

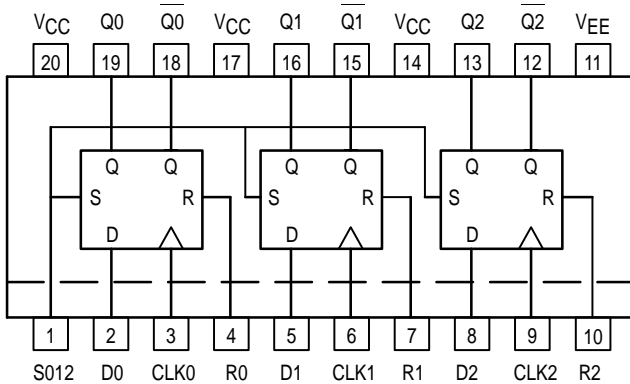
Triple D Flip-Flop With Set and Reset

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.

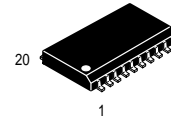
In addition to a common Set input individual Reset inputs are provided for each flip flop. Both the Set and Reset inputs function asynchronous and overriding with respect to the clock inputs.

- 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 | \bar{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 | μA |

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 to Output CLK 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 | μA |

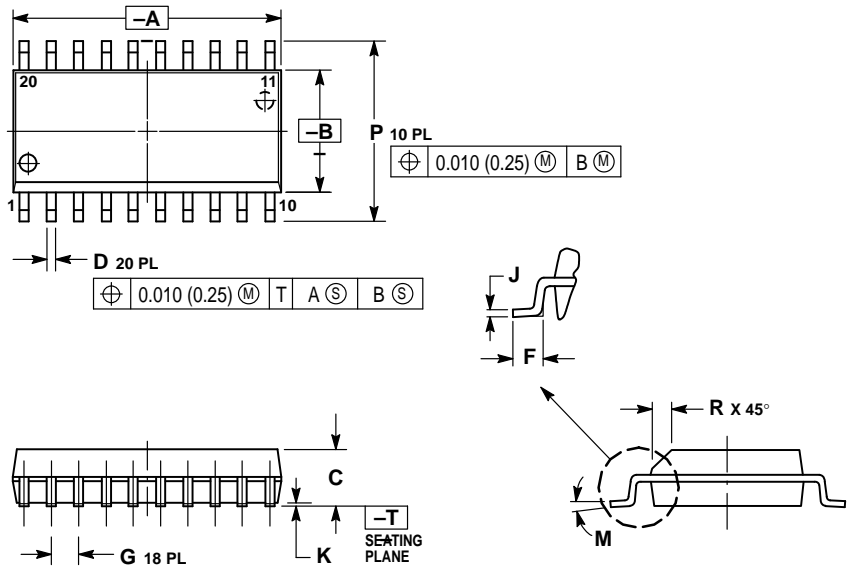
MC100EL30

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 to Output CLK 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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