

Product Overview

MC100E431: ECL 3-Bit Differential D Flip-Flop

For complete documentation, see the data sheet.

The MC10E/100E431 is a 3-bit flip-flop with differential clock, data input and data output.

The asynchronous Set and Reset controls are edge-triggered rather than level controlled. This allows the user to rapidly set or reset the flip-flop and then continue clocking at the next clock edge, without the necessity of de-asserting the set/reset signal (as would be the case with a level controlled set/reset).

The E431 is also designed with larger internal swings, an approach intended to minimize the time spent crossing the threshold region and thus reduce the metastability susceptibility window.

The differential input structures are clamped so that the inputs of unused registers can be left open without upsetting the bias network of the device. The clamping action will assert the Dbar and the CLKbar sides of the inputs. Because of the edge triggered flip-flop nature of the device simultaneously opening both the clock and data inputs will result in an output which reaches an unidentified but valid state. Note that the input clamps only operate when both inputs fall to 2.5 V below V_{CC} .

The 100 Series contains temperature compensation.

The V_{BB} pin, an internally generated voltage supply, is available to this device only. For single-ended input conditions, the unused differential input is connected to V_{BB} as a switching reference voltage. V_{BB} may also rebias AC coupled inputs. When used, decouple V_{BB} and V_{CC} via a 0.01 μ F capacitor and limit current sourcing or sinking to 0.5 mA. When not used, V_{BB} should be left open.

Features

- Edge-Triggered Asynchronous Set and Reset
- Differential D, CLK and Q; V_{BB} Reference Available
- 1100MHz Min. Toggle Frequency
- PECL Mode Operating Range: $V_{CC} = 4.2$ V to 5.7 V with $V_{EE} = 0$ V
- NECL Mode Operating Range: $V_{CC} = 0$ V with $V_{EE} = -4.2$ V to -5.7 V
- Internal Input Pulldown Resistors
- ESD Protection: > 1 kV HBM, > 75 V MM
- Meets or Exceeds JEDEC Spec EIA/JESD78 IC Latchup Test
- Moisture Sensitivity Level 1
For Additional Information, see Application Note AND8003/D
- Flammability Rating: UL-94 code V-0 @ 1/8", Oxygen Index 28 to 34

For more features, see the data sheet

Part Electrical Specifications

Product	Compliance	Status	Type	Bits	Input Level	Output Level	V_{CC} Typ (V)	t_{jitter} Typ (ps)	t_{pd} Typ (ns)	t_{su} Min (ns)	t_h Min (ns)	t_{rec} Typ (ns)	t_R & t_F Max (ps)	f_{Toggle} Typ (MHz)	Package Type
MC100E431FNR2G	Pb-free Halide free	Active	D-Type	3	ECL	ECL	5	1	0.7	0.2	0.2	0.4	700	1100	PLCC-28

For more information please contact your local sales support at www.onsemi.com.

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