

## High-Speed CMOS Logic 16-Channel Analog Multiplexer/Demultiplexer

### Features

- **Wide Analog Input Voltage Range**
- **Low "ON" Resistance**
  - $V_{CC} = 4.5V$  . . . . . **70Ω (Typ)**
  - $V_{CC} = 6V$  . . . . . **60Ω (Typ)**
- **Fast Switching and Propagation Speeds**
- **"Break-Before-Make" Switching. . . . . 6ns (Typ) at 4.5V**
- **Available in Both Narrow and Wide-Body Plastic Packages**
- **Fanout (Over Temperature Range)**
  - Standard Outputs . . . . . **10 LSTTL Loads**
  - Bus Driver Outputs . . . . . **15 LSTTL Loads**
- **Wide Operating Temperature Range . . . -55°C to 125°C**
- **Balanced Propagation Delay and Transition Times**
- **Significant Power Reduction Compared to LSTTL Logic ICs**
- **HC Types**
  - **2V to 6V Operation**
  - **High Noise Immunity:  $N_{IL} = 30\%$ ,  $N_{IH} = 30\%$  of  $V_{CC}$  at  $V_{CC} = 5V$**
- **HCT Types**
  - **4.5V to 5.5V Operation**
  - **Direct LSTTL Input Logic Compatibility,  $V_{IL} = 0.8V$  (Max),  $V_{IH} = 2V$  (Min)**
  - **CMOS Input Compatibility,  $I_I \leq 1\mu A$  at  $V_{OL}$ ,  $V_{OH}$**

### Description

The CD74HC4067 and CD74HCT4067 devices are digitally controlled analog switches that utilize silicon-gate CMOS technology to achieve operating speeds similar to LSTTL, with the low power consumption of standard CMOS integrated circuits.

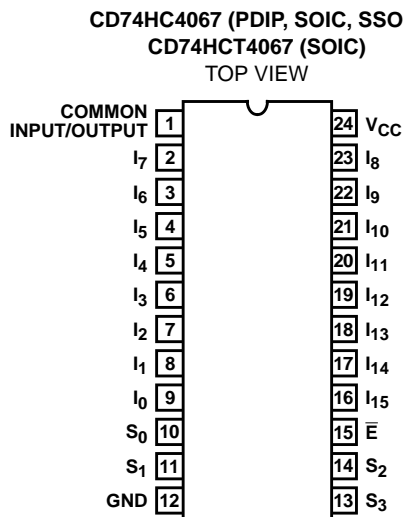
These analog multiplexers/demultiplexers control analog voltages that may vary across the voltage supply range. They are bidirectional switches thus allowing any analog input to be used as an output and vice-versa. The switches have low "on" resistance and low "off" leakages. In addition, these devices have an enable control which when high will disable all switches to their "off" state.

### Ordering Information

| PART NUMBER    | TEMP. RANGE (°C) | PACKAGE    |
|----------------|------------------|------------|
| CD74HC4067E    | -55 to 125       | 24 Ld PDIP |
| CD74HC4067M    | -55 to 125       | 24 Ld SOIC |
| CD74HC4067M96  | -55 to 125       | 24 Ld SOIC |
| CD74HC4067SM96 | -55 to 125       | 24 Ld SSOP |
| CD74HCT4067M   | -55 to 125       | 24 Ld SOIC |

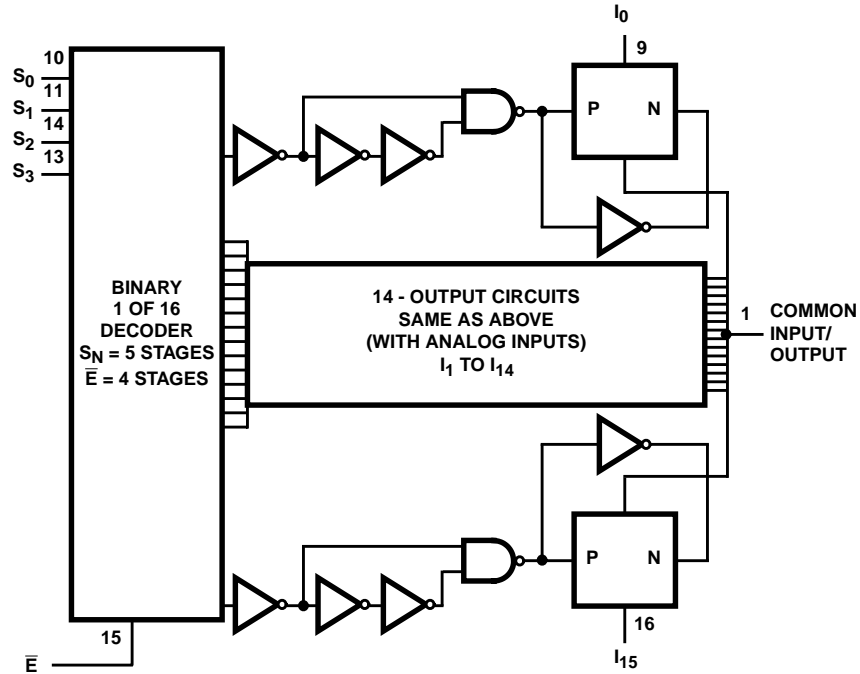
NOTE: When ordering, use the entire part number. The suffix 96 denotes tape and reel.

