Proiect Electronica Analogica

Margaritescu Vlad – 322 AB

Valorile numerice personalizate

L1 = R1 = 150 Ohmi

L3 = R8 = R9 = 56 KOhmi

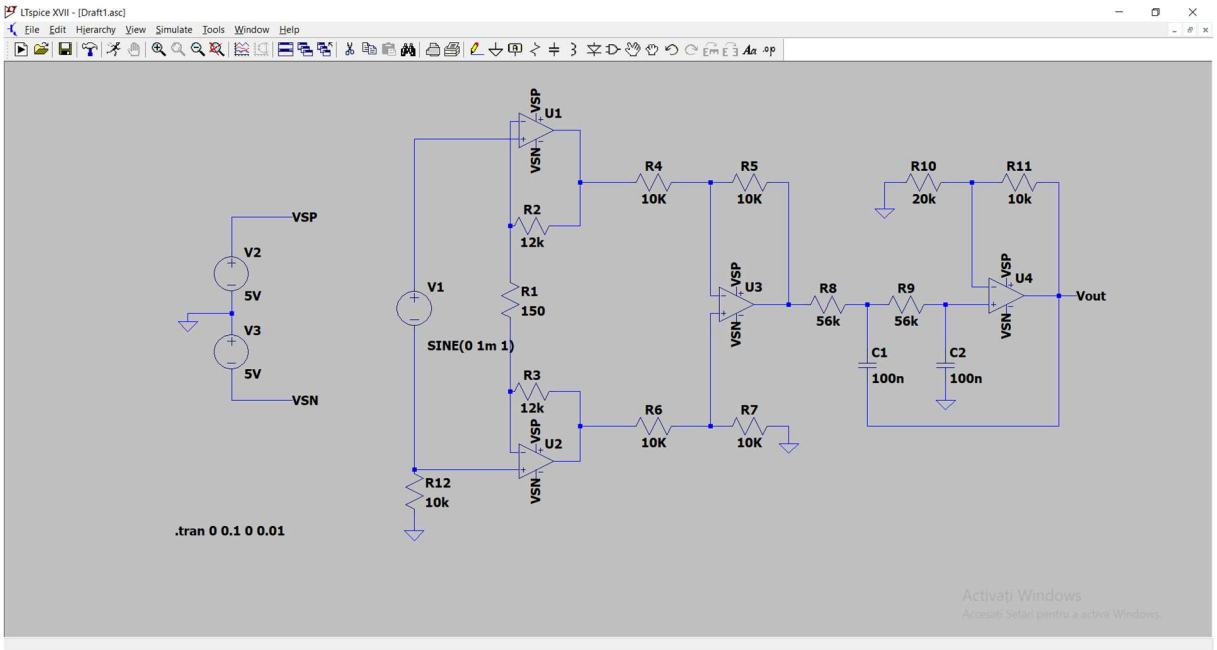
L4 = R2 = R3 = 12 KOhmi

L2 = Vim = 20 mV

L5 = Vom = 3 V

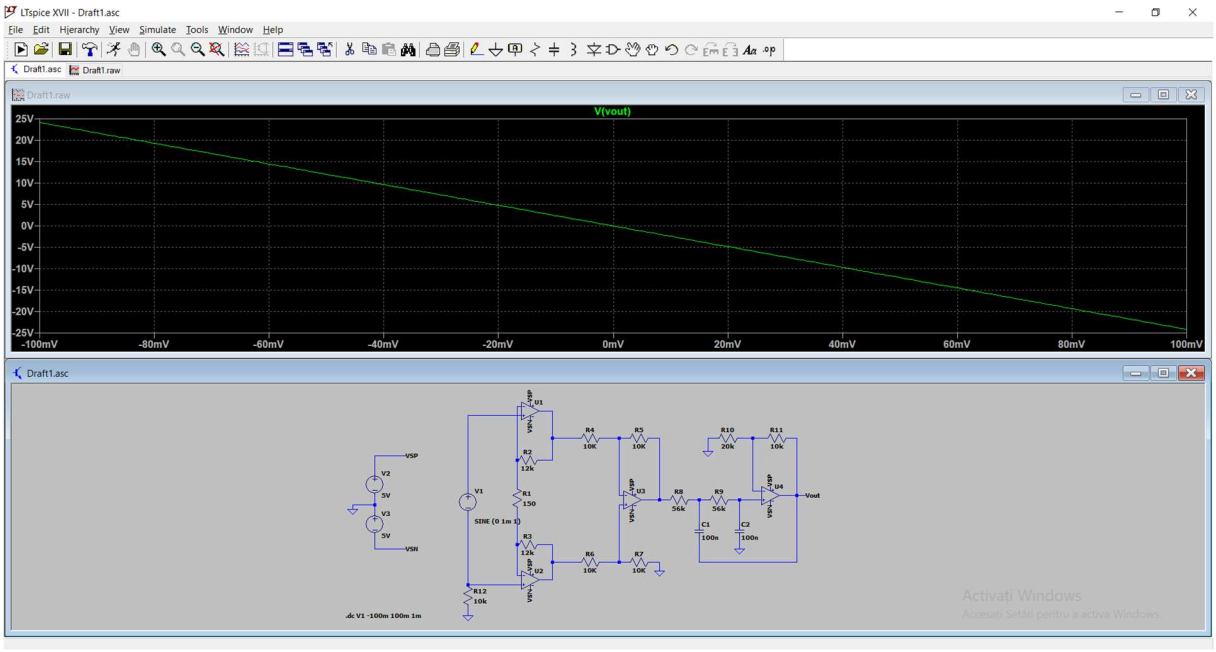
