COS/MOS INTEGRATED CIRCUIT

HCC/HCF 4512B

PRELIMINARY DATA

8-CHANNEL DATA SELECTOR

- 3-STATE OUTPUT
- STANDARDIZED SYMMETRICAL OUTPUT CHARACTERISTICS
- QUIESCENT CURRENT SPECIFIED TO 20V
- MAXIMUM INPUT CURRENT OF 1 μA AT 18V (FULL PACKAGE TEMPERATURE RANGE)
- 5V, 10V, AND 15V PARAMETRIC RATINGS

The **HCC 4512B** (extended temperature range) and **HCF 4512B** (intermediate temperature range) are monolithic integrated circuit, available in 16-lead dual in-line plastic or ceramic package, and ceramic flat package.
The **HCC/HCF 4512B** is an 8-channel data selector featuring a three-state output that can interface directly with, and drive, data lines of bus-oriented systems.

ABSOLUTE MAXIMUM RATINGS

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)	200	mW
	Dissipation per output transistor for T_{op} = full package-temperature range	100	mW
T_{op}	Operating temperature: for **HCC** types	-55 to 125	°C
	for **HCF** types	-40 to 85	°C
T_{stg}	Storage temperature	-65 to 150	°C

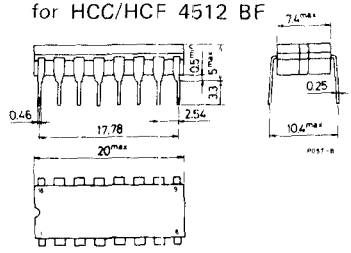
* All voltage values are referred to V_{SS} pin voltage

ORDERING NUMBERS;

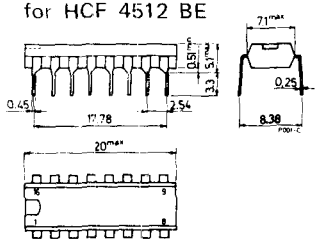
HCC 4512 BD for dual in-line ceramic package
HCC 4512 BF for dual in-line ceramic package, frit seal
HCC 4512 BK for ceramic flat package
HCF 4512 BE for dual in-line plastic package
HCF 4512 BF for dual in-line ceramic package, frit seal

MECHANICAL DATA (dimensions in mm)

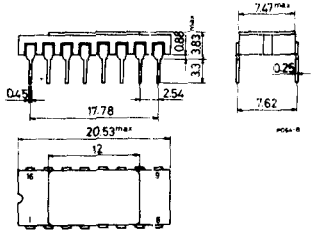
Dual in-line ceramic package for HCC/HCF 4512 BF



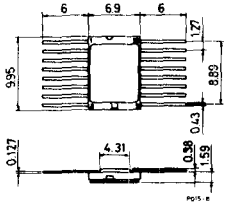
Dual in-line plastic package for HCF 4512 BE



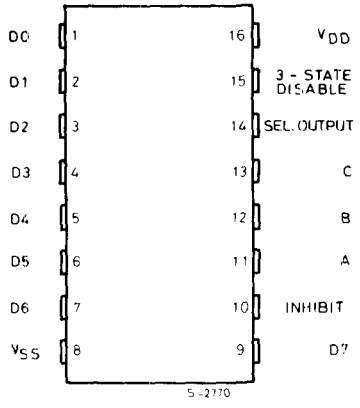
Dual in-line ceramic package for HCC 4512 BD



