

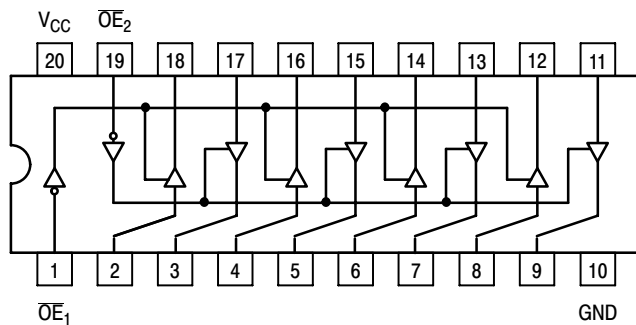
# MC74AC244, MC74ACT244

## Octal Buffer/Line Driver with 3-State Outputs

The MC74AC244/74ACT244 is an octal buffer and line driver designed to be employed as a memory address driver, clock driver and bus oriented transmitter/receiver which provides improved PC board density.

### Features

- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Outputs Source/Sink 24 mA
- 'ACT244 Has TTL Compatible Inputs
- Pb-Free Packages are Available\*



Pinout: 20-Lead Packages Conductors (Top View)

### TRUTH TABLE

Inputs		Outputs
$\overline{OE}_1$	D	(Pins 12, 14, 16, 18)
L	L	L
L	H	H
H	X	Z

NOTE: H = HIGH Voltage Level  
L = LOW Voltage Level  
X = Immaterial  
Z = High Impedance

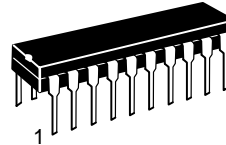
### TRUTH TABLE

Inputs		Outputs
$\overline{OE}_2$	D	(Pins 3, 5, 7, 9)
L	L	L
L	H	H
H	X	Z

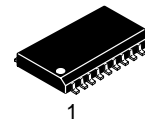
NOTE: H = HIGH Voltage Level  
L = LOW Voltage Level  
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Z = High Impedance



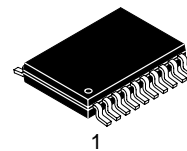
ON Semiconductor®



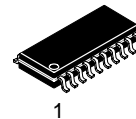
PDIP-20  
N SUFFIX  
CASE 738



SOIC-20W  
DW SUFFIX  
CASE 751D



TSSOP-20  
DT SUFFIX  
CASE 948E



SOEIAJ-20  
M SUFFIX  
CASE 967

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

### DEVICE MARKING INFORMATION

See general marking information in the device marking section on page 6 of this data sheet.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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## MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CC}$	DC Supply Voltage (Referenced to GND)	-0.5 to +7.0	V
$V_{IN}$	DC Input Voltage (Referenced to GND)	-0.5 to $V_{CC} + 0.5$	V
$V_{OUT}$	DC Output Voltage (Referenced to GND)	-0.5 to $V_{CC} + 0.5$	V
$I_{IN}$	DC Input Current, per Pin	$\pm 20$	mA
$I_{OUT}$	DC Output Sink/Source Current, per Pin	$\pm 50$	mA
$I_{CC}$	DC $V_{CC}$ or GND Current per Output Pin	$\pm 50$	mA
$T_{stg}$	Storage Temperature	-65 to +150	$^{\circ}C$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

## RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Typ	Max	Unit	
$V_{CC}$	Supply Voltage	'AC	2.0	5.0	6.0	V
		'ACT	4.5	5.0	5.5	
$V_{IN}, V_{OUT}$	DC Input Voltage, Output Voltage (Ref. to GND)	0	-	$V_{CC}$	V	
$t_r, t_f$	Input Rise and Fall Time (Note 1) 'AC Devices except Schmitt Inputs	$V_{CC}$ @ 3.0 V	-	150	-	ns/V
		$V_{CC}$ @ 4.5 V	-	40	-	
		$V_{CC}$ @ 5.5 V	-	25	-	
$t_r, t_f$	Input Rise and Fall Time (Note 2) 'ACT Devices except Schmitt Inputs	$V_{CC}$ @ 4.5 V	-	10	-	ns/V
		$V_{CC}$ @ 5.5 V	-	8.0	-	
$T_J$	Junction Temperature (PDIP)	-	-	140	$^{\circ}C$	
$T_A$	Operating Ambient Temperature Range	-40	25	85	$^{\circ}C$	
$I_{OH}$	Output Current – High	-	-	-24	mA	
$I_{OL}$	Output Current – Low	-	-	24	mA	

- $V_{IN}$  from 30% to 70%  $V_{CC}$ ; see individual Data Sheets for devices that differ from the typical input rise and fall times.
- $V_{IN}$  from 0.8 V to 2.0 V; see individual Data Sheets for devices that differ from the typical input rise and fall times.

