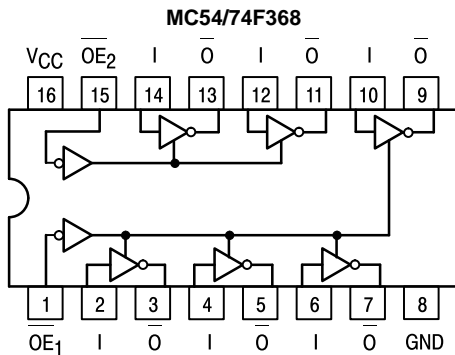
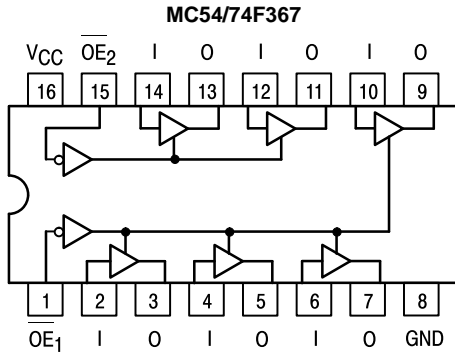




# HEX BUFFER/DRIVER 4-BIT PLUS 2-BIT, NONINVERTING AND INVERTING, 3-STATE

## CONNECTION DIAGRAMS



## FUNCTION TABLE

| Inputs |   | Outputs |   |
|--------|---|---------|---|
| OE     | I | O       | O |
| L      | L | L       | H |
| L      | H | H       | L |
| H      | X | Z       | Z |

H = HIGH Voltage Level  
L = LOW Voltage Level  
X = Don't Care  
Z = High Impedance

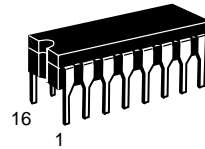
## GUARANTEED OPERATING RANGES

| Symbol          | Parameter                           |        | Min | Typ | Max | Unit |
|-----------------|-------------------------------------|--------|-----|-----|-----|------|
| V <sub>CC</sub> | Supply Voltage                      | 54, 74 | 4.5 | 5.0 | 5.5 | V    |
| T <sub>A</sub>  | Operating Ambient Temperature Range | 54     | -55 | 25  | 125 | °C   |
|                 |                                     | 74     | 0   | 25  | 70  |      |
| I <sub>OH</sub> | Output Current — High               | 54     |     |     | -12 | mA   |
|                 |                                     | 74     |     |     | -15 |      |
| I <sub>OL</sub> | Output Current — Low                | 54     |     |     | 48  | mA   |
|                 |                                     | 74     |     |     | 64  |      |

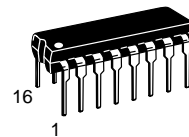
**MC54/74F367  
MC54/74F368**

**F367  
HEX BUFFER/DRIVER  
4-BIT PLUS 2-BIT,  
NONINVERTING 3-STATE**

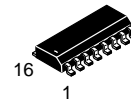
**F368  
HEX BUFFER/DRIVER  
4-BIT PLUS 2-BIT,  
INVERTING 3-STATE  
FAST™ SCHOTTKY TTL**



