



MOTOROLA

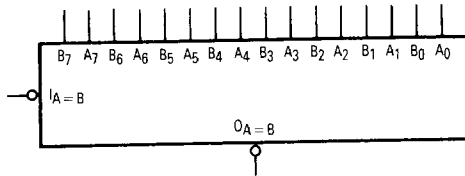
Product Preview

8-Bit Identity Comparator

The MC74AC534/74ACT534 is a high-speed, low-power octal D-type flip-flop featuring separate D-type inputs for each flip-flop and 3-state outputs for bus-oriented applications. A buffered Clock (CP) and Output Enable (\overline{OE}) are common to all flip-flops. The MC74AC534/74ACT534 is the same as the MC74AC374/74ACT374 except that the outputs are inverted.

- Edge-Triggered D-Type Inputs
- Buffered Positive Edge-Triggered Clock
- 3-State Outputs for Bus-Oriented Applications
- Outputs Source/Sink 24 mA
- 'ACT534 Has TTL Compatible Inputs
- Inverted Output Version of MC74AC374/74ACT374

LOGIC SYMBOL



PIN NAMES

- A₀-A₇ Word A Inputs
- B₀-B₇ Word B Inputs
- $\overline{IA=B}$ Expansion or Enable Input
- $\overline{OA=B}$ Identity Output

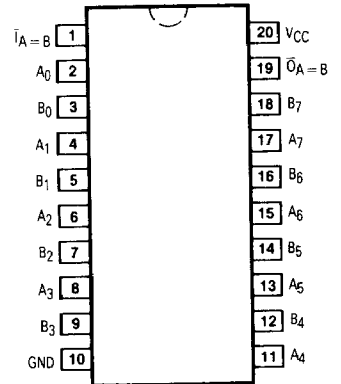
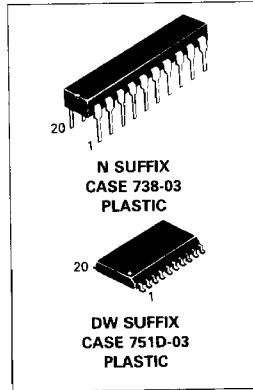
TRUTH TABLE

| Inputs | | Outputs |
|-------------------|--------|-------------------|
| $\overline{IA=B}$ | A, B | $\overline{OA=B}$ |
| L | A = B* | L |
| L | A ≠ B | H |
| H | A = B* | H |
| H | A ≠ B | H |

H = HIGH Voltage Level
 L = LOW Voltage Level
 *A₀ = B₀, A₁ = B₁, A₂ = B₂, etc.

MC74AC520
MC74ACT520
MC74AC521
MC74ACT521

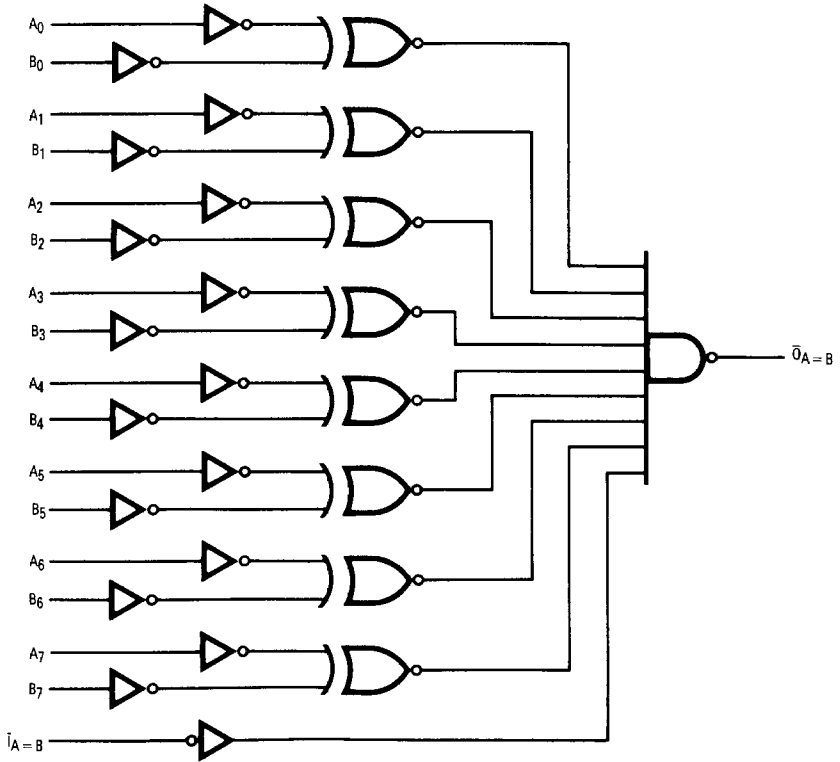
**8-BIT IDENTITY
 COMPARATOR**



This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.

