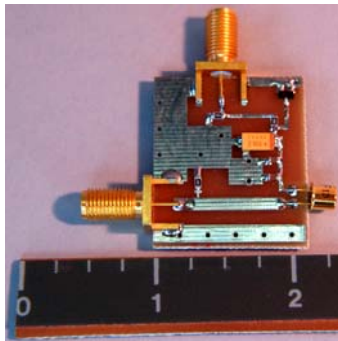


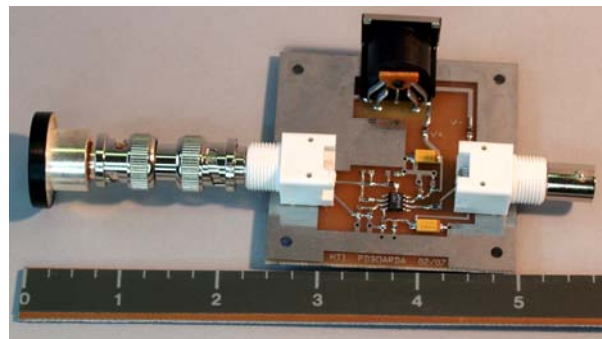
Optical Sensors and Optical Emitters for General Bench Usage

Optical sensors are useful in applications for getting an idea of the transient response of an optical emitter, motor shaft rotation (using a simple laser module to illuminate), and total optical output power (using a wide area sensor), when a calibrated optical power meter is not available. Calibrated optical power meters are available from Coherent at www.coherent.com).

Fast and Medium fast

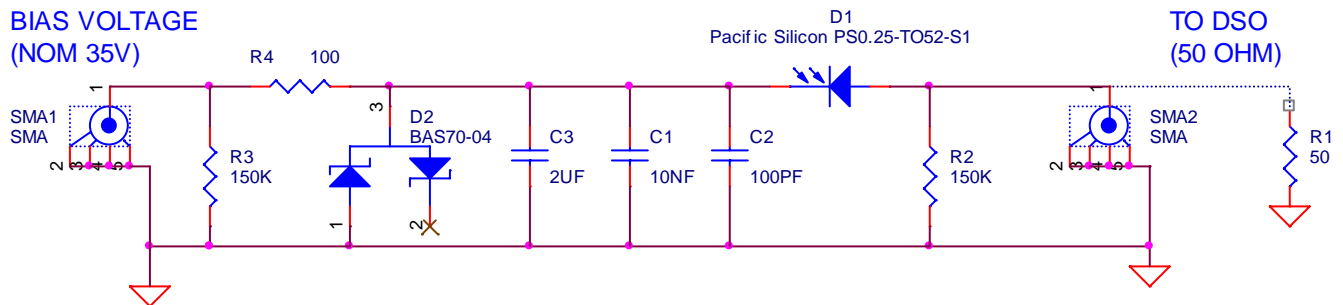


Wide area medium slow

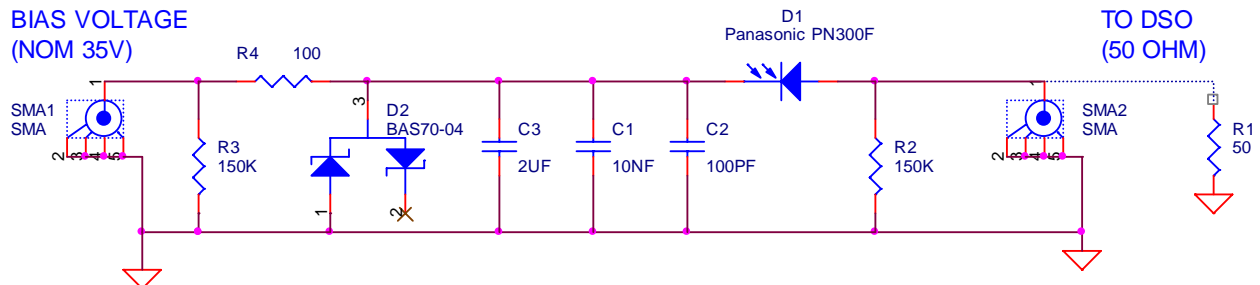


Schematics for the optical sensors shown above:

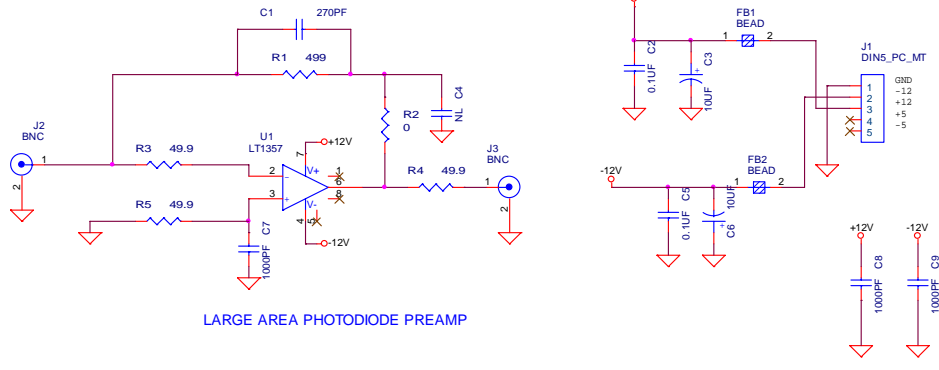
Moderately fast (rise time of ~400ps):



