



**PECL-TO-CML TRANSLATOR
WITH OUTPUT ENABLE**

SY100ELT982

FEATURES

- Up to 1.25Gbps operation
- 25mA peak drive current
- Adjustable output current
- Separate output enable
- Differential inputs for data
- 75KΩ input pull-down resistor
- Single power supply
- Available in a tiny 10-pin MSOP

DESCRIPTION

The SY100ELT982 is a high speed PECL-to-CML translator. The output current is DC current controlled by IRSET, current through the resistor RSET. The output OUT is LOW when output enable is HIGH.

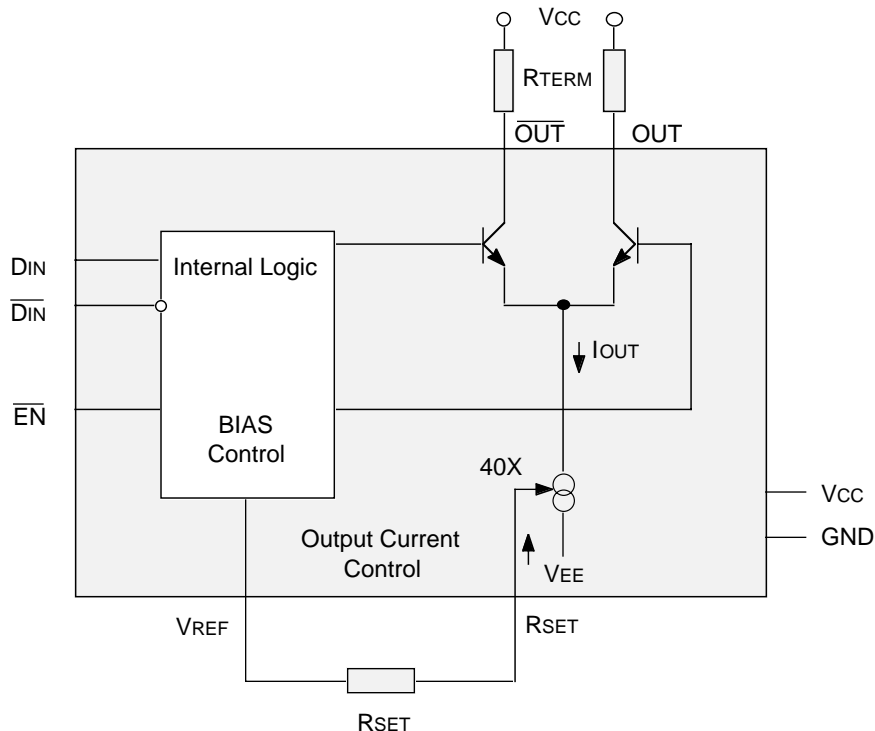
The device incorporates complementary open collector outputs with a capability of driving peak current of 25mA.

The SY100ELT982 utilizes the high performance bipolar ASSET™ technology.

APPLICATIONS

- Telecommunications
- CML output oscillator
- GaAS interface

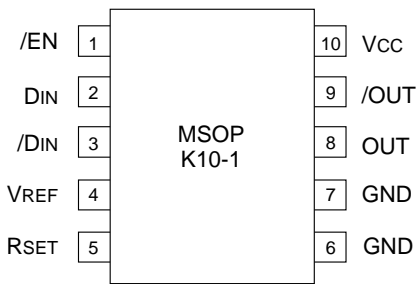
BLOCK DIAGRAM



ASSET technology is a trademark of Micrel, Inc.

PACKAGE/ORDERING INFORMATION

Ordering Information⁽¹⁾



10-Pin MSOP (K10-1)

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100ELT982KC	K10-1	Commercial	XEL982	Sn-Pb
SY100ELT982KCTR ⁽²⁾	K10-1	Commercial	XEL982	Sn-Pb
SY100ELT982KI	K10-1	Industrial	XEL982	Sn-Pb
SY100ELT982KITR ⁽²⁾	K10-1	Industrial	XEL982	Sn-Pb
SY100ELT982KG ⁽³⁾	K10-1	Industrial	XEL982 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100ELT982KGTR ^(2, 3)	K10-1	Industrial	XEL982 with with Pb-Free bar-line indicator	Pb-Free NiPdAu

Notes:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25^\circ\text{C}$, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

PIN NAMES

Pin	Function
VCC	Most positive power supply input, +5V for PECL operation.
GND	Ground
DIN, /DIN	Differential PECL 100K compatible inputs.
/EN	This PECL 100K compatible input enables data translation. When Enable asserted HIGH, OUT = I _{OUT} , /OUT = 0mA.
OUT, /OUT	Open collector outputs from the output buffer drive these differential current outputs.
VREF	Voltage reference for use with RSET.
RSET	External resistor to adjust output current.

