



## ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS<sup>1,3</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	–	5	–	0.05	5	–	150	μAdc	
			10	–	10	–	0.1	10	–	300		
			15	–	15	–	0.2	20	–	600		
HIGH LEVEL OUTPUT VOLTAGE Decoded Outputs	V <sub>OH</sub>	V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub>  I <sub>O</sub>   < 1μA	5	4.25	–	4.25	–	–	4.25	–	Vdc	
			10	9.25	–	9.25	–	–	9.25	–		
			15	14.25	–	14.25	–	–	14.25	–		
MINIMUM INPUT HIGH VOLTAGE	V <sub>IH</sub>	V <sub>O</sub> = 0.5V or 4.25V V <sub>O</sub> = 1.0V or 9.0V V <sub>O</sub> = 1.5V or 13.5V  I <sub>O</sub>   < 1μA	5	–	3.75	–	2.75	3.75	–	3.75	Vdc	
			10	–	7.5	–	5.5	7.5	–	7.5		
			15	–	11.25	–	8.25	11.25	–	11.25		
MAXIMUM INPUT LOW VOLTAGE	V <sub>IL</sub>	V <sub>O</sub> = 0.5V or 4.25V V <sub>O</sub> = 1.0V or 9.0V V <sub>O</sub> = 1.5V or 13.5V  I <sub>O</sub>   < 1μA	5	1.25	–	1.25	2.25	–	1.25	–	Vdc	
			10	2.5	–	2.5	4.5	–	7.5	–		
			15	3.75	–	3.75	6.75	–	3.75	–		
OUTPUT HIGH (SOURCE) CURRENT Decoded Outputs <sup>3</sup>	I <sub>E</sub>	V <sub>OH</sub> = 2.5V V <sub>OH</sub> = 8.5V V <sub>OH</sub> = 13.5V	5	–	–	-10	-25	–	–	–	mAdc	
			10	–	–	–	-60	–	–	–		
			15	–	–	–	-100	–	–	–		
	Carry Output	I <sub>OH</sub>	V <sub>OH</sub> = 4.6V V <sub>OH</sub> = 9.5V V <sub>OH</sub> = 13.5V V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub>	5	-0.10	–	-0.10	-0.4	–	-0.07	–	mAdc
				10	-0.30	–	-0.30	-1.0	–	-0.20	–	
				15	-0.90	–	-0.90	-4.0	–	-0.65	–	
	Remaining Outputs	I <sub>OH</sub>	V <sub>OH</sub> = 4.6V V <sub>OH</sub> = 9.5V V <sub>OH</sub> = 13.5V V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub>	5	-0.08	–	-0.08	-0.2	–	-0.06	–	mAdc
				10	-0.20	–	-0.20	-0.5	–	-0.14	–	
				15	-0.60	–	-0.60	-1.5	–	-0.42	–	
OUTPUT LOW (SINK) CURRENT	I <sub>OL</sub>	V <sub>OL</sub> = 0.4V V <sub>OL</sub> = 0.5V V <sub>OL</sub> = 1.5V V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub>	5	-0.10	–	-0.10	0.4	–	-0.07	–	mAdc	
			10	-0.30	–	-0.30	1.0	–	-0.20	–		
			15	-0.90	–	-0.90	4.0	–	-0.65	–		
	Carry Output	I <sub>OL</sub>	V <sub>OL</sub> = 0.4V V <sub>OL</sub> = 0.5V V <sub>OL</sub> = 1.5V V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub>	5	0.13	–	-0.08	0.25	–	-0.06	–	mAdc
				10	0.31	–	-0.20	0.6	–	-0.14	–	
				15	1.43	–	-0.60	2.5	–	-0.42	–	
Remaining Outputs	I <sub>OL</sub>	V <sub>OL</sub> = 0.4V V <sub>OL</sub> = 0.5V V <sub>OL</sub> = 1.5V V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub>	5	0.13	–	-0.08	0.25	–	-0.06	–	mAdc	
			10	0.31	–	-0.20	0.6	–	-0.14	–		
			15	1.43	–	-0.60	2.5	–	-0.42	–		

