

## CMOS DUAL 4-BIT LATCH

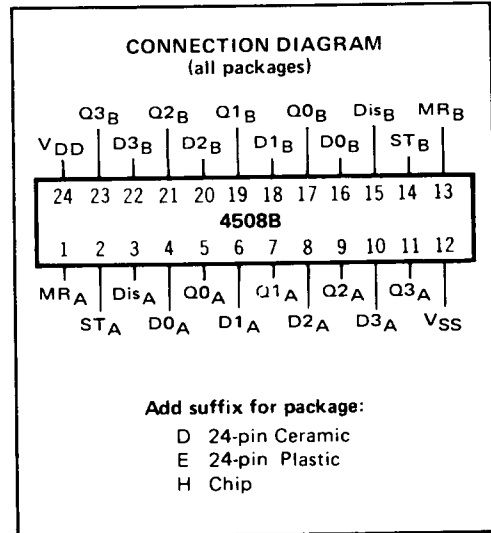
### FEATURES

- ◆ Two Independent Four-Bit Latches
- ◆ 3-State Outputs
- ◆ Direct Reset
- ◆ All Inputs Buffered

### DESCRIPTION

The 4508B consists of two identical independent 4-Bit Latches with separate Strobe (ST) and Master Reset (MR) controls. Separate Disable inputs force the outputs to a high-impedance state for bus line applications.

These devices find primary use in buffer storage, holding register, and display circuits, and other general digital logic applications.



### RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

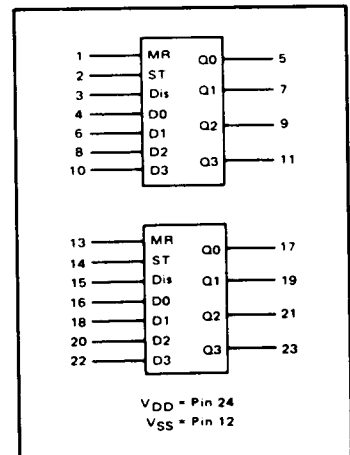
DC Supply Voltage	$V_{DD} - V_{SS}$	3 to 15	Vdc
Operating Temperature	$T_A$	-55 to +125	°C
		-40 to +85	°C

### TRUTH TABLE

MR	ST	Disable	D3	D2	D1	D0	Q3	Q2	Q1	Q0
0	1	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	1	0	0	0	1
0	1	0	0	0	1	0	0	0	1	0
0	1	0	0	1	0	0	0	1	0	0
0	1	0	1	0	0	0	1	0	0	0
0	0	0	X	X	X	X	Latched			
1	X	0	X	X	X	X	0	0	0	0
X	X	1	X	X	X	X	High Impedance			

X = Don't Care

### BLOCK DIAGRAM



## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS<sup>1</sup>

PARAMETER	V <sub>DD</sub> (Vdc)	CONDITIONS	T <sub>LOW</sub> <sup>2</sup>		+25°C			T <sub>HIGH</sub> <sup>2</sup>		Units
			Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
QUIESCENT DEVICE CURRENT	I <sub>DD</sub>	V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub> All valid input combinations	—	5	—	0.05	5	—	150	μA <sub>dc</sub>
			—	10	—	0.1	10	—	300	
			—	20	—	0.2	20	—	600	
3-STATE OUTPUT LEAKAGE CURRENT	I <sub>ZL</sub>		—	±0.1	—	±10 <sup>-4</sup>	±0.1	—	±1.0	μA <sub>dc</sub>

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

<sup>2</sup> T<sub>LOW</sub> = -55°C for D, H device.

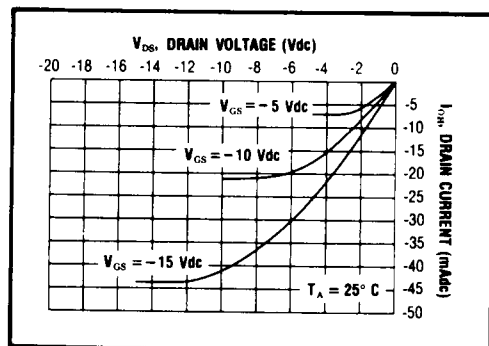
= -40°C for E device.

T<sub>HIGH</sub> = +125°C for D, H device.

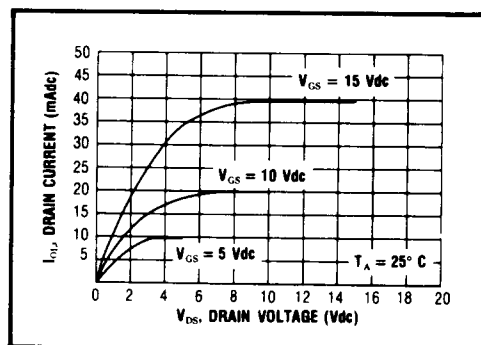
= + 85°C for E device.

