SEMTECH

LVDS Receiver/Driver

HIGH-PERFORMANCE PRODUCTS

Description

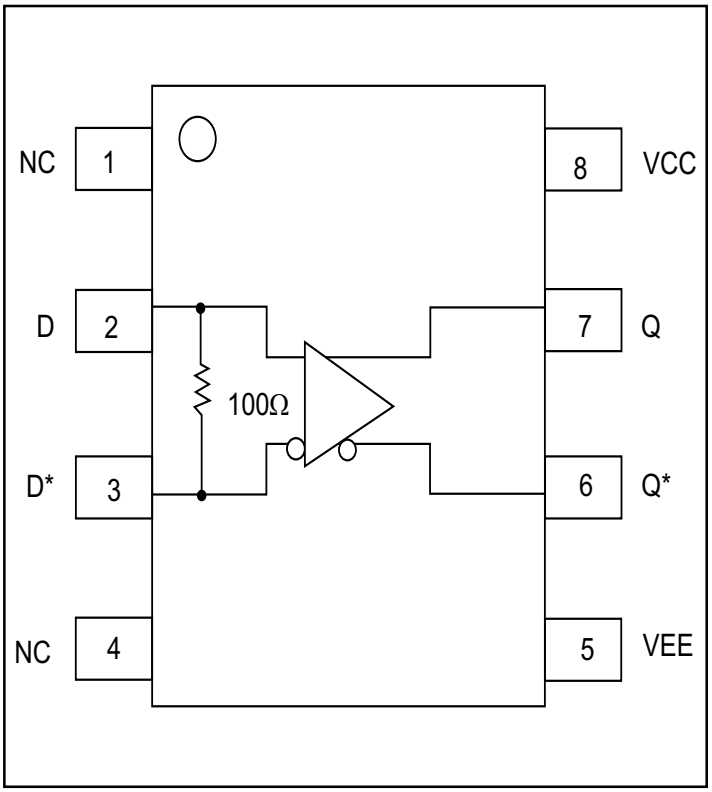
SK1303 is a true differential LVDS Receiver/Driver. This device is designed to support frequency rates in excess of 800 MHz. SK1303 operates over an extended supply range of 3.0V to 5.5V and has a 100 Ω onchip termination resistor across its differential inputs.

When the differential LVDS inputs are left open or floating, the output Q will be at a logic LOW and Q* at a logic HIGH.

Features

- Extended Supply Voltage Range: (VCC = 3.0V to 5.5V; VEE = 0V)
- 800 MHz Minimum Toggle Frequency
- Typical 350 mV Differential LVDS Inputs/Outputs
- Onchip 100 Ω Input Termination Resistor
- ESD Protection > 4000V
- Specified Over Industrial Temperature Range: –40°C to 85°C
- Available in both 8 pin SOIC and MSOP Packages
- Flammability Rating: UL-94 Code V-0
- Moisture sensitivity: Level 1

