Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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SPCM-NIR

NIR-Optimized Single Photon Counting Module

Excelitas Technologies' SPCM-NIR is a Single Photon Counting Module specifically selected and performance-optimized for the near infra-red wavelength spectrum.

The SPCM-NIR uses a specially selected SLiK silicon avalanche photodiode with peak single photon detection efficiency typically better than 73% while maintaining uniformity over a 180 µm diameter active area. This module achieves enhanced red and NIR sensitivity while maintaining such other performance parameters of the standard SPCM-AQRH, such as outstanding uniformity, overload protection, temperature stability and linearity

This NIR spectrum enhanced device is designed to support long range LIDAR, quantum communication and microscopy, as well as many other applications.

Excelitas' series of photon counting modules are designed and built to be fully compliant with the European Union Directive 2011/65/EU – Restriction of Hazardous Substances in Electrical and Electronic equipment (RoHS).

Key Features

- Peak photon detection efficiency (PDE) @ 780 nm: 70% typical
- Active area: 180 µm
- Gated output
- Single +5 V supply
- RoHS-compliant
- Linearity over high count rate

Applications

- LIDAR
- Quantum Cryptography
- Photon correlation spectroscopy
- Astronomical observation
- Optical range finding
- Adaptive optics
- Ultra-sensitive fluorescence
- Particle sizing
- Microscopy and imaging

Table 1. Absolute Maximum Ratings

Supply voltage [1]	5.5 V
Maximum count rate	Maximum count rate can be sustained if case temperature is maintained within limit specified limits
Peak light intensity	Maximum 10^4 photons per pulse, pulse width < 1 ns
Case temperature [3]	-20°C/+70°C storage, +5°C /+70°C operating

Table 2. Specifications of SPCM-NIR, @ 22 ºC, all models; unless otherwise indicated [1]

Parameter	Min	Typ	Max	Unit
Active area (diameter) at minimum PDE	170	180		µm
Photon detection efficiency (PDE) (without FC adaptor) at [2]:				
780 nm	64	70		%
800 nm	62	68		%
850 nm	54	58		%
900 nm	41	45		%
Dark Count SPCM-NIR-10			1500	Counts / second
SPCM-NIR-11			1000	
SPCM-NIR-12			500	
SPCM-NIR-13			250	
SPCM-NIR-14			100	
Single photon timing resolution (at 825 nm)[3]		350		ps
Dead time (count rate below 5M/c) Other values can be factory set		20	40	ns
Output count rate before saturation	12	40		Mc/s
Linearity correction factor at 200 Kc/s		1		
1 Mc/s		1.02		
5 Mc/s		1.16		
10 Mc/s		1.40		
20 Mc/s		2.35		
25 Mc/s		3.32		
Afterpulsing probability		1.0	3.0	%

(1) For other performance characteristics, refer to Operating Instructions, product notes and specifications listed on the standard SPCM-AQRH data sheet.

(2) Minimum photon detection efficiency (PDE) measured and recorded at specific wavelength, refer to Table 3, Ordering Guide.

(3) For timing resolution enhanced module, consult Product Brief for SPCM-AQRH-TR series.

