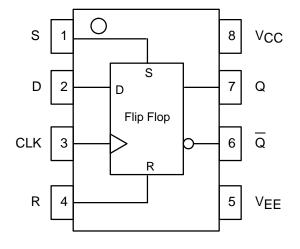
# D Flip-Flop With Set and Reset

The MC100LVEL31 is a D flip-flop with set and reset. The device is functionally equivalent to the EL31 device but operates from a -3.3V (or +3.3V) supply. With propagation delays and output transition times essentially equivalent to the EL31, the LVEL31 is ideally suited for those applications which require the ultimate in AC performance at low power supply voltages.

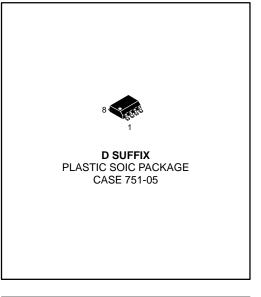
Both set and reset inputs are asynchronous, level triggered signals. Data enters the master portion of the flip-flop when clock is LOW and is transferred to the slave, and thus the outputs, upon a positive transition of the clock.

- 475ps Propagation Delay
- 2.9GHz Toggle Frequency
- 75kΩ Internal Input Pulldown Resistors
- >2000V ESD Protection

#### LOGIC DIAGRAM AND PINOUT ASSIGNMENT



### MC100LVEL31



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	TRUTH TABLE							
L L L Z L H L Z H X H L X H X L H X L X Undef	D	s	R	CLK	ď			
X   H   H   X   Undef		L	L L H	Z Z X	H H L			
	X	H	H	X	Undef			

### **DC CHARACTERISTICS** (VEE = VEE(min) to VEE(max); VCC = GND)

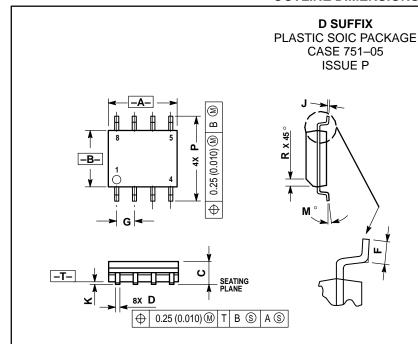
		-40°C			0°C			25°C			85°C			
Symbol	Characteristic	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
IEE	Power Supply Current		30	35		30	35		30	35		32	38	mA
VEE	Power Supply Voltage	-3.0	-3.3	-3.8	-3.0	-3.3	-3.8	-3.0	-3.3	-3.8	-3.0	-3.3	-3.8	V
ΊΗ	Input HIGH Current			150			150			150			150	μΑ
I <sub>I</sub> L	Input LOW Current	0.5			0.5			0.5			0.5			μΑ

## **AC CHARACTERISTICS** ( $V_{EE} = V_{EE}(min)$ to $V_{EE}(max)$ ; $V_{CC} = GND$ )

		–40°C		0°C			25°C			85°C				
Symbol	Characteristic	Min	Тур	Max	Unit									
fMAX	Maximum Toggle Frequency	2.7			2.9			2.9			2.9			GHz
<sup>†</sup> PLH <sup>†</sup> PHL	Propagation Delay to Output CLK S, R	365 385	465 475	580 620	365 385	465 475	580 620	375 395	475 485	590 630	415 435	530 525	630 670	ps
ts tH	Setup Time Hold Time	150 250	0 100		ps									
tRR	Set/Reset Recovery	400	200		400	200		400	200		400	200		ps
tpW	Minimum Pulse Width CLK, Set, Reset	600			600			600			600			ps
t <sub>r</sub>	Output Rise/Fall Times Q (20% – 80%)	120	220	320	120	220	320	120	220	320	120	220	320	ps

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### **OUTLINE DIMENSIONS**



- NOTES:

  1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.

  2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

  3. DIMENSIONS ARE IN MILLIMETER.

  4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.

  5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.

  6. DIMENSION D DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE DAMBAR PROTRUSION ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS							
DIM	MIN	MAX						
Α	4.80	5.00						
В	3.80	4.00						
С	1.35	1.75						
D	0.35	0.49						
F	0.40	1.25						
G	1.27	1.27 BSC						
J	0.18	0.25						
K	0.10	0.25						
M	0 °	7 °						
Р	5.80	6.20						
R	0.25	0.50						

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### MC100LVEL31

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