

CD54AC258/3A
CD54ACT258/3A

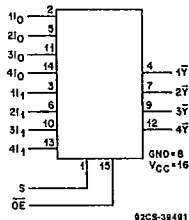
T-67-21-51

Quad 2-Input Multiplexer with 3-State Inverting Outputs

The RCA CD54AC258/3A and CD54ACT258/3A are quad 2-input multiplexers with 3-state outputs. These devices utilize the new RCA ADVANCED CMOS LOGIC technology. Each of these devices selects four bits of data from two sources under the control of a common Select input (S). The Output Enable (OE) is active LOW. When OE is HIGH, all of the outputs (Y) are in the high-impedance state regardless of all other input conditions.

Moving data from two groups of registers to four common output buses is a common use of the CD54AC/ACT258/3A. The state of the Select input determines the particular register from which the data comes. The CD54AC/ACT258/3A can also be used as function generators.

The CD54AC258/3A and CD54ACT258/3A are supplied in 16-lead dual-in-line ceramic packages (F suffix).



FUNCTIONAL DIAGRAM & TERMINAL ASSIGNMENT



Package Specifications

See Section 11, Fig. 11

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		
			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	—	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*
Data	0.83
S	1.27
OE	1.27

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

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Burn-In Test-Circuit Connections

Static	STATIC BURN-IN I			STATIC BURN-IN II		
	OPEN	GROUND	V _{cc} (6V)	OPEN	GROUND	V _{cc} (6V)
CD54AC/ACT258	4,7,9,12	1-3,5,6,8,10,11, 13-15	16	4,7,9,12	8	1-3,5,6,10,11,13-16
Dynamic	OPEN	GROUND	1/2 V _{cc} (3V)	V _{cc} (6V)	OSCILLATOR	
					50 kHz	25 kHz
CD54AC/ACT258	—	8,15	4,7,9,12	16	2,3,5,6,10,11, 13,14	1

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

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 I _n to \bar{Y}	t _{PLH}	1.5	—	100	ns
	t _{PHL}	3.3*	2	14	
S to \bar{Y}	t _{PLH}	1.5	—	168	ns
	t _{PHL}	3.3	3.5	24	
\bar{OE} to \bar{Y}	t _{PLZ}	1.5	—	184	ns
	t _{PHZ}	3.3	3.8	26	
	t _{PZL}	5	2.5	14.7*	
	t _{PZH}	5	2.5	14.7*	
Power Dissipation Capacitance	C _{PD§}	—	130 Typ.		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 I _n to \bar{Y}	t _{PLH}	5†	1.6	9.3*	ns
	t _{PHL}	5	2.6	15.4*	
S to \bar{Y}	t _{PLH}	5	2.6	15.4*	ns
	t _{PHL}	5	2.6	15.4*	
\bar{OE} to \bar{Y}	t _{PLZ}	5	2.8	16.1*	ns
	t _{PHZ}	5	2.8	16.1*	
	t _{PZL}	5	2.8	16.1*	
	t _{PZH}	5	2.8	16.1*	
Power Dissipation Capacitance	C _{PD§}	—	170 Typ.		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

§C_{PD} is used to determine the dynamic power consumption per multiplexer.
For AC, P_D = C_{PD} V_{cc}² f_i + Σ (C_L V_{cc}² f_o)
For ACT, P_D = C_{PD} V_{cc}² f_i + Σ (C_L V_{cc}² f_o) + V_{cc} ΔI_{cc} where f_i = input frequency
f_o = output frequency
C_L = output load capacitance
V_{cc} = supply voltage

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