



Equivalent Circuit

石英晶体谐振器的等效回路

The equivalent quartz resonator circuit is shown in Fig. 1 where the resonance frequency is

$$f_0 = \frac{1}{2\pi\sqrt{L_1 C_1}}$$

While the antiresonant frequency is expressed by

$$f_a = f_0 \left(1 + \frac{C_1}{2C_0} \right)$$

The following factors represent the performance of the quartz resonator

Capacitance Ratio 容量比 $r = \frac{C_0}{C_1}$

Quality Factor 共振尖锐度 $Q = \frac{2\pi f_0 L_1}{R_1} = \frac{1}{2\pi f_0 C_1 R_1}$

Figure of Merit 良好度 $M = \frac{Q}{r} = \frac{1}{2\pi f_0 C_1 R_1}$

石英晶体谐振器的等效回路如图1. 所示, 其谐振频率是

$$f_0 = \frac{1}{2\pi\sqrt{L_1 C_1}}$$

然而, 反谐振频率则是

$$f_a = f_0 \left(1 + \frac{C_1}{2C_0} \right)$$

下述的因数代表石英晶体的特性

