

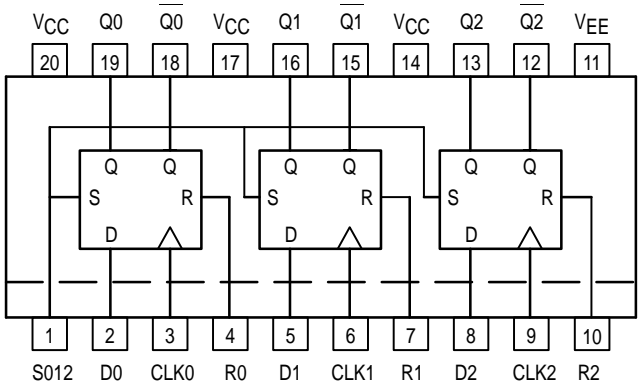
# Triple D Flip-Flop With Set and Reset

The MC100LVEL30 is a triple master–slave D flip flop with differential outputs. The MC100EL30 is pin and functionally equivalent to the MC100LVEL30 but is specified for operation at the standard 100E ECL voltage supply. Data enters the master latch when the clock input is LOW and transfers to the slave upon a positive transition on the clock input.

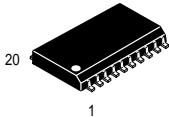
In addition to a common Set input individual Reset inputs are provided for each flip flop. Both the Set and Reset inputs function asynchronous and overriding with respect to the clock inputs.

- 1200MHz Minimum Toggle Frequency
- 20–Lead SOIC Packaging
- 550ps Typical Propagation Delays
- Set and Reset Inputs
- Supports both Standard and Low Voltage 100K ECL
- Internal Input Pulldown Resistors
- >2000V ESD Protection

Logic Diagram and Pinout: 20-Lead SOIC (Top View)



## MC100LVEL30 MC100EL30



DW SUFFIX  
PLASTIC SOIC PACKAGE  
CASE 751D–04

TRUTH TABLE

R	S	D	CLK	Q	$\overline{Q}$
L	L	L	Z	L	H
L	L	H	Z	H	L
H	L	X	X	L	H
L	H	X	X	H	L
H	H	X	X	Undef	Undef

Z = LOW to HIGH Transition

PIN NAMES

Pins	Function
D0–D2	Data Inputs
R0–R2	Reset Inputs
CLK0–CLK2	Clock Inputs
S012	Common Set Input



## MC100LVEL30 MC100EL30

### MC100LVEL30

#### DC CHARACTERISTICS ( $V_{EE} = -3.0V$ to $-3.8V$ ; $V_{CC} = GND$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$I_{EE}$	Power Supply Current		55	62		55	62		55	62		55	64	mA
$I_{IH}$	Input HIGH Current			150			150			150			150	$\mu A$

### MC100LVEL30

#### AC CHARACTERISTICS ( $V_{EE} = -3.0V$ to $-3.8V$ ; $V_{CC} = GND$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$f_{MAX}$	Maximum Toggle Frequency	1.0			1.2			1.2			1.2			GHz
$t_{PLH}$ $t_{PHL}$	Propagation Delay CLK to Output S, R	460 470		690 710	470 480		700 720	480 490		710 730	500 515		730 755	ps
$t_S$ $t_H$	Setup Time Hold Time	150 200	0 100		150 200	0 100		150 200	0 100		150 200	0 100		ps
$t_{RR}$	Set/Reset Recovery	400	200		400	200		400	200		400	200		ps
$t_{PW}$	Minimum Pulse Width CLK Set, Reset	400 650			400 650			400 650			400 650			ps
$t_r$ $t_f$	Output Rise/Fall Times Q (20% – 80%)	280		550	280		550	280		550	280		550	ps

### MC100EL30

#### DC CHARACTERISTICS ( $V_{EE} = -4.2V$ to $-5.5V$ ; $V_{CC} = GND$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$I_{EE}$	Power Supply Current		55	62		55	62		55	62		55	64	mA
$I_{IH}$	Input HIGH Current			150			150			150			150	$\mu A$

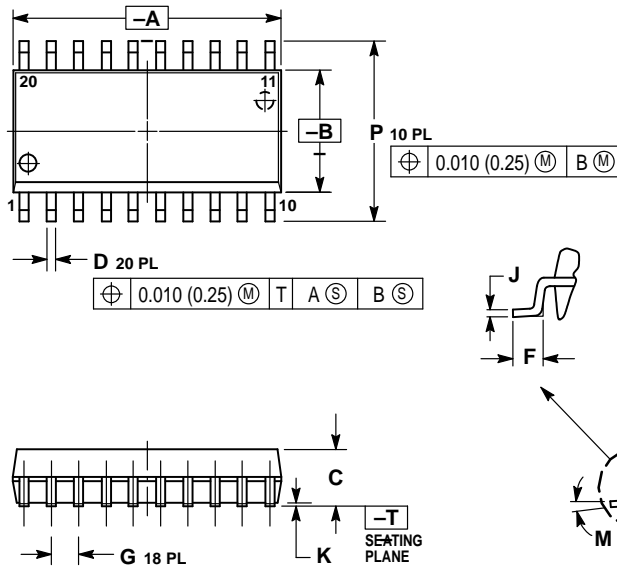
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#### AC CHARACTERISTICS ( $V_{EE} = -4.2V$ to $-5.5V$ ; $V_{CC} = GND$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$f_{MAX}$	Maximum Toggle Frequency	1.0			1.2			1.2			1.2			GHz
$t_{PLH}$ $t_{PHL}$	Propagation Delay CLK to Output S, R	460 470		690 710	470 480		700 720	480 490		710 730	500 515		730 755	ps
$t_S$ $t_H$	Setup Time Hold Time	150 200	0 100		150 200	0 100		150 200	0 100		150 200	0 100		ps
$t_{RR}$	Set/Reset Recovery	400	200		400	200		400	200		400	200		ps
$t_{PW}$	Minimum Pulse Width CLK Set, Reset	400 650			400 650			400 650			400 650			ps
$t_r$ $t_f$	Output Rise/Fall Times Q (20% – 80%)	280		550	280		550	280		550	280		550	ps

## OUTLINE DIMENSIONS


**DW SUFFIX**  
**PLASTIC SOIC PACKAGE**  
**CASE 751D-04**  
**ISSUE E**



## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.150 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.13 (0.005) TOTAL IN EXCESS OF D DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.65	12.95	0.499	0.510
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.50	0.90	0.020	0.035
G	1.27 BSC		0.050 BSC	
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

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