

PRESENTATION

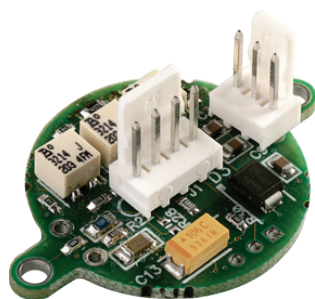
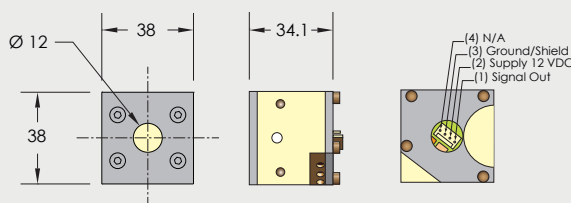
PRODUCT CHARACTERISTICS

Gentec-EO offers OEM customers the highest flexibility so that you make no compromise. Whether you want a different housing, a specific sensitivity or another output connector, we have a solution for you. We will customize existing models or design a whole new detector to meet your needs.



COMPACTNESS

As an OEM, we know space is often a constraint. This is why we offer very compact detectors to ease the integration inside machines. We have built our expertise on detector compactness on our exclusive modular design. Users can mix and match existing detectors and cooling modules from a large set of combinations, thus obtaining the smallest detector possible.



PERFORMANCE

If you select an Ultra Disk (UD Series), you can use our external PCB for signal anticipation, amplification and filtering. We can also integrate a PCB inside complete detectors. See the UP SERIES WITH PCB (Page 146) for details.

Anticipation

0-95% of the signal in as quickly as 0.3 sec with the small UD12-70-H5 and in 0.6 sec with the UD19-200-H5 using our external PCB.

Amplification

Adjust your disk sensitivity to get the perfect voltage for your acquisition system. Disks can be adjusted from 0.6 to 2 V/W.

Filtering

Eliminate the high frequency noise coming from the environment with the integrated low-pass filter of our PCB.



CONNECTIVITY

Gentec-EO offers you several types of output connectors, from the more standard DB-15, BNC and Molex to any exotic type you may need.

DB-15

This connector contains an EEPROM with custom calibration data for both Power and Energy Detectors.

BNC

The BNC output gives you fast, easy installation and the best EMI noise shielding. Perfect for the sensitive Energy Detectors.

Molex

With the Molex connector and pigtail, you join the power and signal wires of the pigtail to your system. Easy to unplug for service.

PRESENTATION

OVERVIEW OF THE DIFFERENT MODELS

Almost anything you see in our product line can be turned into an OEM unit! We also offer standard OEM products, at different levels of integration: from the simple thermopile disk to a complete head with internal PCB for signal anticipation and amplification.



See page 142

UD SERIES

- Thermal Sensor Disks
- Designed for Integration
- Many Sizes and Absorber Choices:
 - 12, 19, 25, and 55 mm Ø Apertures
 - Broadband or High Damage Threshold Coatings

THERMAL SENSOR DISKS



See page 144

UP SERIES

- Complete Thermal Heads with Cooling Modules
- Several Sizes, Coolings and Absorber Choices:
 - 12, 19, 25, 50 and 55 mm Ø Apertures
 - Broadband or High Damage Threshold Coatings
 - Convection, Fan or Water-Cooled
- BNC, Molex or DB-15 Connectors

THERMAL SENSOR HEADS

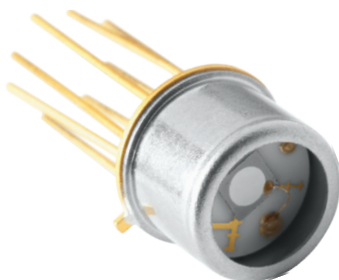


See page 146

UP SERIES WITH PCB

- Complete Thermal Heads with Cooling Modules
- Internal PCB for Amplification, Anticipation and Filtering
- Several Sizes, Coolings and Absorber Choices:
 - 12, 19, 25, 50 and 55 mm Ø Apertures
 - Broadband or High Damage Threshold Coatings
 - Convection, Fan or Water-Cooled
- BNC, Molex or DB-15 Connectors

THERMAL SENSOR HEADS WITH PCB



See pages 148 to 158

QS SERIES

- TO5/T08 Discrete or Hybrid Pyroelectric Detectors
- Available in 5 Sizes: 1, 2, 3, 5 and 9 mm Ø Apertures
- 6 Families of products to choose from
- Test Box Available for Hybrid Detectors

DISCRETE OR HYBRID PYROS SMALL TO5/T08 PACKAGES

UD SERIES

Thermal Sensor Disks, 12 - 55 mm Ø, 1 mW - 400 W



KEY FEATURES

- 1 Designed for Integration**
With a broad bandwidth and high power densities
- 2 Very Thin Profiles**
Starting at only 2 mm deep
- 3 Various Aperture Sizes**
Choose your aperture from 12 mm to 55 mm
- 4 2 Levels of Integration**
 - Disk alone
 - Disk + PCB

AVAILABLE MODELS



UD12-70-H5
(12 mm-70 W)



UD19-150-H5
(19 mm-150 W)



UD19-200-H9
(19 mm-200 W)



UD25-300-H9
(25 mm-300 W)



UD55-400-H9
(55 mm-400 W)



UD19-50-W5
(19 mm-100 kW/cm²)

HOW TO USE SENSOR DISKS

The Ultra Disks were designed for integration into laser systems. They are the solution if you are engineering the cooling and signal processing into your system already. The chart below and on the next page show the various Possibilities that Gentec-EO offers to OEM users. The choice of a level of integration depends on your needs in terms of calibration, output signal level, cooling availability, etc.

