TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74ACT240P, TC74ACT240F, TC74ACT240FW, TC74ACT240FT
TC74ACT244P, TC74ACT244F, TC74ACT244FW, TC74ACT244FT

OCTAL BUS BUFFER

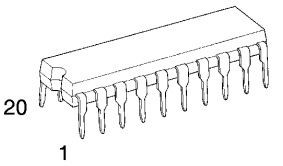
TC74ACT240P/F/FW/FT INVERTED, 3 – STATE OUTPUTS
TC74ACT244P/F/FW/FT NON – INVERTED, 3 – STATE OUTPUTS

The TC74ACT240 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 while the 74ACT244 is non-inverting. Both devices have two active-low output enables.
These devices are designed to be used in such applications as 3-state memory address drivers.
All inputs are equipped with protection circuits against static discharge or transient excess voltage.

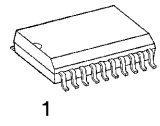
FEATURES :

- High Speed ····· t_{pd} = 5.0ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ····· I_{CC} = 8μA(Max.) at Ta = 25°C
- 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

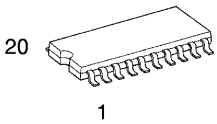
(Note) The JEDEC SOP (FW) is not available in Japan.



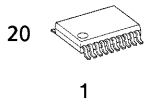
P (DIP20-P-300-2.54A)
Weight : 1.30g (Typ.)



FW (SOL20-P-300-1.27)
Weight : 0.46g (Typ.)

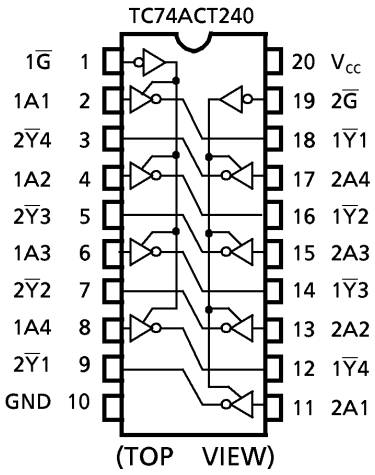


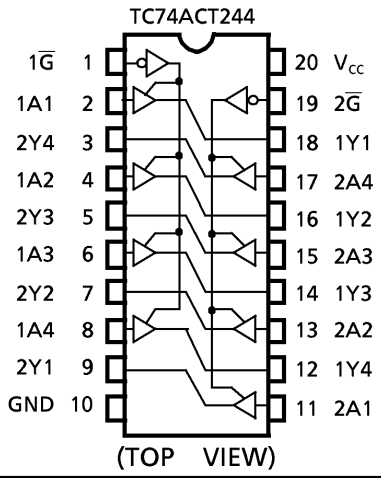
F (SOP20-P-300-1.27)
Weight : 0.22g (Typ.)



FT (TSSOP20-P-0044-0.65)
Weight : 0.08g (Typ.)

