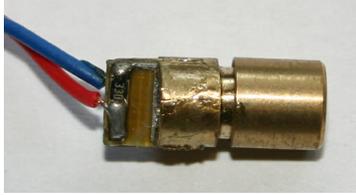
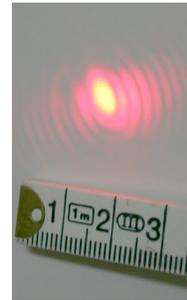


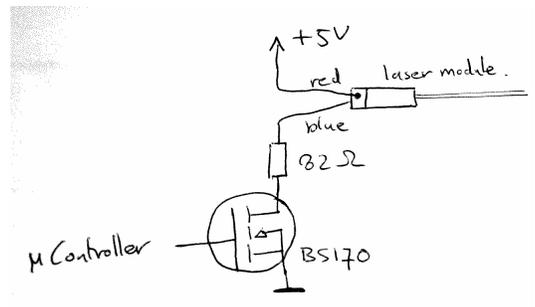
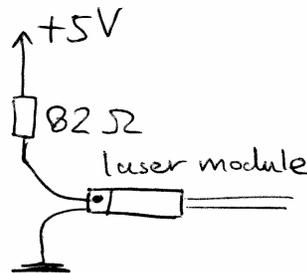
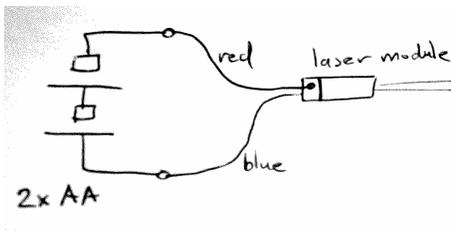
## laser-01 documentation



This is a small laser diode module, ~ 6mm diameter x 9 mm long. It emits a small beam of red light (650nm), at short distances the dot is approximately 2 x 4 mm. The picture at the right shows the dot at a distance of 10 meter. At night I could easily see the dot on a building 100 meter away from me. The focus can not be adjusted. This is a surplus item. I have no manufacturer data, and I don't know whether it has been used, or what the remaining life time will be.



This module is designed for 3-3.5V operation, 30 mA maximum, for instance two AA batteries. It contains a 33 Ohm SMD current limiting resistor. When operated from two fresh AA batteries I measured: 3.1 V battery voltage, 800 mV drop over the 33 Ohm resistor  $\rightarrow$  25 mA,  $\rightarrow$  2.3 Volt for the laser diode itself. When operated directly from a 5V supply you should use an extra series resistor of 82 Ohm. When this module must be switched by a microcontroller a FET can be used, as shown below. A BS170 with ( $R_{DS(on)} = 5$  Ohm maximum) will do fine: the extra 5 Ohm is small compared to the 33 + 82 Ohm series resistors. A bipolar transistor would drop a higher and less predictable voltage, which would make it difficult to set the desired current accurately.



My supplier calls this a 5mW laser. That might be a bit optimistic, but still: **be careful with this item**, laser light can cause harm when you look directly into the light, even at a (long) distance. Don't count on your eye reflex to prevent danger. **Don't use this item as a toy!** I don't know what the optical output of this laser module is, but as far as safety is concerned you must assume that this is a **class 2** laser.