo	linear-regulator
---------	-------	-----------------	-----	------------------

ShareCiteFollow

asked Oct 22, 2021 at 6:42



Newbie

**2,854** 1 15 57

Sorted by:

2 Answers

Highest score (default)

▲ No that is not correct.

2 Since it is a linear regulator, input current is equal to output current plus what the regulator itself needs to operate.



✓ The current the regulator itself needs to operate from the input current will equal to current coming out of the ground pin.



ShareCiteFollow

answered Oct 22, 2021 at 6:45



Justme

**94.9k** 2 71 188

Oh, Ok. But if instead of the linear regulator, I use a DC-DC Buck converter for the same input and output specifications, my input current would be 0.245A, right? But considering 85% efficiency, my input current would be 0.288A, right? – Newbie Oct 22, 2021 at 6:47

1 Yes, but that does not relate to LDOs in any way. – Justme Oct 22, 2021 at 6:59

Thank you very much for the answer – Newbie Oct 22, 2021 at 7:05

▲ No, the calculation isn't correct. The LDO input current is almost equal (greater) than output current. You can say that it will be approx 0.45A.

2 ShareCiteFollow



answered Oct 22, 2021 at 6:46



Marko Buršič

**23.1k** 2 17 32

Oh, thank you. I am using this IC. [ti.com/lit/ds/symlink/...](https://www.ti.com/lit/ds/symlink/ldo111.pdf). On table 6.5, Its given as the quiescent current max is 95uA. So my input current would be 0.45A+95uA, right? – Newbie Oct 22, 2021 at 6:48

And, but if instead of a linear regulator, if I use a DC-DC Buck converter, my calculation of input current , would be correct, right? – Newbie Oct 22, 2021 at 6:49

@Newbie 1st,2nd - Correct. A DC/DC converter would be almost correct calc, except you have to account for self power and efficiency. A LDO has  $(3.3-1.8) \times 0.45 = 0.675\text{W}$  dissipation, which isn't such high. But if you have limited PCB space and battery powered device, then you should go for DC/DC converter. There

are also converters with multiple outputs, PMIC so it could give you 3.3V and 1.8V from same converter.  
– Marko Buršič Oct 22, 2021 at 6:58

Thank you very much for the answer. – Newbie Oct 22, 2021 at 7:05