

MC74AC273, MC74ACT273

Octal D Flip-Flop

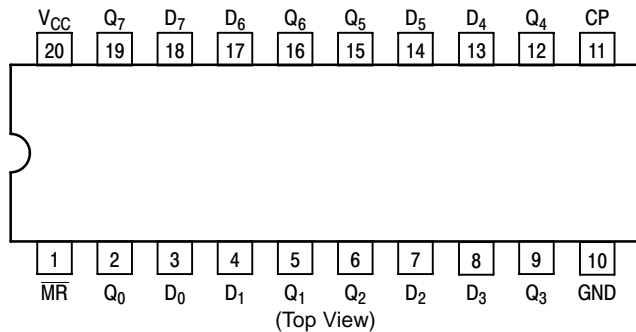
The MC74AC273/74ACT273 has eight edge-triggered D-type flip-flops with individual D inputs and Q outputs. The common buffered Clock (CP) and Master Reset (\overline{MR}) inputs load and reset (clear) all flip-flops simultaneously.

The register is fully edge-triggered. The state of each D input, one setup time before the LOW-to-HIGH clock transition, is transferred to the corresponding flip-flop's Q output.

All outputs will be forced LOW independently of Clock or Data inputs by a LOW voltage level on the \overline{MR} input. The device is useful for applications where the true output only is required and the Clock and Master Reset are common to all storage elements.

Features

- Ideal Buffer for MOS Microprocessor or Memory
- Eight Edge-Triggered D Flip-Flops
- Buffered Common Clock
- Buffered, Asynchronous Master Reset
- See MC74AC377 for Clock Enable Version
- See MC74AC373 for Transparent Latch Version
- See MC74AC374 for 3-State Version
- Outputs Source/Sink 24 mA
- 'ACT273 Has TTL Compatible Inputs
- Pb-Free Packages are Available*



Pinout: 20-Lead Packages Conductors

MODE SELECT-FUNCTION TABLE

| Operating Mode | Inputs | | | Outputs |
|----------------|--------|----|----------------|----------------|
| | MR | CP | D _n | Q _n |
| Reset (Clear) | L | X | X | L |
| Load '1' | H | ┘ | H | H |
| Load '0' | H | ┘ | L | L |

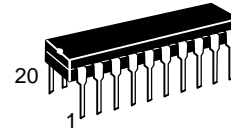
H = HIGH Voltage Level
 L = LOW Voltage Level
 X = Immaterial
 ┘ = LOW-to-HIGH Clock Transition

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

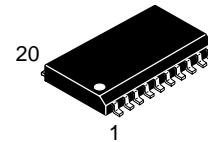


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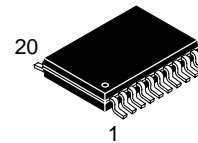
<http://onsemi.com>



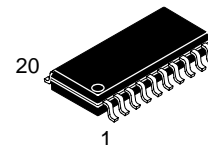
PDIP-20
 SUFFIX N
 CASE 738



SOIC-20WB
 SUFFIX DW
 CASE 751D



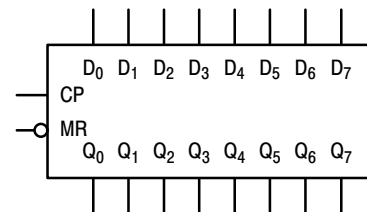
TSSOP-20
 SUFFIX DT
 CASE 948E



SOEIAJ-20
 SUFFIX M
 CASE 967

PIN ASSIGNMENT

| PIN | FUNCTION |
|--------------------------------|-------------------|
| D ₀ -D ₇ | Data Inputs |
| \overline{MR} | Master Reset |
| CP | Clock Pulse Input |
| Q ₀ -Q ₇ | Data Outputs |



