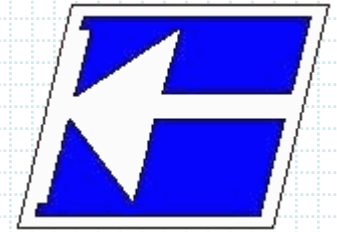


Instituto Federal de Educação, Ciência e Tecnologia de Santa Catarina
Departamento Acadêmico de Eletrônica
Osciladores e Multivibradores



Oscilador a Cristal

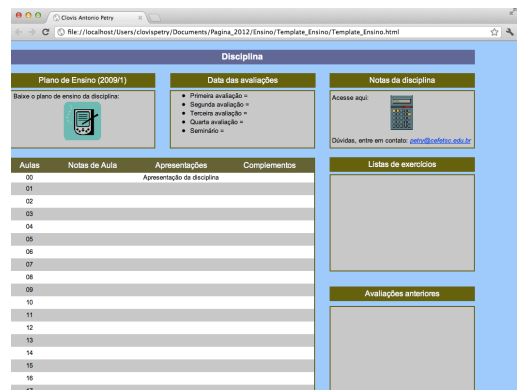
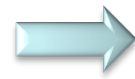
Prof. Clóvis Antônio Petry

Florianópolis, novembro de 2012.