### Pinout



CD74HC4067, CD74HCT4067

Functional Diagram



TRUTH TABLE

| S0 | S1 | S2 | S3 | $\bar{E}$ | SELECTED CHANNEL |
|----|----|----|----|-----------|------------------|
| X  | X  | X  | X  | 1         | None             |
| 0  | 0  | 0  | 0  | 0         | 0                |
| 1  | 0  | 0  | 0  | 0         | 1                |
| 0  | 1  | 0  | 0  | 0         | 2                |
| 1  | 1  | 0  | 0  | 0         | 3                |
| 0  | 0  | 1  | 0  | 0         | 4                |
| 1  | 0  | 1  | 0  | 0         | 5                |
| 0  | 1  | 1  | 0  | 0         | 6                |
| 1  | 1  | 1  | 0  | 0         | 7                |
| 0  | 0  | 0  | 1  | 0         | 8                |
| 1  | 0  | 0  | 1  | 0         | 9                |
| 0  | 1  | 0  | 1  | 0         | 10               |
| 1  | 1  | 0  | 1  | 0         | 11               |
| 0  | 0  | 1  | 1  | 0         | 12               |
| 1  | 0  | 1  | 1  | 0         | 13               |
| 0  | 1  | 1  | 1  | 0         | 14               |
| 1  | 1  | 1  | 1  | 0         | 15               |

H= High Level  
 L= Low Level  
 X= Don't Care

# CD74HC4067, CD74HCT4067

## Absolute Maximum Ratings

|  |             |
|--|-------------|
| DC Supply Voltage, $V_{CC}$<br>(Voltages Referenced to Ground) .....                                       | -0.5V to 7V |
| DC Input Diode Current, $I_{IK}$<br>For $V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$ .....                       | $\pm 20mA$  |
| DC Drain Current, $I_O$<br>For $-0.5V < V_O < V_{CC} + 0.5V$ .....   | $\pm 25mA$  |
| DC Output Diode Current, $I_{OK}$<br>For $V_O < -0.5V$ or $V_O > V_{CC} + 0.5V$ .....                      | $\pm 20mA$  |
| DC Output Source or Sink Current per Output Pin, $I_O$<br>For $V_O > -0.5V$ or $V_O < V_{CC} + 0.5V$ ..... | $\pm 25mA$  |
| DC $V_{CC}$ or Ground Current, $I_{CC}$ .....  | $\pm 50mA$  |

## Thermal Information

|  |                                  |
|--|----------------------------------|
| Thermal Resistance (Typical)                         | $\theta_{JA}$ ( $^{\circ}C/W$ )  |
| E (PDIP) Package, Note 1 .....                       | 67                               |
| M (SOIC) Package, Note 2 .....                       | 46                               |
| SM (SSOP) Package, Note 2 .....                      | 63                               |
| Maximum Junction Temperature (Plastic Package) ..... | $150^{\circ}C$                   |
| Maximum Storage Temperature Range .....              | $-65^{\circ}C$ to $150^{\circ}C$ |

## Operating Conditions

|  |                                  |
|--|----------------------------------|
| Temperature Range, $T_A$ .....               | $-55^{\circ}C$ to $125^{\circ}C$ |
| Supply Voltage Range, $V_{CC}$               |                                  |
| HC Types .....                               | .2V to 6V                        |
| HCT Types .....                              | 4.5V to 5.5V                     |
| DC Input or Output Voltage, $V_I, V_O$ ..... | 0V to $V_{CC}$                   |
| Input Rise and Fall Time                     |                                  |
| 2V .....                                     | 1000ns (Max)                     |
| 4.5V .....                                   | 500ns (Max)                      |
| 6V .....                                     | 400ns (Max)                      |

*CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.*

### NOTES:

1. The package thermal impedance is calculated in accordance with JESD 51-3.
2. The package thermal impedance is calculated in accordance with JESD 51-7.

