$$\mathcal{P}(A) \times \left(\mathcal{P}(B) \times \mathcal{P}(C)\right) \xrightarrow{\alpha} \left(\mathcal{P}(A) \times \mathcal{P}(B)\right) \times \mathcal{P}(C)$$

$$\downarrow_{\alpha} \downarrow \qquad \qquad \downarrow_{\varphi \times 1}$$

$$\mathcal{P}(A) \times \mathcal{P}(B \times C) \qquad \qquad \mathcal{P}(A \times B) \times \mathcal{P}(C)$$

$$\downarrow_{\varphi} \downarrow \qquad \qquad \downarrow_{\varphi}$$

$$\mathcal{P}\left(A \times \left(B \times C\right)\right) \xrightarrow{\mathcal{P}(\alpha)} \mathcal{P}\left(\left(A \times B\right) \times C\right)$$