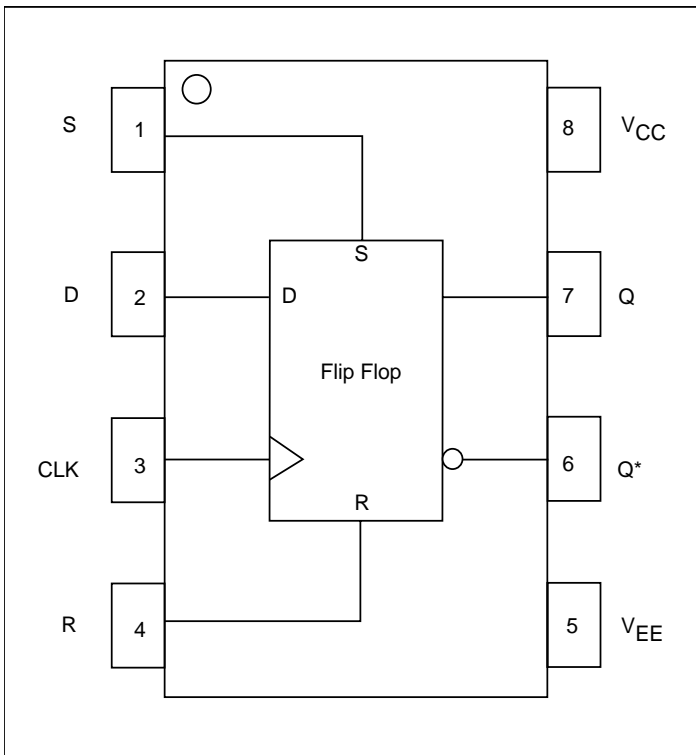


D Flip - Flop with Set and Reset
HIGH-PERFORMANCE PRODUCTS
Description

The SK10/100EL31W is a D Flip-Flop with Set and Reset. The device is fully compatible with the MC10/100EL31 and MC10/100LVEL31 devices, but operates from a -5.5V to -3.3V supply. With propagation delays and output transition times significantly faster than the E131, SK10/100EL31W is ideally suited for those applications which require the ultimate in AC performance. Both set and reset inputs are asynchronous, level triggered signals. Data enters the master portion of the flip-flop when clock is LOW, is transferred to the slave and thus the outputs, upon a positive transition of the clock.

Features

- Extended Supply Voltage Range: ($V_{EE} = -5.5V$ to $-3.0V$, $V_{CC} = 0V$) or ($V_{CC} = +3.0V$ to $+5.5V$, $V_{EE} = 0V$)
- 350 ps typical Propagation Delay
- 2.9 GHz Toggle Frequency
- Fully Compatible with MC10/100EL31 and MC10/100LVEL31
- 75K Ω Internal Input Pulldown Resistors
- Specified Over Industrial Temperature Range: $-40^{\circ}C$ to $85^{\circ}C$
- ESD Protection of $>4000V$
- Small Outline SOIC Package
- Flammability Rate: UL-94 code V-0.
- Moisture Sensitivity: Level 1.