**J SUFFIX  
CERAMIC  
CASE 620-09**



**N SUFFIX  
PLASTIC  
CASE 648-08**



**D SUFFIX  
SOIC  
CASE 751B-03**

## ORDERING INFORMATION

MC54FXXXJ Ceramic  
MC74FXXXN Plastic  
MC74FXXXD SOIC

# MC54/74F367 • MC54/74F368

## DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

| Symbol           | Parameter                             | Limits            |     |      | Unit | Test Conditions               |                           |                          |
|------------------|---------------------------------------|-------------------|-----|------|------|-------------------------------|---------------------------|--------------------------|
|                  |                                       | Min               | Typ | Max  |      |                               |                           |                          |
| V <sub>IH</sub>  | Input HIGH Voltage                    | 2.0               |     |      | V    | Guaranteed Input HIGH Voltage |                           |                          |
| V <sub>IL</sub>  | Input LOW Voltage                     |                   |     | 0.8  | V    | Guaranteed Input LOW Voltage  |                           |                          |
| V <sub>IK</sub>  | Input Clamp Diode Voltage             |                   |     | -1.2 | V    | I <sub>IN</sub> = -18 mA      | V <sub>CC</sub> = MIN     |                          |
| V <sub>OH</sub>  | Output HIGH Voltage                   | 54, 74            | 2.4 | 3.4  |      | V                             | I <sub>OH</sub> = -3.0 mA | V <sub>CC</sub> = 4.5 V  |
|                  |                                       | 74                | 2.7 | 3.4  |      | V                             | I <sub>OH</sub> = -3.0 mA | V <sub>CC</sub> = 4.75 V |
|                  |                                       | 54                | 2.0 |      |      | V                             | I <sub>OH</sub> = -12 mA  | V <sub>CC</sub> = 4.5 V  |
|                  |                                       | 74                | 2.0 |      |      | V                             | I <sub>OH</sub> = -15 mA  | V <sub>CC</sub> = 4.5 V  |
| V <sub>OL</sub>  | Output LOW Voltage                    | 54                |     | 0.35 | 0.55 | V                             | I <sub>OL</sub> = 48 mA   | V <sub>CC</sub> = MAX    |
|                  |                                       | 74                |     | 0.4  | 0.55 | V                             | I <sub>OL</sub> = 64 mA   |                          |
| I <sub>OZH</sub> | Output Off Current HIGH               |                   |     |      | 50   | μA                            | V <sub>OUT</sub> = 2.7 V  | V <sub>CC</sub> = MAX    |
| I <sub>OZL</sub> | Output Off Current LOW                |                   |     |      | -50  | μA                            | V <sub>OUT</sub> = 0.5 V  | V <sub>CC</sub> = MAX    |
| I <sub>IH</sub>  | Input HIGH Current                    |                   |     |      | 20   | μA                            | V <sub>IN</sub> = 2.7 V   | V <sub>CC</sub> = MAX    |
|                  |                                       |                   |     |      | 100  |                               | V <sub>IN</sub> = 7.0 V   | V <sub>CC</sub> = 0 V    |
| I <sub>IL</sub>  | Input LOW Current                     |                   |     |      | -20  | μA                            | V <sub>IN</sub> = 0.5 V   | V <sub>CC</sub> = MAX    |
| I <sub>OS</sub>  | Output Short Circuit Current (Note 2) | -100              |     |      | -225 | mA                            | V <sub>OUT</sub> = GND    | V <sub>CC</sub> = MAX    |
| I <sub>CC</sub>  | F367                                  | I <sub>CC</sub> H |     |      | 35   | mA                            | V <sub>CC</sub> = MAX     |                          |
|                  |                                       | I <sub>CC</sub> L |     |      | 62   |                               |                           |                          |
|                  |                                       | I <sub>CC</sub> Z |     |      | 48   |                               |                           |                          |
|                  | F368                                  | I <sub>CC</sub> H |     |      | 25   |                               |                           |                          |
|                  |                                       | I <sub>CC</sub> L |     |      | 62   |                               |                           |                          |
|                  |                                       | I <sub>CC</sub> Z |     |      | 48   |                               |                           |                          |

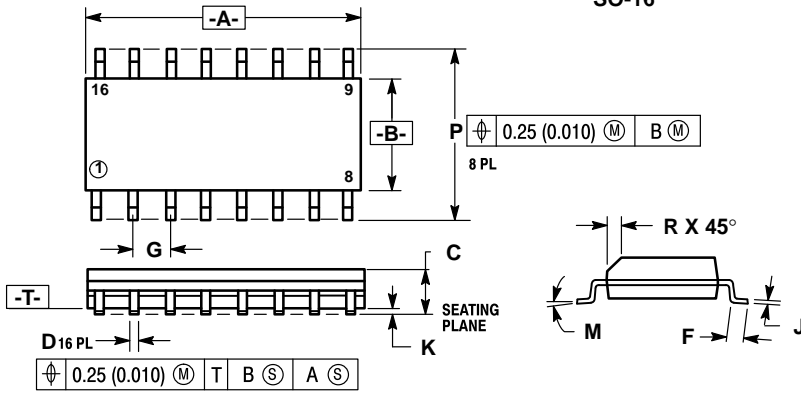
**NOTES:**

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
- Not more than one output should be shorted at a time, nor for more than 1 second.

## AC CHARACTERISTICS

| Symbol           | Parameter                        | 54/74F                   |     |     | 54F                              |     | 74F                           |     | Unit |     |    |
|------------------|----------------------------------|--------------------------|-----|-----|----------------------------------|-----|-------------------------------|-----|------|-----|----|
|                  |                                  | T <sub>A</sub> = +25°C   |     |     | T <sub>A</sub> = -55°C to +125°C |     | T <sub>A</sub> = 0°C to +70°C |     |      |     |    |
|                  |                                  | V <sub>CC</sub> = +5.0 V |     |     | V <sub>CC</sub> = 5.0 V ± 10%    |     | V <sub>CC</sub> = 5.0 V ± 10% |     |      |     |    |
|                  |                                  | C <sub>L</sub> = 50 pF   |     |     | C <sub>L</sub> = 50 pF           |     | C <sub>L</sub> = 50 pF        |     |      |     |    |
|                  |                                  | Min                      | Typ | Max | Min                              | Max | Min                           | Max |      |     |    |
| t <sub>PLH</sub> | Propagation Delay                | F367                     |     | 2.0 | 4.5                              | 6.5 | 2.0                           | 8.0 | 2.0  | 7.0 | ns |
| t <sub>PHL</sub> | I <sub>n</sub> to O <sub>n</sub> | F367                     |     | 3.0 | 5.5                              | 7.0 | 3.0                           | 8.5 | 3.0  | 7.5 |    |
| t <sub>PLH</sub> | Propagation Delay                | F368                     |     | 2.0 | 5.0                              | 6.5 | 2.0                           | 8.5 | 2.0  | 7.5 | ns |
| t <sub>PHL</sub> | I <sub>n</sub> to $\bar{O}_n$    | F368                     |     | 1.0 | 3.0                              | 5.0 | 1.0                           | 6.5 | 1.0  | 5.5 |    |
| t <sub>PZH</sub> | Output Enable Time               |                          |     | 2.5 | 5.5                              | 7.5 | 2.5                           | 9.5 | 2.5  | 8.5 | ns |
| t <sub>PZL</sub> | to HIGH and LOW Level            |                          |     | 3.0 | 6.5                              | 8.5 | 3.0                           | 10  | 3.0  | 9.0 |    |
| t <sub>PHZ</sub> | Output Disable Time              |                          |     | 2.5 | 4.5                              | 6.5 | 2.5                           | 8.0 | 2.5  | 7.0 | ns |
| t <sub>PLZ</sub> | from HIGH and LOW Level          |                          |     | 1.5 | 4.0                              | 6.0 | 1.5                           | 7.5 | 1.5  | 6.5 |    |

