SEMTECH

LVDS to PECL/ LVPECL Translator

TEST AND MEASUREMENT PRODUCTS

Description

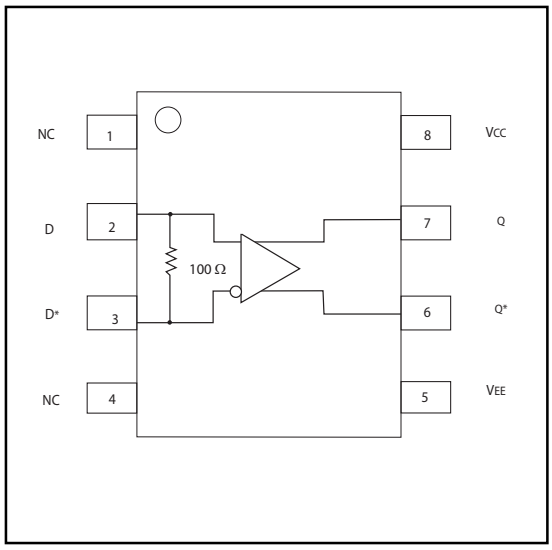
The SK1301 is a true bipolar and high speed LVDS to PECL / LVPECL translator. This device accepts low voltage (350 mV typical) differential input signal and translate them into either LVPECL or PECL output signals. SK1301 has an on-chip 100 Ohm termination resistors across its differential inputs.

This device operates over an extended supply range of 3.0 to 5.5V which allow either PECL or LVPECL signal at its outputs based on the supply voltage range.

Features

- Extended Supply Voltage Range: (VCC = 3.0V to 5.5V; VEE = 0V)
- 800 MHz Min. Toggle Frequency
- On-Chip 100 Ω Input Termination Resistor
- ESD Protection > 4000V
- Specified Over Industrial Temperature Range: –40°C to 85°C
- Available in both 8 Lead SOIC and MSOP Packages
- Flammability Rate: UL-94 code V-0
- Moisture sensitivity: Level 1

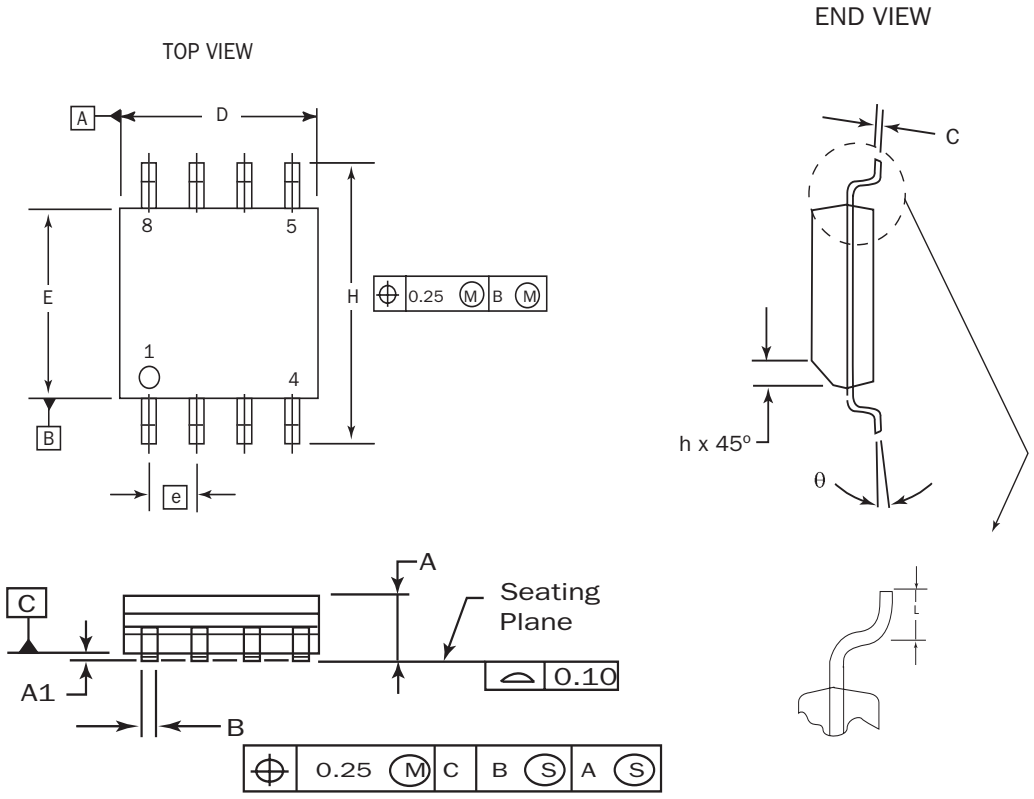
Functional Block Diagram



Pin Descriptions

Pin Name	Function
D, D*	Differential LVDS inputs
Q, Q*	Differential PECL / LVPECL Outputs