Bibliografia para esta aula



www·ProfessorPetry·com·br

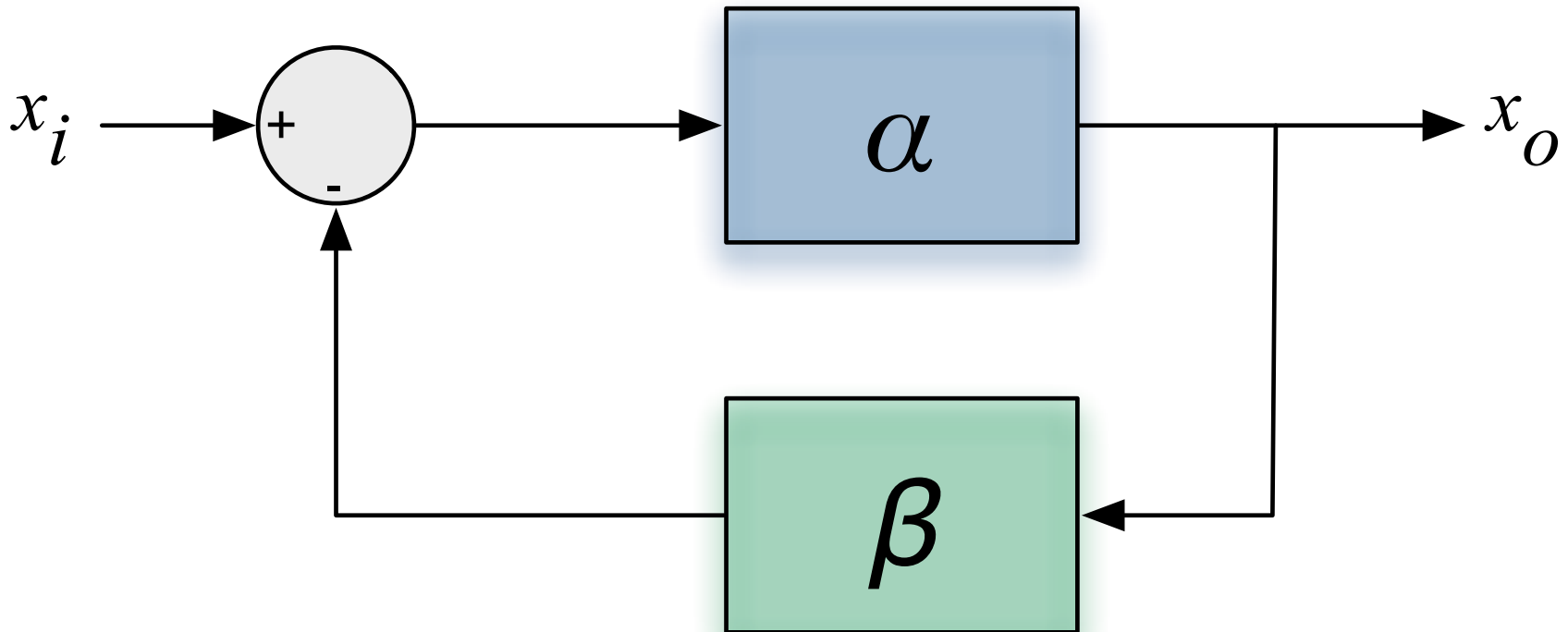


The screenshot shows a web browser window with a URL: file:///localhost/Users/clivspetry/Documents/Pagina_2012/Ensino/Template_Ensino/Template_Ensino.html. The page content is organized into several sections:

- Disciplina**: A header section.
- Plano de Ensino (2009/1)**: A section with a download icon and the text "Baixe o plano de ensino da disciplina:".
- Data das avaliações**: A section with a list of evaluation dates: "Primeira avaliação", "Segunda avaliação", "Terceira avaliação", "Quarta avaliação", and "Semifinal".
- Notas da disciplina**: A section with a "Acesso aqui:" link and the email "Dividas, entre em contato: petry@ufsc.br".
- Aulas**: A table with columns for "Aulas", "Notas de Aula", "Apresentações", "Complementos", and "Listas de exercicios". The rows are numbered 00 to 17.
- Avaliações anteriores**: A section at the bottom of the page.

Osciladores a cristal:

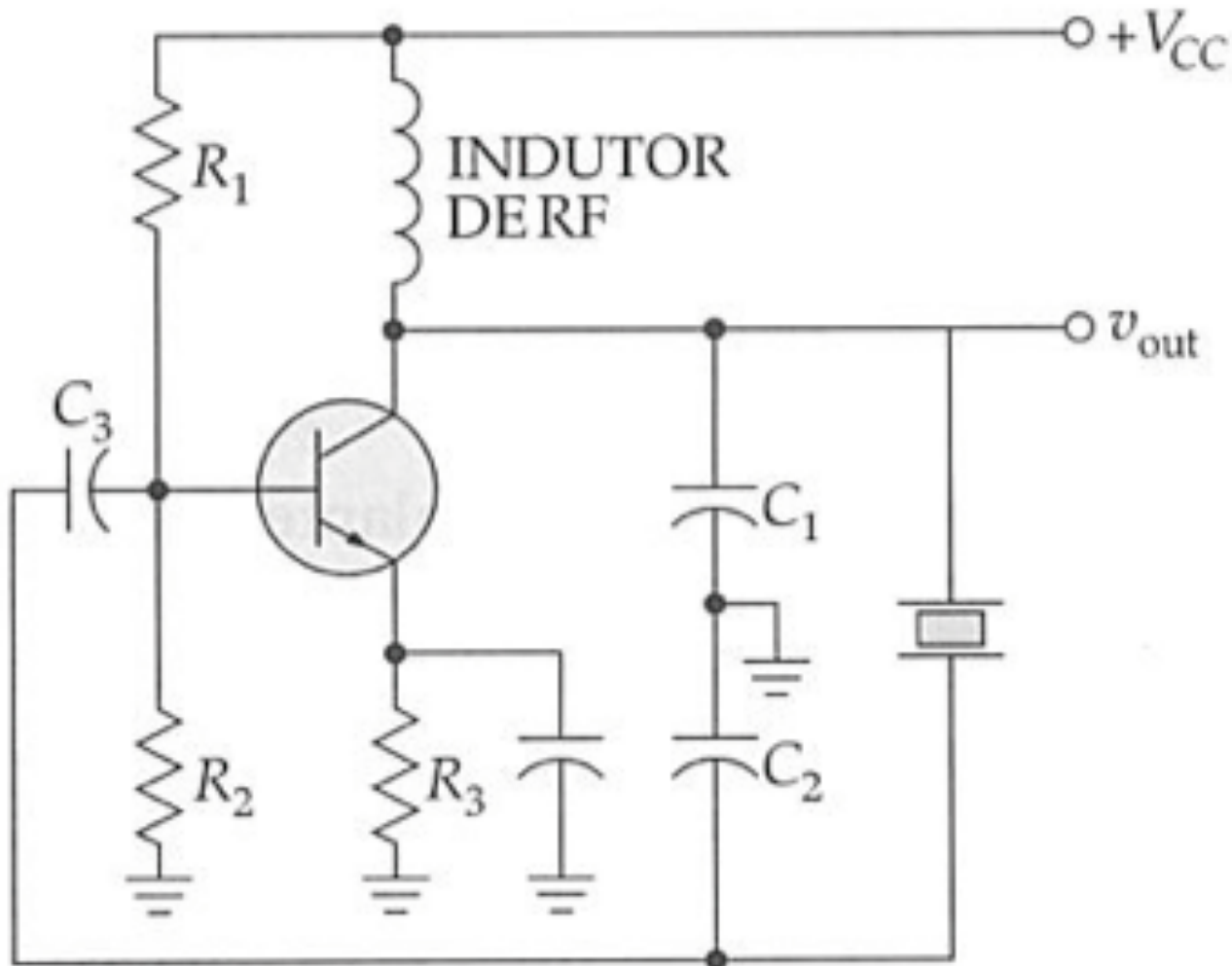
1. Considerações iniciais;
2. Circuito ressonante série;
3. Circuito ressonante paralelo;
4. Osciladores a cristal.



