Common Fourier Transform Pairs

$f(t), \quad a > 0,\ \tau > 0$	$F(\omega)$
$e^{-at}u(t)$	$\dfrac{1}{a + j\omega}$
$te^{-at}u(t)$	$\left(\dfrac{1}{a + j\omega}\right)^2$
$p_\tau(t) = \begin{cases} 1, & -\frac{\tau}{2} \le t < \frac{\tau}{2}, \\ 0, & \text{else} \end{cases}$	$\tau \operatorname{sinc}\left(\dfrac{\tau\omega}{2\pi}\right)$
$\Delta_\tau(t) = \begin{cases} 1 - \frac{2\lvert t\rvert}{\tau}, & -\frac{\tau}{2} \le t < \frac{\tau}{2} \\ 0, & \text{else} \end{cases}$	$\dfrac{\tau}{2} \operatorname{sinc}^2\left(\dfrac{\tau\omega}{4\pi}\right)$
$e^{-a\lvert t\rvert}$	$\dfrac{2a}{a^2 + \omega^2}$
$e^{-at}\sin(\omega_0 t)\,u(t)$	$\dfrac{\omega_0}{(a + j\omega)^2 + \omega_0^2}$
$e^{-at}\cos(\omega_0 t)\,u(t)$	$\dfrac{a + j\omega}{(a + j\omega)^2 + \omega_0^2}$
e^{-at^2}	$\sqrt{\dfrac{\pi}{a}} e^{-\omega^2/4a}$
$\operatorname{sinc}\left(\dfrac{\tau t}{2\pi}\right)$	$\dfrac{2\pi}{\tau} p_\tau(\omega)$
$\operatorname{sinc}^2\left(\dfrac{\tau t}{4\pi}\right)$	$\dfrac{4\pi}{\tau} \Delta_\tau(\omega)$
$\dfrac{1}{a^2 + t^2}$	$\dfrac{\pi}{a} e^{-a\lvert\omega\rvert}$
$\delta(t)$	1
1	$2\pi\delta(\omega)$
$u(t)$	$\pi\delta(\omega) + \dfrac{1}{j\omega}$
$e^{j\omega_0 t}$	$2\pi\delta(\omega - \omega_0)$
$\cos(\omega_o t)$	$\pi\left[\delta(\omega + \omega_0) + \delta(\omega - \omega_0)\right]$
$\sin(\omega_o t)$	$j\pi\left[\delta(\omega + \omega_0) - \delta(\omega - \omega_0)\right]$
$\operatorname{sgn}(t) = \begin{cases} \frac{t}{\lvert t\rvert}, & t \ne 0, \\ 0, & t = 0 \end{cases}$	$\dfrac{2}{j\omega}$
$\cos(\omega_0 t)u(t)$	$\dfrac{\pi}{2}\left[\delta(\omega - \omega_0) + \delta(\omega + \omega_0)\right] + \dfrac{j\omega}{\omega_0^2 - \omega^2}$
$\sin(\omega_0 t)u(t)$	$\dfrac{\pi}{j2}\left[\delta(\omega - \omega_0) - \delta(\omega + \omega_0)\right] + \dfrac{\omega_0}{\omega_0^2 - \omega^2}$