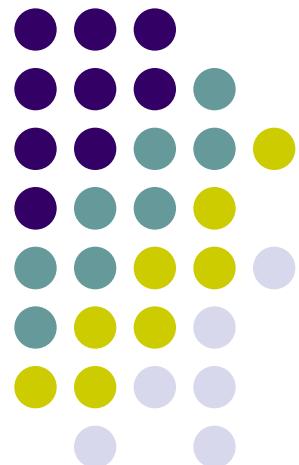


# KỸ THUẬT ĐIỆN TỬ

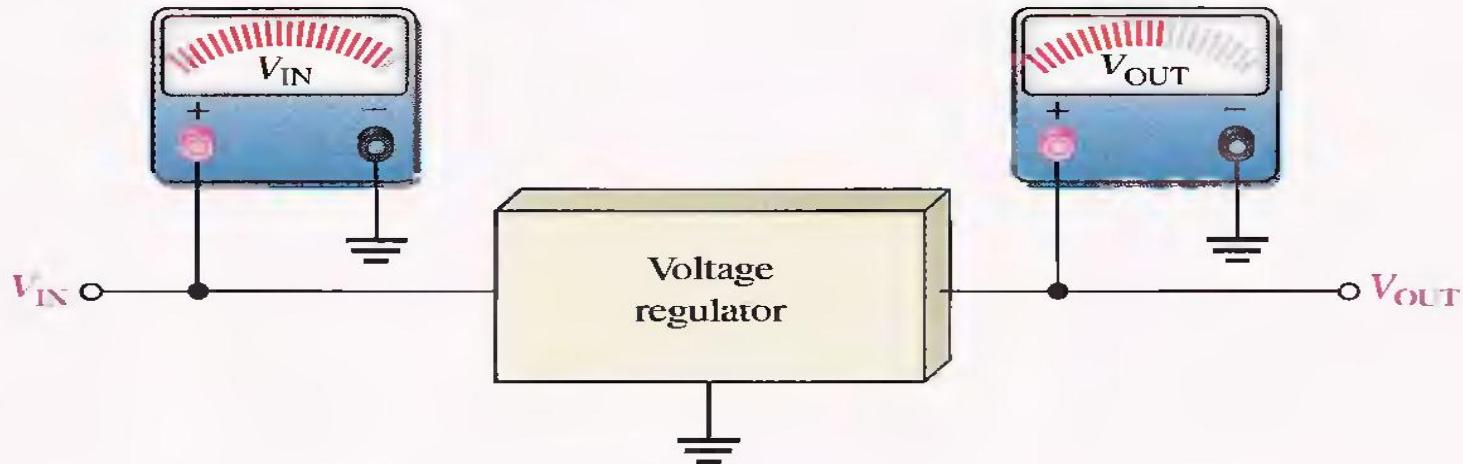
(ELECTRONICS TECHNIQUE)



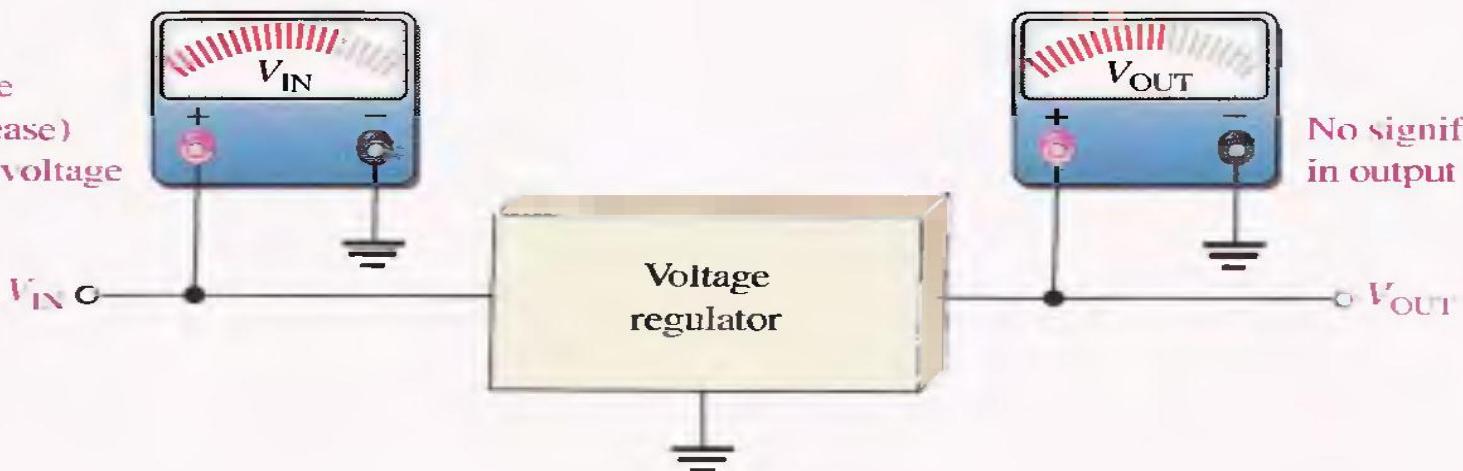
**ỔN ÁP**  
(VOLTAGE  
REGULATORS)



# ÔN ÁP (VOLTAGE REGULATORS)

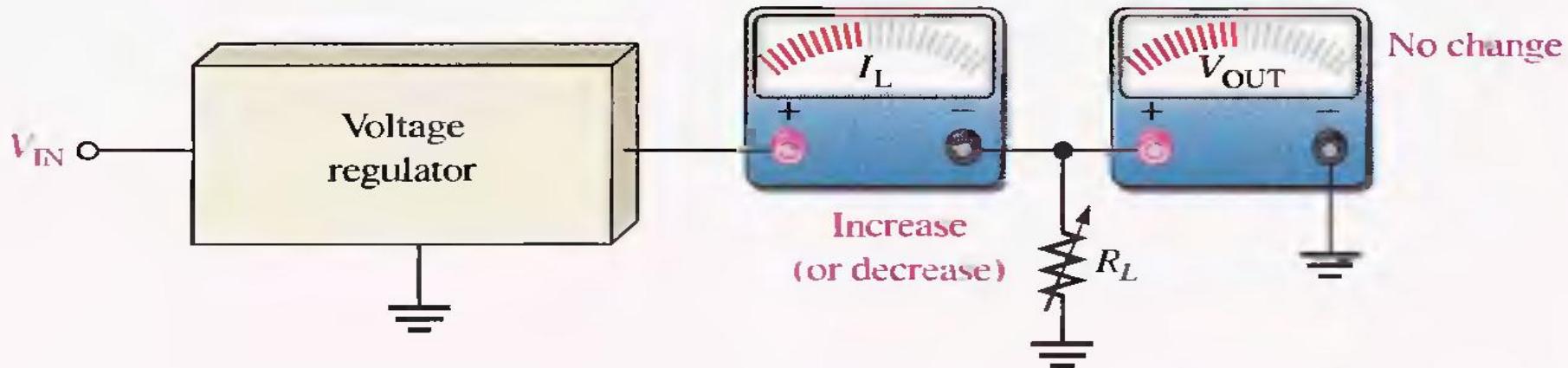
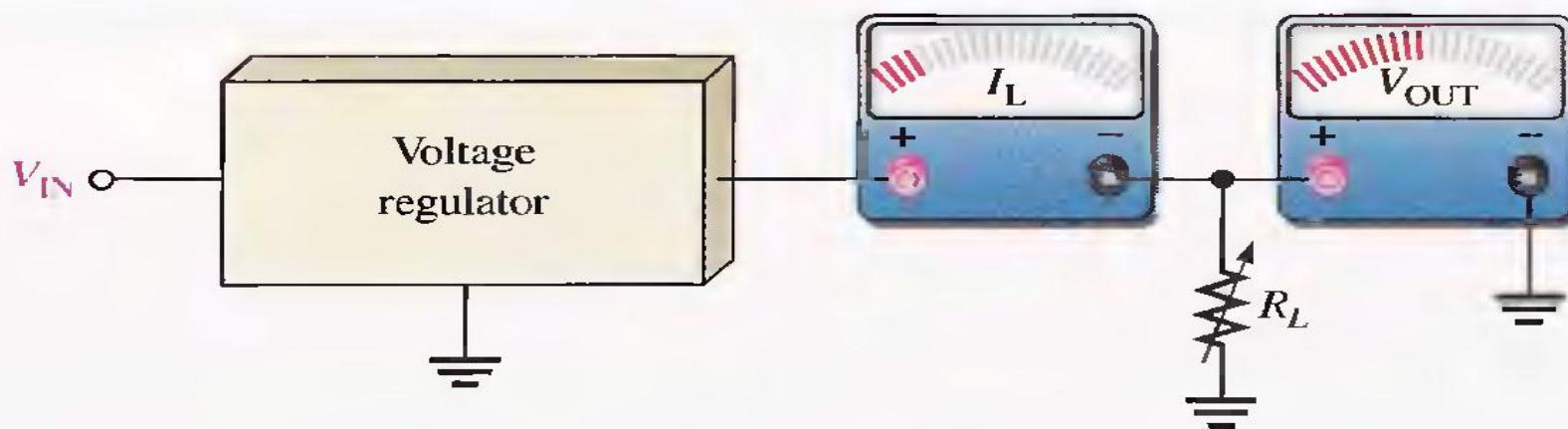
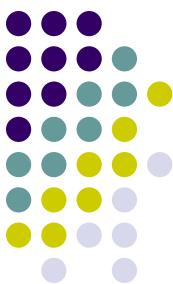


