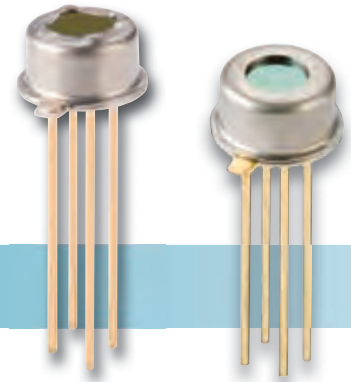


# Miniature Thermopile Detectors

## For Gas Sensing And Measurement



### TPD 1T 0223, TPD 1T 0122, TPD 1T 0623 – Thermopile Detector

#### Target Applications

- Non-contact Temperature measurements
- IR-based Gas Sensors

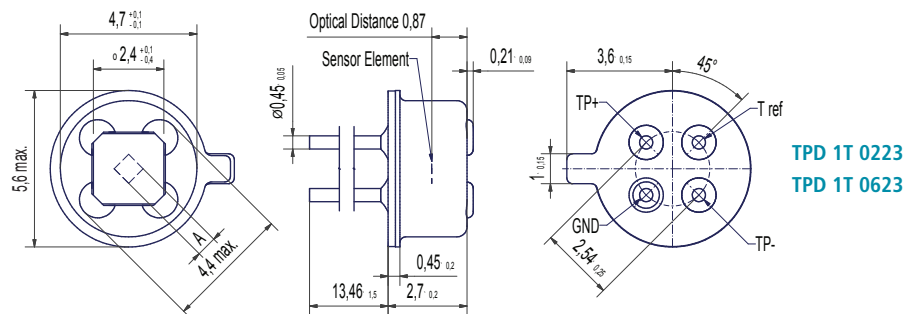
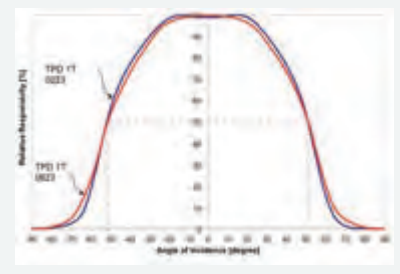
#### Features and Benefits

- TO-46 metal housing
- Square window/round window
- Optical Filter options
- Thermistor included

#### Product Description

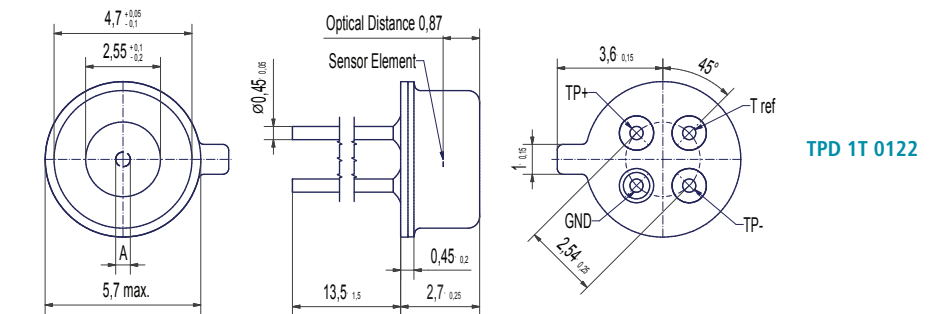
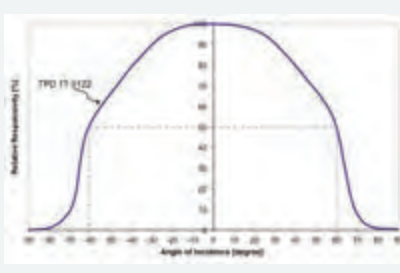
This is our range of general-purpose Detectors in 4.7 mm diameter TO-46 type housings, featuring a specially-designed element configuration, each one with different size of absorbing area. The window is available as standard infrared or optional with narrow band pass filter as per page 7 for gas sensing applications. With the narrowband filters a square window is provided. TPD 1T 0223 and TPD 1T 0122 provide the smallest absorbing area, TPD 1T 0623 is a larger design offering strong signals. All types are equipped as standard with an internal Thermistor as temperature reference for Thermopile temperature compensation.