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## DC CHARACTERISTICS

Symbol	Parameter	V <sub>CC</sub> (V)	74ACT		74ACT		Unit	Conditions
			T <sub>A</sub> = +25°C		T <sub>A</sub> = -40°C to +85°C			
			Typ	Guaranteed Limits		Min		
V <sub>IH</sub>	Minimum High Level Input Voltage	4.5 5.5	1.5 1.5	2.0 2.0	2.0 2.0		V	V <sub>OUT</sub> = 0.1 V or V <sub>CC</sub> - 0.1 V
V <sub>IL</sub>	Maximum Low Level Input Voltage	4.5 5.5	1.5 1.5	0.8 0.8	0.8 0.8		V	V <sub>OUT</sub> = 0.1 V or V <sub>CC</sub> - 0.1 V
V <sub>OH</sub>	Minimum High Level Output Voltage	4.5 5.5	4.49 5.49	4.4 5.4	4.4 5.4		V	I <sub>OUT</sub> = -50 μA
		4.5 5.5	- -	3.86 4.86	3.76 4.76		V	*V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub> -24 mA I <sub>OH</sub> -24 mA
V <sub>OL</sub>	Maximum Low Level Output Voltage	4.5 5.5	0.001 0.001	0.1 0.1	0.1 0.1		V	I <sub>OUT</sub> = 50 μA
		4.5 5.5	- -	0.36 0.36	0.44 0.44		V	*V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub> 24 mA I <sub>OL</sub> 24 mA
I <sub>IN</sub>	Maximum Input Leakage Current	5.5	-	±0.1	±1.0		μA	V <sub>I</sub> = V <sub>CC</sub> , GND
ΔI <sub>CCT</sub>	Additional Max. I <sub>CC</sub> /Input	5.5	0.6	-	1.5		mA	V <sub>I</sub> = V <sub>CC</sub> - 2.1 V
I <sub>OZ</sub>	Maximum 3-State Current	5.5	-	±0.5	±5.0		μA	V <sub>I</sub> (OE) = V <sub>IL</sub> , V <sub>IH</sub> V <sub>I</sub> = V <sub>CC</sub> , GND V <sub>O</sub> = V <sub>CC</sub> , GND
I <sub>OLD</sub>	†Minimum Dynamic Output Current	5.5	-	-	75		mA	V <sub>OLD</sub> = 1.65 V Max
I <sub>OHD</sub>		5.5	-	-	-75		mA	V <sub>OHD</sub> = 3.85 V Min
I <sub>CC</sub>	Maximum Quiescent Supply Current	5.5	-	8.0	80		μA	V <sub>IN</sub> = V <sub>CC</sub> or GND

\*All outputs loaded; thresholds on input associated with output under test.

†Maximum test duration 2.0 ms, one output loaded at a time.

## AC CHARACTERISTICS

Symbol	Parameter	V <sub>CC</sub> * (V)	74ACT			74ACT		Unit	Figure No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF			T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Min	Typ	Max	Min	Max		
t <sub>PLH</sub>	Propagation Delay Data to Output	5.0	2.0	6.5	9.0	1.5	10.0	ns	3-5
t <sub>PHL</sub>	Propagation Delay Data to Output	5.0	2.0	7.0	9.0	1.5	10.0	ns	3-5
t <sub>PZH</sub>	Output Enable Time	5.0	1.5	6.0	8.5	1.0	9.5	ns	3-7
t <sub>PZL</sub>	Output Enable Time	5.0	2.0	7.0	9.5	1.5	10.5	ns	3-8
t <sub>PHZ</sub>	Output Disable Time	5.0	2.0	7.0	9.5	1.5	10.5	ns	3-7
t <sub>PLZ</sub>	Output Disable Time	5.0	2.5	7.5	10.0	2.0	10.5	ns	3-8

\*Voltage Range 5.0 V is 5.0 V ±0.5 V.

## CAPACITANCE

Symbol	Parameter	Value Typ	Unit	Test Conditions
C <sub>IN</sub>	Input Capacitance	4.5	pF	V <sub>CC</sub> = 5.0 V
C <sub>PD</sub>	Power Dissipation Capacitance	45	pF	V <sub>CC</sub> = 5.0 V

