

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	$V_{DD}(V)$	Test Conditions	-40°C		25°C			85°C		Unit
				min	max	min	typ	max	min	max	
Output Voltage	V_{OL}	5.0	$V_{in} = V_{DD}$ or 0	-	0.05	-	0	0.05	-	0.05	V
		10		-	0.05	-	0	0.05	-	0.05	
		15		-	0.05	-	0	0.05	-	0.05	
	V_{OH}	5.0	$V_{in} = 0$ or V_{DD}	4.95	-	4.95	5.0	-	4.95	-	V
		10		9.95	-	9.95	10	-	9.95	-	
		15		14.95	-	14.95	15	-	14.95	-	
Input Voltage	V_{IL}	5.0	$V_{out} = 4.5$ or $0.5V$	-	1.5	-	2.25	1.5	-	1.5	V
		10	$V_{out} = 9.0$ or $1.0V$	-	3.0	-	4.50	3.0	-	3.0	
		15	$V_{out} = 13.5$ or $1.5V$	-	4.0	-	6.75	4.0	-	4.0	
	V_{IH}	5.0	$V_{out} = 0.5$ or $4.5V$	3.5	-	3.5	2.75	-	3.5	-	V
		10	$V_{out} = 1.0$ or $9.0V$	7.0	-	7.0	5.50	-	7.0	-	
		15	$V_{out} = 1.5$ or $13.5V$	11.0	-	11.0	8.25	-	11.0	-	
Output Drive Current	I_{OH}	5.0	$V_{OH} = 2.5V$	-0.23	-	-0.20	-1.7	-	-0.16	-	mA
		10	$V_{OH} = 9.5V$	-0.23	-	-0.20	-0.9	-	-0.16	-	
		15	$V_{OH} = 13.5V$	-0.69	-	-0.60	-3.5	-	-0.48	-	
	I_{OL}	5.0	$V_{OL} = 0.4V$	0.23	-	0.20	0.78	-	0.16	-	mA
		10	$V_{OL} = 0.5V$	0.60	-	0.50	2.0	-	0.40	-	
		15	$V_{OL} = 1.5V$	1.8	-	1.5	7.8	-	1.2	-	
Input Current	I_{in}	15		-	± 0.3	-	± 0.00001	± 0.3	-	± 1.0	μA
Input Capacitance	C_{in}		$V_{in} = 0$	-	-	-	5.0	7.5	-	-	pF
Quiescent Current	I_{DD}	5.0	Zero Signal, per Package	-	20	-	0.005	20	-	150	μA
		10		-	40	-	0.010	40	-	300	
		15		-	80	-	0.015	80	-	600	
Total Supply Current*	I_T	5.0	Dynamic + I_{DD} ,	-	-	-	0.8	-	-	-	μA
		10	per Gate	-	-	-	1.6	-	-	-	
		15	$C_L = 50pF$, $f = 1kHz$	-	-	-	2.4	-	-	-	
Three-State Output Leakage Current	I_{TL}	15		-	± 1.0	-	± 0.00001	± 1.0	-	± 7.5	μA

* To calculate total supply current at frequency other than 1kHz.

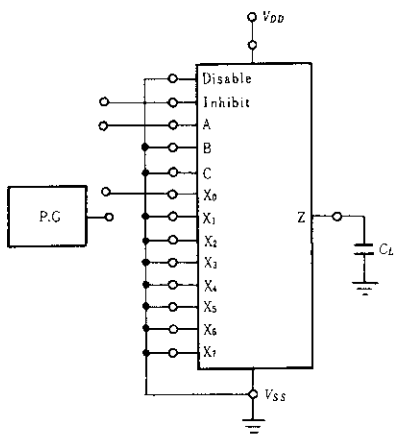
@ $V_{DD} = 5.0V$ $I_T = 0.8\mu A/kHz + I_{DD}$. @ $V_{DD} = 10V$ $I_T = 1.6\mu A/kHz + I_{DD}$. @ $V_{DD} = 15V$ $I_T = 2.4\mu A/kHz + I_{DD}$

■ SWITCHING CHARACTERISTICS ($C_L=50\text{pF}$, $T_a=25^\circ\text{C}$)

