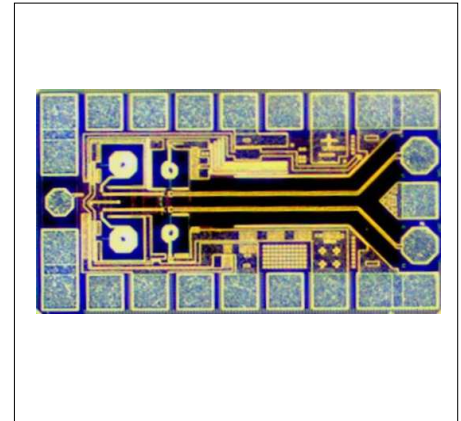


Transimpedance Amplifier 40 Gbit/s

Product Code: T40-150C IC



Sample image only. Actual product may vary.

Preliminary

Product Description

The T40-150C is a high speed transimpedance amplifier IC designed for use by 40G receiver modules in fiber optic transmission systems. The T40-150C operates from a single +3.3 V supply typically dissipating 145mW of DC power and is designed for the use with PIN photodetectors in a wire-bond or flip-chip design.

Features

- 0.25 μm SiGe-BiCMOS technology
- Supports data rates of up to 40 Gbit/s
- Low power consumption: typ. 145mW
- Input sensitivity -10 dBm
- 3.3V power supply
- Dimensions 0.7mm x 0.5mm

Applications

- Fiber optics systems tests
- Research and development
- Short reach receiver
- IEEE 40/100G transceiver

All product specifications and descriptions are subject to change without notice.

Transimpedance Amplifier T40-150C

Preliminary

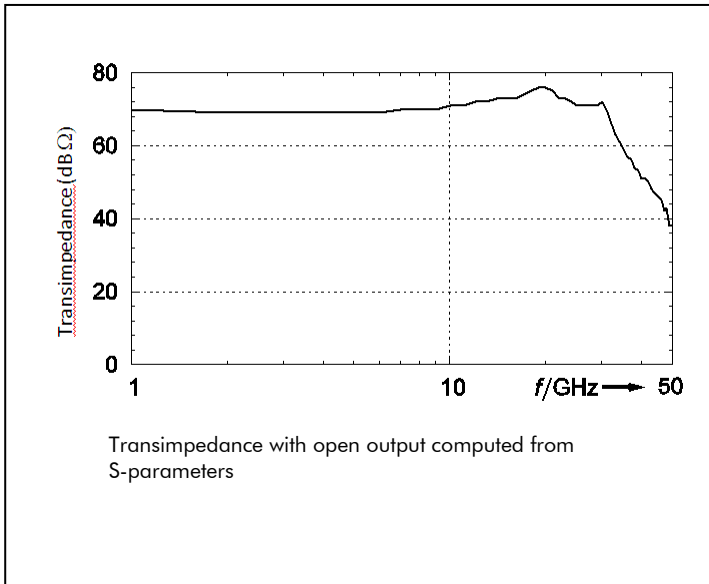
Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Maximum Data Rate		10^{-12}	40			Gbit/s
Differential Transimpedance Gain	Z_T	Diff. p-p F=100 MHz			70	$\text{dB}\Omega$
Input current	I_{IN}		40		2000	$\mu\text{A p-p}$
Input Linear Range		+/- 5%	100			$\mu\text{A p-p}$
Differential Output Amplitude (Limited)	V_{OUTp} - V_{OUTn}	For $I_{IN} > 500\mu\text{A}$ p-p	0.75	1	1.35	V
Small Signal Z_T BW (3dB)	BW	Assumes VIS Photodiode	30			GHz
Rise / Fall Time	t_R / t_F	20-80% for $I_{IN} >$ 0.5mA p-p	7	10	12	ps
Group Delay Variation				+/- 5	+/- 10	ps
Input-Referred RMS Noise	$I_{N_{rms}}$	40GHz BW		3.8	5	μA
Total Jitter	J_T	Peak-to-peak, no filter			1.5	ps
Output voltage	$V_{pp,d}$			500		mV
Output Return Loss	RL_{OUT}	< 40 GHz	7	10		dB
Input AC Signal Current	I_{IN}				20	$\mu\text{A p-p}$