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### ORDERING INFORMATION

Device	Package	Shipping†
MC74AC244N	PDIP-20	18 Units / Rail
MC74AC244NG	PDIP-20 (Pb-Free)	
MC74ACT244N	PDIP-20	
MC74ACT244NG	PDIP-20 (Pb-Free)	
MC74AC244DW	SOIC-20	38 Units / Rail
MC74AC244DWG	SOIC-20 (Pb-Free)	
MC74AC244DWR2	SOIC-20	1000 / Tape & Reel
MC74AC244DWR2G	SOIC-20 (Pb-Free)	
MC74ACT244DW	SOIC-20	38 Units / Rail
MC74ACT244DWG	SOIC-20 (Pb-Free)	
MC74ACT244DWR2	SOIC-20	1000 / Tape & Reel
MC74ACT244DWR2G	SOIC-20 (Pb-Free)	
MC74AC244DTR2	TSSOP-20*	2500 / Tape & Reel
MC74AC244DTR2G	TSSOP-20*	
MC74ACT244DTR2	TSSOP-20*	
MC74ACT244DTR2G	TSSOP-20*	
MC74AC244MEL	SOEIAJ-20	2000 / Tape & Reel
MC74AC244MELG	SOEIAJ-20 (Pb-Free)	
MC74ACT244M	SOEIAJ-20	40 Units / Rail
MC74ACT244MG	SOEIAJ-20 (Pb-Free)	
MC74ACT244MEL	SOEIAJ-20	2000 / Tape & Reel
MC74ACT244MELG	SOEIAJ-20 (Pb-Free)	

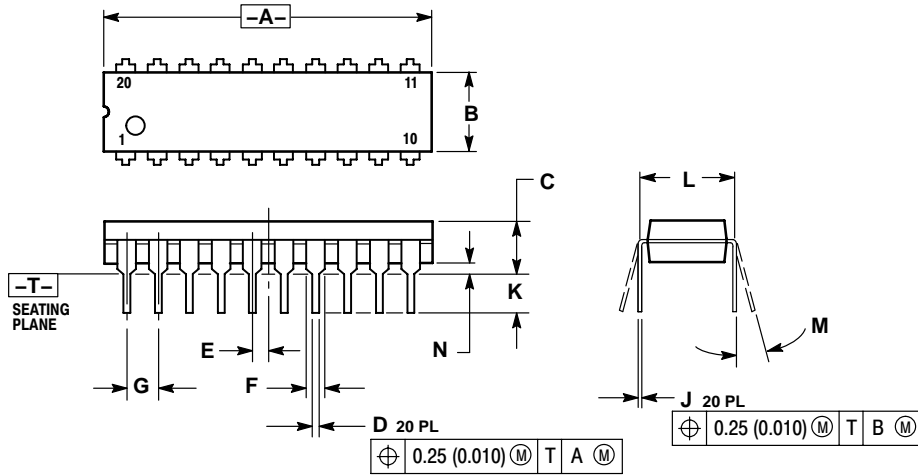
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*These packages are inherently Pb-Free.

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## PACKAGE DIMENSIONS

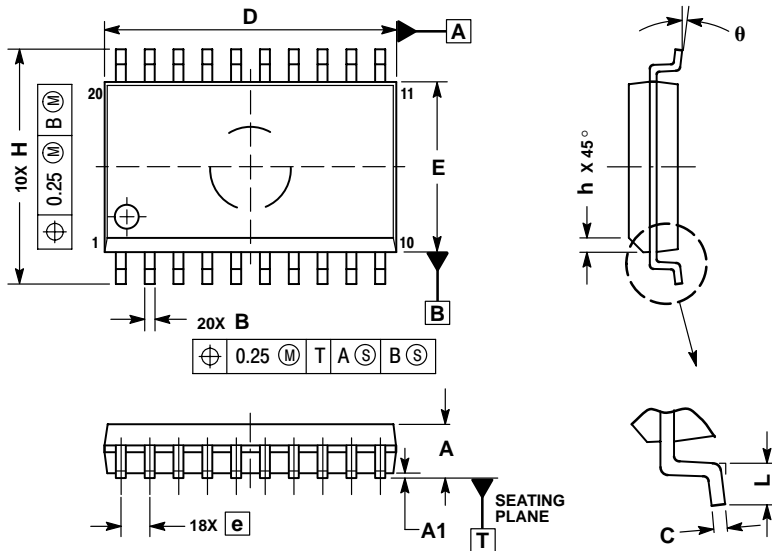
**PDIP-20**  
**N SUFFIX**  
 PLASTIC DIP PACKAGE  
 CASE 738-03  
 ISSUE E



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
  4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.010	1.070	25.66	27.17
B	0.240	0.260	6.10	6.60
C	0.150	0.180	3.81	4.57
D	0.015	0.022	0.39	0.55
E	0.050 BSC		1.27 BSC	
F	0.050	0.070	1.27	1.77
G	0.100 BSC		2.54 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.140	2.80	3.55
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

**SOIC-20W**  
**DW SUFFIX**  
 CASE 751D-05  
 ISSUE G



- NOTES:
1. DIMENSIONS ARE IN MILLIMETERS.
  2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
  3. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
  5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF B DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS	
	MIN	MAX
A	2.35	2.65
A1	0.10	0.25
B	0.35	0.49
C	0.23	0.32
D	12.65	12.95
E	7.40	7.60
e	1.27 BSC	
H	10.05	10.55
h	0.25	0.75
L	0.50	0.90
$\theta$	0°	7°