FACT DATA

LOGIC DIAGRAM (MC74AC521/74ACT521)

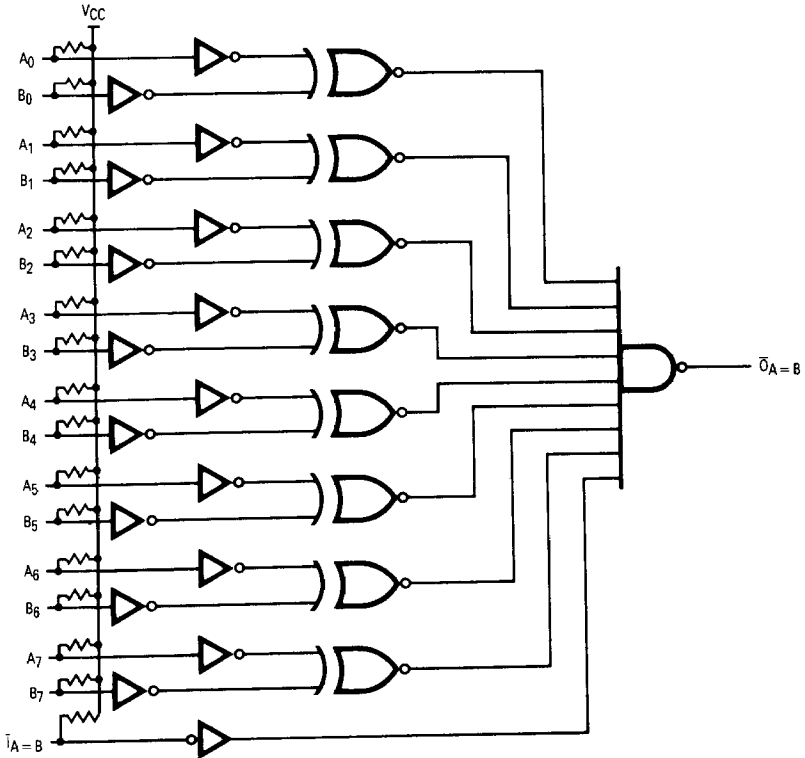


5

Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

MC74AC520 • MC74ACT520 • MC74AC521 • MC74ACT521

LOGIC DIAGRAM (MC74AC520/74ACT520)



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

DC CHARACTERISTICS (unless otherwise specified)

| Symbol | Parameter | Value | Units | Test Conditions |
|-----------|--|-------|---------|--|
| I_{CC} | Maximum Quiescent Supply Current | 80 | μA | $V_{IN} = V_{CC}$ or Ground, $V_{CC} = 5.5 V, T_A = \text{Worst Case}$ |
| I_{CC} | Maximum Quiescent Supply Current | 8.0 | μA | $V_{IN} = V_{CC}$ or Ground, $V_{CC} = 5.5 V, T_A = 25^\circ C$ |
| I_{CCT} | Maximum Additional I_{CC}/Input ('ACT520/521) | 1.5 | mA | $V_{IN} = V_{CC} - 2.1 V$, $V_{CC} = 5.5 V, T_A = \text{Worst Case}$ |