PIN ASSIGNMENT



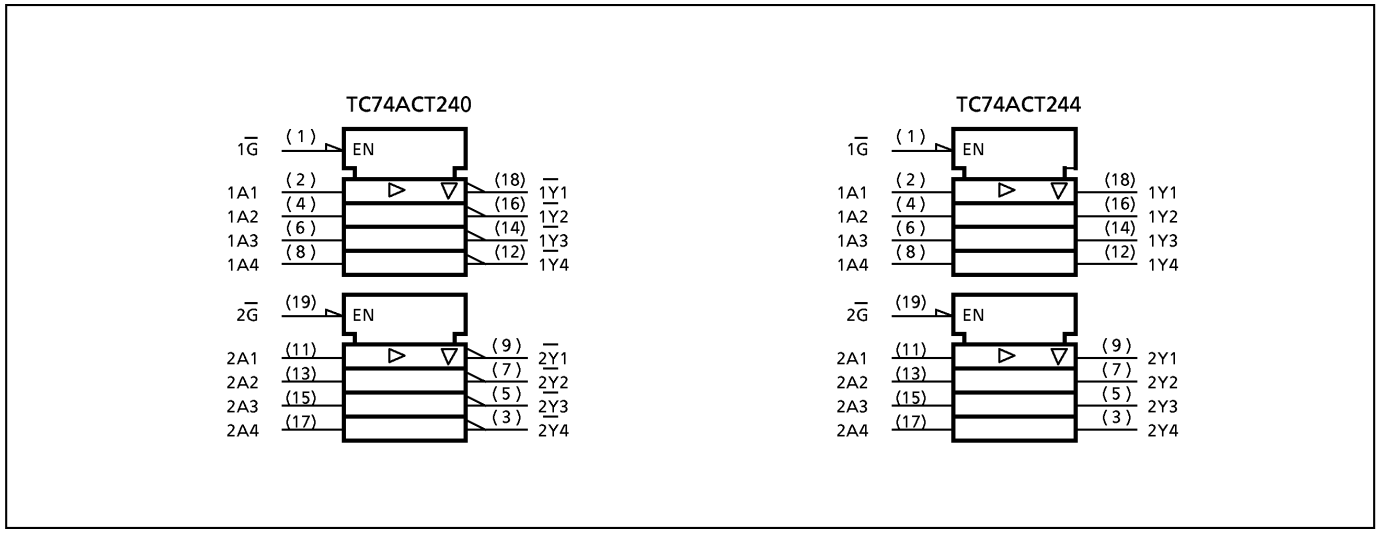


TRUTH TABLE

INPUTS		OUTPUTS	
$\overline{G}$	An	Y_n(244)	$\overline{Y}$n(240)
L	L	L	H
L	H	H	L
H	X	Z	Z

X : Don't Care
Z : High Impedance

IEC LOGIC SYMBOL



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	V_{CC}	−0.5~7.0	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/TSSOP)	mW
Storage Temperature	T_{stg}	−65~150	°C

*500mW in the range of Ta = −40°C~65°C. From Ta = 65°C to 85°C a derating factor of −10mW/°C 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	°C
Input Rise and Fall Time	dt / dV	0~10	ns / V

DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION		V_{CC} (V)	Ta = 25°C MIN.	Ta = 25°C TYP.	Ta = 25°C MAX.	Ta = −40~85°C MIN.	Ta = −40~85°C MAX.	UNIT
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	
	I_C	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.

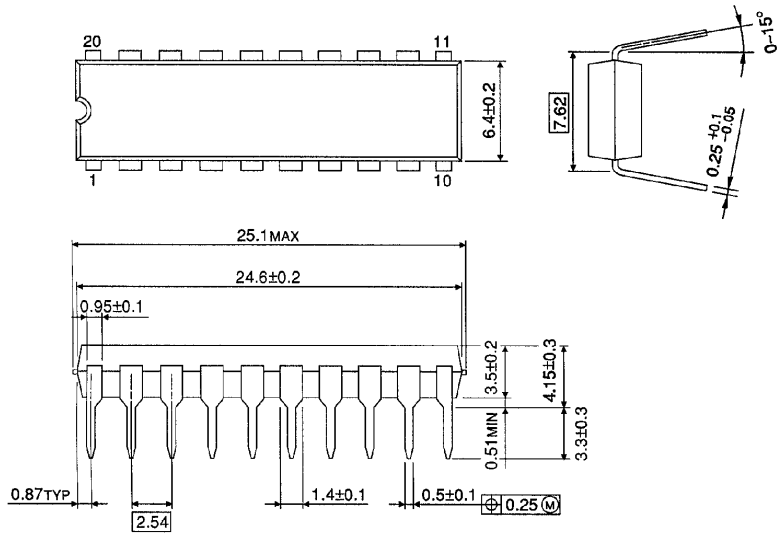
AC ELECTRICAL CHARACTERISTICS (C_L = 50pF, R_L = 500Ω, Input $t_r = t_f$ = 3ns)

PARAMETER	SYMBOL	TEST CONDITION	V_{CC} (V)	Ta = 25°C MIN.	Ta = 25°C TYP.	Ta = 25°C MAX.	Ta = −40~85°C MIN.	Ta = −40~85°C 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	
Output Disable Time	t_{pLZ} t_{pHZ}		5.0 ± 0.5	—	5.9	8.5	1.0	10.0	
Input Capacitance	C_{IN}			—	5	10	—	10	pF
Output Capacitance	C_{OUT}			—	10	—	—	—	
Power Dissipation Capacitance	C_{PD} (1)	TC74ACT240		—	25	—	—	—	
		TC74ACT244		—	29	—	—	—	

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 :

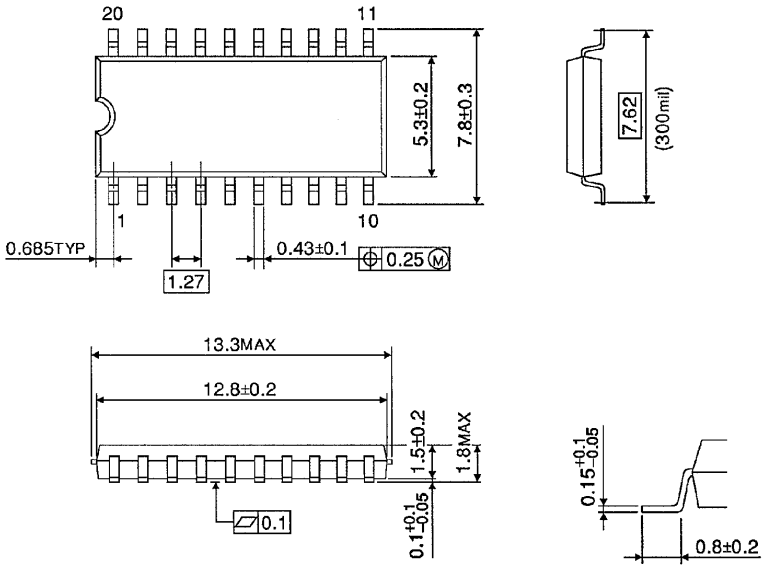
$$I_{CC}(opr.) = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC} / 8 \text{ (per bit)}$$

DIP 20PIN PACKAGE DIMENSIONS (DIP20-P-300-2.54A) Unit in mm



Weight : 1.30g (Typ.)

