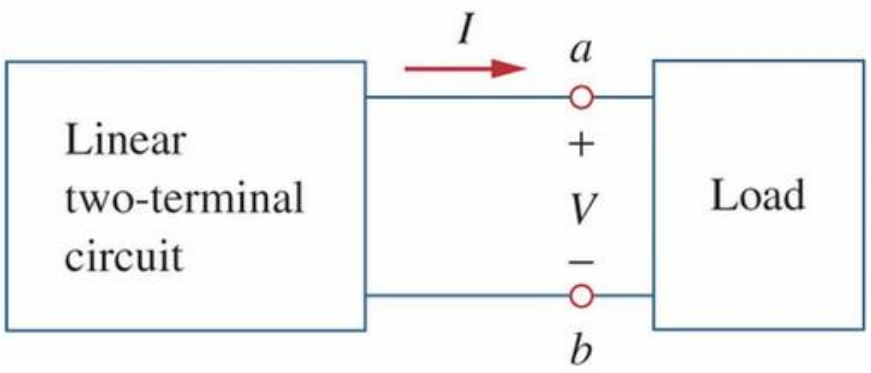
Laboratório de Eletricidade

Prática 4 : Máxima Transferência de Potência

Objetivos

- Determinar experimentalmente a máxima transferência que um circuito de dois terminais a-b pode fornecer ;
- Comparar resultados obtidos com a teoria.

Conceitos teóricos: MTP



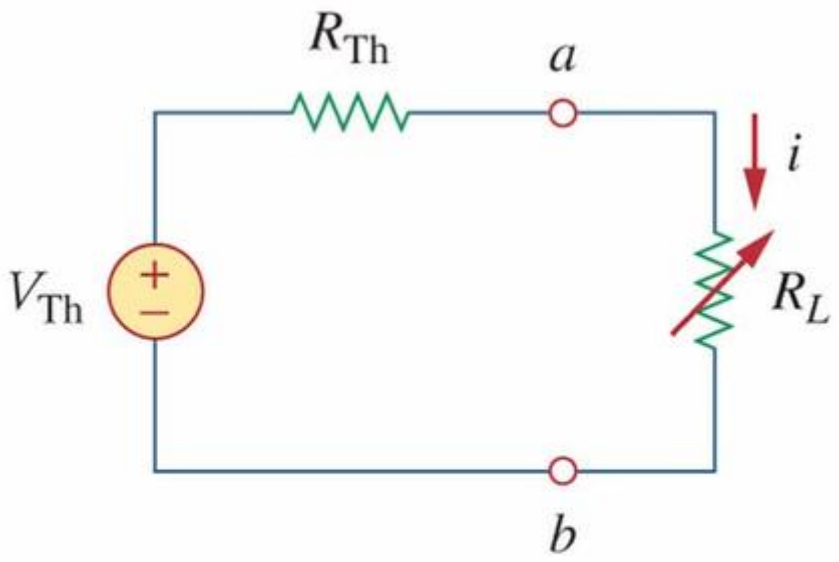
$P_{L(carga)} = Ri^2$

Aumentar **R** – implica em diminuir **i**

Aumentar **i** – implica em diminuir **R**

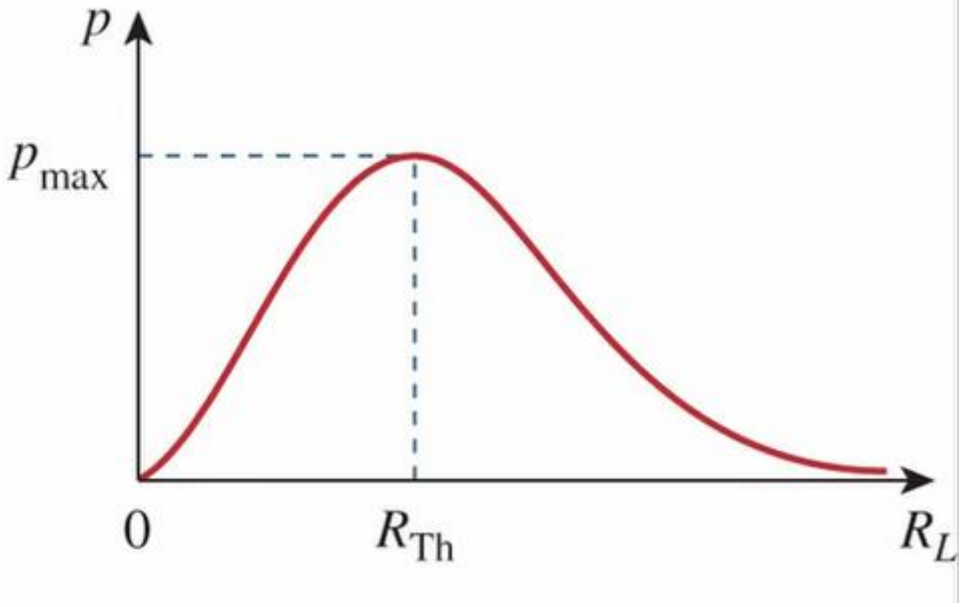
??????????