## DC Electrical Specifications

| PARAMETER  | SYMBOL          | TEST CONDITIONS    |                 | $V_{CC}$ (V) | 25°C |     |           | -40°C TO 85°C |         | -55°C TO 125°C |         | UNITS    |
|--|-----------------|--------------------|-----------------|--------------|------|-----|-----------|---------------|---------|----------------|---------|----------|
|  |                 | $V_I$ (V)          | $V_{IS}$ (V)    |              | MIN  | TYP | MAX       | MIN           | MAX     | MIN            | MAX     |          |
| <b>HC TYPES</b>                                  |                 |                    |                 |              |      |     |           |               |         |                |         |          |
| High Level Input Voltage                         | $V_{IH}$        | -                  | -               | 2            | 1.5  | -   | -         | 1.5           | -       | 1.5            | -       | V        |
|  |                 |                    |                 | 4.5          | 3.15 | -   | -         | 3.15          | -       | 3.15           | -       | V        |
|  |                 |                    |                 | 6            | 4.2  | -   | -         | 4.2           | -       | 4.2            | -       | V        |
| Low Level Input Voltage                          | $V_{IL}$        | -                  | -               | 2            | -    | -   | 0.5       | -             | 0.5     | -              | 0.5     | V        |
|  |                 |                    |                 | 4.5          | -    | -   | 1.35      | -             | 1.35    | -              | 1.35    | V        |
|  |                 |                    |                 | 6            | -    | -   | 1.8       | -             | 1.8     | -              | 1.8     | V        |
| Maximum "ON" Resistance<br>$I_O = 1mA$           | $R_{ON}$        | $V_{CC}$ or GND    | $V_{CC}$ or GND | 4.5          | -    | 70  | 160       | -             | 200     | -              | 240     | $\Omega$ |
|  |                 |                    |                 | 6            | -    | 60  | 140       | -             | 175     | -              | 210     | $\Omega$ |
|  |                 | $V_{CC}$ to GND    | $V_{CC}$ to GND | 4.5          | -    | 90  | 180       | -             | 225     | -              | 270     | $\Omega$ |
|  |                 |                    |                 | 6            | -    | 80  | 160       | -             | 200     | -              | 240     | $\Omega$ |
| Maximum "ON" Resistance Between Any Two Switches | $\Delta R_{ON}$ | -                  | -               | 4.5          | -    | 10  | -         | -             | -       | -              | -       | $\Omega$ |
|  |                 |                    |                 | 6            | -    | 8.5 | -         | -             | -       | -              | -       | $\Omega$ |
| Switch "Off" Leakage Current<br>16 Channels      | $I_{IZ}$        | $\bar{E} = V_{CC}$ | $V_{CC}$ or GND | 6            | -    | -   | $\pm 0.8$ | -             | $\pm 8$ | -              | $\pm 8$ | $\mu A$  |
| Logic Input Leakage Current                      | $I_I$           | $V_{CC}$ or GND    | -               | 6            | -    | -   | $\pm 0.1$ | -             | $\pm 1$ | -              | $\pm 1$ | $\mu A$  |

## CD74HC4067, CD74HCT4067

### DC Electrical Specifications (Continued)

| PARAMETER  | SYMBOL                       | TEST CONDITIONS                    |                        | V <sub>CC</sub> (V) | 25°C |     |      | -40°C TO 85°C |     | -55°C TO 125°C |     | UNITS |
|--|------------------------------|------------------------------------|------------------------|---------------------|------|-----|------|---------------|-----|----------------|-----|-------|
|  |                              | V <sub>I</sub> (V)                 | V <sub>IS</sub> (V)    |                     | MIN  | TYP | MAX  | MIN           | MAX | MIN            | MAX |       |
| Quiescent Device Current<br>I <sub>O</sub> = 0mA               | I <sub>CC</sub>              | V <sub>CC</sub> or GND             | -                      | 6                   | -    | -   | 8    | -             | 80  | -              | 160 | μA    |
| <b>HCT TYPES</b>   |                              |                                    |                        |                     |      |     |      |               |     |                |     |       |
| High Level Input Voltage                                       | V <sub>IH</sub>              | -                                  | -                      | 4.5                 | 2    | -   | -    | 2             | -   | 2              | -   | V     |
| Low Level Input Voltage  | V <sub>IL</sub>              | -                                  | -                      | 4.5                 | -    | -   | 0.8  | -             | 0.8 | -              | 0.8 | V     |
| Maximum "ON" Resistance<br>I <sub>O</sub> = 1mA                | R <sub>ON</sub>              | V <sub>CC</sub> or GND             | V <sub>CC</sub> or GND | 4.5                 | -    | 70  | 160  | -             | 200 | -              | 240 | Ω     |
|  |                              | V <sub>CC</sub> to GND             | V <sub>CC</sub> to GND | 4.5                 | -    | 90  | 180  | -             | 225 | -              | 270 | Ω     |
| Maximum "ON" Resistance Between Any Two Switches               | ΔR <sub>ON</sub>             | -                                  | -                      | 4.5                 | -    | 10  | -    | -             | -   | -              | -   | Ω     |
| Switch "Off" Leakage Current<br>16 Channels                    | I <sub>Iz</sub>              | $\bar{E} = V_{CC}$                 | V <sub>CC</sub> or GND | 6                   | -    | -   | ±0.8 | -             | ±8  | -              | ±8  | μA    |
| Logic Input Leakage Current                                    | I <sub>I</sub>               | V <sub>CC</sub> or GND<br>(Note 3) | -                      | 6                   | -    | -   | ±0.1 | -             | ±1  | -              | ±1  | μA    |
| Quiescent Device Current                                       | I <sub>CC</sub>              | V <sub>CC</sub> or GND             | -                      | 6                   | -    | -   | 8    | -             | 80  | -              | 160 | μA    |
| Additional Quiescent Device Current Per Input Pin: 1 Unit Load | ΔI <sub>CC</sub><br>(Note 4) | V <sub>CC</sub><br>-2.1            | -                      | -                   | -    | 100 | 360  | -             | 450 | -              | 490 | μA    |

**NOTES:**

3. Any voltage between V<sub>CC</sub> and GND.
4. For dual-supply systems theoretical worst case (V<sub>I</sub> = 2.4V, V<sub>CC</sub> = 5.5V) specification is 1.8mA.