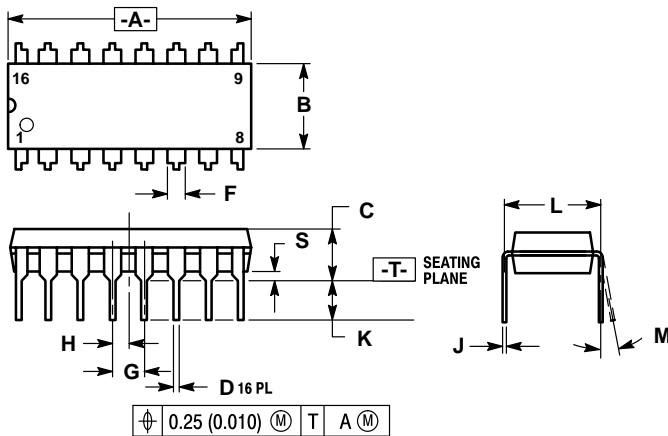
**Case 751B-03 D Suffix  
16-Pin Plastic  
SO-16**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
  5. 751B-01 IS OBSOLETE, NEW STANDARD 751B-03.

| 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 |

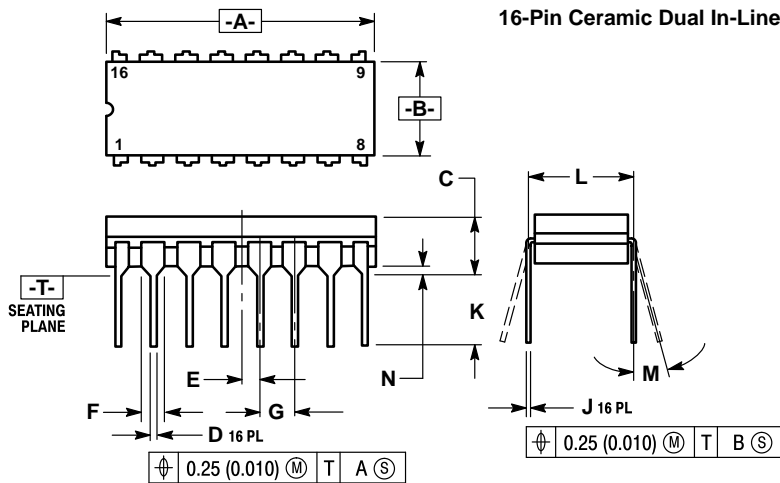
**Case 648-08 N Suffix  
16-Pin Plastic**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
  4. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
  5. ROUNDED CORNERS OPTIONAL.
  6. 648-01 THRU -07 OBSOLETE, NEW STANDARD 648-08.

| 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 |

**Case 620-09 J Suffix  
16-Pin Ceramic Dual In-Line**



- 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. DIM F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.
  5. 620-01 THRU -08 OBSOLETE, NEW STANDARD 620-09.

| DIM | MILLIMETERS |       | INCHES    |       |
|-----|-------------|-------|-----------|-------|
|     | MIN         | MAX   | MIN       | MAX   |
| A   | 19.05       | 19.55 | 0.750     | 0.770 |
| B   | 6.10        | 7.36  | 0.240     | 0.290 |
| C   | —           | 4.19  | —         | 0.165 |
| D   | 0.39        | 0.53  | 0.015     | 0.021 |
| E   | 1.27 BSC    |       | 0.050 BSC |       |
| F   | 1.40        | 1.77  | 0.055     | 0.070 |
| G   | 2.54 BSC    |       | 0.100 BSC |       |
| J   | 0.23        | 0.27  | 0.009     | 0.011 |
| K   | —           | 5.08  | —         | 0.200 |
| L   | 7.62 BSC    |       | 0.300 BSC |       |
| M   | 0°          | 15°   | 0°        | 15°   |
| N   | 0.39        | 0.88  | 0.015     | 0.035 |

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