

Totem Pole SEPP Error Correction Analysis

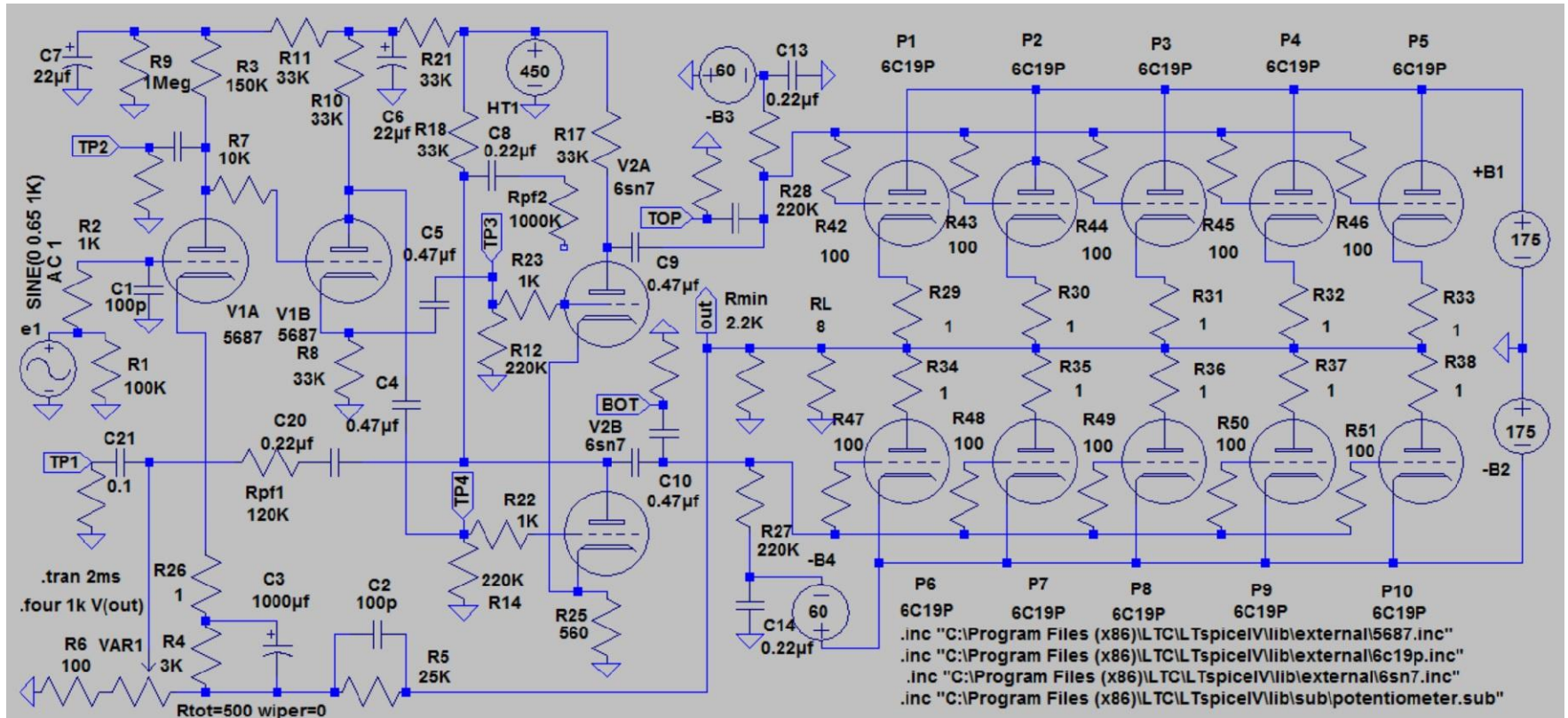
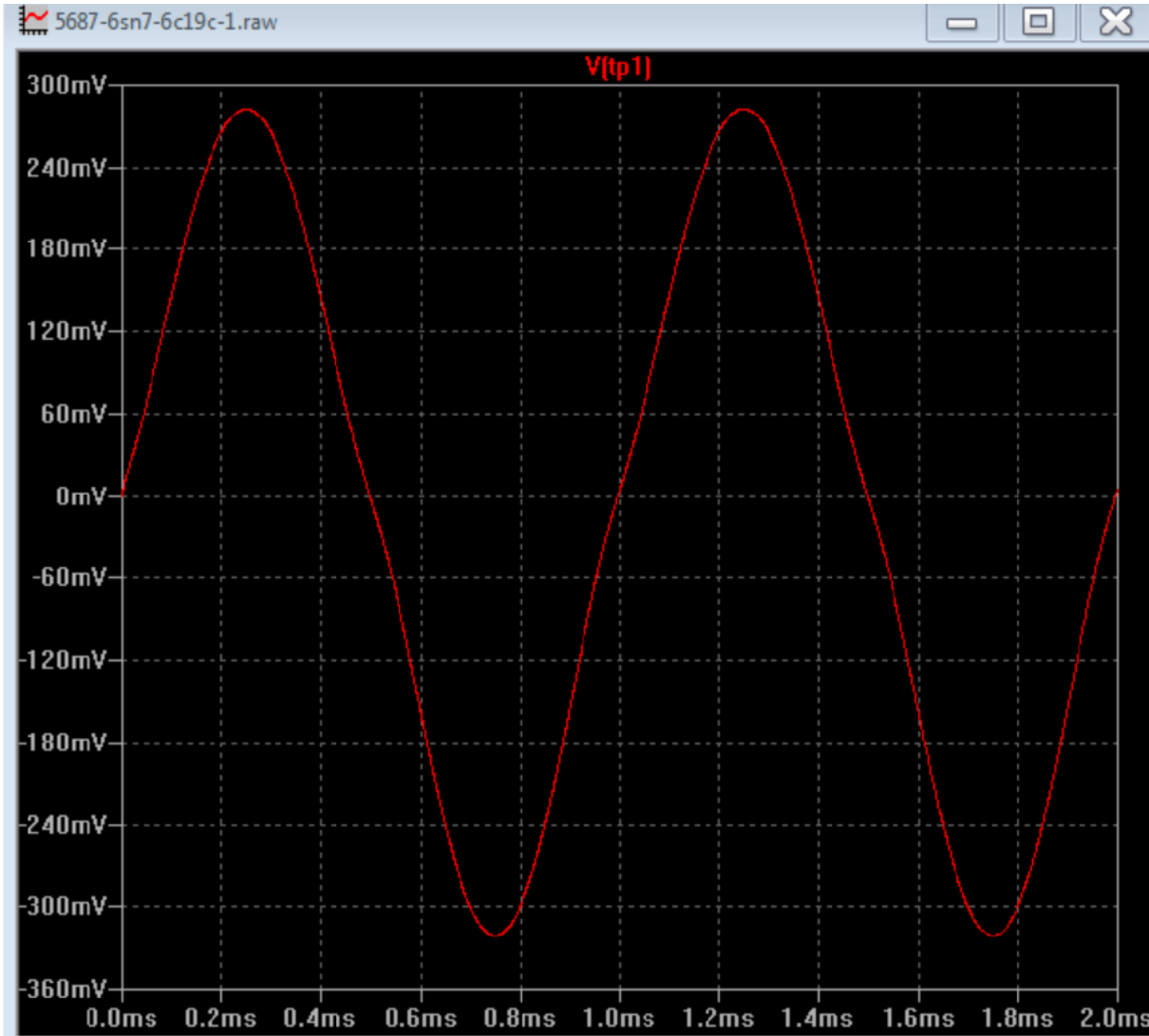