### HCT Input Loading Table

| INPUT                           | UNIT LOAD |
|---------------------------------|-----------|
| S <sub>0</sub> - S <sub>3</sub> | 0.5       |
| $\bar{E}$                       | 0.3       |

NOTE: Unit Load is ΔI<sub>CC</sub> limit specified in DC Electrical Specifications table, e.g., 360μA max at 25°C.

### Switching Specifications Input t<sub>r</sub>, t<sub>f</sub> = 6ns

| PARAMETER                                  | SYMBOL                              | TEST CONDITIONS       | V <sub>CC</sub> (V) | 25°C |     |     | -40°C TO 85°C |     | -55°C TO 125°C |     | UNITS |
|--|-------------------------------------|-----------------------|---------------------|------|-----|-----|---------------|-----|----------------|-----|-------|
|  |                                     |                       |                     | MIN  | TYP | MAX | MIN           | MAX | MIN            | MAX |       |
| <b>HC TYPES</b>                            |                                     |                       |                     |      |     |     |               |     |                |     |       |
| Propagation Delay Time<br>Switch In to Out | t <sub>PLH</sub> , t <sub>PHL</sub> | C <sub>L</sub> = 50pF | 2                   | -    | -   | 75  | -             | 95  | -              | 110 | ns    |
|  |                                     |                       | 4.5                 | -    | -   | 15  | -             | 19  | -              | 22  | ns    |
|  |                                     |                       | 6                   | -    | -   | 13  | -             | 16  | -              | 19  | ns    |
|  |                                     | C <sub>L</sub> = 15pF | 5                   | -    | 6   | -   | -             | -   | -              | -   | ns    |

## CD74HC4067, CD74HCT4067

### Switching Specifications Input $t_r, t_f = 6\text{ns}$ (Continued)

| PARAMETER                                     | SYMBOL             | TEST CONDITIONS     | $V_{CC}$<br>(V) | 25°C |     |     | -40°C TO 85°C |     | -55°C TO 125°C |     | UNITS |
|---|--------------------|---------------------|-----------------|------|-----|-----|---------------|-----|----------------|-----|-------|
|   |                    |                     |                 | MIN  | TYP | MAX | MIN           | MAX | MIN            | MAX |       |
| Switch Turn On<br>$\bar{E}$ to Out            | $t_{PZH}, t_{PZL}$ | $C_L = 50\text{pF}$ | 2               | -    | -   | 275 | -             | 345 | -              | 415 | ns    |
|   |                    |                     | 4.5             | -    | -   | 55  | -             | 69  | -              | 83  | ns    |
|   |                    |                     | 6               | -    | -   | 47  | -             | 59  | -              | 71  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 23  | -   | -             | -   | -              | -   | ns    |
| Switch Turn On<br>Sn to Out                   | $t_{PZH}, t_{PZL}$ | $C_L = 50\text{pF}$ | 2               | -    | -   | 300 | -             | 375 | -              | 450 | ns    |
|   |                    |                     | 4.5             | -    | -   | 60  | -             | 75  | -              | 90  | ns    |
|   |                    |                     | 6               | -    | -   | 51  | -             | 64  | -              | 76  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 25  | -   | -             | -   | -              | -   | ns    |
| Switch Turn Off<br>$\bar{E}$ to Out           | $t_{PHZ}, t_{PLZ}$ | $C_L = 50\text{pF}$ | 2               | -    | -   | 275 | -             | 345 | -              | 415 | ns    |
|   |                    |                     | 4.5             | -    | -   | 55  | -             | 69  | -              | 83  | ns    |
|   |                    |                     | 6               | -    | -   | 47  | -             | 59  | -              | 71  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 23  | -   | -             | -   | -              | -   | ns    |
| Switch Turn Off<br>Sn to Out                  | $t_{PHZ}, t_{PLZ}$ | $C_L = 50\text{pF}$ | 2               | -    | -   | 290 | -             | 365 | -              | 435 | ns    |
|   |                    |                     | 4.5             | -    | -   | 58  | -             | 73  | -              | 87  | ns    |
|   |                    |                     | 6               | -    | -   | 49  | -             | 62  | -              | 74  | ns    |
|   |                    | $C_L = 50\text{pF}$ | 5               | -    | 21  | -   | -             | -   | -              | -   | ns    |
| Input (Control) Capacitance                   | $C_I$              | -                   | -               | -    | 10  | -   | 10            | -   | 10             | pF  |       |
| Power Dissipation Capacitance<br>(Notes 5, 6) | $C_{PD}$           | -                   | 5               | -    | 93  | -   | -             | -   | -              | pF  |       |
| <b>HCT TYPES</b>                              |                    |                     |                 |      |     |     |               |     |                |     |       |
| Propagation Delay Time<br>Switch In to Out    | $t_{PLH}, t_{PHL}$ | $C_L = 50\text{pF}$ | 4.5             | -    | -   | 15  | -             | 19  | -              | 22  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 6   | -   | -             | -   | -              | -   | ns    |
| Switch Turn On<br>$\bar{E}$ to Out            | $t_{PZH}, t_{PZL}$ | $C_L = 50\text{pF}$ | 4.5             | -    | -   | 60  | -             | 75  | -              | 90  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 25  | -   | -             | -   | -              | -   | ns    |
| Switch Turn On<br>Sn to Out                   | $t_{PZH}, t_{PZL}$ | $C_L = 50\text{pF}$ | 4.5             | -    | -   | 60  | -             | 75  | -              | 90  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 25  | -   | -             | -   | -              | -   | ns    |
| Switch Turn Off<br>$\bar{E}$ to Out           | $t_{PHZ}, t_{PLZ}$ | $C_L = 50\text{pF}$ | 4.5             | -    | -   | 55  | -             | 69  | -              | 83  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 23  | -   | -             | -   | -              | -   | ns    |
| Switch Turn Off<br>Sn to Out                  | $t_{PHZ}, t_{PLZ}$ | $C_L = 50\text{pF}$ | 4.5             | -    | -   | 58  | -             | 73  | -              | 87  | ns    |
|   |                    | $C_L = 15\text{pF}$ | 5               | -    | 21  | -   | -             | -   | -              | -   | ns    |
| Input (Control) Capacitance                   | $C_I$              | -                   | -               | -    | 10  | -   | 10            | -   | 10             | pF  |       |
| Power Dissipation Capacitance<br>(Notes 5, 6) | $C_{PD}$           | -                   | 5               | -    | 96  | -   | -             | -   | -              | pF  |       |