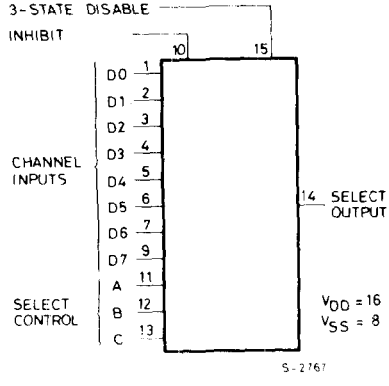
Ceramic flat package for HCC 4512 BK



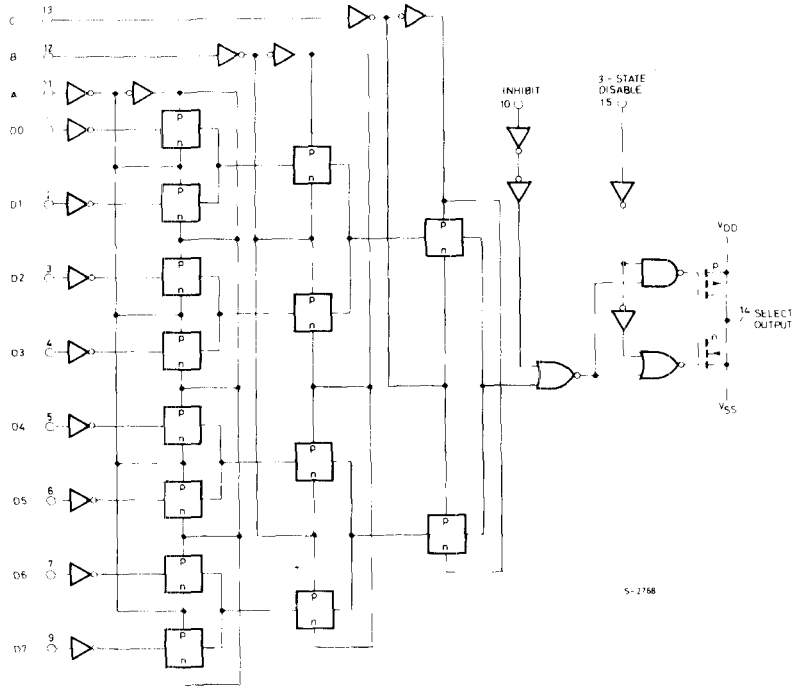
CONNECTION DIAGRAM

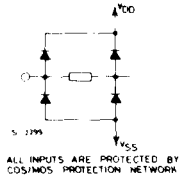


FUNCTIONAL DIAGRAM



LOGIC DIAGRAM





TRUTH TABLE

SEL. CONT.			INH.	3-STATE DISABLE	SEL. OUTPUT
A	B	C			
0	0	0	0	0	D 0
1	0	0	0	0	D 1
0	1	0	0	0	D 2
1	1	0	0	0	D 3
0	0	1	0	0	D 4
1	0	1	0	0	D 5
0	1	1	0	0	D 6
1	1	1	0	0	D 7
X	X	X	1	0	0
X	X	X	X	1	High Z

1 = High Level
0 = Low Level
X = Don't Cave

RECOMMENDED OPERATING CONDITIONS

V_{DD}	Supply voltage	3 to 18	V
V_I	Input voltage	0 to V_{DD}	V
T_{op}	Operating temperature: for **HCC** types	-55 to 125	°C
	for **HCF** types	-40 to 85	°C

STATIC ELECTRICAL CHARACTERISTICS (over recommended operating conditions)

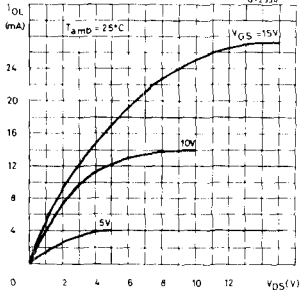
Parameter			Test conditions				Values							Unit
			V_I (V)	V_O (V)	$\|I_O\|$ (μA)	V_{DD} (V)	T_{Low}*		25°C			T_{High}*		
							Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
I_L	Quiescent supply current		0/ 5			5		5		0.04	5		150	μA
			0/10			10		10		0.04	10		300	
			0/15			15		20		0.04	20		600	
			0/20			20		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		
		HCF types	0/ 5	2.5		5	-1.8		-1.6	-3.2		-1.3		
			0/ 5	4.6		5	-0.61		-0.51	-1		-0.42		
			0/10	9.5		10	-1.5		-1.3	-2.6		-1.1		
			0/15	13.5		15	-4		-3.4	-6.8		-2.8		
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		
		HCF types	0/ 5	0.4		5	0.61		0.51	1		0.42		
			0/10	0.5		10	1.5		1.3	2.6		1.1		
			0/15	1.5		15	4		3.4	6.8		2.8		
I_{IH},I_{IL}**	Input leakage current		0/18			18		±0.1		$±10^{-5}$	±0.1		± 1	μA
$I_{O\,max}$	3-state output leakage current		0/18	0/18		18		± 0.4		$±10^{-4}$	± 0.4		± 12	μA
C_i**	Input capacitance									5	7.5			pF

* T_{Low} = - 55°C for **HCC** device; - 40°C for **HCF** device.
* T_{High} = +125°C for **HCC** device; + 85°C for **HCF** device.
The Noise Margin for both "1" and "0" level is: 1V min. with V_{DD} = 5V
2V min. with V_{DD} = 10V
2.5V min. with V_{DD} = 15V
** Any input

