

Samples of SpO₂ Emitters and Detector configurations and types

'OEM' (Lead Frame)



'Viamed' (Lead Frame)

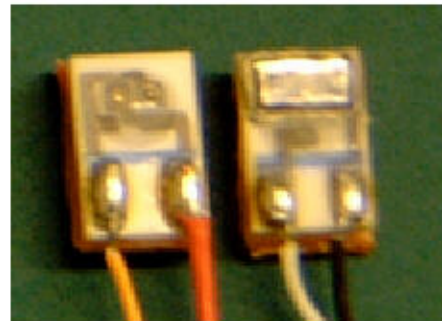


'Generic' manufacturer 'A' (Ceramic)

Old Version

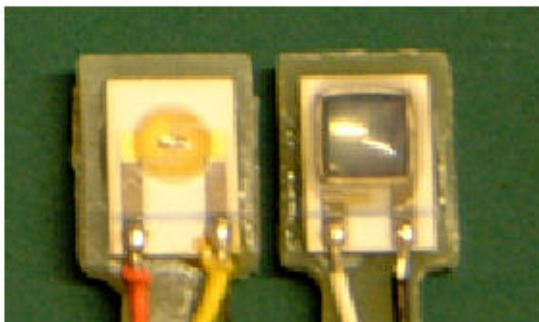


'Generic' manufacturer 'B' (Ceramic)



'Generic' manufacturer 'A' (Ceramic)

New Version



Specification Comparison

Specification	Nelcor	P856RA	P861RA
Red LED			
Peak Wavelength	660nm +/- 5nm ($I_f=20\text{mA}$)	660nm +/- 5nm ($I_f=20\text{mA}$)	660nm +/- 5nm ($I_f=20\text{mA}$)
Half Power Bandwidth	19nm typ ($I_f = 20\text{mA}$)	25nm typ ($I_f = 20\text{mA}$)	25nm typ ($I_f = 20\text{mA}$)
V_t , forward voltage	1.8 v typ ($I_f = 20\text{mA}$)	1.8 v typ ($I_f = 20\text{mA}$)	1.8 v typ ($I_f = 20\text{mA}$)
V_r , reverse Voltage	4 Volts mim. ($I_{R-} = 50\mu\text{A}$)	4 Volts mim. ($I_{R-} = 50\mu\text{A}$)	4 Volts mim. ($I_{R-} = 50\mu\text{A}$)
Radiant Power	0.766 mW ($I_f = 20\text{mA}$)	? mW ($I_f = 20\text{mA}$)	? mW ($I_f = 20\text{mA}$)
Luminous Intensity		30 mcd typ ($I_f = 20\text{mA}$)	30 mcd typ ($I_f = 20\text{mA}$)
Infrared LED			
Peak Wavelength	908nm typ ($I_f = 20\text{mA}$)	880 +/- 10 nm typ ($I_f = 20\text{mA}$)	905nm typ ($I_f = 100\text{mA}$)
Half Power Bandwidth	40nm typ ($I_f = 20\text{mA}$)	80 nm typ ($I_f = 20\text{mA}$)	50nm typ ($I_f = 100\text{mA}$)
V_t forward voltage	1.3 Volts typ ($I_f=20\text{mA}$)	1.6 Volts typ ($I_f=20\text{mA}$)	1.5 Volts typ ($I_f=20\text{mA}$)
V_r , reverse voltage	5 volts min. ($I_R=50\mu\text{A}$)	4 volts min. ($I_R=10\mu\text{A}$)	5 volts min. ($I_R=10\mu\text{A}$)
Radiant Power	1.386mW typ. ($I_f= 20\text{mA}$)	1.5mW typ. ($I_f= 20\text{mA}$)	2.0mW typ. ($I_f= 20\text{mA}$)
LED Drive	2 wire opposed LED's	2 wire opposed LED's	2 wire opposed LED's
Detector			
Type	Silicon PIN Photodiode	Silicon PIN Photodiode	Silicon PIN Photodiode
Active Area	3mm ² typ. All	3mm ² typ. All	0.81mm ² typ. All
Spectral Response Range	400nm to 1100nm	400nm to 1100nm	400nm to 1100nm
Peak Spectral Response	940nm	940nm	940nm
Responsivity/sensitivity	0.5 A/W typ.(peak)	>0.35 A/W @ 660 nm >0.45A/W @ 880nm	0.05 A/W @ 850 nm
Forward Voltage		0.7v ($I_f = 20\text{mA}$)	0.7v ($I_f = 20\text{mA}$)
Dark Current	0.50 nA ($V_R=100\text{V}$)typ.	<10 nA @ -40V 25°C.	<10 nA @ -40V 25°C.
Rise Time	50nS max ($R_i = 1\text{K ohm}$ $V_R= 50\text{V}$)	50nS max ($R_i = 1\text{K ohm}$ $V_R= 50\text{V}$)	3nS max ($R_i=50\text{ohm}$ $V_R= 50\text{V}$) 850 nm
Capacitance	50pf typ. ($V=50\text{V}$)	<35pf typ. (0v 1Khz)	6pf typ. ($V=0\text{V}$) 1Khz
Cable Length	55cm - 100cm (Varies by type)	3 ft	3ft
Cable Jacket Material	Medical Grade PVC, White	Medical Grade PVC, White	Medical Grade PVC, White
Cable Emitter Wires	2 ea. 30AWG 25/44. pvc insulation	shielded twisted pair + 3 insulated wires all shielded	shielded twisted pair + 3 insulated wires all shielded
Cable Detector Wire	2 ea. 30AWG. 25/44 twisted pair shielded with drain wire. PVC Insulation	2 ea. 30AWG. 25/44 twisted pair shielded with drain wire. PVC Insulation	2 ea. 30AWG. 25/44 twisted pair shielded with drain wire. PVC Insulation

