SEMTECH

D Flip - Flop with Set and Reset
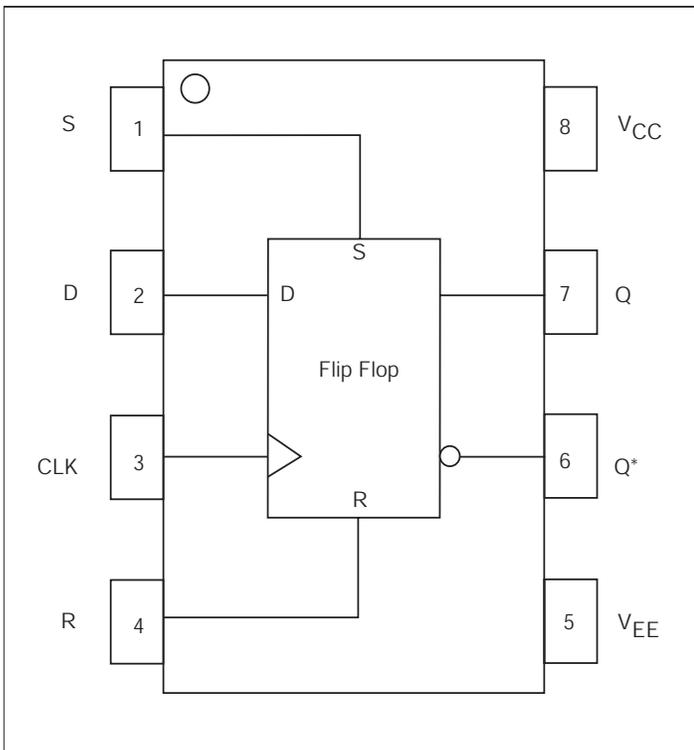
TEST AND MEASUREMENT PRODUCTS

Description

The SK100EL31W is a D Flip-Flop with Set and Reset. The device is fully compatible with the MC100EL31 and MC100LVEL31 devices, but operates from a –5.5V to –3.3V supply. With propagation delays and output transition times significantly faster than the E131, SK100EL31W 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: (VEE = –5.5V to –3.0V, VCC = 0V) or (VCC = +3.0V to +5.5V, VEE = 0V)
- 350 ps typical Propagation Delay
- 2.9 GHz Toggle Frequency
- Fully Compatible with MC100EL31 and MC100LVEL31
- 75KΩ Internal Input Pulldown Resistors
- Specified Over Industrial Temperature Range: –40ºC to 85ºC
- ESD Protection of >4000V
- Small Outline SOIC Package
- Flammability Rate: UL-94 code V-0.
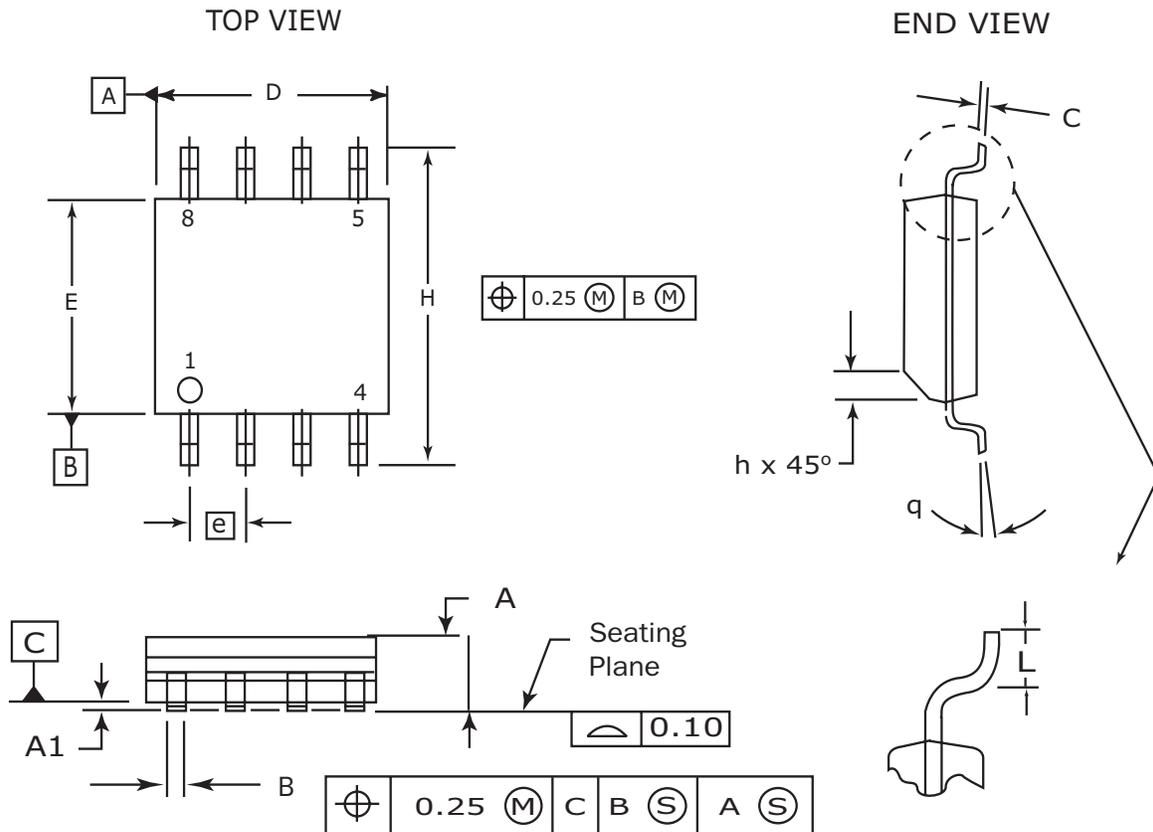- Moisture Sensitivity: Level 1.

