



GTRAN 12.5 GB/s Limiting Amplifier Specifications GT10-5000LA

Description

The GT10-5000LA is a high performance SiGe 12.5GB/s limiting amplifier IC designed for use in receiver modules for fiber optic transmission systems such as SDH STM-64 and SONET OC-192. If used in die form it has sufficient bandwidth to be used in double forward error correction systems at 12.5 Gb/s. The limiting amplifier IC features a single supply voltage.

Features

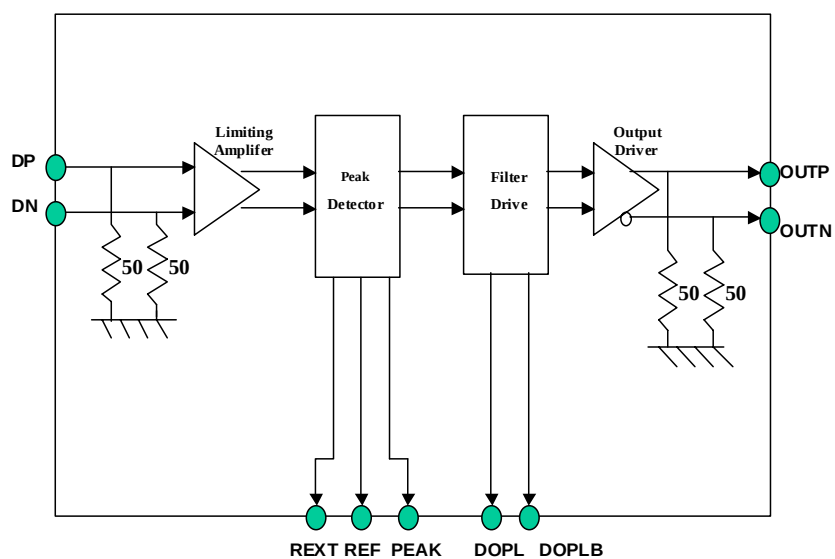
- 34 dB differential gain
- Single power supply of -5.2v or -3.3v
- 0.71W or .25W typical power dissipation
- CML interface compatible output ($0.61\text{ V}_{\text{p-p}}$ differential)
- Available in die or plastic package
- 50Ω input internal termination
- 50Ω output internal termination
- 25ps typical output rise/fall times
- Peak detector and reference outputs

Applications

- SDH STM-64
- SONET OC-192
- SONET OC-192 with dual FEC



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Specifications

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Operating temperature (case)	Tc	0	100	°C
Storage temperature	Ts	-40	150	°C
Electrical input voltage (DATA)	Vin	-3.0	0.5	V
Input current (DATA)	Iin	-	50	mA
Power supply voltage	VEE	-7.0	0.5	V
ESD protection	ESD	-	TBD	V

Recommended Operating Conditions

Parameter		Symbol	Min	Typ	Max	Unit
Operating temperature (case)		Temp	0	25	85	°C
Power supply		VEE	-5.5	-	-3.3	V
Single-ended	Sensitivity	Vin	2.5	-	-	mV _{p-p}
Input DATA level Vpp	Overload		-	-	1000	

Performance Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Negative Vee supply current -5.2v	I(Vee)	120	130	150	mA
Negative Vee supply current -3.3v	I(Vee)	75	83	90	mA
Power dissipation -5.2v VEE	Pd	676	712	780	mW
Power dissipation -3.3v VEE	Pd	247	274	297	mW
Differential output swing under limiting conditions(RL=50Ω)	Vpp	-	0.6	-	V _{p-p}
Small Signal 3dB Bandwidth *		9.5	10.5	11.5	GHz
Small Signal 3dB Bandwidth die		11	11.5	12.5	GHz
Output rise time	Tr	-	25	35	ps
Output fall time	Tf	-	25	35	ps
Output overshoot/undershoot	Vos	-	-	10	%
Input return loss	S11	-15	-	-8	dB
Output return loss	S22	-15	-	-8	dB
Output Jitter (RMS)	Jitter	-	1.4	2.0	ps
Small Signal Gain, single ended	Gain	26	28	-	dB
Input Offset	Voff	-	TBD	5	mV

