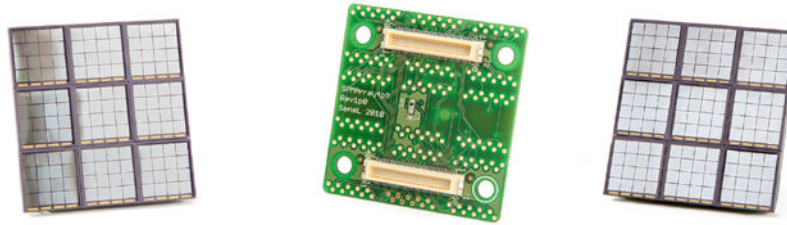


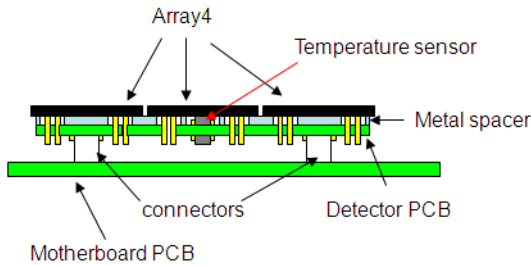
Large area position sensitive silicon photomultiplier matrix in a four side scalable package



SensL Array4p9 is a low cost, large area silicon photomultiplier matrix for position sensitive low light detection.

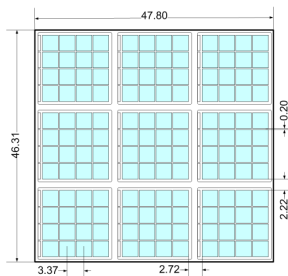
Product Characteristics

Building on SensL's high volume production capabilities for silicon photomultipliers (SPM), Array4p9 is a low cost 144 pixel, position sensitive low light detector integrating SensL Array4 ceramic packaged silicon photomultipliers. The following schematic shows a cross section of Array4p9:



Signal readout for each pixel takes place through two board-to-board connectors allowing for simple integration of Array4p9 on a PCB motherboard. The detector height is ~ 10 mm including connectors allowing for highly compact system designs.

An integrated digital sensor measures detector temperature to ± 0.1 °C allowing for precise compensation of SPM signal gain variations with temperature. The detector head is four side scalable with a pixel pitch optimized for 3 x 3 mm² light sources:



The 144 SPM integrated on Array4p9 are selected to have a photo response uniformity within ± 10 % or 1 : 1.2 in comparison to multi-anode PMT. Array4p9 operates at 30V simplifying HV infrastructure. Mechanically robustness and safe to handle, it operates under ambient lighting and is insensitive to magnetic fields up to 7 T.

The principle characteristics of each SPM pixel integrated on Array4p9 are:

Parameter	Unit	Min	Max
Number of micro-cells		3640	
Spectral range	nm	400	1000
Peak sensitivity wavelength	nm	490	
Signal gain		$> 10^6$	
Peak responsivity at V_{op}	kA / W	> 80	
Dark current at V_{op}	μ A	< 15	
Temperature dependence of signal gain	% / °C	< 2.5	
Signal rise time	ns	< 3 ns	
dE/E (FWHM) for LYSO at 511keV	%	< 17	

Applications

Array4p9 addresses a range of applications that are currently realized using multi-anode PMT or APD and PIN photo diode arrays such as:

- PET
- SPECT
- Gamma, Anger and X-ray cameras
- Readout of fiber bundles

Outlook: Array4p9 SPM is currently optimized for the readout of L(Y)SO, NaI:TI and CsI:TI scintillators. Our aggressive R&D program will allow us to shortly introduce a BGO optimized SPM and one for sub-nanosecond timing applications in the UV/Blue spectral range. Contact us for more information.

FOR MORE INFORMATION, VISIT www.sensl.com

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