Fig 1 Overall Schematic Diagram

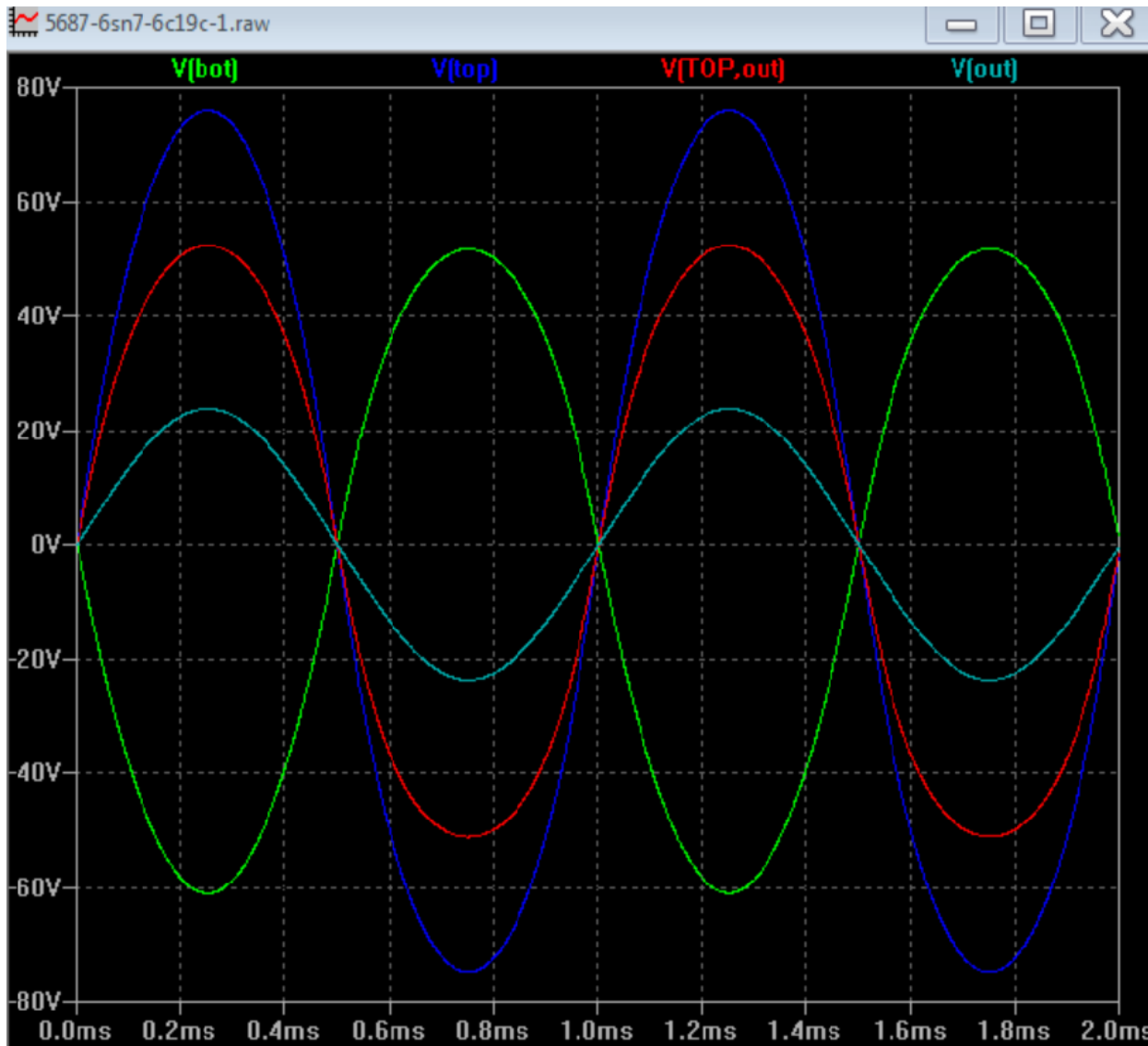
Totem Pole SEPP Error Correction Analysis



Resistor Rpf2 is adjusted to get best distortion output. When that point is reached, correction waveform at TP2 is found nearly symmetrical.

