

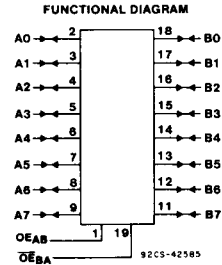
**CD54AC623/3A  
CD54ACT623/3A**

**Octal-Bus Transceiver, 3-State  
Non-Inverting**

The RCA CD54AC623/3A and CD54ACT623/3A are octal-bus transceivers that utilize the new RCA ADVANCED CMOS LOGIC technology. They are non-inverting 3-state bidirectional transceiver-buffers that allow for two-way transmission from "A" bus to "B" bus or "B" bus to "A" bus depending on the logic levels of the Output Enable ( $\overline{OE}_{AB}$ ,  $\overline{OE}_{BA}$ ) inputs.

The dual Output Enable provision gives these devices the capability to store data by simultaneously enabling  $\overline{OE}_{AB}$  and  $\overline{OE}_{BA}$ . Each output reinforces its input under these conditions, and when all other data sources to the bus lines are at high-impedance, both sets of bus lines will remain in their last states.

The CD54AC623/3A and CD54ACT623/3A are supplied in 20-lead dual-in-line ceramic packages (F suffix).



**Package Specifications**

See Section 11, Fig. 13

**FUNCTIONAL DIAGRAM &  
TERMINAL ASSIGNMENT**

**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	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*
$A_n, B_n$	0.83
$\overline{OE}_{BA}$	0.64
$\overline{OE}_{AB}$	0.15

\*Unit load is  $\Delta I_{CC}$  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/ACT623	2-9	1,10-19	20	11-18	10	1-9,19,20
Dynamic	OPEN	GROUND	1/2 $V_{CC}$ (3V)	$V_{CC}$ (6V)	OSCILLATOR	
					50 kHz	25 kHz
CD54AC/ACT623	—	10	11-18	19,20	2-9	1

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

# CD54AC623/3A

# CD54ACT623/3A

**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: Data to Output	$t_{PLH}$	1.5	—	120	ns
	$t_{PHL}$	3.3*	2.1	16.8	
Output Disable to Output	$t_{PLZ}$	1.5	—	167	ns
	$t_{PHZ}$	3.3	3.8	23.4	
Output Enable to Output	$t_{PZL}$	1.5	—	167	ns
	$t_{PZH}$	3.3	3.8	23.4	
Power Dissipation Capacitance	$C_{PD}\S$	—	66 Typ.		pF
Min. (Valley) $V_{OH}$ During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OHV}$	5	4 Typ. @ 25°C		V
Max. (Peak) $V_{OL}$ During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OLP}$	5	1 Typ. @ 25°C		V
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: Data to Output	$t_{PLH}$	5†	1.8	10.6*	ns
	$t_{PHL}$				
Output Disable to Output	$t_{PLZ}$	5	2.5	14.4*	ns
	$t_{PHZ}$				
Output Enable to Output	$t_{PZH}$	5	2.5	14.4*	ns
	$t_{PZL}$				
Power Dissipation Capacitance	$C_{PD}\S$	—	79 Typ.		pF
Min. (Valley) $V_{OH}$ During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OHV}$	5	4 Typ. @ 25°C		V
Max. (Peak) $V_{OL}$ During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OLP}$	5	1 Typ. @ 25°C		V
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 channel.

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

(Limits with black dots (\*) are tested 100%.)

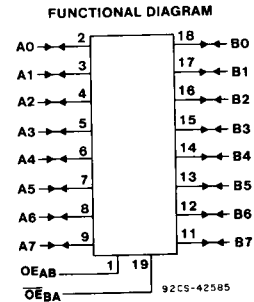
**CD54AC7623/3A**  
**CD54ACT7623/3A**

**Octal-Bus Transceiver, 3-State (B Side),  
Open-Drain (A Side), Non-Inverting**

The RCA CD54AC7623/3A and CD54ACT7623/3A are octal-bus transceivers that utilize the new RCA ADVANCED CMOS LOGIC technology. They are non-inverting 3-state bidirectional transceiver-buffers that allow for two-way transmission from "A" bus to "B" bus or "B" to "A" bus depending on the logic levels of the Output Enable ( $OE_{AB}$ ,  $\overline{OE}_{BA}$ ) inputs.