#### Field of View TPD 1T 0223, TPD 1T 0623



TPD 1T 0223  
TPD 1T 0623

#### Field of View TPD 1T 0122

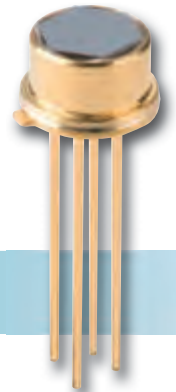


TPD 1T 0122

#### TPD 1T 0223, TPD 1T 0623 and TPD 1T 0122

Parameter	Symbol	TPD 1T 0223	TPD 1T 0623	TPD 1T 0122	Unit	Remarks
Sensitive Area	A	0,7 x 0,7	1,2 x 1,2	0,2	mm <sup>2</sup>	Absorber Area
Thermopile Resistance	R <sub>TP</sub>	50...100	50...110	85...135	kΩ	25°C
Responsivity	R	45	33	77	V/W	500°K/ 1Hz/ Without IR-filter
Sensitivity (Tdet 25 °C / Tobj 40°C)	S <sub>40</sub>	88	133	43	μV/K	With standard filter (LWP, cut-on 5,5 μm)
Sensitivity (Tdet 25 °C / Tobj 100°C)	S <sub>100</sub>	116	177	56	μV/K	With standard filter (LWP, cut-on 5,5 μm)
Time Constant	t	22	27	15	ms	
Noise Voltage	V <sub>n</sub>	35	36	42	nV/√Hz	25°C
Specific Detectivity	D*	0,9	1,1	0,8	10 <sup>8</sup> cm <sup>2</sup> /Hz/W	25°C
Temp. Coefficient of Resistance	TC <sub>RTP</sub>	0,03	0,03	0,03	%/K	
Temp. Coefficient of Responsivity	TC <sub>R</sub>	-0,05	-0,05	-0,05	%/K	
Field of view	FoV	104	104	120	Degrees	at 50% intensity points
Thermistor resistance (25°C)	R <sub>25</sub>	100	100	100	kΩ	25°C
Thermistor BETA-value	β	3964	3964	3964	K	defined at 25°C / 100°C

# ISOthermal, Miniature Thermopile Detectors For Ear Thermometry



## TPiD 1T 0122B, TPiD 1T 0222B, TPiD 1T 0622B – Thermopile Detector

### Target Applications

- Ear Thermometry
- General purpose Thermometry

### Features and Benefits

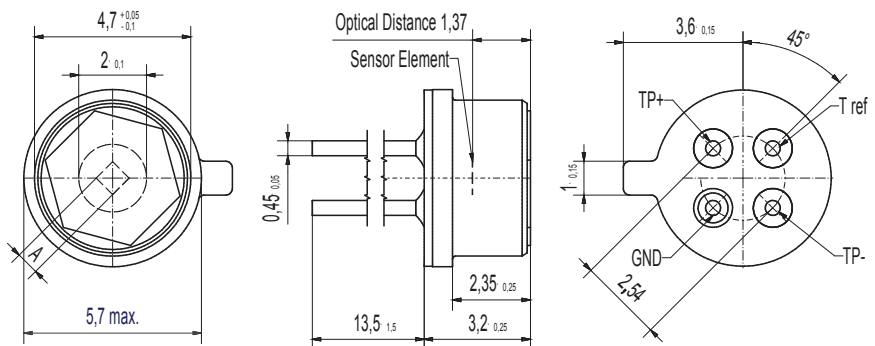
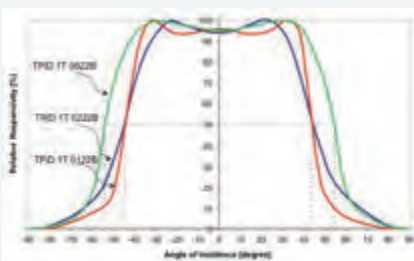
- ISOthermal performance
- Miniature, TO type metal housing
- Light collecting aperture
- Thermistor included

### Product Description

As the optimum for Ear thermometry Excelitas offers Thermopile Detectors referenced as ISOthermal detectors. The patented designs provide superior performance of thermopiles under thermal shock conditions and thereby are best suited for the tympanon ear thermometry.

The range comprises TPiD 1T0122B as the low cost version, whereas the other versions provide higher signal by either high sensitive element designs or larger element area. The physical dimensions of the ISOthermal sensors are equivalent to our TO-46 sensor housings and include a special aperture. All types are equipped with an internal Thermistor as temperature reference for Thermopile temperature compensation to further improve accuracy.

### Field of View



### TPiD 1T 0122B, TPiD 1T 0222B and TPiD 1T 0622B

Parameter	Symbol	TPiD 1T 0122B	TPiD 1T 0222B	TPiD 1T 0622B	Unit	Remarks
Sensitive Area	A	0,2	0,7 x 0,7	1,2 x 1,2	mm <sup>2</sup>	Absorber Area
Thermopile Resistance	R <sub>TP</sub>	85...135	50...100	50...110	kΩ	25°C
Responsivity	R	92	60	40	V/W	500°K/ 1Hz/ Without IR-filter
Sensitivity (Tdet 25 °C / Tobj 40 °C)	S <sub>40</sub>	44	95	126	μV/K	With standard filter (LWP, cut-on 5,5 μm)
Sensitivity (Tdet 25 °C / Tobj 100 °C)	S <sub>100</sub>	58	125	140	μV/K	With standard filter (LWP, cut-on 5,5 μm)
Time Constant	t	15	22	27	ms	
Noise Voltage	V <sub>n</sub>	42	35	36	nV/√Hz	25°C
Specific Detectivity	D*	1,0	1,2	1,3	10 <sup>8</sup> cm <sup>2</sup> /Hz/W	25°C
Temp. Coefficient of Resistance	TC <sub>RTP</sub>	0,03	0,03	0,03	%/K	
Temp. Coefficient of Responsivity	TC <sub>R</sub>	-0,05	-0,05	-0,05	%/K	
Field of view	FoV	90	90	110	Degrees	at 50% intensity points
Thermistor resistance (25°C)	R <sub>25</sub>	100	100	100	kΩ	25°C
Thermistor BETA-value	β	3964	3964	4092	K	defined at 25°C / 100°C