Fig 2 Correction Waveform @TP1 when Rpf1 and Rpf2 in circuit

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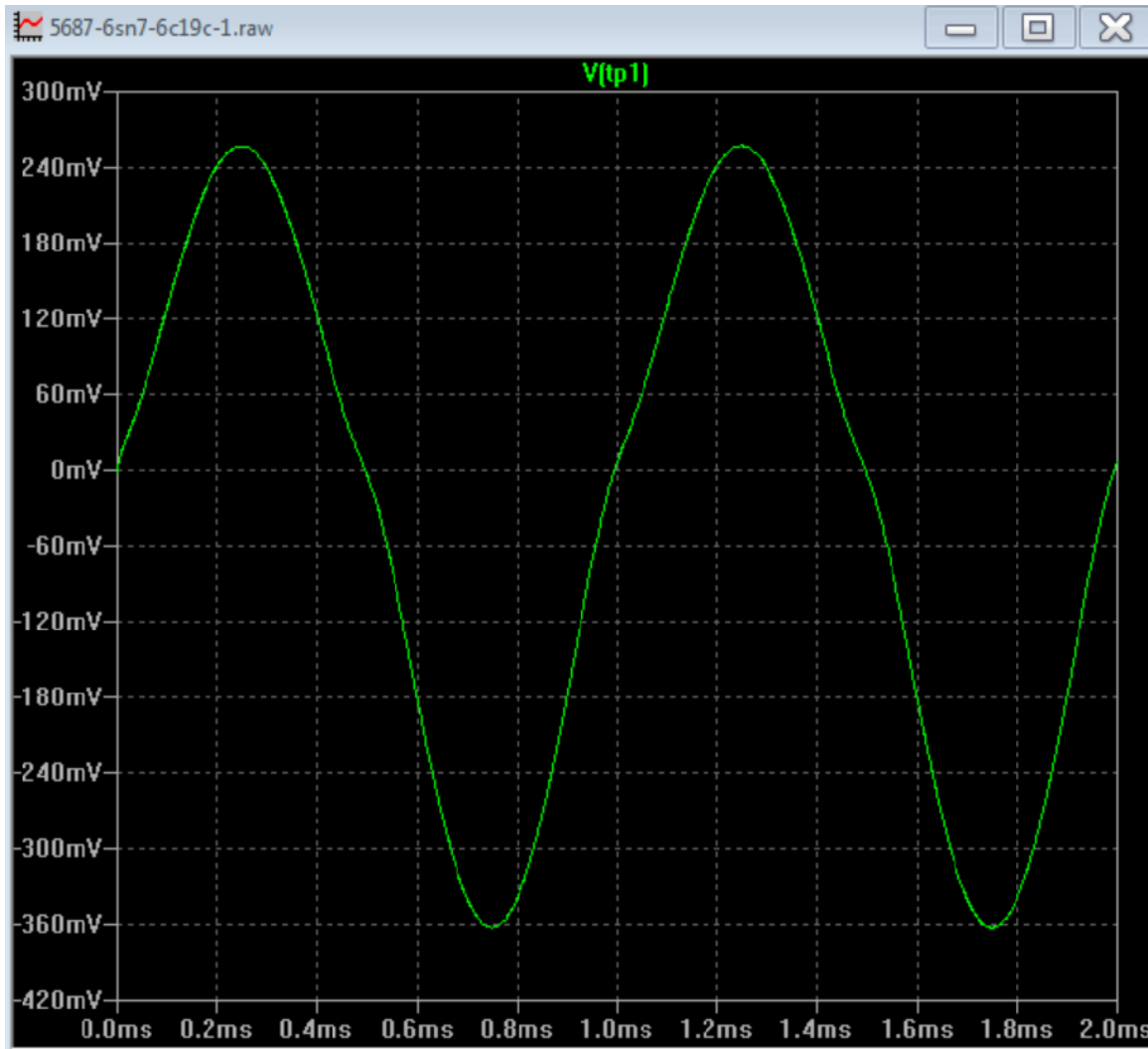
Here it can be seen that the driver top and bottom waveforms are nearly symmetry but the amplitudes are different. The difference is due to drive level decrement by Rpf2 and C8 so that:

$$V(\text{Top}) - V(\text{out}) = V(\text{Bot})$$

Distortion is about 1.14%, not the best though.