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 C

T<sub>HIGH</sub> = +125°C for C

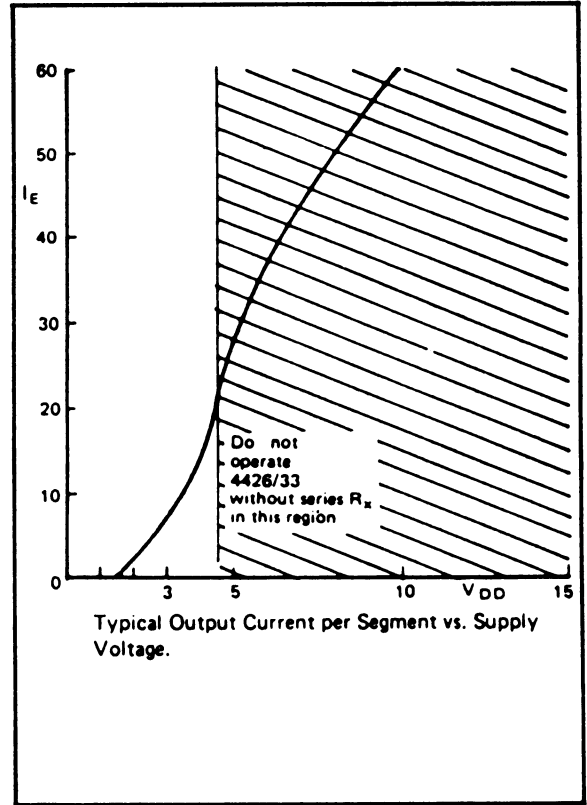
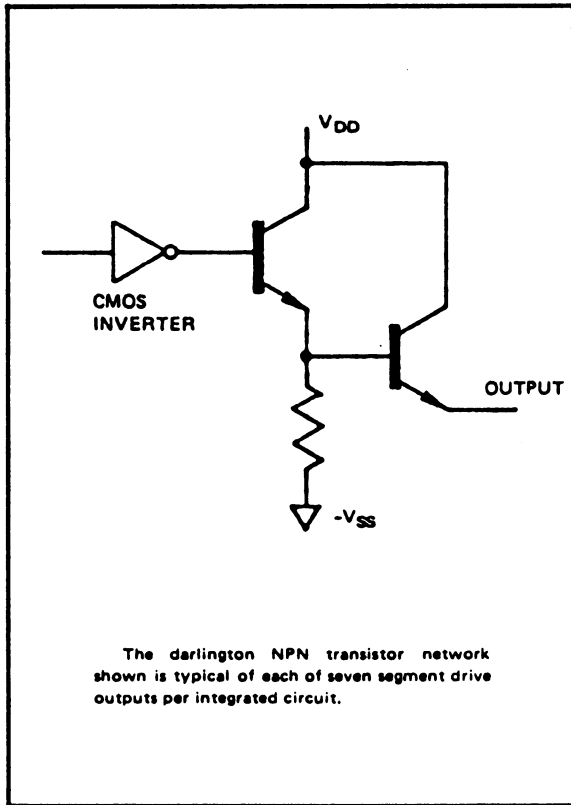
<sup>3</sup> Observe Package Power Dissipation rating.