Decrease  
(or increase)  
in input voltage



No significant change  
in output voltage

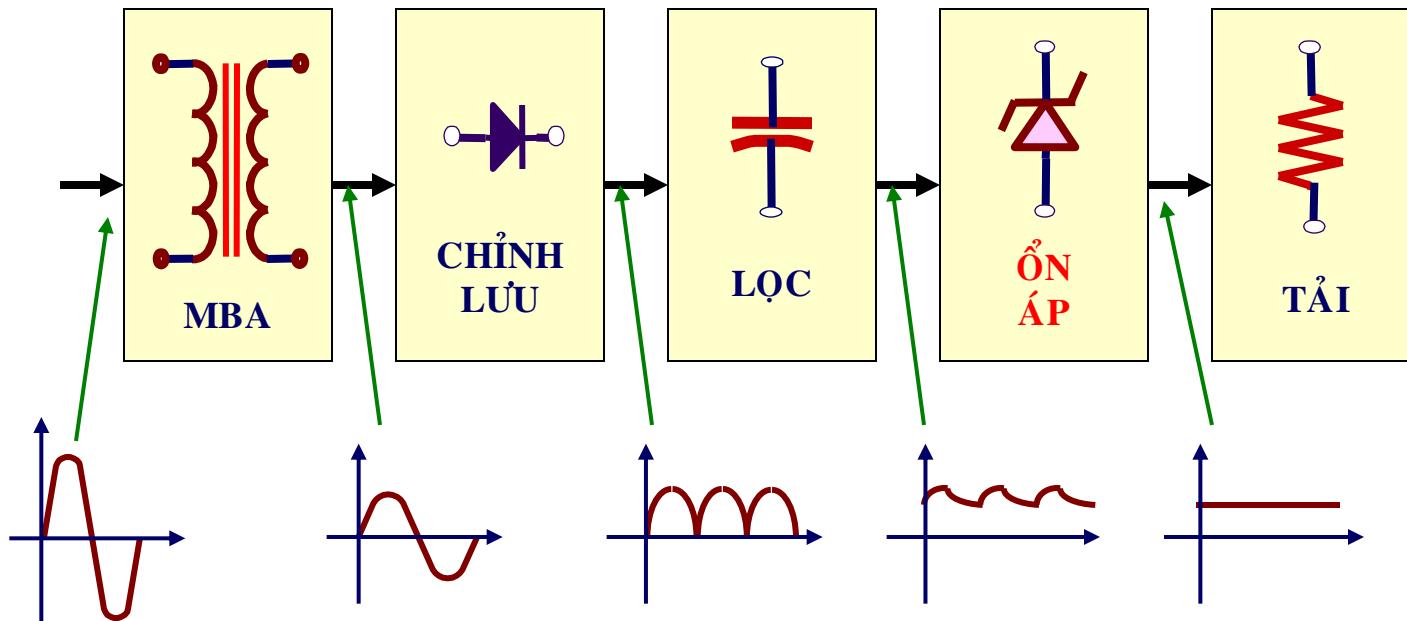
# ÔN ÁP (VOLTAGE REGULATORS)





# ỔN ÁP (VOLTAGE REGULATORS)

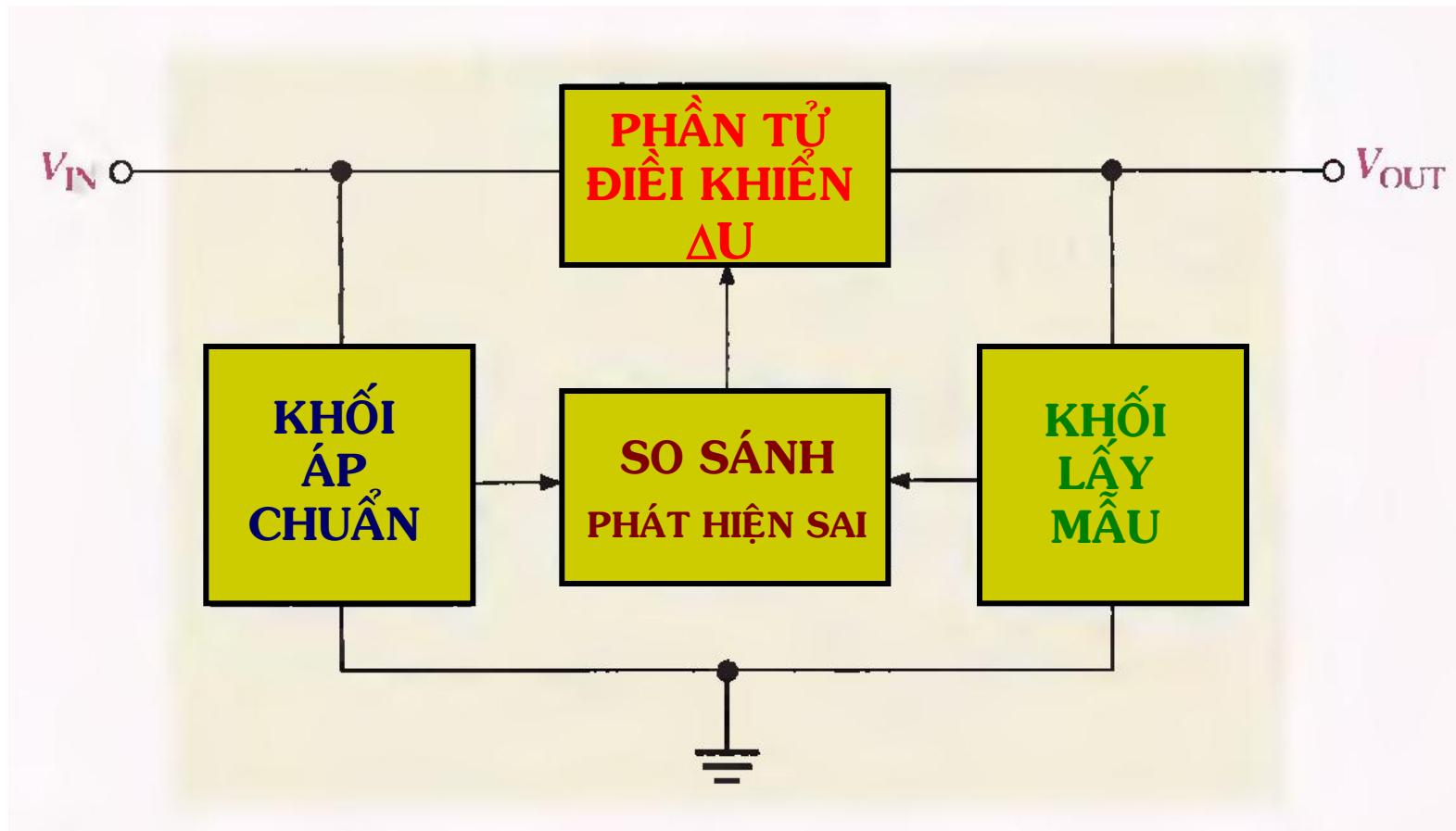
VỊ TRÍ ỔN ÁP TRONG KHỐI NGUỒN CUNG CẤP :