Logic Symbol

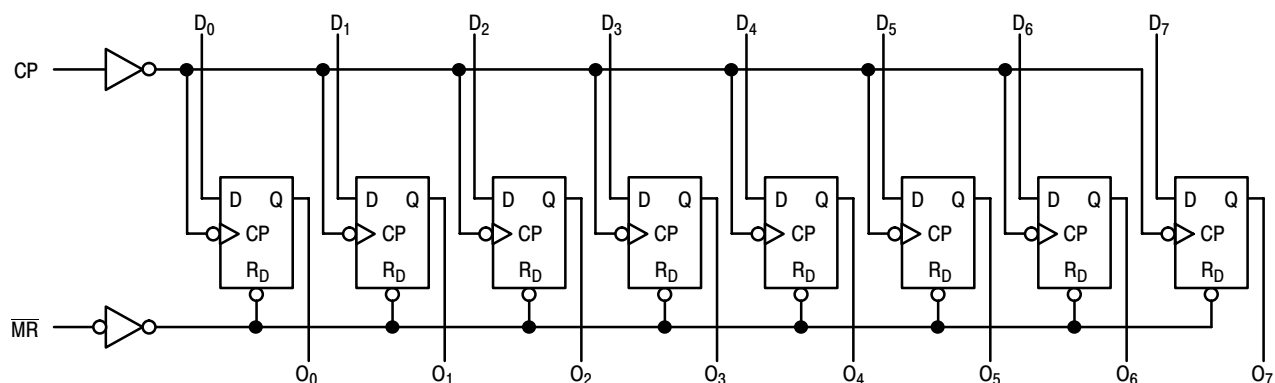
ORDERING INFORMATION

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.

MC74AC273, MC74ACT273



NOTE: That this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

Figure 1. Logic Diagram

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 | ± 20 | mA |
| I_{OUT} | DC Output Sink/Source Current, per Pin | ± 50 | mA |
| I_{CC} | DC V_{CC} or GND Current per Output Pin | ± 50 | mA |
| T_{stg} | Storage Temperature | - 65 to + 150 | $^{\circ}C$ |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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 _{CC} (V) | 74AC | | 74AC | | Unit | Conditions | | | | | |
|--------------------------------------|-----------------------------------|------------------------|------------------------|-------------------|---------------------------------|------|------|--|---|-----|---|------|------|
| | | | T _A = +25°C | | T _A = -40°C to +85°C | | | | | | | | |
| | | | Typ | Guaranteed Limits | | | | | | | | | |
| V _{IH} | Minimum High Level Input Voltage | 3.0 | 1.5 | 2.1 | 2.1 | | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V | | | | | |
| | | 4.5 | 2.25 | 3.15 | 3.15 | | | | | | | | |
| | | 5.5 | 2.75 | 3.85 | 3.85 | | | | | | | | |
| V _{IL} | Maximum Low Level Input Voltage | 3.0 | 1.5 | 0.9 | 0.9 | | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V | | | | | |
| | | 4.5 | 2.25 | 1.35 | 1.35 | | | | | | | | |
| | | 5.5 | 2.75 | 1.65 | 1.65 | | | | | | | | |
| V _{OH} | Minimum High Level Output Voltage | 3.0 | 2.99 | 2.9 | 2.9 | | V | I _{OUT} = -50 μA | | | | | |
| | | 4.5 | 4.49 | 4.4 | 4.4 | | | | | | | | |
| | | 5.5 | 5.49 | 5.4 | 5.4 | | | | | | | | |
| | 3.0 | - | 4.5 | - | 5.5 | 2.56 | 2.46 | V | *V _{IN} = V _{IL} or V _{IH} -12 mA I _{OH} -24 mA -24 mA | | | | |
| | | | | | | | | | | 4.5 | - | 3.86 | 3.76 |
| | | | | | | | | | | 5.5 | - | 4.86 | 4.76 |
| V _{OL} | Maximum Low Level Output Voltage | 3.0 | 0.002 | 0.1 | 0.1 | | V | I _{OUT} = 50 μA | | | | | |
| | | 4.5 | 0.001 | 0.1 | 0.1 | | | | | | | | |
| | | 5.5 | 0.001 | 0.1 | 0.1 | | | | | | | | |
| | 3.0 | - | 4.5 | - | 5.5 | 0.36 | 0.44 | V | *V _{IN} = V _{IL} or V _{IH} 12 mA I _{OL} 24 mA 24 mA | | | | |
| | | | | | | | | | | 4.5 | - | 0.36 | 0.44 |
| | | | | | | | | | | 5.5 | - | 0.36 | 0.44 |
| I _{IN} | Maximum Input Leakage Current | 5.5 | - | ±0.1 | ±1.0 | | μA | V _I = V _{CC} , GND | | | | | |
| I _{OLD} I _{OHD} | †Minimum Dynamic Output Current | 5.5 | - | - | 75 | | mA | V _{OLD} = 1.65 V Max V _{OHD} = 3.85 V Min | | | | | |
| | | 5.5 | - | - | -75 | | | | | | | | |
| I _{CC} | Maximum Quiescent Supply Current | 5.5 | - | 8.0 | 80 | | μA | V _{IN} = V _{CC} 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.

NOTE: Note: I_{IN} and I_{CC} @ 3.0 V are guaranteed to be less than or equal to the respective limit @ 5.5 V V_{CC}.