TRUTH TABLE⁽¹⁾

D	/D	/EN	OUT ⁽²⁾	/OUT ⁽³⁾
L	H	L	L	H
H	L	L	H	L
X	X	H	L	H

NOTE:

1. L = LOW, H = HIGH, X = don't care
2. H = I_{OUT} = 0mA
3. H = /I_{OUT} = 0mA

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Rating	Value	Unit
VCC	Power Supply Voltage	0 to +7.0	V
V _I	Input Voltage	0 to +6.0	V
I _O	Output Current	25	mA
T _{LEAD}	Lead Temperature (soldering, 20sec.)	+260	°C
T _A	Operating Temperature Range	0°C to +85°C	°C
T _{store}	Storage Temperature Range	-55°C to +125°C	°C
P _{tot}	Power Dissipation	250	mW

Note:

1. Permanent device damage may occur if absolute maximum ratings are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

OPERATING CONDITIONS⁽¹⁾

Symbol	Rating	Value	Unit
VCC	Power Supply Voltage	+4.5 to +5.5	V
R _{TERM}	Resistor to Terminate Outputs	10 to 50	Ω
R _{SET}	Resistor to Adjust Current	1500 to 50,000	Ω
θ _{JA}	Thermal Resistance of Package to Ambient ⁽²⁾	206	°C/W
C _{OUT}	Capacitance on OUT + /OUT	2.5 typical	pf

Notes:

1. The voltage drop across R_{TERM} should not be greater than 2V.
2. Still air without heatsink.

DC ELECTRICAL CHARACTERISTICS

GND = 0V; VCC = +5.0V ±10%; TA = 0°C to + 85°C

Symbol	Parameter	TA = 0°C			TA = +25°C			TA = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V _{IH}	Input HIGH Voltage (Din, /Din, /EN)	V _{CC} -1165	—	V _{CC} -880	V _{CC} -1165	—	V _{CC} -880	V _{CC} -1165	—	V _{CC} -880	mV
V _{IL}	Input LOW Voltage (Din, /Din, /EN)	V _{CC} -1810	—	V _{CC} -1475	V _{CC} -1810	—	V _{CC} -1475	V _{CC} -1810	—	V _{CC} -1475	mV
V _{REF}	Reference Voltage	—	3.12	—	—	3.00	—	—	2.80	—	V
I _{IL}	Input LOW Current ⁽¹⁾ (Din, /Din, /EN)	0.5	—	—	0.5	—	—	0.5	—	—	µA
I _{IH}	Input HIGH Current (Din, /Din, /EN)	—	—	100	—	—	100	—	—	100	µA
I _{CC}	Supply Current ⁽²⁾	—	16	25	—	16	25	—	16	25	mA
I _{OL}	Output LOW Current (/EN = HIGH)	—	—	500	—	—	500	—	—	500	µA
I _{OR}	Output Current Ringing ⁽²⁾	—	—	10	—	—	10	—	—	10	%
I _{GAIN}	I _{OUT} /I _{RSET}	30	38	44	30	38	44	30	38	44	—

Notes:

1. V_I = V_{IL}(Min.)
2. I_{OH} = 25mA.

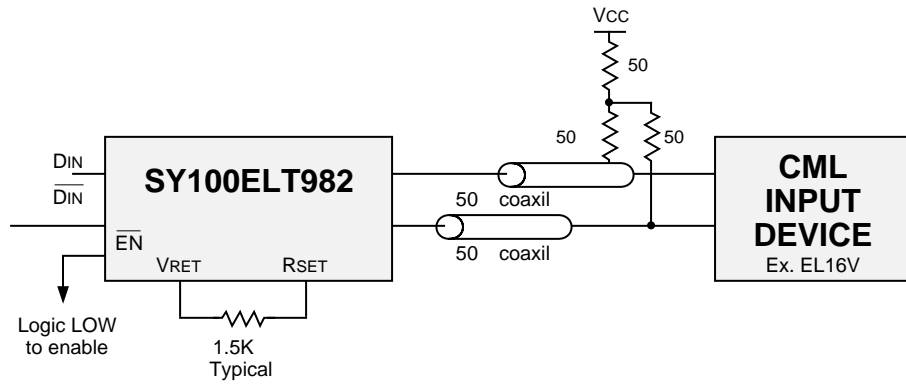
AC ELECTRICAL CHARACTERISTICS⁽¹⁾I_{OH} = 10mA; GND = 0V; VCC = +5V ±10%; TA = 0°C to + 85°C

