

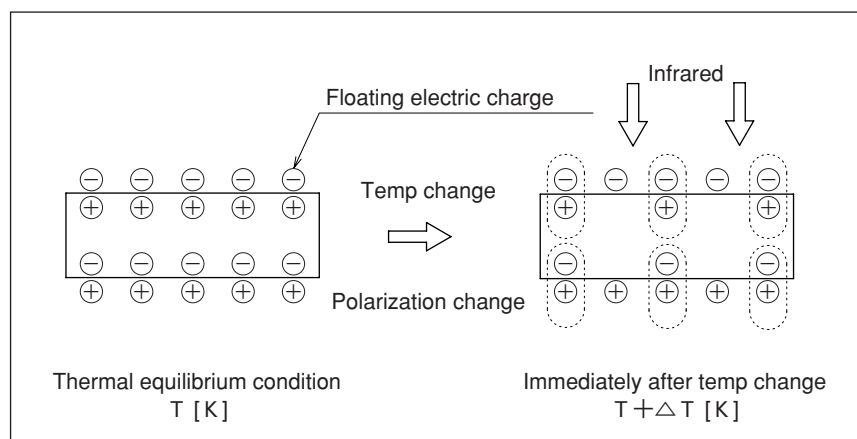


Pyroelectric Infrared Sensor

The pyrosensor, as developed and supplied to the market by NICERA, is being used world wide for many applications. For example, light switch control, visitor acknowledgement, security systems and burglar alarms. Utilizing our expertism gained by years of state of the art expertise, we satisfy marketing needs for high quality and low cost.







■ Principle of Operation

Material call ferroelectrics absorb thermal energy which changes spontaneous polarization generating a surface electrical charge. The charge is proportional to polarizarion change. This phenomenon is called the pyroelectric effect. A pyrosensor using fine ceramic materials can detect even the slightest infrared energy charge, such as that from a human body.





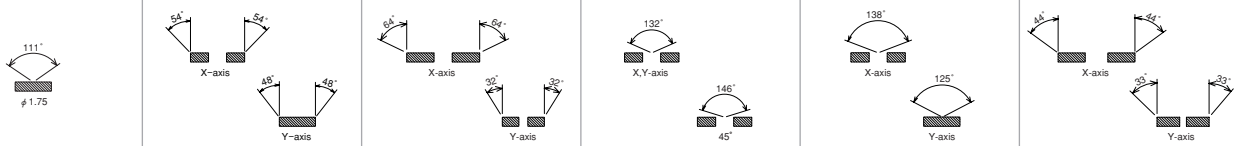
Specifications

Element Type	Recommended Model	Features	Applications
Compensated Single	SSAC10-11		
		Detection from any angle of intrusion. Compensating element cancels the effects of rapid change in temperature.	<ul style="list-style-type: none"> • Human body detector • Flame detector • NDIR gas detector • Radiation thermometer • Microwave oven
Dual	SDA02-54		
		Best choice for human body detector. Highly sensitive to human body while remaining insensitive to ambient temperature change, vibration or optical noise. This is due to configuration which electrically cancels such effects.	<ul style="list-style-type: none"> • Security burglar alarm • Air-conditioner
Quad	REP05B		
		Two independent dual element pyrosensors in combination. By using appropriate optics nuisance alarm from sources such as small animals are much reduce. Provides higher rejection against external noise.	<ul style="list-style-type: none"> • Security burglar alarm (To avoid false alarm by small animals nuisance alarm)
Omni-directional Quad	RE46B		
		Omni directional characteristics is achieved by unique 4 element configuration. Technical merits of single and dual type have successfully met on this model.	<ul style="list-style-type: none"> • Security burglar alarm (For ceiling mount applications) • Automatic lighting switches
General Purpose Dual	RE200B		
		This model satisfies customer's cost reduction need, keeping most performance of dual element type at reasonable level.	<ul style="list-style-type: none"> • Automatic lighting switches • Security burglar alarm • Toys
High Sensitivity 4 elements Dual	RE431B		
		A new dual type with high sensitivity and S/N ratio and wide field of view. Excellent human body detection is achieved by optimal element pattern.	<ul style="list-style-type: none"> • Security burglar alarm • Automatic lighting switches