- 1 Disk Alone**
 - Thermal Sensor Disk

- 2 Disk + PCB**
 - Thermal Sensor Disk
 - Amplification - Anticipation - Filtering

SEE ALSO

UD SERIES

SPECIFICATIONS



MODELS	UD12-70-H5	UD19-150-H5	UD19-200-H9	UD25-300-H9	UD55-400-H9	UD19-50-W5
MAX AVERAGE POWER (CONTINUOUS / 1 MINUTE)	70 W / 110 W	150 W / 190 W	200 W / 200 W	300 W / 300 W	400 W / 400 W	50 W / 85 W
EFFECTIVE APERTURE	12 mm Ø	19 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø

MEASUREMENT CAPABILITY						
Spectral Range	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 10 µm
Noise Equivalent Power	1 mW	1 mW	3 mW	3 mW	5 mW	1 mW
Rise Time (nominal) ^{a, b}	1.6 sec	2.8 sec	4.5 sec	5 sec	11 sec	5 sec
Sensitivity (typ into 100 kΩ load) ^b	0.53 mV/W	0.65 mV/W	0.23 mV/W	0.23 mV/W	0.12 mV/W	0.65 mV/W
Energy Mode						
Sensitivity	0.84 mV/J	0.65 mV/J	0.23 mV/J	0.14 mV/J	0.03 mV/J	0.33 mV/J
Maximum Measurable Energy ^c	5 J	15 J	25 J	40 J	200 J	200 J
Noise Equivalent Energy ^a	20 mJ	20 mJ	60 mJ	0.2 J	0.25 J	23 mJ
DAMAGE THRESHOLDS						
Maximum Average Power Density	36 kW/cm ²	36 kW/cm ²	45 kW/cm ²	45 kW/cm ²	45 kW/cm ²	100 kW/cm ²
Pulsed Laser Damage Thresholds						
1064 nm, 360 µs, 5 Hz	5 J/cm ²	5 J/cm ²	9 J/cm ²	9 J/cm ²	9 J/cm ²	100 J/cm ²
1064 nm, 7 ns, 10 Hz	1 J/cm ²	1 J/cm ²	1 J/cm ²	1 J/cm ²	1 J/cm ²	1.1 J/cm ²
532 nm, 7 ns, 10 Hz	0.6 J/cm ²	0.6 J/cm ²	0.6 J/cm ²	0.6 J/cm ²	0.6 J/cm ²	1.1 J/cm ²
266 nm, 7 ns, 10 Hz	0.3 J/cm ²	0.3 J/cm ²	0.3 J/cm ²	0.3 J/cm ²	0.3 J/cm ²	0.7 J/cm ²
PHYSICAL CHARACTERISTICS						
Absorber	H5	H9	H9	H9	H9	W5
Dimensions	36Ø x 2D mm	44Ø x 3D mm	44Ø x 3D mm	54Ø x 3D mm	85Ø x 4D mm	44Ø x 3D mm
Weight (head only)	4 g	7 g	7 g	13 g	39 g	7 g
ORDERING INFORMATION						
Full Product Name	UD12-70-H5	UD19-150-H5	UD19-200-H9	UD25-300-H9	UD55-400-H9	UD19-50-W5
Product Number (Including stand)	200382	200262	200576	200263	200264	200761

* Other Sizes Available Upon Request

a. These characteristics depend on the thermal management and electronics provided by the user. Packaging, cooling and electronics similar to our Ultra Series (UP) detectors will provide similar performances. See UP Series specifications sheets for more details. Actual performance depends on the tradeoffs in a user's design. It may be possible to enhance some performance parameters at the expense of others.

b. Without anticipation algorithm or circuitry.

c. For 360 µs pulses. Higher pulse energy possible when customized for long pulses (ms), less for short pulses (ns).

Specifications are subject to change without notice

UP SERIES

Thermal Sensor Heads, 12 - 55 mm Ø, 1 mW - 400 W

KEY FEATURES

- 1 Fully Integrable Thermopile Sensor Heads**
OEM Sensors designed to integrate easily into existing systems
- 2 Modular Concept**
Increase the power capability of your detector :
5 different cooling modules
- 3 Very High Damage Thresholds**
Up to 100 kW/cm² in average power density
- 4 Choice of connectors**
DB-15, BNC, Molex



AVAILABLE MODELS



UP12E

(12 mm Ø-Up to 110 W)



UP19K-H

(19 mm Ø-Up to 200 W)



UP25N(M)

(25 mm Ø-Up to 350 W)



UP55N(M)

(55 mm Ø-Up to 500 W)



UP19K-W5

(18 mm Ø-100 kW/cm²)



UP50N(M)-W9

(50 mm Ø-100 kW/cm²)

LEVELS OF INTEGRATION



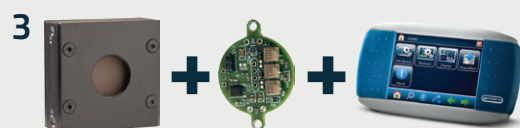
Head Only

- Thermal Sensor Head (with natural response)
- Connector



Head with PCB & Connector

- Thermal Sensor Head
- Amplification - Anticipation - Filtering
- Connector



Head with PCB & Display

- Thermal Sensor Head
- Amplification - Anticipation - Filtering
- Connector
- Display

SEE ALSO

HOW IT WORKS	12
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ABSORPTION CURVES	103
COMPATIBLE MONITORS	
MAESTRO	18
UNO	24
S-LINK-2	26
P-LINK	28

UP SERIES

SPECIFICATIONS



*Also traceable to NRC-CNRC

MODELS	UP12E	UP19K-H	UP25N(M)	UP55N(M)	UP19K-W5	UP50N-W9
MAX AVERAGE POWER (CONTINUOUS / 1 MINUTE)	70 W / 110 W	200 W / 200 W	350 W / 350 W	500 W / 500 W	50 W / 85 W	50 W / 85 W
EFFECTIVE APERTURE	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø

