$$
\begin{aligned}
\Psi_{233} &= C_1\left(-|2d2u\rangle + |2u2d\rangle - |d2u2\rangle + |u2d2\rangle\right) \\
&\quad + C_2\left(-|22du\rangle + |22ud\rangle - |2du2\rangle + |2ud2\rangle - |d22u\rangle - |du22\rangle + |u22d\rangle + |ud22\rangle\right) \\
&\quad + C_3\left(|0222\rangle + |2022\rangle + |2202\rangle + |2220\rangle\right)
\end{aligned}
$$

$$
C_1 = \frac{-\left(48\,t^2 + \left(U - \left(-36\,t^2\,U + U^3 + 6\,\sqrt{6}\,\sqrt{-\left(t^2\,\left(512\,t^4 + 26\,t^2\,U^2 + U^4\right)\right)}\right)^{\frac{1}{3}}\right)^2\right)}{2\,\left(48\,t^2 + U^2 + U\left(-36\,t^2\,U + U^3 + 6\,\sqrt{6}\,\sqrt{-\left(t^2\,\left(512\,t^4 + 26\,t^2\,U^2 + U^4\right)\right)}\right)^{\frac{1}{3}} + \left(-36\,t^2\,U + U^3 + 6\,\sqrt{6}\,\sqrt{-\left(t^2\,\left(512\,t^4 + 26\,t^2\,U^2 + U^4\right)\right)}\right)^{\frac{2}{3}}\right)}
$$

$$
C_2 = \frac{48\,t^2 + \left(U - \left(-36\,t^2\,U + U^3 + 6\,\sqrt{6}\,\sqrt{-\left(t^2\,\left(512\,t^4 + 26\,t^2\,U^2 + U^4\right)\right)}\right)^{\frac{1}{3}}\right)^2}{24\,t\left(-36\,t^2\,U + U^3 + 6\,\sqrt{6}\,\sqrt{-\left(t^2\,\left(512\,t^4 + 26\,t^2\,U^2 + U^4\right)\right)}\right)^{\frac{1}{3}}}
$$

$$
C_3 = \frac{1}{2}
$$