**Transimpedance Amplifier
T40-150C**

Transimpedance

Preliminary



Absolute Maximum Ratings

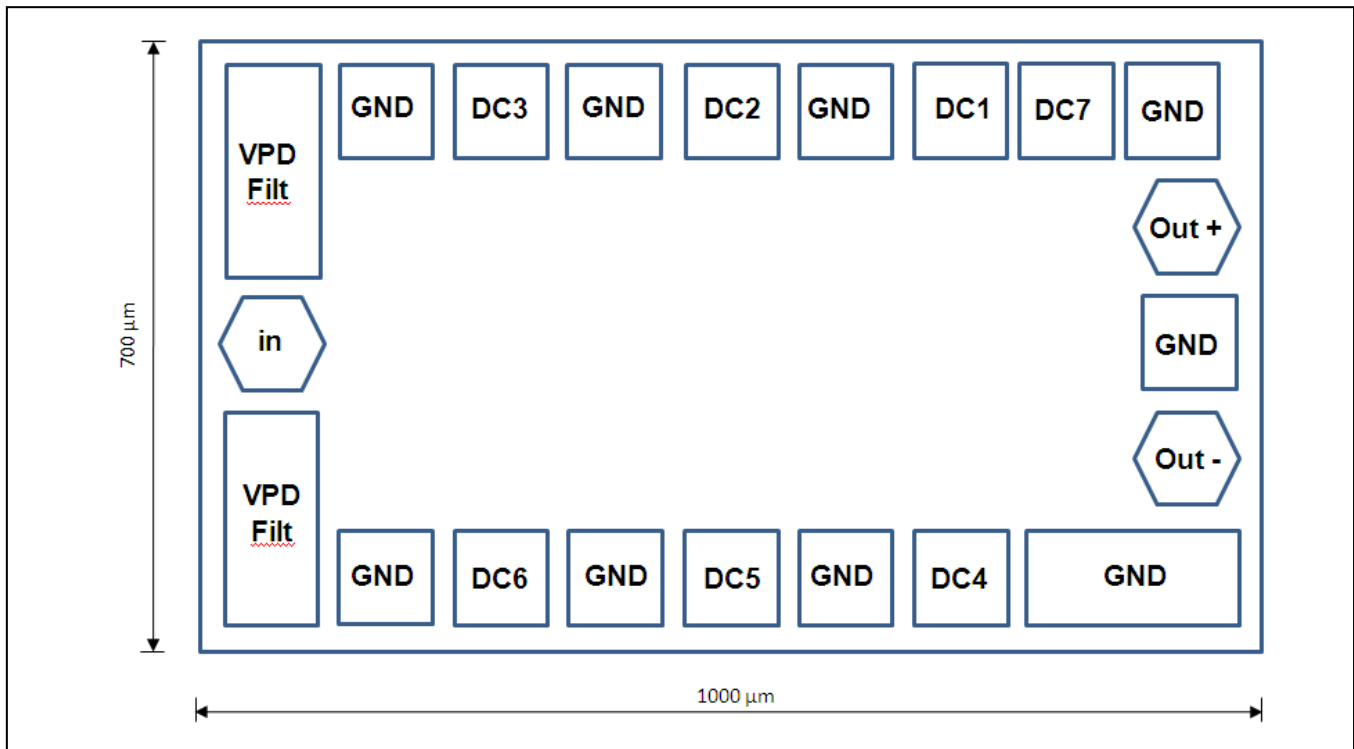
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Voltage	V_{CC}		-0.5		5	V
Continuous Input Current	I_{IN}				3	mA
Shipping/Storage Temp.	T_{ST}		-40		+125	°C
Soldering Temp.	T_{SD}	< 10 sec			+300	°C

Operating Conditions

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Voltage	V_{CC}		+3.1	+3.3	+3.4	V
Power Dissipation	P_D			150		mW
Operating Temperature	T_J		-10	+25	+85	°C

Preliminary

Pad Layout (top view)



Name	Pin	Description	Function
input	In	Data input: from PIN photodiode	Input
RF GND	VPD Filt	Ground (PIN photodiode)	Input
out-/out+	out-/out+	Data outputs: Positive CML	Output
Cblock	DC7	100nF (optional)	Output
Vcc	DC4/DC5/DC6	Power Supply: connect to +3.3V	Supply
Vbias PD	DC3	min. 2.0 V to 5.0 V	Supply
Vmod	DC2	0 to 3.3V / typ. 1.65V	Supply
Ving	DC1	0 to 3.3V / typ. 1.65V	Supply
GND	GND	Ground	Supply



Transimpedance Amplifier T40-150C

Limited Qualification Notification

The T40-140C has been tested to meet specifications outlined in this data sheet at room temperature. However, it has not undergone full qualification testing or characterization and therefore may not meet the performance specifications over all extremes.

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