Bilaga 5

Huvudidentitet

Från: "Bruno Putzeys" <bruno@hypex.nl>
Till: "Patrik Boström" <Patrik.Bostrom@Anaview.com>
Kopia: <info@hypex.nl>
Skickat: den 26 januari 2009 08:50
Ämne: Re: Too little gain

The common-mode voltage on the comparator is a red herring. The error integrator is a differential circuit of which the output refers to ground (the mirror image of the feedback network is tied to ground). The circuit arrangement around the comparator likewise measures between the error amp output and ground. Any common mode voltage is added later, so this has no impact on the output voltage of the error amp. I still have to think about whether to keep this arrangement for full-bridge use. I might instead go for a differential opamp (a la OPA1632).

----- Original Message -----
From: Patrik Boström
To: Bruno Putzeys
Cc: info@hypex.nl
Sent: Monday, January 26, 2009 12:49 AM
Subject: SV: Too little gain

Hi Bruno

I have been looking at the UcDi circuit to understand its operation and there is something that puzzles me a little bit. Can this circuit handle a differential input signal? If the positive input of the comparator is driven with a signal then the negative input will follow it and thereby the 0,7V output swing of the error amp will be a problem. Have I understood this correct? I do not see it as a big problem if a differential input has to be converted to a single ended but a problem occurs when we will try to build a full bridge. Having to convert the output signal to single ended without messing up the modulation part of the signal requires a tough OPAMP.

BTW, I really like the circuit. Your talent in using few parts and still obtain outstanding performance is very impressive :)

Best regards / Patrik

Från: Bruno Putzeys [mailto:bruno@hypex.nl]
Skickat: ti 2009-01-13 15:01
Till: Patrik Boström
Ämne: Re: Too little gain

Hi Patrik,

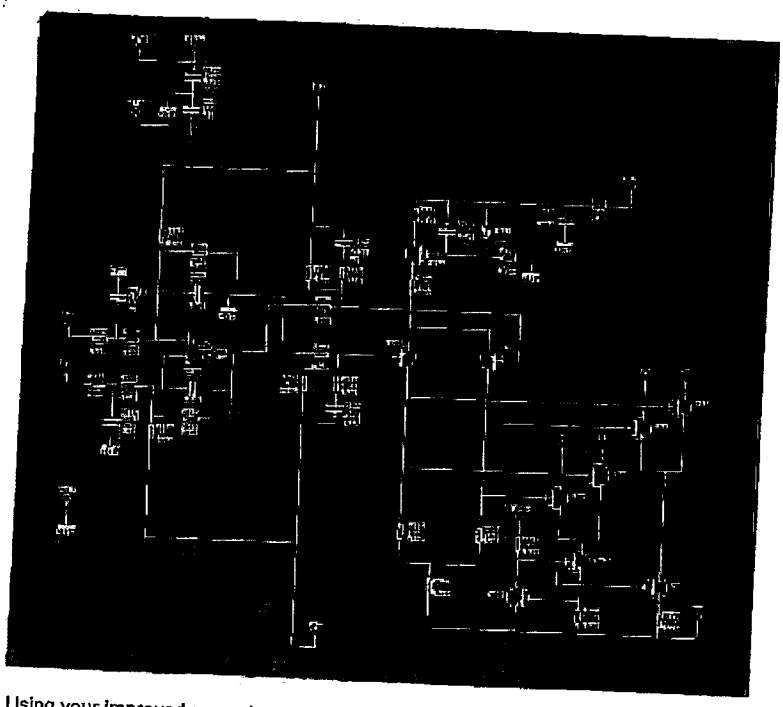
I don't think it's possible to get enough gain with just two stages except with a construction like the old UcD comparator. If we expect Philips to try and salvage the patent I'll have to think about finding a similar circuit that doesn't look the same. Unfortunately I did a really good job back then, making a really simple comparator that still kinda worked...

I'll mull over it and keep you posted.

