

TIA56

56 Gb/s Transimpedance Amplifier

MICRAM

Type: Module	Technology: SiGe	f_T / f_{max} : 170/250 GHz	Metallization: 4	Ref.-No.: R1031
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Brief description

The TIA56 is a versatile high-speed transimpedance amplifier for data rates up to 56 Gb/s. Key features are:

- single-ended and differential I/O operation,
- very high small signal gain,
- small signal and limiting operation,
- high cut-off frequency,
- low noise,
- adjustable input offset,
- output sense for offset control,
- tunable frequency response,
- dc and ac coupled operation,
- single supply voltage.

The TIA56 consists of a fully symmetrical differential input buffer. This allows differential as well as single ended drive and is optimized for 50 Ω line termination.

For applications which require adjustable input bias or compensation of DC input currents (e.g. photodiodes) the TIA56 allows to adjust the bias input current for each input independently. This feature can e.g. be used for offset cancellation, pulse shaping, duty cycle adjustment or vertical sampling-point adjustment.

The TIA56 exhibits a fully symmetrical differential output buffer which provides either one differential output signal or two single ended output signals. The output amplitude is set to typ. 500 mV_{pp} (differential signal).

Main fields of application are:

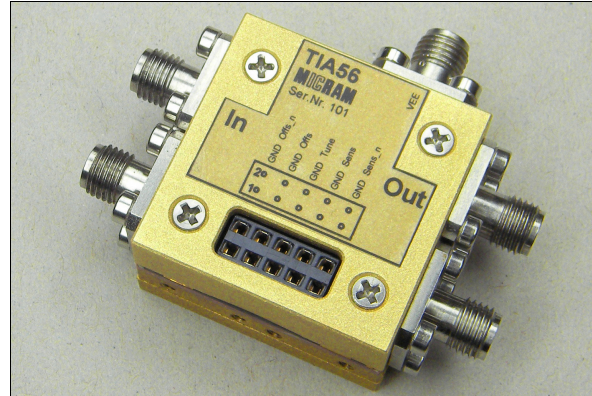
- TIA for photoreceiver,
- single-ended to differential conversion,
- differential to single-ended conversion,
- amplitude regeneration,
- active power/signal splitter,
- 50 Ω line driver.

Package

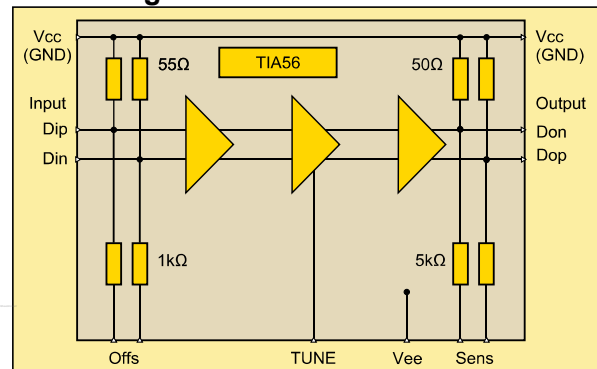
The TIA56 is available as bare die or as a ruggedized module equipped with K connectors. Other connector types are available upon request.

For further information on the TIA56 please contact your MICRAM sales representative.

TIA56 Module with K-Connectors



Block diagram of the TIA56



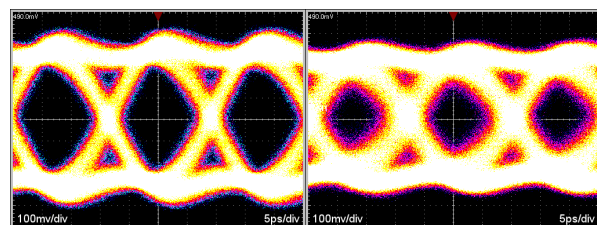
TIA56 data

Power supply, (V _{ee})	-4.5 ... -5.5 V
Current consumption	85 mA @ -5.2 V
S11, S22 (f < 20) GHz	-12 dB
Input amplitude range	5 mV _{pp} - 1 V _{pp}
Output amplitude	0.5 V _{pp} , 56 Gb/s
Gain / Transimpedance	~ 40 dB / 5 k Ω
Cutoff frequency	~ 30 GHz (adjustable)
Input related noise	< 30 pA / $\sqrt{\text{Hz}}$

Output Eye Diagrams at 56 Gb/s

Left: Input 800 mV_{pp}

Right: Input 8 mV_{pp}



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