$$\delta_{T_s}(t) = \sum_{n=-\infty}^{\infty} \delta\left(t - nT_s\right)$$

Because $\delta_{T_s}(t)$ is a periodic signal, it can be expressed as a Fourier series:

$$\delta_{T_s}(t) = \sum_{n=-\infty}^{\infty} C_n \, e^{j2\pi n f_s t}$$

where

$$C_n = \frac{1}{T_s} \int_{-T_s/2}^{T_s/2} \delta_{T_s}(t) \, e^{-j2\pi n f_s t} \, dt$$

Within the range $\left(-\frac{T_s}{2}, \frac{T_s}{2}\right)$, $\delta_{T_s}(t)$ is equal to $\delta(t)$. Hence,

$$\begin{aligned} C_n &= \frac{1}{T_s} \int_{-T_s/2}^{T_s/2} \delta(t) \, e^{-j2\pi n f_s t} \, dt \\ &= \frac{1}{T_s} e^{-j2\pi n f_s t} \Big|_{t=0} \\ &= \frac{1}{T_s} \end{aligned}$$

Therefore, we obtain

$$\delta_{T_s}(t) = \frac{1}{T_s} \sum_{n=-\infty}^{\infty} e^{j2\pi n f_s t}$$

-- end --