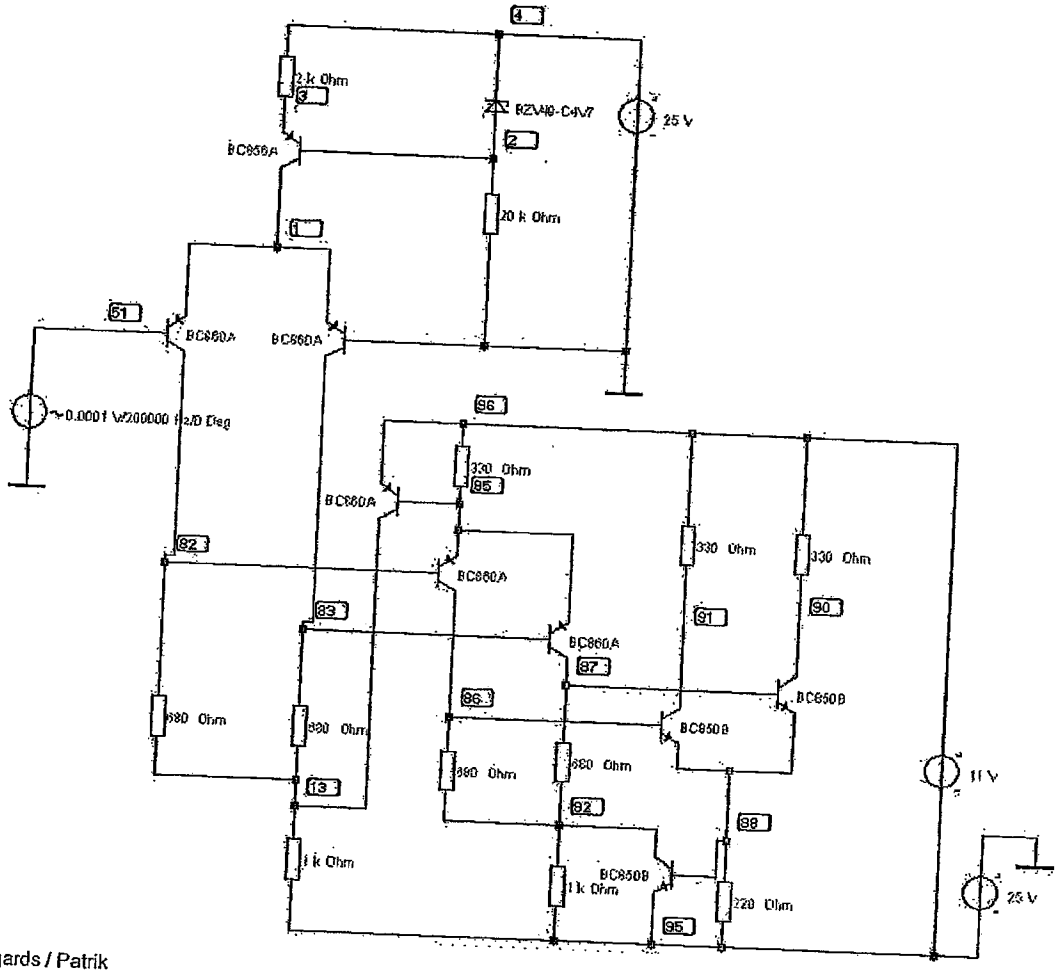
B.

----- Original Message -----
From: Patrik Boström
To: Bruno Putzeys
Sent: Tuesday, January 13, 2009 2:36 PM
Subject: SV: Too little gain

Here it is!



Using your improved second stage from the UcDi comparator helps a lot and it gives even higher gain but it adds five parts. A simpler version would find it splace in the world.



Best regards / Patrik

PS. I really like the servo feature you get when controlling the bias point of the previous stage with the current sense BJT ☺

Från: Bruno Putzeys [mailto:bruno@hypex.nl]
Skickat: den 13 januari 2009 14:31
Till: Patrik Boström
Ämne: Re: Too little gain

Could you send a fresh set of schematics?

----- Original Message -----
From: Patrik Boström
To: Bruno Putzeys
Sent: Tuesday, January 13, 2009 1:51 PM
Subject: Too little gain

Hi Bruno

We have too little gain in the comparator I replaced the original UcD comparator with. The DC offsett is too high. Suddenly it start to get complicated and uses too many parts. What do you think? Is there an easy way to modify the original comparator and keep the high gain?