MEASUREMENT CAPABILITY

Spectral Range	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 10 µm	0.19 – 10 µm
Available Cooling Modules (Max. Power)						
Standalone (S)	10 W	15 W	40 W	40 W	15 W	40 W
Heatsink (H)	20 W	30 W	100 W	100 W	30 W	50 W
Large Heatsink (L)	–	50 W	–	–	50 W	–
Fan (F)	–	110 W	250 W	300 W	50 W	50 W
Water (W)	70 W	150 W	350 W	500 W	50 W	50 W
Water (W)	–	200 W	–	–	–	–
Noise Equivalent Power	1 mW	1 mW	3 mW	5 mW	1 mW	5 mW
Rise Time (nominal)	1.6 sec	2.8 sec	5 sec	11 sec	5 sec	16 sec
Sensitivity (typ into 10 MΩ load)	0.53 mV/W	0.65 mV/W	0.23 mV/W	0.12 mV/W	0.65 mV/W	0.12 mV/W
Maximum Average Power Density ^b	36 kW/cm ²	36-45 kW/cm ²	45 kW/cm ²	45 kW/cm ²	100 kW/cm ²	100 kW/cm ²

PHYSICAL CHARACTERISTICS

Effective Aperture Diameter	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø
Absorber	H5	H5/H9	H9	H9	W5	W9
Dimensions ^c	38H x 38W x 14D mm	50H x 50W x 20.6D mm	89H x 89W x 32D mm	89H x 89W x 32D mm	50H x 50W x 20.6D mm	89H x 89W x 32D mm
Weight ^c	130 g	160 g	680 g	620 g	160 g	620 g

ORDERING INFORMATION

Full Product Name (Standalone)	UP12E-10S-H5-DO	UP19K-15S-H5-DO	UP25N-40S-H9-DO	UP55N-40S-H9-DO	UP19K-15S-W5-DO	UP50N-40S-W9-DO
Product Number	200383	200142	200195	200215	200282	200803
Full Product Name (Heatsink)	UP12E-20H-H5-DO	UP19K-30H-H5-DO	UP25N-100H-H9-DO	UP55N-100H-H9-DO	UP19K-30H-W5-DO	UP50N-50H-W9-DO
Product Number	200385	200143	200199	200219	200284	200897
Full Product Name (Large Heatsink)	–	UP19K-50L-H5-DO	–	–	UP19K-50L-W5-DO	–
Product Number	–	200164	–	–	200331	–
Full Product Name (Fan)	–	UP19K-110F-H9-DO	UP25N-250F-H12-DO	UP55N-300F-H12-DO	UP19K-50F-W5-DO	UP50N-50F-W9-DO
Product Number	–	200994	201151	201157	200334	200894
Full Product Name (Water)	UP12E-70W-H5-DO	UP19K-150W-H5-DO	UP25M-350W-H12-DO	UP55M-500W-H12-DO	UP19K-50W-W5-DO	UP50M-50W-W9-DO
Product Number	200389	200194	201893	201882	200300	201887
Full Product Name (Water)	–	UP19K-200W-H9-DO	–	–	–	–
Product Number	–	200582	–	–	–	–

* Other Sizes Available Upon Request

a. For model with the most efficient cooling module available.
b. At 1064 nm, 10 W CW.
c. For standalone version. Ask gentec-EO for dimensions of other versions.

Specifications are subject to change without notice

UP SERIES + PCB

Thermal Sensor Heads with Internal PCB, 12 - 55 mm Ø, 1 mW - 400 W

KEY FEATURES

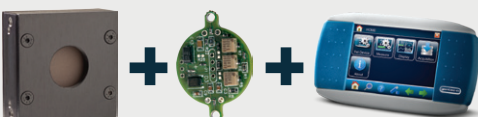
- 1 Fully Integrable Thermopile Sensor Heads**
OEM Sensors designed to integrate easily into existing systems
- 2 With Internal PCB**
Integrated amplification, anticipation and filtering
- 3 Modular Concept**
Increase the power capability of your detector :
5 different cooling modules
- 4 Very High Damage Thresholds**
Up to 100 kW/cm² in average power density
- 5 Largest Choice of connectors**
DB-15, BNC, Molex or custom



AVAILABLE MODELS

- UP12E 12 mm Ø, 10 W, With Rear Molex Output
- UP19K-H 19 mm Ø, 15-30-50-110-150 W, Standard Broadband Coating (H5 or H9)
- UP25N 25 mm Ø, 40-100-250-300 W, Standard Broadband Coating (H9 or H12)
- UP55N 55 mm Ø, 40-100-300-400 W, Standard Broadband Coating (H9 or H12)
- UP19K-W5 17 mm Ø, 15-30-50 W, High Damage Threshold 100 kW/cm² Coating (W5)
- UP50N-W9 50 mm Ø, 40-50 W, High Damage Threshold 100 kW/cm² Coating (W9)

LEVELS OF INTEGRATION

- 1**  **Head Only**
 - Thermal Sensor Head (with natural response)
 - Connector
- 2**  **Head with PCB & Connector**
 - Thermal Sensor Head
 - Amplification - Anticipation - Filtering
 - Connector
- 3**  **Head with PCB & Display**
 - Thermal Sensor Head
 - Amplification - Anticipation - Filtering
 - Connector
 - Display

SEE ALSO

HOW IT WORKS	12
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ABSORPTION CURVES	103
COMPATIBLE MONITORS	
MAESTRO	18
UNO	24
S-LINK-2	26
P-LINK	28

UP SERIES + PCB

SPECIFICATIONS



*Also traceable to NRC-CNRC

MODELS	UP12E	UP19K-H	UP25N	UP55N(M)	UP19K-W5	UP50N-W9
MAX AVERAGE POWER (CONTINUOUS / 1 MINUTE)	70 W / 110 W	200 W / 200 W	350 W / 350 W	500 W / 500 W	50 W / 85 W	50 W / 85 W
EFFECTIVE APERTURE	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø

MEASUREMENT CAPABILITY

Spectral Range	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 10 µm	0.19 – 10 µm
Available Cooling Modules (Max. Power)						
Standalone (S)	10 W	15 W	40 W	40 W	15 W	40 W
Heatsink (H)	–	30 W	100 W	100 W	30 W	50 W
Large Heatsink (L)	–	50 W	–	–	50 W	–
Fan (F)	–	110 W	250 W	300 W	50 W	–
Water (W)	–	150 W	350 W	500 W	50 W	85 W
Water (W)	–	200 W	–	–	–	–
Noise Equivalent Power	0.2 mW	0.2 mW	1-3 mW	2-3 mW	0.2 mW	3 mW
Rise Time (anticipated)	0.3 sec	0.5 sec	1.3 sec	2 sec	1.4 sec	3.5 sec
Sensitivity (typ into 10 MΩ load)	400 mV/W	30-400 mV/W	20-150 mV/W	15-150 mV/W	400 mV/W	120-150 mV/W
Maximum Average Power Density ^b	36 kW/cm ²	36-45 kW/cm ²	45 kW/cm ²	45 kW/cm ²	100 kW/cm ²	100 kW/cm ²

PHYSICAL CHARACTERISTICS

Effective Aperture Diameter	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø
Absorber	H5	H5/H9	H9	H9	W5	W9
Dimensions ^b	38H x 38W x 28.6D mm	50H x 50W x 25.6D mm	89H x 89W x 32D mm	89H x 89W x 32D mm	50H x 50W x 25.6D mm	89H x 89W x 32D mm
Weight ^b	200 g	200 g	680 g	620 g	200 g	620 g

ORDERING INFORMATION ^c

Full Product Name (Standalone)	UP12E-10S-H5-MT-B	UP19K-15S-H5-MT	UP25N-40S-H9-MT	UP55N-40S-H9-MT	UP19K-15S-W5-MT	UP50N-40S-W9-MT
Product Number	200919	200150	200197	200217	200290	200904
Full Product Name (Heatsink)	–	UP19K-30H-H5-MT	UP25N-100H-H9-MT	UP55N-100H-H9-MT	UP19K-30H-W5-MT	UP50N-50H-W9-MT
Product Number	–	200151	200201	200221	Call	200905
Full Product Name (Large Heatsink)	–	UP19K-50L-H5-MT	–	–	UP19K-50L-W5-MT	–
Product Number	–	200166	–	–	Call	–
Full Product Name (Fan)	–	UP19K-110F-H9-MT	UP25N-250F-H12-MT	UP55N-300F-H12-MT	UP19K-50F-W5-MT	–
Product Number	–	200640	201153	201159	Call	–
Full Product Name (Water)	–	UP19K-150W-H5-MT	UP25M-350W-H12-MT	UP55M-500W-H12-MT	UP19K-50W-W5-MT	UP50M-50W-W9-MT
Product Number	–	200152	201899	201918	Call	201919
Full Product Name (Water)	–	UP19K-200W-H9-MT	–	–	–	–
Product Number	–	200585	–	–	–	–

* Other Sizes Available Upon Request

a. For model with the most efficient cooling module available.

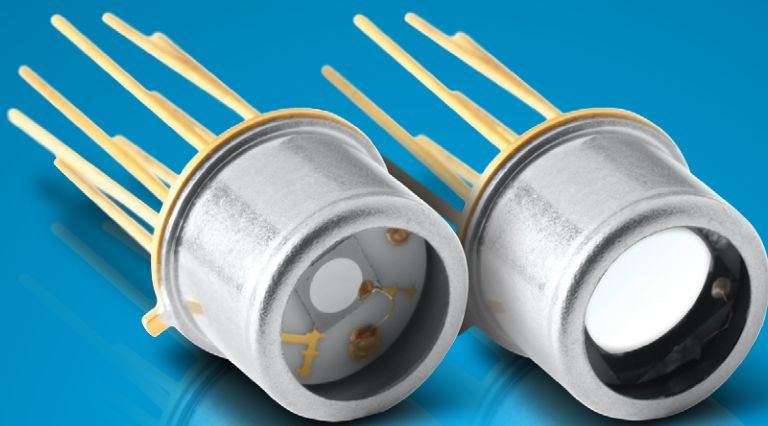
b. For standalone version. Ask gentec-EO for dimensions of other versions.

c. For Molex connector version (-MT). Contact Gentec-EO for other types.

Specifications are subject to change without notice

QS-L

Discrete Pyro Detectors, Low Noise Level



KEY FEATURES

1 Broad Spectral Response

From 0.1 to 100 μm

2 Optimum Current Output

To maximize the detector's thermal time constant

3 Easy to Integrate Format

T05 and T08 packages make the QS detectors small and easy to integrate in an existing system

4 Large Area Sensors

5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5 Several IR Windows in Option

- Quartz: 0.2 – 3.5 μm
- Barium Fluoride: 0.2 – 17.5 μm
- Sapphire: 0.1 – 7.0 μm
- Silicon: 1.2 – 9.0 μm and 22 – 100 μm
- AR Germanium: 1.8 – 23 μm (10.6 μm peak)

AVAILABLE MODELS

- QS1-L 1 mm $\varnothing$, T05 Packaging
- QS2-L 2 mm $\varnothing$, T05 Packaging
- QS3-L 3 mm $\varnothing$, T05 Packaging
- QS5-L 5 mm $\varnothing$, T05 Packaging
- QS9-L 9 mm $\varnothing$, T08 Packaging

ACCESSORIES



Permanent IR Windows
(Various types available)



Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS

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QS-L

SPECIFICATIONS



Approved or in the process of being approved *

MODELS	QS1-L	QS2-L	QS3-L	QS5-L	QS9-L
CURRENT RESPONSIVITY	1 $\mu\text{A/W}$	0.5 $\mu\text{A/W}$	0.5 $\mu\text{A/W}$	0.25 $\mu\text{A/W}$	0.25 $\mu\text{A/W}$
EFFECTIVE APERTURE	1 mm $\varnothing$	2 mm $\varnothing$	3 mm $\varnothing$	5 mm $\varnothing$	9 mm $\varnothing$
PACKAGE	TO5	TO5	TO5	TO5	TO8

