



SIP package TO39

SIP package TO8

Features

- Very small size
- High signal-to-noise ratio
- Bandwidth up to 250 MHz
- Dedicated for operation with 2-, 3- and 4-stage TE cooled or uncooled detectors
- Biased and non-biased detector compatible
- Adjustable gain (for bandwidth up to 100 MHz)
- Fully protected against exceeding supply voltage and reversing power supply polarity
- Custom modifications upon request
- Additional accessories available

Description

SIP is the ultra small transimpedance, AC or DC coupled preamplifier. It is dedicated for OEM applications and requires external heat sink (see Recommended Accessories).

SIP is designed for operation with either biased or non-biased and either cooled or uncooled detectors.

Applications

- Contactless temperature measurement
- Free space optical communication
- Laser radiation detection
- Gas analysis
- Fourier spectroscopy
- Fire, flame and human body detection
- Pyrometers, scanners
- Nondestructive material testing
- OEM applications

Preamplifier Specification

Parameter	Symbol	Unit	Typical Value	Conditions, Remarks
Input Noise Voltage Density	e_n	$\frac{nV}{\sqrt{Hz}}$	0.97 – 8.0 ¹⁾	$f_o = 10 \text{ kHz}^2)$
Input Noise Current Density	i_n	$\frac{nV}{\sqrt{Hz}}$	0.02 – 3.5 ¹⁾	$f_o = 10 \text{ kHz}^2)$
Low Cut-Off Frequency	f_{lo}	Hz	DC 10 to 10k	DC coupling set AC coupling set
High Cut-Off Frequency	f_{hi}	Hz	100k to 250M	
Transimpedance	K_i	$\frac{V}{A}$	up to 10 ⁵	
Transimpedance Range	$\frac{K_{i \max}}{K_{i \min}}$	-	up to 5	dependent on the high cut-off frequency
Output Impedance	R_{out}	Ω	50	
Output Voltage Swing	V_{out}	V	± 10 ± 1	$f_{hi} \leq 1 \text{ MHz}, R_L = 1 \text{ M}\Omega^3)$ $1 \text{ MHz} < f_{hi} \leq 250 \text{ MHz}, R_L = 50 \Omega^3)$
Output Voltage Offset	V_{off}	mV	max $\pm 20^4)$	
Power Supply Voltage	V_{sup}	V	± 15 ± 9	$f_{hi} \leq 1 \text{ MHz}$ $1 \text{ MHz} < f_{hi} \leq 250 \text{ MHz}$
Power Supply Current	I_{sup}	mA	max ± 50	no detector biasing
Dimensions	-	mm×mm×mm	27×44.5×25 27×49.4×25	width×depth×height – SIP package TO39 width×depth×height – with 2TE, 3TE, 4TE

Electrical characteristics @ $T_a = 20 \text{ }^\circ\text{C}$

¹⁾ The preamplifier noise may significantly reduce the system performance in some situations.

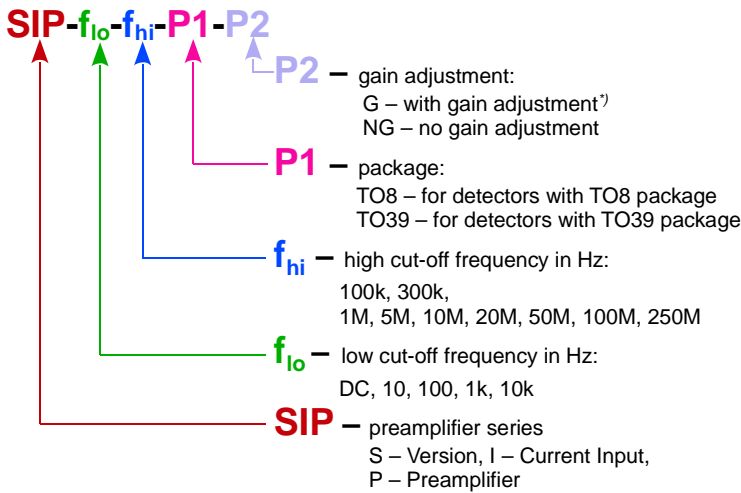
This happens for large capacitance detectors operating at high frequencies