Best regards / Patrik

Patrik Boström
CEO

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Till: "Patrik Boström" <Patrik.Bostrom@Anaview.com>
Kopia: "Jan-Peter van Amerongen" <info@hypex.nl>
Skickat: den 3 april 2009 10:28
Ämne: Re: UcDi designs for Alpine

I'll try to make a mathcad sheet that's more readable than the one I'm using now along with the circuit diagram with the references.

Why should the mono channel run at 250kHz by the way? Seems like a waste of magnetics.

> ----- Original Message -----
> **From:** Patrik Boström
> **To:** Bruno Putzeys
> **Cc:** Jan-Peter van Amerongen
> **Sent:** Friday, April 03, 2009 11:00 AM
> **Subject:** UcDi designs for Alpine
>
> Hi Bruno
>
> Now we are starting to design the amplifier loops for Alpine. They need one full range version and one mono version. This is what we have agreed on.
>
> Full range:
> -3dB@100kHz
> Fsw=600kHz
> Max +/-45V supply
>
> Mono:
> -3dB@200Hz
> Fsw=250kHz
> Max +/-54V supply
>
> Other than that we are striving to get the best out of the topology. Can you tell me what the filter should be and the loop components? Adjustments later on is OK as long as we are playing in the right backyard. The mono version will be two separate channels and I will implement your proposal to put a cap between the outputs for synchronisation.
>
> As soon as the schematics are finished we will start on the layout and we will involve you to review it already at an early stage.
>
> Best regards / Patrik
>
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Från: "Patrik Boström" <Patrik.Bostrom@Anaview.com>
Till: "Bruno Putzeys" <bruno@hypex.nl>
Kopia: "Jan-Peter van Amerongen" <info@hypex.nl>
Skickat: den 23 april 2009 14:23
Ämne: 3V3 zener ?

Hi Bruno

Could you just enlighten me about why the 3V3 zener is in the collector path of the clamp circuit? My curiosity forces me to ask and it is also good that I know if Alpine asks ☺

Best regards / Patrik

Från: Bruno Putzeys [mailto:bruno@hypex.nl]
Skickat: den 17 april 2009 12:01
Till: Patrik Boström
Kopia: Jan-Peter van Amerongen
Ämne: Re: UcDi for Alpine with fewer components

The UcD stage would only have a gain of 4.02 if its loop gain were infinite. That is not quite the case, it is only around 80 times. The input signal is made up of the error amp response and the input, both through 820ohm resistors. So from the input alone you get half the input signal into 410ohms. With infinite gain this would be a gain of 8.01 times (but only starting from half the signal level) but with loop gain only being 80 times you lose about 9%. Which in the end, of course works out as around 3.7 times :-)

---- Original Message ----
From: Patrik Boström
To: Bruno Putzeys
Cc: Jan-Peter van Amerongen
Sent: Thursday, April 16, 2009 4:38 PM
Subject: SV: UcDi for Alpine with fewer components

Hi Bruno

Looking at your schematic of UcDi I am a little puzzled. The UcD stage has a gain of 3k3/0k82=4,02 and the error amp is striving to make 3k3/4,8*8k2/1k5=3,75 in gain. Why is this? I would expect this to generate a step in the frequency plot once the loop gain of the error amp goes down.

Also, do you think that increasing the resistor values (especially in the UcD stage) will generate much higher noise?

Best regards / Patrik

Från: Bruno Putzeys [mailto:bruno@hypex.nl]
Skickat: den 16 april 2009 09:46
Till: Patrik Boström
Kopia: Jan-Peter van Amerongen
Ämne: Re: UcDi for Alpine with fewer components

You could make the whole modulator single-ended. That works but it becomes more critical layout-wise.

----- Original Message -----
From: Patrik Boström
To: Bruno Putzeys
Cc: Jan-Peter van Amerongen
Sent: Thursday, April 16, 2009 9:18 AM
Subject: UcDi for Alpine with fewer components

Hi Bruno

I am starting to suspect that it will be tough to fit all the parts in Alpines amps. I am therefore thinking about what you have been saying about the possibility to change the UcDi input and error amp so that only two OPAMPs are needed (one for differential reception and one for the error amp). Do you think that the performance of such an amp will be significantly worse? Is it in that case only noise that is affected?

Best regards / Patrik

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CEO

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