ELECTRICAL ENGINEERING

Forward voltage schottky

Asked 5 years ago Modified 5 years ago Viewed 1k times

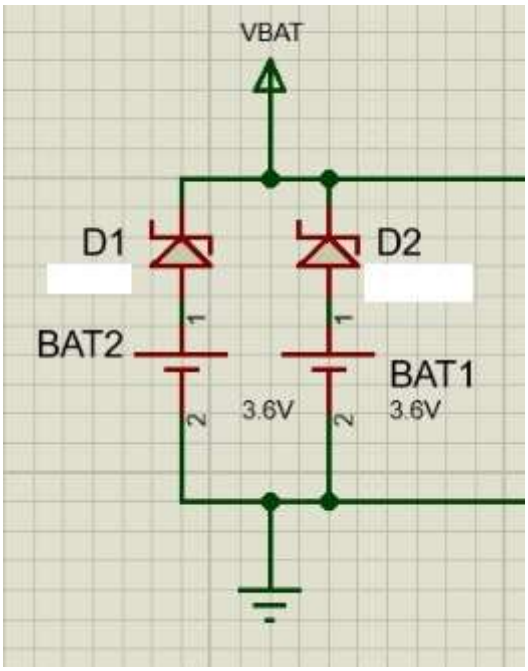
1

If I want to use a Schottky diode with a forward voltage of 450 mV at 1 A. Is the forward voltage the same at 0.3 mA?

The diode is a 1N5817 and for 10 mA there is Vf=0 V.

If I put this diode in series with a 3.6 V lithium battery in a system consuming 0.3 mA under 2.5 V which is the Vout of an LDO, is my system going to work?

EDIT: This is the application :



voltage diodes schottky

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edited Mar 1, 2017 at 15:07

asked Mar 1, 2017 at 10:01

Tagadac

453 ● 1 ● 5 ● 18

3 What datasheet are you looking at? This is among the most basic information of diodes and I rarely see any without a graph – PlasmaHH Mar 1, 2017 at 10:04

You are right .. In fact I was misunderstanding forward current... – Tagadac Mar 1, 2017 at 10:21

1 To your update: yes, the system will work OK, as long as the voltage doesn't dip. Be sure 0.3mA is also the peak value, not just average. If a short peak of, say, 0.5A is possible, other working point will apply.
– user76844 Mar 1, 2017 at 10:48

0.3mA is the maximum current consumption of my system. This mean if I have a constant consumption of 0.3**m**A under 3.6V, this diode will be ok? And I will have less than 450mV of forward voltage? – Tagadac Mar 1, 2017 at 10:57

"as long as the voltage doesn't dip" --> It is a 3.6V battery, the voltage is going to drop slowly to 3V, then I shutdown the system – Tagadac Mar 1, 2017 at 11:04

2 Answers

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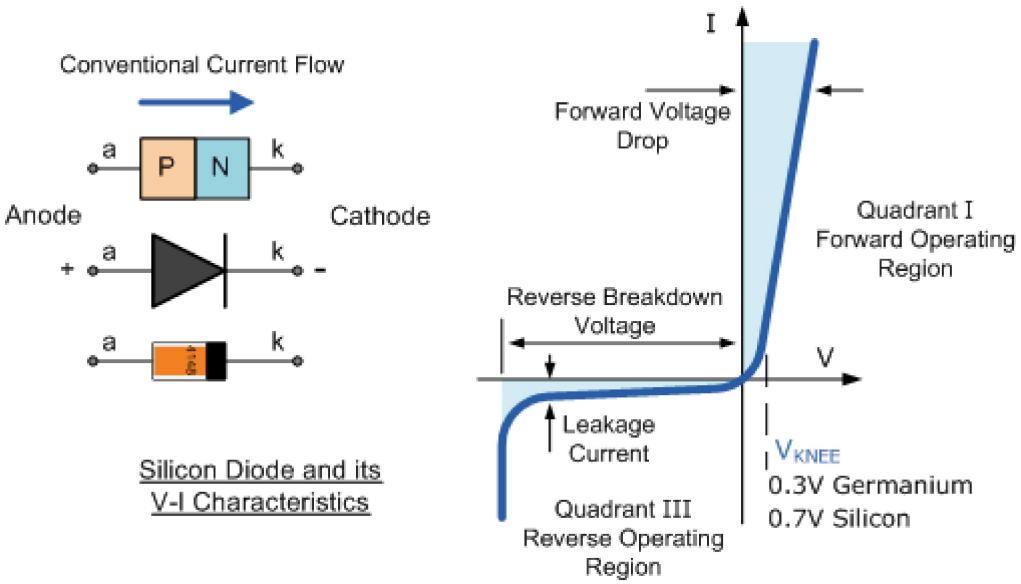
3

Usually there is a graph in the datasheet. Just to remind you general diode characteristic, forward voltage is not constant across all currents:



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answered Mar 1, 2017 at 10:04
user76844

3

Edit
The diode will work for sure with extremely low forward voltage.
But, keep in mind the reverse leakage current which is far more than your actual forward current, if you are designing low power battery operated device.
The datasheet mentions reverse leakage current if 1mA at room temperature.

