OCTAL BUS BUFFER

TC74ACT240P/F/FW INVERTED, 3-STATE OUTPUTS
TC74ACT241P/F/FW NON-INVERTED, 3-STATE OUTPUTS
TC74ACT244P/F/FW NON-INVERTED, 3-STATE OUTPUTS

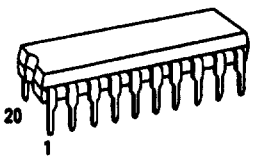
The TC74ACT240, 241 and 244 are advanced high speed CMOS OCTAL BUS BUFFERs fabricated with silicon gate and double-layer metal wiring C^2MOS technology.

They achieve the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.

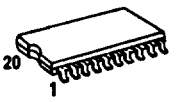
The 74ACT240 is an inverting 3-state buffer having two active-low output enables. The TC74ACT241 and TC74ACT244 are non-inverting 3-state buffers that differ only in that the 241 has one active-high and one active-low output enable, and the 244 has two active-low output enables.

These devices are designed to be used with 3-state memory address drivers, etc.

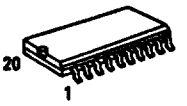
All inputs are equipped with protection circuits against static discharge or transient excess voltage.



P(DIP20-P-300A)



F(SOP20-P-300)



FW(SOL20-P-300)

FEATURES:

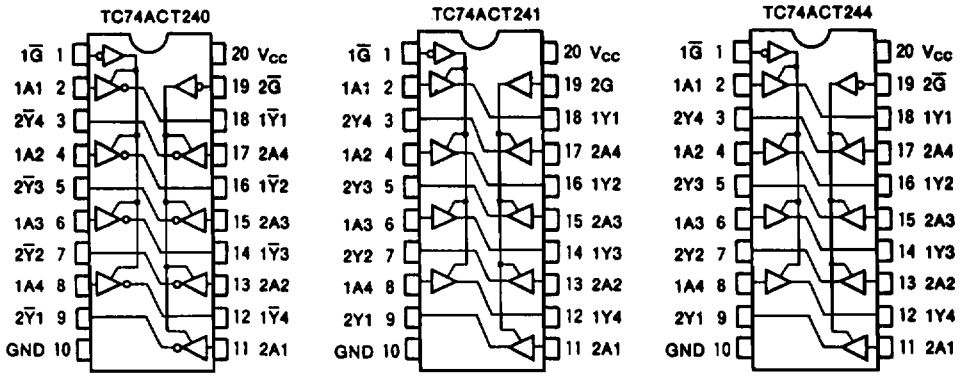
- High Speed ..... t_{pd}=5.0ns(typ.) at V_{CC}=5V
- Low Power Dissipation ..... I_{CC}=8μA(Max.) at Ta=25℃
- Compatible with TTL outputs..... V_{IL} =0.8V (Max.)
  V_{IH} =2.0V (Min.)
- Symmetrical Output Impedance ··· $|I_{OH}|=I_{OL}$=24mA(Min.)
  Capability of driving 50Ω transmission lines.
- Balanced Propagation Delays ..... $t_{pLH} \simeq t_{pHL}$
- Pin and Function Compatible with 74F240/244

TRUTH TABLE

INPUTS			OUTPUTS	
$\overline{G}$	G△	A_n	Y_n	$\overline{Y}_n$△△
L	H	L	L	H
L	H	H	H	L
H	L	X	Z	Z

△ : for TC74ACT241 only
△△ : for TC74ACT240 only
X : Don't Care
Z : High Impedance

PIN ASSIGNMENT(TOP VIEW)



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	V_{CC}	−0.5 ~6.0	V
DC Input Voltage	V_{IN}	−0.5 ~V_{CC}+0.5	V
DC Output Voltage	V_{OUT}	−0.5 ~V_{CC}+0.5	V
Input Diode Current	I_{IK}	±20	mA
Output Diode Current	I_{OK}	±50	mA
DC Output Current	I_{OUT}	±50	mA
DC V_{CC}/Ground Current	I_{CC}	±200	mA
Power Dissipation	P_D	500(DIP)*/180(SOP)	mW
Storage Temperature	T_{stg}	−65 ~150	℃
Lead Temperature 10sec	T_L	300	℃

*500mW in the range of Ta= −40℃~ 65℃. From Ta=65℃ to 85℃ a derating factor of −10mW/℃ should be applied up to 300mW.