MEASUREMENT CAPABILITY

Spectral Range	0.1 - 1000 μm	0.1 - 1000 μm	0.1 - 1000 μm	0.1 - 1000 μm	0.1 - 1000 μm
Max Average Power	50 mW	50 mW	50 mW	50 mW	50 mW
Capacitance (at 1000 Hz)	15 pF	22 pF	60 pF	90 pF	250 pF
Current Responsivity (at 630 nm)	1 $\mu\text{A/W}$	0.5 $\mu\text{A/W}$	0.5 $\mu\text{A/W}$	0.25 $\mu\text{A/W}$	0.25 $\mu\text{A/W}$
Thermal Frequency (3 dB)	3.5 Hz	1.6 Hz	0.8 Hz	0.5 Hz	0.25 Hz
Temperature Coefficient	0.2%/°C	0.2%/°C	0.2%/°C	0.2%/°C	0.2%/°C

PHYSICAL CHARACTERISTICS

Effective Aperture	1 mm $\varnothing$	2 mm $\varnothing$	3 mm $\varnothing$	5 mm $\varnothing$	9 mm $\varnothing$
Package	TO5	TO5	TO5	TO5	TO8
Sensor	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric
Absorber	MT	MT	MT	MT	MT
Dimensions	8.3 $\varnothing$ x 6.4D mm	8.3 $\varnothing$ x 6.4D mm	8.3 $\varnothing$ x 6.4D mm	8.3 $\varnothing$ x 6.4D mm	13.6 $\varnothing$ x 6.4D mm
Weight	1.0 g	1.0 g	1.0 g	1.0 g	1.5 g

ORDERING INFORMATION

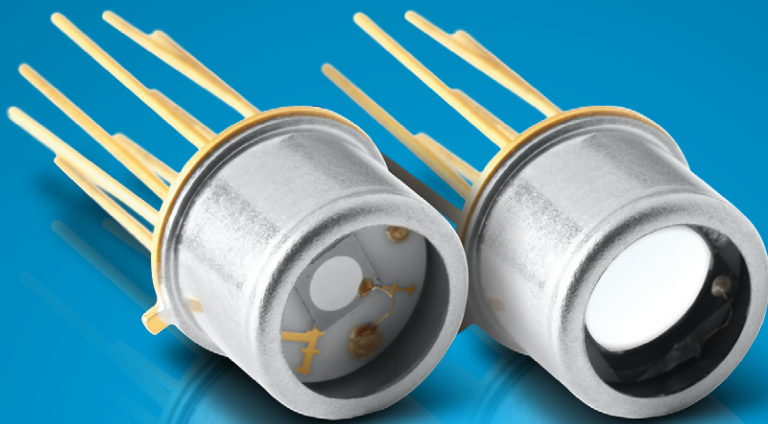
Full Product Name	QS1-L	QS2-L	QS3-L	QS5-L	QS9-L
Product Number	201657	201659	201662	201664	201666

Specifications are subject to change without notice

* For details, contact your Gentec-EO representative

QS-H

Discrete Pyro Detectors, High Average Power



KEY FEATURES

1 Broad Spectral Response

From 0.1 to 100 μm

2 Handles Higher Average Powers

Thanks to a maximized heat dissipation design

3 Easy to Integrate Format

T05 and T08 packages make the QS detectors small and easy to integrate in an existing system

4 Large Area Sensors

5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5 Several IR Windows in Option

- Quartz: 0.2 – 3.5 μm
- Barium Fluoride: 0.2 – 17.5 μm
- Sapphire: 0.1 – 7.0 μm
- Silicon: 1.2 – 9.0 μm and 22 – 100 μm
- AR Germanium: 1.8 – 23 μm (10.6 μm peak)

AVAILABLE MODELS

- QS1-H 1 mm $\varnothing$, T05 Packaging
- QS2-H 2 mm $\varnothing$, T05 Packaging
- QS3-H 3 mm $\varnothing$, T05 Packaging
- QS5-H 5 mm $\varnothing$, T05 Packaging
- QS9-H 9 mm $\varnothing$, T08 Packaging

ACCESSORIES



Permanent IR Windows
(Various types available)



Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS

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QS-H

SPECIFICATIONS



Approved or in the process of being approved *

MODELS	QS1-H	QS2-H	QS3-H	QS5-H	QS9-H
MAX AVERAGE POWER	500 mW	500 mW	500 mW	500 mW	500 mW
EFFECTIVE APERTURE	1 mm Ø	2 mm Ø	3 mm Ø	5 mm Ø	9 mm Ø
PACKAGE	TO5	TO5	TO5	TO5	TO8

MEASUREMENT CAPABILITY					
Spectral Range	0.1 - 1000 µm	0.1 - 1000 µm	0.1 - 1000 µm	0.1 - 1000 µm	0.1 - 1000 µm
Max Average Power	500 mW	500 mW	500 mW	500 mW	500 mW
Capacitance (at 1000 Hz)	3 pF	12 pF	30 pF	90 pF	250 pF
Current Responsivity (at 630 nm)	0.25 µA/W	0.25 µA/W	0.25 µA/W	0.25 µA/W	0.25 µA/W
Thermal Frequency (3 dB)	5 Hz	5 Hz	5 Hz	5 Hz	5 Hz
Temperature Coefficient	0.2%/°C	0.2%/°C	0.2%/°C	0.2%/°C	0.2%/°C
PHYSICAL CHARACTERISTICS					
Effective Aperture	1 mm Ø	2 mm Ø	3 mm Ø	5 mm Ø	9 mm Ø
Package	TO5	TO5	TO5	TO5	TO8
Sensor	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric
Absorber	MT	MT	MT	MT	MT
Dimensions	8.3Ø x 6.4D mm	8.3Ø x 6.4D mm	8.3Ø x 6.4D mm	8.3Ø x 6.4D mm	13.6Ø x 6.4D mm
Weight	1.0 g	1.0 g	1.0 g	1.0 g	1.5 g
ORDERING INFORMATION					
Full Product Name	QS1-H	QS2-H	QS3-H	QS5-H	QS9-H
Product Number	201658	201661	201663	201665	201667