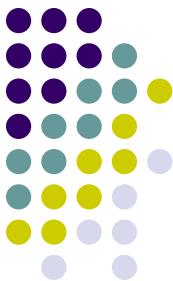


# ỔN ÁP (VOLTAGE REGULATORS)

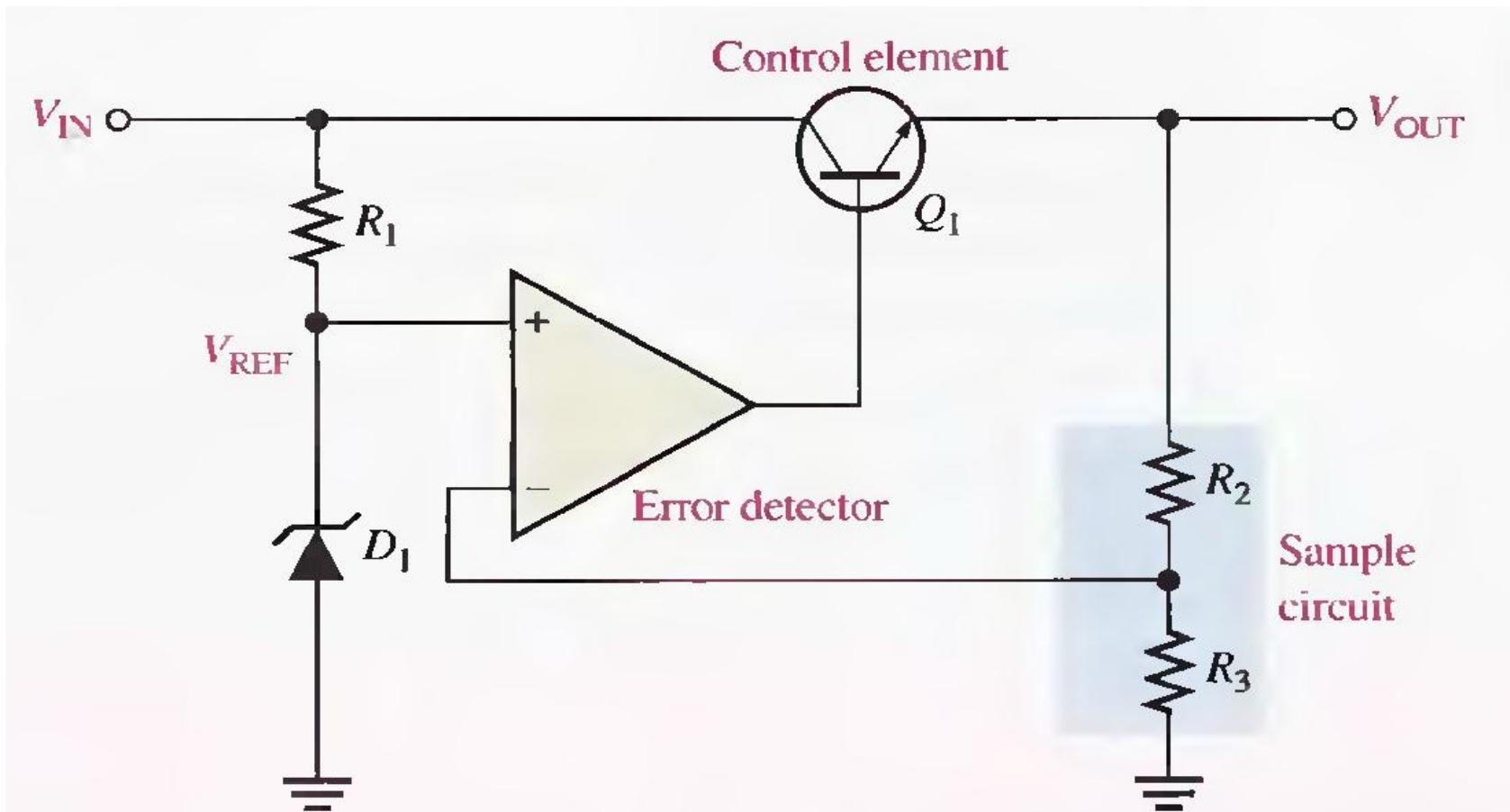
TỔ CHỨC CÁC BỘ PHẬN KHỐI ỔN ÁP NỐI TIẾP :



# ỔN ÁP (VOLTAGE REGULATORS)



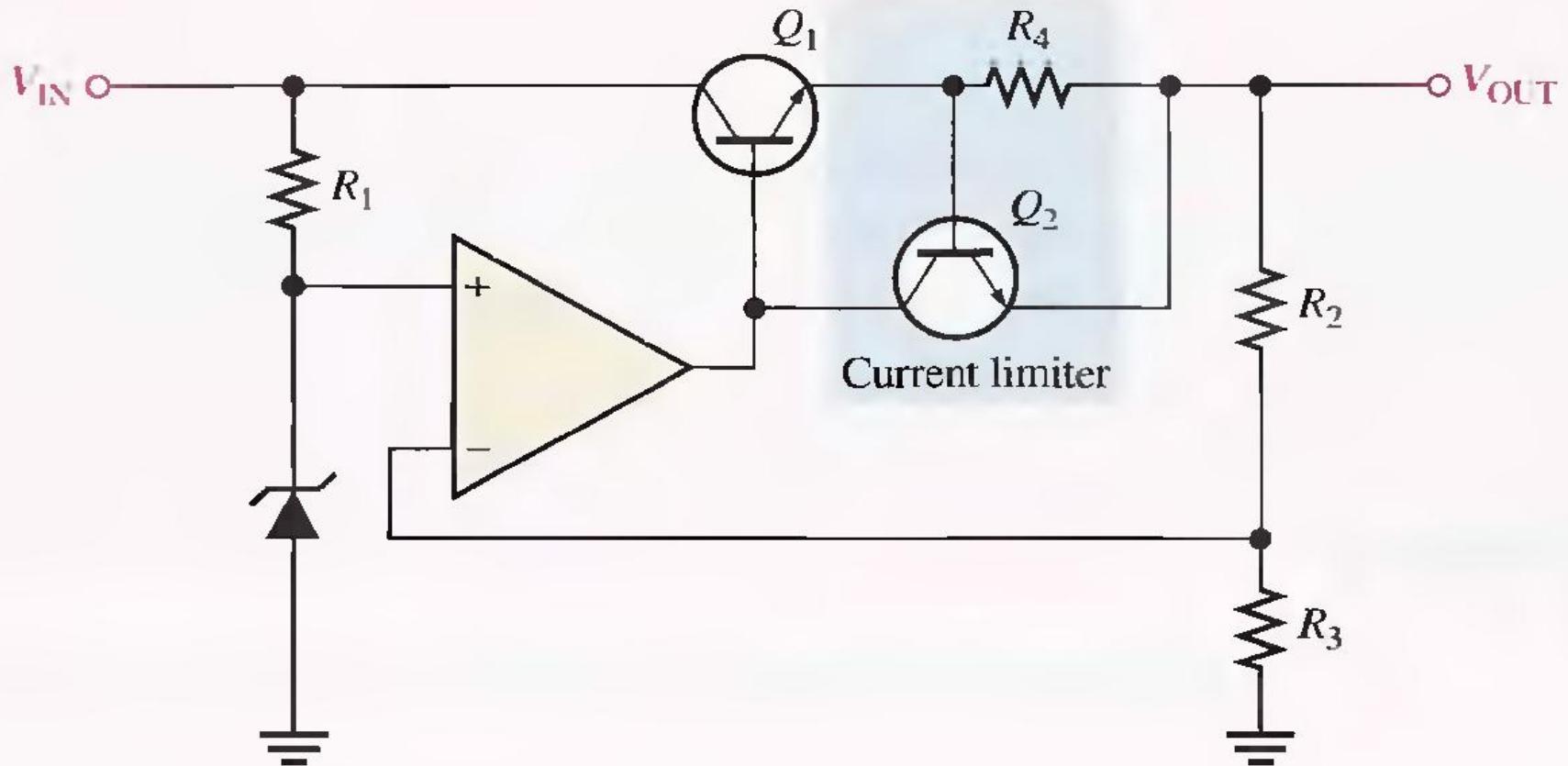
TỔ CHỨC CÁC BỘ PHẬN KHỐI ỔN ÁP NỐI TIẾP :





# ỔN ÁP (VOLTAGE REGULATORS)

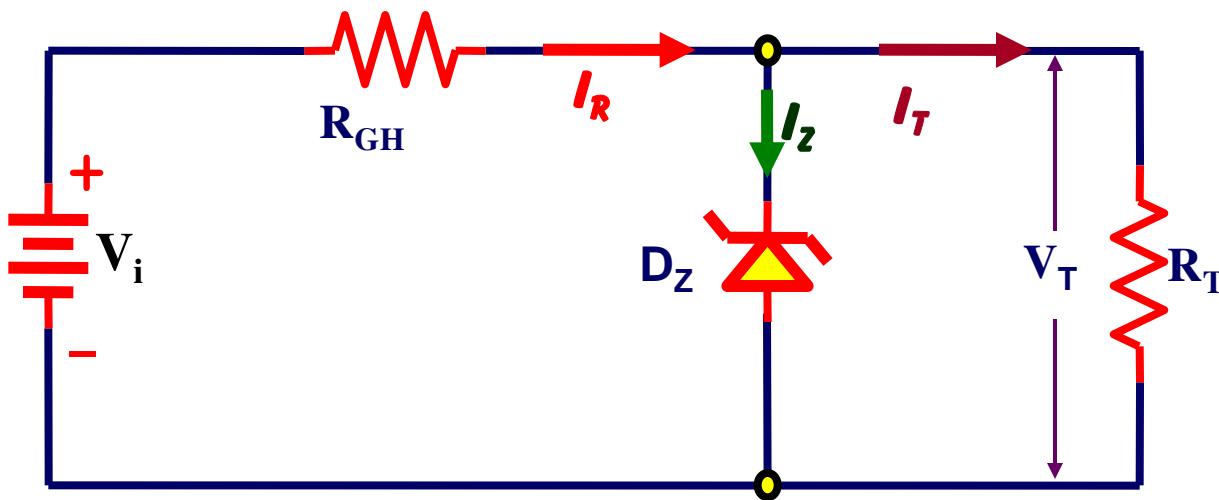
TỔ CHỨC CÁC BỘ PHẬN KHỐI ỔN ÁP NỐI TIẾP :