Characteristic	Symbol	$V_{DD}(\text{V})$	typ	max	Unit
Output Rise Time	t_r	5.0	225	400	ns
		10	110	200	
		15	80	160	
Output Fall Time	t_f	5.0	130	250	ns
		10	75	150	
		15	50	100	
Propagation Delay Time	t_{PLH}	5.0	225	750	ns
		10	75	200	
		15	57	150	
	t_{PHL}	5.0	225	750	ns
		10	75	200	
		15	57	150	
Output Enable Time/Output Disable Time	$t_{HZ}, t_{LZ}, t_{ZH}, t_{ZL}$	5.0	50	150	ns
		10	25	100	
		15	19	75	

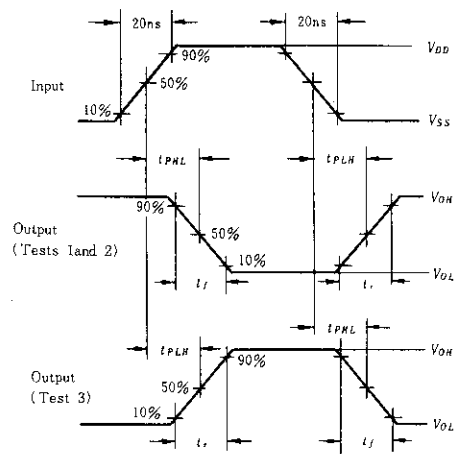
■ AC TEST CIRCUITS

● $t_r, t_f, t_{PLH}, t_{PHL}$

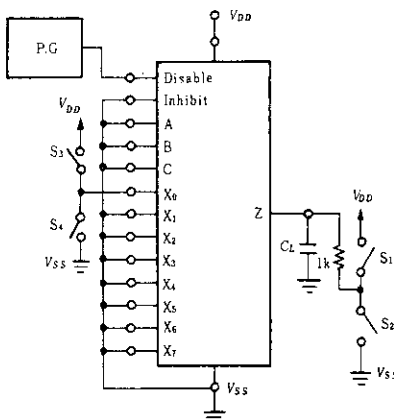


● Input Conditions

Test	Inhibit	A	X_0
1	P.G.	GND	V_{DD}
2	GND	P.G.	V_{DD}
3	GND	GND	P.G.

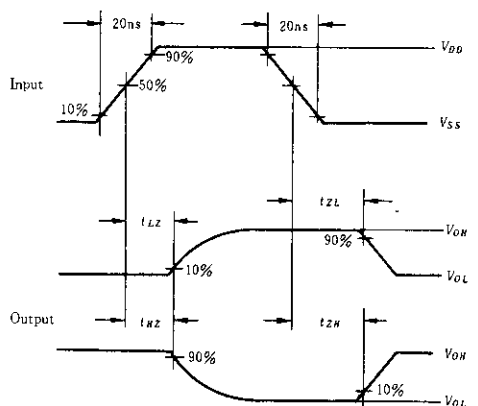


● $t_{HZ}, t_{LZ}, t_{ZH}, t_{ZL}$



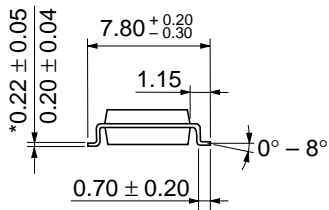
● Switch Positions

Test	S_1	S_2	S_3	S_4
t_{HZ}	Open	Closed	Closed	Open
t_{LZ}	Closed	Open	Open	Closed
t_{ZL}	Closed	Open	Open	Closed
t_{ZH}	Open	Closed	Closed	Open





Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.24 g



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.15 g

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HITACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL North America : <http://semiconductor.hitachi.com/>
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For further information write to:

Hitachi Semiconductor
(America) Inc.
179 East Tasman Drive,
San Jose, CA 95134
Tel: <1> (408) 433-1990
Fax: <1> (408) 433-0223

Hitachi Europe GmbH
Electronic components Group
Dornacher Straße 3
D-85622 Feldkirchen, Munich
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
Electronic Components Group.
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 049318
Tel: 535-2100
Fax: 535-1533

Hitachi Asia Ltd.
Taipei Branch Office
3F, Hung Kuo Building, No.167,
Tun-Hwa North Road, Taipei (105)
Tel: <886> (2) 2718-3666
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower, World Finance Centre,
Harbour City, Canton Road, Tsim Sha Tsui,
Kowloon, Hong Kong
Tel: <852> (2) 735 9218
Fax: <852> (2) 730 0281
Telex: 40815 HITEC HX

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