L6 = banda = 100 Hz

Cerinta 1

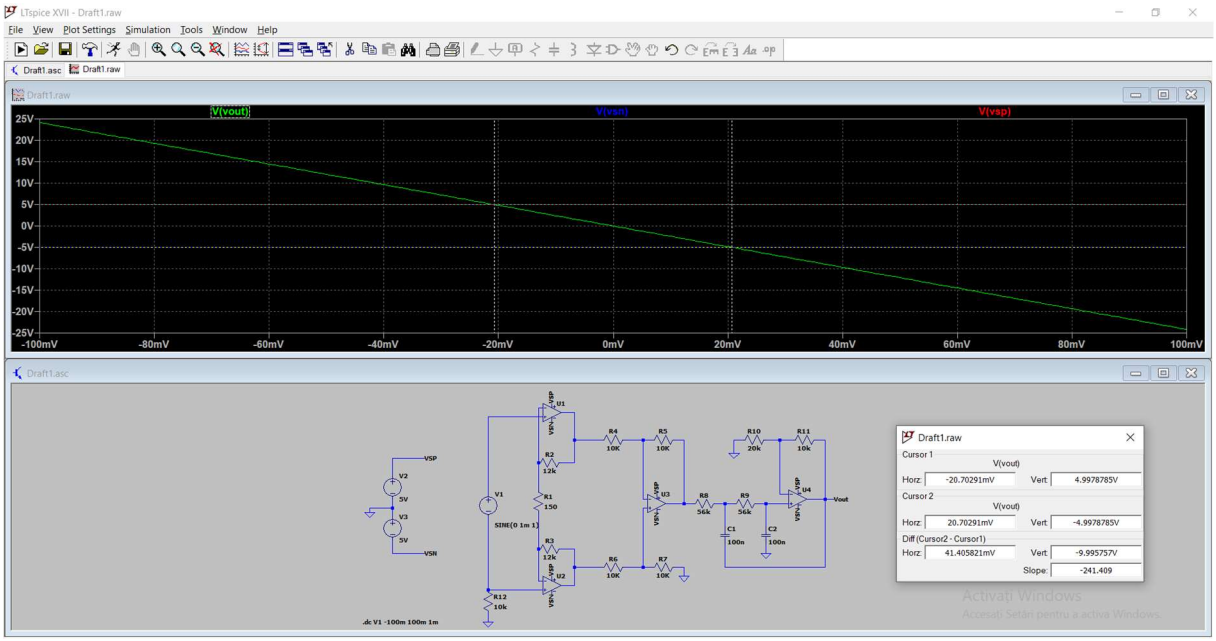


Cerinta 2

2.1 Grafic Vout

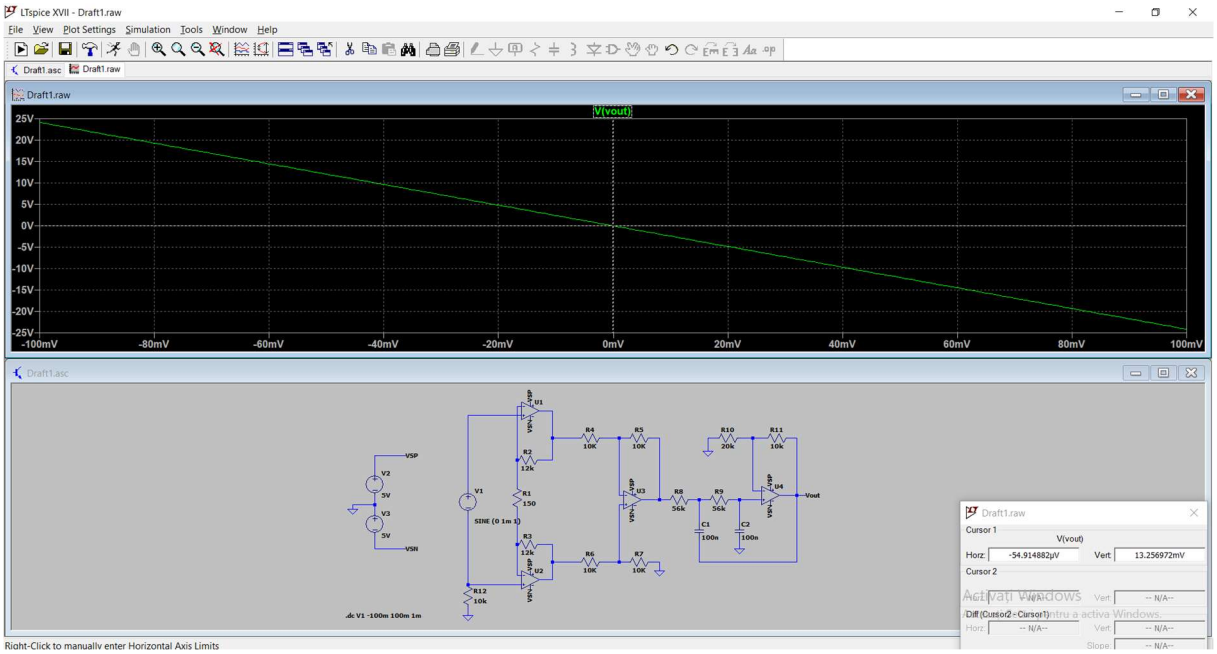


2.2 Domeniul tensiunii



Domeniul pentru care schema functioneaza liniar este (-20.702mV; 20.702mV)

