# CD54AC253/3A
CD54ACT253/3A

Dual 4-Input Multiplexer, 3-State

The RCA CD54AC253/3A and CD54ACT253/3A are dual 4-input mulitiplexers that utilize the new RCA ADVANCED CMOS LOGIC technology. One of the four sources for each section is selected by the common Select inputs, S0 and S1. When the Output Enable ($\overline{1OE}$ or $\overline{2OE}$) is HIGH, the output is in the high-impedance state.

The CD54AC253/3A and CD54ACT253/3A are supplied in 16-lead dual-in-line ceramic packages (F suffix).
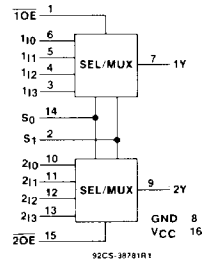
Package Specifications
See Section 11, Fig. 11

FUNCTIONAL DIAGRAM & TERMINAL ASSIGNMENT

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Static Electrical Characteristics (Limits with black dots (•) are tested 100%.)

CHARACTERISTICS	TEST CONDITIONS		V_{CC} (V)	AMBIENT TEMPERATURE (T_A) - °C				UNITS
				+25		-55 to +125		
	V_I (V)	I_O (mA)		MIN.	MAX.	MIN.	MAX.	
3-State Leakage Current I_{OZ}	V_{IH} or V_{IL} $V_O =$ V_{CC} or GND		5.5	—	±0.5•	—	±10•	μA
Quiescent Supply Current (MSI) I_{CC}	V_{CC} or GND	0	5.5	—	8•	—	160•	μA

The complete static electrical test specification consists of the above by-type static tests combined with the standard static tests in the beginning of this section.

ACT INPUT LOADING TABLE

INPUT	UNIT LOAD*
S0, S1, nI_0, nI_1	1
$\overline{nOE}$	0.83

*Unit load is ΔI_{CC} limit specified in Static Characteristics Chart, e.g., 2.4 mA max. @ 25°C.

Burn-In Test-Circuit Connections (Use Static II for /3A burn-in and Dynamic for Life Test.)

Static	STATIC BURN-IN I			STATIC BURN-IN II		
	OPEN	GROUND	V_{CC} (6V)	OPEN	GROUND	V_{CC} (6V)
CD54AC/ACT253	7,9	1-6,8,10-15	16	7,9	8	1-6,10-16

Dynamic	OPEN	GROUND	1/2 V_{CC} (3V)	V_{CC} (6V)	OSCILLATOR	
					50 kHz	25 kHz
CD54AC/ACT253	—	1,8,15	7,9	16	3-6,10-14	2

NOTE: Each pin except V_{CC} and Gnd will have a resistor of 2k-47k ohms.

CD54AC253/3A
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SWITCHING CHARACTERISTICS: AC Series; t_r, t_f = 3 ns, C_L = 50 pF (Worst Case)

CHARACTERISTICS	SYMBOL	V_{CC} (V)	−55 to +125°C		UNITS
			MIN.	MAX.	
Propagation Delays S0, S1, to Y	t_{PLH} t_{PHL}	1.5 3.3* 5†	— 5.2 3.4	250 35 20•	ns
nl to Y	t_{PLH} t_{PHL}	1.5 3.3 5	— 3.4 2.3	166 23 13.3•	ns
Output Enable and Output Disable to Y	t_{PLZ} t_{PHZ} t_{PZL} t_{PZH}	1.5 3.3 5	— 2.9 1.9	144 20 11.5•	ns
Power Dissipation Capacitance	C_{PD}§	—			pF
Input Capacitance	C_I	—	—	10	pF
3-State Output Capacitance	C_O	—	—	15	pF

SWITCHING CHARACTERISTICS: ACT Series; t_r, t_f = 3 ns, C_L = 50 pF (Worst Case)

CHARACTERISTICS	SYMBOL	V_{CC} (V)	−55 to +125°C		UNITS
			MIN.	MAX.	
Propagation Delays S0, S1, to Y	t_{PLH} t_{PHL}	5†	3.8	22•	ns
nl to Y	t_{PLH} t_{PHL}	5	3.1	18•	ns
Output Enable, Output Disable to Y	t_{PLZ} t_{PHZ} t_{PZL} t_{PZH}	5	2.1	12.6•	ns
Power Dissipation Capacitance	C_{PD}§	—			pF
Input Capacitance	C_I	—	—	10	pF
3-State Output Capacitance	C_O	—	—	15	pF

*3.3 V: min. is @ 3.6 V
max. is @ 3 V

†5 V: min. is @ 5.5 V
max. is @ 4.5 V

(Limits with black dots (•) are tested 100%.)

§C_{PD} is used to determine the dynamic power consumption per multiplexer.
For AC, $P_D = V_{CC}^2 f_i (C_{PD} + C_L)$
For ACT, $P_D = V_{CC}^2 f_i (C_{PD} + C_L) + V_{CC} \Delta I_{CC}$ where f_i = input frequency
C_L = output load capacitance
V_{CC} = supply voltage