# ỔN ÁP (VOLTAGE REGULATORS)



1 SỐ DẠNG ỔN ÁP NỐI TIẾP RỜI ĐƠN GIẢN :



$$R_{GH} = \frac{V_{iMAX} - V_Z}{I_{ZMAX}}$$

ỔN ÁP  $V_T = V_Z$

$$I_R = I_Z + I_T$$

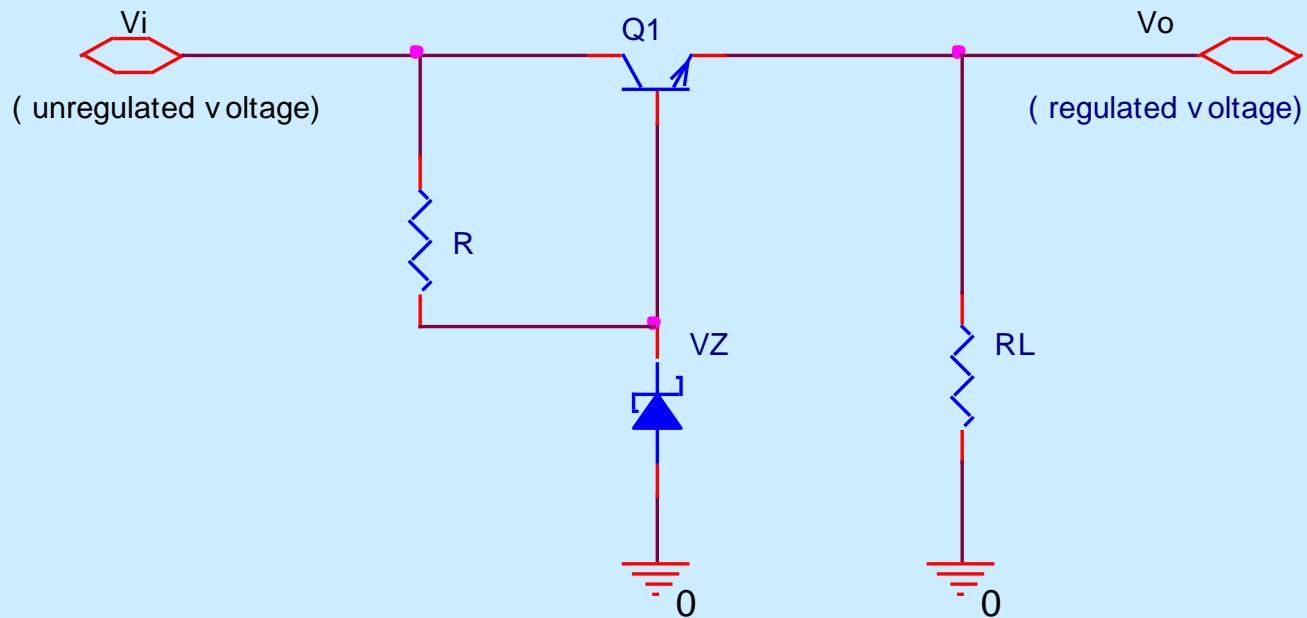
CHỈ ỔN ÁP KHI:

$$V_i \frac{R_T}{R_{GH} + R_T} \geq V_Z$$

# ỔN ÁP (VOLTAGE REGULATORS)



1 SỐ DẠNG ỔN ÁP NỐI TIẾP RỜI ĐƠN GIẢN :

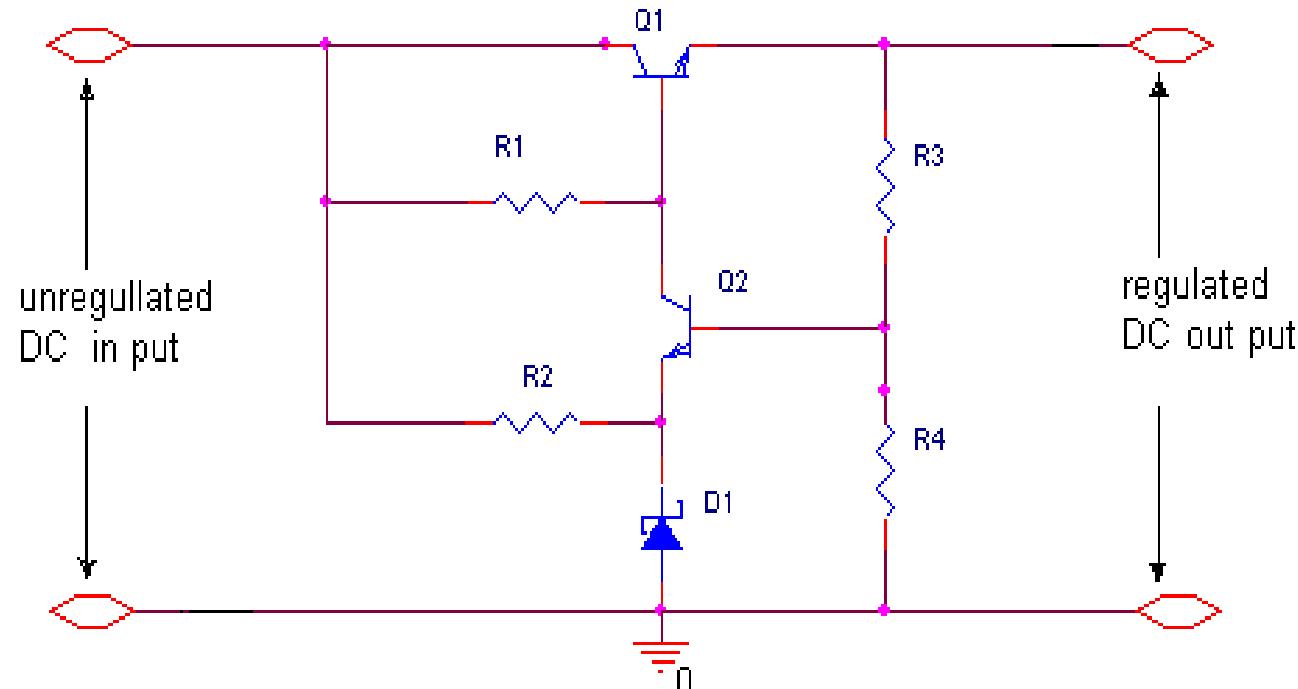


$$V_T = V_Z - V_{BE}$$

# ỔN ÁP (VOLTAGE REGULATORS)



1 SỐ DẠNG ỔN ÁP NỐI TIẾP RỜI ĐƠN GIẢN :

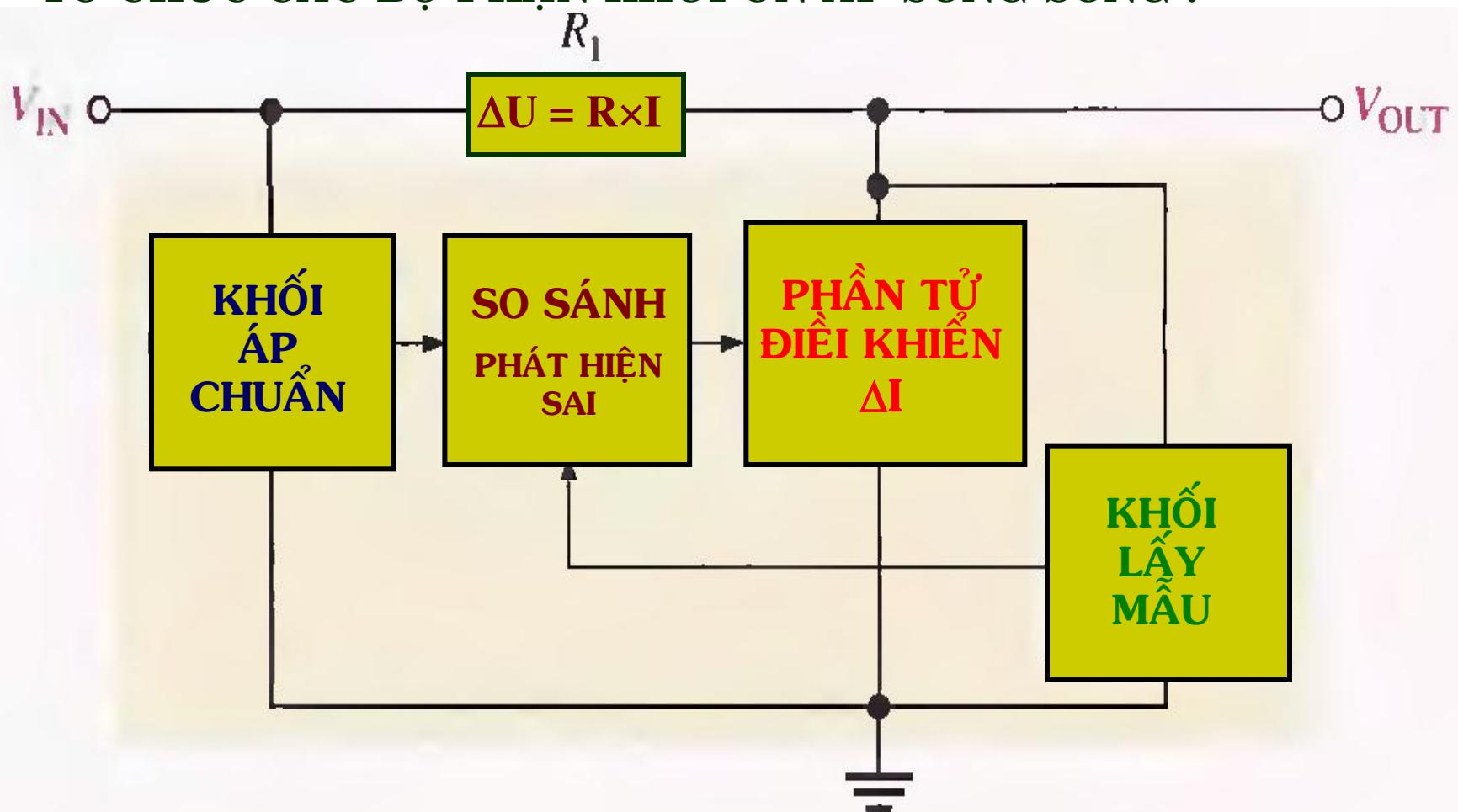


$$V_T = (V_Z + V_{BE}) \frac{R_3 + R_4}{R_4}$$



# ỔN ÁP (VOLTAGE REGULATORS)

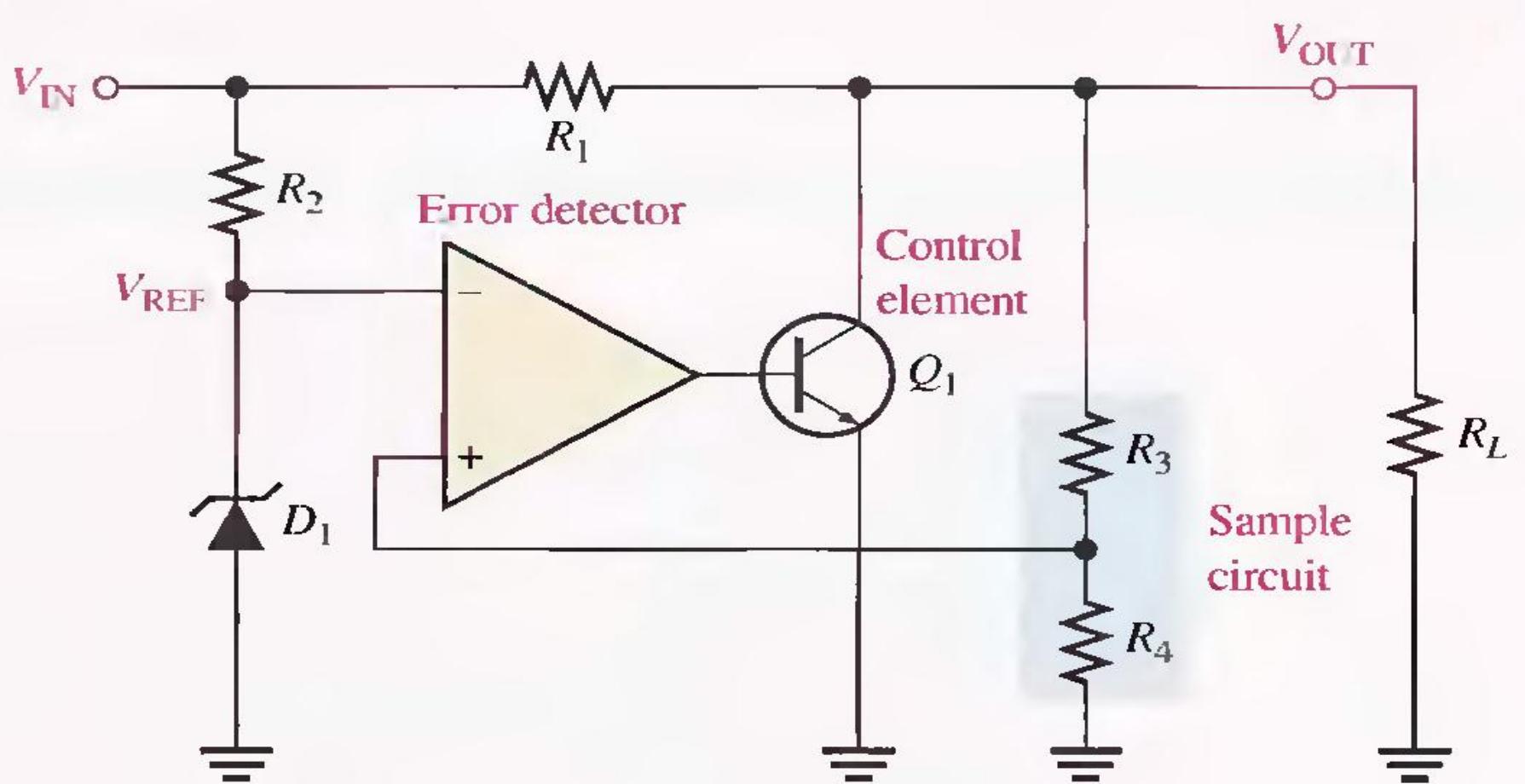
TỔ CHỨC CÁC BỘ PHẬN KHỐI ỔN ÁP SONG SONG :



# ỔN ÁP (VOLTAGE REGULATORS)



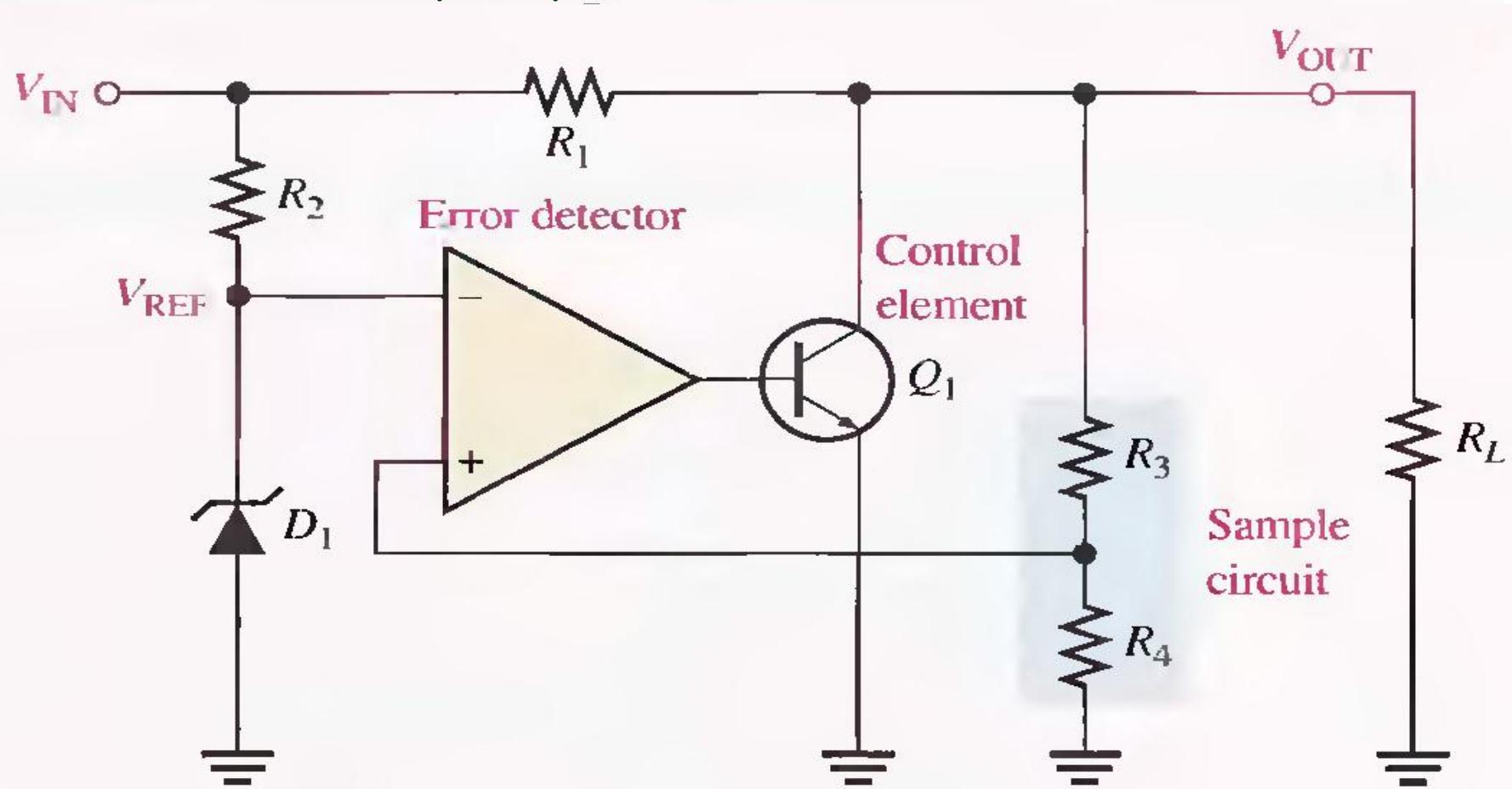
TỔ CHỨC CÁC BỘ PHẬN KHỐI ỔN ÁP SONG SONG :