²⁾ f_o – noise measurement frequency

³⁾ R_L – load resistance

⁴⁾ Measured with equivalent resistor at the input instead of the detector. It's to avoid the environmental thermal radiation's impact

Preamplifier Code Description



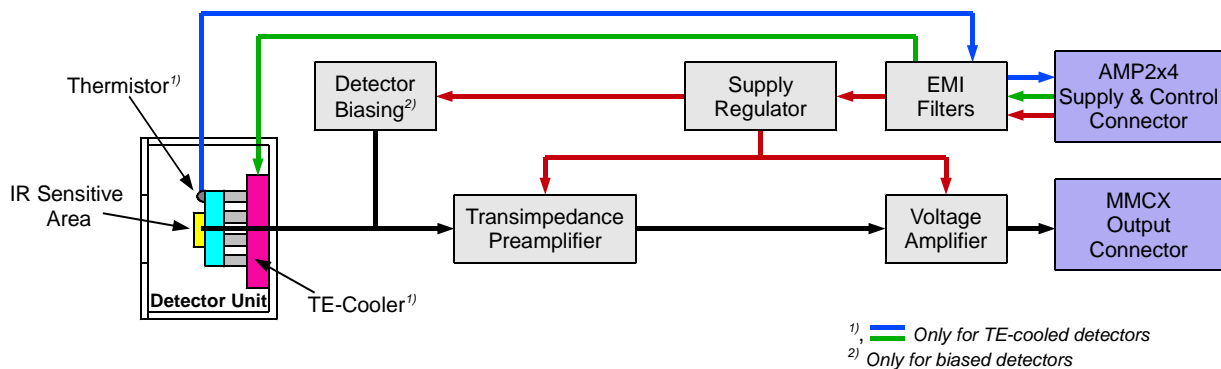
The preamplifier can be integrated with following types IR detectors:

Detector Type	Description
PC, PC-2TE, PC-3TE, PC-4TE	photoconductive
PCI, PCI-2TE, PCI-3TE, PCI-4TE	photoconductive, optically immersed
PV, PV-2TE, PV-3TE, PV-4TE	photovoltaic
PVI, PVI-2TE, PVI-3TE, PVI-4TE	photovoltaic, optically immersed
PVM, PVM-2TE, PVM-3TE, PVM-4TE	multiple heterojunction photovoltaic
PVMI, PVMI-2TE, PVMI-3TE, PVMI-4TE	multiple heterojunction photovoltaic, optically immersed