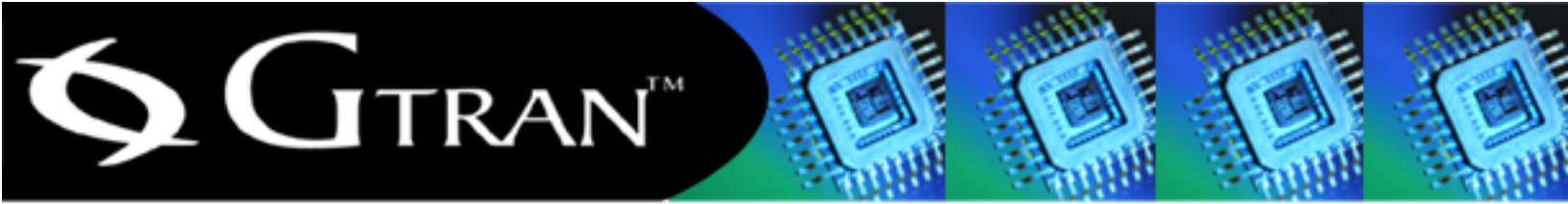
*Plastic package performance



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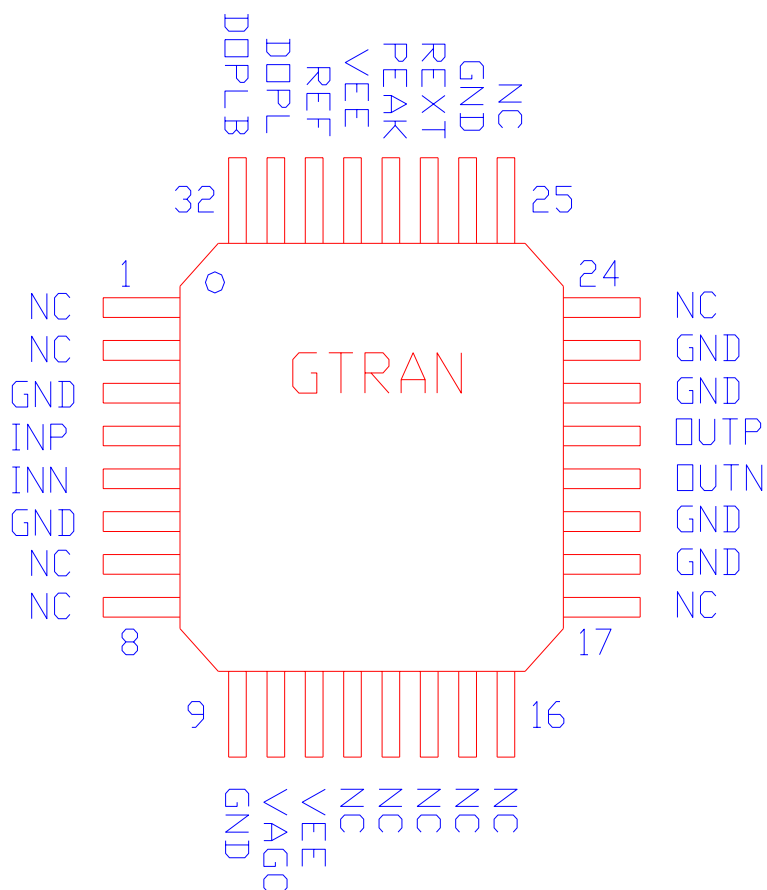
Pin Descriptions

Pin Name	Descriptions	Type	Comments
INP	Data signal input (AC/DC coupled)	RF	50 Ω impedance to ground. Data could be single-ended or differential.
INN	Data signal input (AC/DC coupled)	RF	50 Ω impedance to ground. Data could be single-ended or differential.
DOPL	Drive signal for DC feedback	DC	Signal for use with GT5010 Differential Transimpedance amplifier for input offset control
DOPLB	Drive signal for DC feedback	DC	Signal for use with GT5010 Differential Transimpedance amplifier for input offset control
VEE	Negative Supply Voltage	POWER	-5.2 to -3.3 V
REF	Reference level for peak detector output	DC	Equal to loss of signal level if REXT is left open. With REXT, forms AGC loop with PEAK.
PEAK	Peak detector output	DC	Indicates the average peak voltage of the output
REXT	External resistor connection to set the reference level	DC	Optional connection
GND	Ground	GND	Ground
OUTP	Data signal output (AC/DC coupled)	RF	50 Ω back-terminated
OUTN	Data signal output (AC/DC coupled)	RF	50 Ω back-terminated