# ỔN ÁP (VOLTAGE REGULATORS)

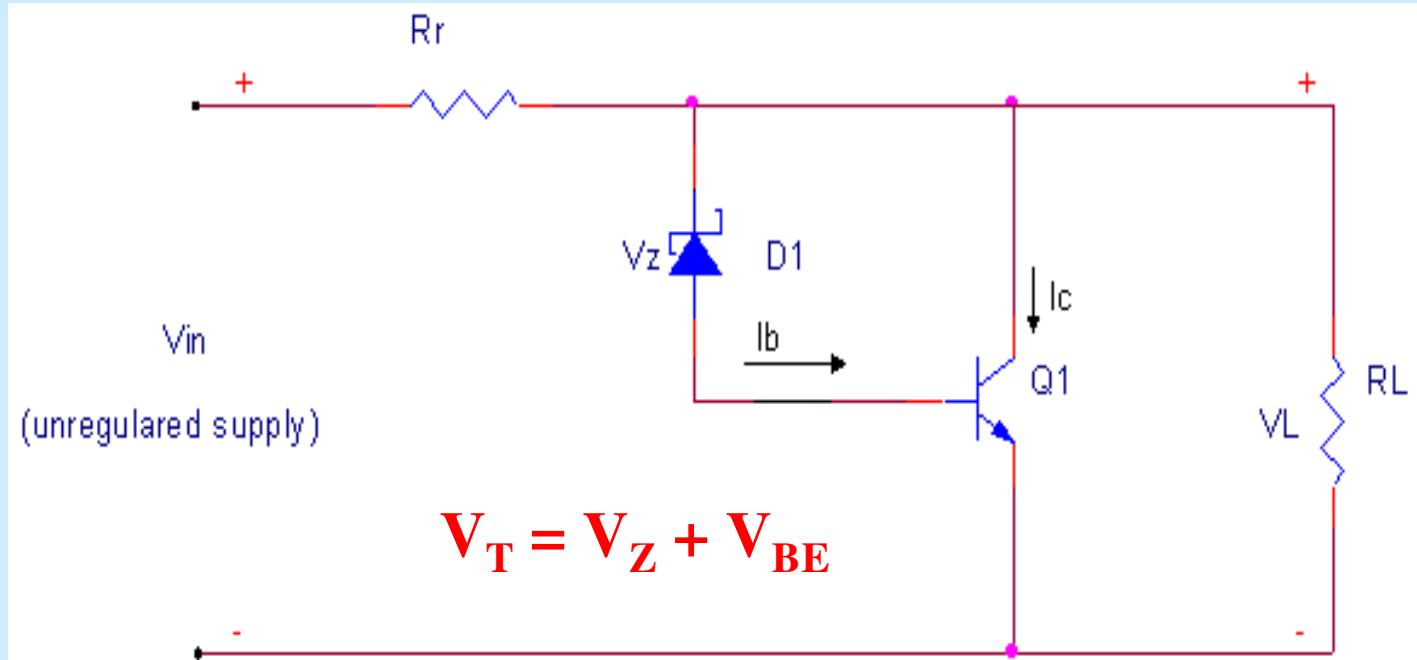
TỔ CHỨC CÁC BỘ PHẬN KHỐI ỔN ÁP SONG SONG :



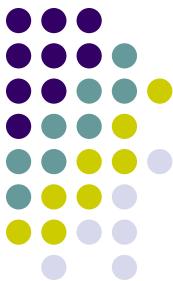
# ỔN ÁP (VOLTAGE REGULATORS)



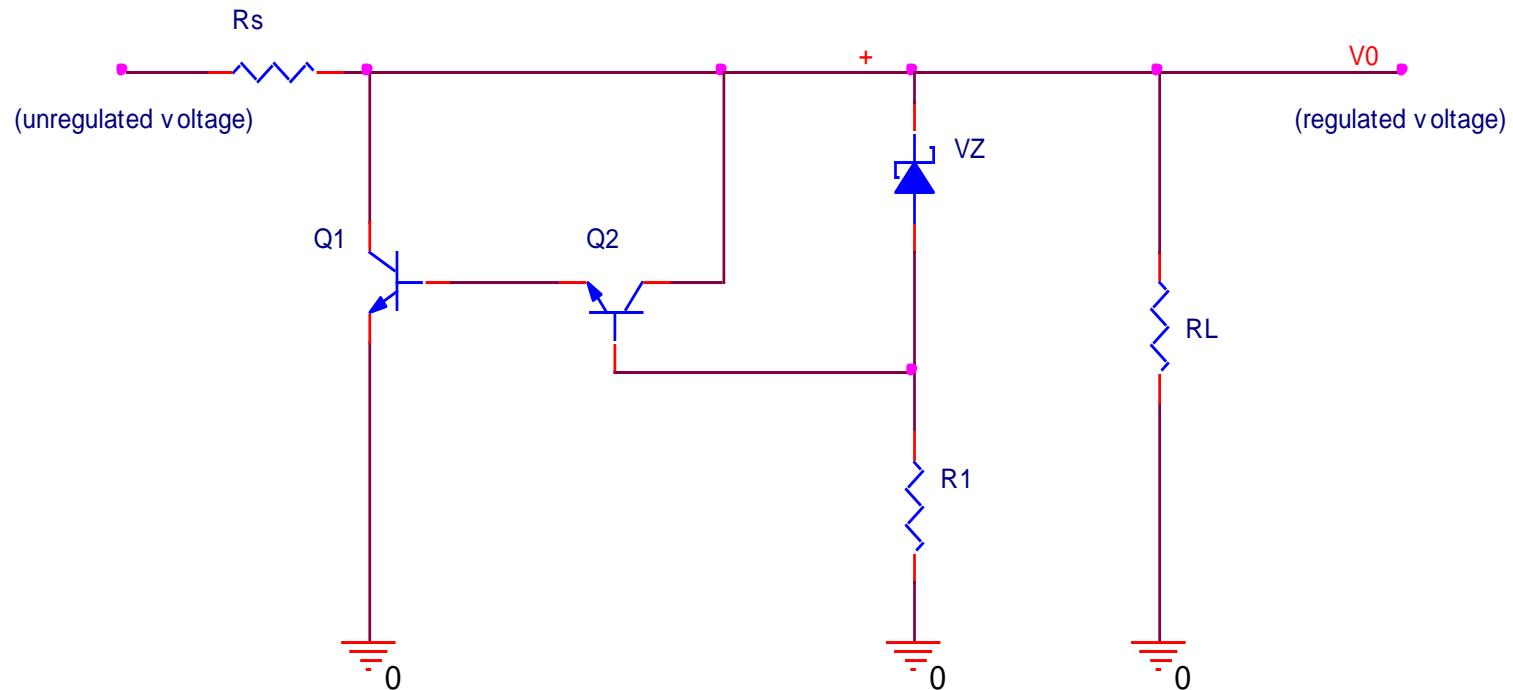
1 SỐ DẠNG ỔN ÁP SONG SONG RỜI ĐƠN GIẢN :



