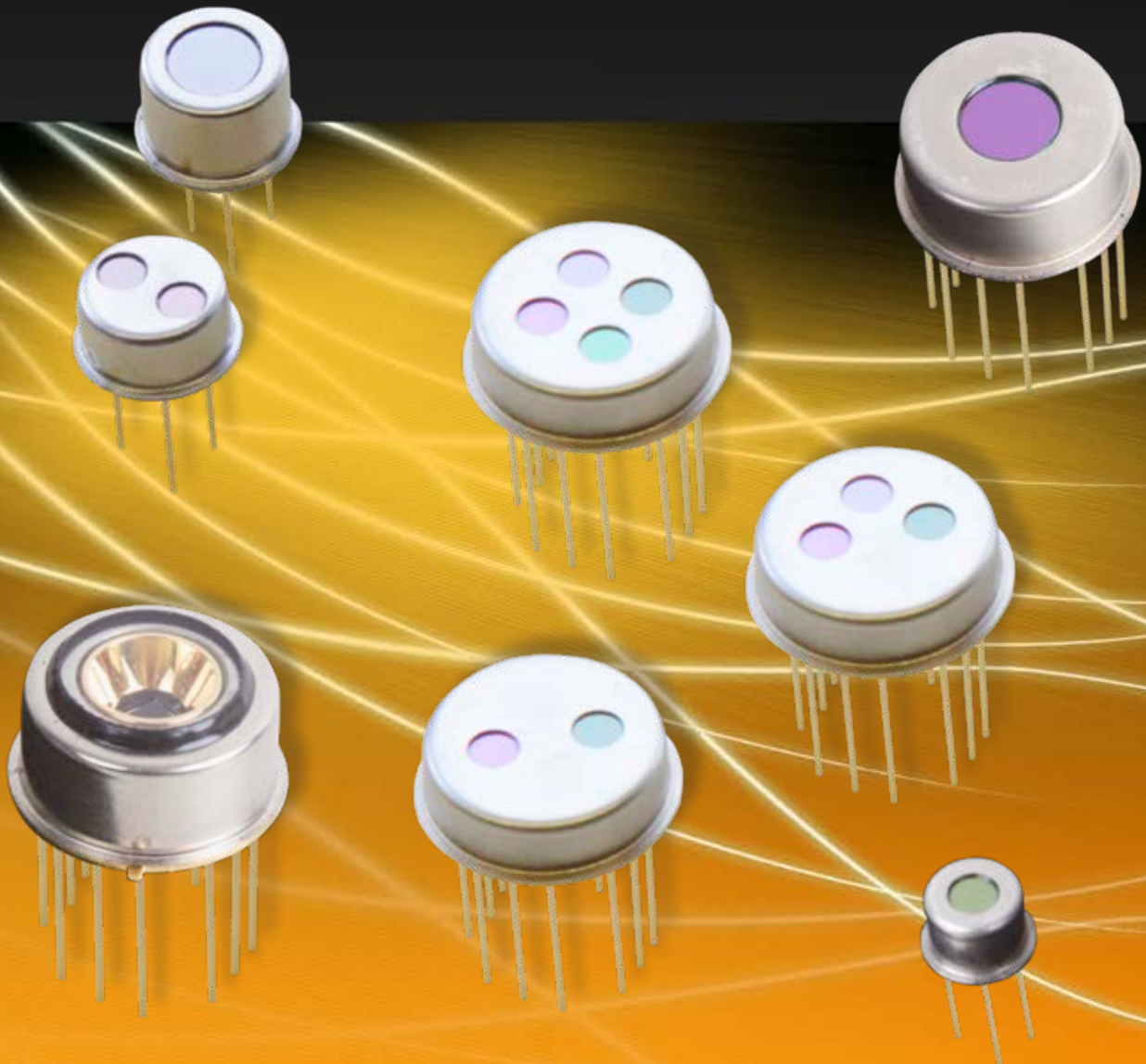


Pyroelectric Infrared Detectors **PYROSENS**

For Measurement Applications



PYROSENS

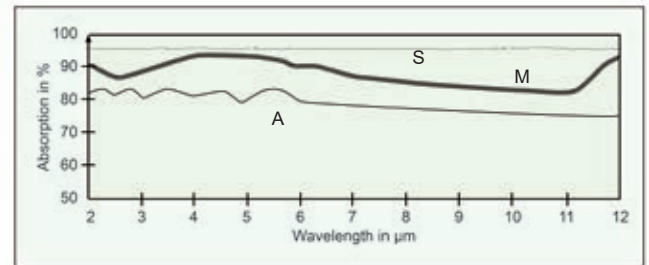
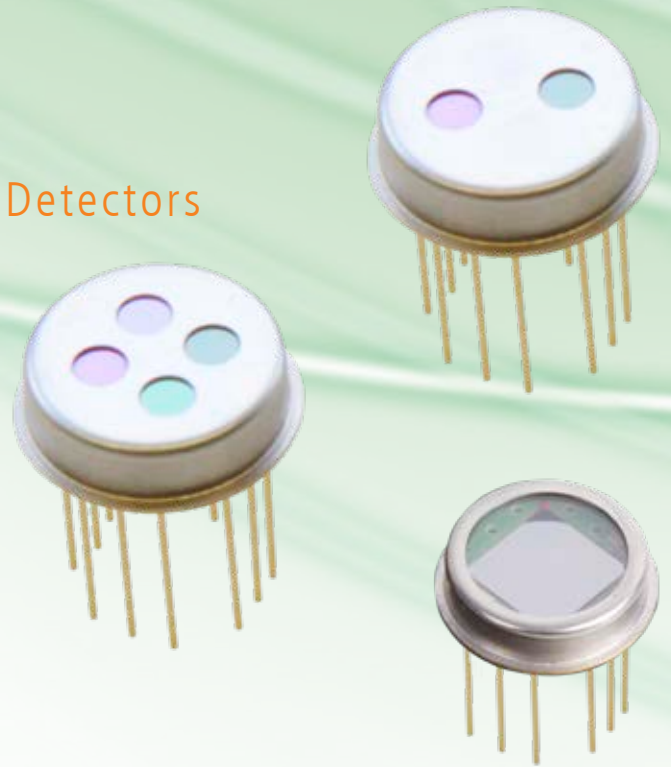
Single-Element and Multi-Channel Detectors

The pyroelectric single-element and multi-channel infrared detectors from DIAS Infrared GmbH are designed for use in **gas analysis, spectroscopy, pyrometry and security engineering applications**.

Very high values of specific detectivity D^* (up to $10^9 \text{ cm}\sqrt{\text{Hz/W}}$) are achieved by using modern ion beam etching technology for extremely thin elements. The **great variety** of infrared sensor constructions makes it possible to realize **custom-made solutions** for both small and large quantities with an **excellent price-performance payoff**.

Further features of our single-element and multi-channel detectors:

- Detector elements made from Lithium Tantalate
- Extremely low noise
- Low microphony
- Low temperature dependence, option: thermal compensation
- Excellent long-term stability
- Voltage or current mode
- Custom-designed IR filters
- Optional with additional absorption layer
- Up to 4 spectral channels per detector
- Individual element geometries
- Different package types



Typical wavelength dependence of different absorption layers

Our detectors are available in different types:

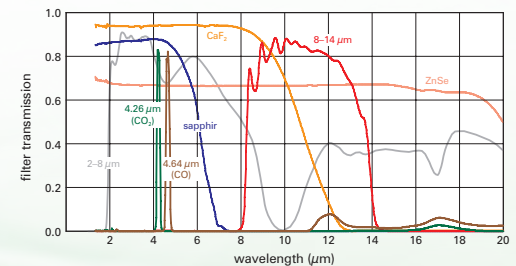
- LT – Standard types
- LTA – Types with additional polymeric absorption layer
- LTM – Types with additional nanostructured NiCr layer
- LTS – Types with additional silver black
- LTI, LTAI, LTMI, LTSI – Ion beam etched, max detectivity