**NOTES:**

5.  $C_{PD}$  is used to determine the dynamic power consumption, per package.
6.  $P_D = C_{PD} V_{CC}^2 f_i + \sum (C_L + C_S) V_{CC}^2 f_o$  where  $f_i$  = input frequency,  $f_o$  = output frequency,  $C_L$  = output load capacitance,  $C_S$  = switch capacitance,  $V_{CC}$  = supply voltage.

# CD74HC4067, CD74HCT4067

## Analog Channel Specifications $T_A = 25^\circ\text{C}$

| PARAMETER  | TEST CONDITIONS      | $V_{CC}$ (V) | HC/HCT | UNITS |
|--|----------------------|--------------|--------|-------|
| Switch Frequency Response Bandwidth at -3dB (Figure 2) | Figure 4, Notes 7, 8 | 4.5          | 89     | MHz   |
| Sine Wave Distortion                                   | Figure 5             | 4.5          | 0.051  | %     |
| Feedthrough Noise<br>E to Switch                       | Figure 6, Notes 8, 9 | 4.5          | TBE    | mV    |
| Feedthrough Noise<br>S to Switch                       |                      |              | TBE    | mV    |
| Switch "OFF" Signal Feedthrough (Figure 3)             | Figure 7             | 4.5          | -75    | dB    |
| Switch Input Capacitance, $C_S$                        |                      | -            | 5      | pF    |
| Common Capacitance, $C_{COM}$                          |                      | -            | 50     | pF    |

**NOTES:**

7. Adjust input level for 0dBm at output,  $f = 1\text{MHz}$ .
8.  $V_{IS}$  is centered at  $V_{CC}/2$ .
9. Adjust input for 0dBm at  $V_{IS}$ .

