$$\begin{array}{ccc}
(S(\mathbf{A}) \times S(\mathbf{B})) \times S(\mathbf{C}) & \xrightarrow{\alpha} & S(\mathbf{A}) \times (S(\mathbf{B}) \times S(\mathbf{C})) \\
\downarrow{\scriptstyle \mathrm{coh}_{\mathbf{A},\mathbf{B}} \times \mathrm{id}_{S(\mathbf{C})}} & & \downarrow{\scriptstyle \mathrm{id}_{S(\mathbf{A})} \times \mathrm{coh}_{\mathbf{B},\mathbf{C}}} \\
S(\mathbf{A} * \mathbf{B}) \times S(\mathbf{C}) & & S(\mathbf{A}) \times S(\mathbf{B} * \mathbf{C}) \\
\downarrow{\scriptstyle \mathrm{coh}_{\mathbf{A}*\mathbf{B},\mathbf{C}}} & & \downarrow{\scriptstyle \mathrm{coh}_{\mathbf{A},\mathbf{B}*\mathbf{C}}} \\
S(\mathbf{A} * \mathbf{B} * \mathbf{C}) & =\!=\!=\!= & S(\mathbf{A} * \mathbf{B} * \mathbf{C})
\end{array}$$