Single-Element Detectors in Voltage Mode						
Type	Size of Element	H	TC	S_v in $\text{V/W}^{1,2}$	u_{Rn} in $\text{nV}/\sqrt{\text{Hz}}^1$	D^* in $\text{cm}\sqrt{\text{Hz/W}}^{1,2}$
LT G2	2 mm × 2 mm	TO39		300	170	$3.5 \cdot 10^8$
LT G2PC	2 mm × 2 mm	TO39	×	150	100	$3 \cdot 10^8$
LT G1.2	1.2 mm × 1.2 mm	TO18		730	370	$2.3 \cdot 10^8$
LT D2.5	Ø 2.5 mm	TO39		220	140	$4 \cdot 10^8$
LT D2	Ø 2 mm	TO39		360	190	$3.5 \cdot 10^8$
LT D1	Ø 1 mm	TO39		1200	700	$2 \cdot 10^8$
LTI Q2	2 mm × 2 mm	TO39		250	80	$8 \cdot 10^8$
LTI Q2PC	2 mm × 2 mm	TO39	×	125	55	$6.2 \cdot 10^8$
LTI Q1	1 mm × 1 mm	TO39		900	160	$6 \cdot 10^8$
LTI Q0.5	0.5 mm × 0.5 mm	TO39		3500	500	$3 \cdot 10^8$
LTI D2	Ø 2 mm	TO39		300	80	$8 \cdot 10^8$
LTI D1	Ø 1 mm	TO39		1200	200	$5 \cdot 10^8$
LTA G2	2 mm × 2 mm	TO39		400	170	$4.5 \cdot 10^8$
LTA G2PC	2 mm × 2 mm	TO39	×	200	100	$3.7 \cdot 10^8$
LTA G1.2	1.2 mm × 1.2 mm	TO18		900	370	$3 \cdot 10^8$
LTA G3	3 mm × 3 mm	TO39		170	100	$6 \cdot 10^8$
LTMI Q2	2 mm × 2 mm	TO39		400	75	$8.5 \cdot 10^8$
LTMI Q1	1 mm × 1 mm	TO39		1400	140	$7.5 \cdot 10^8$
LMTI Q1PC	1 mm × 1 mm	TO39	×	650	100	$6.5 \cdot 10^8$
LTMI D1	Ø 1 mm	TO39		1600	180	$7.5 \cdot 10^8$

H ... Housing, TC ... Thermal Compensation, S_v ... Responsivity, u_{Rn} ... Noise voltage, D^* ... Specific detectivity.

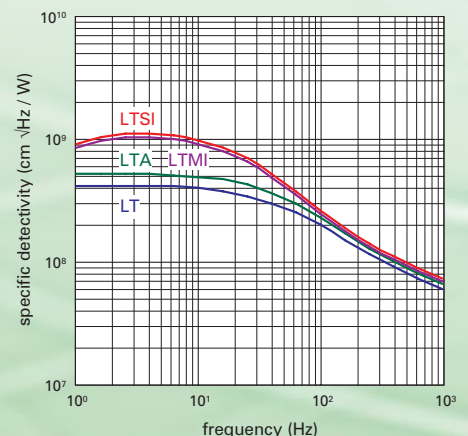
¹ Frequency: 10 Hz, detector temperature: 25 °C, ² Blackbody source temperature: 500 K, filter transmission: 100 %

IR filter



- Coated silicon or germanium as infrared window
- Broad band windows ($>1.3 \mu\text{m}$) or special filters
- Customized filters and integrated optics

