

## High Sensitivity 10 Gbps TIA

### 1. Introduction

#### 1.1 Description & Features

The i7650 is a high sensitivity transimpedance amplifier (TIA) die with automatic gain control (AGC) that gives a wide dynamic range of 25 dB. The i7650 is user configurable for desired bit rate, where the nominal rates supported are fiber channel 8G rates, as well as the 10 Gigabit Ethernet rate of 10.3125Gbps. The i7650 has a typical input overload of 2 mApp, it supports short-haul fiber optic systems. Additionally, a typical input sensitivity of -20dBm allows the detection of very small signals in a noisy environment.

In order to satisfy such high sensitivity and optical overload requirements, the i7650 includes automatic gain control (AGC). The AGC monitors the output amplitude and automatically reduces the TIA gain when the photodiode current exceeds the AGC threshold, maintaining the output at a constant amplitude level for input signals exceeding the AGC threshold.

An accurate replica across the entire dynamic range of the i7650 of the average photodiode current is available at the MON pad for photo-alignment and RSSI average power monitoring.

#### 1.2 Applications

- 10 Gigabit Ethernet.
- 8X Fibre Channel.
- SONET OC-192/SDH-64.
- XFP and SFP+ Transceiver Modules.

### 2. Die Pin configuration and Definition