Conceitos teóricos: MTP

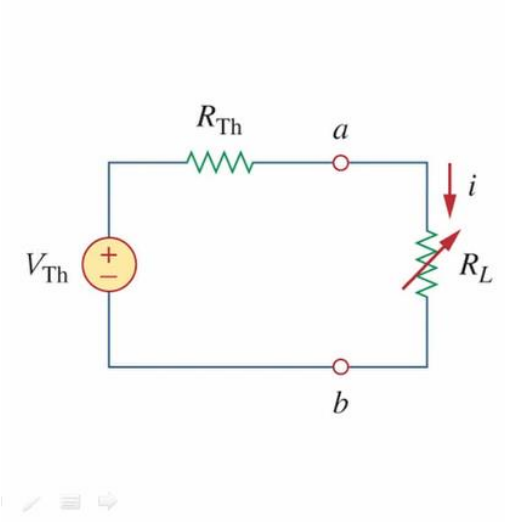


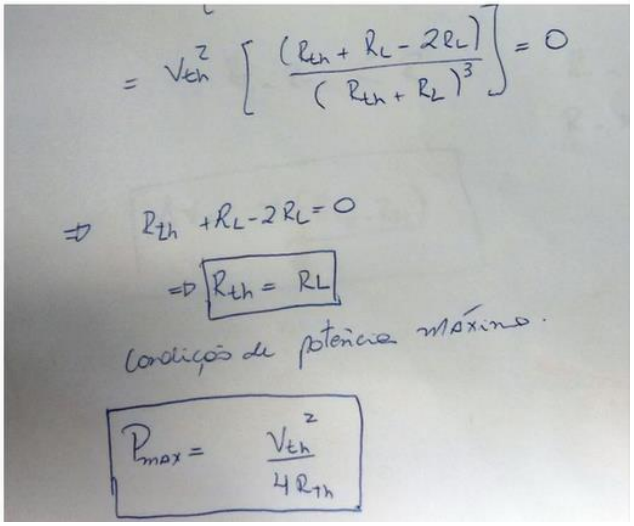
$$i_L = V_{Th}/(R_{Th} + R_L)$$

$$p = \left(\frac{V_{Th}}{R_{Th} + R_L} \right)^2 R_L$$

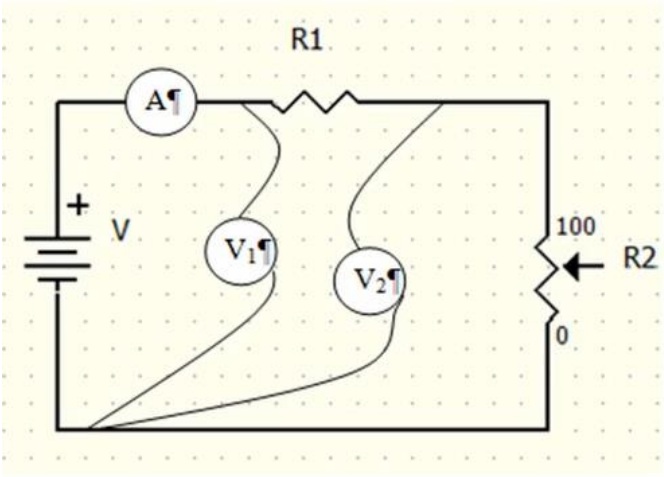


$$\frac{dP}{dR_L} = V_{th}^2 \left[\frac{(R_{th} + R_L)^2 - 2R_L(R_{th} + R_L)}{(R_{th} + R_L)^4} \right] = 0$$





