

CMOS QUAD 3-STATE R-S LATCHES

FEATURES

- ◆ Separate Set and Reset Inputs for each Latch
- ◆ Active-High (4043 B) or Active-Low (4044 B) Inputs
- ◆ 3-State Outputs with Common Enable

DESCRIPTION

4043 B types are Quad cross-coupled 3-state CMOS NOR Latches, and the 4044 B types are Quad cross-coupled 3-state CMOS NAND Latches. Each latch has a separate Q output and individual Set and Reset inputs. The Q outputs are gated through transmission gates controlled by a common Enable input. A logic "1" or "high" on the Enable input connects the latch states to the Q outputs. A logic "0" or "low" on the Enable input disconnects the latch states from the Q outputs, resulting in an open circuit condition on the Q outputs. The open circuit feature allows common bussing of the outputs. The logic operation of the latches is summarized in the truth table below.

TRUTH TABLES

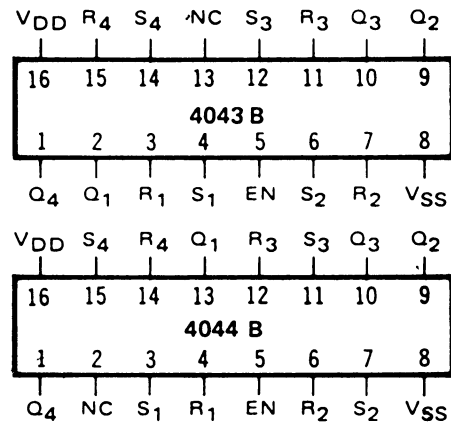
4043 B			
S	R	E	Q
X	X	O	OC*
O	O	I	NC+
I	O	I	I
O	I	I	O
I	I	I	Δ

* OPEN CIRCUIT
+ NO CHANGE
Δ DOMINATED BY S = I INPUT

4044 B			
S	R	E	Q
X	X	O	OC*
I	I	I	NC+
O	I	I	I
I	O	I	O
O	O	I	ΔΔ

* OPEN CIRCUIT
+ NO CHANGE
ΔΔ DOMINATED BY R = O INPUT

CONNECTION DIAGRAMS (all packages)



Add suffix for package:

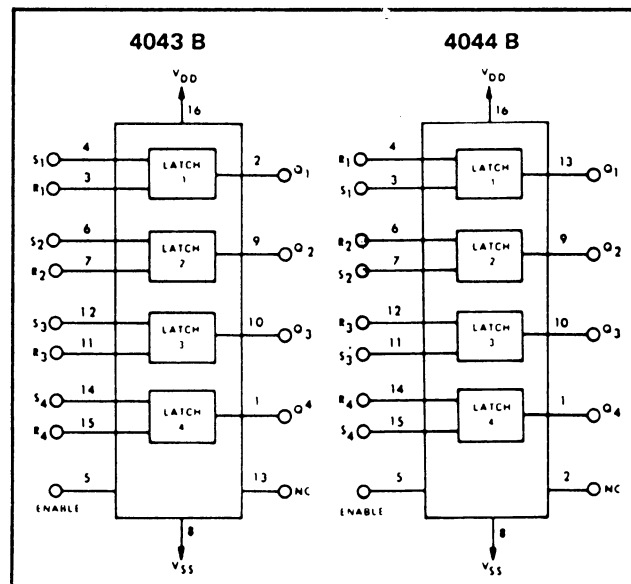
- C 16-pin Cerdip
- E 16-pin Epoxy

RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

DC Supply Voltage	$V_{DD} - V_{SS}$	3 to 15	Vdc
Operating Temperature	T_A	-55 to +125	°C
		-40 to +85	°C

BLOCK DIAGRAMS



ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS ¹

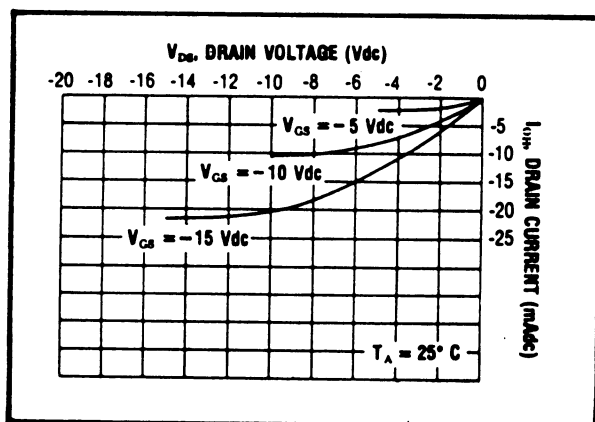
PARAMETER	V _{DD} (Vdc)	CONDITIONS	T _{LOW} ²		+25°C			T _{HIGH} ²		Units	
			Min.	Max.	Min.	Typ.	Max.	Min.	Max.		
QUIESCENT DEVICE CURRENT	I _{DD}	V _{IN} =V _{SS} or V _{DD} All valid input combinations	-	1.0	-	0.005	1.0	-	30	μAdc	
			-	2.0	-	0.01	2.0	-	60		
			-	4.0	-	0.02	4.0	-	120		
3-STATE OUTPUT LEAKAGE CURRENT	I _{ZL}	15	Enable = V _{SS}	-	±0.1	-	±10 ⁻⁴	±0.1	-	±1.0	μAdc

NOTES: ¹ Remaining Static Electrical Characteristics are listed under "4000B Series Family Specifications".

