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問1

Claim 1

A reference voltage generating circuit comprising:

a first resistor (10) having a first end supplied with a first electric potential and a second end connected to an output terminal of a reference voltage;

a second resistor (11) having a first end supplied with a second electric potential and a second end connected to the output terminal;

a first bipolar transistor (15) having a first polarity, the first bipolar transistor (15) having a collector supplied with the first electric potential and an emitter connected to the output terminal;

a second bipolar transistor (16) having a second polarity different from the first polarity, the second bipolar transistor (16) having a collector supplied with the second electric potential and an emitter connected to the output terminal;

a first bias generating circuit (17, 18) for generating a first direct-current bias voltage and supplying the first direct-current bias voltage to a base of the first bipolar transistor; and

a second bias generating circuit (19, 20) for generating a second direct-current bias voltage and supplying the second direct-current bias voltage to a base of the second bipolar transistor.

Claim 2

The reference voltage generating circuit according to claim 1, wherein

the first direct-current bias voltage is lower than the reference voltage and has a value that is not smaller than a voltage value calculated by subtracting a forward voltage between the base and the emitter of the first bipolar transistor from the reference voltage, and

the second direct-current bias voltage is higher than the reference voltage, and has a value smaller than a voltage value calculated by adding a forward voltage between the base and the emitter of the second bipolar transistor to the reference voltage.

問2

A lot of attention is now being drawn to optical coherence tomography (OCT), which is a technique for forming a cross-sectional image of a measurement target object by means of interference phenomenon of a light beam such as a laser beam. OCT, which is noninvasive to the human body, is hoped to find its applications in such fields as the medical and biochemical fields. In the ophthalmological field, for example, there is already an apparatus in practical use that forms a cross-sectional image of the fundus, the cornea or the like of the eye.

Patent Document 1 discloses an apparatus that uses OCT. This apparatus includes a measurement arm provided with a rotary scanning mirror (galvanometer mirror) to scan an object, a reference arm provided with a reference mirror, and an outlet provided with an interferer that analyzes the intensity of coherent light in luminous flux from the measurement arm and the reference arm with use of a spectrometer. The reference arm is arranged to change the phase of reference light in stages into discontinuous values.

The apparatus disclosed in Patent Document 1 uses the so-called Fourier-domain OCT technique. Specifically, the apparatus emits a low-coherence light beam to a measurement target object, superimposes reflected light from the measurement target object onto reference light to generate coherent light, obtains a spectral intensity distribution for that coherent light, and performs Fourier transform on that spectral intensity distribution. This operation forms an image of the shape of the measurement target object along its depth direction (z direction).

問3

The telecommunication device is connected to a monitoring unit over an appropriate network such as a cellular network or the Internet. Alternatives of the network, needless to say, include a public switched telephone network, radio link, cable splicing, and short message service.

The remote monitoring device requests the monitoring service user to identify himself/herself, and then instructs the user to perform a particular procedure for monitoring or measurement. The user is provided with information on how to perform measurements and how to transmit the measurement results to the monitoring device.

A typical example of the monitoring unit is a remote monitoring unit, which can be installed on the hospital side of a network connection. This is, however, a mere example. The monitoring unit may alternatively perform its treatment operations at any convenient location between the patient and the medical professional. Typically, when the patient uses a digital device to connect to the network, treatment operations may be performed for the user through a communication between the user and the remote unit. Alternatively, the user manually may make a telephone call to connect to the network, in which case treatments are performed at a location away from the patient.