Procedimento Experimental

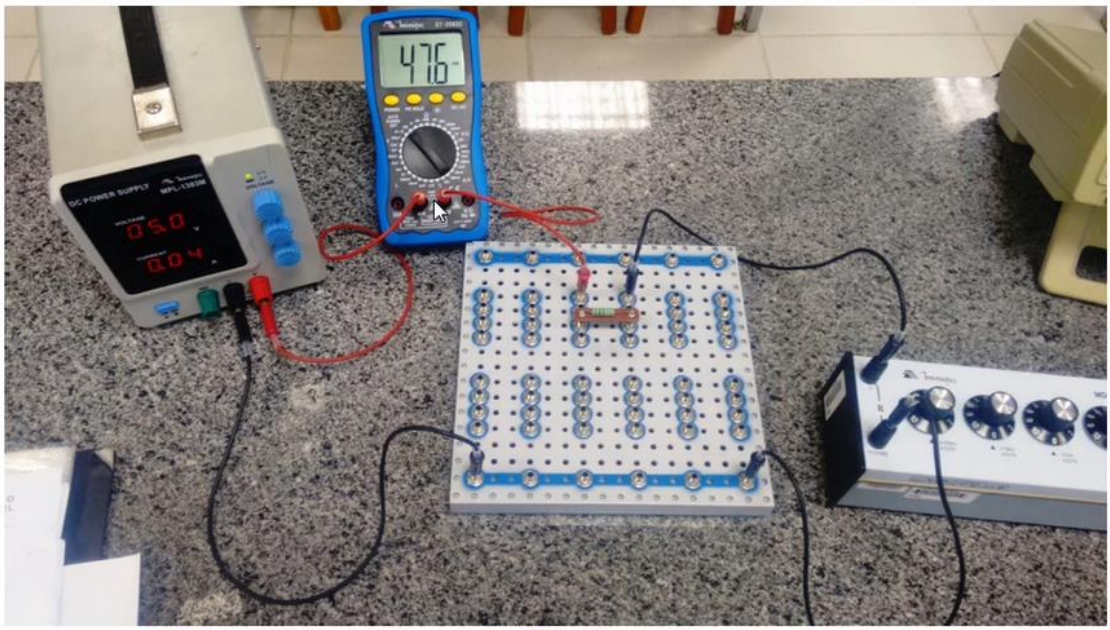


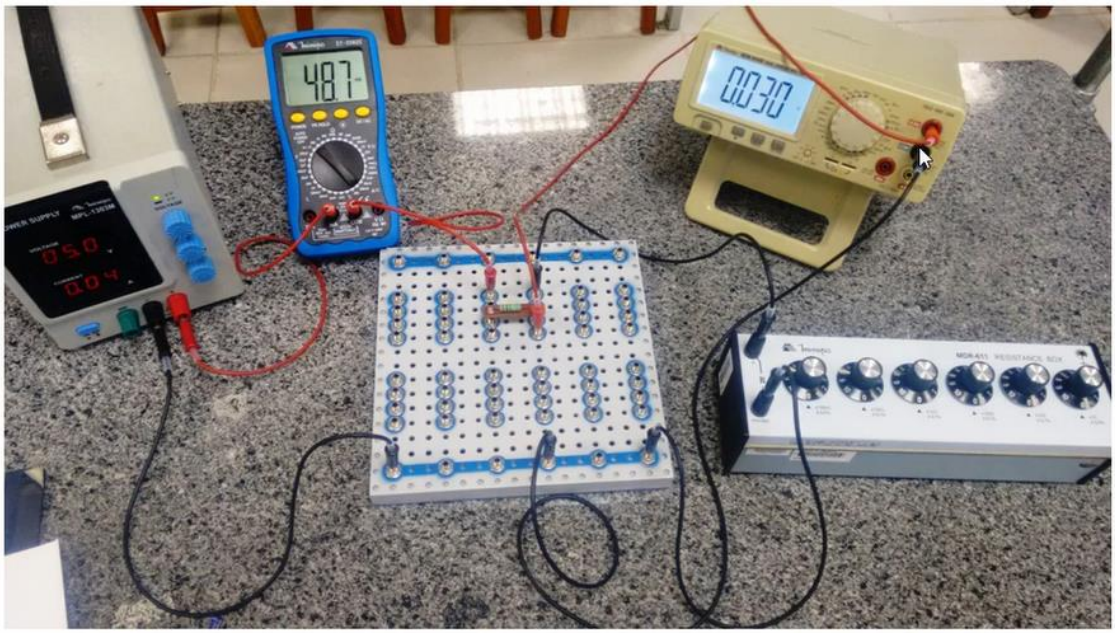
R1 ~ 100 Ω

R2 - resistor variável

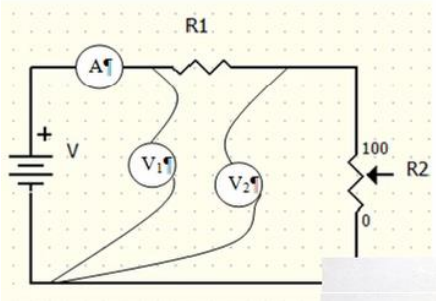

Minipa
MDR-611 RESISTANCE BOX
R
x100kΩ ±0.2%
x10kΩ ±0.1%
x1kΩ ±0.1%
x100Ω ±0.1%
x10Ω ±0.1%
x1Ω ±0.5%
1111110Ω

R = 2393 Ω


476
DC POWER SUPPLY
0.5.0
0.0 4



Resultados



Variar R2 de 20 em 20 Ω de 0 a 240 Ω;
Medir **V1** , **V2** , **i**

$P = V_2 i$

i (mA)	V_1	V_2 (V)	R_2 (carga)	P
48,7	5,00	0	0	
40,9		0,84	20	
35,2		1,42	40	
30,9		1,87	60	
27,5		2,21	80	
24,8		2,49	100	
22,6		2,72	120	
20,7		2,91	140	
19,2		3,07	160	
17,8		3,21	200	
16,6		3,33	220	
15,6		3,44	240	
14,7		3,53		

- Atenção aos gráficos!!!!

  Item 5) V1 e V2 no eixo y e i no eixo x.

  Item 6) P No eixo y e R2 no eixo x.