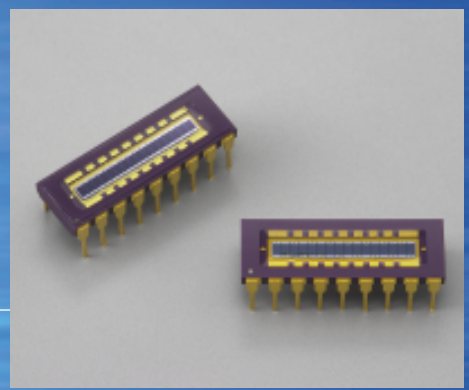


Si photodiode array

S4111-16Q/-16R

16-element photodiode array



S4111-16Q and S4111-16R are 16-element Si photodiode arrays in a ceramic DIP package. These photodiode arrays are chiefly developed for low-light-level detection such as spectrophotometers. S4111-16Q uses a quartz window that covers a wide spectral response range from UV through near infrared light. S4111-16R uses a resin coating window that provides a spectral response range from the visible to near infrared light. Since all elements can be used with a reverse voltage for charge storage readout, S4111-16Q and S4111-16R are able to detect low level light with high sensitivity. Cross-talk between elements is minimized to maintain signal purity.

Features

- Active area: 0.9×1.45 mm ($\times 16$ elements)
- S4111-16Q: for UV through near infrared detection
S4111-16R: for visible to near infrared detection
- Low cross-talk

Applications

- Low-light-level detection
- Spectrophotometers
- Position detection

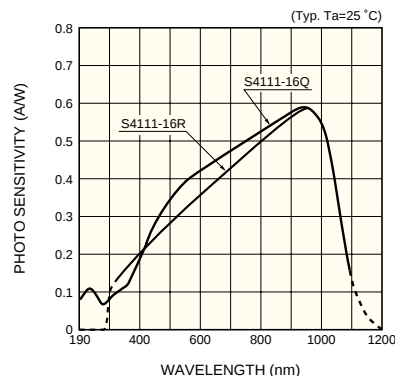
■ Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Reverse voltage	VR Max.	15	V
Operating temperature	Topr	-20 to +60	°C
Storage temperature	Tstg	-20 to +80	°C

■ Electrical and optical characteristics (Ta=25 °C, per 1 element)

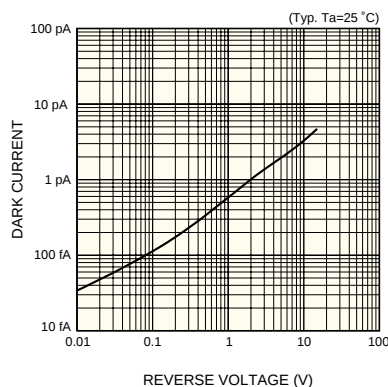
Parameter	Symbol	Condition	S4111-16Q			S4111-16R			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	190 to 1100	-	-	320 to 1100	-	nm
Peak sensitivity wavelength	λ_p		-	960	-	-	960	-	nm
Photo sensitivity	S	$\lambda=633$ nm	-	0.43	-	-	0.40	-	A/W
		$\lambda=\lambda_p$	-	0.58	-	-	0.58	-	A/W
Dark current	ID1	VR=10 mV	-	1	5	-	1	5	pA
	ID2	VR=10 V	-	5	25	-	5	25	pA
Shunt resistance	Rsh	VR=10 mV	2	10	-	2	10	-	GΩ
Terminal capacitance	Ct1	VR=0 V, f=10 kHz	-	200	-	-	200	-	pF
	Ct2	VR=10 V, f=10 kHz	-	50	-	-	50	-	pF
Rise time	tr	VR=0 V, RL=1 kΩ 10 to 90 %	-	0.5	-	-	0.5	-	μs
Noise equivalent power	NEP	$\lambda=\lambda_p$	-	2.0×10^{-16}	-	-	2.0×10^{-16}	-	W/Hz ^{1/2}

Spectral response



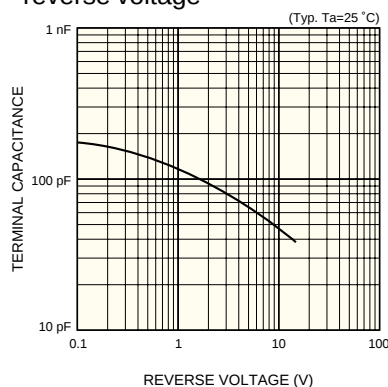
KMPDB0190EA

Dark current vs. reverse voltage



KMPDB0191EA

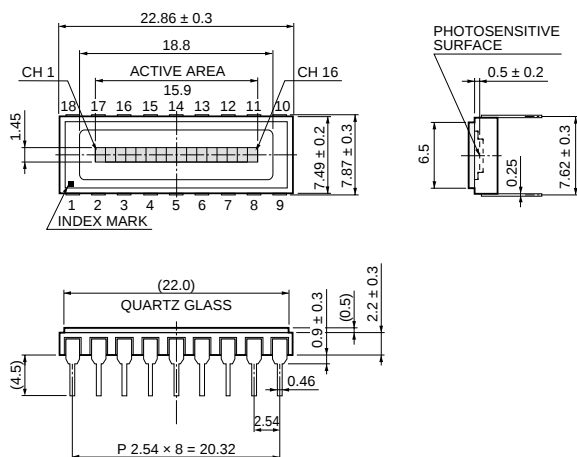
Terminal capacitance vs. reverse voltage



KMPDB0192EA

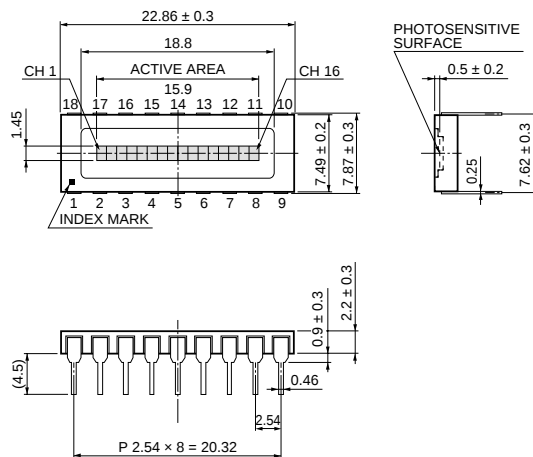
Dimensional outlines (unit: mm)

① S4111-16Q



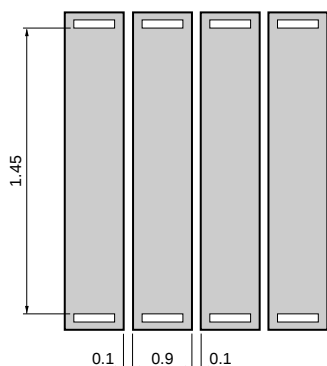
KMPDA0135EA

② S4111-16R



KMPDA0136EA

Details of elements (unit: mm)



KMPDA0145EA

Pin connection

Pin No.	Element No.
1	Cathode
2	2
3	4
4	6
5	8
6	10
7	12
8	14
9	16
10	Cathode
11	15
12	13
13	11
14	9
15	7
16	5
17	3
18	1

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