Symbol	Parameter	TA = 0°C			TA = +25°C			TA = +85°C			Unit	Conditions
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
t _{pd D}	Propagation Delay Din - OUT	—	480	1000	—	480	1000	—	480	1000	ps	
t _{pd EN}	Propagation Delay /EN - OUT	—	450	1000	—	450	1000	—	450	1000	ps	
t _r t _f	Rise/Fall Time (20% to 80%)	—	200	—	—	200	—	—	200	—	ps	
I _{OUT}	Output Current	5	15	25	5	15	25	5	15	25	mA	
I _{RSET}	Output Current Control	0.125	—	0.625	0.125	—	0.625	0.125	—	0.625	mA	
I _{OR}	Output Current Ringing ⁽²⁾	—	—	10	—	—	10	—	—	10	%	

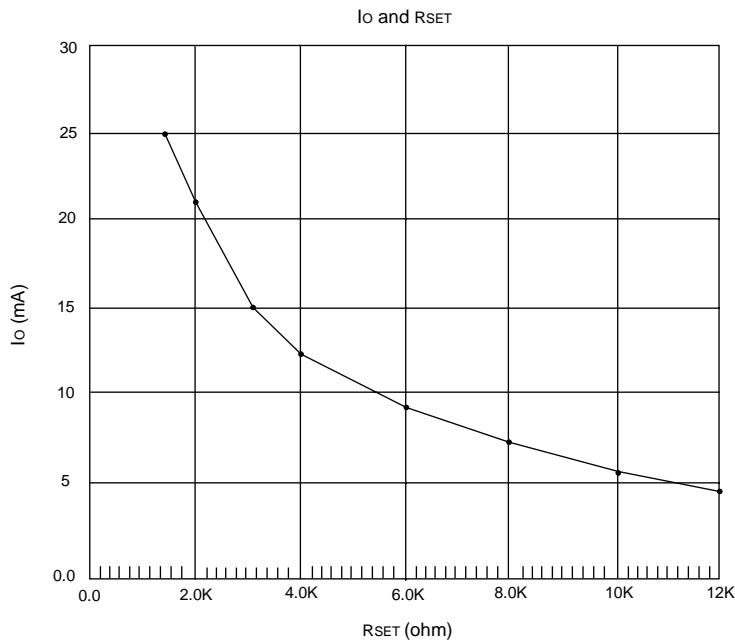
Notes:

1. R_{TERM} = 50Ω ±1%
2. I_{OH} = 5 to 25mA

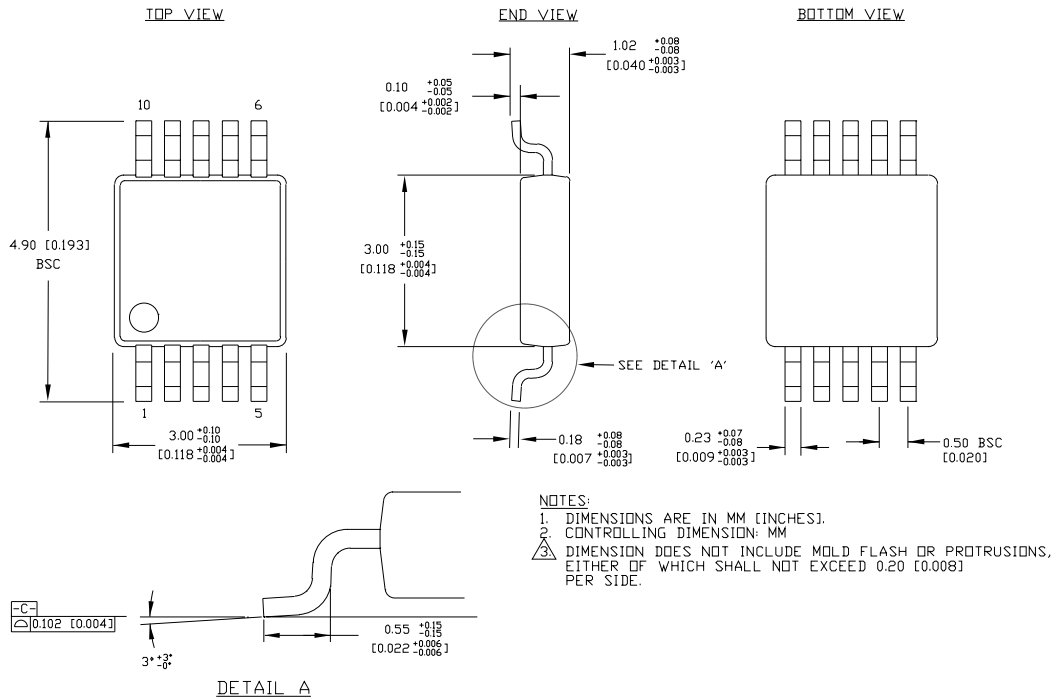
APPLICATION EXAMPLE



PERFORMANCE CURVES



10-PIN MSOP (K10-1)



Rev. 00

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