# ỔN ÁP (VOLTAGE REGULATORS)



1 SỐ DẠNG ỔN ÁP SONG SONG RỜI ĐƠN GIẢN :

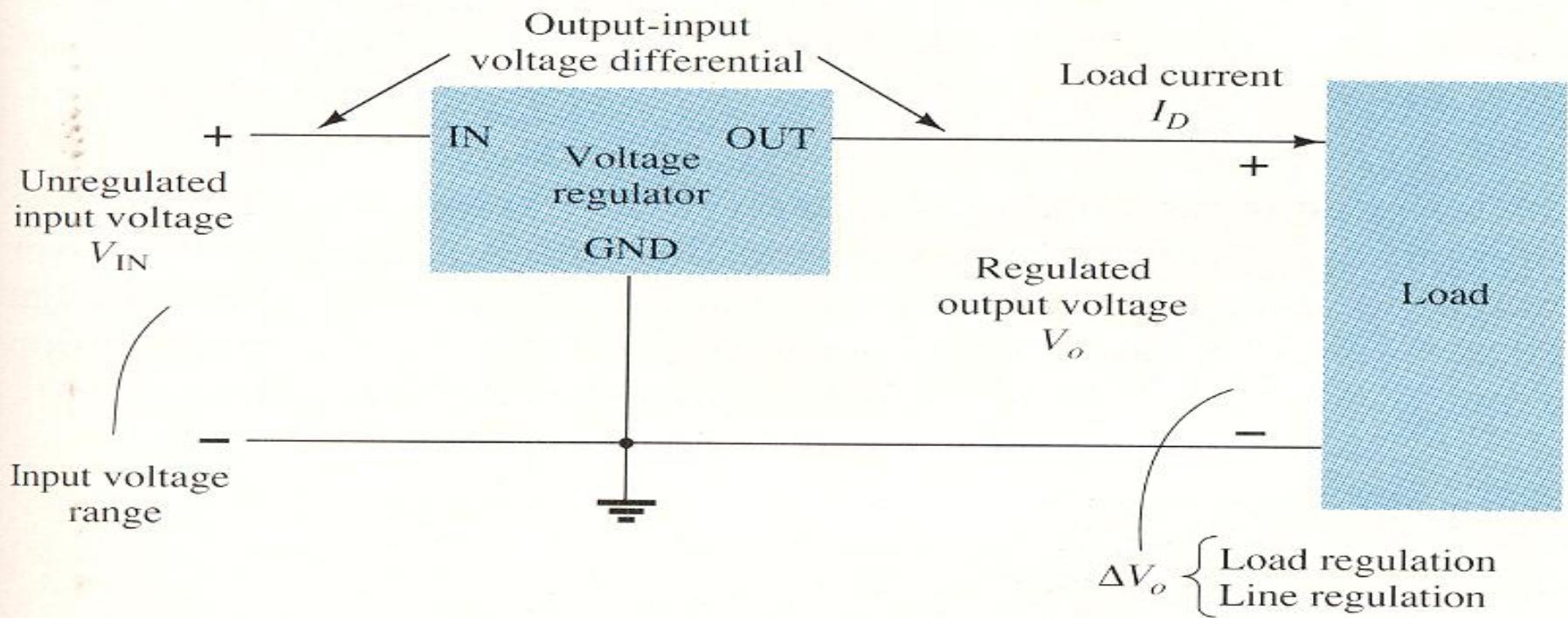


$$V_T = (V_Z + V_{BE1} + V_{BE2})$$



# ỔN ÁP (VOLTAGE REGULATORS)

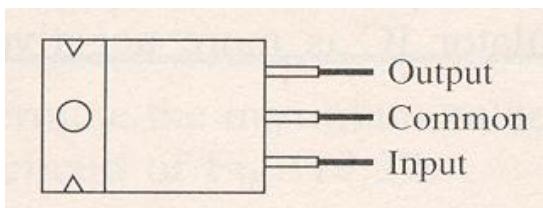
## ỔN ÁP DƯƠNG IC





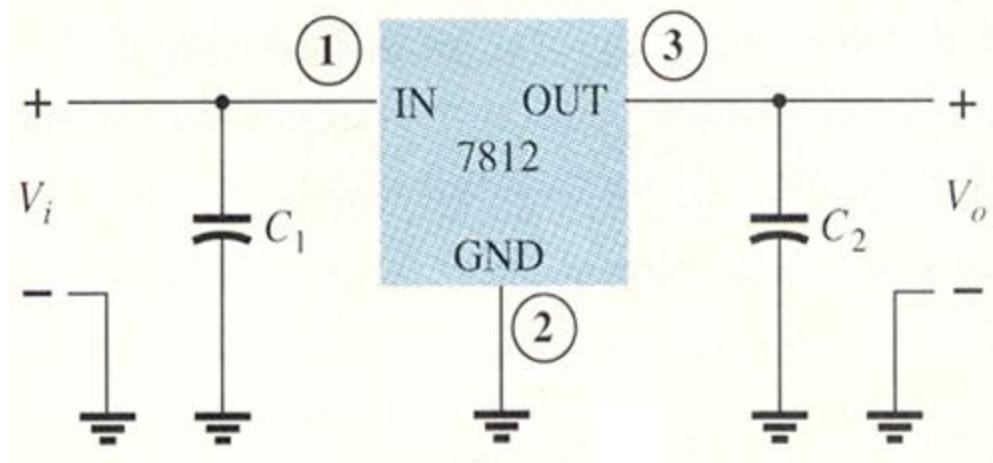
# ỔN ÁP (VOLTAGE REGULATORS)

## ỔN ÁP DƯƠNG IC 78xx



$I_{out\ max} = 1A$

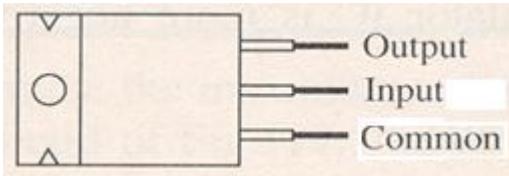
$V_{in} > V_{out} + 2V : 3V$



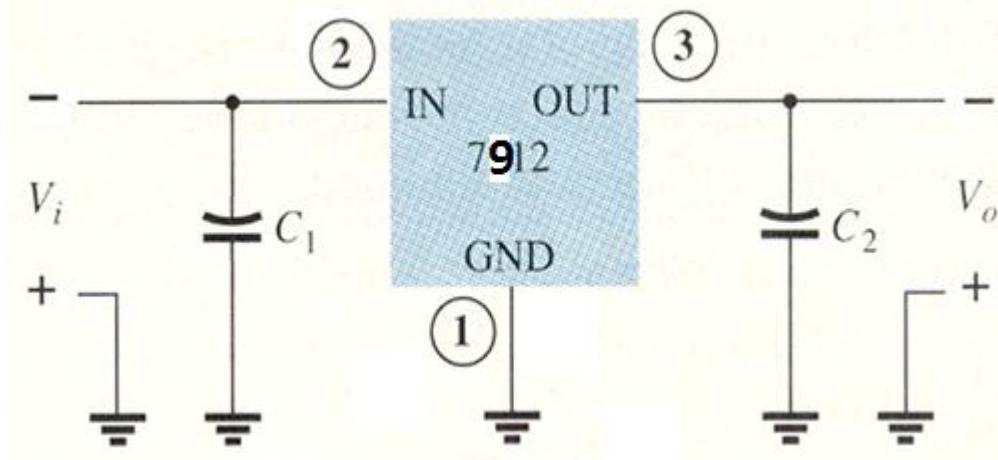


# ỔN ÁP (VOLTAGE REGULATORS)

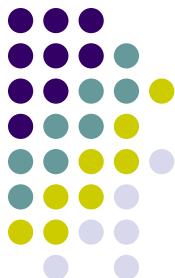
## ỔN ÁP ÂM IC 79xx



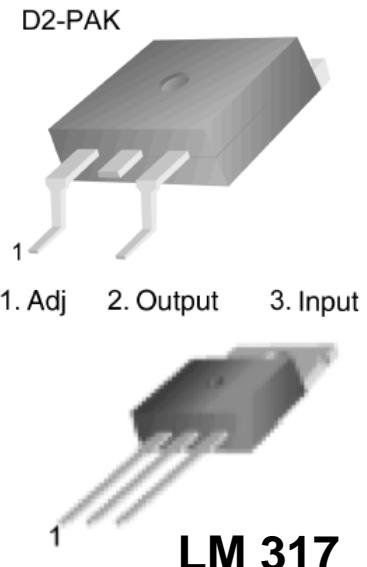
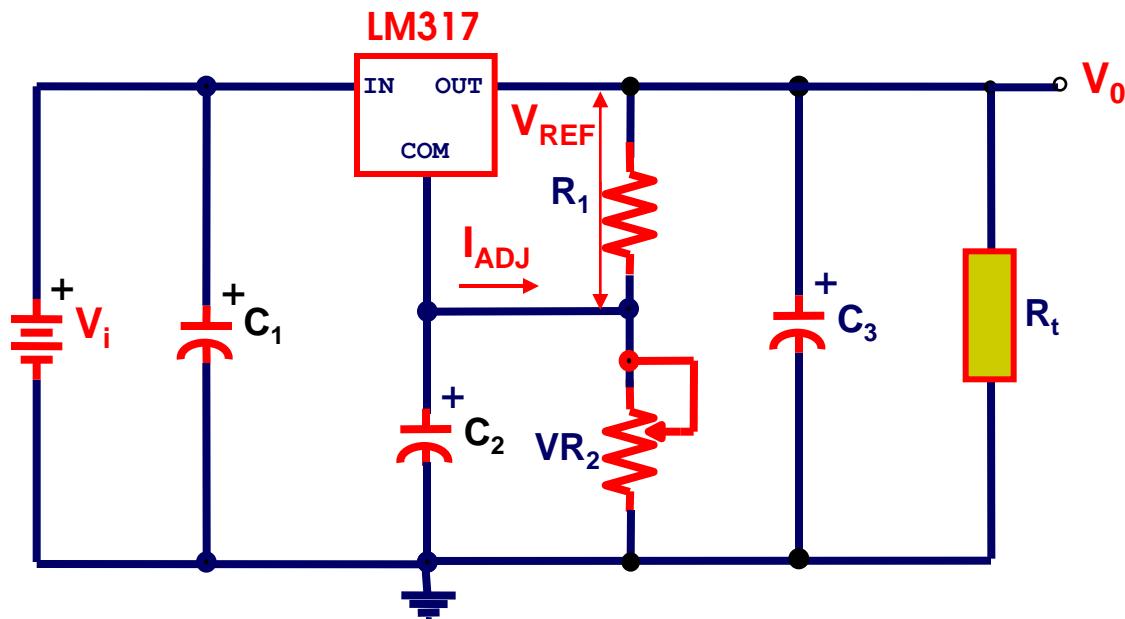
$I_{out\ max} = 1A$