Blocos do oscilador:

- Amplificador – α – circuito de amplificação de sinais, ativo, formado por transistores e/ou amplificadores operacionais.
- Rede de realimentação – β – circuito de realimentação, normalmente com elementos passivos (resistores, capacitores e indutores).

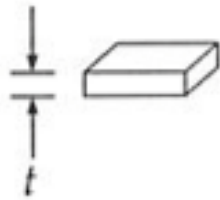
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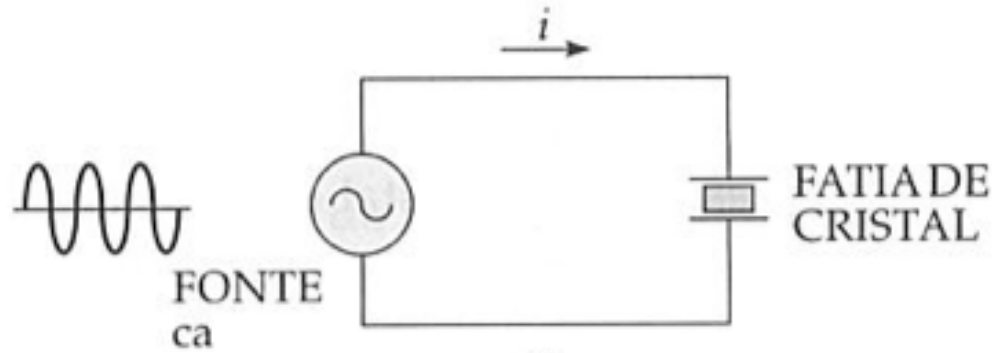
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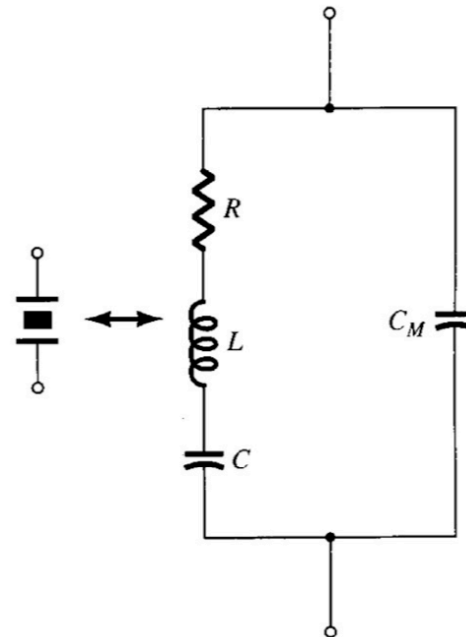
(a)