8 Pin SOIC Package

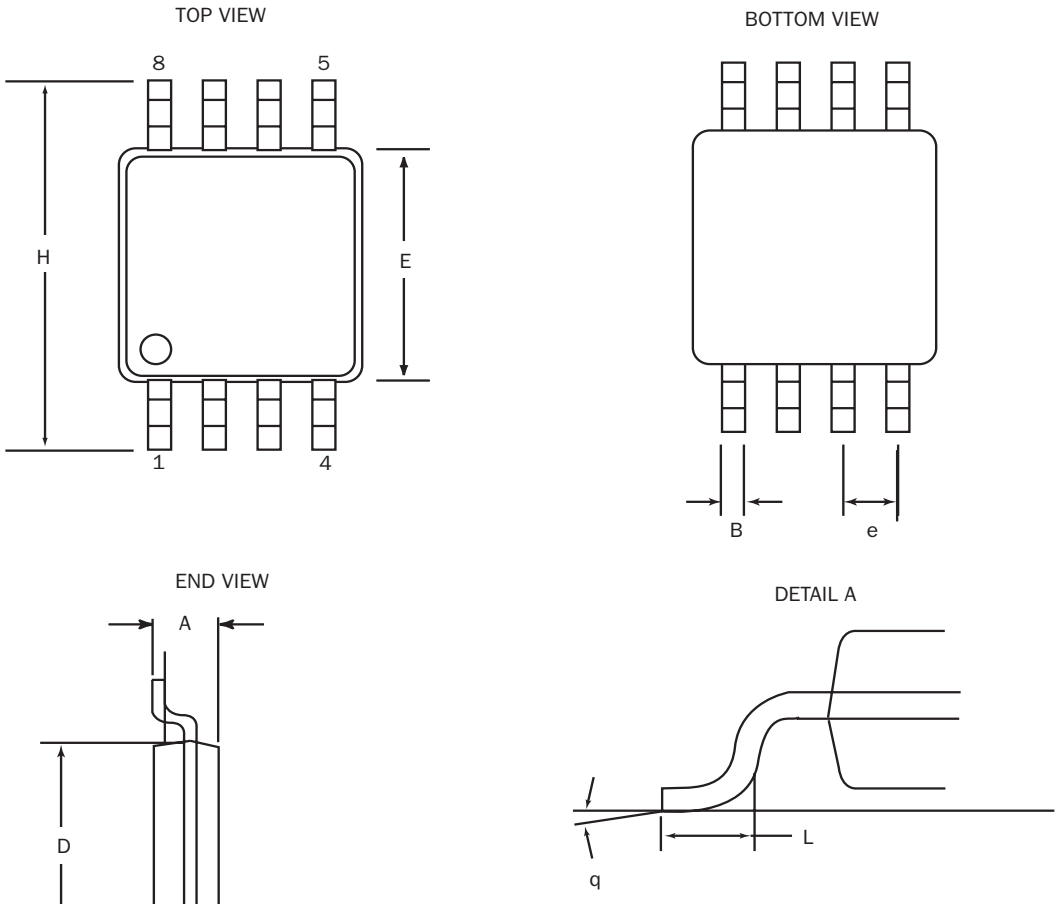


DIM	MILLIMETERS	
	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.27
θ	0°	8°

NOTES:
1. Dimensions are in millimeters.
2. Dimensions D and E do no include mold protrusion.
3. Maximum mold protrusion 0.15 per side.
4. Dimension B does not include Dambar protrusion. Allowable Dambar protrusion shall be 0.127 total in excess of the B dimension at maximum material condition.

Package Information *(continued)*

8 Pin MSOP Package



DIM	MILLIMETERS	
	MIN	MAX
A	0.94	1.1
B	0.25	0.40
C	0.13	0.23
D	2.90	3.10
E	2.90	3.10
e	0.65	BSC
H	4.75	5.1
L	0.4	0.7
θ	0°	6°

NOTES:
1. Dimensions are in mm
2. Controlling dimension: mm
3. Dimension does not include mold flash or protrusions, either of which shall not exceed 0.20

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{EE}	Power Supply (V_{CC} = 0V)	-6.0 to 0	V
V_{CC}	Power Supply (V_{EE} = 0V)	6.0 to 0	V
V_I	Input Voltage (V_{CC} = 0V, V_I not more negative than V_{EE})	-6.0 to 0	V
V_I	Input Voltage (V_{EE} = 0V, V_I not more positive than V_{CC})	6.0 to 0	V
I_{OUT}	Output Current Continuous Surge	 50 100	 mA mA
T_A	Operating Temperature Range	-40 to +85	°C
T_{stg}	Storage Temperature	-65 to +150	°C
θ_{JA} for SOIC	Thermal Resistance (Junction-to-Ambient) Still Air 500 lfpm	 153.7 130	 °C/W °C/W
θ_{JC} for SOIC	Thermal Resistance (Junction-to-Case)	41.2	°C/W
θ_{JA} for MSOP	Thermal Resistance (Junction-to-Ambient) Still Air 500 lfpm (>2 layers)	 206.3 140	 °C/W °C/W
θ_{JC} for MSOP	Thermal Resistance (Junction-to-Case)	39.1	°C/W
T_{sol}	Solder Temperature (<2 to 3 seconds: 245°C desired)	265	°C

* Maximum Ratings are those values beyond which damage to the device may occur.
Note 1: Use for inputs of same package only.

