If $s \neq 0$, then for each z in $\mathrm{ran}(f)$, there exist two distinct arguments x_z and x'_z such that $f(x_z) = z = f(x'_z)$, and $x_z \oplus s = x'_z$. The probability to observe y is given by

$$\left\| \frac{1}{2^n} \sum_{x \in \{0,1\}^n} (-1)^{x \cdot y} |f(x)\rangle \right\|^2 = \left\| \frac{1}{2^n} \sum_{z \in \mathrm{ran}(f)} ((-1)^{x_z \cdot y} + (-1)^{x'_z \cdot y}) |z\rangle \right\|^2$$

$$= \left\| \frac{1}{2^n} \sum_{z \in \mathrm{ran}(f)} ((-1)^{x_z \cdot y} + (-1)^{(x_z \oplus s) \cdot y}) |z\rangle \right\|^2$$

$$= \left\| \frac{1}{2^n} \sum_{z \in \mathrm{ran}(f)} (-1)^{x_z \cdot y} (1 + (-1)^{s \cdot y}) |z\rangle \right\|^2 = \begin{cases} 2^{-(n-1)} & \text{if } s \cdot y = 0 \\ 0 & \text{if } s \cdot y = 1 \end{cases}$$