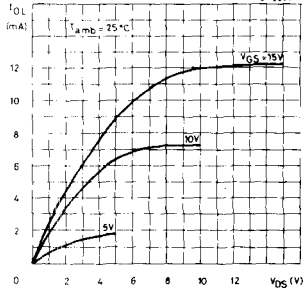
DYNAMIC ELECTRICAL CHARACTERISTICS (T_{amb}= 25°C, C_L= 50 pF, R_L= 200 kΩ, typical temperature coeffic ent for all V_{DD} values is 0,3%/°C, all input rise and fall times = 20 ns)

Parameter	Test conditions	Values			Unit
	V_{DD} (V)	Min.	Typ.	Max.	
t_{PHL}, t_{PLH} Propagation delay time inhibit to output	5		140	280	ns
	10		70	140	
	15		50	100	
t_{PHL}, t_{PLH} Propagation delay time "A" select to output	5		200	400	ns
	10		85	170	
	15		60	120	
t_{PHL}, t_{PLH} Propagation delay time data to output	5		180	360	ns
	10		75	150	
	15		55	110	
t_{PZL}, t_{PLZ}, t_{PHZ}, t_{PZH} 3-State disable delay time	5		60	120	ns
	10		30	60	
	15		20	40	
t_{THL}, t_{TLH} Transition time	5		100	200	ns
	10		50	100	
	15		40	80	

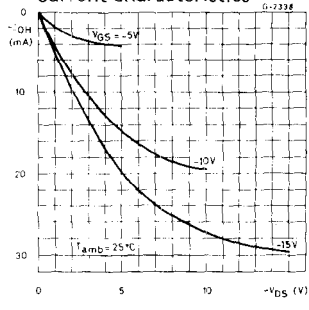
Typical output low (sink) current characteristics



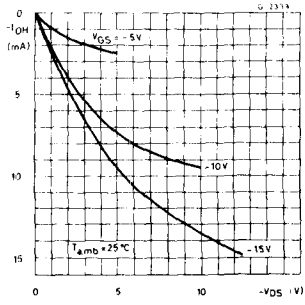
Minimum output low (sink) current characteristics



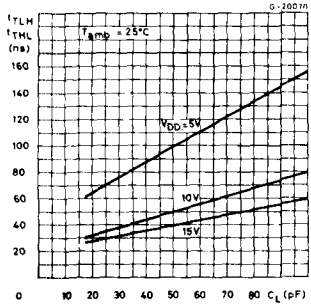
Typical output high (source) current characteristics



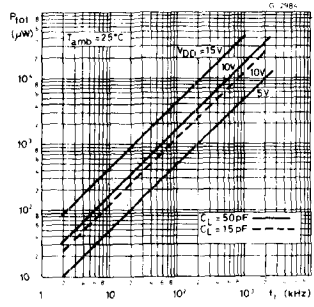
Minimum output high(source) current characteristics



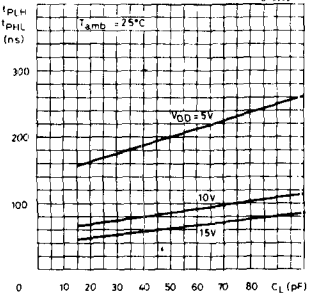
Typical transition time vs. load capacitance



Typical dynamic power dissipation vs. input frequency

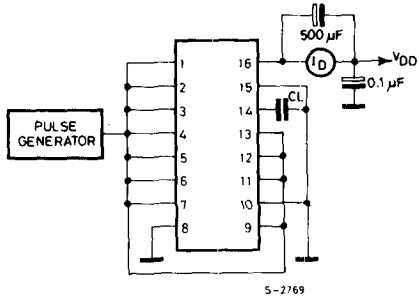


Typical propagation delay time as a function of load capacitance ("A" select to output)

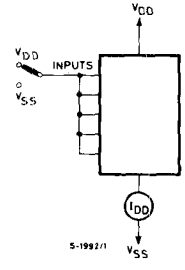


TEST CIRCUITS

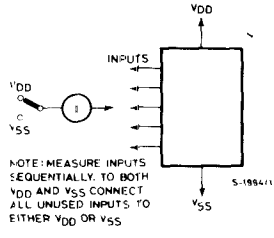
Dynamic power dissipation test circuit



Quiescent device current test circuit



Input current test circuit



Input voltage test circuit