DAILY REPORT #17

발표자 : 신홍민

1. Design for OP-AMP Circuit (Gain = 100)

5.1 Absolute Maximum Ratings

over operating ambient temperature range (unless otherwise noted)(1)

		MIN	MAX	UNIT
V_{CC+}	Supply voltage(2)		18	V
V_{CC-}			-18	
V_{ID}	Differential input voltage(3)		±30	V
V_I	Input voltage (any input)(2) (4)		±15	V
I_O	Output Current(5)		±125	mA
T_J	Operating virtual junction temperature		150	°C
T_{STG}	Storage temperature	−65	150	°C

Total supply voltage (+5 V = 5, ±5 V = 10) (min) (V)	10
Total supply voltage (+5 V = 5, ±5 V = 10) (max) (V)	30
GBW (typ) (MHz)	3
Slew rate (typ) (V/µs)	1.7
Rail-to-rail	No
Vos (offset voltage at 25°C) (max) (mV)	6
Iq per channel (typ) (mA)	1.25
Vn at 1 kHz (typ) (nV√Hz)	8
Features	Standard Amps
THD + N at 1 kHz (typ) (%)	0.0005
Rating	Catalog
Operating temperature range (°C)	-40 to 85

- Design Spec.
  - Input Signal : Sinewave(Freq=**40kHz**, Ampl=10mV)
  - AMP type : Inverting AMP
  - OPAMP : RC4558 사용
  - Power Supply : 12V

- RC4558 Import Spec.
  - Supply Voltage : 18V to -18V
  - Gain-bandwidth : 3MHz
    (3MHz = 100 X 30kHz)
    (3MHz = 75 X **40kHz**)

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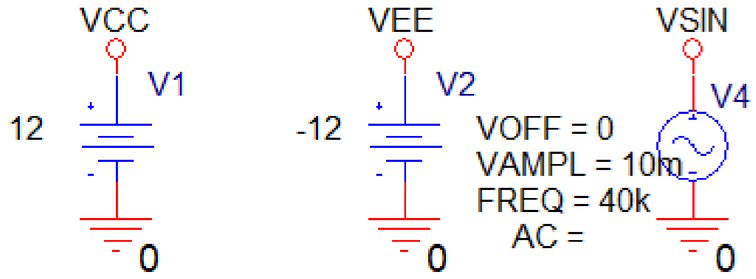
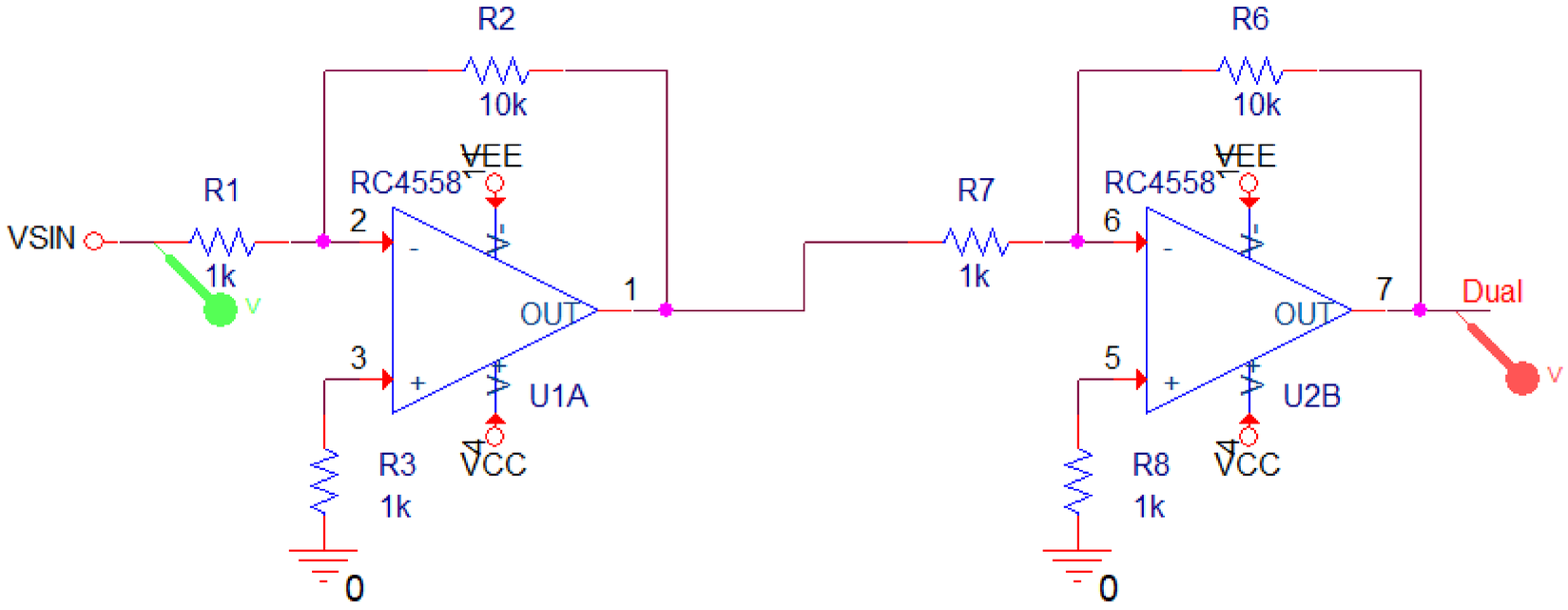


