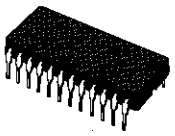
4-BIT LATCH/4-TO-16 LINE DECODER

HCC/HCF4514B OUTPUT "HIGH" ON SELECT
HCC/HCF4515B OUTPUT "LOW" ON SELECT

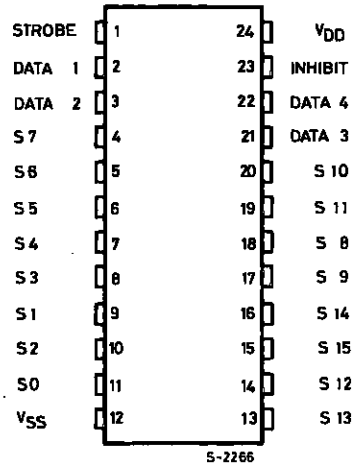
- QUIESCENT CURRENT SPECIFIED TO 20V FOR HCC DEVICE
- STROBED INPUT LATCH
- INHIBIT CONTROL
- INPUT CURRENT OF 100nA AT 18V AND 25°C FOR HCC DEVICE
- 100% TESTED FOR QUIESCENT CURRENT
- MEETS ALL REQUIREMENTS OF JEDEC TENTATIVE STANDARD N°. 13A, "STANDARD SPECIFICATIONS FOR DESCRIPTION OF "B" SERIES CMOS DEVICES"



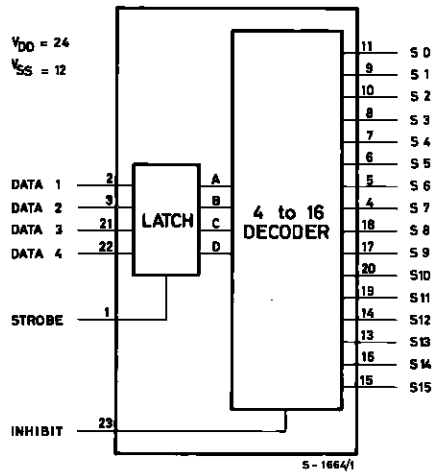
DESCRIPTION

The **CC4514/CC4515** (intermediate temperature range) is monolithic integrated circuits available in 24-lead dual in-line plastic or ceramic package and plastic micro package. The **CC4514/4515** consisting of a 4-bit strobed latch and a 4 to 16 line decoder. The latches hold the last input data presented prior to the strobe transition from 1 to 0. Inhibit control allows all outputs to be placed at 0 (**CC4514**) or 1 (**CC4515**) regardless of the state of the data or strobe inputs. The decode truth table indicates all combinations of data inputs and appropriate selected outputs.

PIN CONNECTIONS



FUNCTIONAL DIAGRAM



ABSOLUTE MAXIMUM RATINGS

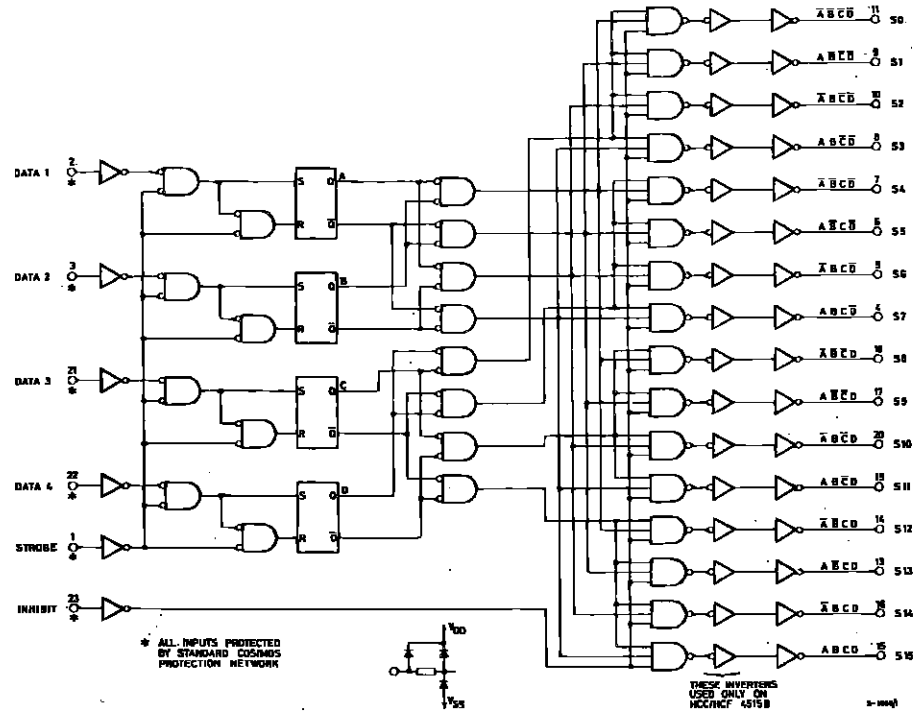
Symbol	Parameter	Value	Unit
V_{DD}*	Supply Voltage :	– 0.5 to + 20	V
V_i	Input Voltage	– 0.5 to V_{DD} + 0.5	V
I_I	DC Input Current (any one input)	± 10	mA
P_{tot}	Total Power Dissipation (per package) Dissipation per Output Transistor for T_{op} = Full Package-temperature Range	200 100	mW mW
T_{op}	Operating Temperature :	– 55 to + 125	°C
T_{stg}	Storage Temperature	– 65 to + 150	°C

