

# AZ88923

## High-Speed Limiting Post Amplifier

### 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

### PACKAGE AVAILABILITY

PACKAGE	PART NUMBER	MARKING	NOTES
TSSOP 10	AZ88923U	AZ88 923	1,2,3

- 1 Add R1 at end of part number for 7 inch (1K parts), R2 for 13 inch (2.5K parts) Tape & Reel.
- 2 Date code format: "Y" or "YY" for year followed by "WW" for week.
- 3 Parts marked JNB for date codes prior to 4WW (prior to 2004).
- 4 Date code "YWW" or "YYWW" on underside of part.

### DESCRIPTION

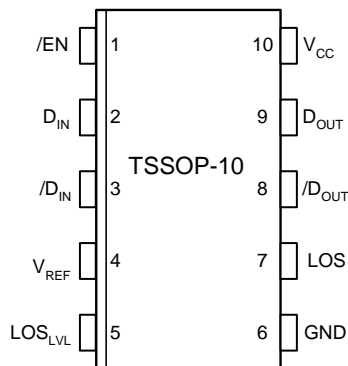
The AZ88923 is a limiting post amplifier usable at data rates up to 2.5Gbps. It is ideal for use as a post amplifier following a transimpedance amplifier.

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 /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.

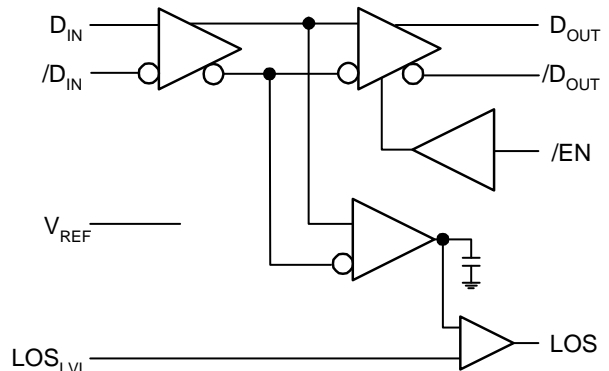
### PIN DESCRIPTION

PIN	FUNCTION
$D_{IN}$ , $/D_{IN}$	Differential Inputs
$D_{OUT}$ , $/D_{OUT}$	PECL Outputs
/EN	Output Enable
$LOS_{LVL}$	LOS Threshold
LOS	LOS Output
$V_{REF}$	Reference Voltage Output
$V_{CC}$	Positive Voltage
GND	Ground



### PINOUT ASSIGNMENT

### BLOCK DIAGRAM



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

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	DC Supply Voltage (Referenced to GND)	4.5	V
T <sub>A</sub>	Operating Temperature Range (In Free-Air)	-40 to +85	°C
T <sub>STG</sub>	Storage Temperature Range	-65 to +150	°C
D <sub>IN</sub> , /D <sub>IN</sub>	Input Voltage	0 to V <sub>CC</sub>	V
/EN	Input Voltage	0 to V <sub>CC</sub>	V
LOS <sub>LVL</sub>	Input Voltage	0 to V <sub>CC</sub>	V
V <sub>REF</sub>	Output Voltage	V <sub>CC</sub> -2V to V <sub>CC</sub>	V
D <sub>OUT</sub> , /D <sub>OUT</sub>	Output Voltage	V <sub>CC</sub> -2V to V <sub>CC</sub>	V

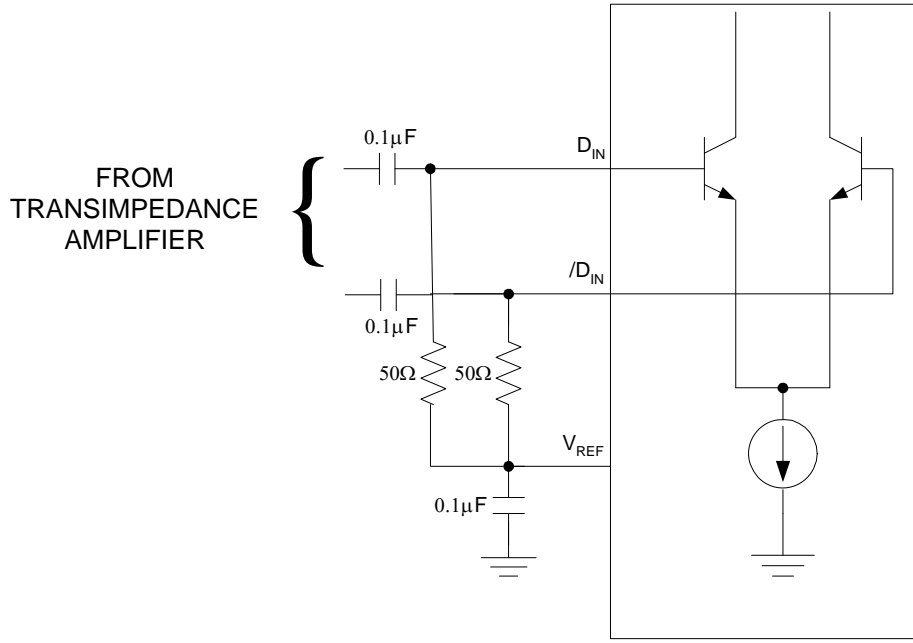
**DC Characteristics (V<sub>CC</sub> = 3.0V to 3.6V, R<sub>LOAD</sub> = 50Ω to V<sub>CC</sub>-2V)**