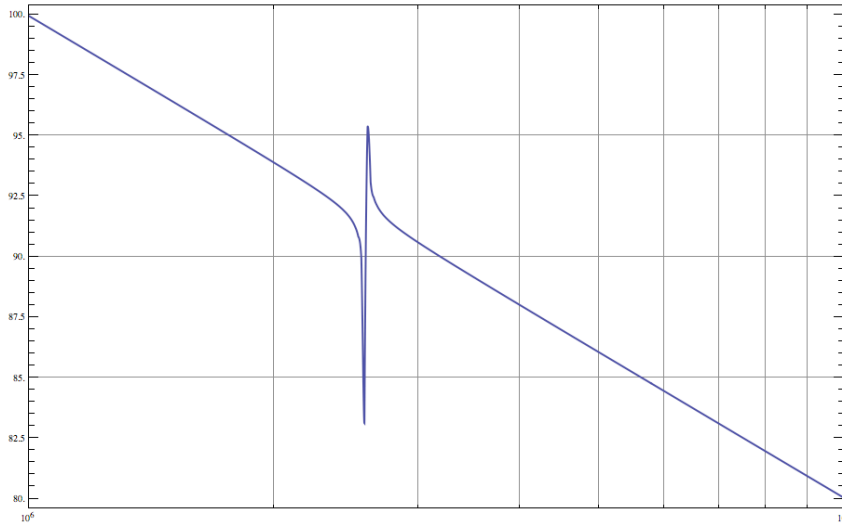
(b)



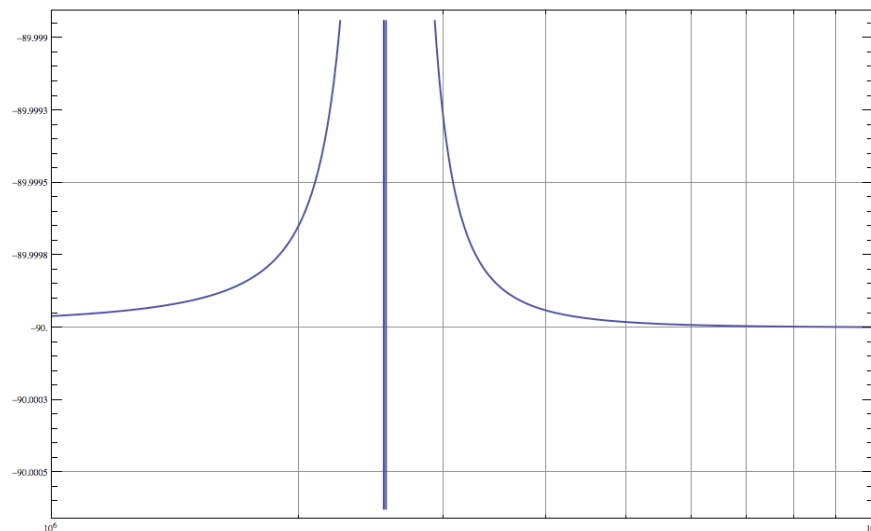
(c)



