

Structured Electronic Design

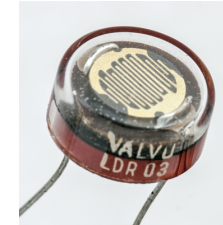
Principle of Amplification

LDR demo

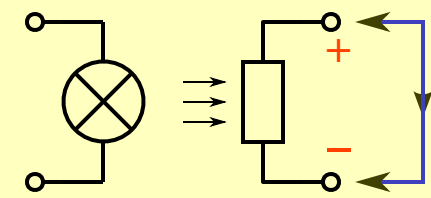
From to LDR light bulb amplifier to electronic amplifier



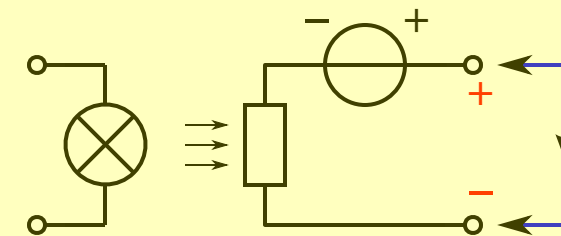
Can we create a circuit with an available power gain > 1 using an LDR and a light bulb?



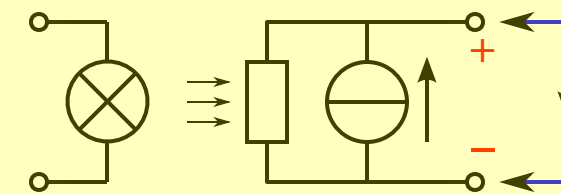
The LDR and the light bulb are passive devices and cannot deliver power, we need a power source!



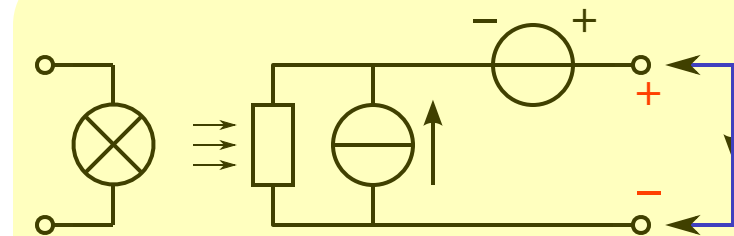
LDR = passive
V-I characteristic
can be controlled



Current transfer
from power source
to output
can be controlled

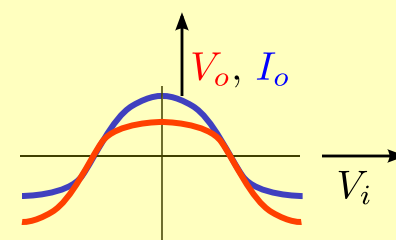
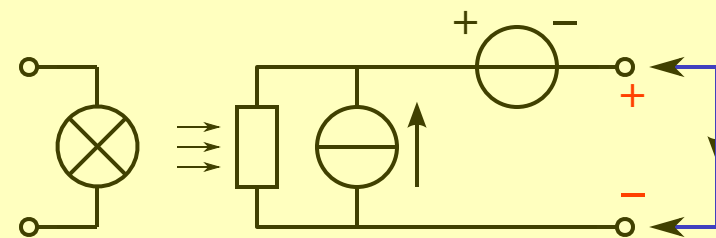


Voltage transfer
from power source
to output
can be controlled

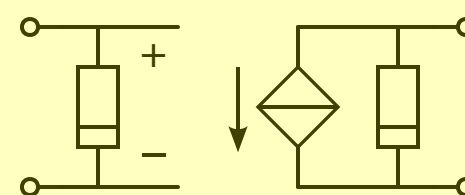


Voltage and current
transfer from power
sources to output
can be controlled

Output port operating
point is shifted such
that positive and
negative output V & I
are possible

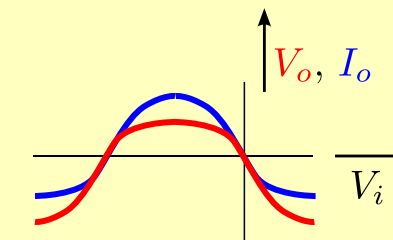
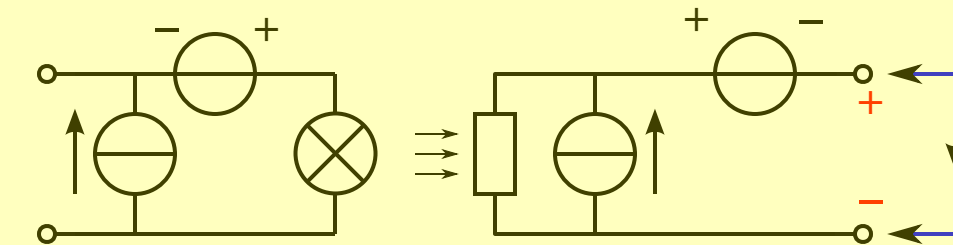


**Definition available
power gain:
Chapter 2**



The biased passive
device modeled as
an active device

Input port operating
point is shifted such
that positive and
negative input V & I
are accepted



Input port operating
point is shifted such
that curves pass through
the origin:

Input bias quantities depend
on output bias quantities
and device characteristics.