AZ88923

High Speed Limiting Post Amplifier

www.azmicrotek.com

DESCRIPTION

The AZ88923 is a limiting post amplifier usable at data rates up to 2.5Gbps. It is ideal for use as a post amplifier following a transimpedance amplifier.

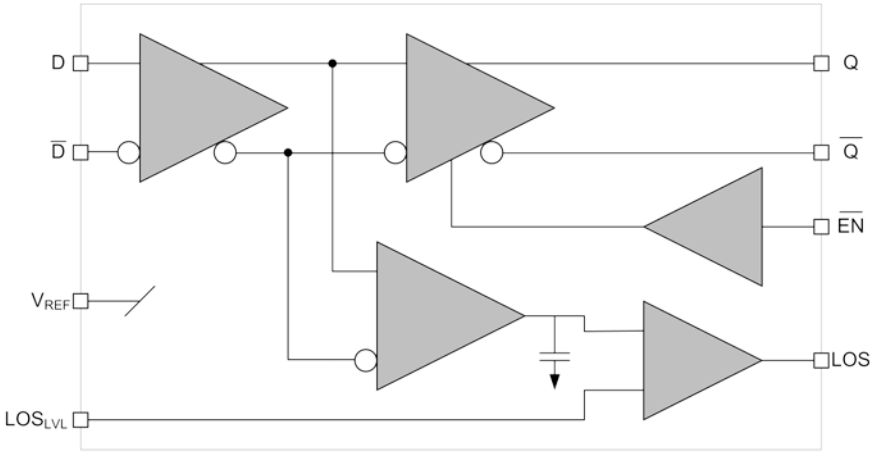
The AZ88923 contains a programmable loss of signal detect function to determine when the input signal has been lost. This information can be used with the $\overline{EN}$ input pin to disable the output under LOS conditions. The detect threshold can be set with a resistor divider between V_{CC} and V_{REF}. The LOS output is an open drain compatible with CMOS and TTL.

The outputs produce standard PECL 100K voltage compensated levels.

FEATURES

- Up to 2.5Gbps operation
- Differential PECL Inputs
- Differential PECL Outputs
- Open Drain TTL/CMOS LOS output
- TTL/CMOS Enable input
- High Speed SiGe Process

BLOCK DIAGRAM



APPLICATIONS

- General applications

PACKAGE AVAILABILITY

- MSOP10
- Green/RoHS Compliant/Pb-Free

Order Number	Package	Marking
AZ88923U[1]	MSOP10	AZ88923[2]

[1] Tape & Reel - Add 'R1' at end of order number for 7in (1k parts), 'R2' (2.5k) for 13in

[2] See www.azmicrotek.com for date code format

PIN DESCRIPTION AND CONFIGURATION

Table 1 - Pin Description

Pin	Name	Type	Function
1	$\overline{EN}$	Input	Output Enable
2	D	Input	Data Input
3	$\overline{D}$	Input	Data Input
4	V_{REF}	Input	Select Input
5	LOS_{LVL}	Input	LOS Threshold
6	GND	Power	Ground
7	LOS	Output	LOS Output
8	$\overline{Q}$	Output	PECL Output
9	Q	Output	PECL Output
10	V_{CC}	Power	Positive Supply