## ELECTRICAL CHARACTERISTICS

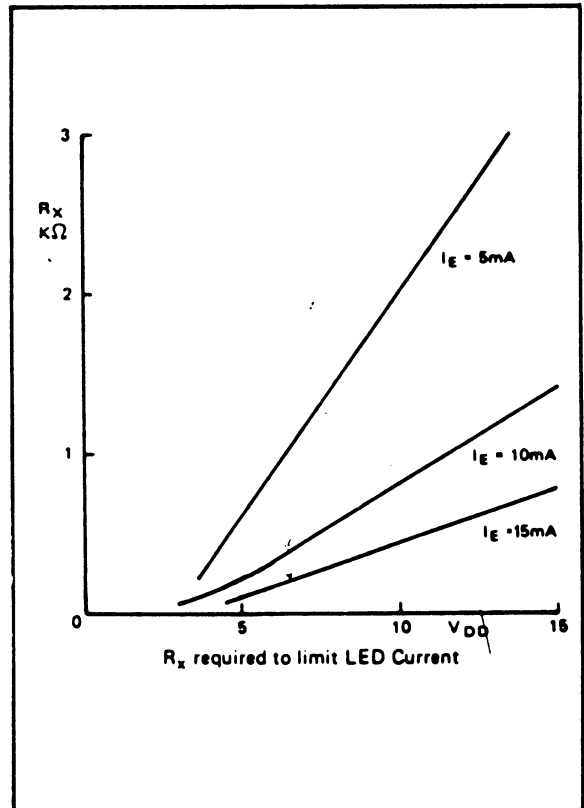
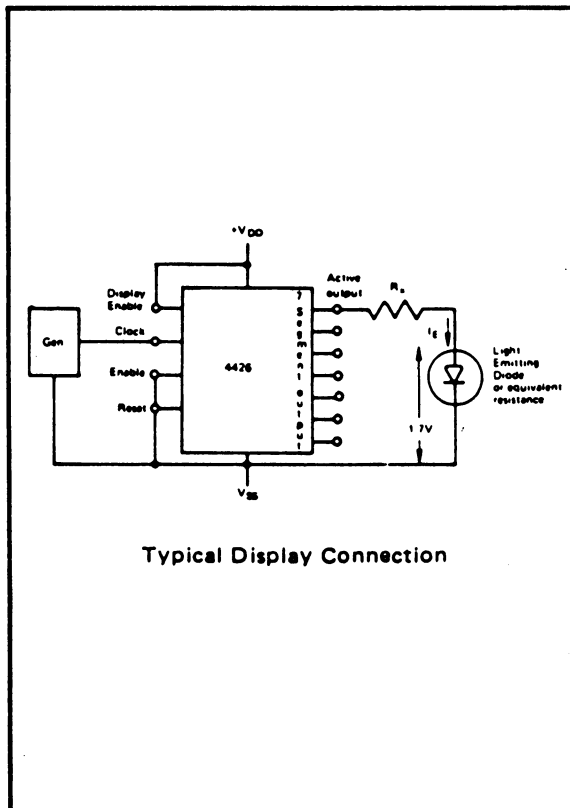
DYNAMIC CHARACTERISTICS ( $C_L = 50\text{pF}$ ,  $T_A = 25^\circ\text{C}$ )