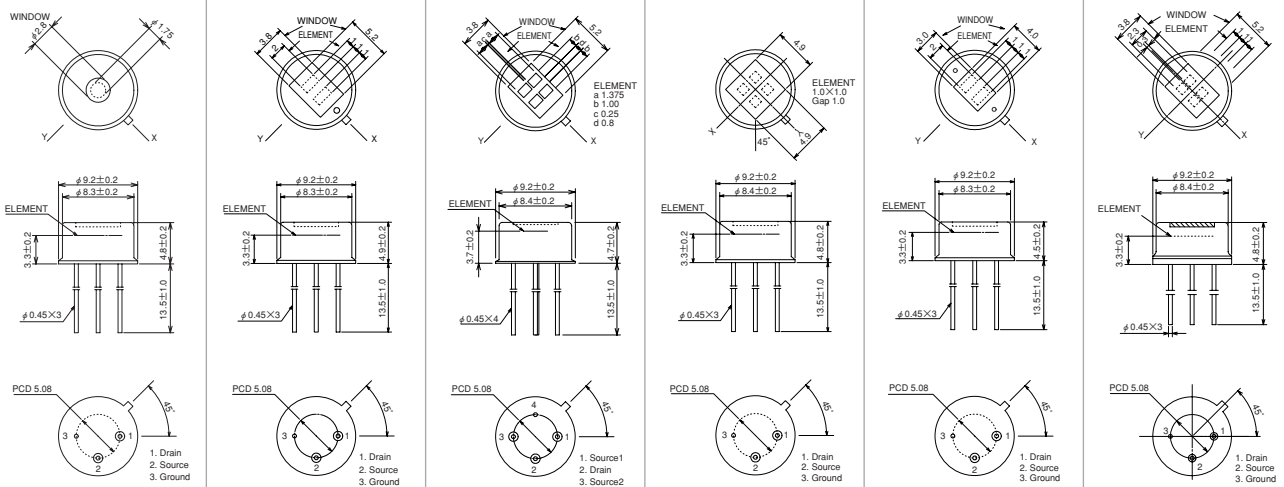
Element Type

Compensated Single	Dual	Quad	Omni-Directional quad	General Purpose Dual	デュアル High Sensitivity 4 element Dual
SSAC10-11	SDA02-54	REP05B	RE46B	RE200B	RE431B
					

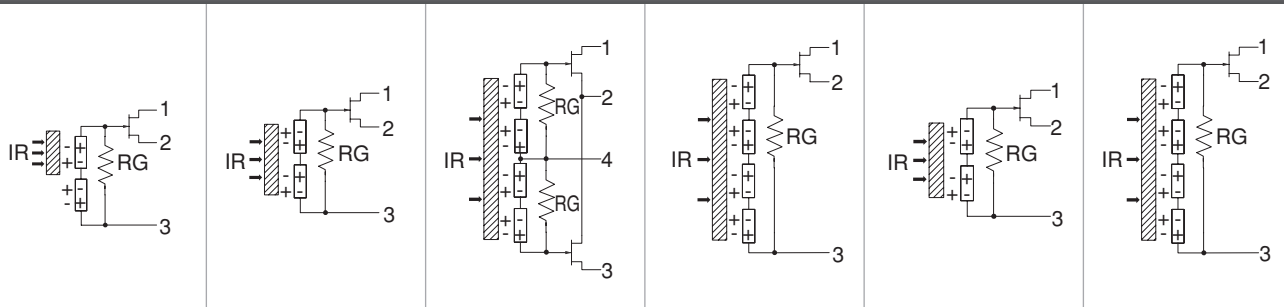
FOV



Dimensions Drawing [mm]



Equivalent Circuit



※ FOV : Field of View

Directivity

● SDA02-54



Ratings (25 °C)

Element Type Parameters	Compensated Single	Dual	Quad	Omni-Directional quad	General Purpose Dual	High Sensitivity 4 element Dual
	SSAC10-11	SDA02-54	REP05B	RE46B	RE200B	RE431B
(mm) Sensitive Area	$\phi 1.75$	2 × 1 2 elements	1.375 × 1 4 elements	1 × 1 4 elements	2 × 1 2 elements	1 × 1 4 elements
(μ m) Spectral Response	7 ~ 14	7 ~ 14	5 ~ 14	5 ~ 14	5 ~ 14	5 ~ 14
(mVp-p) Signal Output	2900	3200	3600	5500	3900	7300
(V/W) Sensitivity 420K, 1Hz	2400	3400	3900	4860	3300	6450
(D*) ($cmHz^{1/2}/W$) Detectivity (420K, 1Hz, 1Hz)	1.7×10^8	1.4×10^8	1.2×10^8	1.7×10^8	1.5×10^8	1.7×10^8
(W) NEP (420K, 1Hz, 1Hz)	8.9×10^{-10}	1.0×10^{-9}	1.0×10^{-9}	8.5×10^{-10}	9.6×10^{-10}	7.9×10^{-10}
(mVp-p) Noise	60	70	90	90	80	130
(V) Offset Voltage	0.6	0.8	0.7	0.8	0.7	0.8
(V) Supply Voltage	2.2 ~ 15	2.2 ~ 15	2.2 ~ 15	2.2 ~ 15	2.2 ~ 15	2.2 ~ 15
(°C) Operating Temp.	-30 ~ 70	-30 ~ 70	-30 ~ 70	-30 ~ 70	-30 ~ 70	-30 ~ 70
(°C) Storage Temp.	-40 ~ 80	-40 ~ 80	-40 ~ 80	-40 ~ 80	-40 ~ 80	-40 ~ 80