AC CHARACTERISTICS (For Figures and Waveforms – See Section 3 of the ON Semiconductor FACT Data Book, DL138/D)

| Symbol | Parameter | V _{CC} * (V) | 74AC | | | 74AC | | Unit | Figure 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 | | |
| f _{max} | Maximum Clock Frequency | 3.3 5.0 | 90 140 | 125 175 | - - | 75 125 | - - | Mhz | 3-3 |
| t _{PLH} | Propagation Delay Clock to Output | 3.3 5.0 | 4.0 3.0 | 7.0 5.5 | 12.5 9.0 | 3.0 2.5 | 14.0 10.0 | ns | 3-6 |
| t _{PHL} | Propagation Delay Clock to Output | 3.3 5.0 | 4.0 3.0 | 7.0 5.0 | 13.0 10.0 | 3.5 2.5 | 14.5 11.0 | ns | 3-6 |
| t _{PHL} | Propagation Delay MR to Output | 3.3 5.0 | 4.0 3.0 | 7.0 5.0 | 13.0 10.0 | 3.5 2.5 | 14.0 10.5 | ns | 3-6 |

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

AC OPERATING REQUIREMENTS

| Symbol | Parameter | V _{CC} * (V) | 74AC | | | 74AC | | Unit | Figure No. |
|------------------|------------------------------------|--------------------------|---|--------------------|------------|--|----|------|------------|
| | | | T _A = +25°C C _L = 50 pF | | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Typ | Guaranteed Minimum | | | | | |
| t _s | Setup Time, HIGH or LOW Data to CP | 3.3 5.0 | 3.5 2.5 | 5.5 4.0 | 6.0 4.5 | | ns | 3-9 | |
| t _h | Hold Time, HIGH or LOW Data to CP | 3.3 5.0 | -2.0 -1.0 | 0 1.0 | 0 1.0 | | ns | 3-9 | |
| t _w | Clock Pulse Width HIGH or LOW | 3.3 5.0 | 3.5 2.5 | 5.5 4.0 | 6.0 4.5 | | ns | 3-6 | |
| t _w | MR Pulse Width HIGH or LOW | 3.3 5.0 | 2.0 1.5 | 5.5 4.0 | 6.0 4.5 | | ns | 3-6 | |
| t _{rec} | Recovery Time MR to CP | 3.3 5.0 | 1.5 1.0 | 3.5 2.0 | 4.5 3.0 | | ns | 3-9 | |

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

MC74AC273, MC74ACT273

DC CHARACTERISTICS

| Symbol | Parameter | V _{CC} (V) | 74ACT | | 74ACT | | Unit | Conditions |
|--------------------------------------|--|------------------------|------------------------|-------------------|---------------------------------|--|------|---|
| | | | T _A = +25°C | | T _A = -40°C to +85°C | | | |
| | | | Typ | Guaranteed Limits | | | | |
| V _{IH} | Minimum High Level Input Voltage | 4.5 5.5 | 1.5 1.5 | 2.0 2.0 | 2.0 2.0 | | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V |
| V _{IL} | Maximum Low Level Input Voltage | 4.5 5.5 | 1.5 1.5 | 0.8 0.8 | 0.8 0.8 | | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V |
| V _{OH} | Minimum High Level Output Voltage | 4.5 5.5 | 4.49 5.49 | 4.4 5.4 | 4.4 5.4 | | V | I _{OUT} = -50 μA |
| | | 4.5 5.5 | - - | 3.86 4.86 | 3.76 4.76 | | V | *V _{IN} = V _{IL} or V _{IH} I _{OH} -24 mA -24 mA |
| V _{OL} | Maximum Low Level Output Voltage | 4.5 5.5 | 0.001 0.001 | 0.1 0.1 | 0.1 0.1 | | V | I _{OUT} = 50 μA |
| | | 4.5 5.5 | - - | 0.36 0.36 | 0.44 0.44 | | V | *V _{IN} = V _{IL} or V _{IH} 24 mA I _{OL} 24 mA |
| | | | | | | | | |
| I _{IN} | Maximum Input Leakage Current | 5.5 | - | ±0.1 | ±1.0 | | μA | V _I = V _{CC} , GND |
| ΔI _{CCT} | Additional Max. I _{CC} /Input | 5.5 | 0.6 | - | 1.5 | | mA | V _I = V _{CC} - 2.1 V |
| I _{OLD} I _{OHD} | †Minimum Dynamic Output Current | 5.5 5.5 | - - | - - | 75 -75 | | mA | V _{OLD} = 1.65 V Max V _{OHD} = 3.85 V Min |
| I _{CC} | Maximum Quiescent Supply Current | 5.5 | - | 8.0 | 80 | | μA | V _{IN} = V _{CC} 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 (For Figures and Waveforms – See Section 3 of the ON Semiconductor FACT Data Book, DL138/D)