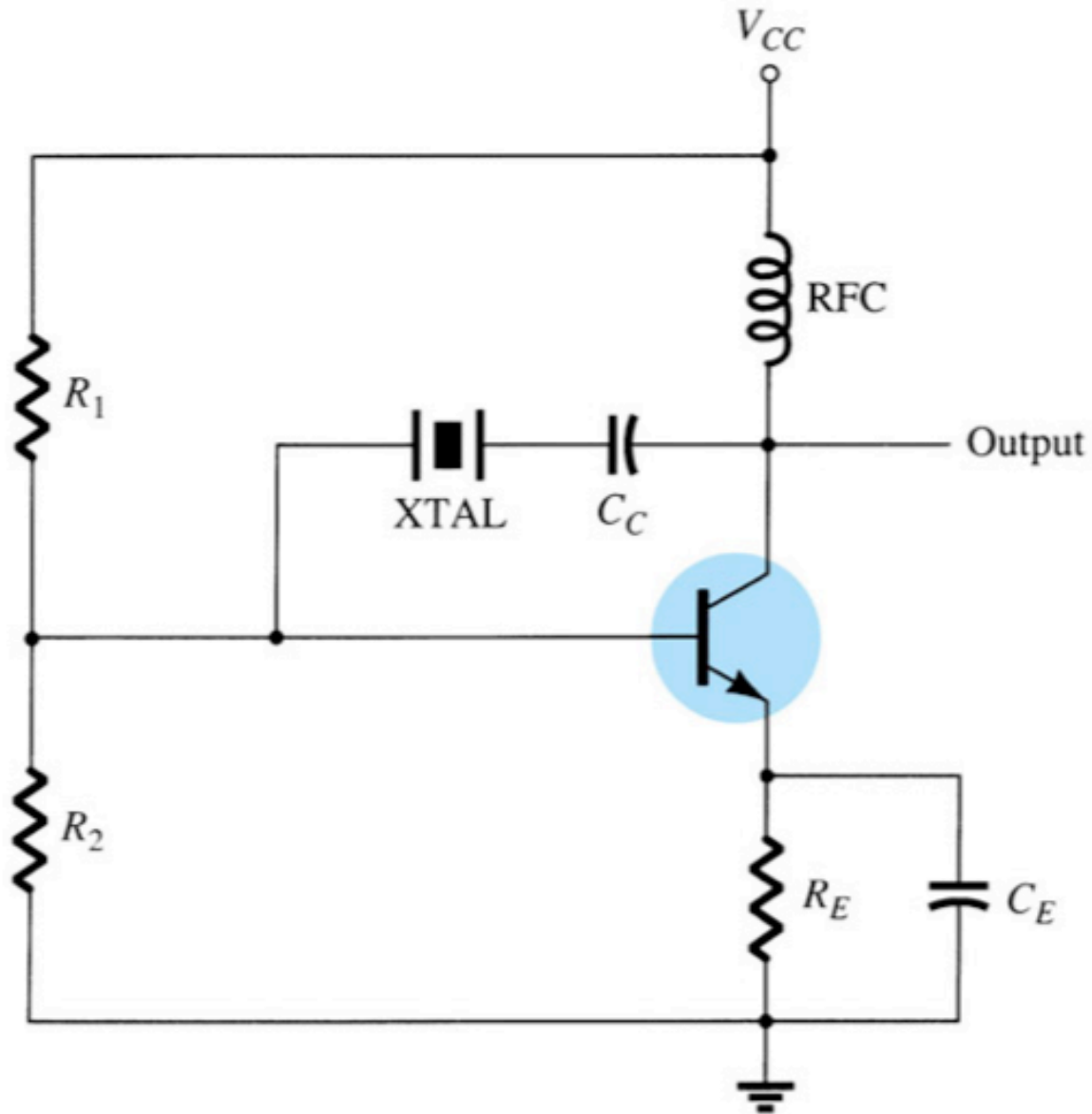
Oscilador a cristal:



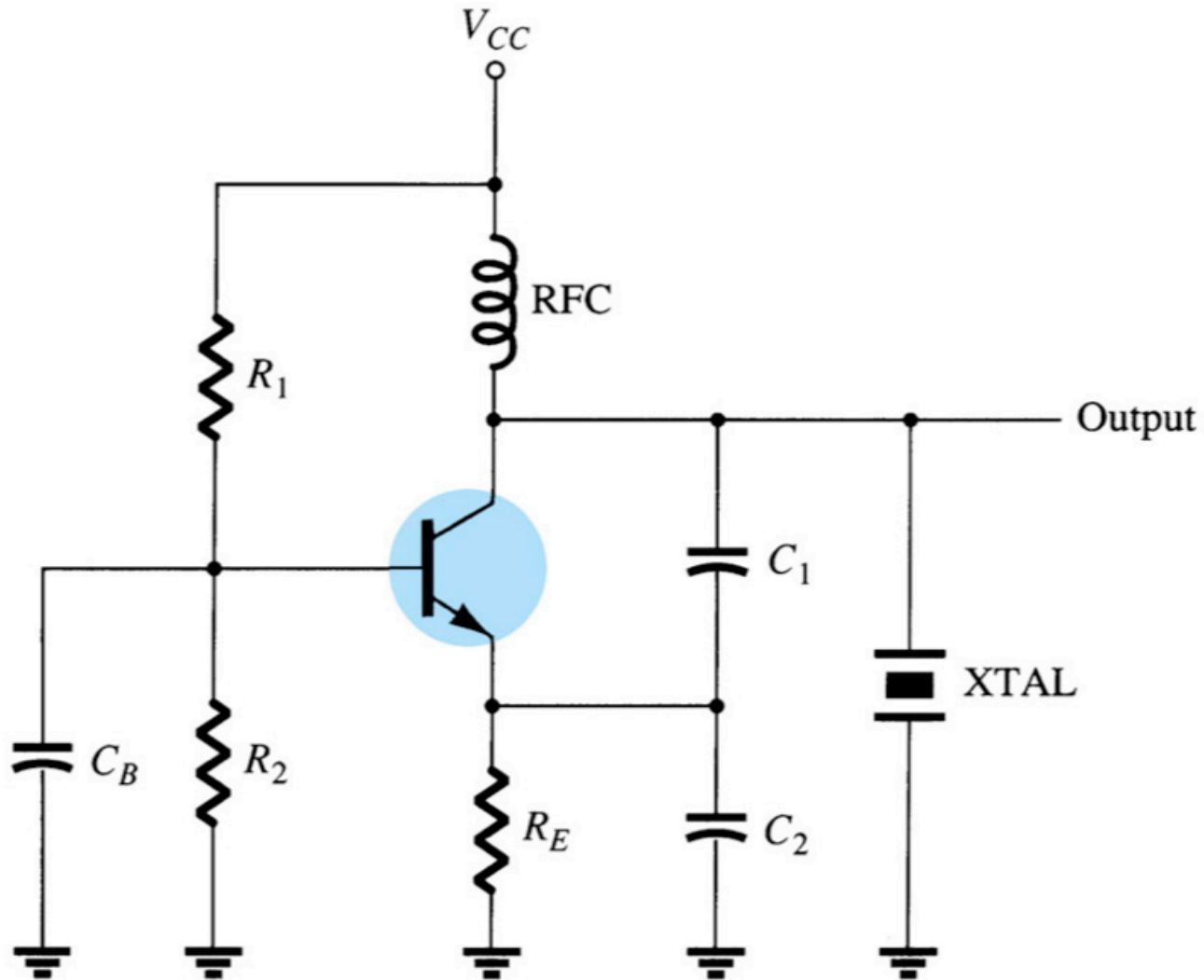
$$Z_{XTAL} = \frac{\left(R + j \cdot \omega \cdot L + \frac{1}{j \cdot \omega \cdot C} \right) \cdot \left(\frac{1}{j \cdot \omega \cdot C_M} \right)}{R + j \cdot \omega \cdot L + \frac{1}{j \cdot \omega \cdot C} + \frac{1}{j \cdot \omega \cdot C_M}}$$