Specifications are subject to change without notice

* For details, contact your Gentec-EO representative

QS-VF

Hybrid Pyro Detectors, Voltage Mode, Fast Response

KEY FEATURES

1 High Frequency Response

Up to 10 MHz

2 Fast Response in Voltage Mode

Optimized frequency response takes full advantage of the pyroelectric detectors' phenomenal response time

3 Easy to Integrate Format

T05 and T08 packages make the QS detectors small and easy to integrate in an existing system

4 Large Area Sensors

5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5 Several IR Windows in Option

- Quartz: 0.2 – 3.5 μm
- Barium Fluoride: 0.2 – 17.5 μm
- Sapphire: 0.1 – 7.0 μm
- Silicon: 1.2 – 9.0 μm and 22 – 100 μm
- AR Germanium: 1.8 – 23 μm (10.6 μm peak)

AVAILABLE MODELS

- QS1-VF 1 mm $\varnothing$, T05 Packaging
- QS2-VF 2 mm $\varnothing$, T05 Packaging
- QS3-VF 3 mm $\varnothing$, T05 Packaging
- QS5-VF 5 mm $\varnothing$, T05 Packaging
- QS9-VF 9 mm $\varnothing$, T08 Packaging

ACCESSORIES



QS-V-TEST
(Test Box in Voltage Mode)



Permanent IR Windows
(Various types available)



Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS

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QS-VF

SPECIFICATIONS



Approved or in the process of being approved *

MODELS	QS1-VF	QS2-VF	QS3-VF	QS5-VF	QS9-VF
VOLTAGE RESPONSIVITY	100 V/W	50 V/W	50 V/W	25 V/W	25 V/W
CURRENT RESPONSIVITY	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
EFFECTIVE APERTURE	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
PACKAGE	T05	T05	T05	T05	T08

MEASUREMENT CAPABILITY

Spectral Range	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m
Max Average Power	50 mW	50 mW	50 mW	50 mW	50 mW
Noise Equivalent Power ^a	2×10^{-8} W/(Hz) ^{1/2}	4×10^{-8} W/(Hz) ^{1/2}	4×10^{-8} W/(Hz) ^{1/2}	1×10^{-7} W/(Hz) ^{1/2}	1×10^{-7} W/(Hz) ^{1/2}
Detectivity ^a	4.4×10^7 cm(Hz) ^{1/2} / W	4.4×10^7 cm(Hz) ^{1/2} / W	6.6×10^7 cm(Hz) ^{1/2} / W	4.4×10^7 cm(Hz) ^{1/2} / W	8.0×10^7 cm(Hz) ^{1/2} / W
Capacitance (at 1000 Hz)	15 pF	22 pF	60 pF	90 pF	250 pF
Current Responsivity (at 630 nm)	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
Voltage Responsivity ^b	100 V/W	50 V/W	50 V/W	25 V/W	25 V/W
Thermal Frequency (3 dB)	3.5 Hz	1.6 Hz	0.8 Hz	0.5 Hz	0.25 Hz
Load Resistor	100 M Ω	100 M Ω	100 M Ω	100 M Ω	100 M Ω
Supply Voltage	+9 to +15 V	+9 to +15 V	+9 to +15 V	+9 to +15 V	+9 to +15 V

PHYSICAL CHARACTERISTICS

Effective Aperture	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
Package	T05	T05	T05	T05	T08
Sensor	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric
Absorber	MT	MT	MT	MT	MT
Dimensions	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	13.6 $\emptyset$ x 6.4D mm
Weight	1.0 g	1.0 g	1.0 g	1.0 g	1.5 g

ORDERING INFORMATION

Full Product Name	QS1-VF	QS2-VF	QS3-VF	QS5-VF	QS9-VF
Product Number	201668	201669	201670	201671	201672

^a: 630 nm, 15 Hz, 1 Hz Bandwidth
^b: 630 nm, 15 Hz

Specifications are subject to change without notice

QS-V-TEST EVALUATION TEST BOX



Batteries
 R_L Resistors
 C_f Compensating
 Package
 Optical Mount
 Front Bezel

QS-V-TEST

+9V
 $10^5 - 10^{10} \Omega$
 NO
 101.6H x 127W x 58.4D
 1/4-20 Threaded
 SM1 (1.035-40)

* For details, contact your Gentec-EO representative

QS-VL

Hybrid Pyro Detectors, Voltage Mode, Low Noise Level



KEY FEATURES

- 1 Low Noise Level in Voltage Mode**
Ultra low noise Field-Effect Transistor (FET) and $G\Omega$ resistor for unparalleled performance from 1 Hz to 1 KHz
- 2 High Voltage Response**
Up to 900 V/W
- 3 Easy to Integrate Format**
TO5 and TO8 packages make the QS detectors small and easy to integrate in an existing system
- 4 Large Area Sensors**
5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier
- 5 Several IR Windows in Option**
 - Quartz: 0.2 – 3.5 μm
 - Barium Fluoride: 0.2 – 17.5 μm
 - Sapphire: 0.1 – 7.0 μm
 - Silicon: 1.2 – 9.0 μm and 22 – 100 μm
 - AR Germanium: 1.8 – 23 μm (10.6 μm peak)

AVAILABLE MODELS

- QS1-VL 1 mm $\varnothing$, TO5 Packaging
- QS2-VL 2 mm $\varnothing$, TO5 Packaging
- QS3-VL 3 mm $\varnothing$, TO5 Packaging
- QS5-VL 5 mm $\varnothing$, TO5 Packaging
- QS9-VL 9 mm $\varnothing$, TO8 Packaging

ACCESSORIES



QS-V-TEST
(Test Box in Voltage Mode)



