

Arithmetic Solution

eq1 := V_{Reference} = V_{Supply} · $\frac{R_{40}}{R_{41} + R_{40}}$

assume , R₄₀ > 0

solve , V_{Supply}

assume , ALL > 0

expand , **V_{Reference}**

→ V_{Reference} + $\frac{R_{41} \cdot V_{\text{Reference}}}{R_{40}}$

f(V_{Reference} , R₄₀ , R₄₁) := eq1

→ V_{Reference} + $\frac{R_{41} \cdot V_{\text{Reference}}}{R_{40}}$

Determining the maximum and minimum are easy in this form

R₄₀ := 5.23kΩ

R₄₁ := 34.0kΩ

V_{Reference} := 1.25V

These are the nominal values in the circuit

V_{SupplyMax} := f(V_{Reference} + 0.01V , R₄₀ · 0.99 , R₄₁ · 1.01) = 9.61668V

Maximum value of the parameter

V_{SupplyMin} := f(V_{Reference} − 0.01V , R₄₀ · 1.01 , R₄₁ · 0.99) = 9.14156V

Minimum value of the parameter

Monte Carlo Solution

$R_{40} := R_{40} \cdot (1 + 1\% \cdot \text{runif}(40000, -1, 1))$

$R_{41} := R_{41} \cdot (1 + 1\% \cdot \text{runif}(40000, -1, 1))$

$V_{\text{Reference}} := 1.25V + 0.01 \cdot \text{runif}(40000, -1, 1) \cdot V$

$V_{\text{SupplyMax}} := \max\left(\overrightarrow{f(V_{\text{Reference}}, R_{40}, R_{41})}\right) = 9.609\text{ V}$

$V_{\text{SupplyMin}} := \min\left(\overrightarrow{f(V_{\text{Reference}}, R_{40}, R_{41})}\right) = 9.1461\text{ V}$