Symbol -2TE, -3TE, -4TE means 2-, 3- or 4-stage TEC integrated with detector

¹⁾ available only for f_{hi} to 100M

Schematic Diagram

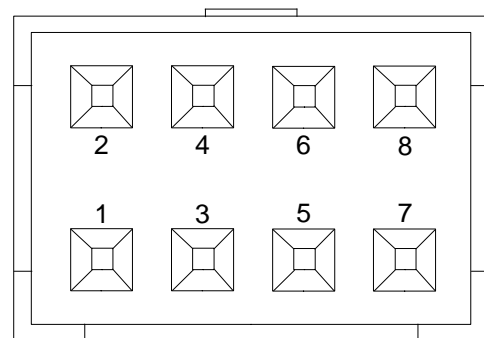


Power Supply and TEC Control Connector

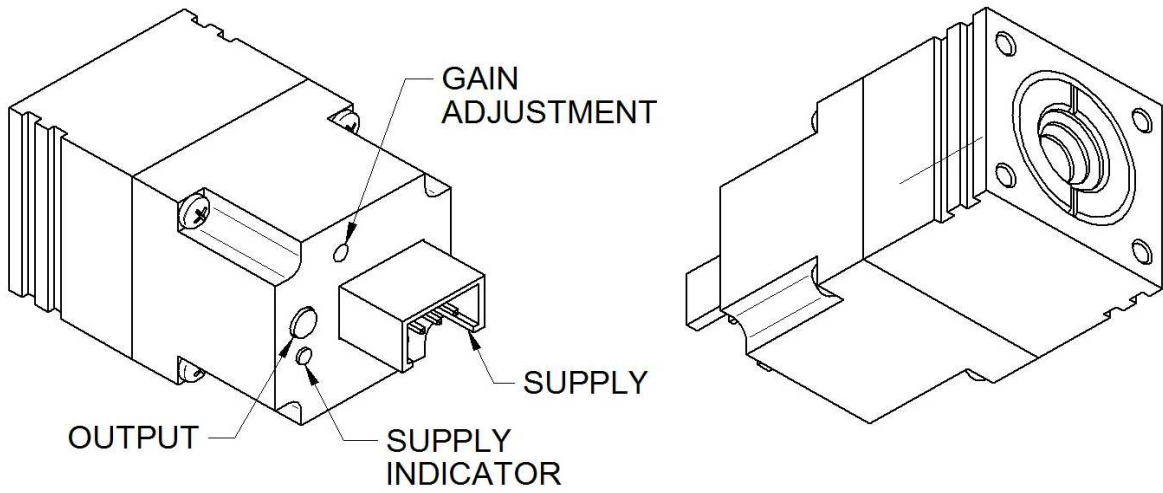
Pin Number	Symbol	Function
1	-V _{sup}	power supply input (-)
2 ¹⁾	TH2/N.C.	thermistor output/not connected
3	GND	power ground
4 ¹⁾	TEC-/N.C.	TEC supply input (-)/not connected
5	GND	power ground
6 ¹⁾	TH1/N.C.	thermistor output/not connected
7	+V _{sup}	power supply input (+)
8 ¹⁾	TEC+/N.C.	TEC supply input (+)/not connected