Specific Detectivity D^* ⁵



Single-Element Detectors in Voltage Mode

Type	Size of Element	H	TC	S_V in $V/W^{1,2}$	u_{Rn} in $nV/\sqrt{Hz}^1$	D^* in $cm\sqrt{Hz}/W^{1,2}$
LTS Q2	2 mm × 2 mm	TO39		420	150	$5 \cdot 10^8$
LTS Q2PC	2 mm × 2 mm	TO39	×	200	105	$4 \cdot 10^8$
LTS D2.5	Ø 2.5 mm	TO39		340	140	$6 \cdot 10^8$
LTS D2	Ø 2 mm	TO39		520	190	$5 \cdot 10^8$
LTSI Q2	2 mm × 2 mm	TO39		410	80	$9.5 \cdot 10^8$
LTSI D2	Ø 2 mm	TO39		500	80	$9.5 \cdot 10^8$

Single-Element Detectors in Current Mode

Type	Size of Element	H	TC	S_V in $V/W^{1,2}$	u_{Rn} in $nV/\sqrt{Hz}^1$	D^* in $cm\sqrt{Hz}/W^{1,2}$
LTI Q2I10	2 mm × 2 mm	TO39		56000	22000	$6.5 \cdot 10^8$
LTI Q2I100	2 mm × 2 mm	TO39		300000	100000	$8 \cdot 10^8$
LTA G2I10	2 mm × 2 mm	TO39		15000	20000	$1.5 \cdot 10^8$
LTA G2I10PC	2 mm × 2 mm	TO39	×	14000	20000	$1.4 \cdot 10^8$
LTA G2I100	2 mm × 2 mm	TO39		70000	20000	$2.5 \cdot 10^8$
LTA G2I100PC	2 mm × 2 mm	TO39	×	65000	20000	$2.3 \cdot 10^8$
LTA G2C10 ³	2 mm × 2 mm	TO39		15000	20000	$1.5 \cdot 10^8$
LTA G2C10PC ³	2 mm × 2 mm	TO39	×	14000	20000	$1.4 \cdot 10^8$
LTA G2C100 ³	2 mm × 2 mm	TO39		70000	20000	$2.5 \cdot 10^8$
LTA G2C100PC ³	2 mm × 2 mm	TO39	×	65000	20000	$2.3 \cdot 10^8$
LTMi Q2I10	2 mm × 2 mm	TO39		75000	21000	$7.5 \cdot 10^8$
LTMi Q2I100	2 mm × 2 mm	TO39		450000	90000	$10 \cdot 10^8$
LTSI Q2I10	2 mm × 2 mm	TO39		80000	22000	$7.5 \cdot 10^8$
LTSI Q2I100	2 mm × 2 mm	TO39		480000	100000	$10 \cdot 10^8$

