# Damping Factor

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The effective output impedance of an amplifier is given by:

$$R_X = \frac{V_{O2} - V_{O1}}{\frac{V_{O1}}{R_{O1}} - \frac{V_{O2}}{R_{O2}}}$$

$V_{O1}$ is the output level with load $R_{O1}$

$V_{O2}$ is the output level with load $R_{O2}$

Note that in general this value is *frequency dependent*.

If $R_{O1} \to \infty$ (i.e. no load), then it can be simplified to:

$$R_X = \left( \frac{V_{O1}}{V_{O2}} - 1 \right) R_{O2}$$

If the load $R_{O2}$ is the nominal 8Ω, then the 8Ω *damping factor* is given by:

$$DF = \frac{1}{\frac{V_{O1}}{V_{O2}} - 1}$$