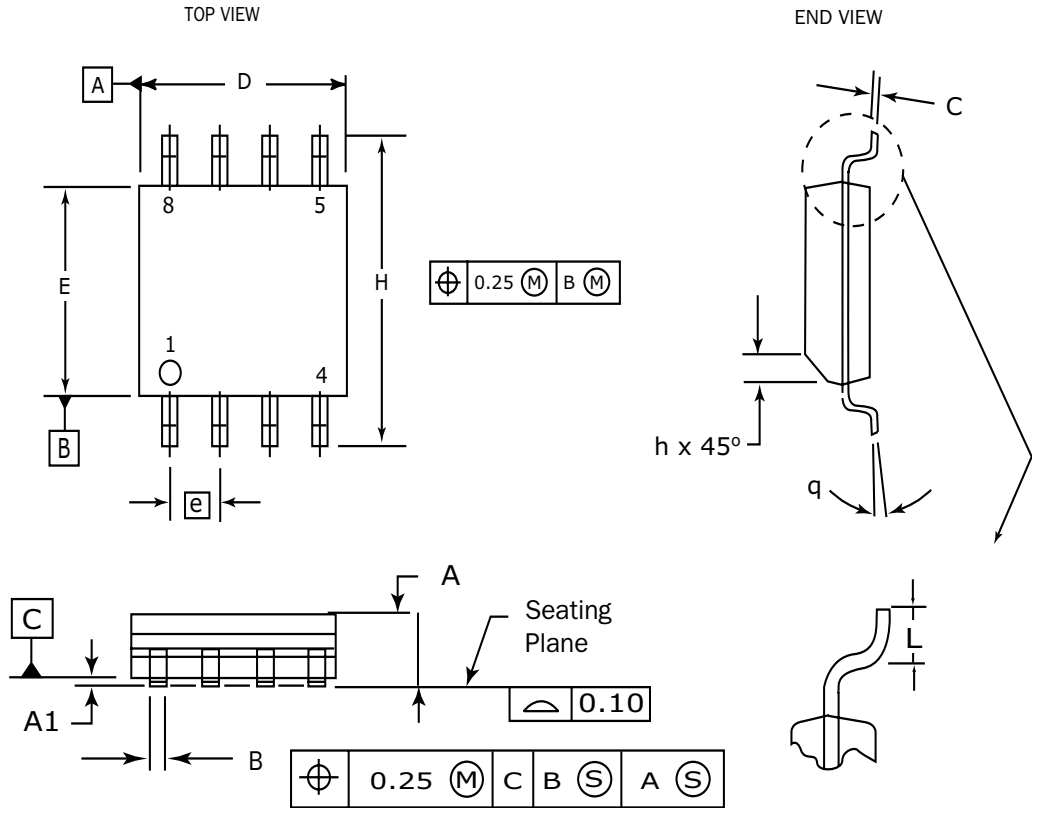
Functional Block Diagram



Pin Descriptions

Pin Name	Function
D, D*	Differential LVDS inputs
Q, Q*	Differential LVDS Outputs

8 Pin SOIC Package

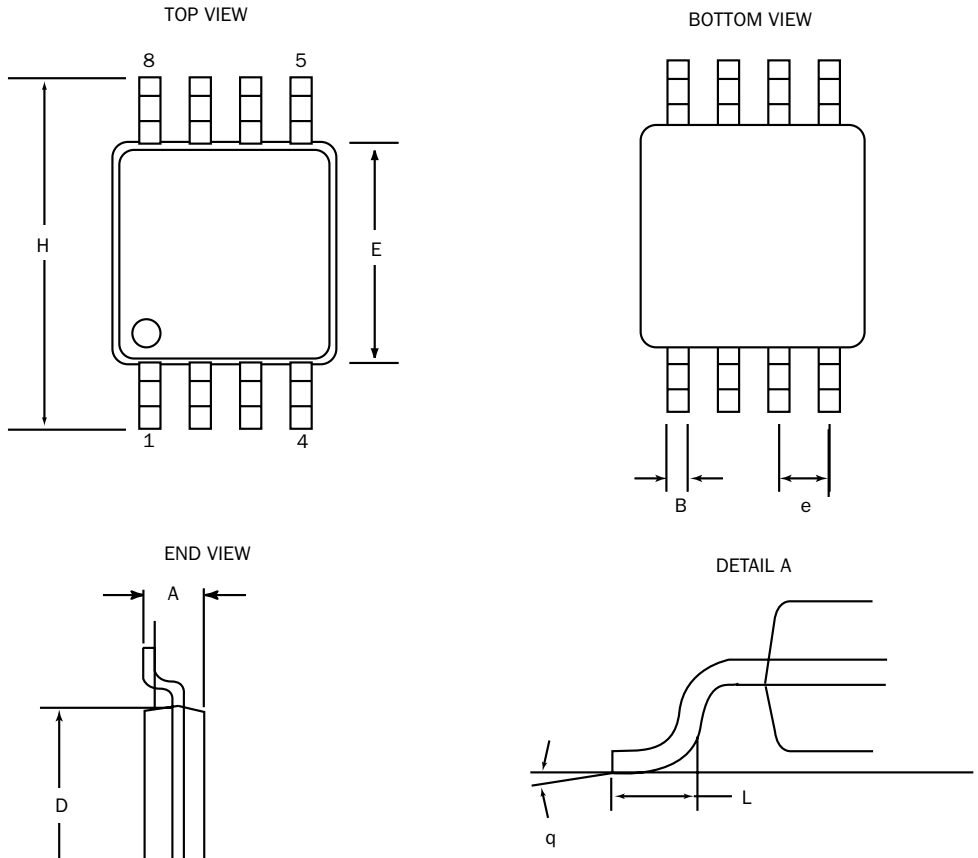


DIM	MILLIMETERS	
	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.27
θ	0°	8°

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	^oC
T_{stg}	Storage Temperature	-65 to +150	^oC
θ_{JA} for SOIC	Thermal Resistance (Junction-to-Ambient) Still Air 500 lfpm	 153.7 130	 $^oC/W$ $^oC/W$
θ_{JC} for SOIC	Thermal Resistance (Junction-to-Case)	41.2	$^oC/W$
θ_{JA} for MSOP	Thermal Resistance (Junction-to-Ambient) Still Air 500 lfpm (>2 layers)	 206.3 140	 $^oC/W$ $^oC/W$
θ_{JC} for MSOP	Thermal Resistance (Junction-to-Case)	39.1	$^oC/W$
T_{sol}	Solder Temperature (<2 to 3 seconds: 245^{o}C desired)	265	^oC

* Maximum Ratings are those values beyond which damage to the device may occur.