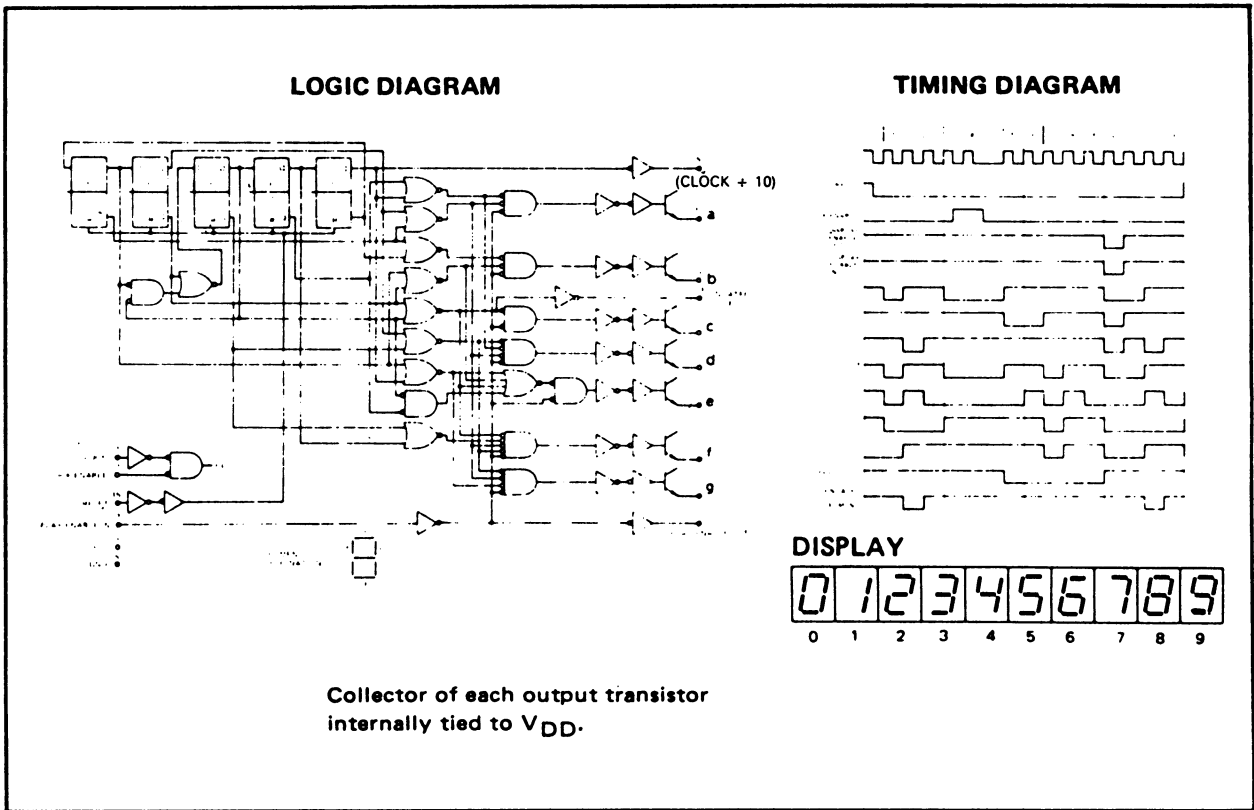
PARAMETER	$V_{DD}$ (Vdc)	Min.	Typ.	Max.	Units	
<b>CLOCKED OPERATION</b>						
PROPAGATION DELAY TIME Clock to Decoded Outputs	$t_{PLH}, t_{PHL}$	5	—	850	1700	ns
		10	—	250	500	
15		—	200	400		
Clock to Carry Out	$t_{PLH}, t_{PHL}$	5	—	500	1000	ns
		10	—	125	250	
		15	—	100	200	
OUTPUT TRANSITION TIME Decoded Outputs	$t_{TLH}, t_{THL}$	5	—	450	900	ns
		10	—	200	400	
15		—	150	300		
Carry Output	$t_{TLH}, t_{THL}$	5	—	250	500	ns
		10	—	125	250	
		15	—	100	200	
MINIMUM CLOCK OR ENABLE PULSE WIDTH	$PW_{CL}, PW_{CE}$	5	—	200	400	ns
		10	—	100	200	
		15	—	80	160	
MAXIMUM CLOCK FREQUENCY	$f_{CL}$	5	1.25	2.5	—	MHz
		10	2.5	5.0	—	
		15	3.0	6.0	—	
MAXIMUM CLOCK OR ENABLE RISE AND FALL TIME	$t_{rCL}, t_{fCL}$	5	15	—	—	$\mu\text{s}$
		10	15	—	—	
		15	3	—	—	
MINIMUM CLOCK OR ENABLE SETUP TIME	$t_{setup}$	5	—	250	500	ns
		10	—	100	200	
		15	—	80	160	
<b>RESET OPERATION</b>						
PROPAGATION DELAY TIME Reset to Decoded Outputs	$t_{PLH}, t_{PHL}$	5	—	700	1400	ns
		10	—	250	500	
15		—	200	400		
Reset to Carry Output	$t_{PLH}, t_{PHL}$	5	—	500	1000	ns
		10	—	125	250	
		15	—	100	200	
MINIMUM RESET PULSE WIDTH	$PW_R$	5	—	200	400	ns
		10	—	100	200	
		15	—	80	160	
RESET REMOVAL TIME	$t_{rem}$	5	—	375	750	ns
		10	—	150	300	
		15	—	125	250	