Medium fast (rise time of ~1ns):



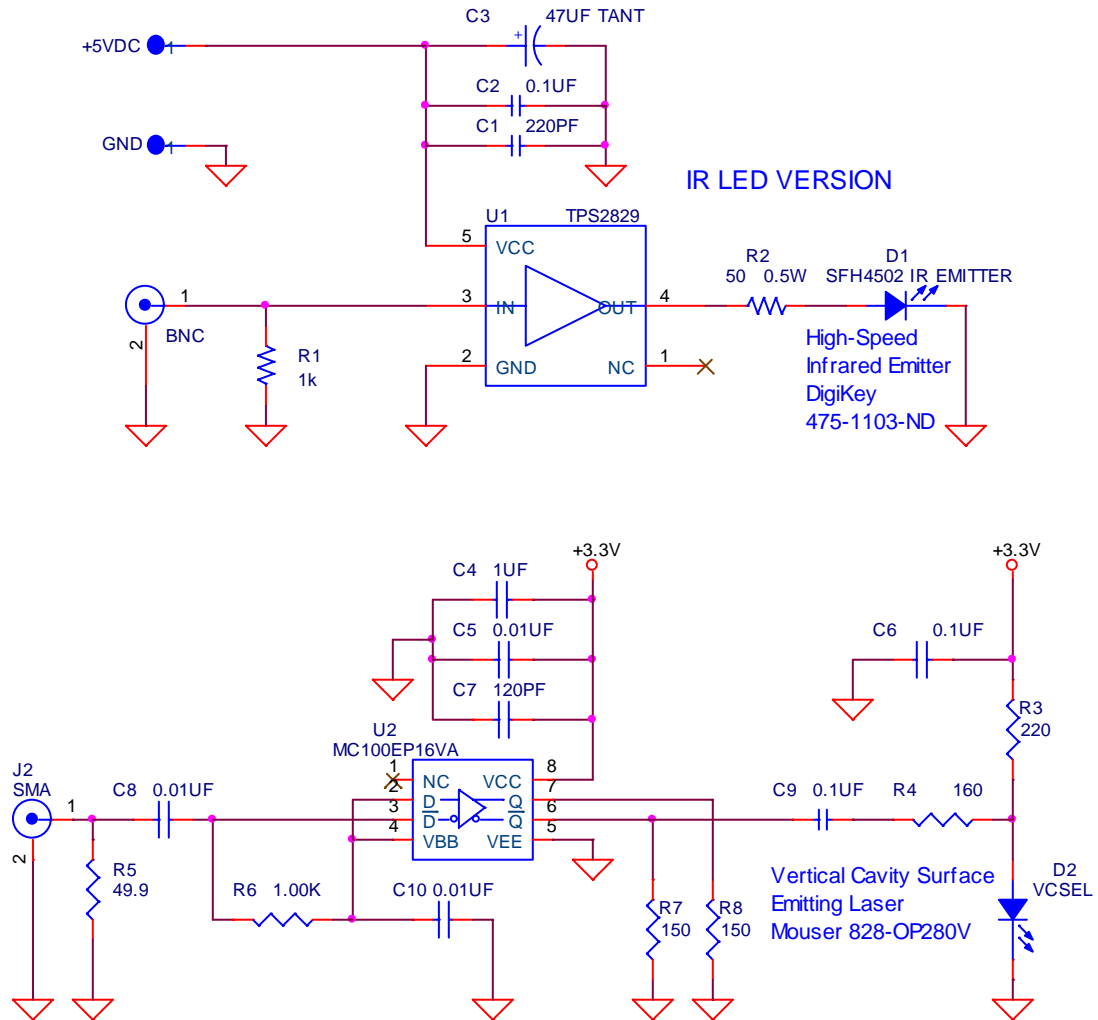
Large area photodiode preamp, medium slow (rise time of $\sim 200\text{ns}$):



The wide area sensor (BNC mount) was purchased from Edmund Optics, and is similar to units manufactured by OSI Optoelectronics at www.osioptoelectronics.com.

Optical sources can be as simple as a visible laser module (as a source of DC light, 1 to 5mW), or even a low cost laser pointer.

When you need to examine transient response, a few simple support boards are needed. An IR LED source (approximately 5NS rise time), and an IR laser source (~0.3NS rise time) are shown below:



Note:

1. The IR LED version requires a 5V signal level drive. The VCSEL driver only requires ~200mV pk-pk.
2. All resistors used on the drive boards are 0805 size.
3. The laser version uses an Infrared VCSEL device to make the drive circuitry as simple as possible. If you use conventional visible laser diodes, you will need to bias them using the internal photodiode feedback to avoid device destruction. It is important to note that you cannot safely use a simple current source to drive them, due to their rather large component tolerances for initial lasing current.
4. Use appropriate eye safety precautions with the optical emitters.