Specification	Nellcor	P856RA	P861RA
Connector Type	9 pin Sub D Male overmoulded	9 pin Sub D Male overmoulded	5 pin Lemo
Connector Contact Material	Brass	BPhosphor bronze	BPhosphor bronze
Connector Contact finish	Gold Flash over Nickel	Gold Flash over Nickel	Gold Flash over Nickel
Operation			
Temperature	10° - 40.5°C (50° F - 105°F)	10° - 40.5°C (50° F - 105°F)	10° - 40.5°C (50° F - 105°F)
Relative Humidity	20%-80% non condensing	20%-80% non condensing	20%-80% non condensing
Storage			
Storage Temperature	4.5° - 43.3° (40° F - 110°F)		
Recommended	10° - 40.5°C (50° F - 105°F)		
Relative Humidity	10%-90% non condensing		
Accuracy Range	70%-100%		
Deviation	+/- 2 Digits (1SD. 2.5%)		
Sensor Life	3 years from manufacture		
Biocompatibility	No Latex		

Specification Comparison

Specification	P862RA	P867RA	P876RA
Red LED			
Peak Wavelength	660nm +/- 5nm ($I_f=20\text{mA}$)	660nm +/- 5nm ($I_f=20\text{mA}$)	660nm +/- 5nm ($I_f=20\text{mA}$)
Half Power Bandwidth	25nm typ ($I_f = 20\text{mA}$)	25nm typ ($I_f = 20\text{mA}$)	25nm typ ($I_f = 20\text{mA}$)
V_t , forward voltage	1.8 v typ ($I_f = 20\text{mA}$)	1.8 v typ ($I_f = 20\text{mA}$)	1.8 v typ ($I_f = 20\text{mA}$)
V_r , reverse Voltage	4 Volts min. ($I_{R-} = 50\mu\text{A}$)	4 Volts min. ($I_{R-} = 50\mu\text{A}$)	4 Volts min. ($I_{R-} = 50\mu\text{A}$)
Radiant Power	? mW ($I_f = 20\text{mA}$)	? mW ($I_f = 20\text{mA}$)	? mW ($I_f = 20\text{mA}$)
Luminous Intensity	30 mcd typ ($I_f = 20\text{mA}$)	30 mcd typ ($I_f = 20\text{mA}$)	30 mcd typ ($I_f = 20\text{mA}$)
Infrared LED			
Peak Wavelength	905nm typ ($I_f = 100\text{mA}$)	940 +/-10 nm typ ($I_f = 20\text{mA}$)	940 +/-10 nm typ ($I_f = 20\text{mA}$)
Half Power Bandwidth	50nm typ ($I_f = 100\text{mA}$)	50nm typ ($I_f = 100\text{mA}$)	50nm typ ($I_f = 100\text{mA}$)
V_t forward voltage	1.5 Volts typ ($I_f=20\text{mA}$)	1.3 Volts typ ($I_f=20\text{mA}$)	1.3 Volts typ ($I_f=20\text{mA}$)
V_r , reverse voltage	5 volts min. ($I_R=10\mu\text{A}$)	5 volts min. ($I_R=10\mu\text{A}$)	5 volts min. ($I_R=10\mu\text{A}$)
Radiant Power	2.0mW typ. ($I_f= 20\text{mA}$)	1.5mW typ. ($I_f= 20\text{mA}$)	1.5mW typ. ($I_f= 20\text{mA}$)
LED Drive			
Detector			
Type	Silicon PIN Photodiode	Silicon PIN Photodiode	Silicon PIN Photodiode
Active Area	8mm ² typ. All	8mm ² typ. All	8mm ² typ. All
Spectral Response Range	400nm to 1150nm	400nm to 1150nm	400nm to 1150nm
Peak Spectral Response	950nm =+/- 50	950nm =+/- 50	950nm =+/- 50
Responsivity/sensitivity	>0.3 A/W @ 632 nm	>0.3 A/W @ 632 nm	>0.3 A/W @ 632 nm
Forward Voltage	<0.7V ($I_f = 0.4\text{mA}$)	0.7V ($I_f = 0.4\text{mA}$)	0.7V ($I_f = 0.4\text{mA}$)
Dark Current	<20 nA @ 40V 25°C.	<20 nA @ 40V .	<20 nA @ 40V .
Rise Time			
Capacitance	140pf typ.	140pf typ.	140pf typ.
Cable Length			
Cable Jacket Material	Medical Grade PVC, White	Medical Grade PVC, White	Medical Grade PVC, White
Cable Emitter Wires	shielded twisted pair + 3 insulated wires all shielded	shielded twisted pair + 3 insulated wires all shielded	shielded twisted pair + 3 insulated wires all shielded
Cable Detector Wire			
Connector Type		9 Pin Hypertronic	7 Pin Hypertronic
Connector Contact Material		Phosphor Bronze	Phosphor Bronze
Connector Contact Finish		Gold flash over Nickel	Gold flash over Nickel
Operation			
Temperature			
Relative Humidity			
Storage			
Storage Temperature			
Recommended			
Relative Humidity			