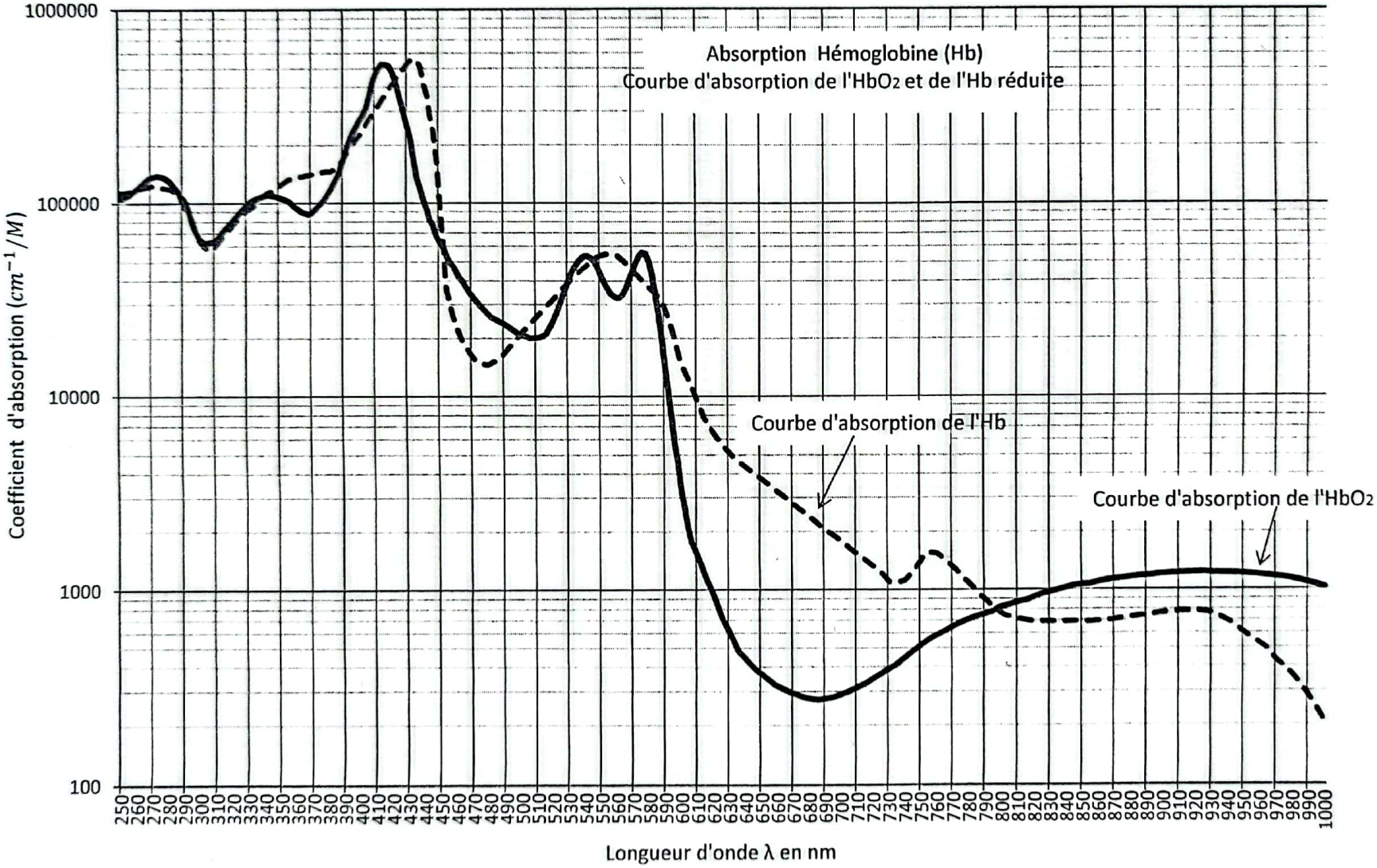
ANNEXE 1


Absorption Hémoglobine (Hb)
Courbe d'absorption de l'HbO2 et de l'Hb réduite
Courbe d'absorption de l'Hb
Courbe d'absorption de l'HbO2
Coefficient d'absorption (cm^{-1}/M)
1000000
100000
10000
1000
100
Longueur d'onde λ en nm

ANNEXE 2

Décomposition en Série de Fourier (DSF)

Un signal $x(t)$ de période T, peut s'exprimer sous forme suivante :

$$x(t) = a_0 + \sum_{n=1}^{+\infty} a_n \cos(n\frac{2\pi}{T}t) + b_n \sin(n\frac{2\pi}{T}t)$$