Multi-Channel Detectors in Voltage Mode

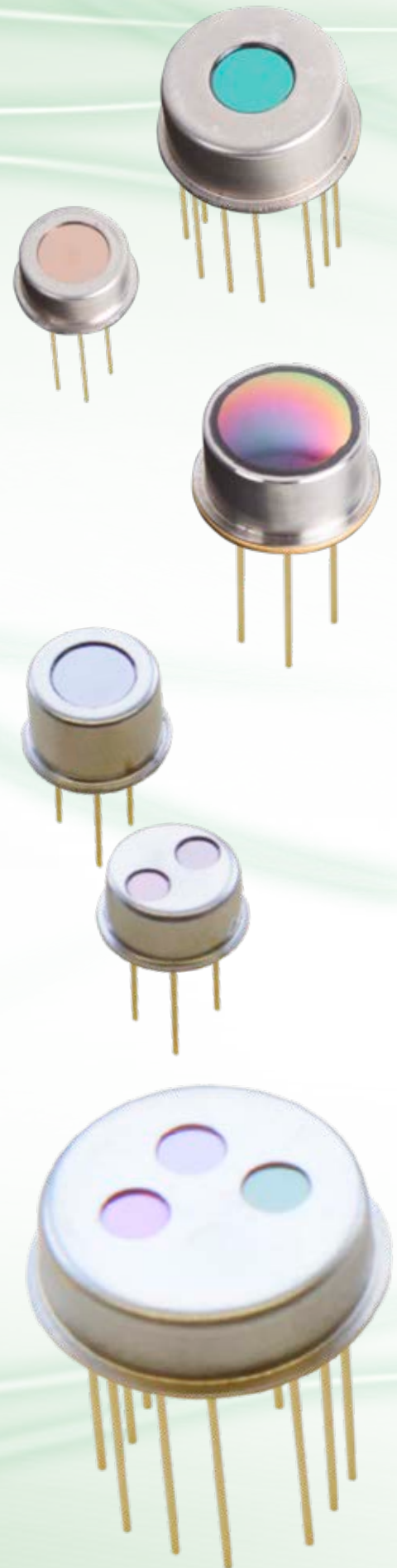
Type	Size of Element	H	TC	S_V in $V/W^{1,2}$	u_{Rn} in $nV/\sqrt{Hz}^1$	D^* in $cm\sqrt{Hz}/W^{1,2}$
2LTA G2	2 × 2 mm × 2 mm	TO39		300	170	$3.4 \cdot 10^8$
2LTA G2PC	2 × 2 mm × 2 mm	TO39	×	150	100	$3 \cdot 10^8$
2LTMi Q1	2 × 1 mm × 1 mm	TO39		1200	140	$7 \cdot 10^8$
2LTMi Q1PC	2 × 1 mm × 1 mm	TO39	×	600	100	$6 \cdot 10^8$
3LTA G2	3 × 2 mm × 2 mm	TO8		300	170	$3.4 \cdot 10^8$
3LTA G2PC	3 × 2 mm × 2 mm	TO8	×	150	100	$3 \cdot 10^8$
4LTA G2	4 × 2 mm × 2 mm	TO8		300	170	$3.4 \cdot 10^8$
4LTA G2PC	4 × 2 mm × 2 mm	TO8	×	150	100	$3 \cdot 10^8$

Multi-Channel Detectors in Current Mode

Type	Size of Element	H	TC	S_V in $V/W^{1,2}$	u_{Rn} in $nV/\sqrt{Hz}^1$	D^* in $cm\sqrt{Hz}/W^{1,2}$
2LTA G2I100	2 × 2 mm × 2 mm	TO8		70000	20000	$2.5 \cdot 10^8$
2LTA G2I100PC	2 × 2 mm × 2 mm	TO8	×	65000	20000	$2.3 \cdot 10^8$
2LTA G2C10 ³	2 × 2 mm × 2 mm	TO39		15000	20000	$1.5 \cdot 10^8$
2LTA G2C100 ³	2 × 2 mm × 2 mm	TO39		70000	20000	$2.5 \cdot 10^8$
3LTA G2I100	3 × 2 mm × 2 mm	TO8		70000	20000	$2.5 \cdot 10^8$
3LTA G2I100PC	3 × 2 mm × 2 mm	TO8	×	65000	20000	$2.3 \cdot 10^8$
4LTA G2I100	4 × 2 mm × 2 mm	TO8		70000	20000	$2.5 \cdot 10^8$
4LTA G2I100PC	4 × 2 mm × 2 mm	TO8	×	65000	20000	$2.3 \cdot 10^8$

H ... Housing, TC ... Thermal Compensation, S_V ... Responsivity, u_{Rn} ... Noise voltage, D^* ... Specific detectivity.

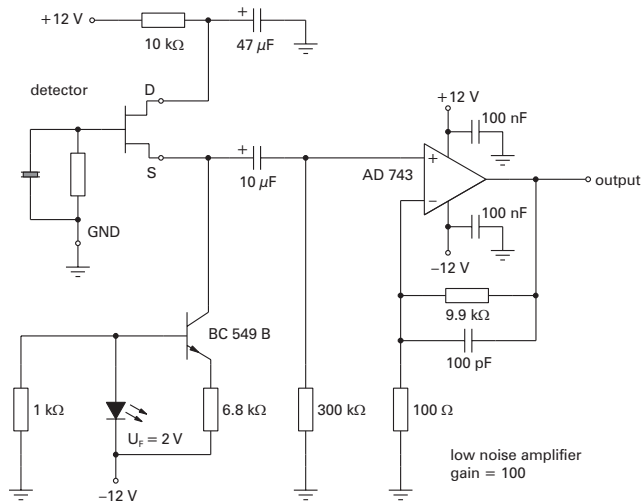
¹ Frequency: 10 Hz, detector temperature: 25 °C, ² Blackbody source temperature: 500 K, filter transmission: 100 %, ³ Only one operating voltage.