Fig 3 Waveforms when Rpf1 and Rpf2 are in circuit

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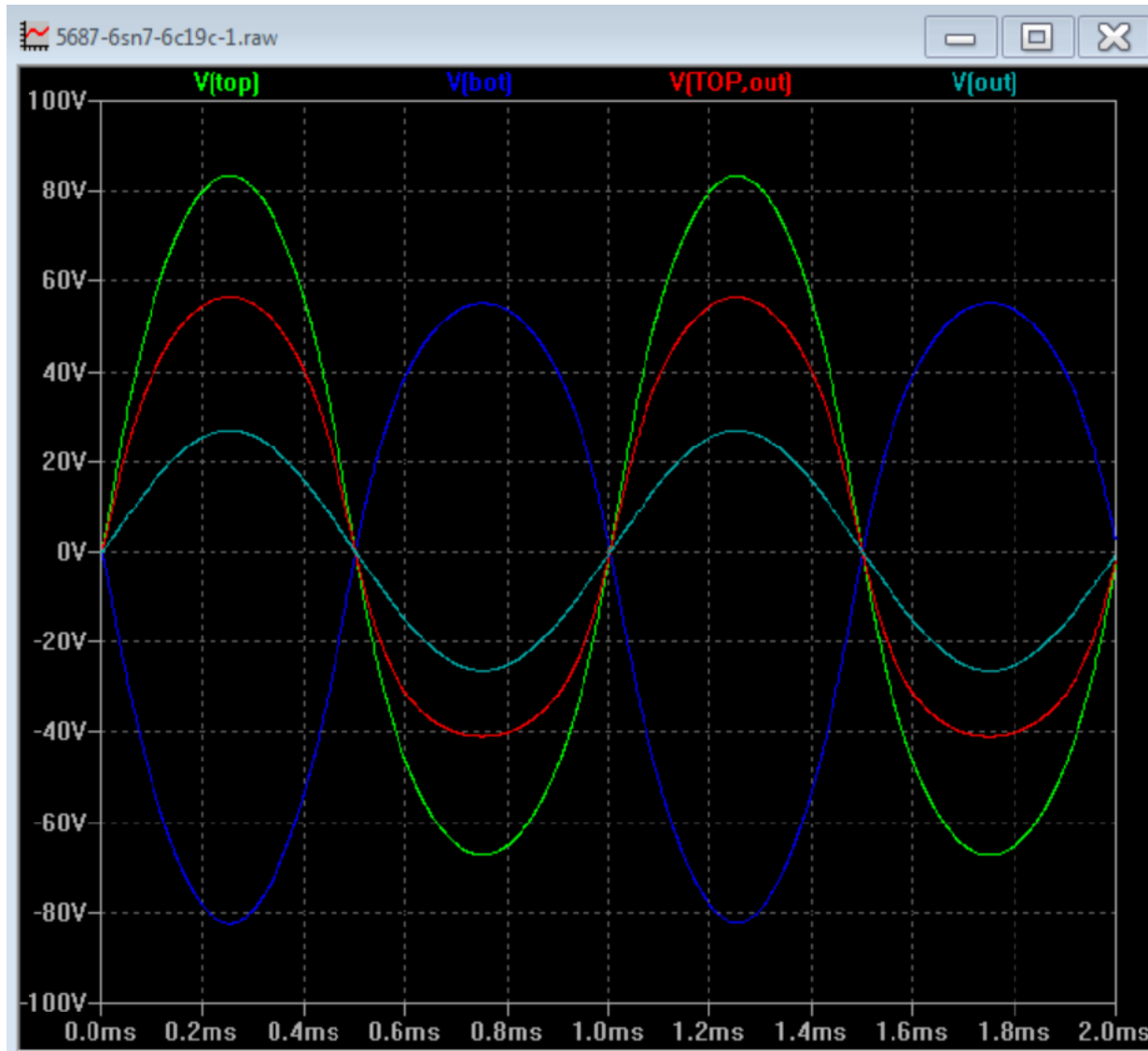


Resistor Rpf2 is removed from circuit output. Correction waveform at TP2 is found asymmetrical.