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit
		Min	Max	Min	Max	Min	Typ	Max	Min	Max	
I <sub>EE</sub>	Power Supply Current <sup>1</sup>		40		40		30	40		45	mA
V <sub>OH</sub>	Output HIGH Voltage	V <sub>CC</sub> -1085	V <sub>CC</sub> -880	V <sub>CC</sub> -1025	V <sub>CC</sub> -880	V <sub>CC</sub> -1025	V <sub>CC</sub> -955	V <sub>CC</sub> -880	V <sub>CC</sub> -1025	V <sub>CC</sub> -880	mV
V <sub>OL</sub>	Output LOW Voltage	V <sub>CC</sub> -1830	V <sub>CC</sub> -1555	V <sub>CC</sub> -1810	V <sub>CC</sub> -1620	V <sub>CC</sub> -1810	V <sub>CC</sub> -1705	V <sub>CC</sub> -1620	V <sub>CC</sub> -1810	V <sub>CC</sub> -1620	mV
V <sub>IH</sub>	/EN Input HIGH Voltage	2.0		2.0		2.0			2.0		mV
V <sub>IL</sub>	/EN Input LOW Voltage	0.8		0.8		0.8			0.8		mV
V <sub>OL</sub>	LOS Output LOW Voltage <sup>2</sup>		0.5		0.5			0.5		0.5	V
V <sub>REF</sub>	Reference Voltage	V <sub>CC</sub> -1.38	V <sub>CC</sub> -1.26	V <sub>CC</sub> -1.38	V <sub>CC</sub> -1.26	V <sub>CC</sub> -1.38		V <sub>CC</sub> -1.26	V <sub>CC</sub> -1.38	V <sub>CC</sub> -1.26	V
I <sub>IH</sub>	/EN Input HIGH Current		100		100			100		100	μA
V <sub>CMR</sub>	Common Mode Range	GND+2	V <sub>CC</sub>	GND+2	V <sub>CC</sub>	GND+2		V <sub>CC</sub>	GND+2	V <sub>CC</sub>	V

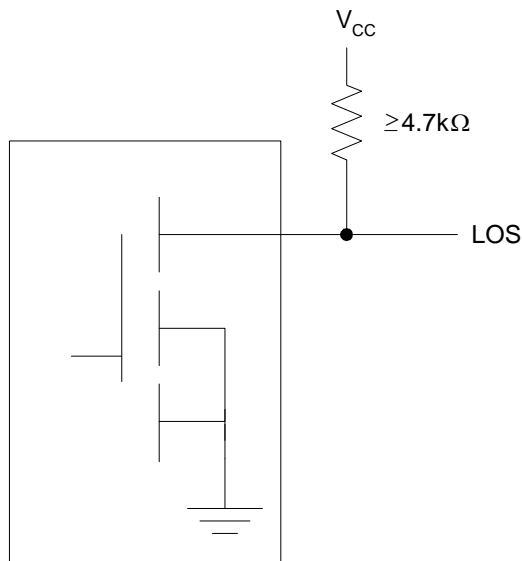
1. No output load.
2. I<sub>OL</sub> = +2mA.

**AC Characteristics (V<sub>CC</sub> = 3.0V to 3.6V, R<sub>LOAD</sub> = 50Ω to V<sub>CC</sub>-2V)**

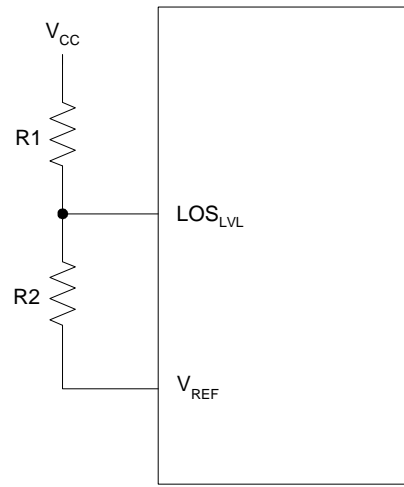
Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit
		Min	Max	Min	Max	Min	Typ	Max	Min	Max	
V <sub>ID</sub>	Input Voltage Range	5	1800	5	1800	5		1800	5	1800	mV
t <sub>r</sub> / t <sub>f</sub>	Rise/Fall Time		150		150			150		150	ps
V <sub>OD</sub>	Diff V <sub>ID</sub> =15 mVp-p Out V <sub>ID</sub> =5 mVp-p						600 200				MVp-p
HYS	LOS Hysteresis	2	8	2	8	2	4.6	8	2	8	dB
t <sub>OFFL</sub>	LOS Release Time Minimum Input		0.5		0.5		0.1	0.5		0.5	μs
t <sub>OFFH</sub>	LOS Release Time Maximum Input		0.5		0.5		0.1	0.5		0.5	μs
t <sub>ONL</sub>	LOS Assert Time		0.5		0.5		0.2	0.5		0.5	μs
V <sub>SR</sub>	LOS Sensitivity Range	5	50	5	50	5		50	5	50	MVp-p