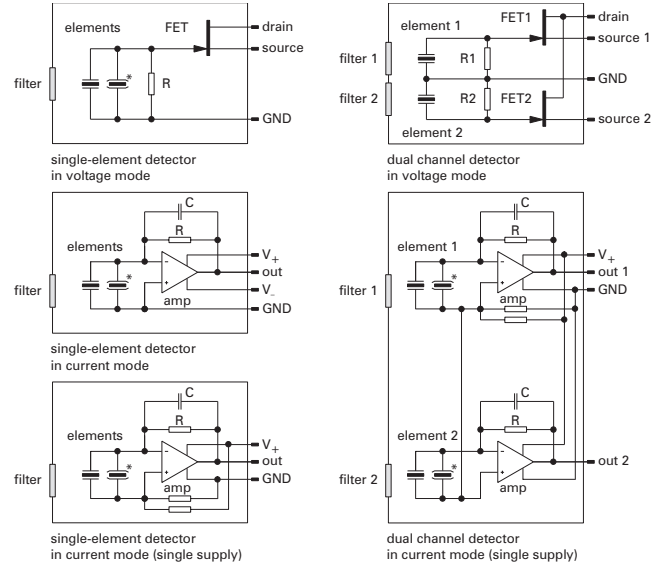
PYROSENS

Pyroelectric Infrared Detectors

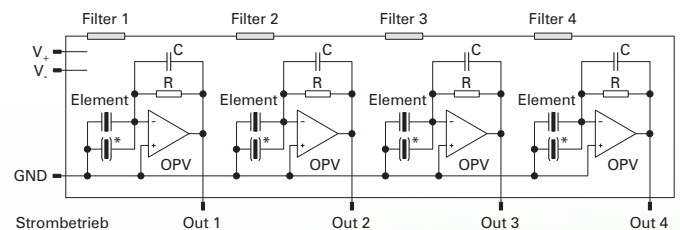
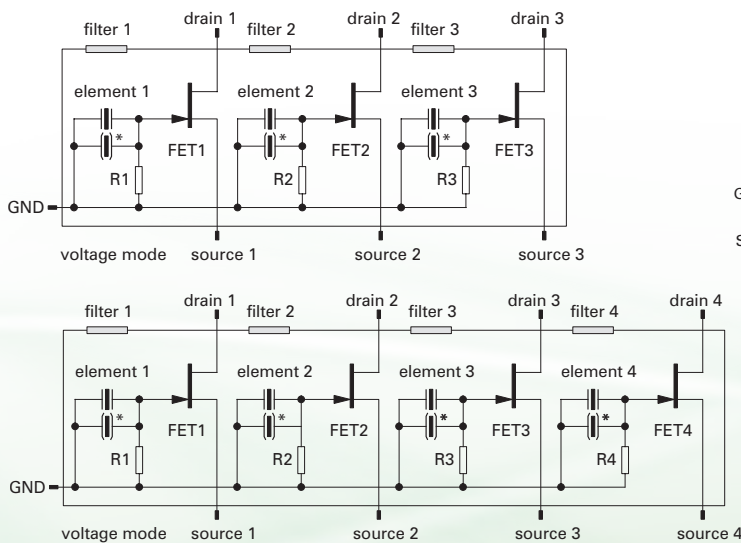
Detector in Voltage Mode with Amplifier



Single-Element and Dual-Channel Detectors in T039 Housing



Three and Four Channel Detectors in T08 Housing



* thermal compensation element



T018



T039



T08



T08



T08