RECOMMENDED OPERATING CONDITIONS

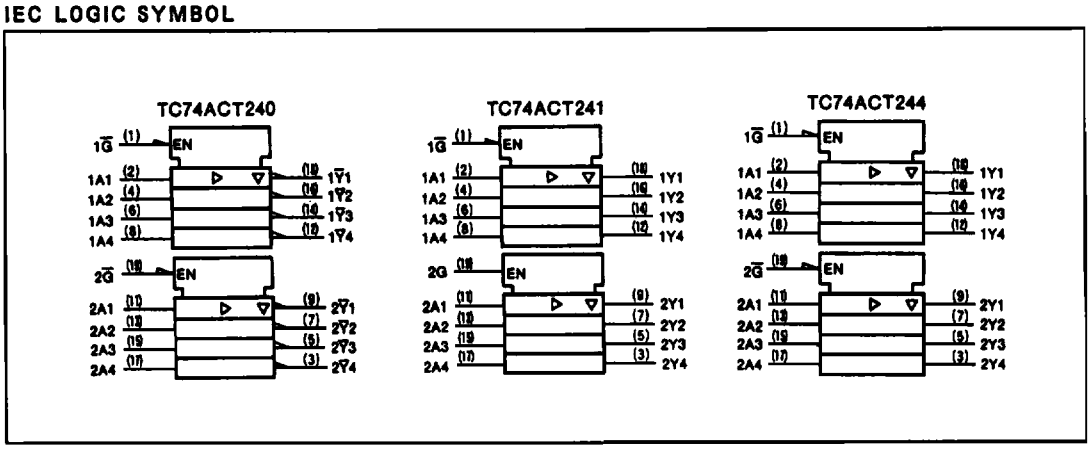
PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	4.5~5.5	V
Input Voltage	V_{IN}	0 ~ V_{CC}	V
Output Voltage	V_{OUT}	0 ~ V_{CC}	V
Operating Temperature	T_{opr}	−40 ~ 85	℃
Input Rise and Fall Time	dt/dv	0 ~ 10	ns/v

DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION		V_{CC}	Ta=25℃			Ta=−40~85℃		UNIT
					MIN.	TYP.	MAX.	MIN.	MAX.	
High−Level Input Voltage	V_{IH}			4.5 ~ 5.5	2.0	−	−	2.0	−	V
Low−Level Input Voltage	V_{IL}			4.5 ~ 5.5	−	−	0.8	−	0.8	V
High−Level Output Voltage	V_{OH}	V_{IN}= V_{IH} or V_{IL}	I_{OH}=−50μA	4.5	4.4	4.5	−	4.4	−	V
			I_{OH}=−24mA	4.5	3.94	−	−	3.80	−	
			I_{OH}=−75mA*	5.5	−	−	−	3.85	−	
Low−Level Output Voltage	V_{OL}	V_{IN}= V_{IH} or V_{IL}	I_{OL}=50μA	4.5	−	0.0	0.1	−	0.1	V
			I_{OL}=24mA	4.5	−	−	0.36	−	0.44	
			I_{OL}=75mA*	5.5	−	−	−	−	1.65	
3−State Output Off−State Current	I_{OZ}	V_{IN}=V_{IH} or V_{IL} V_{OUT}=V_{CC} or GND		5.5	−	−	±0.5	−	±5.0	μA
Input Leakage Current	I_{IN}	V_{IN} =V_{CC} or GND		5.5	−	−	±0.1	−	±1.0	
Quiescent Supply Current	I_{CC}	V_{IN} =V_{CC} or GND		5.5	−	−	8.0	−	80.0	
	ΔI_{cc}	PER INPUT:V_{IN} = 3.4V OTHER INPUT:V_{CC} or GND		5.5	−	−	1.35	−	1.5	mA

* :This spec indicates the capability of driving 50Ω transmission lines. One output should be tested at a time for a 10ms maximum duration.

IEC LOGIC SYMBOL



AC ELECTRICAL CHARACTERISTICS(C_L=50pF, R_L=500Ω, Input $t_r=t_f$=3ns)

PARAMETER	SYMBOL	TEST CONDITION	V_{CC}	Ta=25℃ MIN.	Ta=25℃ TYP.	Ta=25℃ MAX.	Ta=−40 ~85℃ MIN.	Ta=−40 ~85℃ MAX.	UNIT
Propagation Delay Time	t_{pLH} t_{pHL}		5.0±0.5	−	5.7	8.0	1.0	9.0	ns
Output Enable Time	t_{pZL} t_{pZH}		5.0±0.5	−	6.0	9.0	1.0	10.5	ns
Output Disable Time	t_{pLZ} t_{pHZ}		5.0±0.5	−	5.9	8.5	1.0	10.0	ns
Input Capacitance	C_{IN}			−	5	10	−	10	pF
Output Capacitance	C_{OUT}			−	10	−	−	−	pF
Power Dissipation Capacitance*	C_{PD}(1)			−	25	−	−	−	pF
Power Dissipation Capacitance**	C_{PD}(1)			−	29	−	−	−	pF

Note (1) C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.
Average operating current can be obtained by the equation:

$$I_{CC(opr)} = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC}/8 \text{ (per bit)}$$

(2) * for TC74ACT240 only
** for TC74ACT241/244