This is directly from the datasheet. Page 2. Figure 2.
Hope you can now find the drop at various load current. Be aware that it is still typical values at room temperature.

Couple of things to consider:

1. The graph is for a signal with less ON time.
2. The forward voltage starts falling as the temperature rises and viceversa

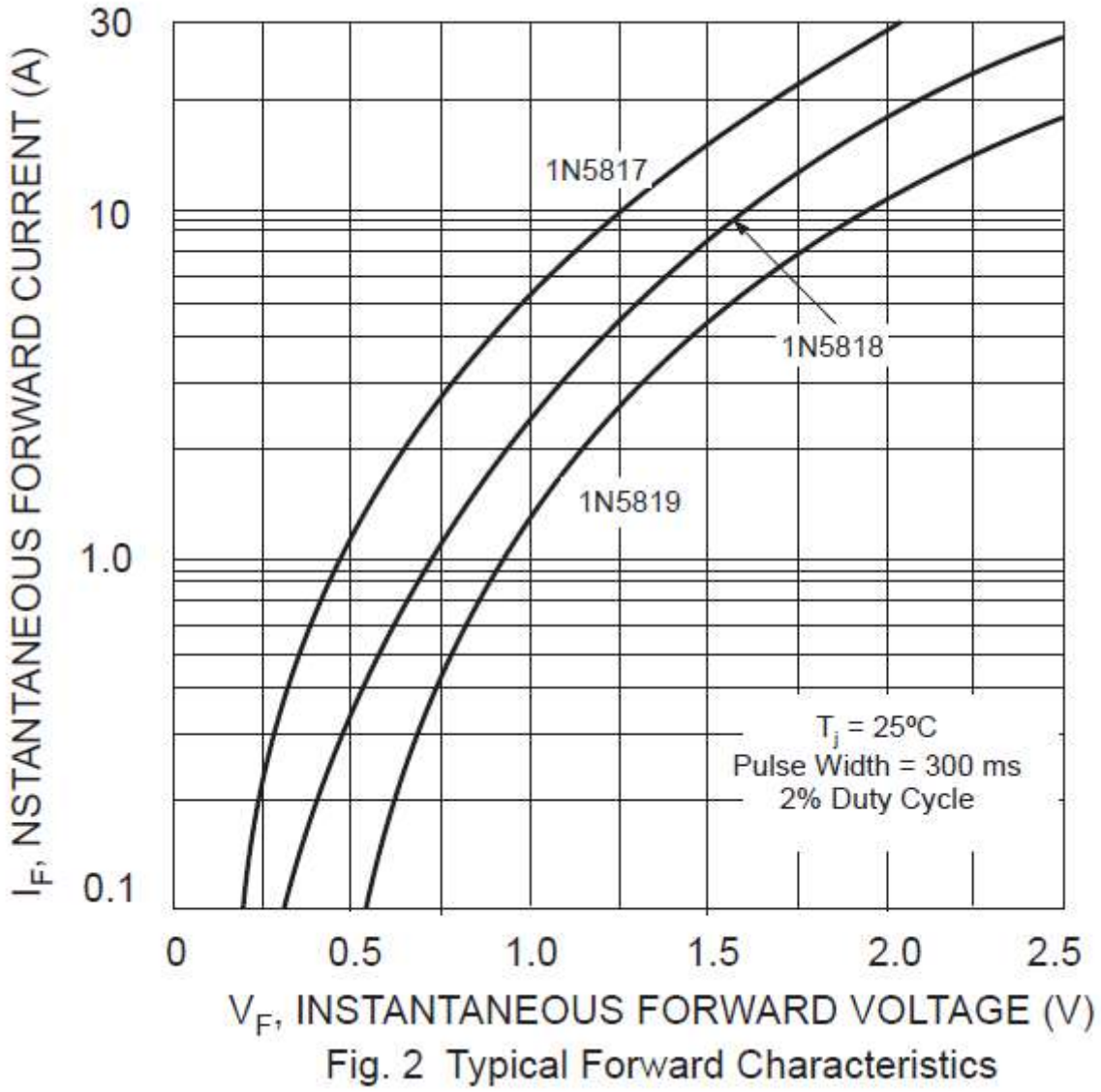

Fig. 2 Typical Forward Characteristics

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edited Mar 1, 2017 at 11:16

answered Mar 1, 2017 at 10:10

User323693
9,011 ● 4 ● 18 ● 49

I can't see your image – Tagadac Mar 1, 2017 at 10:11

There is issue with imgur. I am able to see here. – User323693 Mar 1, 2017 at 10:15

Yes, it is ok thanks. I found the same datasheet as yours. But is this diode ok if I want to use it in series with a battery of 3.6V? Because if I have 0.1A there is Vf=0V... And I have not much more than 0.3**m**A – Tagadac Mar 1, 2017 at 10:18

Vf isn't zero at 0.1 A. It is say around 0.2 V. – User323693 Mar 1, 2017 at 10:23

1 Without the circuit I cannot comment. Two diodes are used normally to power up load from the battery or some mains supply source. In which case, it is of a little concern. If there is no application of reverse voltage, then no need to worry. – User323693 Mar 1, 2017 at 14:56