DYNAMIC CHARACTERISTICS (C<sub>L</sub> = 50pF, T<sub>A</sub> = 25°C)

PARAMETER	V <sub>DD</sub> (Vdc)	Min.	Typ.	Max.	Units	
PROPAGATION DELAY TIME From Data Inputs	t <sub>PLH</sub> , t <sub>PHL</sub>	5	—	220	ns	
		10	—	90		
		15	—	60		
	From Disable Input	t <sub>PHZ</sub> , t <sub>PLZ</sub> t <sub>PZH</sub> , t <sub>PZL</sub>	5	—	85	ns
			10	—	45	
			15	—	30	
OUTPUT TRANSITION TIME	t <sub>TLH</sub> , t <sub>THL</sub>	5	—	100	ns	
		10	—	50	100	
		15	—	40	80	
MINIMUM MASTER RESET PULSE WIDTH	PW <sub>MR</sub>	5	—	100	ns	
		10	—	50	100	
		15	—	35	70	
MINIMUM STROBE PULSE WIDTH	PW <sub>ST</sub>	5	—	70	ns	
		10	—	35	70	
		15	—	20	40	
MINIMUM SETUP TIME Data Inputs	t <sub>setup</sub>	5	—	25	ns	
		10	—	10	20	
		15	—	5	10	
MINIMUM HOLD TIME Data Inputs	t <sub>hold</sub>	5	—	0	ns	
		10	—	0	0	
		15	—	0	0	

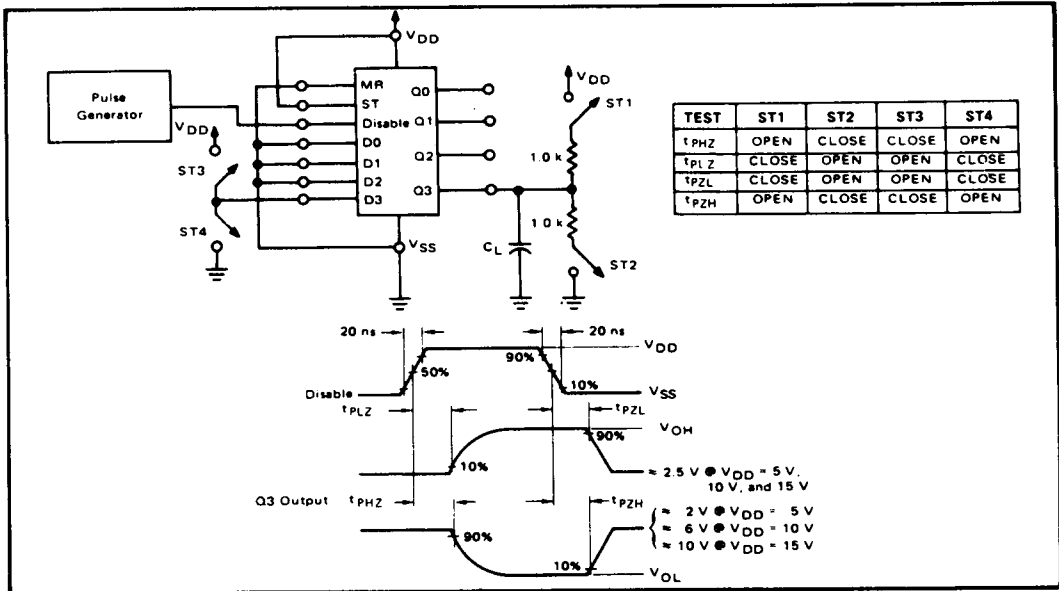


Typical P-Channel  
Source Current Characteristics



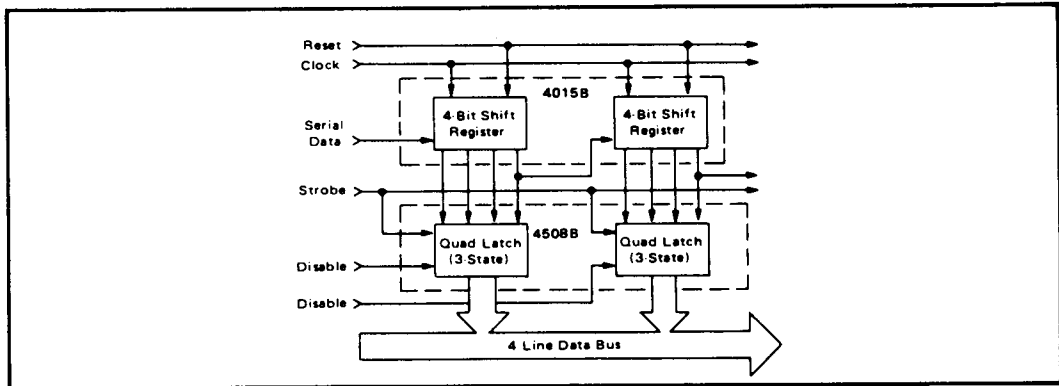
Typical N-Channel  
Sink Current Characteristics

**3-STATE AC TEST CIRCUIT AND WAVEFORMS**

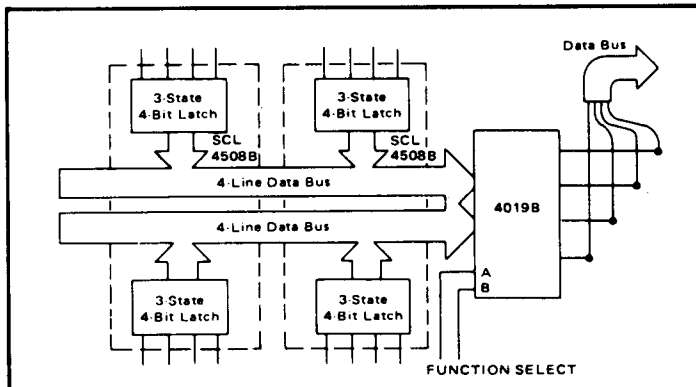


**APPLICATIONS INFORMATION**

**BUS REGISTER**



**DUAL MULTIPLEXED BUS REGISTER WITH FUNCTION SELECT**



**FUNCTION SELECT**

A	B	Function
0	0	Inhibit (all 0)
1	0	Select A Bus
0	1	Select B Bus
1	1	A <sub>i</sub> + B <sub>i</sub>