Permanent IR Windows
(Various types available)



Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS

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QS-VL

SPECIFICATIONS



Approved or in the process of being approved *

MODELS	QS1-VL	QS2-VL	QS3-VL	QS5-VL	QS9-VL
VOLTAGE RESPONSIVITY	900 V/W	200 V/W	90 V/W	25 V/W	15 V/W
CURRENT RESPONSIVITY	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
EFFECTIVE APERTURE	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
PACKAGE	T05	T05	T05	T05	T08

MEASUREMENT CAPABILITY

Spectral Range	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m
Max Average Power	50 mW	50 mW	50 mW	50 mW	50 mW
Noise Equivalent Power ^a	3×10^{-10} W/(Hz) ^{1/2}	6×10^{-10} W/(Hz) ^{1/2}	1×10^{-9} W/(Hz) ^{1/2}	2×10^{-9} W/(Hz) ^{1/2}	5×10^{-9} W/(Hz) ^{1/2}
Detectivity ^a	2.9×10^8 cm(Hz) ^{1/2} / W	3.0×10^8 cm(Hz) ^{1/2} / W	2.7×10^8 cm(Hz) ^{1/2} / W	2.2×10^8 cm(Hz) ^{1/2} / W	1.6×10^8 cm(Hz) ^{1/2} / W
Capacitance (at 1000 Hz)	15 pF	22 pF	60 pF	90 pF	250 pF
Current Responsivity (at 630 nm)	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
Voltage Responsivity ^b	900 V/W	200 V/W	90 V/W	25 V/W	15 V/W
Thermal Frequency (3 dB)	3.5 Hz	1.6 Hz	0.8 Hz	0.5 Hz	2.5 Hz
Load Resistor	300 G Ω	300 G Ω	100 G Ω	100 G Ω	100 G Ω
Supply Voltage	+9 to +15 V	+9 to +15 V	+9 to +15 V	+9 to +15 V	+9 to +15 V

PHYSICAL CHARACTERISTICS

Effective Aperture	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
Package	T05	T05	T05	T05	T08
Sensor	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric
Absorber	MT	MT	MT	MT	MT
Dimensions	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	13.6 $\emptyset$ x 6.4D mm
Weight	1.0 g	1.0 g	1.0 g	1.0 g	1.5 g

ORDERING INFORMATION

Full Product Name	QS1-VL	QS2-VL	QS3-VL	QS5-VL	QS9-VL
Product Number	201673	201674	201676	201677	201678

^a: 630 nm, 15 Hz, 1 Hz Bandwidth
^b: 630 nm, 15 Hz

Specifications are subject to change without notice

QS-V-TEST EVALUATION TEST BOX



Batteries
 R_L Resistors
 C_f Compensating
 Package
 Optical Mount
 Front Bezel

QS-V-TEST

+9V
 $10^5 - 10^{10} \Omega$
 NO
 101.6H x 127W x 58.4D
 1/4-20 Threaded
 SM1 (1.035-40)

* For details, contact your Gentec-EO representative

QS-IF

Hybrid Pyro Detectors, Current Mode, Fast Response

KEY FEATURES

1 High Frequency Response

From 1 KHz to 20 MHz

2 Fast Response in Current Mode

The QS-IF take full advantage of the pyroelectric detectors' fast response times

3 Easy to Integrate Format

T05 and T08 packages make the QS detectors small and easy to integrate in an existing system

4 Large Area Sensors

5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5 Several IR Windows in Option

- Quartz: 0.2 – 3.5 μm
- Barium Fluoride: 0.2 – 17.5 μm
- Sapphire: 0.1 – 7.0 μm
- Silicon: 1.2 – 9.0 μm and 22 – 100 μm
- AR Germanium: 1.8 – 23 μm (10.6 μm peak)

AVAILABLE MODELS

- QS1-IF 1 mm $\varnothing$, T05 Packaging
- QS2-IF 2 mm $\varnothing$, T05 Packaging
- QS3-IF 3 mm $\varnothing$, T05 Packaging
- QS5-IF 5 mm $\varnothing$, T05 Packaging
- QS9-IF 9 mm $\varnothing$, T08 Packaging

ACCESSORIES



QS-I-TEST
(Test Box in Current Mode)



Permanent IR Windows
(Various types available)



Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS

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QS-IF

SPECIFICATIONS



Approved or in the process of being approved *

MODELS	QS1-IF	QS2-IF	QS3-IF	QS5-IF	QS9-IF
VOLTAGE RESPONSIVITY	100 V/W	50 V/W	50 V/W	25 V/W	25 V/W
CURRENT RESPONSIVITY	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
EFFECTIVE APERTURE	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
PACKAGE	T05	T05	T05	T05	T08

MEASUREMENT CAPABILITY

Spectral Range	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m
Max Average Power	50 mW	50 mW	50 mW	50 mW	50 mW
Noise Equivalent Power ^a	5×10^{-8} W/(Hz) ^{1/2}	8×10^{-8} W/(Hz) ^{1/2}	8×10^{-8} W/(Hz) ^{1/2}	1.6×10^{-7} W/(Hz) ^{1/2}	1.6×10^{-7} W/(Hz) ^{1/2}
Detectivity ^a	1.8×10^6 cm(Hz) ^{1/2} / W	2.2×10^6 cm(Hz) ^{1/2} / W	3.3×10^6 cm(Hz) ^{1/2} / W	2.8×10^6 cm(Hz) ^{1/2} / W	5.0×10^6 cm(Hz) ^{1/2} / W
Capacitance (at 1000 Hz)	15 pF	22 pF	60 pF	90 pF	250 pF
Current Responsivity (at 630 nm)	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
Voltage Responsivity ^b	100 V/W	50 V/W	50 V/W	25 V/W	25 V/W
Thermal Frequency (3 dB)	3.5 Hz	1.6 Hz	0.8 Hz	0.5 Hz	0.25 Hz
Feedback Resistor	100 M Ω	100 M Ω	100 M Ω	100 M Ω	100 M Ω
Supply Voltage	± 12 V	± 12 V	± 12 V	± 12 V	± 12 V