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for external periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{DD}	Supply Voltage :	3 to 18	V
V_I	Input Voltage	0 to V_{DD}	V
T_{op}	Operating Temperature : **HCC** Types	– 55 to + 125	°C

LOGIC DIAGRAM AND TRUTH TABLE



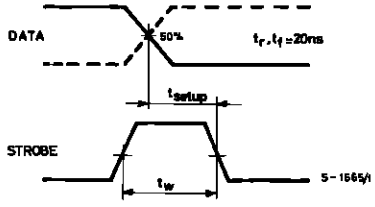
Strobe = 1

Inhibit	Data Inputs				Selected Output HCC/HCF 4514B = Logic 1 (High) HCC/HCF 4515B = Logic 0 (Low)
	D	C	B	A	
0	0	0	0	0	S0
0	0	0	0	1	S1
0	0	0	1	0	S2
0	0	0	1	1	S3
0	0	1	0	0	S4
0	0	1	0	1	S5
0	0	1	1	0	S6
0	0	1	1	1	S7
0	1	0	0	0	S8
0	1	0	0	1	S9
0	1	0	1	0	S10
0	1	0	1	1	S11
0	1	1	0	0	S12
0	1	1	0	1	S13
0	1	1	1	0	S14
0	1	1	1	1	S15
1	X	X	X	X	All Outputs = 0, HCC/HCF 4514B All Outputs = 1, HCC/HCF 4515B

X = Don't Care
1 = high

WAVEFORMS

Setup Time and Strobe Pulse Width.



STATIC ELECTRICAL CHARACTERISTICS (over recommended operating conditions)

Symbol	Parameter		Test Conditions				Value							Unit
			V_I (V)	V_O (V)	$\|I_O\|$ (μA)	V_{DD} (V)	T_{Low}*		25°C			T_{High}*		
							Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
I_L	Quiescent Current		0/ 5			5		5		0.04	5		150	μA
			0/10			10		10		0.04	10		300	
			0/15			15		20		0.04	20		600	
			0/18			18		100		0.08	100		3000	
V_{OH}	Output High Voltage		0/ 5		< 1	5	4.95		4.95			4.95		V
			0/10		< 1	10	9.95		9.95			9.95		
			0/15		< 1	15	14.95		14.95			14.95		
V_{OL}	Output Low Voltage		5/0		< 1	5		0.05			0.05		0.05	V
			10/0		< 1	10		0.05			0.05		0.05	
			15/0		< 1	15		0.05			0.05		0.05	
V_{IH}	Input High Voltage			0.5/4.5	< 1	5	3.5		3.5			3.5		V
				1/9	< 1	10	7		7			7		
				1.5/13.5	< 1	15	11		11			11		
V_{IL}	Input Low Voltage			4.5/0.5	< 1	5		1.5			1.5		1.5	V
				9/1	< 1	10		3			3		3	
				13.5/1.5	< 1	15		4			4		4	
I_{OH}	Output Drive Current	HCC Types	0/ 5	2.5		5	– 2		– 1.6	– 3.2		– 1.15		mA
			0/ 5	4.6		5	– 0.64		– 0.51	– 1		– 0.36		
			0/10	9.5		10	– 1.6		– 1.3	– 2.6		– 0.9		
			0/15	13.5		15	– 4.2		– 3.4	– 6.8		– 2.4		
I_{OL}	Output Sink Current	HCC Types	0/ 5	0.4		5	0.64		0.51	1		0.36		mA
			0/10	0.5		10	1.6		1.3	2.6		0.9		
			0/15	1.5		15	4.2		3.4	6.8		2.4		
I_{IH}, I_{IL}	Input Leakage Current		0/18	Any Input		18		± 0.1		$\pm 10^{-5}$	± 0.1		± 1	μA
C_I	Input Capacitance			Any Input						5	7.5			pF

DYNAMIC ELECTRICAL CHARACTERISTICS

(T_{amb} = 25°C, C_L = 50pF, R_L = 200kΩ, all input rise and fall time = 20ns)

Symbol	Parameter	Test Conditions		Value			Unit
			V_{DD} (V)	Min.	Typ.	Max.	
t_{PHL}, t_{PLH}	Propagation Delay Time	Strobe or Data	5		485	970	ns
			10		185	370	
			15		135	270	
		Inhibit	5		250	500	ns
			10		110	220	
			15		85	170	
t_{THL}, t_{THL}	Transition Time		5		100	200	ns
			10		50	100	
			15		40	80	
t_W	Strobe Pulse Width		5	250	125		ns
			10	100	50		
			15	75	40		
t_{setup}	Setup Time		5	150	75		ns
			10	70	35		
			15	40	20		

Typical Output Low (sink) Current Characteristics.

Minimum Output Low (sink) Current Characteristics.