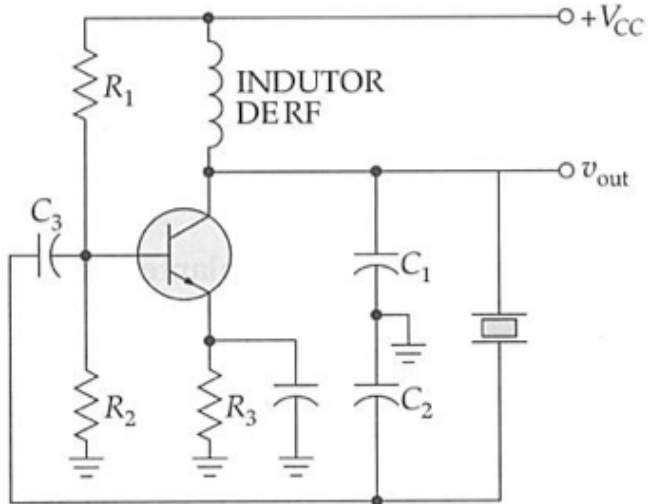
Circuito ressonante série



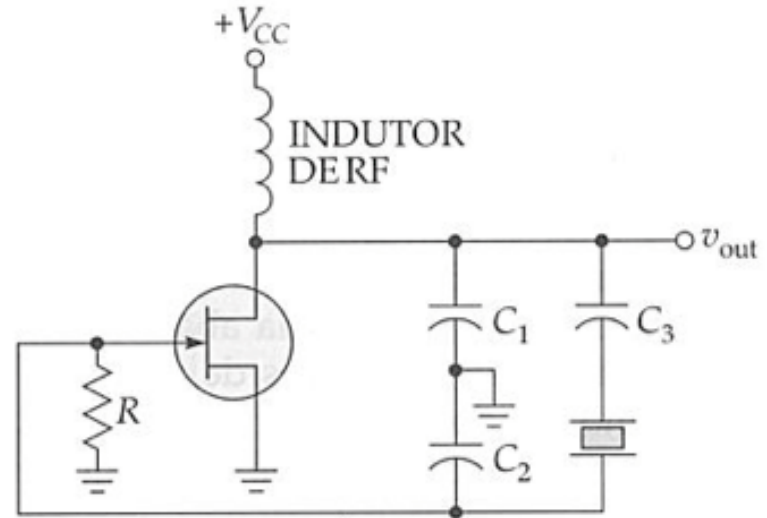
Circuito ressonante paralelo



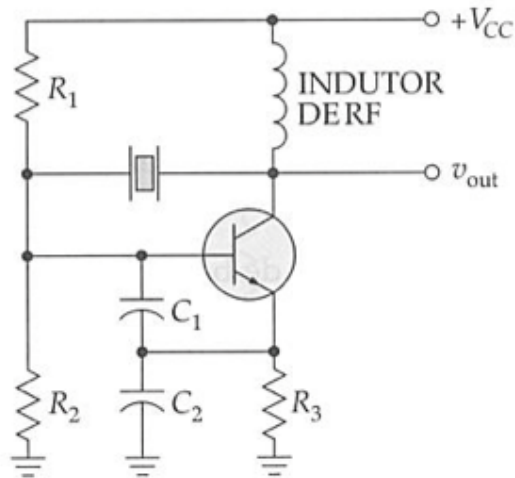
Osciladores a cristal



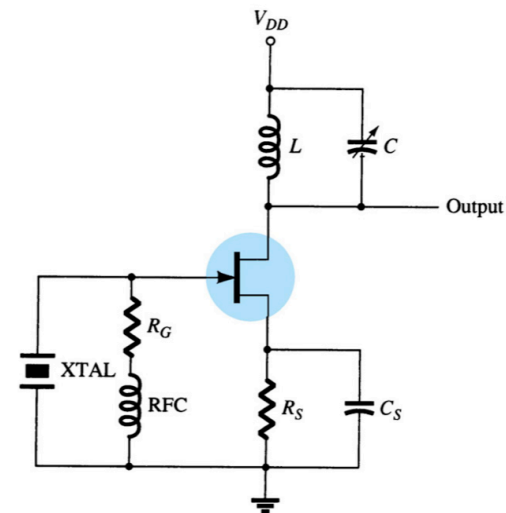