MC74AC520 • MC74ACT520 • MC74AC521 • MC74ACT521

AC CHARACTERISTICS (For Figures and Waveforms — See Section 3)

| Symbol | Parameter | V _{CC} * (V) | 74AC | | | 74AC | | Units | Fig. No. |
|------------------|---|--------------------------|--|------------|-----|--|-----|-------|----------|
| | | | T _A = +25°C C _L = 50 pF | | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Min | Typ | Max | Min | Max | | |
| t _{PLH} | Propagation Delay A _n or B _n to $\overline{O}_A = B$ | 3.3 5.0 | | 13 9.5 | | | | ns | 3-6 |
| t _{PHL} | Propagation Delay A _n or B _n to $\overline{O}_A = B$ | 3.3 5.0 | | 13 9.5 | | | | ns | 3-6 |
| t _{PLH} | Propagation Delay $\overline{I}_A = B$ to $\overline{O}_A = B$ | 3.3 5.0 | | 9.0 6.5 | | | | ns | 3-6 |
| t _{PHL} | Propagation Delay $\overline{I}_A = B$ to $\overline{O}_A = B$ | 3.3 5.0 | | 9.5 7.0 | | | | ns | 3-6 |

*Voltage Range 3.3 is 3.3 V ± 0.3 V
Voltage Range 5.0 is 5.0 V ± 0.5 V

AC CHARACTERISTICS (For Figures and Waveforms — See Section 3)

| Symbol | Parameter | V _{CC} * (V) | 74ACT | | | 74ACT | | Units | Fig. No. |
|------------------|---|--------------------------|--|-----|-----|--|-----|-------|----------|
| | | | T _A = +25°C C _L = 50 pF | | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Min | Typ | Max | Min | Max | | |
| t _{PLH} | Propagation Delay A _n or B _n to $\overline{O}_A = B$ | 5.0 | | 9.5 | | | | ns | 3-6 |
| t _{PHL} | Propagation Delay A _n or B _n to $\overline{O}_A = B$ | 5.0 | | 9.5 | | | | ns | 3-6 |
| t _{PLH} | Propagation Delay $\overline{I}_A = B$ to $\overline{O}_A = B$ | 5.0 | | 6.5 | | | | ns | 3-6 |
| t _{PHL} | Propagation Delay $\overline{I}_A = B$ to $\overline{O}_A = B$ | 5.0 | | 7.0 | | | | ns | 3-6 |

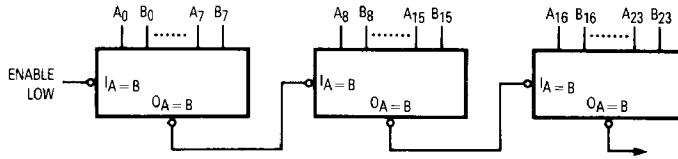
*Voltage Range 5.0 is 5.0 V ± 0.5 V

CAPACITANCE

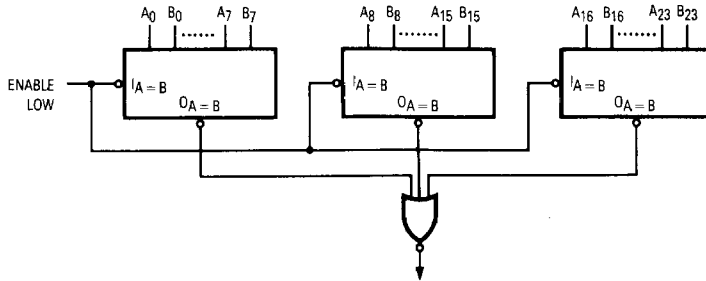
| Symbol | Parameter | Value Typ | Units | Test Conditions |
|-----------------|-------------------------------|--------------|-------|-------------------------|
| C _{IN} | Input Capacitance | 4.5 | pF | V _{CC} = 5.0 V |
| C _{PD} | Power Dissipation Capacitance | | pF | V _{CC} = 5.0 V |