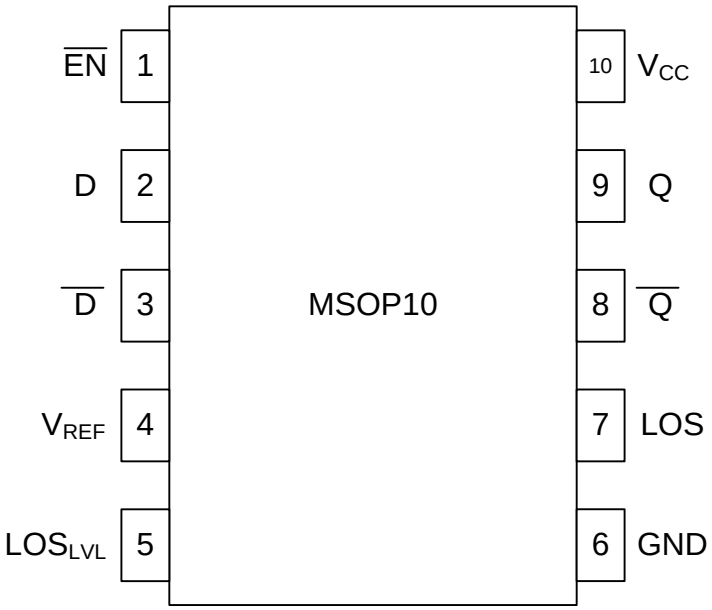


Figure 1 - Pin Configuration for MSOP10

ENGINEERING NOTES

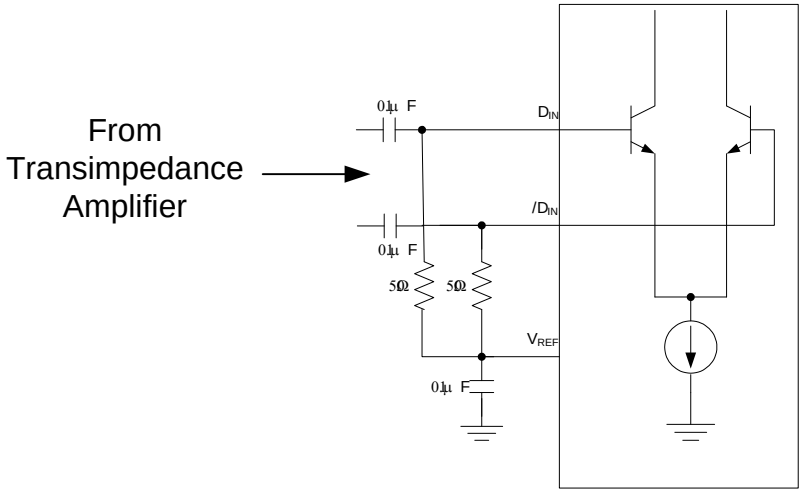


Figure 2 - Differential Input Configuration

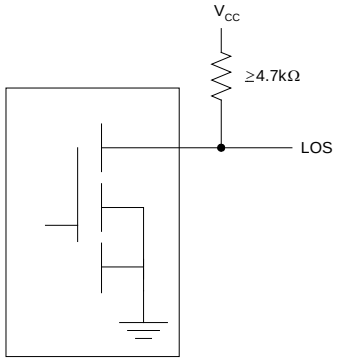


Figure 3 - LOS Output

$$LOS_{LVL} = V_{CC} - 1.32V + \frac{R_2 * 1.32V}{R_1 + R_2}$$

$$R_1 + R_2 \geq 2.6k\Omega$$

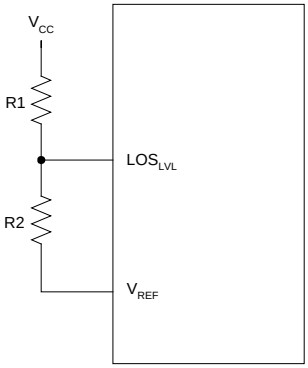


Figure 4 - LOS_{LVL} Circuit

PERFORMANCE DATA

Table 2 – Absolute Maximum Ratings

Absolute Maximum Ratings are those values beyond which device life may be impaired.

Symbol	Characteristic	Condition	Rating	Unit
V_{CC}	DC Supply Voltage	Referenced to GND	0 to +4.5	V
V_I	Input Voltage	In Free Air	0 to V_{CC}	V
V_O	Output Voltage		V_{CC}-2V to V_{CC}	V
T_A	Operating Temperature Range		-40 to +85	°C
T_{STG}	Storage Temperature Range		-65 to +150	°C
ESD_{HBM}	Human Body Model		2500	V
ESD_{MM}	Machine Model		200	V
ESD_{CDM}	Charged Device Model		2500	V

Table 3 - DC Characteristics

DC Characteristics (V_{CC} = 3.0V to 3.6V, R_{LOAD}=50Ω to V_{CC}-2V)