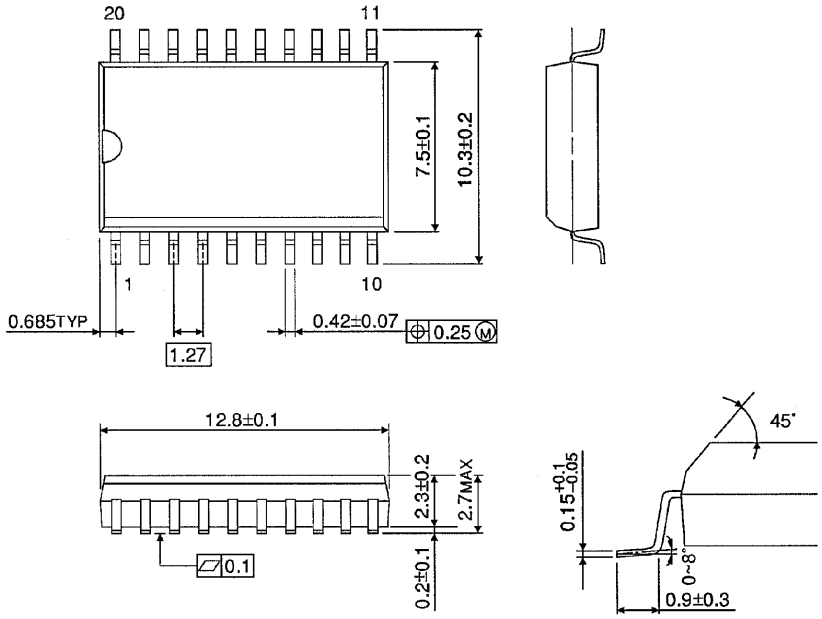
SOP 20PIN (200mil BODY) PACKAGE DIMENSIONS (SOP20-P-300-1.27) Unit in mm



Weight : 0.22g (Typ.)

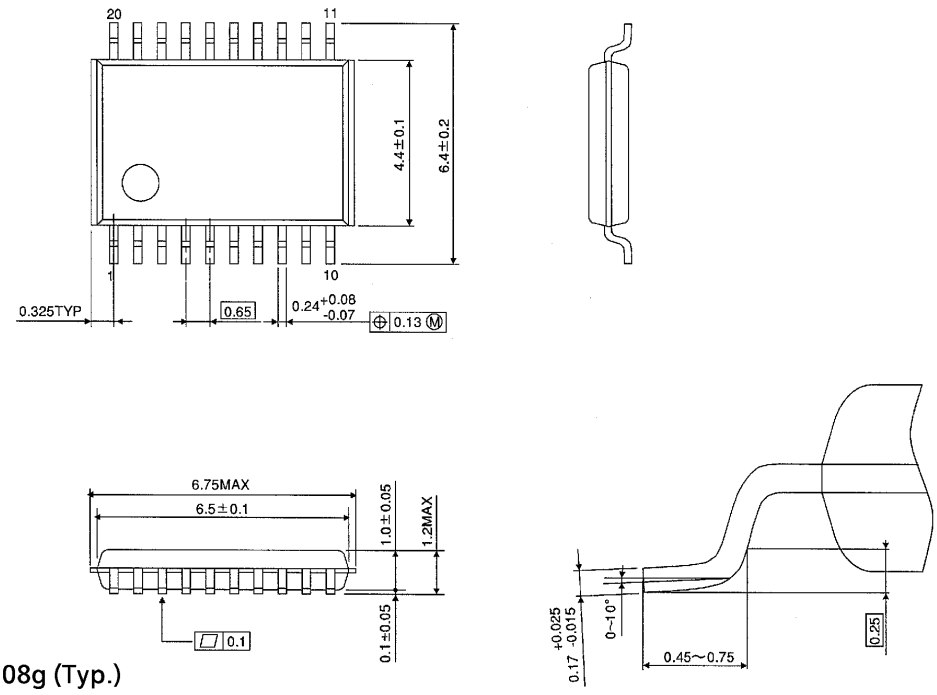
SOP 20PIN (300mil BODY) PACKAGE DIMENSIONS (SOL20-P-300-1.27) Unit in mm

(Note) This package is not available in Japan.



Weight : 0.46g (Typ.)

TSSOP 20PIN PACKAGE DIMENSIONS (TSSOP20-P-0044-0.65) Unit in mm



Weight : 0.08g (Typ.)

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000707EBA

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