APPLICATIONS

RIPPLE EXPANSION



PARALLEL EXPANSION

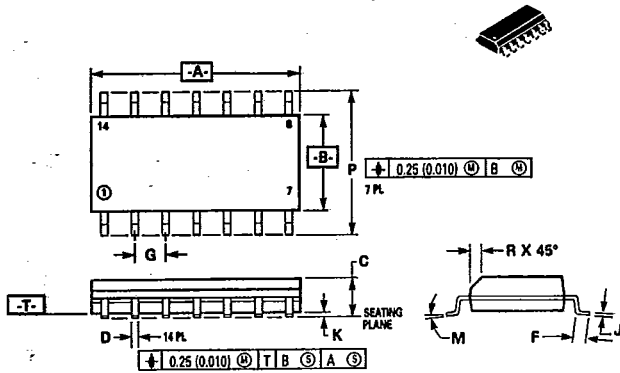


T-90-20

PACKAGE OUTLINES

SOIC

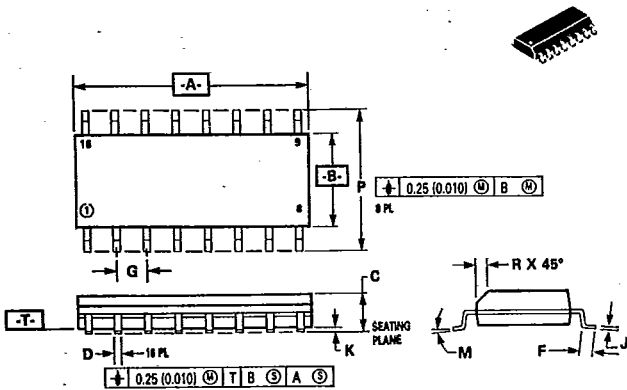
Case 751A-02 D Suffix
14-Pin Plastic
SO-14



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 8.55 | 8.75 | 0.337 | 0.344 |
| B | 3.80 | 4.00 | 0.150 | 0.157 |
| C | 1.35 | 1.75 | 0.054 | 0.068 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.40 | 1.25 | 0.016 | 0.049 |
| G | 1.27 BSC | | 0.050 BSC | |
| J | 0.19 | 0.25 | 0.008 | 0.009 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 5.80 | 6.20 | 0.229 | 0.244 |
| R | 0.25 | 0.50 | 0.010 | 0.019 |

Case 751B-03 D Suffix
16-Pin Plastic
SO-16



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 9.80 | 10.00 | 0.386 | 0.393 |
| B | 3.80 | 4.00 | 0.150 | 0.157 |
| C | 1.35 | 1.75 | 0.054 | 0.068 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.40 | 1.25 | 0.016 | 0.049 |
| G | 1.27 BSC | | 0.050 BSC | |
| J | 0.19 | 0.25 | 0.008 | 0.009 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 5.80 | 6.20 | 0.229 | 0.244 |
| R | 0.25 | 0.50 | 0.010 | 0.019 |

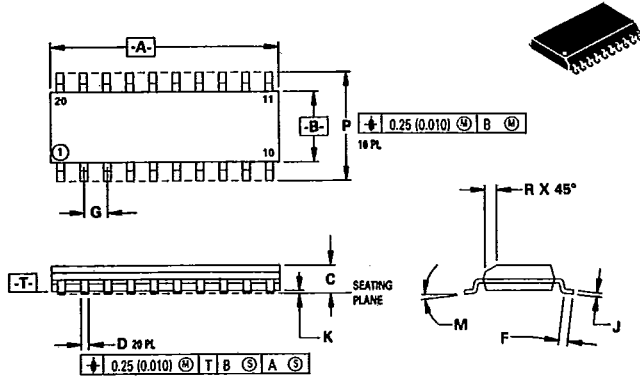
6

FACT DATA

T-90-20

SOIC (continued)

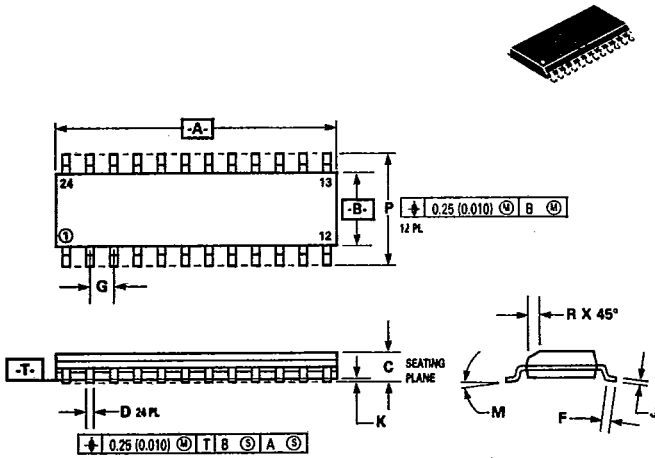
Case 751D-03 DW Suffix
20-Pin Plastic
SO-20