PinDescription

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

Functional Block Diagram

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

TOP VIEW

END VIEW

	MILLIMETERS	
DIM	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	0º	8º

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.

TEST AND MEASUREMENT PRODUCTS

DC Characteristics

SK100EL31W DC Characteristics *(Notes 1, 2)*

(V_{CC} – V_{EE} = 3.0V to 5.5V; VOUT Loaded 50Ω to VCC – 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		27	34		27	34		27	34		31	38	mA
I_{IH}	Input HIGH Current			150			150			150			150	µA

AC Characteristics

SK100EL31W AC Characteristics *(Note 1)*

(V_{CC} – V_{EE} = 3.0V to 5.5V; VOUT Loaded 50Ω to VCC – 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:
1. 100K circuits are designed to meet the DC specifications shown in the table where transverse airflow greater than 500 lfpm is maintained.
2. *For standard ECL DC specifications, refer to the ECL Logic Family Standard DC Specifications Data Sheet.*
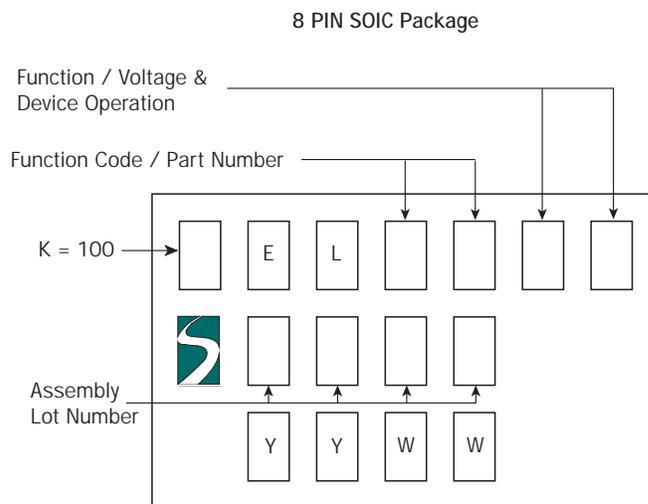3. For part ordering description, see TMD part ordering information Data sheet.

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

TEST AND MEASUREMENT PRODUCTS

Ordering Information

Ordering Code	Package ID
SK100EL31WD	8-SOIC
SK100EL31WDT	8-SOIC
SK100EL31WU	Die

Marking Information

8 PIN SOIC Package

Function / Voltage &
Device Operation

Function Code / Part Number

K = 100

E   L

Assembly
Lot Number

Y   Y   W   W

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

Contact Information

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