Table 3. Ordering Guide

SPCM - NIR - xX - FC

FC connectorized option

Dark count selection

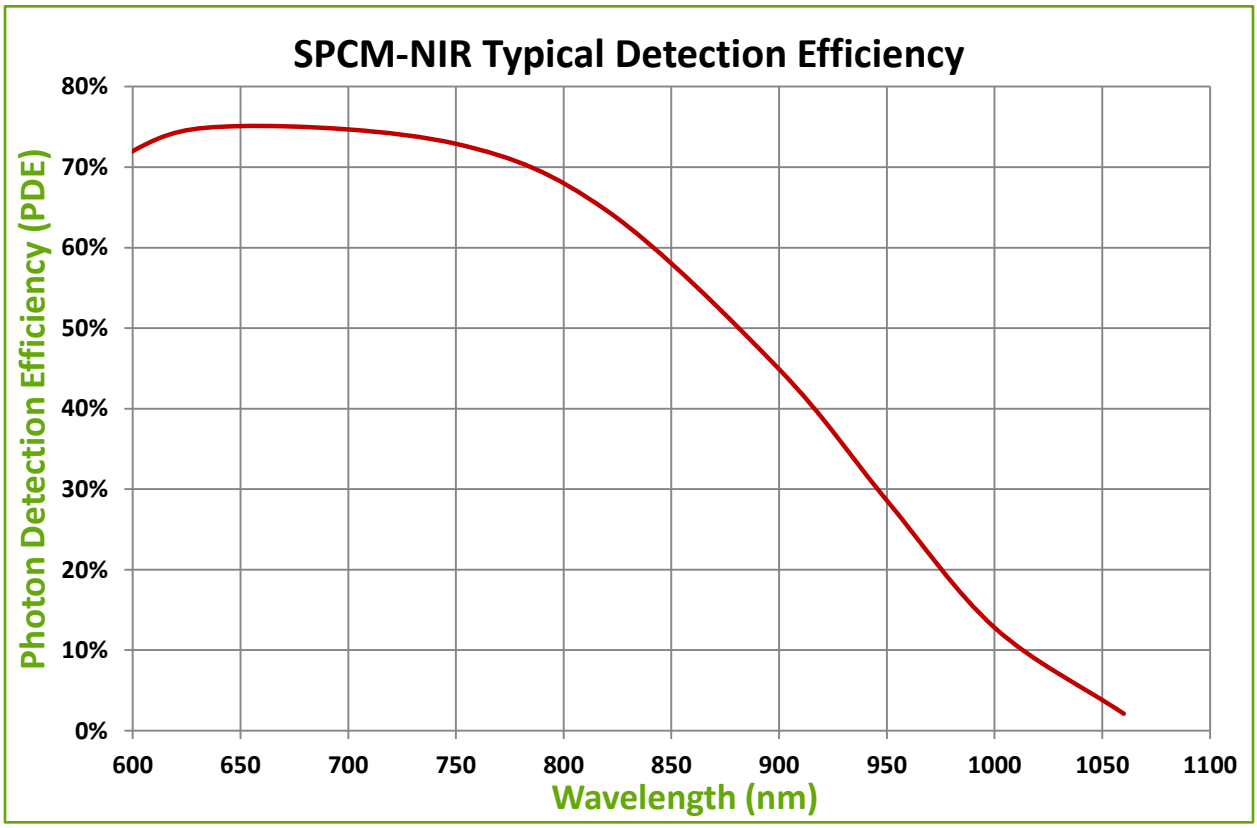
x0 – Dark count <1500 c/s
x1 – Dark count <1000 c/s
x2 – Dark count < 500 c/s
x3 – Dark count < 250 c/s
x4 – Dark count < 100 c/s

Pulse width model

1 – Output pulse width = TYP 7ns, dead time = TYP 20ns
2 – Output pulse width = TYP 18ns, dead time = TYP 30ns

780 – Minimum PDE measured & data supplied at 780nm
800 – Minimum PDE measured & data supplied at 800nm
850 – Minimum PDE measured & data supplied at 850nm
900 – Minimum PDE measured & data supplied at 900nm

Figure 1. Typical Photon Detection Efficiency (PDE) vs. Wavelength



Warranty

A standard 12-month warranty following shipment applies. Any warranty is null and void if the module case has been opened. Warranty is null and void if the module input exceeds 5.5V or the polarity of the +5V supply is reversed.

Individual Module Test Data

Each module is supplied with test data indicating the module's actual dark count, dead time, pulse width, photon detection efficiency at the chosen wavelength per Ordering Guide, and linearity correction factor.

RoHS Compliance

This series of SPCM module is designed and built to be fully compliant with the European Union Directive 2011/65/EU – Restriction of the use of certain Hazardous Substances (RoHS) in Electrical and Electronic equipment.

About Excelitas Technologies

Excelitas Technologies is a global technology leader focused on delivering innovative, customized solutions to meet the detection, lighting, and other high-performance technology needs of OEM customers.

From analytical instrumentation to clinical diagnostics, medical, industrial, safety and security, and aerospace and defense applications, Excelitas Technologies is committed to enabling our customers' success in their end-markets. Excelitas Technologies has approximately 5,000 employees in North America, Europe and Asia, serving customers across the world.

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