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 12.65 | 12.95 | 0.499 | 0.510 |
| B | 7.40 | 7.60 | 0.292 | 0.299 |
| C | 2.35 | 2.65 | 0.093 | 0.104 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.50 | 0.90 | 0.020 | 0.035 |
| G | 1.27 BSC | | 0.050 BSC | |
| J | 0.25 | 0.32 | 0.010 | 0.012 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 10.05 | 10.55 | 0.395 | 0.415 |
| R | 0.25 | 0.75 | 0.010 | 0.029 |

Case 751E-02 DW Suffix
24-Pin Plastic
SO-24



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 15.25 | 15.50 | 0.601 | 0.610 |
| B | 7.40 | 7.60 | 0.292 | 0.299 |
| C | 2.35 | 2.65 | 0.093 | 0.104 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.50 | 0.90 | 0.020 | 0.035 |
| G | 1.27 BSC | | 0.050 BSC | |
| J | 0.25 | 0.32 | 0.010 | 0.012 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 10.05 | 10.55 | 0.395 | 0.415 |
| R | 0.25 | 0.75 | 0.010 | 0.029 |

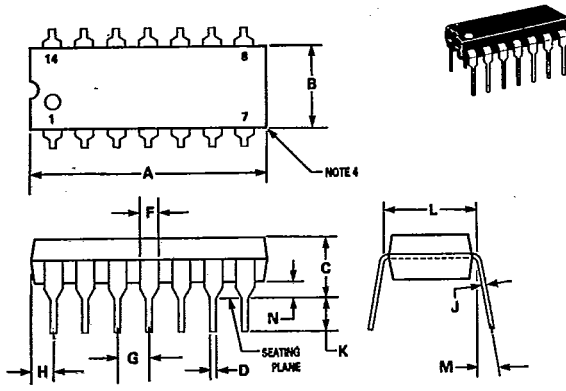
FACT DATA

T-90-20

PLASTIC DUAL-IN-LINE

Case 646-06 N Suffix
14-Pin Plastic

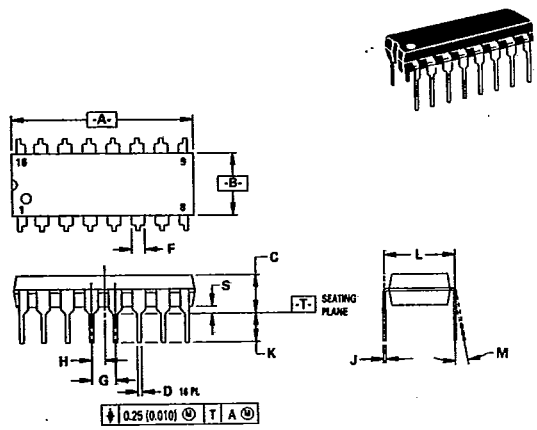
- NOTES:
- LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
 - DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 - DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 - ROUNDED CORNERS OPTIONAL.



| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 18.16 | 19.56 | 0.715 | 0.770 |
| B | 6.10 | 6.60 | 0.240 | 0.260 |
| C | 3.69 | 4.69 | 0.145 | 0.185 |
| D | 0.38 | 0.53 | 0.015 | 0.021 |
| F | 1.02 | 1.78 | 0.040 | 0.070 |
| G | 2.54 BSC | | 0.100 BSC | |
| H | 1.32 | 2.41 | 0.052 | 0.095 |
| J | 0.20 | 0.38 | 0.008 | 0.015 |
| K | 2.92 | 3.43 | 0.115 | 0.135 |
| L | 7.62 BSC | | 0.300 BSC | |
| M | 0° | 10° | 0° | 10° |
| N | 0.39 | 1.01 | 0.015 | 0.039 |

Case 648-08 N Suffix
16-Pin Plastic

- NOTES:
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - CONTROLLING DIMENSION: INCH.
 - DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 - DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 - ROUNDED CORNERS OPTIONAL.



