



# Intel® LXT16865

## Transimpedance Amplifier (TIA)

### Product Description

The Intel® LXT16865 is a high-gain Transimpedance Amplifier (TIA) designed to convert and amplify an optical signal into an electrical signal for further processing.

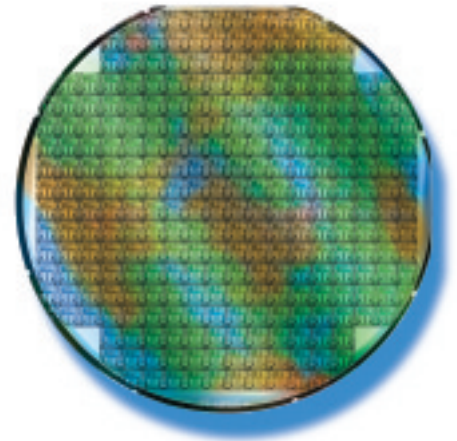
Used in conjunction with a photodetector and featuring a differential gain of  $12\text{k}\Omega$ , the LXT16865 is intended for SONET/SDH transmission systems at 9.953, 10.3, and 10.7Gbps data rates.

The Intel LXT16865 delivers the following features:

- output signal swing up to  $2 \times 200\text{mV}$
- input current overload:  $2\text{mA}_{\text{app}}$
- input DC current control circuit
- automatic offset and output swing control

The LXT16865 requires a single power supply  $+3.3\text{V}$  and dissipates less than  $160\text{mW}$ , allowing the customer to relax the power budget of the optical receiver or module. The TIA provides high optical input sensitivity (as good as  $-20\text{dBm}$ ) which makes it suitable for long-haul transmissions. The LXT16865 is designed in well-proven SiGe BiCMOS process and is available as die.

The Intel LXT16865 is a four-stage TIA. A large value transimpedance provides significant output amplitude for the next device, even at small input current. The output connection can be either AC- or DC-coupled.

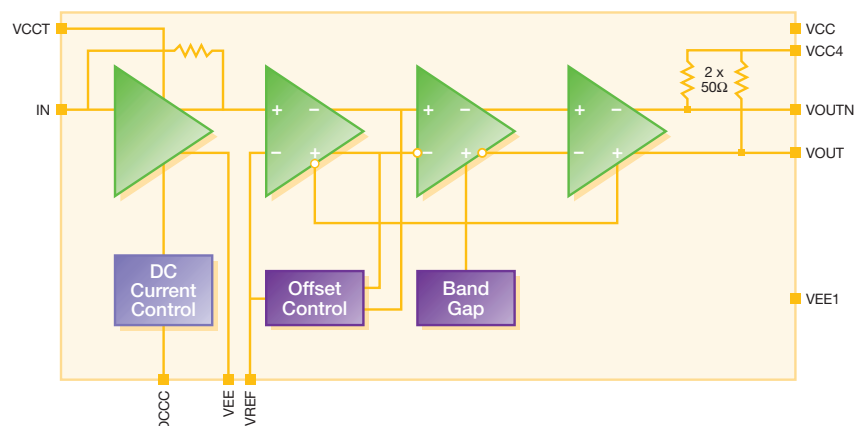


The input stage is directly connected to the photodiode anode to receive, amplify, and convert a small photodiode current to a voltage signal at line rates of up to 10.7Gbps. Second, third, and fourth stages are intended to amplify this voltage signal, transform it to a differential signal, and arrange  $50\Omega$  output matching. Because the input stage is single-ended and the second and third stages are differential, an on-chip circuit is used to control the offset level.

### Key Applications

- Telecommunication transmission systems STM 64/OC-192
- Dense Wavelength Division Multiplexing (DWDM) applications
- 10.7Gbps Forward Error Correction (FEC) and Optical Transport Network (OTN) transmission
- Metro and Long-Haul optical receiver

### Block Diagram



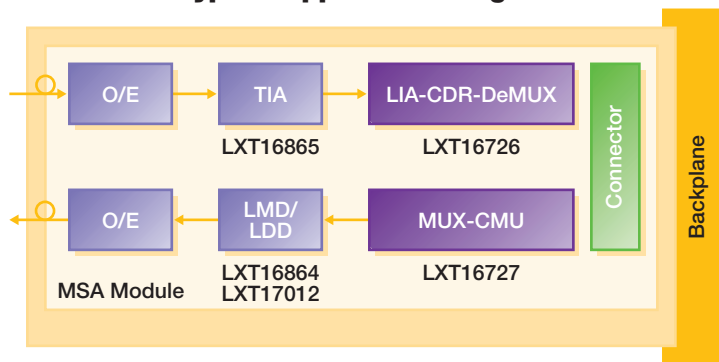
## Features

- Low power dissipation 160mW
- 12k $\Omega$  differential gain
- -20dBm optical input sensitivity
- Automatic output swing and offset control
- Up to 10.7Gbps speed

## Benefits

- Relaxes total power budget
- Provides high amplification stage and makes further processing easier
- Increases signal quality and transmission distance
- Provides stable and high quality output eye
- Suitable for FEC and OTN applications

## Typical Application Diagram



## Support Collateral

Item	Description	Order Number
LXT16865	Data Sheet	250694-001
LXD90865	Demo Board Data Sheet	Contact your local rep.
LXT16865	Test report	Contact your local rep.

## Intel Access

Developer's Site	<a href="http://developer.intel.com">http://developer.intel.com</a>
Networking Components Home Page	<a href="http://developer.intel.com/design/network">http://developer.intel.com/design/network</a>
Other Intel Support: Intel Literature Center	<a href="http://developer.intel.com/design/litcentr">http://developer.intel.com/design/litcentr</a> (800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
General Information Hotline	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

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