# ỔN ÁP (VOLTAGE REGULATORS)



ỔN ÁP DƯƠNG IC ĐIỀU CHỈNH ĐƯỢC :



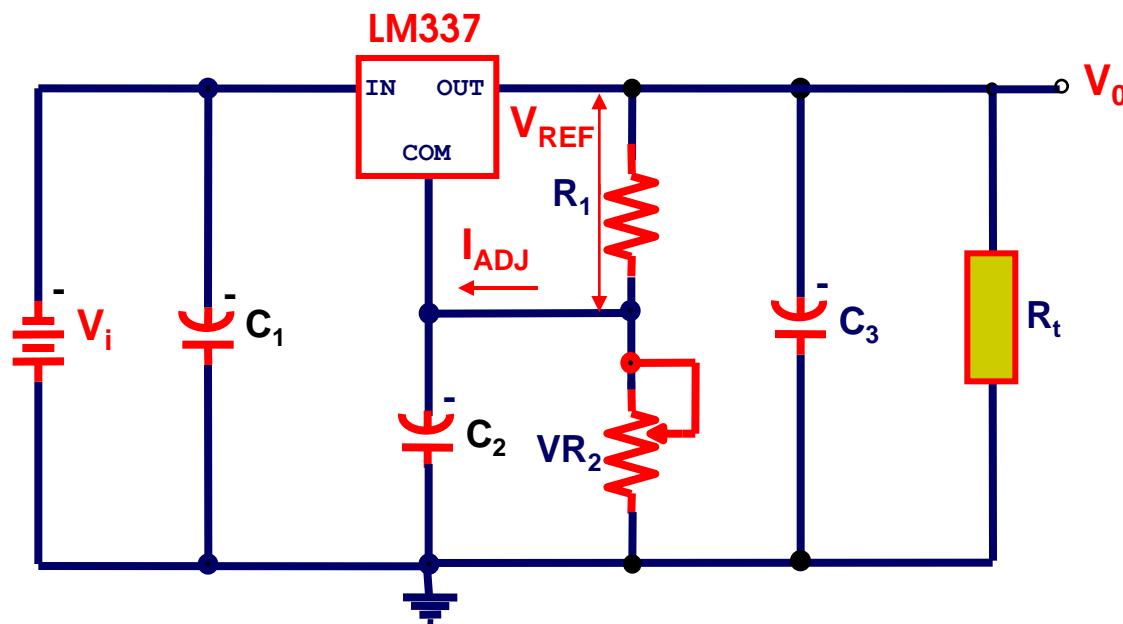
1. Adj 2. Output 3. Input

$$V_{OUT} = V_{REF} \left( 1 + \frac{R_2}{R_1} \right) + I_{ADJ} R_2$$

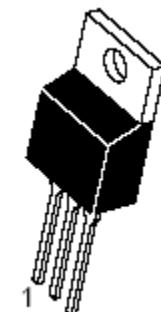


# ỔN ÁP (VOLTAGE REGULATORS)

ỔN ÁP ÂM IC ĐIỀU CHỈNH ĐƯỢC :



LM 337



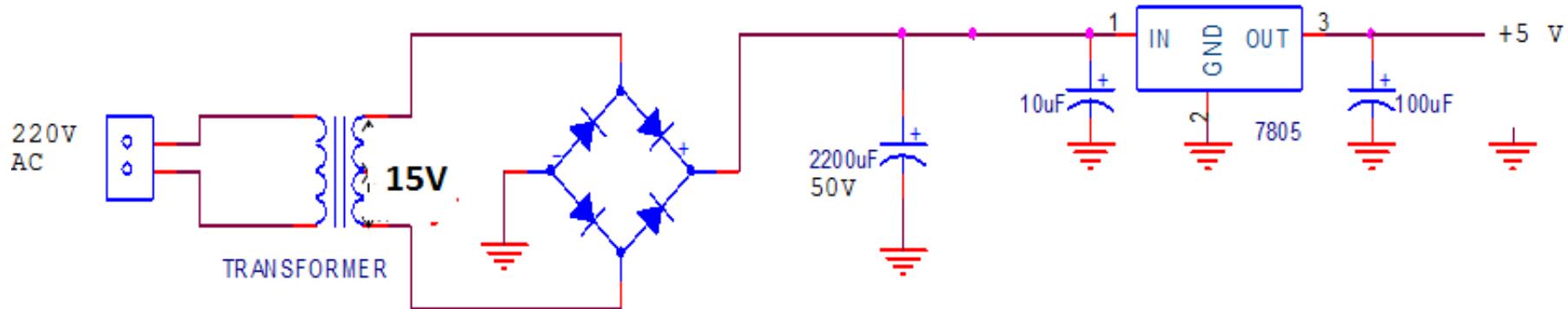
Pin 1. Adjust  
2.  $V_{in}$   
3.  $V_{out}$

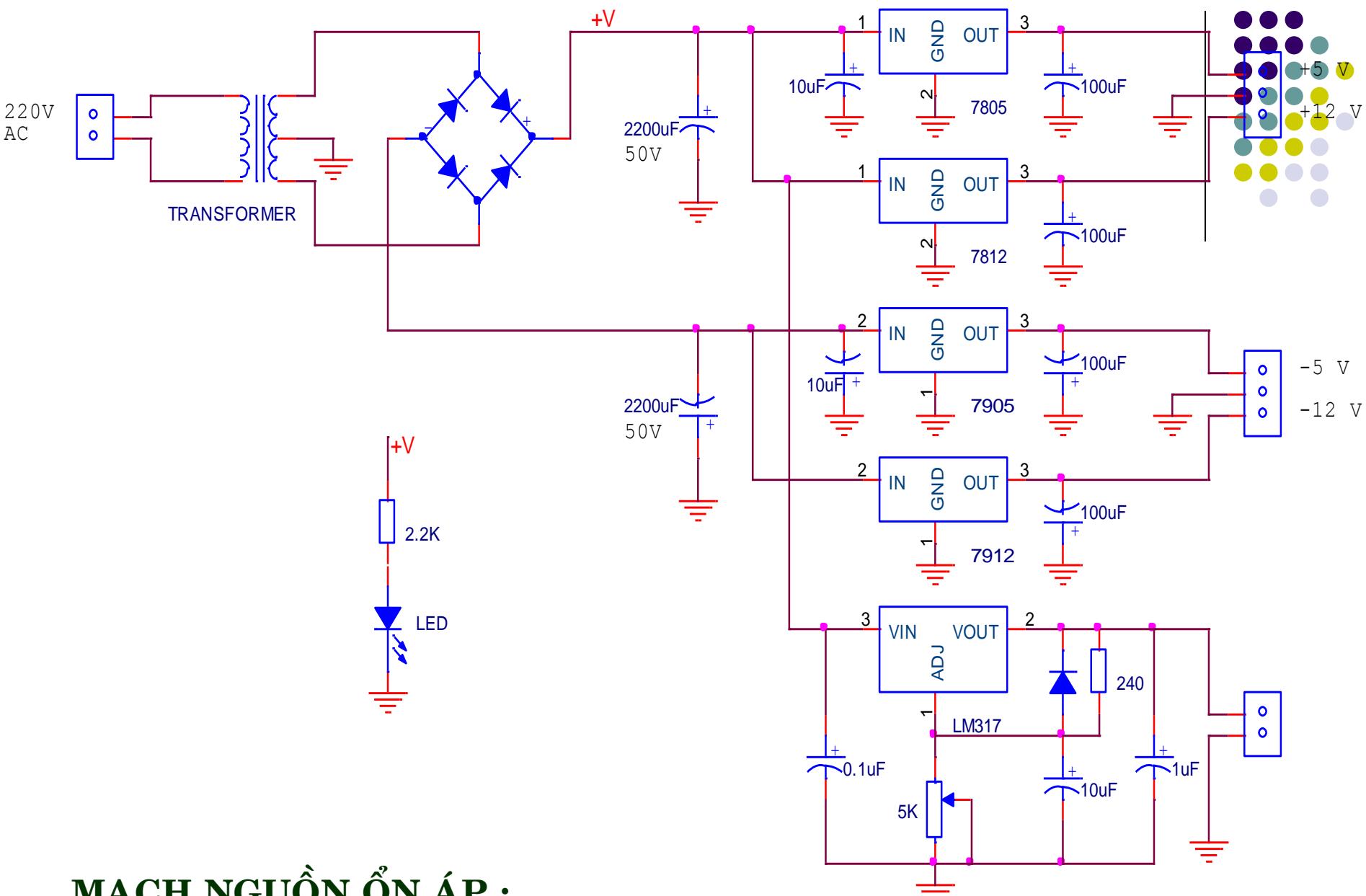
$$V_{OUT} = V_{REF} \left( 1 + \frac{R_2}{R_1} \right) + I_{ADJ} R_2$$



# ỔN ÁP (VOLTAGE REGULATORS)

MẠCH NGUỒN ỔN ÁP 5V:





## MẠCH NGUỒN ỔN ÁP :