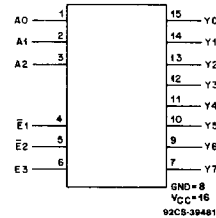


CD54AC238/3A
CD54ACT238/3A

3-to-8-Line Decoder/Demultiplexer
Non-Inverting

The RCA CD54AC238/3A and CD54ACT238/3A are 3-to-8-line decoders/demultiplexers that utilize the new RCA ADVANCED CMOS LOGIC technology.

The CD54AC238/3A and CD54ACT238/3A are supplied in 16-lead dual-in-line ceramic packages (F suffix).



Package Specifications

See Section 11, Fig. 11

FUNCTIONAL DIAGRAM & TERMINAL ASSIGNMENT

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

CHARACTERISTICS	TEST CONDITIONS	V_i (V)	I_o (mA)	V_{cc} (V)	AMBIENT TEMPERATURE (T_A) - °C				UNITS
					+25		-55 to +125		
					MIN.	MAX.	MIN.	MAX.	
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*
A0 - A2	0.83
$\overline{E1}, \overline{E2}$	1
E3	0.42

*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/ACT238	7,9-15	1-6,8	16	7,9-15	8	1-6,16
Dynamic	OPEN	GROUND	$1/2 V_{cc}$ (3V)	V_{cc} (6V)	OSCILLATOR	
CD54AC/ACT238	—	4,5,8	7,9-15	3,6,16	50 kHz	25 kHz
					2	1

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

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CD54AC238/3A

CD54ACT238/3A

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 Delay An to Output	t_{PLH}	1.5 3.3*	— 4.2	187 26.2	ns
	t_{PHL}	5†	2.7	15•	
$\bar{E}1, \bar{E}2$ to Output	t_{PLH}	1.5 3.3	— 3.8	167 23.4	ns
	t_{PHL}	5	2.1	11.9•	
E3 to Output	t_{PLH}	1.5 3.3	— 4.7	208 29.1	ns
	t_{PHL}	5	3	16.6	
Power Dissipation Capacitance	$C_{PD}§$	—	110 Typ.		pF
Input Capacitance	C_i	—	—	10	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 Delay An to Output	t_{PLH} t_{PHL}	5†	2.8	15.6•	ns
	t_{PHL}	5	2.5	14.2•	
E3 to Output	t_{PLH} t_{PHL}	5	2.4	13.6	ns
	t_{PHL}	5	2.4	13.6	
Power Dissipation Capacitance	$C_{PD}§$	—	160 Typ.		pF
Input Capacitance	C_i	—	—	10	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 package.

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%.)