2.3 Amplificarea de tensiune a schemei



Amplificarea din schema:

A = 13.256 V / (-54.914 mV) = 10^3 * 13.256 / -54.914 = -241.395

Amplificarea teoretica:

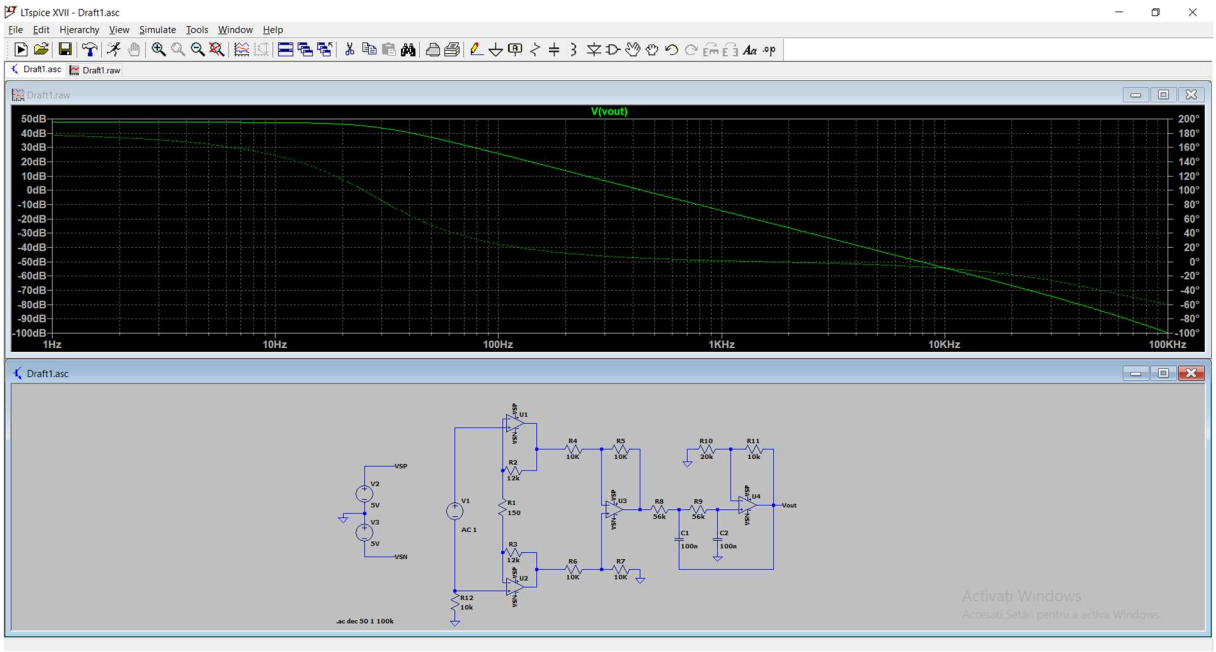
A = (1 + (R2+R3)/R1) * (-R5/R4) * (1+R11/R10) = (1+160) * (-1) * (1+1/2)