DC Characteristics

SK1301 LVDS Input DC Electrical Characteristics

(VCC = +3.0V to +5.5V; VEE = 0V; VOUT Loaded 50 Ω to VCC - 2.0V)

		TA = - 40°C			TA = 0°C			TA = + 25°C			TA = + 85°C			
Symbol	Characteristic	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Unit
V_{IH}	Input High Voltage	0.9		2.6	0.9		2.6	0.9		2.6	0.9		2.6	V
V_{IL}	Input Low Voltage	0.65		2.40	0.65		2.40	0.65		2.40	0.65		2.40	V
VPP	Minimum Peak-to-Peak Input Swing	100		1000	100		1000	100		1000	100		1000	mV
R_{IN}	Input Impedance	79	100	121	79	100	121	79	100	121	79	100	121	Ω

DC Characteristics *(Continued)*

SK1301 PECL / LVPECL Output DC Electrical Characteristics

(VCC = +3.0V to +5.5V; VEE = 0V; VOUT Loaded 50 Ω to VCC - 2.0V)

Symbol	Characteristic	TA = -40°C			TA = 0 °C			TA = 25°C			TA = 85°C			Unit	Condition
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
V_{OH}	Output HIGH Voltage	3915 2215		4120 2420	3975 2275		4120 2420	3975 2275		4120 2420	3975 2275		4120 2420	mV mV	V_{CC} = 5V V_{CC} = 3.3V
V_{OL}	Output LOW Voltage	3170 1470		3445 1745	3190 1490		3380 1680	3190 1490		3380 1680	3190 1490		3380 1680	mV mV	V_{CC} = 5V V_{CC} = 3.3V
I_{EE}	Power Supply Current		15	19		16	21		18	22		19	24	mA	

AC Characteristics

SK1301 AC Electrical Characteristics

(VCC = +3.0V to +5.5V; VEE = 0V; VOUT Loaded 50 Ω to VCC - 2.0V)

Symbol	Characteristic	TA = -40°C		TA = 0°C		TA = 25°C		TA = 85°C		Unit
		Min	Max	Min	Max	Min	Max	Min	Max	
F_{MAX}	Maximum Toggle Frequency	800		800		800		800		MHz
t_{PLH} t_{PHL}	Propagation Delay D to Q	230	430	240	430	240	430	260	480	ps
tr, tf	Output Rise/Fall	140	260	140	260	140	270	160	270	ps

Application Notes

AN1003 - Termination Techniques for ECL / LVECL / PECL / LVPECL Devices
AN1004 - Interfacing Between LVDS and ECL / LVECL / PECL / LVPECL

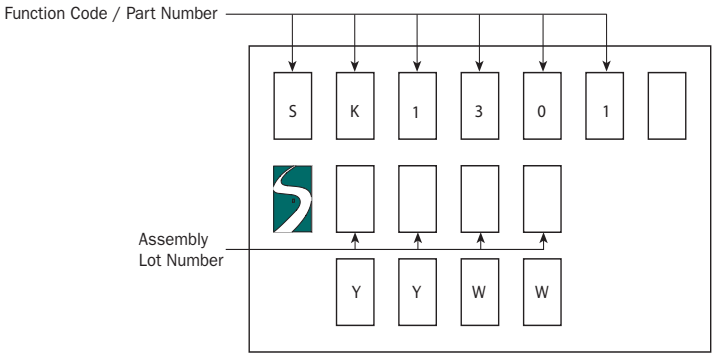
Ordering Information

Ordering Code	Package ID
SK1301D	8-SOIC
SK1301DT	8-SOIC
SK1301MS	8-MSOP
SK1301MST	8-MSOP

The letter “T” stands for tape and reel. For tape and reel information refer to the TMD Part Ordering Information Data Sheet.

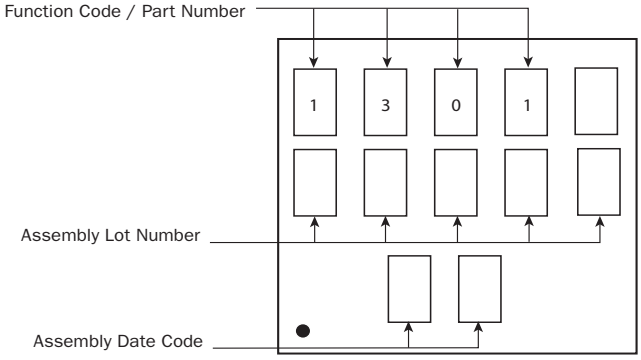
Marking Information

8 PIN SOIC PACKAGE



YY: Last two digits of the Year
WW: Working Week

8 PIN MSOP PACKAGE



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