ARIZONA MICROTEK, INC.

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

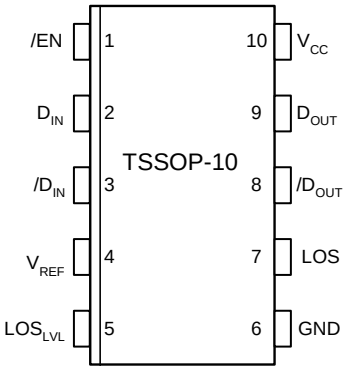
The AZ88923 is a limiting post amplifier usable at data rates up to 2.5Gbps. It is ideal for use as a post amplifier following a transimpedance amplifier.

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.

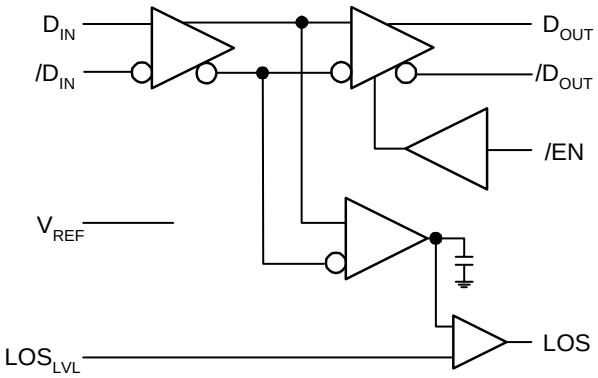
PIN DESCRIPTION

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



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

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	4.5	V
T_A	Operating Temperature Range (In Free-Air)	-40 to +85	°C
T_{STG}	Storage Temperature Range	-65 to +150	°C
D_{IN}, /D_{IN}	Input Voltage	0 to V_{CC}	V
/EN	Input Voltage	0 to V_{CC}	V
LOS_{LVL}	Input Voltage	0 to V_{CC}	V
V_{REF}	Output Voltage	V_{CC}-2V to V_{CC}	V
D_{OUT}, /D_{OUT}	Output Voltage	V_{CC}-2V to V_{CC}	V

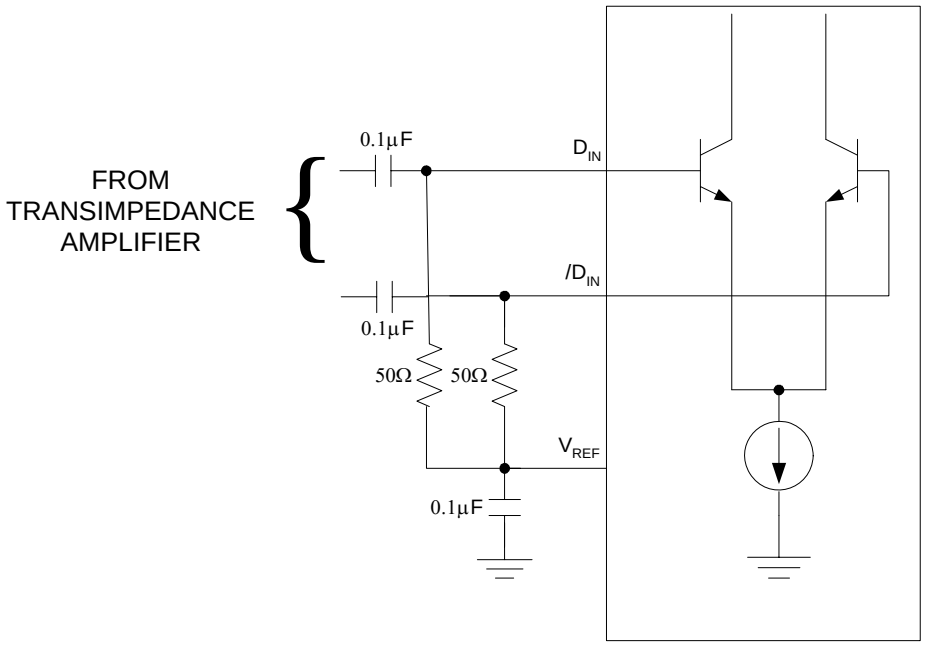
DC Characteristics (V_{CC} = 3.0V to 3.6V, R_{LOAD} = 50Ω to V_{CC}-2V)

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit
		Min	Max	Min	Max	Min	Typ	Max	Min	Max	
I_{EE}	Power Supply Current[1]		40		40		30	40		45	mA
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}	/EN Input HIGH Voltage	2.0		2.0		2.0			2.0		mV
V_{IL}	/EN Input LOW Voltage	0.8		0.8		0.8			0.8		mV
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
I_{IH}	/EN Input HIGH Current		100		100			100		100	µA
V_{CMR}	Common Mode Range	GND+2	V_{CC}	GND+2	V_{CC}	GND+2		V_{CC}	GND+2	V_{CC}	V