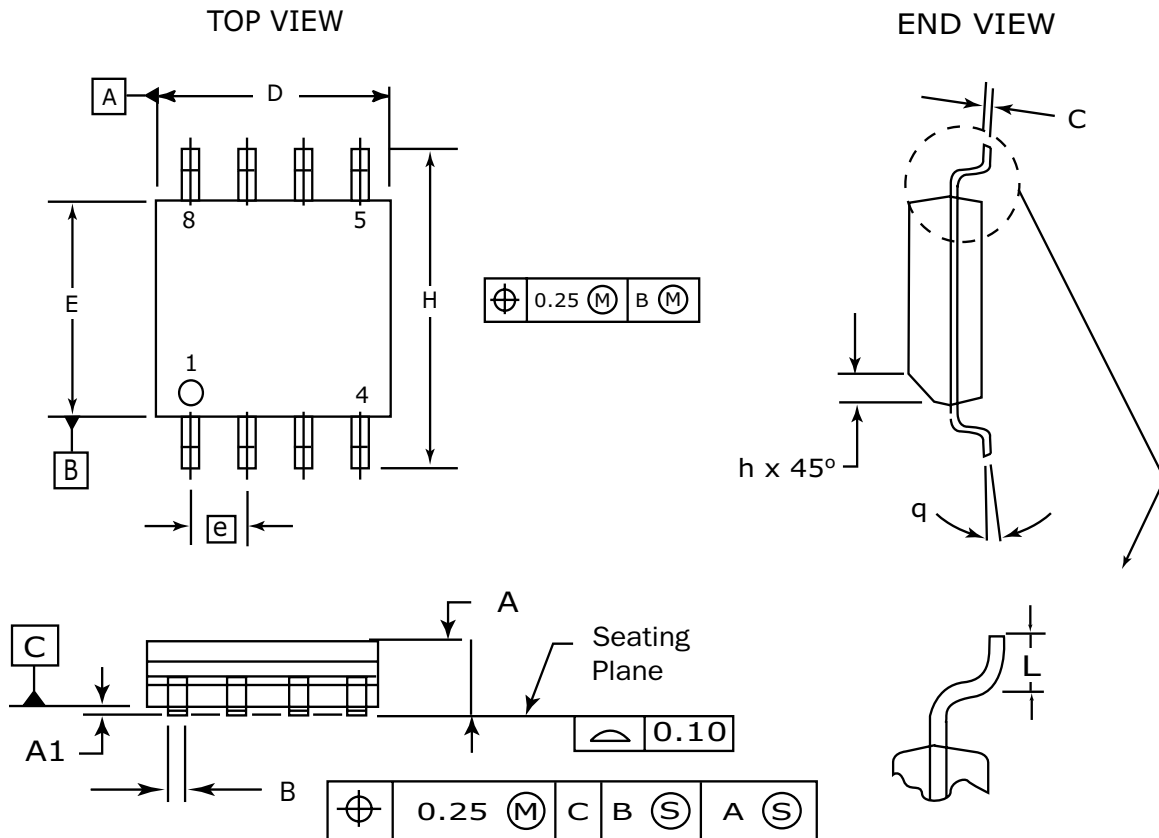
PinDescription
Functional Block Diagram


Pin	Function
Q, Q*	Data Outputs
S	Set
D	Data Input
CLK	Clock Input
R	Reset

Truth Table

D	S	R	CLK	Q
L	L	L	Z	L
H	L	L	Z	H
X	H	L	X	H
X	L	H	X	L
X	H	H	X	Undef

Z = LOW to HIGH Transition

8 Lead 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 not 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.

HIGH-PERFORMANCE PRODUCTS
DC Characteristics
SK10/100EL31W DC Characteristics (Notes 1, 2, 3)
 $(V_{CC} - V_{EE} = 3.0V \text{ to } 5.5V; V_{OUT} \text{ Loaded } 50\Omega \text{ to } V_{CC} - 2.0V)$

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	
I _{EE}	Power Supply Current 10EL 100EL		22	30		22	30		22	30		22	30	mA
			27	34		27	34		27	34		31	38	
I _{IH}	Input HIGH Current			150			150			150			150	μA

AC Characteristics
SK10/100EL31W AC Characteristics (Notes 1, 2)
 $(V_{CC} - V_{EE} = 3.0V \text{ to } 5.5V; V_{OUT} \text{ Loaded } 50\Omega \text{ to } V_{CC} - 2.0V)$

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}	Maximum Toggle Frequency	2.6	2.9		2.6	2.9		2.6	2.9		2.6	2.9		GHz
t _{PLH} t _{PHL}	Prop Delay to Output CLK S, R	300 240	350 400	400 560	300 240	350 390	400 540	300 260	350 390	400 520	300 280	355 430	410 580	ps ps
t _S t _H	Setup Time Hold Time	150 250			150 250			150 250			150 250			ps
t _{RR}	Set/Reset Recovery	400			400			400			400			ps
t _{PW}	Minimum Pulse Width CLK, Set, Reset	400			400			400			400			ps
t _r t _f	Output Rise/Fall Times Q (20% – 80%)	110	145	180	110	145	180	110	148	185	125	165	200	ps

Notes:

- 10EL circuits are designed to meet the DC specifications shown in the table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfpm is maintained. Outputs are terminated through a 50Ω resistor to V_{CC} - 2.0V except where otherwise specified on the individual datasheets.
- 100K circuits are designed to meet the DC specifications shown in the table where transverse airflow greater than 500 lfpm is maintained.
- For standard ECL DC specifications, refer to the ECL Logic Family Standard DC Specifications Data Sheet.
- For part ordering description, see HPP part ordering information Data sheet.

HIGH-PERFORMANCE PRODUCTS**Application Notes**

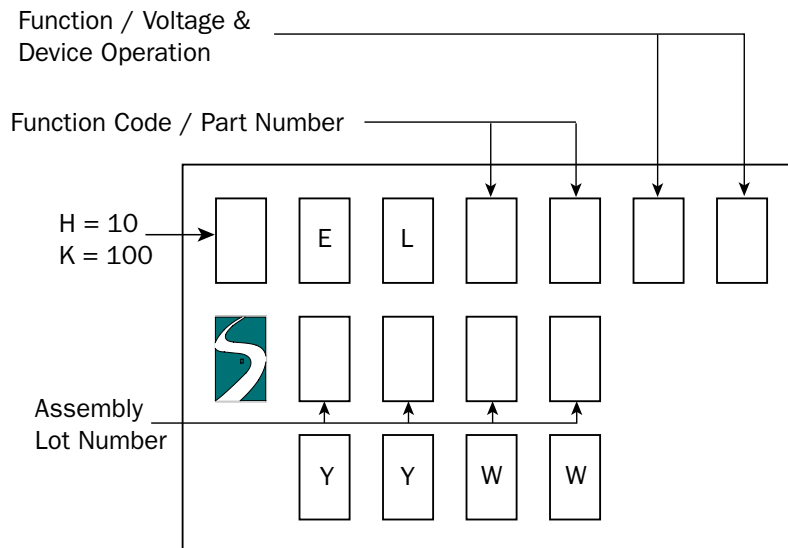
AN1003 - Termination Techniques for ECL / LVECL / PECL / LVPECL Devices

AN1005 - Using ECL / LVECL Devices as PECL / LVPECL

AN1006 - Designing with 10K and 100K ECL / PECL Devices

HIGH-PERFORMANCE PRODUCTS
Ordering Information

Ordering Code	Package ID
SK10EL31WD	8-SOIC
SK10EL31WDT	8-SOIC
SK100EL31WD	8-SOIC
SK100EL31WDT	8-SOIC
SK10EL31WU	Die
SK100EL31WU	Die

Marking Information
8 PIN SOIC PACKAGE


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

Contact Information

Division Headquarters
 10021 Willow Creek Road
 San Diego, CA 92131
 Phone: (858) 695-1808
 FAX: (858) 695-2633

Semtech Corporation
High-Performance Products Division

Marketing Group
 1111 Comstock Street
 Santa Clara, CA 95054
 Phone: (408) 566-8776
 FAX: (408) 566-8759