

Using a resistor in the collector current of the beta-enhancer transistor to limit VAS current and sticky rail

In this technique, R20 and R24 limit the maximum amount of current that can be injected to the base of the main VAS transistors Q6 and Q8 by causing the beta-enhancer stage $V_{ce} \approx 0$ when overdriven.

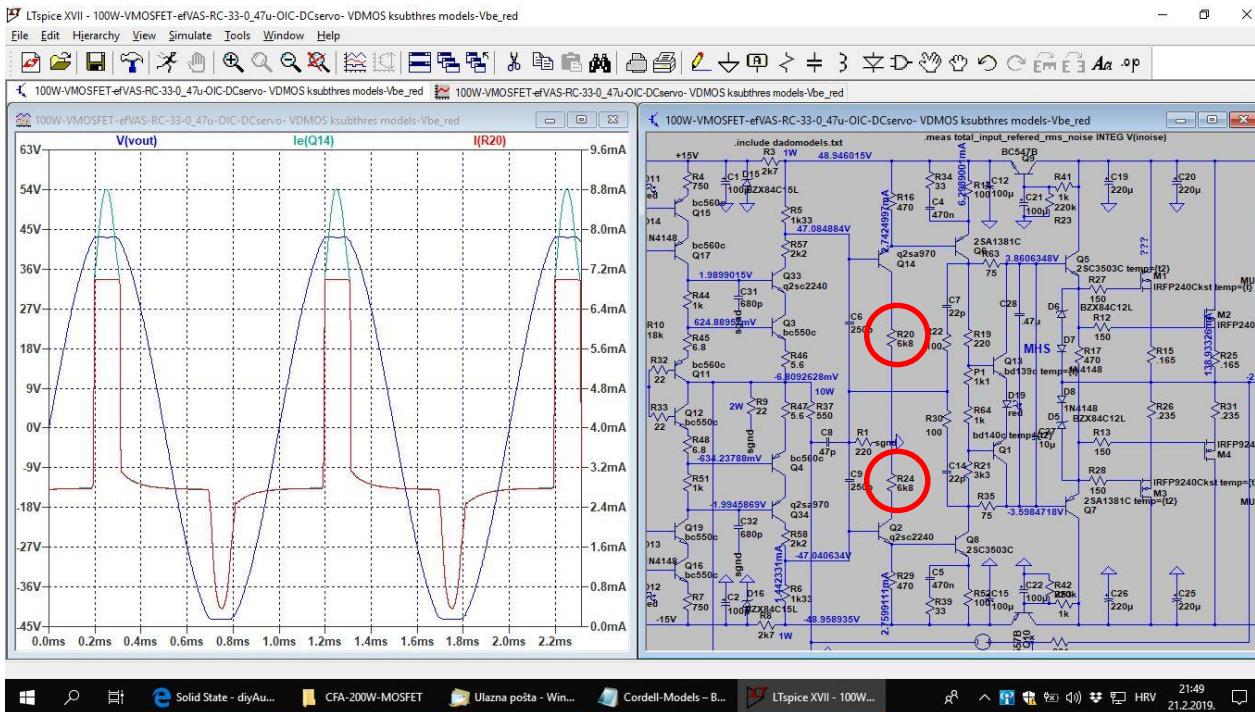
This forms a voltage divider with R16 and R29, setting the VAS peak current to

$$[V_{cc} * R16 / (R16 + R20)] / R11$$

where R11 is the VAS Q6 emitter degeneration resistor. The same applies to the -ve VAS circuit around Q8.

Since the base charge storage is low in the small signal beta-enhance transistors Q2 and Q14, and the main VAS transistor currents are limited, the VAS recovers very quickly after overdrive with no rail sticking.

The peak VAS current can be tweaked by adjusting the value of R20 and R24



Courtesy 'dadod' – DIY Audio