Subject: 1N4007 diode
Posted by DocWaxham on Fri, 28 May 2021 14:29:53 GMT
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Are these ok to use in the the bias circuit? Just rebuilding this amp and want to do it correctly. Thanks

Subject: Re: 1N4007 diode
Posted by chicagobill on Fri, 28 May 2021 20:22:16 GMT
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Yes, that diode will work. The usual replacement of bias diodes in any power amp are 1N4148 or 1N914. The 1N4007 is rated much higher than needed, but it will work.

The only diode that is hard to replace is the 1N3754 diode that sits on the heat sink.

Subject: Re: 1N4007 diode
Posted by DocWaxham on Fri, 28 May 2021 21:01:50 GMT
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Cant you use the 4007 for that as well? The old diodes from another amp I drilled out the glass material and I am going to use the case to put a new one in with some silicone. Thanks

Subject: Re: 1N4007 diode
Posted by stevem on Sat, 29 May 2021 16:24:22 GMT
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So let me get this straight, you drilled out the epoxy from a original bias diode and your planing on stuffing a 1n4007 in that case?
I sence a disaster coming you way if this is what your planing!

Subject: Re: 1N4007 diode
Posted by DocWaxham on Sat, 29 May 2021 16:34:48 GMT
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In what way? As far as heat sensing? What should I do? I have the nte equivalents ready to ship. Just didn't want to wait again like I did for the drivers. Thanks

Subject: Re: 1N4007 diode
Posted by chicagobill on Sat, 29 May 2021 17:04:22 GMT

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If you are just testing the board, solder in any diode on the board in place of the dead one and test away. The heat sink mounting is only needed on the amp after it is working and running hard.

A few years back, I tried a similar experiment. I bought a piece of aluminum tubing and cut it into 1/2 inch lengths. I then epoxied a few different diodes into the small pieces. The diodes that I tried this with were 1N914 and 1N4148, which both have small glass cases.

Then I clamped the test diodes and a real 1N3754 diode onto the surface of an old heatsink that I had laying around. I took meter readings of the diodes to get a starting point based on the room temperature at the time. Then I slowly heated the heatsink with a hair dryer and took readings from each of the diodes as the temperature increased to see how the three different parts reacted.

The two homemade ones reacted a little slower than the 1N3754, but they did react in a similar fashion. I wanted to try using different methods of gluing in the diodes, like different epoxies or silicons to see if that would make a difference, but I have not gotten back to this test yet.

You could also mount a two position terminal strip to the heat sink and then solder in a diode so that it's case is in contact with the heatsink. Then run two wires to the pc board to make the connection.

Subject: Re: 1N4007 diode
Posted by stevem on Sat, 29 May 2021 19:22:09 GMT
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I am in favor of this terminal strip way of doing it that Bill has presented because this is basically how Peavey did it in a bunch of there amps when using just a plain black epoxy cased diode, What they did since there heat sink was a long Aluminum L bracket that sat on top of the circuit board then was bolted to the amp chassis , all they did was to drill a hole in the L bracket and the body of the diode was just centered in that drilled hole. In fact it was only in contact with the wall of that hole by maybe 35% of the body of the diode and that was all that was needed.
I would post a picture here if we could do such on this site, but I think you get the jist of what Bill was saying to do.

Subject: Re: 1N4007 diode
Posted by DocWaxham on Sat, 29 May 2021 20:46:43 GMT
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I think I will go with Bill's idea. I'll have the correct diodes next week hopefully. Thanks all.

Subject: Re: 1N4007 diode

Posted by stevem on Sun, 30 May 2021 01:24:01 GMT
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Be sure to apply some thermal grease !

Subject: Re: 1N4007 diode
Posted by C4ster on Tue, 01 Jun 2021 12:51:00 GMT
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Without any data to back this up, couldn't you use any TO220 or TO126 transistor BE or BC junction? The mounting is completly robust.

Subject: Re: 1N4007 diode
Posted by stevem on Wed, 02 Jun 2021 12:35:56 GMT
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Well it may work ok, the question is how much the needed mica insulator will effect heat transfer and then number two what is the cold resistance of the chosen transistor ?

Here's what I have found from just testing the cold resistance of several diodes I have.
Seven 1N1007 of the same brand tested anywhere from a low of 643k up to 4.8 meg, with most of those seven testing above 4.3 meg
Next I tested four UF5804 diodes and they ranged from 450 to 602k.

I tested two 1N5625 diodes (ball type) they where 718k and 3.8 meg.

A original 1N3754 in one of my K100s checks in at 5.6 meg.

So what do we consider average?
How much effect does such a wide range of cold resistance have on the bias voltage ?

I wish I had like 15 to 20 1N3754s to test out and then average that out!

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Subject: Re: 1N4007 diode
Posted by chicagobill on Thu, 03 Jun 2021 16:30:02 GMT
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Interesting ideas. There were a few companies that used a transistor as the heat sensing compensation component in their bias circuits. I guess that would require a little investigation.

As for bias diodes, I always sorted and tested by forward conduction voltage. That is usually the reading you get when testing them with a multimeter, using the diode test function.

When I get a power amp in a Kustom that gets a little too warm while idling, I will change one of the diodes in the bias string with a different one that tests with a lower voltage reading. That will increase the voltage to the upper half of the power amp circuit and reduce the current draw at idle.