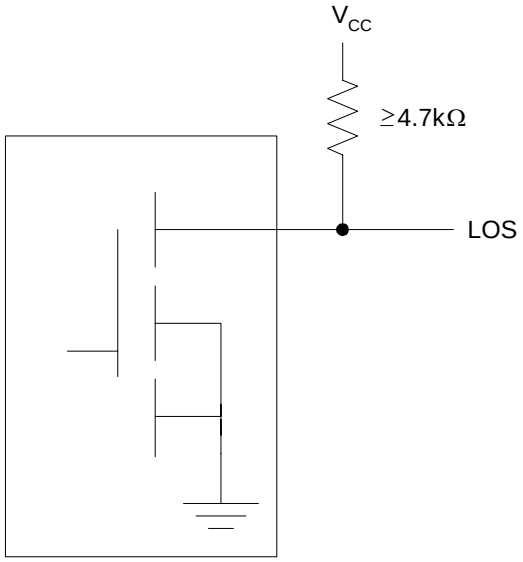
1. No output load.
2. I_{OL} = +2mA.

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

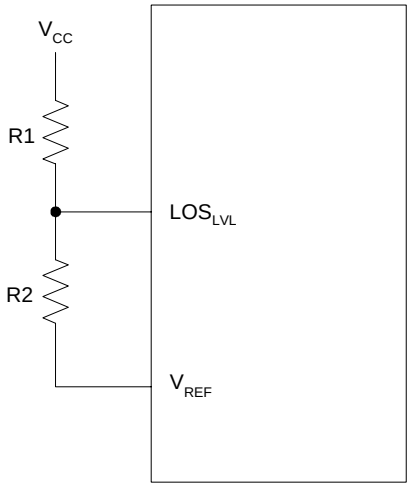
Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit
		Min	Max	Min	Max	Min	Typ	Max	Min	Max	
V_{ID}	Input Voltage Range	5	1800	5	1800	5		1800	5	1800	mV
t_r / t_f	Rise/Fall Time		150		150			150		150	ps
V_{OD}	Diff V_{ID}=15 mVp-p Out V_{ID}=5 mVp-p						600 200				MVp-p
HYS	LOS Hysteresis	2	8	2	8	2	4.6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



DIFFERENTIAL INPUT CONFIGURATION



LOS OUTPUT



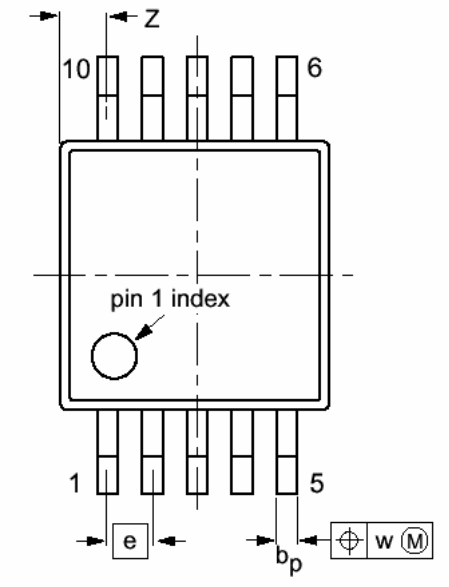
LOS$_{LVL}$ CIRCUIT

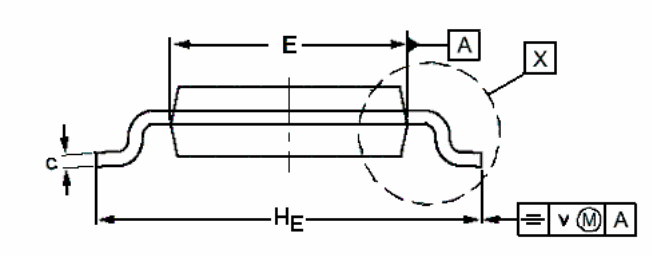
NOTES:

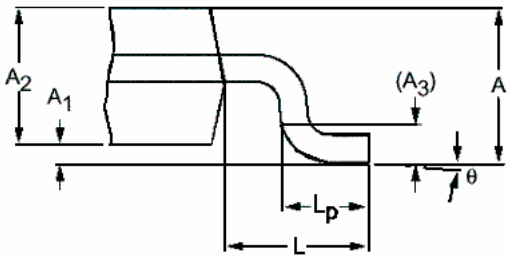
$$LOS_{LVL} = V_{CC} - 1.32V + \frac{R2 \times 1.32V}{R1 + R2}$$

$R1 + R2 \geq 2.6k\Omega$

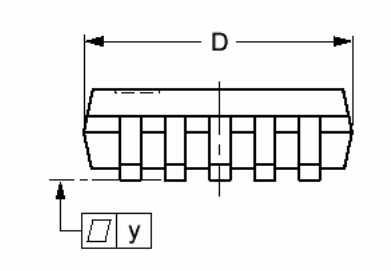
PACKAGE DIAGRAM
TSSOP 10







detail X



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_1	0.05	0.15
A_2	0.80	0.95
A_3	0.25	
b_p	0.15	0.30
c	0.15	0.23
D^1	2.90	3.10
E^2	2.90	3.10
e	0.50	
H_E	4.80	5.00
L	0.95	
L_p	0.40	0.70
v	0.10	
w	0.10	
y	0.10	
Z	0.34	0.67
θ	0^O	6^O

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