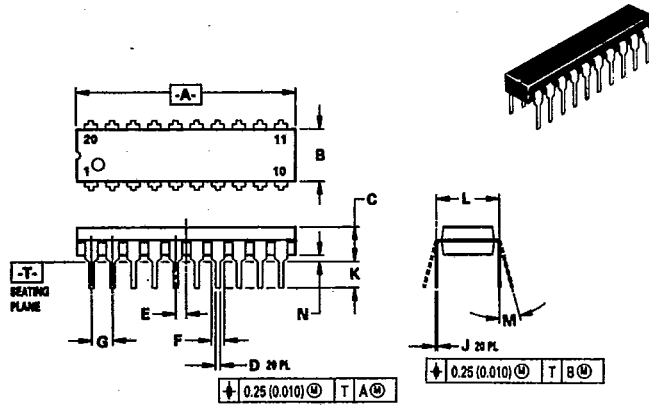
| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 18.80 | 19.55 | 0.740 | 0.770 |
| B | 6.35 | 6.85 | 0.250 | 0.270 |
| C | 3.69 | 4.44 | 0.145 | 0.175 |
| D | 0.39 | 0.53 | 0.015 | 0.021 |
| F | 1.02 | 1.77 | 0.040 | 0.070 |
| G | 2.54 BSC | | 0.100 BSC | |
| H | 1.27 BSC | | 0.050 BSC | |
| J | 0.21 | 0.38 | 0.008 | 0.015 |
| K | 2.80 | 3.30 | 0.110 | 0.130 |
| L | 7.50 | 7.74 | 0.295 | 0.305 |
| M | 0° | 10° | 0° | 10° |
| S | 0.51 | 1.01 | 0.020 | 0.040 |

6

T-90-20

PLASTIC DUAL-IN-LINE (continued)

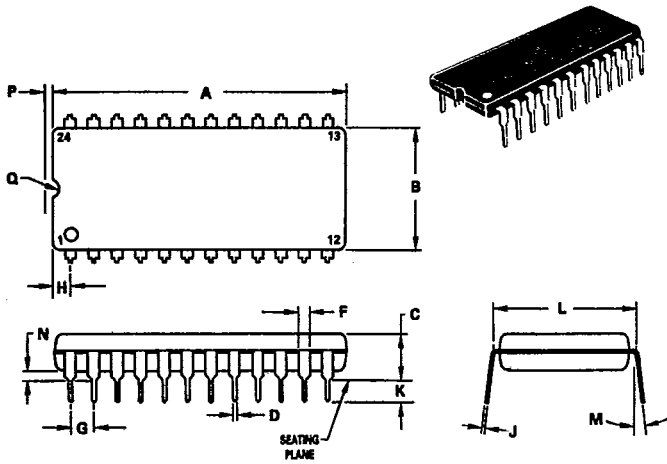
Case 738-03 N Suffix
20-Pin Plastic



- 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 | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 25.65 | 27.17 | 1.010 | 1.070 |
| B | 6.10 | 6.60 | 0.240 | 0.260 |
| C | 3.81 | 4.57 | 0.150 | 0.180 |
| D | 0.39 | 0.55 | 0.015 | 0.022 |
| E | 1.27 BSC | | 0.050 BSC | |
| F | 1.27 | 1.77 | 0.050 | 0.070 |
| G | 2.54 BSC | | 0.100 BSC | |
| J | 0.21 | 0.38 | 0.008 | 0.015 |
| K | 2.80 | 3.55 | 0.110 | 0.140 |
| L | 7.62 BSC | | 0.300 BSC | |
| M | 0° - 15° | | 0° - 15° | |
| N | 0.51 | 1.01 | 0.020 | 0.040 |

Case 649-03 N Suffix
24-Pin Plastic



- NOTES:
1. LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
 2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 31.50 | 32.13 | 1.240 | 1.265 |
| B | 13.21 | 13.72 | 0.520 | 0.540 |
| C | 4.70 | 5.21 | 0.185 | 0.205 |
| D | 0.38 | 0.51 | 0.015 | 0.020 |
| F | 1.02 | 1.52 | 0.040 | 0.060 |
| G | 2.54 BSC | | 0.100 BSC | |
| H | 1.65 | 2.16 | 0.065 | 0.085 |
| J | 0.20 | 0.30 | 0.008 | 0.012 |
| K | 2.92 | 3.43 | 0.115 | 0.135 |
| L | 14.99 | 15.49 | 0.590 | 0.610 |
| M | 10° | | 10° | |
| N | 0.51 | 1.02 | 0.020 | 0.040 |
| P | 0.13 | 0.38 | 0.005 | 0.015 |
| Q | 0.51 | 0.76 | 0.020 | 0.030 |

FACT DATA