- Inverting AMP 2개 사용
  (RC4558 GBW를 고려한 Gain Max = 75)
- 그렇기에 1차, 2차 모두 10배 증폭 (10X10 = 100배)
- $\frac{R2}{R1} = \frac{R6}{R7} = -10$
- R1, R7 = 1k / R2, R6 = 10k



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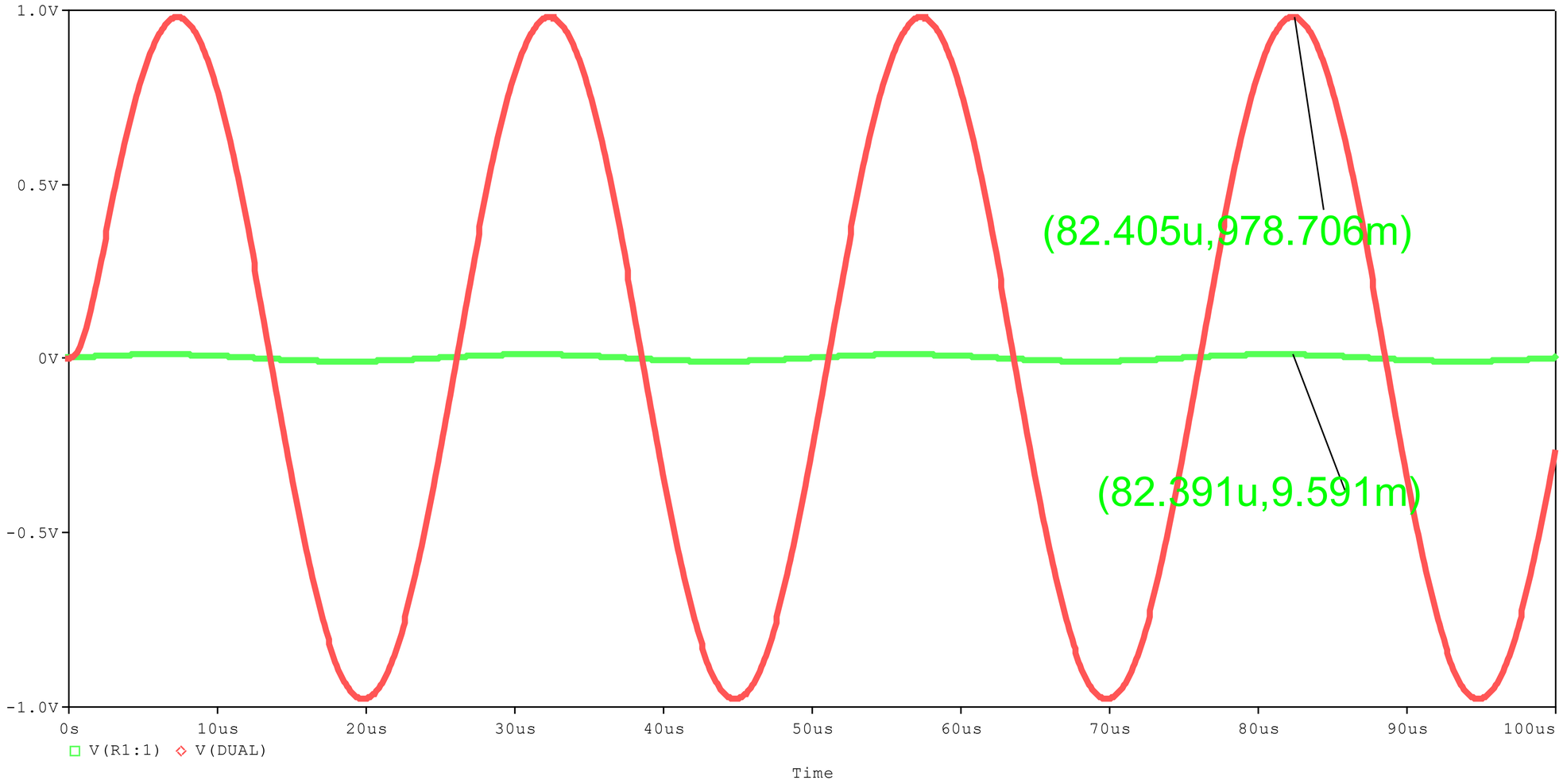

- 시뮬레이션 결과
  - ➢ 입력 신호 10mV를 100배 증폭 시켜 약 1000mV = 1V가 나오는 것을 확인