These devices are modified versions of the CD54AC/ACT623/3A. They differ in that the 3-state outputs are on the B side only; the A side outputs are open drain. Another difference is that the A data inputs are TTL inputs for both the AC and ACT types, and therefore the supply-voltage and bus-voltage ranges are limited to 4.5 V to 5.5 V.

The CD54AC7623/3A and CD54ACT7623/3A are supplied in 20-lead dual-in-line ceramic packages (F suffix).



**FUNCTIONAL DIAGRAM & TERMINAL ASSIGNMENT**

**Package Specifications**

See Section 11, Fig. 13

**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 or Off-State Leakage Current	$I_{OZ}$	$V_{IH}$ or $V_{IL}$ $V_O = V_{CC}$ or GND	5.5	—	$\pm 0.5\bullet$	—	$\pm 10\bullet$	$\mu A$
Quiescent Supply Current (MSI)	$I_{CC}$	$V_{CC}$ or GND	5.5	—	$8\bullet$	—	$160\bullet$	$\mu A$

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*
$A_n, B_n$	0.83
$\overline{OE}_{BA}$	0.64
$OE_{AB}$	0.15

\*Unit load is  $\Delta I_{CC}$  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/ACT7623	2-9	1,10-19	20	11-13	10	1-9,19,20
Dynamic	OPEN	GROUND	1/2 $V_{CC}$ (3V)	$V_{CC}$ (6V)	OSCILLATOR	
					50 kHz	25 kHz
CD54AC/ACT7623	—	10	11-18	19,20	2-9	1

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

# CD54AC7623/3A

## CD54ACT7623/3A

**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: A Data to B Bus	$t_{PLH}$ $t_{PHL}$	5*	1.9	10.9*	ns
B Data to A Bus	$t_{PZL}$	5	1.7	9.6*	ns
	$t_{PLZ}$	5	2.4	13.4*	ns
Output Enable or Disable to Output 3-State (B Side)	$t_{PZL}$ $t_{PLZ}$ $t_{PZH}$ $t_{PHZ}$	5	2.4	14.4*	ns
Off-State Enabling, Disabling Times (A Side)	$t_{PZL}$ $t_{PLZ}$	5	2.4	14.4*	ns
Power Dissipation Capacitance	$C_{PD}\S$	—			pF
Min. (Valley) $V_{OH}$ (B Side) During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OHV}$	5	4 Typ. @ 25°C		V
Max. (Peak) $V_{OL}$ During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OLP}$	5	1 Typ. @ 25°C		V
Input Capacitance	$C_i$	—	—	10	pF
3-State Output Capacitance (B Side)	$C_o$	—	—	15	pF
Off-State Output Capacitance (A Side)	$C_o$	—	—	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: A Data to B Bus	$t_{PLH}$ $t_{PHL}$	5*	1.9	10.9*	ns
B Data to A Bus	$t_{PZL}$	5	1.9	10.9*	ns
	$t_{PLZ}$	5	2.5	14.7*	ns
Output Enable or Disable to Output 3-State (B Side)	$t_{PZH}$ $t_{PZL}$ $t_{PLZ}$ $t_{PHZ}$	5	2.5	14.7*	ns
Off-State Enabling, Disabling Times (A Side)	$t_{PZL}$ $t_{PLZ}$	5	2.5	14.7*	ns
Power Dissipation Capacitance	$C_{PD}\S$	—			pF
Min. (Valley) $V_{OH}$ (B Side) During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OHV}$	5	4 Typ. @ 25°C		V
Max. (Peak) $V_{OL}$ During Switching of Other Outputs (Output Under Test Not Switching)	$V_{OLP}$	5	1 Typ. @ 25°C		V
Input Capacitance	$C_i$	—	—	10	pF
3-State Output Capacitance (B Side)	$C_o$	—	—	15	pF
Off-State Output Capacitance (A Side)	$C_o$	—	—	15	pF

\*5 V: min. is @ 5.5 V  
max. is @ 4.5 V

$\S C_{PD}$  is used to determine the dynamic power consumption per channel.

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

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