Product Preview

Differential Clock D Flip-Flop

MC100LVEL51

The MC100LVEL51 is a differential clock D flip-flop with reset. The device is functionally equivalent to the EL51 device, but operates from a low voltage supply. With propagation delays and output transition times essentaially equal to the EL51, the LVEL51 is ideally suited for those applications which require the ultimate in AC performance at 3.3V V_{CC}.

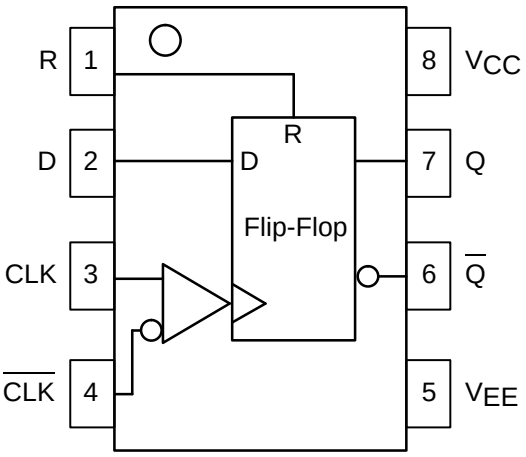
The reset input is an asynchronous, level triggered signal. Data enters the master portion of the flip-flop when the clock is LOW and is transferred to the slave, and thus the outputs, upon a positive transition of the clock. The differential clock inputs of the LVEL51 allow the device to be used as a negative edge triggered flip-flop.

The differential input employs clamp circuitry to maintain stability under open input conditions. When left open, the CLK input will be pulled down to V_{EE} and the CLK input will be biased at $V_{CC}/2$.

- 475ps Propagation Delay
- 2.8GHz Toggle Frequency
- 75kΩ Internal Input Pulldown Resistors
- >1000V ESD Protection

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



TRUTH TABLE

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

Z = LOW to HIGH Transition

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.

DC CHARACTERISTICS (V_{EE} = V_{EE}(min) to V_{EE}(max); V_{CC} = GND)

		–40°C			0°C			25°C			85°C			
Symbol	**Characteristic**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Unit**
I_{EE}	Power Supply Current		24			24			24			24		mA
V_{EE}	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
I_{IH}	Input HIGH Current			150			150			150			150	µA

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**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Unit**
f_{MAX}	Maximum Toggle Frequency		2.8			2.8			2.8			2.8		GHz
t_{PLH} t_{PHL}	Propagation Delay to Output CLK R		465 455			465 455			475 465			530 510		ps
t_S	Setup Time		0			0			0			0		ps
t_H	Hold Time		100			100			100			100		ps
t_{RR}	Reset Recovery		200			200			200			200		ps
t_{PW}	Minimum Pulse Width CLK, Reset	400			400			400			400			ps
V_{PP}	Minimum Input Swing[1]	150			150			150			150			mV
V_{CMR}	Common Mode Range[2]													V
t_r t_f	Output Rise/Fall Times Q (20% – 80%)		225			225			225			225		ps

1. Minimum input swing for which AC parameters are guaranteed.

OUTLINE DIMENSIONS

D SUFFIX
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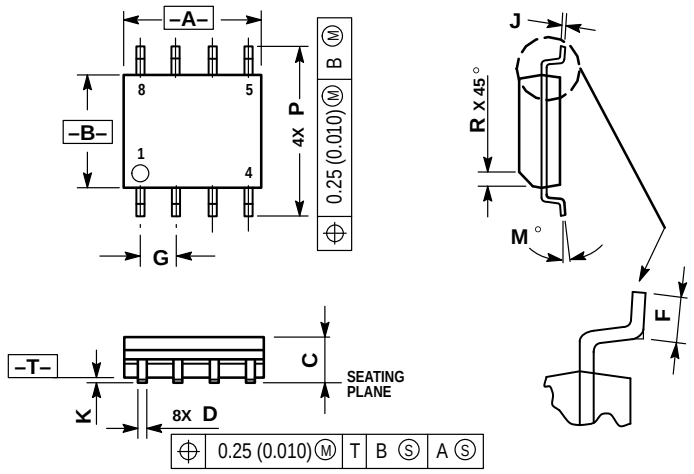
ISSUE P



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 SHALL BE 0.127 TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

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

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