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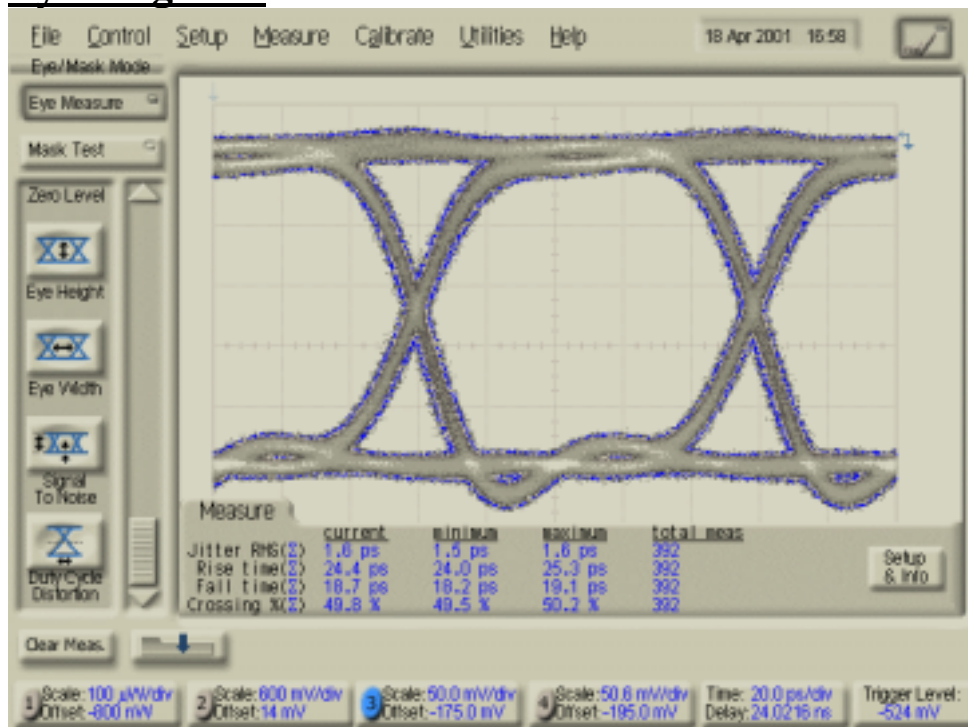
Pin Configuration for the Limiting Amp