Distortion is about 1%, which best so far

Fig 4 Correction Waveform @TP1 when Rpf2 removed from circuit

Totem Pole SEPP Error Correction Analysis – Drivers forward Gain Compared

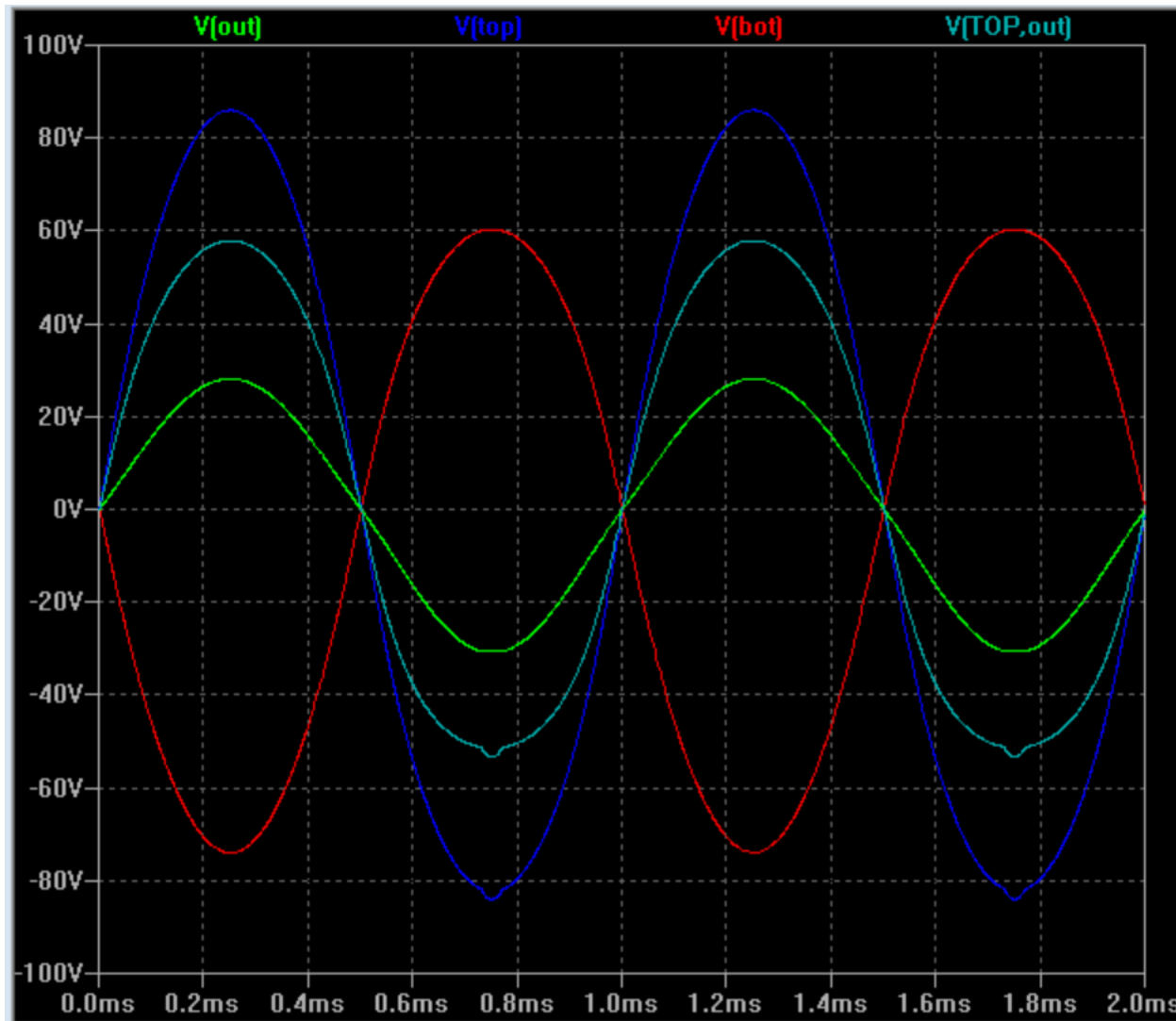


Here it can be seen that the driver top and bottom waveforms are asymmetry but same amplitude variation over 360 deg, opposite phase. There are oppose phase but identical drive level as decrement by Rpf2 and C8 is not present but the difference now appeared as EC at TP1, which is asymmetric. The difference will be corrected (via NFB and PF) so that:

$$V(\text{Top}) - V(\text{out}) = V(\text{Bot})$$

Fig 5 Waveforms when Rpf2 is removed from circuit

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Sensitivity decreased
(from 0.7 to 1.2V for
full output)