DC Characteristics

SK1303 LVDS Input DC Electrical Characteristics

(VCC = +3.0V to +5.5V; VEE = 0V)

		TA = - 40^{o}C			TA = 0^{o}C			TA = + 25^{o}C			TA = + 85^{o}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
R_{IN}	Input Impedance	79	100	121	79	100	121	79	100	121	79	100	121	Ω
VPP	Minimum Peak-to-Peak Input Swing	100		1000	100		1000	100		1000	100		1000	mV
I_{CC}	Supply Current			45			45			45			45	mA

DC Characteristics *(Continued)*

SK1303 LVDS Outputs DC Electrical Characteristics

(VCC = +3.0V to +5.5V; VEE = 0V)

Symbol	Characteristic	TA = - 40°C			TA = 0°C			TA = + 25°C			TA = + 85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OH}	Output High Voltage	1.25		1.8	1.25		1.8	1.25		1.8	1.25		1.8	V
V_{OL}	Output Low Voltage	0.95		1.5	0.95		1.5	0.95		1.5	0.95		1.5	V
RO	Output Impedance	15		70	15		70	15		70	15		70	Ω
DV_{OUT}	Peak-to-Peak Voltage [1]	250	350	470	250	350	470	250	350	470	250	350	470	mV

AC Characteristics

SK1303 AC Electrical Characteristics

(VCC = +3.0V to +5.5V; VEE = 0V)

Symbol	Characteristic	TA = - 40°C			TA = 0°C			TA = + 25°C			TA = + 85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
F_{MAX}	Max Toggle Frequency [2]	800			800			800			800			MHz
t_{PLH} t_{PHL}	Propagation Delay D to Q	450	595	740	450	600	750	470	615	760	500	650	800	ps
tr, tf	Output Rise/Fall	150	335	520	150	240	330	150	240	330	160	250	340	ps

Notes:

1. DV_{OUT} is obtained as follows: Voltages of Q and Q* outputs with respect with V_{EE} are measured. The absolute difference between the high and the low is equal to DV_{OUT}.
2. 250 mV minimum output peak-to-peak swing per Max. toggle frequency.

Application Notes

AN1004 - Interfacing Between LVDS and ECL / LVECL / PECL / LVPECL

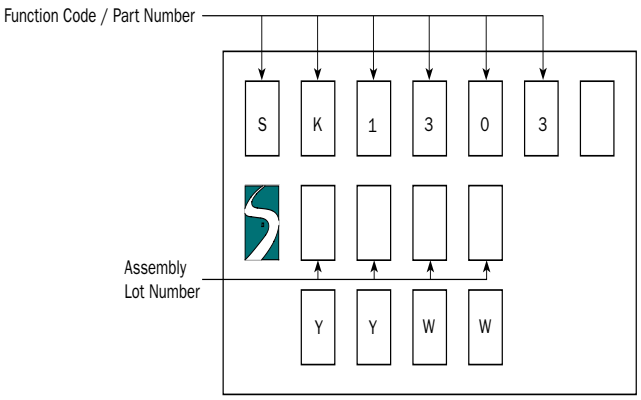
Ordering Information

Ordering Code	Package ID
SK1303D	8-SOIC
SK1303DT	8-SOIC
SK1303MS	8-MSOP
SK1303MST	8-MSOP

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

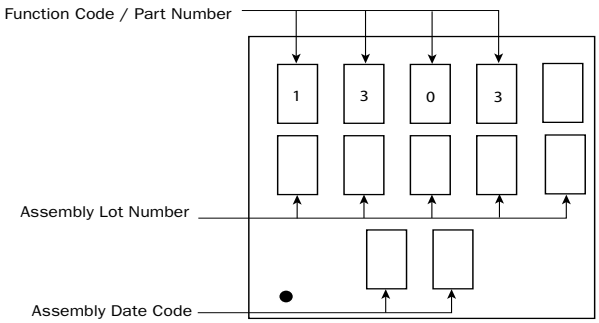
Marking Information

8 PIN SOIC PACKAGE



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

8 PIN MSOP PACKAGE



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