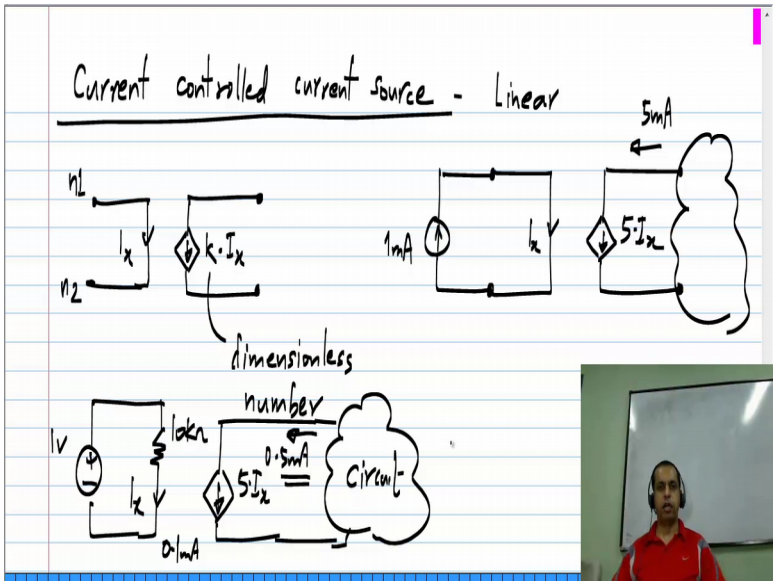
Basic Electrical Circuits
Dr Nagendra Krishnapura
Department of Electrical Engineering
Indian Institute of Technology Madras

Lecture - 24
Voltage Controlled Current Source (VCCS)

(Refer Slide Time: 00:10)



The last of the controlled sources will consider is the current controlled current source. It is denoted by this symbol, and input short circuit branch to sense the current between n 1 and n 2, and an output current source which is the dependent current source whose current is dependent on this I x. So, this current is given by k times I x, where k is as you realize a dimensionless number, because it multiplies a current to give your current. You can think of this as counterpart of the voltage controlled voltage source. A voltage controlled voltage source gives you a scaled voltage, and a current controlled current source gives you a scaled current. And again from this relationship, it is obvious that this is linear and what it means is that if you drive a current controlled current source by a current source. So, let us say we have a current controlled current source defined to be 5 times the input current and it derived with 1 milli amps, I connect this to some arbitrary circuit, this causes a current of 5 milli amps to flow here, so that is what is meant by a current controlled current source.

Now as before, when you use it in a circuit, so I will take the same example circuit I have done with current controlled voltage source. Let say I had 1 volt and 10 kilo ohms then I

can define this current to be I x and I can define a current controlled current source to be 5 times I x. And this could be connected to any circuit, and because I x equals 0.1 milli amps, this causes 0.5 milli amps to flow through the circuit, so that is the current controlled current source. It is a controlled source whose value depends on a current elsewhere in the circuit. Now all these controlled sources as I mentioned are unilateral that is you have a controlling quantity and that results in the controlled quantity, you cannot use it in the other direction.