

## Re: DCO/VCO Fine clock output?

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Ignore my last post. I accidentally clicked "Send" before I was through editing.

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Use an op-amp. With +/- supplies:

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Feedback resistor R1 from output to Inv Input.

Shunt resistor R2 from Inv input to gnd.

Positive feedback R3 from output to Non Inv Input.

Capacitor from Non Inv Input to ground.

Let  $V_{sat}$  = op amp saturated output voltage.

Let  $V_{ref}$  = voltage at Inv input with op amp saturated.

Then  $V_{ref} = V_{sat}R2/(R1+R2)$

Let  $V_s = V_{sat} + V_{ref}$ .

Let  $\tau = R3C$

Let  $f$  = frequency of oscillation.

$f = -1/\{2 \tau \ln[(V_s - V)/V_s]\}$

Where  $\ln(X)$  means "natural logarithm of X".

If the +/- saturation voltages are equal, the output frequency will be independent of the supply voltage.

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A pot can be substituted for any of the resistors.

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Regards,

Jon

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