



$$\frac{V_x}{V_{out}} = \frac{R_A}{R_{TrackA}} \times \frac{R_{TrackA} + R_{TrackB}}{R_B + R_B}$$

$$= \frac{82k}{R_{TrackA}} \times \frac{10k + R_{TrackA}}{498k + 82k}$$

R_{TrackA}
(max. 2.2k)

$$= \frac{82k \times (10k + R_{TrackA})}{R_{TrackA} \times 581k}$$

$$= \frac{82}{581} \times \left(\frac{10k + R_{TrackA}}{R_{TrackA}} \right)$$

$$\frac{V_x}{V_{out}} = \frac{82}{581} \times \frac{10k + R_{TrackA}}{R_{TrackA}}$$

$$\frac{V_x \rightarrow 5V}{V_{out} \max} = \frac{82}{581} \times \frac{10k + R}{R}$$

$$\frac{5}{1} = 5 = \frac{82}{581} \times \frac{10k + R_{TrackA}}{R_{TrackA}}$$

$$5 \times \frac{581}{82} = \frac{10k + R}{R}$$

$$\frac{2905}{82} \times R = 10k + R$$

$$\left(\frac{2905}{82} - 1 \right) R = 10k$$

$$R = \frac{10k}{\frac{2905}{82} - 1} \approx 1.6433k\Omega$$

$$\min = \frac{82}{581} \times \frac{10k + 1}{1}$$

$$= \frac{82 \times 10001}{581}$$

$$V_{out} = 3.542 \times 10^{-3} V$$

max

$$\frac{82}{581} \times \frac{10k + 2.2k}{2.2k}$$

$$= \frac{V_x}{V_{out}} = 0.7826$$

$$V_{out} = 6.1388 V$$

$$\frac{V_x \rightarrow 5V}{V_{out} \rightarrow 5V} = 1 = \frac{10k + R_{TrackA}}{R_{TrackA}}$$

$$= \frac{581}{82}$$

$$\frac{581}{82} \times R = 10k + R$$

$$\left(\frac{581}{82} - 1 \right) R = 10k$$

$$R = \frac{10k}{\frac{581}{82} - 1}$$

$$R = 1.6433k\Omega$$

$$\frac{5V}{V_{out}} = \frac{82k}{R} \times \frac{R + 10k}{499k + 82k}$$

$$IV \leftarrow \frac{5V}{V_{out}} \times \frac{499k + 82k}{82k} = \frac{R + 10k}{R}$$

$$\frac{5 \times (499k + 82k)}{82k} \times R = R + 10k$$

$$\left[\frac{5 \times (499k + 82k)}{82k} - 1 \right] R = 10k$$

$$R = \frac{10k}{\frac{5 \times (499k + 82k)}{82k} - 1}$$

$$\frac{10k}{\frac{5 \times \left(\frac{581}{82} \right) - 1}{\cancel{82.0}}} = \frac{10k}{\frac{5 \times 581}{82.0} - 1} \quad 2905$$