Oscilador Colppits



Oscilador Clapp

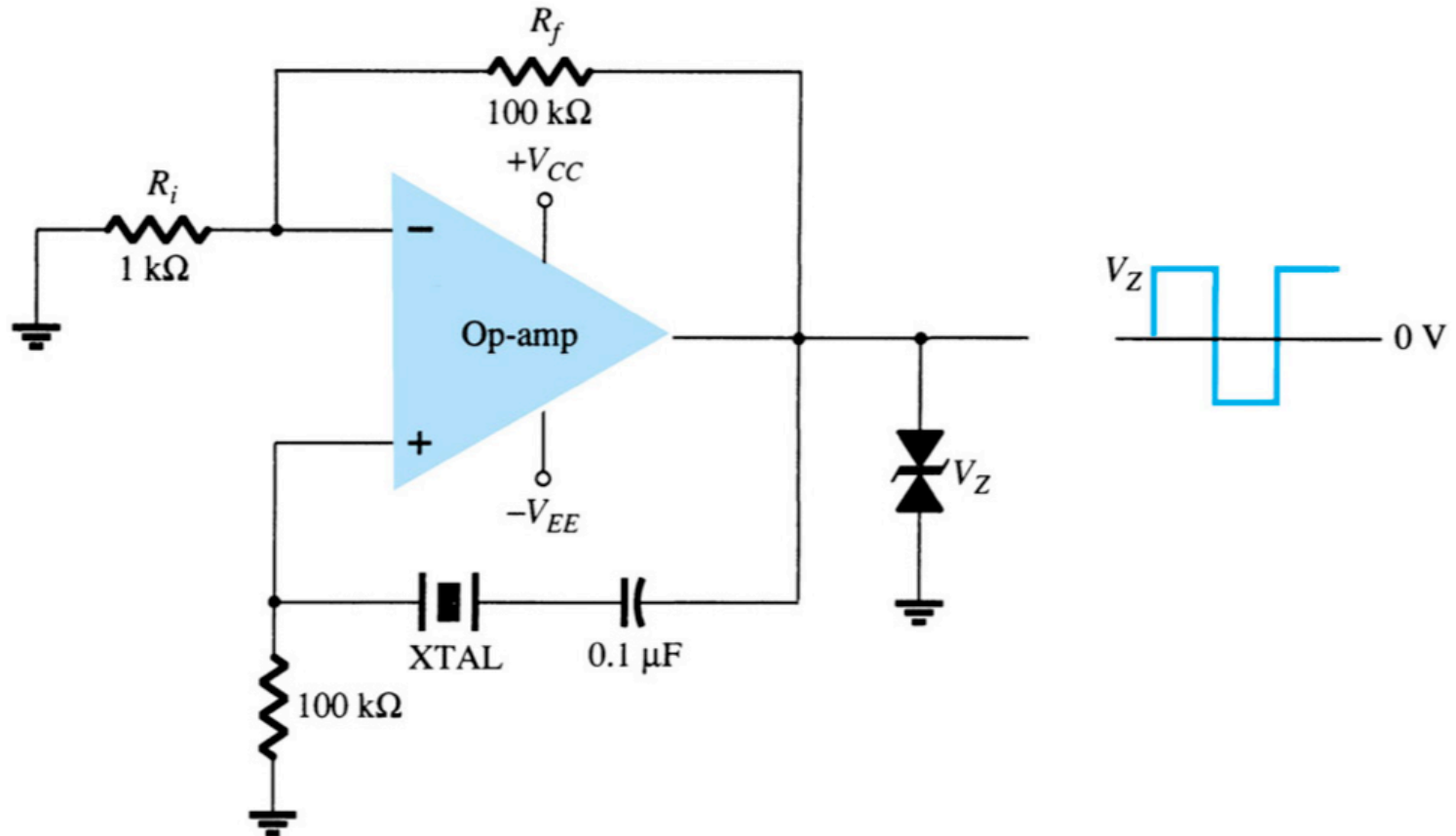


Oscilador Colppits



Oscilador Miller

Oscilador a cristal com amplificador operacional



Osciladores com controle automático de ganho.