A = -161 * 1.5 = -241.5

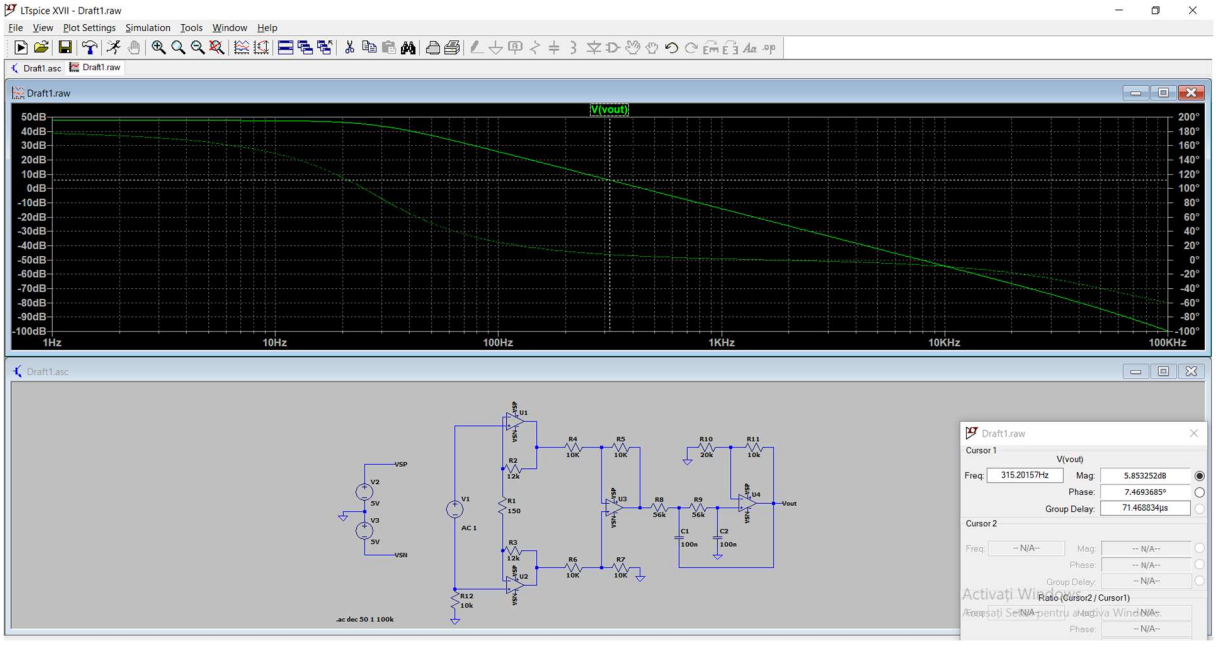
Rezultatul este corect, deoarece ambele amplificari sunt aproximativ egale

