Subject: LM3875
Posted by Gnational on Sat, 18 Sep 2004 20:38:11 GMT
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I have a small bone to pick-Why do so many people talk about "gainclones" when what they really mean is a LM3875 chip amp? No disrespect for 47 Labs but I mean really! The heart of the circuit is the National Semiconductor LM3875. That's really all there is to the "gainclone" so why do so many people refer to practically every chip amp someone builds as a gainclone? I might offer a suggestion that we refer to them with the actual part numbers in respect for the company that makes them instead of whatever cute name is thought of by the seller.Bone picked. End of Rant.
National Semiconductor LM3875

Subject: Re: LM3875
Posted by Manualblock on Sun, 19 Sep 2004 02:14:37 GMT
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Well the thing is if you look at the applications data it suggests a much more complicated circuit than the 47 labs guy utilized. So if he devised the gaincard and you build a copy; ergo, what to call it?I don't know; sounds better than calling an electronic device a"Foreplay".

Subject: Re: LM3875
Posted by Gnational on Sun, 19 Sep 2004 02:50:51 GMT
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The applications data shows using the chip with only an input resistor, two feedback resistors and a feedback capacitor.Add a +/- power supply and you have instant amp.
LM3875 Applications Data

Subject: Re: LM3875
Posted by Manualblock on Sun, 19 Sep 2004 12:41:20 GMT
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So Gnational, what other goodies have you got to share. This little LM3875 amp sounds pretty good. I find it gets a little squirrely as you apply power but at low levels it has a pleasent tonal quality and nice bass. For some reason it reminds me of my old NAD 3020. That version I built with the basic parts will shortly be superceded by the "high end version" as soon as I get around to assembling it.You sound knowing, any tricks up your sleeve with this amp? Thanks J.R.

Subject: Re: LM3886
Posted by Gnational on Sun, 19 Sep 2004 21:37:25 GMT
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For a little more juice, try the LM3886.
LM3886 Applications Data

Subject: Re: LM1875
Posted by Gnational on Sun, 19 Sep 2004 21:39:03 GMT
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For a little less, try the LM1875.
LM1875 Applications Data

Subject: Re: LM1875
Posted by Manualblock on Mon, 20 Sep 2004 16:04:14 GMT
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Thanks Much for the info. I don't know if power is what I need, I think maybe there are some applications adjustments that can take this amp to another level, I just don't know what they are. Any ideas?

Subject: National Semiconductor Amp Modules
Posted by Gnational on Mon, 20 Sep 2004 21:53:45 GMT
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The entire amp circuit is on the module's IC substrate. The only external circuitry required is a power supply.Beyond that, use the amp modules as suggested in the applications notes. In particular, refer to the externalcomponents description section. There you will find specific guidelines for component values.

Subject: Re: National Semiconductor Amp Modules
Posted by Manualblock on Mon, 20 Sep 2004 22:13:09 GMT
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Thanks again; so those are the optimal values and there really are no ways to improve on the published components?

Subject: Re: National Semiconductor Amp Modules
Posted by Skip Pack on Tue, 21 Sep 2004 21:51:55 GMT
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I've built an inverted 1875 based amp using Scott Nixon's boards, and a couple of BrianGT's standard kits. Others are awaiting my attention. I have driven One Pi Studios with the 3875 and 2 Pi Towers with the 1875. With that efficiency, I get plenty of volume. In the chip amp forums, there is a train of thought that you need regulation to take the 3875 much above 20 watts for a less sensitive speaker as the power supply ripple starts to be heard whereas the chip's amazing ripple rejection does the job below the voltage where the power is becoming more intermittent due to the lack of power supply smoothing capacitance.Everybody seems to agree that simply adding capacitance to the unregulated amp dulls the music. I'm not knowledgable enough to assess this position, but I sure like them on the Pi's.Skip

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Subject: Re: National Semiconductor Amp Modules
Posted by Manualblock on Wed, 22 Sep 2004 00:29:05 GMT
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Right now mine is playing on a pair of Altec 421 woofers and 811 horns/806 drivers. It sounds pretty darn good actually. Drives them with very little heat on the heatsinks so I geuss they are not being overdriven. I have Brian GT's extra special kit that I will put together soon and see if there is a difference. I get nice full and deep bass outa them on the Altecs. J.R.

Subject: Re: National Semiconductor Amp Modules
Posted by Wayne Parham on Wed, 22 Sep 2004 02:19:56 GMT
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I agree about the regulation. The supply for a powerful amp should have adequate current capacity and should be regulated so that the voltage rails don't fluctuate with changes in current demand.

I understand how some tube amp enthusiasts like using a simple unregulated circuit, but I think this is more for simplicity's sake than anything else. If there is not much of a current demand, then that's sufficient. Small power tube amps are that way.

But high power needs higher current, and the swings can really rob a power supply. So in this case, I think a good, high-current regulated supply is important. You could even do something like using motorcycle batteries or small sealed lead-acid batteries for improved transient current capacity.

Subject: Re: National Semiconductor Amp Modules
Posted by Chris R. on Wed, 13 Apr 2005 16:18:44 GMT
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Wayne,About supply regulation on these chip amps...The one I built uses two 12KuF (or maybe 15KuF) caps very closeto the chip itself. Using a scope, I can watch the PS droop.At the point the amp starts clipping, I'm getting only a smallamount of droop. I could go measure it again if anyone cares.Adding a ~4A regulator would significantly complicate the design and make the project less attractive.One thing I noticed that was interesting was that in at leastone of my HT receivers, the PS caps were about the same size I'musing for a single amp. The accountants got to that desing. About the previous comment about bigger caps coloring the sound, Ican't imagine how that would work. I can understand how undersizedcaps could cause problems, though.Chris

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Subject: Re: National Semiconductor Amp Modules
Posted by Wayne Parham on Wed, 13 Apr 2005 17:35:35 GMT
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That's some serious capacitance. I'll bet the amp stays running for several minutes without AC power input. I don't know who might have felt the smp sounded better with less capacitance either, but maybe if they were using big 'ol electrolytics that were real lossy or something, maybe they didn't work so well. Sometimes, the real problem is rectifier switching artifacts anyway, and a few small value caps across the diodes work wonders for that. But as far as transient ability and ripple reduction are concerned, high capacitance energy storage is king.
