$$H(j\omega) = \frac{1}{(1+j\omega RC)^2}$$

$$= \frac{(1-j\omega RC)^2}{(1+(j\omega RC)^2)^2} = \frac{(1-j\omega RC)^2}{(1+(\omega RC)^2)^2} = \left(\frac{1-j\omega RC}{1+(\omega RC)^2}\right)^2$$

$$|H(j\omega)| = \sqrt{\left(\frac{1}{1+(\omega RC)^2} - j\frac{\omega RC}{1+(\omega RC)^2}\right)^2 \left(\frac{1}{1+(\omega RC)^2} + j\frac{\omega RC}{1+(\omega RC)^2}\right)^2}$$

$$= \sqrt{\frac{1}{(1+(\omega RC)^2)^4} \cdot (1+(\omega RC)^2)^2}$$

$$= \sqrt{\frac{1}{(1+(\omega RC)^2)^2}}$$

$$= \frac{1}{1+(\omega RC)^2}$$

$$|H(j\omega)|^2 = \frac{1}{(1+(\omega RC)^2)^2} = \frac{1}{2}$$

$$2 = (1+(\omega RC)^2)^2$$

$$\sqrt{2}-1 = (\omega RC)^2$$

$$\sqrt{\sqrt{2}-1} = \omega RC$$

$$2\pi f = \frac{\sqrt{\sqrt{2}-1}}{RC}$$

$$f = \frac{\sqrt{\sqrt{2}-1}}{2\pi RC}$$