¹⁾N.C for SIP-f_{lo}-f_{hi}-TO39

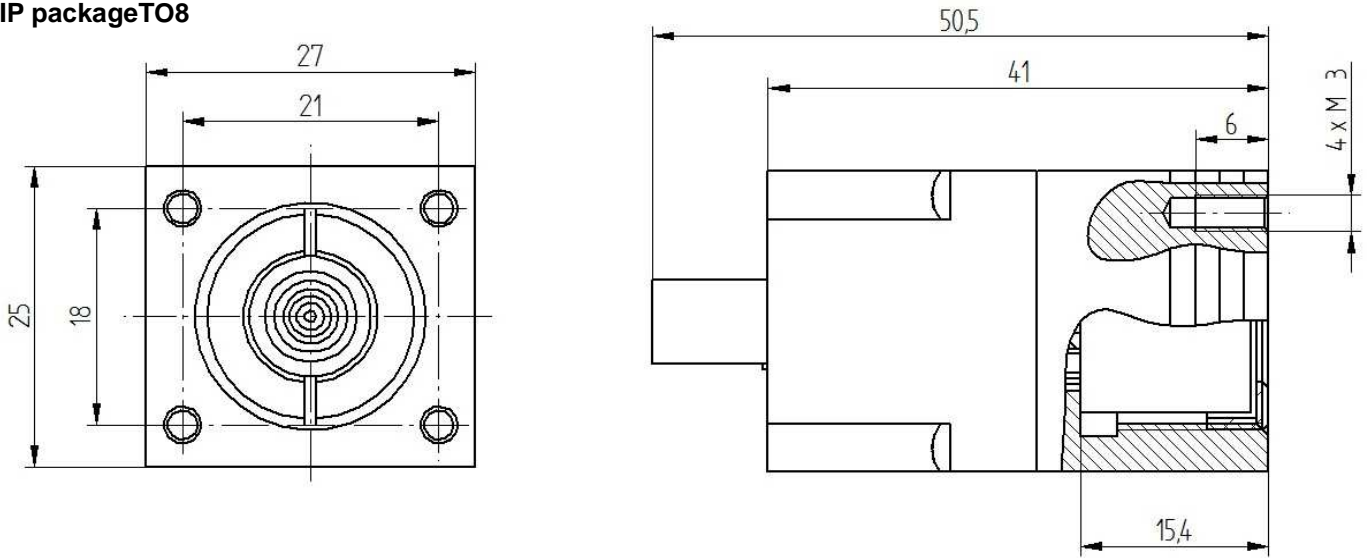
AMP2x4 Connector Male



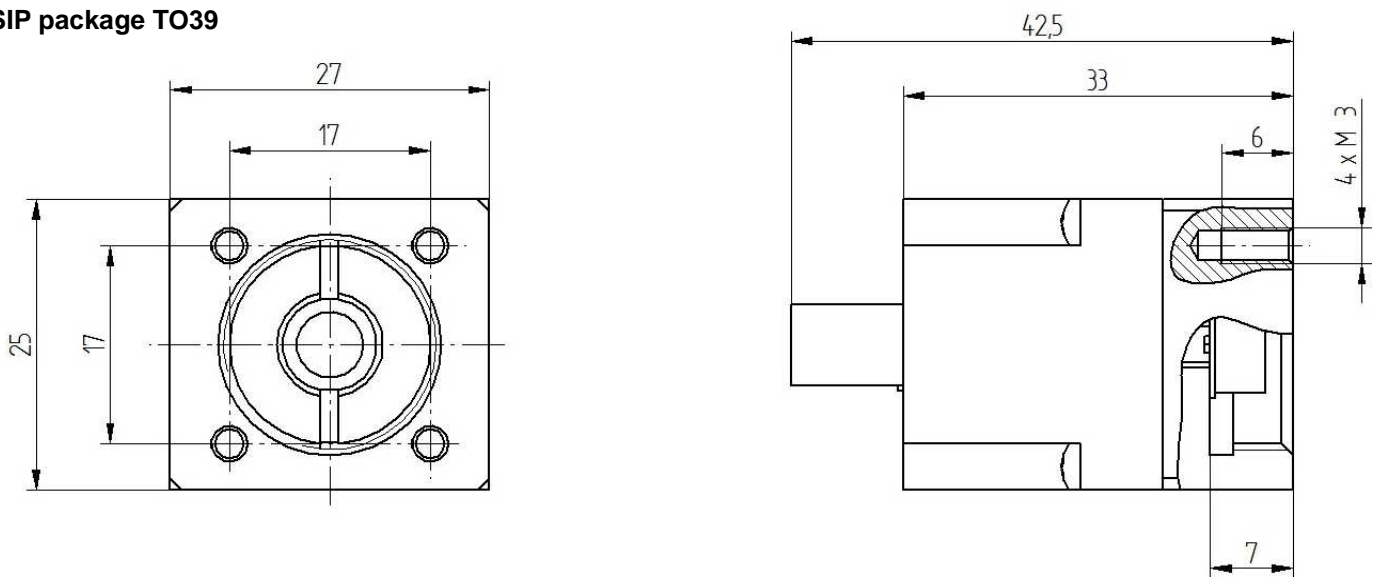
Physical Dimensions [mm]



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Recommended Accessories

PTCC-01-OEM	PTTC-01-BAS	PTCC-01-ADV	STCC-04	MTCC-01
Programmable "Smart" TEC Controller – OEM	Programmable "Smart" TEC Controller – Basic	Programmable "Smart" TEC Controller – Advanced	Standard TEC Controller	Miniature TEC Controller
MPPS-01	PPS-02	PPS-03	MMCX-BNC	MMCX-SMA
Preamplifier Power Supply	Preamplifier Power Supply	Preamplifier Power Supply	Signal Output Cable	Signal Output Cable
AMP2x4-DB9	AMP2x4-DUBOX2x5	AMP2x4-AMP2x4	AMP2x4-MIC5	AMP1x6-MIC5
TEC and Supply Cable	TEC and Supply Cable	TEC and Supply Cable	Power Supply Cable	Power Supply Cable
AMP1x6-POWER	KK2-POWER	USB: TypeA-MicroB	AC Adaptor	Power Cable EU
Power Supply Cable	Power Supply Cable	Cable for PC Connection	Power Supply Adaptor	Power Cable
Power Cable UK	Power Cable US	MHS-2		
Power Cable	Power Cable	Additional Heat Sink		