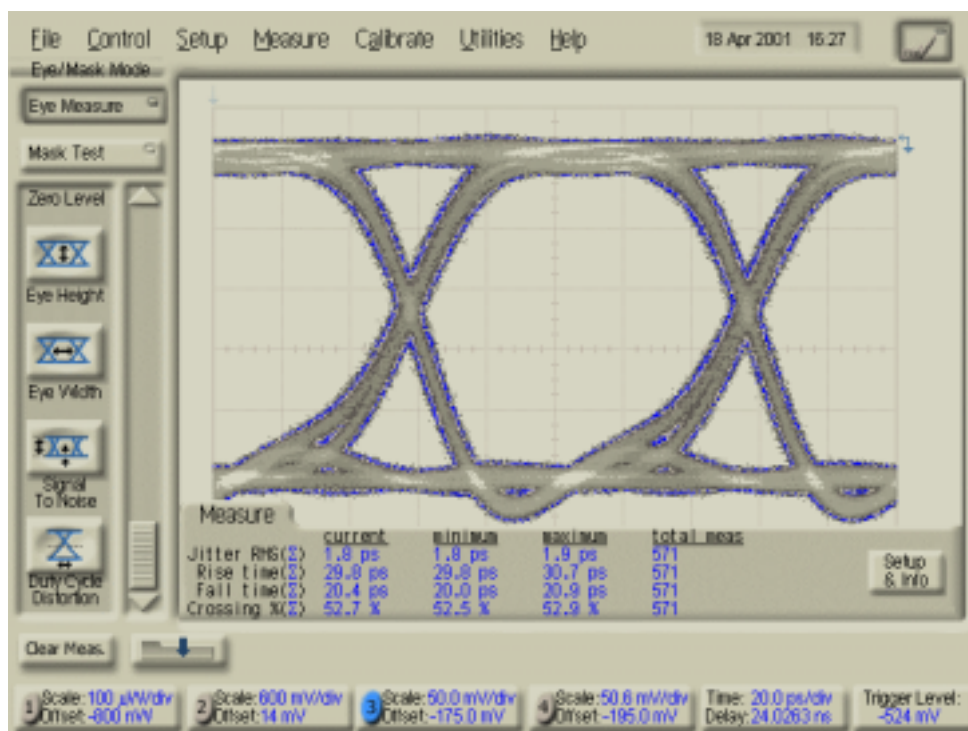


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Eye Diagrams



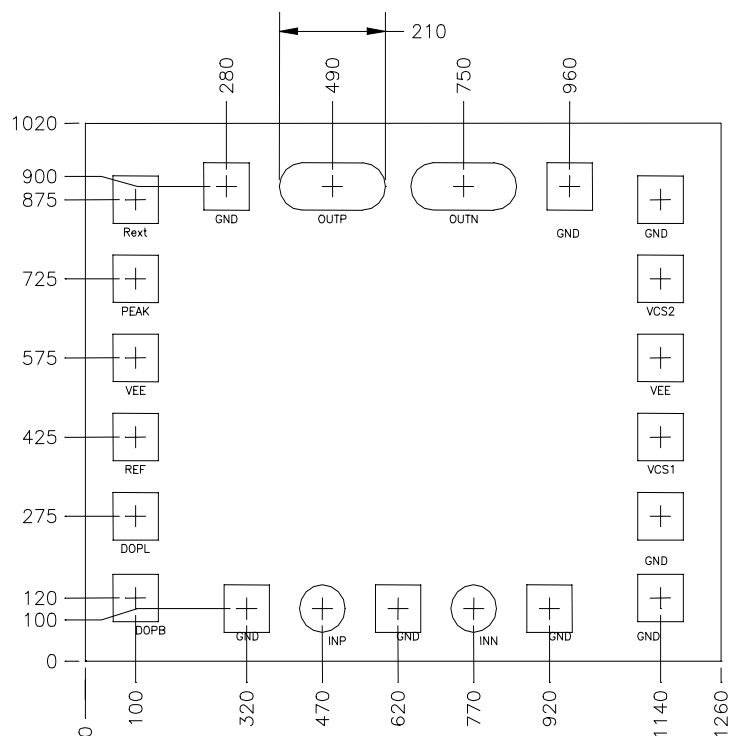
Output Eye at input = 1V Single ended





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Output Eye at Input = 25mV Single ended.



IC Pad Layout

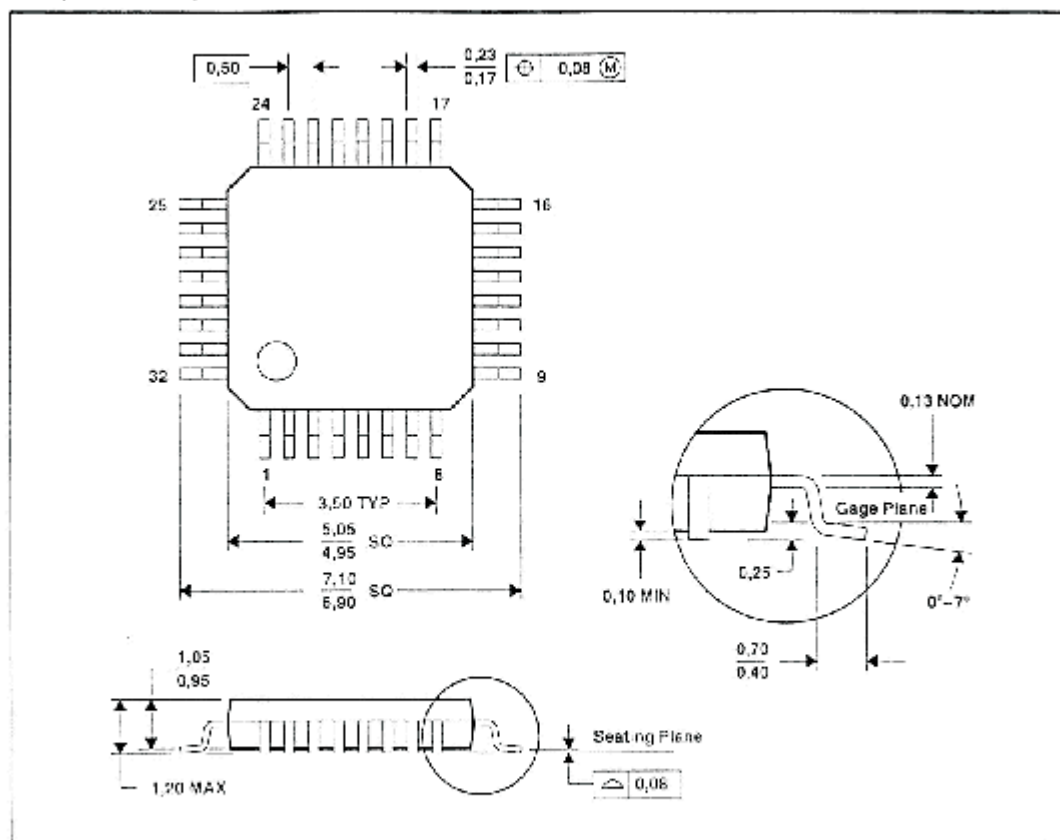
Square pads are 90 x 90 μm
 Pad pitch = 150 μm center-to-center
 Die size = 1.0 x 1.2 mm



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PBS (S-PQFP-G32)

PLASTIC QUAD FLATPACK



NOTES: A. All linear dimensions are in millimeters.
B. This drawing is subject to change without notice.

GTRAN

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