## Typical Performance Curves

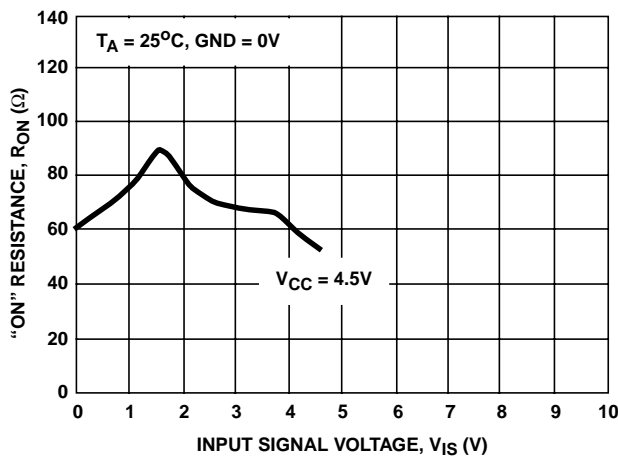


FIGURE 1. TYPICAL "ON" RESISTANCE vs INPUT SIGNAL VOLTAGE

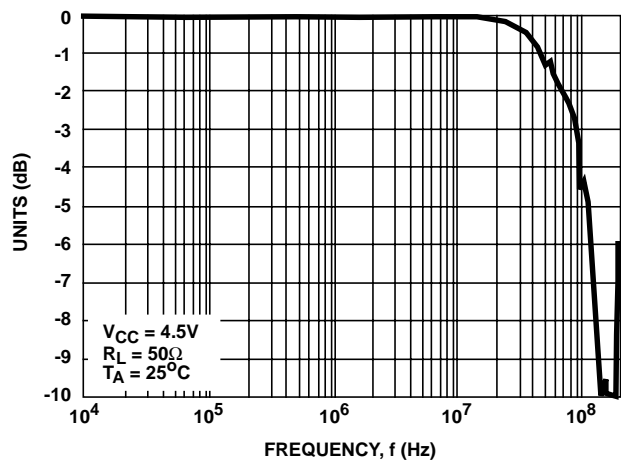


FIGURE 2. TYPICAL SWITCH FREQUENCY RESPONSE

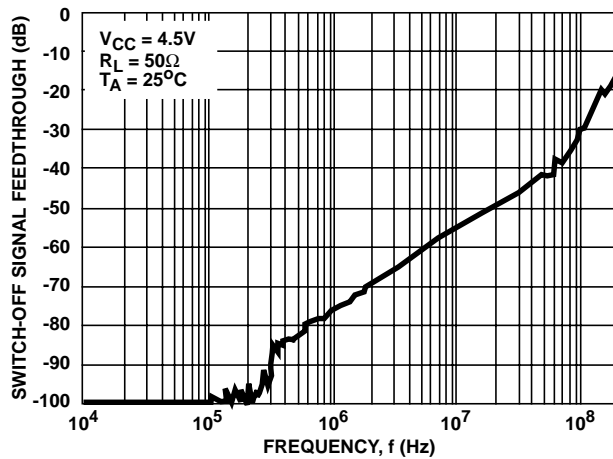


FIGURE 3. TYPICAL SWITCH-OFF SIGNAL FEEDTHROUGH vs FREQUENCY

Analog Test Circuits

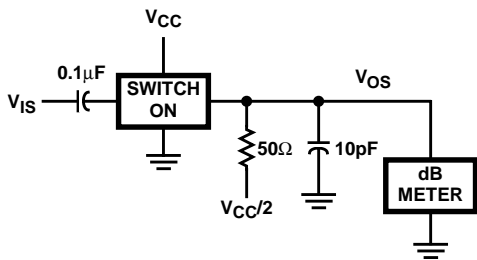
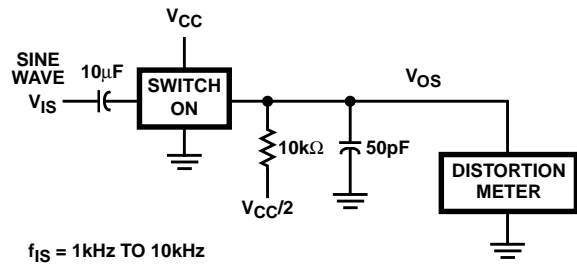