DIFFERENTIAL INPUT CONFIGURATION



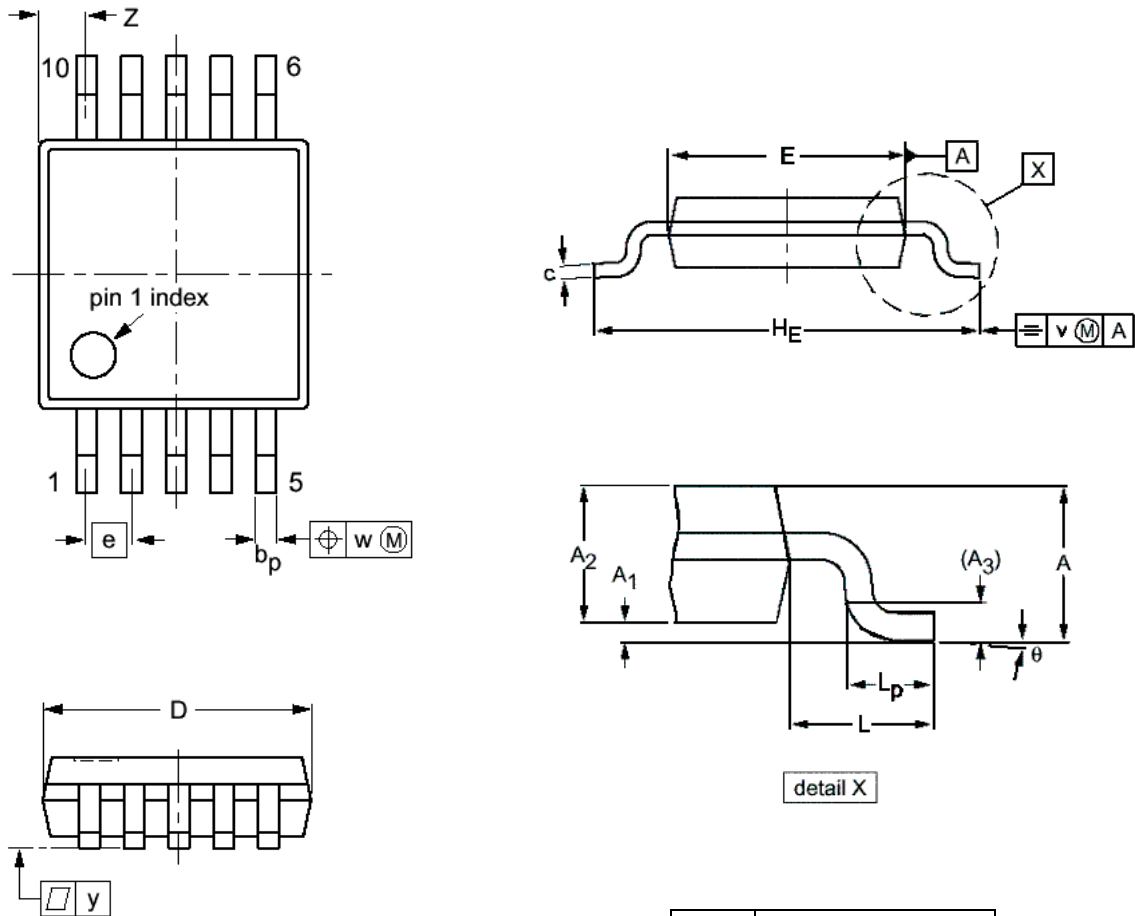
LOS OUTPUT



LOS<sub>LVL</sub> CIRCUIT

NOTES:  
 $LOS_{LVL} = V_{CC} - 1.32V + \frac{R2 \times 1.32V}{R1 + R2}$   
 $R1 + R2 \geq 2.6k\Omega$

**PACKAGE DIAGRAM  
TSSOP 10**



**NOTES:**

1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

DIM	MILLIMETERS	
	MIN	MAX
A		1.10
A <sub>1</sub>	0.05	0.15
A <sub>2</sub>	0.80	0.95
A <sub>3</sub>	0.25	
b <sub>p</sub>	0.15	0.30
c	0.15	0.23
D <sup>1</sup>	2.90	3.10
E <sup>2</sup>	2.90	3.10
e	0.50	
H <sub>E</sub>	4.80	5.00
L	0.95	
L <sub>p</sub>	0.40	0.70
v	0.10	
w	0.10	
y	0.10	
Z	0.34	0.67
θ	0°	6°

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