PHYSICAL CHARACTERISTICS

Effective Aperture	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
Package	T05	T05	T05	T05	T08
Sensor	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric
Absorber	MT	MT	MT	MT	MT
Dimensions	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	13.6 $\emptyset$ x 6.4D mm
Weight	1.0 g	1.0 g	1.0 g	1.0 g	1.5 g

ORDERING INFORMATION

Full Product Name	QS1-IF	QS2-IF	QS3-IF	QS5-IF	QS9-IF
Product Number	201679	201680	201681	201682	201683

^a: 630 nm, 15 Hz, 1 Hz Bandwidth
^b: 630 nm, 15 Hz

Specifications are subject to change without notice

QS-I-TEST EVALUATION TEST BOX



Batteries
 R_f Resistors
 C_f Compensating
 Package
 Optical Mount
 Front Bezel

QS-I-TEST

+9V/-9V
 $10^5 - 10^{10} \Omega$
 YES
 101.6H x 127W x 58.4D
 1/4-20 Threaded
 SM1 (1.035-40)

* For details, contact your Gentec-EO representative

QS-IL

Hybrid Pyro Detectors, Current Mode, Low Noise Level

KEY FEATURES

1 High Voltage Response in Current Mode

This family of pyro detectors offers a $10^{11} \Omega$ chip resistor that results in an incredible 50 000 V/W voltage response

2 Low Noise Level

The high voltage response allows to detect signals down in the nW range!

3 Easy to Integrate Format

T05 and T08 packages make the QS detectors small and easy to integrate in an existing system

4 Large Area Sensors

5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5 Several IR Windows in Option

- Quartz: 0.2 – 3.5 μm
- Barium Fluoride: 0.2 – 17.5 μm
- Sapphire: 0.1 – 7.0 μm
- Silicon: 1.2 – 9.0 μm and 22 – 100 μm
- AR Germanium: 1.8 – 23 μm (10.6 μm peak)

AVAILABLE MODELS

- QS1-IL 1 mm $\varnothing$, T05 Packaging
- QS2-IL 2 mm $\varnothing$, T05 Packaging
- QS3-IL 3 mm $\varnothing$, T05 Packaging
- QS5-IL 5 mm $\varnothing$, T05 Packaging
- QS9-IL 9 mm $\varnothing$, T08 Packaging

ACCESSORIES



QS-I-TEST
(Test Box in Current Mode)



Permanent IR Windows
(Various types available)



Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS

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QS-IL

SPECIFICATIONS



Approved or in the process of being approved *

MODELS	QS1-IL	QS2-IL	QS3-IL	QS5-IL	QS9-IL
VOLTAGE RESPONSIVITY	50 kV/W	25 kV/W	25 kV/W	13 kV/W	13 kV/W
CURRENT RESPONSIVITY	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
EFFECTIVE APERTURE	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
PACKAGE	T05	T05	T05	T05	T08

MEASUREMENT CAPABILITY

Spectral Range	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m	0.1 - 1000 μ m
Max Average Power	50 mW	50 mW	50 mW	50 mW	50 mW
Noise Equivalent Power ^a	8×10^{-10} W/(Hz) ^{1/2}	2×10^{-9} W/(Hz) ^{1/2}	2×10^{-9} W/(Hz) ^{1/2}	6×10^{-9} W/(Hz) ^{1/2}	6×10^{-9} W/(Hz) ^{1/2}
Detectivity ^a	1.1×10^8 cm(Hz) ^{1/2} / W	9.0×10^7 cm(Hz) ^{1/2} / W	1.3×10^8 cm(Hz) ^{1/2} / W	7.0×10^7 cm(Hz) ^{1/2} / W	1.3×10^8 cm(Hz) ^{1/2} / W
Capacitance (at 1000 Hz)	15 pF	22 pF	60 pF	90 pF	250 pF
Current Responsivity (at 630 nm)	1 μ A/W	0.5 μ A/W	0.5 μ A/W	0.25 μ A/W	0.25 μ A/W
Voltage Responsivity ^b	50 kV/W	25 kV/W	25 kV/W	13 kV/W	13 kV/W
Thermal Frequency (3 dB)	3.5 Hz	1.6 Hz	0.8 Hz	0.5 Hz	0.25 Hz
Feedback Resistor	100 G Ω	100 G Ω	100 G Ω	100 G Ω	100 G Ω
Supply Voltage	± 5 to ± 12 V	± 5 to ± 12 V	± 5 to ± 12 V	± 5 to ± 12 V	± 5 to ± 12 V

PHYSICAL CHARACTERISTICS

Effective Aperture	1 mm $\emptyset$	2 mm $\emptyset$	3 mm $\emptyset$	5 mm $\emptyset$	9 mm $\emptyset$
Package	T05	T05	T05	T05	T08
Sensor	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric	Pyroelectric
Absorber	MT	MT	MT	MT	MT
Dimensions	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	8.3 $\emptyset$ x 6.4D mm	13.6 $\emptyset$ x 6.4D mm
Weight	1.0 g	1.0 g	1.0 g	1.0 g	1.5 g

ORDERING INFORMATION

Full Product Name	QS1-IL	QS2-IL	QS3-IL	QS5-IL	QS9-IL
Product Number	201684	201685	201686	201687	201688

^a: 630 nm, 15 Hz, 1 Hz Bandwidth
^b: 630 nm, 15 Hz

Specifications are subject to change without notice

QS-I-TEST EVALUATION TEST BOX



Batteries
 R_f Resistors
 C_f Compensating
 Package
 Optical Mount
 Front Bezel

QS-I-TEST

+9V/-9V
 $10^5 - 10^{10} \Omega$
 YES
 101.6H x 127W x 58.4D
 1/4-20 Threaded
 SM1 (1.035-40)

* For details, contact your Gentec-EO representative