Symbol	Characteristic	-40 °C			0 °C			25 °C			85 °C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OH}	Output HIGH Voltage	V_{CC}-1085		V_{CC}-880	V_{CC}-1025		V_{CC}-880	V_{CC}-1025	V_{CC}-955	V_{CC}-880	V_{CC}-1025		V_{CC}-880	mV
V_{OL}	Output LOW Voltage	V_{CC}-1830		V_{CC}-1555	V_{CC}-1810		V_{CC}-1620	V_{CC}-1810	V_{CC}-1705	V_{CC}-1620	V_{CC}-1810		V_{CC}-1620	mV
V_{IH}	Input HIGH Voltage	2			2			2			2			V
V_{IL}	Input LOW Voltage	0.8			0.8			0.8			0.8			V
V_{OL}	LOS Output LOW Voltage[2]			0.5			0.5			0.5			0.5	V
V_{REF}	Reference Voltage	V_{CC}-1.38		V_{CC}-1.26	V_{CC}-1.38		V_{CC}-1.26	V_{CC}-1.38		V_{CC}-1.26	V_{CC}-1.38		V_{CC}-1.26	V
V_{CMR}	Common Mode Range	GND + 2		V_{CC}	GND + 2		V_{CC}	GND + 2		V_{CC}	GND + 2		V_{CC}	V
I_{IH}	Input HIGH Current			100			100			100			100	µA
I_{EE}	Power Supply Current[1]			40			40		30	40			45	mA

[1] No Output Load

[2] I_{OL} = +2mA

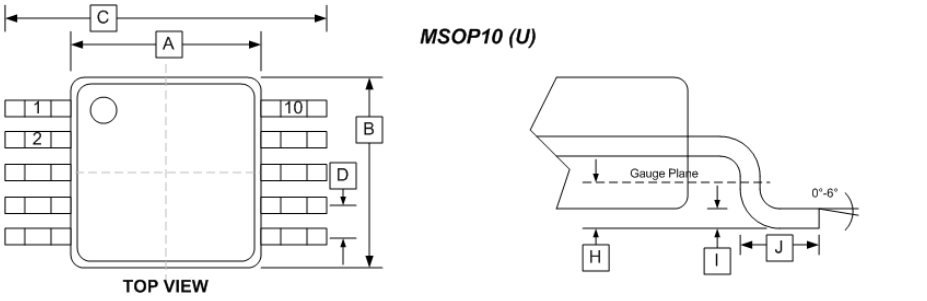
Table 4 - AC Characteristics

AC Characteristics (V_{CC} = 3.0V to 3.6V, R_{LOAD}=50Ω to V_{CC}-2V)

Symbol	Characteristic	-40 °C			0 °C			25 °C			85 °C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{ID}	Input Voltage Range	5		1800	5		1800	5		1800	5		1800	mV
t_r / t_f	Rise/Fall Time			150			150			150			150	ps
V_{OD}	Diff - V_{ID} - 15mVp-p								600					mVpp
	SE - V_{ID} - 5mVp-p								200					
HYS	LOS Hysteresis	2		8	2		8	2	4.6	8	2		8	dB
t_{OFFL}	LOS Release Time Min Input			0.5			0.5		0.1	0.5			0.5	µs
t_{OFFH}	LOS Release Time Max Input			0.5			0.5		0.1	0.5			0.5	µs
t_{ONL}	LOS Assert Time			0.5			0.5		0.2	0.5			0.5	µs
V_{SR}	LOS Sensitivity Range	5		50	5		50	5		50	5		50	mVpp

PACKAGE DIAGRAM

MSOP10
Green/RoHS compliant/Pb-Free
MSL=1



DIM	INCHES MIN	MAX
A	0.118±0.004	
B	0.118±0.004	
C	0.192±0.008	
D	0.0197 TYP	
E	0.004±0.002	
F	0.034±0.002	
G	0.007±0.0106	
H	0.010	
I	0.006±0.002	
J	0.021±0.004