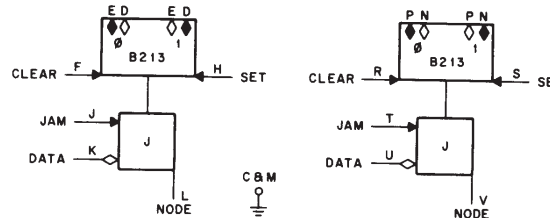# B213 JAM FLIP-FLOP

Standard Size FLIP CHIP Module, 18 Pins

The B213 provides two jam transfer (C-D) flip-flops. It is often used in combination with the B169 diode gate to form a general purpose register. It is also useful as a complementary bus driver.

INPUTS: Data - Standard DEC levels of -3 V and ground. Input load is 2 mA shared among those inputs (pin K or U and expansion inputs) which are at ground. The inputs must be settled at -3 V or ground 20 ns before the jam input is pulsed.

Node - The node can be used to expand the data input using R001 or R002 diode networks. Short wires must be used between the node and diode networks. If any data input is at ground when the jam input is pulsed, pin D, N will go negative (the flip-flop will be set). If all data inputs are at -3 V, pin E, P will go negative (the flip-flop will be cleared).

Jam - A standard DEC 40 ns negative pulse or a level change greater than -1 V in 12 ns will set or clear the flip-flop. Input load is -5 mA at -3 V and 31 pF. Maximum repetition rate is 10 MHz. Rise and fall TTT from the jam input to the output is less than 40 ns.

Direct Set or Clear - Standard DEC 40 ns negative pulses. Input load is -10 mA at -3 V. The result of pulsing both the set and clear inputs is not defined. The set and clear inputs may be left open when not in use.

OUTPUTS: Standard DEC levels of -3 V and ground. All outputs can drive 36 mA at ground or 2 base loads at 10 MHz. (A base load is -1 mA and 60 pF.) The internally connected clamped loads will supply -7 mA at -3 V.

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POWER:

Pin	Voltage	Margin Range	Current
A	+10 V	+8 V to +12 V	32 mA
B	-15 V	-12 V to -18 V	80 mA
C, M	ground		

Both pins C and M must be grounded.

CAUTION

The B213 flip-flop may be damaged if its outputs are
grounded when one or more of its inputs is active.

APPLICATIONS: Redefining the B213 output pins provides a jam (C-D) flip-flop with a negative data
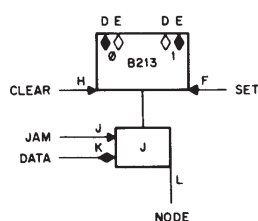input. (See Figure 4-6.)

Figure 4-6   B213 With Negative Data Input

The B213 can also be used as a dual complementary bus driver by connecting the jam input
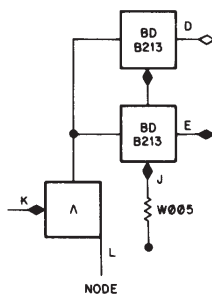to a source of -3 V such as a free clamped load. (See Figure 4-7.)

Figure 4-7   B213 As Bus Driver

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