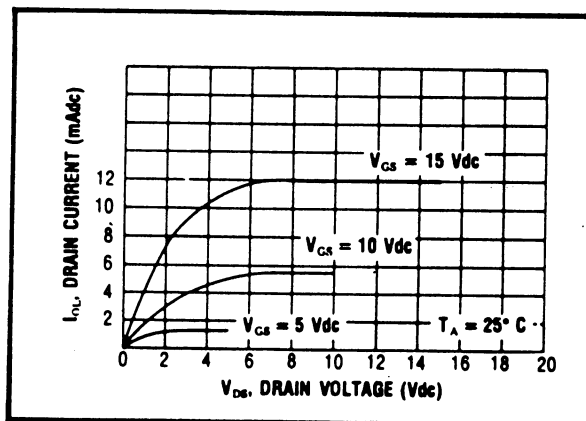
² T_{LOW} = -55°C for C
 = -40°C for E
 T_{HIGH} = +125°C for C
 = + 85°C for E

DYNAMIC CHARACTERISTICS (C_L = 50pF, T_A = 25°C)

PARAMETER		V _{DD} (Vdc)	Min.	Typ.	Max.	Units	
PROPAGATION DELAY TIME From S or R Inputs	t _{PLH} , t _{PHL}	5	-	150	300	ns	
		10	-	70	140		
		15	-	50	100		
	From Enable Input	t _{PHZ} , t _{PLZ} t _{PZH} , t _{PZL}	5	-	75	150	ns
			10	-	35	70	
			15	-	30	60	
OUTPUT TRANSITION TIME	t _{TLH} , t _{THL}	5	-	100	200	ns	
		10	-	50	100		
		15	-	40	80		
MINIMUM SET OR RESET PULSE WIDTH	PW _S , PW _R	5	-	80	160	ns	
		10	-	40	80		
		15	-	30	60		
SET OR RESET REMOVAL TIME	t _{rem}	5	-	25	50	ns	
		10	-	15	30		
		15	-	10	20		

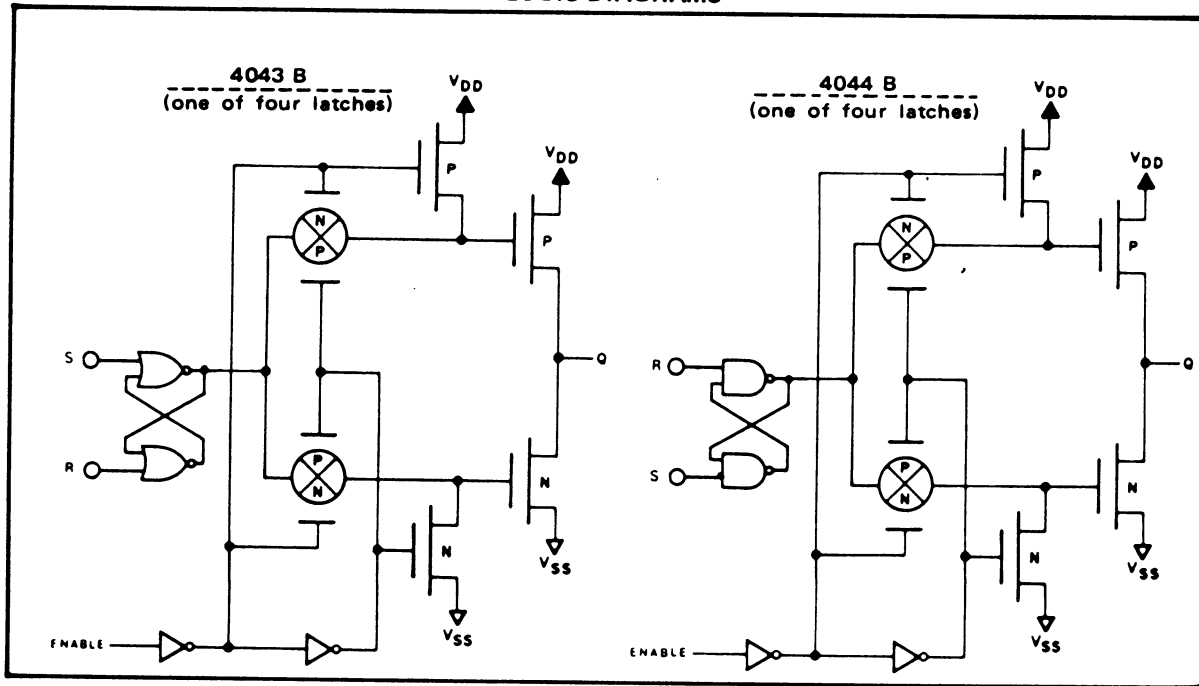


Typical P-Channel Source Current Characteristics



Typical N-Channel Sink Current Characteristics

LOGIC DIAGRAMS



APPLICATIONS INFORMATION