Cerinta 3

3.1 Caracteristica de frecventa a schemei la scara logaritmica

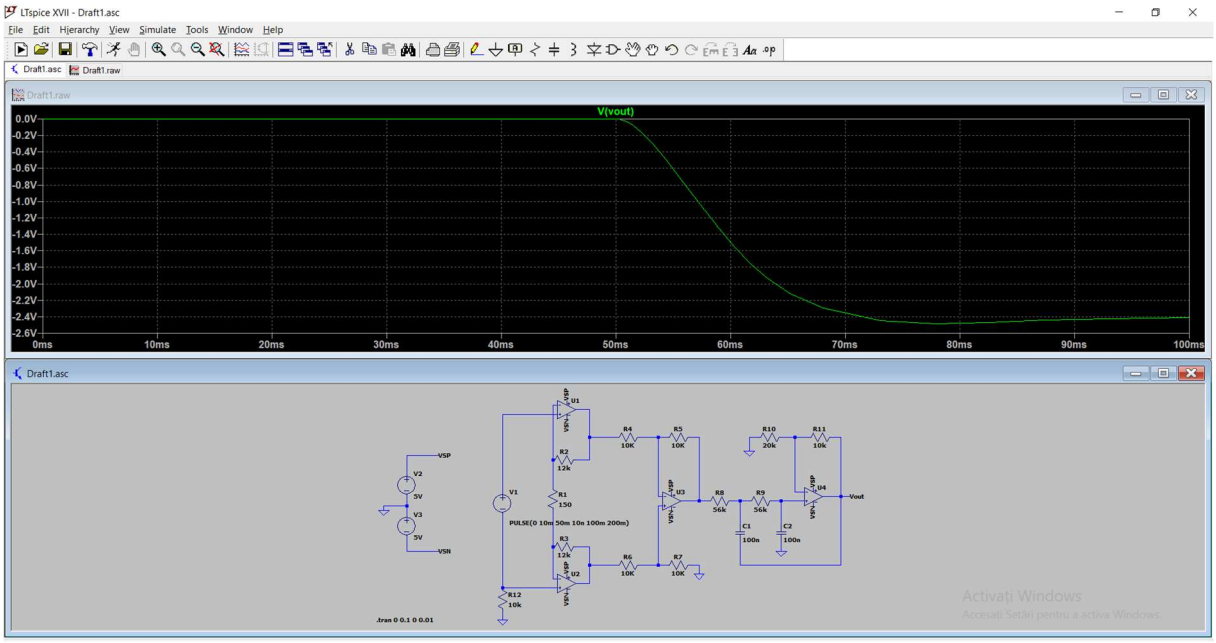


3.2 Banda de trecere a schemei

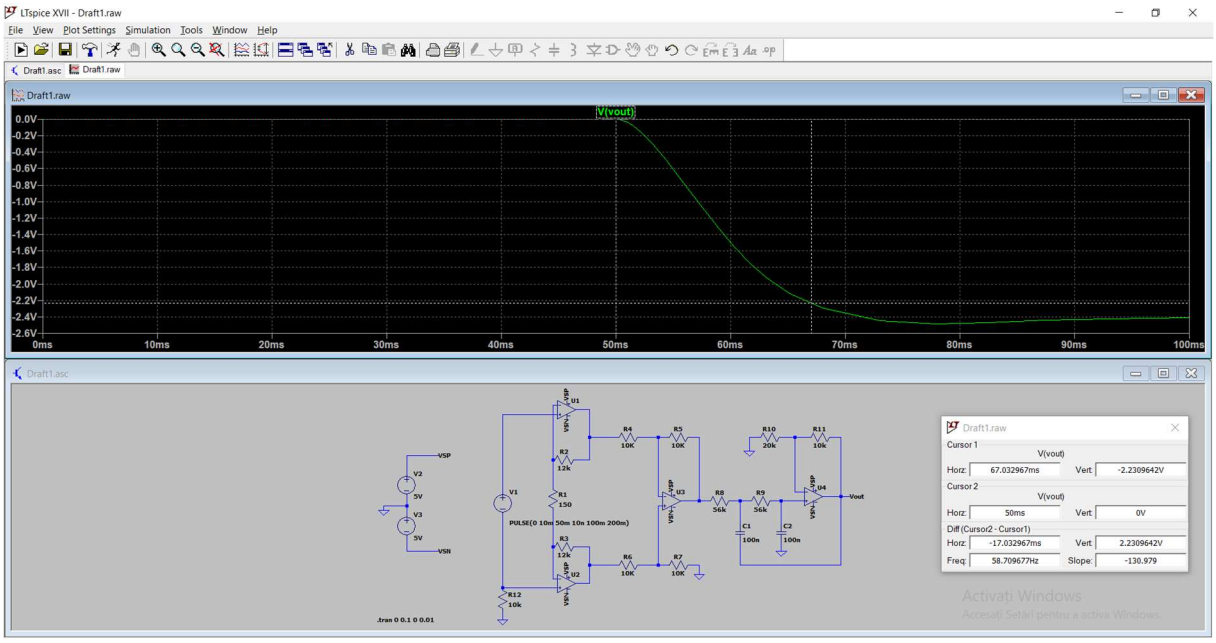


Cerinta 4

4.1 Raspunsul la semnal de tip treapta



4.2 Timpul de crestere



Timpul de crestere este de aproximativ 17 ms

Cerinta 5

5.1

Vim = 20mV

Vom = 3V

Amplificarea:

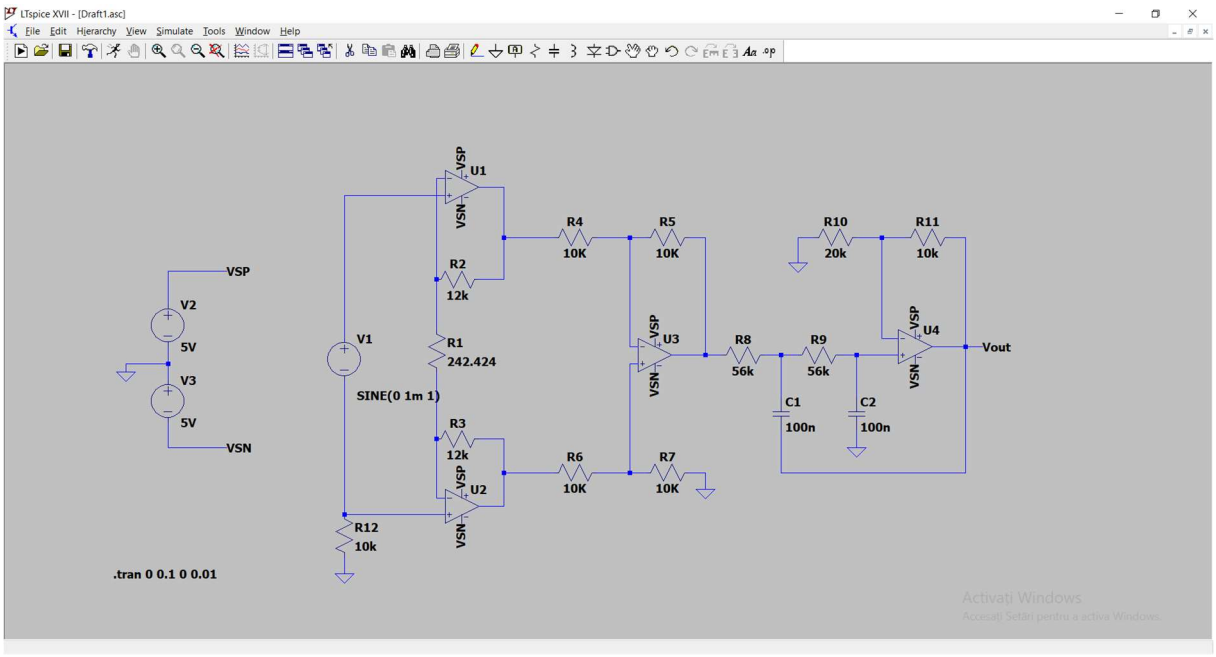
A = Vom / Vim = 3000 / -20 = -150

Modificare R1:

A = (1 + (R2+R3)/R1) * (-R5/R4) * (1 + R11/R10)

-150 = (1 + (R2+R3)/R1) * -1.5

R1 = (R2+R3)/(100-1) = 24000/99 = 242.424 Ohmi



5.2

Frecventa de taiere = 100 Hz

R8 = R9; C1 = C2

Pulsatia de taiere se calculeaza cu formula:

2*pi*f = 1 / sqrt(R8 * R9 * C1 * C2) = 1 / R8 * C1

R8 = 1 / (2*pi*f*C1) = 1 / (2*3.14*100*10^-7) = 10^7 / 628 = 15923 Ohmi = R9