OUTPUT NETWORK

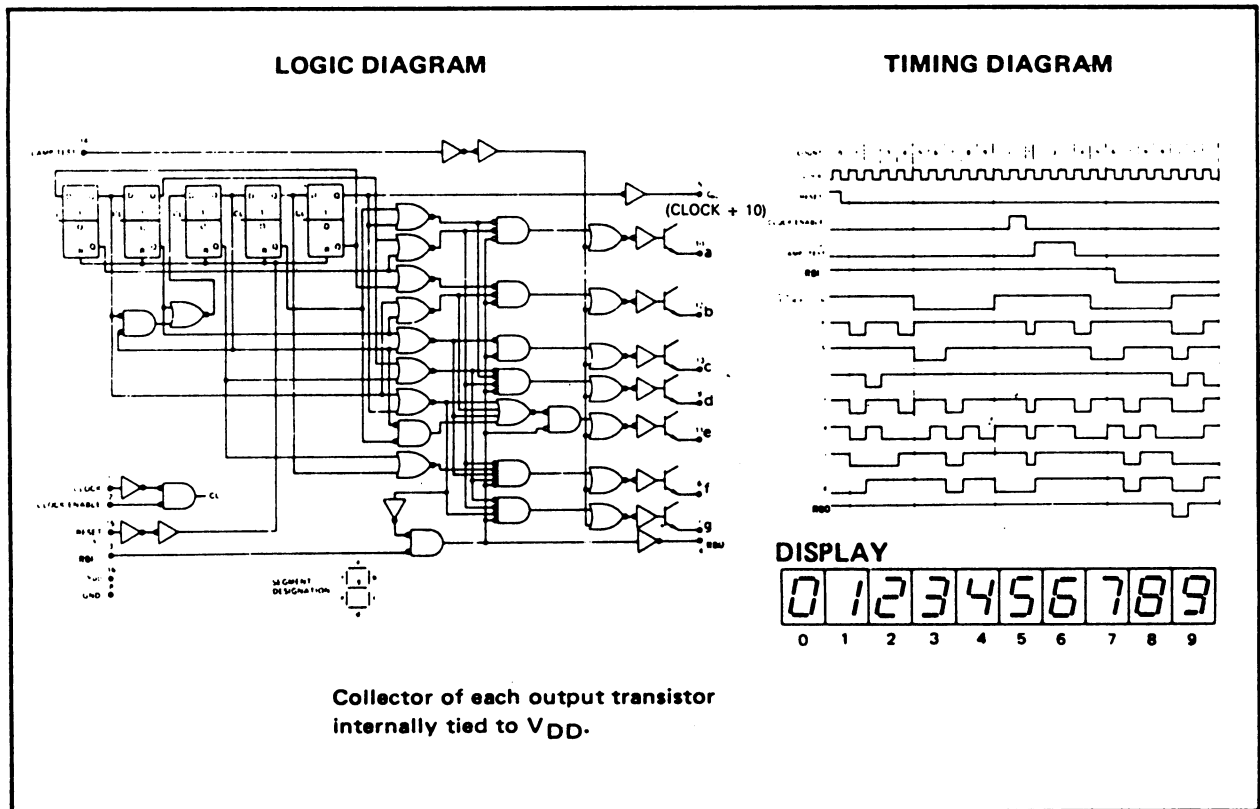


DISPLAY INTERFACE





**4426AB Decade Counter/7-Segment Decoder/Driver with Display Enable.**



**4433B Decade Counter/7-Segment Decoder/Driver with Ripple Blanking.**