

Example 2

$$KG(s) = \frac{0.01 (s^2 + 0.01s + 1)}{s^2 \left(\frac{s^2}{4} + 0.02 \frac{s}{2} + 1 \right)} \quad \text{— already in Bode form}$$

What can we tell about magnitude?

- ▶ low-frequency term $\frac{0.01}{(j\omega)^2}$ with $K_0 = 0.01$, $n = -2$
— asymptote has slope = -2 , passes through $(\omega = 1, M = 0.01)$
- ▶ complex zero with break-point at $\omega_n = 1$ and $\zeta = 0.005$ —
slope up by 2; large resonant dip
- ▶ complex pole with break-point at $\omega_n = 2$ and $\zeta = 0.01$ —
slope down by 2; large resonant peak