Avec :

$$a_0 = \frac{1}{T}\int_{-T/2}^{T/2} x(t).dt$$

$$a_n = \frac{2}{T}\int_{-T/2}^{T/2} x(t).\cos(n\frac{2\pi}{T}t)dt$$

$$b_n = \frac{2}{T}\int_{-T/2}^{T/2} x(t).\sin(n\frac{2\pi}{T}t)dt$$

a_0 : Valeur moyenne du signal ou composante continue

Formules trigonométriques utiles

$$\sin^2(x) = \frac{1-\cos(2x)}{2}$$

$$\cos^2(x) = \frac{1+\cos(2x)}{2}$$

$$\cos(a)\cos(b) = \frac{\cos(a+b)+\cos(a-b)}{2}$$

$$\sin(a)\sin(b) = -\frac{\cos(a+b)-\cos(a-b)}{2}$$

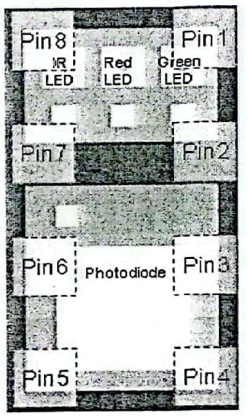
$$\sin(a)\cos(b) = \frac{\sin(a+b)+\sin(a-b)}{2}$$

$$\cos(a)\sin(b) = \frac{\sin(a+b)-\sin(a-b)}{2}$$

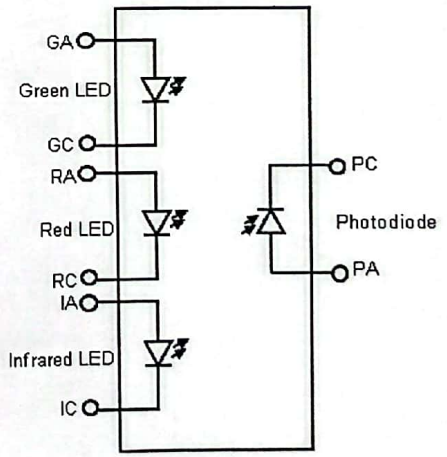
Pin configuration

Pin	Name	Function
1	GC	Green LED Cathode
2	GA	Green LED Anode
3	RA	Red LED Anode
4	PA	Photodiode Anode
5	PC	Photodiode Cathode
6	RC	Red LED Cathode
7	IA	Infrared LED Anode
8	IC	Infrared LED Cathode

Top view



Block diagram



OSRAM
Opto Semiconductors

Characteristics (T_A = 25 °C)

Parameter		Symbol	Value	Unit
Detector				
Photocurrent (E_e = 0.1 mW/cm², λ = 530 nm, V_R = 5 V)	(typ.)	$I_{P,530}$	0.42	µA
Photocurrent (E_e = 0.1 mW/cm², λ= 660 nm, V_R = 5 V)	(typ.)	$I_{P,655}$	0.76	µA
Photocurrent (E_e = 0.1 mW/cm², λ = 940 nm, V_R = 5 V)	(typ.)	$I_{P,940}$	1.3	µA
Wavelength of max. sensitivity	(typ.)	$\lambda_{S\ max}$	920	nm
Spectral range of sensitivity	(typ.)	$\lambda_{10\%}$	400 ... 1100	nm
Radiation sensitive area	(typ.)	A	1.7	mm²
Dimensions of radiant sensitive area	(typ.)	L x W	1.3 x 1.3	mm x mm
Dark current (V_R = 5 V, Ee = 0 mW/cm²)	(typ. (max.))	I_R	1 (≤ 5)	nA
Spectral sensitivity of the chip (λ = 530 nm)	(typ.)	$S_{\lambda 530}$	0.26	A / W
Spectral sensitivity of the chip (= 660nm)	(typ.)	$S_{\lambda 660}$	0.47	A / W
Spectral sensitivity of the chip (λ = 940 nm)	(typ.)	$S_{\lambda 940}$	0.77	A / W
Open-circuit voltage (E_e = 0.1 mW/cm², λ = 530 nm)	(typ.)	$V_{O,530}$	240	mV
Short-circuit current (E_e = 0.1 mW/cm², λ = 530 nm)	(typ.)	$I_{SC,530}$	0.40	µA
Open-circuit voltage (E_e = 0.1 mW/cm², λ = 660nm)	(typ.)	$V_{O,660}$	250	mV
Short-circuit current (E_e = 0.1 mW/cm², λ = 660 nm)	(typ.)	$I_{SC,660}$	0.71	µA
Open-circuit voltage (E_e = 0.1 mW/cm², λ =940 nm)	(typ.)	$V_{O,940}$	270	mV
Short-circuit current (E_e = 0.1 mW/cm², λ = 940 nm)	(typ.)	$I_{SC,940}$	1.2	µA