FIGURE 4. FREQUENCY RESPONSE TEST CIRCUIT



$f_{IS} = 1\text{kHz TO } 10\text{kHz}$

FIGURE 5. SINE WAVE DISTORTION TEST CIRCUIT

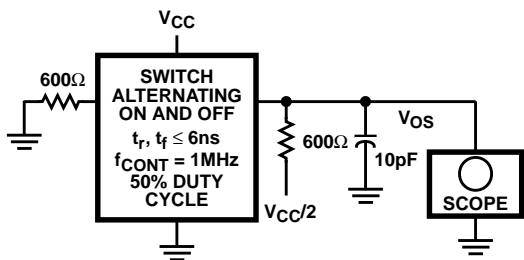


FIGURE 6. CONTROL-TO-SWITCH FEEDTHROUGH NOISE TEST CIRCUIT

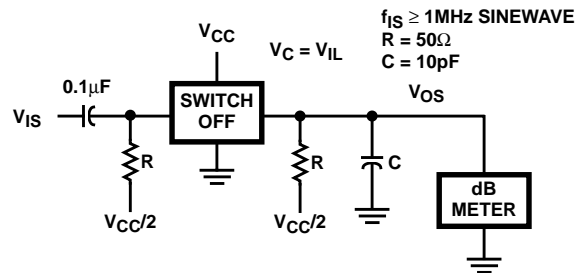


FIGURE 7. SWITCH OFF SIGNAL FEEDTHROUGH TEST CIRCUIT

Test Circuits and Waveforms

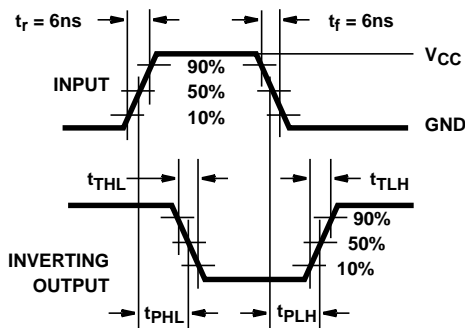


FIGURE 8. HC TRANSITION TIMES AND PROPAGATION DELAY TIMES, COMBINATION LOGIC

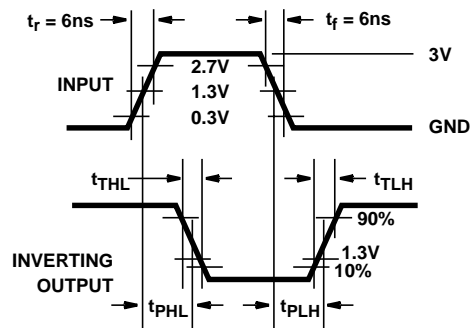


FIGURE 9. HCT TRANSITION TIMES AND PROPAGATION DELAY TIMES, COMBINATION LOGIC

**PACKAGING INFORMATION**

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| CD74HC4067DB     | PREVIEW               | SSOP         | DB              | 24   | 60          | TBD                     | Call TI          | Call TI                      |
| CD74HC4067E      | ACTIVE                | PDIP         | N               | 24   | 15          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| CD74HC4067EE4    | ACTIVE                | PDIP         | N               | 24   | 15          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| CD74HC4067M      | ACTIVE                | SOIC         | DW              | 24   | 25          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| CD74HC4067M96    | ACTIVE                | SOIC         | DW              | 24   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| CD74HC4067M96E4  | ACTIVE                | SOIC         | DW              | 24   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| CD74HC4067ME4    | ACTIVE                | SOIC         | DW              | 24   | 25          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| CD74HC4067SM     | PREVIEW               | SSOP         | DB              | 24   | 60          | Green (RoHS & no Sb/Br) | CU NIPD          | Level-1-260C-UNLIM           |
| CD74HC4067SM96   | ACTIVE                | SSOP         | DB              | 24   | 2000        | Green (RoHS & no Sb/Br) | CU NIPD          | Level-1-260C-UNLIM           |
| CD74HC4067SM96E4 | ACTIVE                | SSOP         | DB              | 24   | 2000        | Green (RoHS & no Sb/Br) | CU NIPD          | Level-1-260C-UNLIM           |
| CD74HCT4067M     | ACTIVE                | SOIC         | DW              | 24   | 25          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| CD74HCT4067ME4   | ACTIVE                | SOIC         | DW              | 24   | 25          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

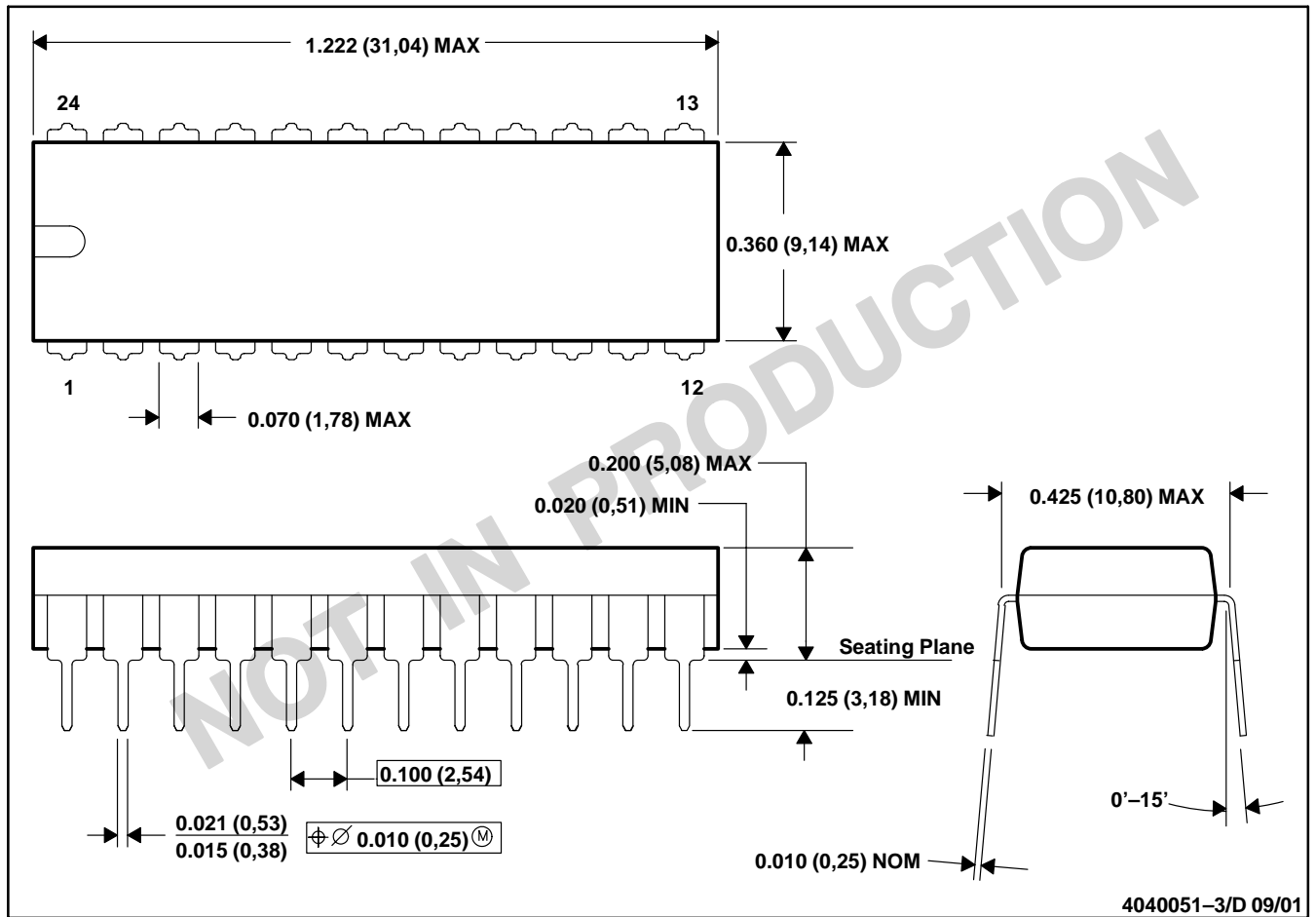
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N (R-PDIP-T24)

