CD54AC258/3A
CD54ACT258/3A

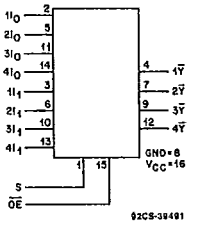
T-67-21-51

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 ($\overline{OE}$) is active LOW. When $\overline{OE}$ is HIGH, all of the outputs ($\overline{Y}$) 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

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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		
	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*
Data	0.83
S	1.27
$\overline{OE}$	1.27

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

CD54AC258/3A
CD54ACT258/3A

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**	**OSCILLATOR 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 MIN.	-55 to +125°C MAX.	UNITS
Propagation Delays I_n to $\overline{Y}$	t_{PLH} t_{PHL}	1.5 3.3* 5†	— 2 1.3	100 14 8•	ns
S to $\overline{Y}$	t_{PLH} t_{PHL}	1.5 3.3 5	— 3.5 2.3	168 24 13.4•	ns
$\overline{OE}$ to $\overline{Y}$	t_{PLZ} t_{PHZ} t_{PZL} t_{PZH}	1.5 3.3 5	— 3.8 2.5	184 26 14.7•	ns
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 MIN.	-55 to +125°C MAX.	UNITS
Propagation Delays I_n to $\overline{Y}$	t_{PLH} t_{PHL}	5†	1.6	9.3•	ns
S to $\overline{Y}$	t_{PLH} t_{PHL}	5	2.6	15.4•	ns
$\overline{OE}$ to $\overline{Y}$	t_{PLZ} t_{PHZ} t_{PZL} t_{PZH}	5	2.8	16.1•	ns
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

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

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