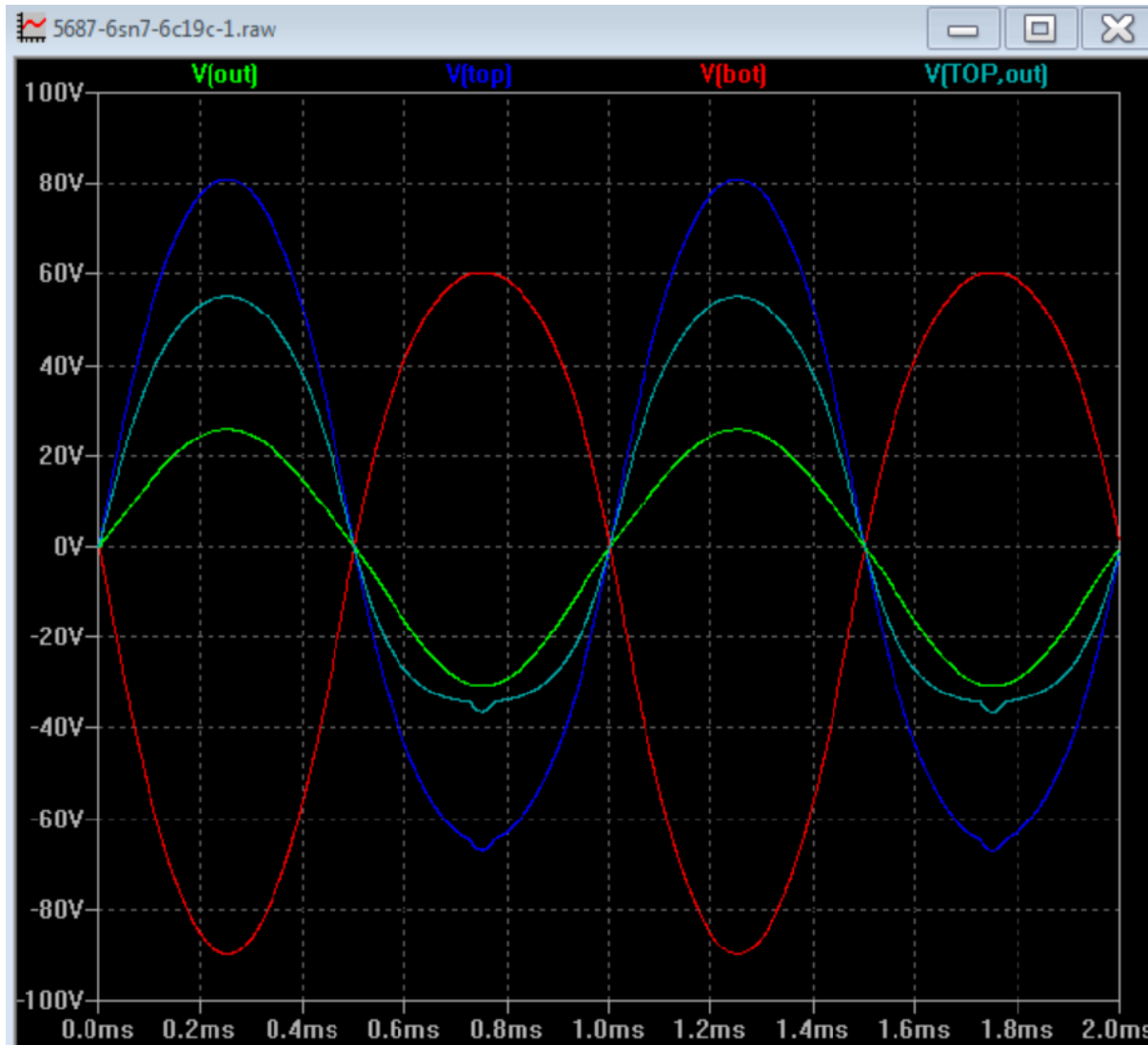
Thus EC apart from
error correction also
increased sensitivity,
an increased of 70%

Distortion is increased
from 1.14% to 3.89%,
increase 2.75%

DC offset increase from
10mV to 700mV ,
increased of 700%.

Fig 6 Waveforms when Rpf1 is removed from circuit

Totem Pole SEPP Error Correction Analysis – What is corrected?



When both Rpf1 and Rpf2 are removed, distortion is at its worse, 4.9%
But when only Rpf1 (main forward EC) is in, the distortion is best. The result shows that forward EC is able to operate well even internal gains requirement are different as one found with totem pole driver. Therefore it appears that only forward EC is needed.

Fig 7 Wave forms when resistor Rpf1 and Rpf2 are both removed from circuit