PLASTIC DUAL-IN-LINE



- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. Falls within JEDEC MS-010

**N (R-PDIP-T\*\*)**

**PLASTIC DUAL-IN-LINE PACKAGE**

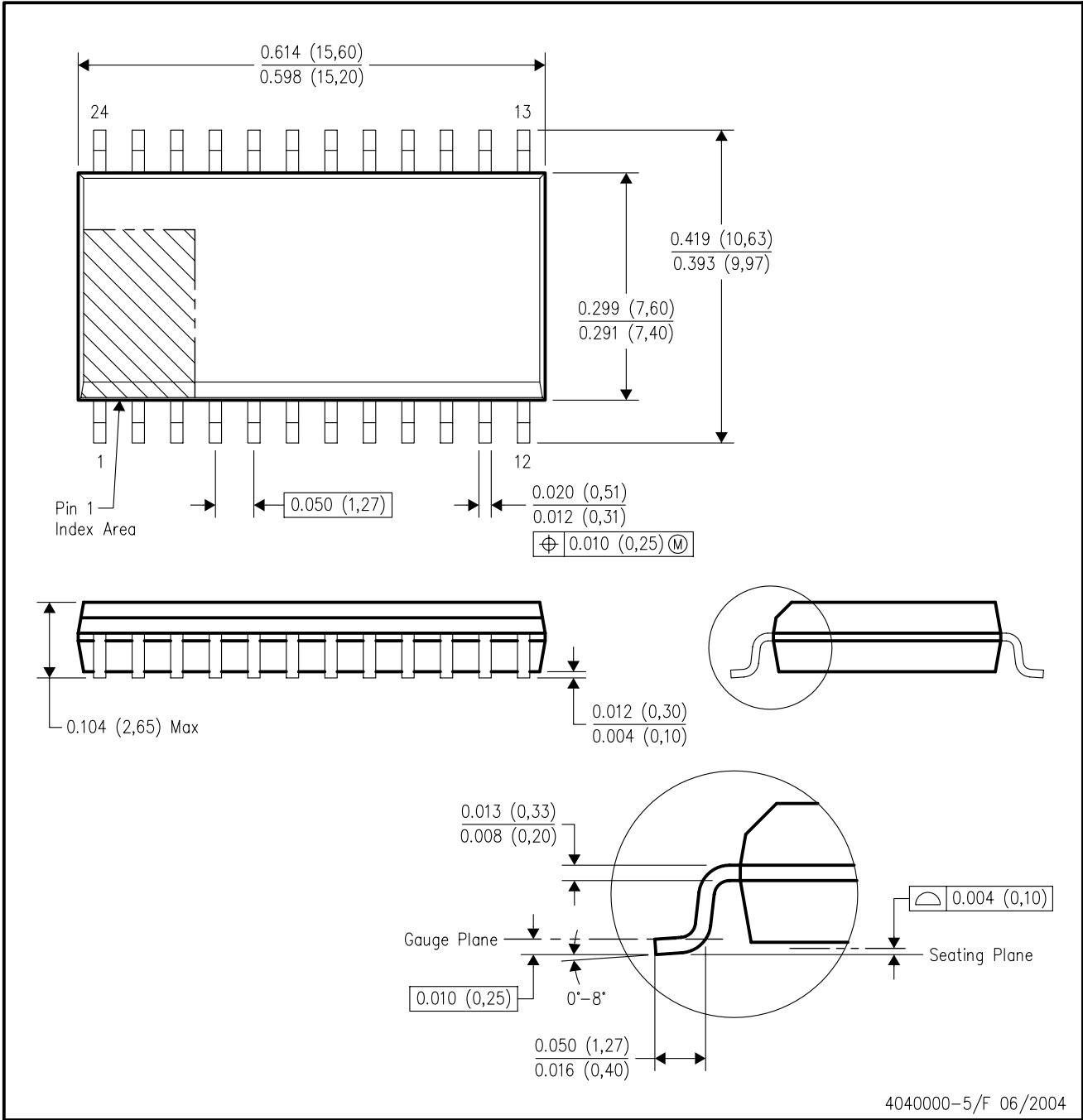
24 PIN SHOWN



- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. Falls within JEDEC MS-011  
 D. Falls within JEDEC MS-015 (32 pin only)

DW (R-PDSO-G24)

PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
  - D. Falls within JEDEC MS-013 variation AD.

DB (R-PDSO-G\*\*)

PLASTIC SMALL-OUTLINE

28 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.  
 D. Falls within JEDEC MO-150

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