| Symbol | Parameter | V _{CC} * (V) | 74ACT | | | 74ACT | | Unit | Figure 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 | | |
| f _{max} | Maximum Clock Frequency | 5.0 | 125 | 200 | - | 125 | - | MHz | 3-3 |
| t _{PHL} | Propagation Delay Clock to Output | 5.0 | 3.0 | 6.0 | 10 | 2.5 | 11.0 | ns | 3-6 |
| t _{PLH} | Propagation Delay Clock to Output | 5.0 | 3.0 | 6.5 | 11 | 2.5 | 12.0 | ns | 3-6 |
| t _{PHL} | Propagation Delay $\overline{\text{MR}}$ to Output | 5.0 | 3.0 | 7.0 | 11 | 2.5 | 11.5 | ns | 3-6 |

*Voltage Range 5.0 V is 5.0 V ±0.5 V.

AC OPERATING REQUIREMENTS

| Symbol | Parameter | V _{CC} * (V) | 74ACT | | 74ACT | | Unit | Figure No. |
|------------------|--|--------------------------|---|--------------------|---|--|------|------------|
| | | | T _A = +25°C C _L = 50 pF | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Typ | Guaranteed Minimum | | | | |
| t _s | Setup Time, HIGH or LOW – Data to CP | 5.0 | 3.0 | 4.5 | 5.0 | | ns | 3-9 |
| t _h | Hold Time, HIGH or LOW – Data to CP | 5.0 | -2.5 | 2.0 | 2.0 | | ns | 3-9 |
| t _w | Clock Pulse Width – HIGH or LOW | 5.0 | 2.5 | 4.0 | 4.5 | | ns | 3-6 |
| t _w | $\overline{\text{MR}}$ Pulse Width – HIGH or LOW | 5.0 | 2.5 | 4.0 | 4.5 | | ns | 3-6 |
| t _{rec} | Recovery Time – $\overline{\text{MR}}$ to CP | 5.0 | -1.0 | 2.0 | 3.0 | | ns | 3-6 |

*Voltage Range 5.0 V is 5.0 V ±0.5 V.

CAPACITANCE

| Symbol | Parameter | Value Typ | Unit | Test Conditions |
|-----------------|-------------------------------|-----------|------|-------------------------|
| C _{IN} | Input Capacitance | 4.5 | pF | V _{CC} = 5.0 V |
| C _{PD} | Power Dissipation Capacitance | 50 | pF | V _{CC} = 5.0 V |

MC74AC273, MC74ACT273

ORDERING INFORMATION

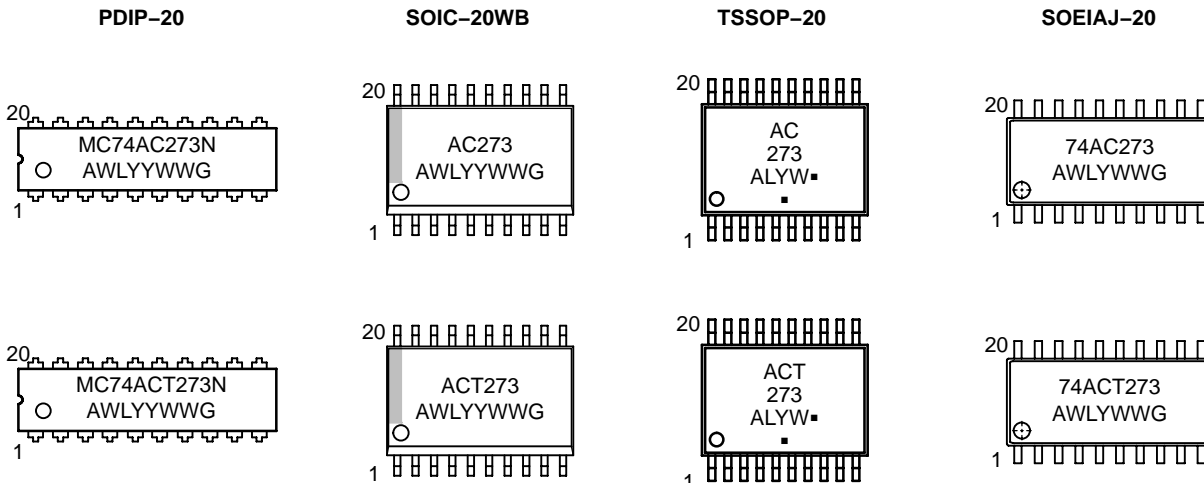
| Device | Package | Shipping† |
|-----------------|------------------------|--------------------|
| MC74AC273N | PDIP-20 | 18 Units / Rail |
| MC74AC273NG | PDIP-20 (Pb-Free) | 18 Units / Rail |
| MC74ACT273N | PDIP-20 | 18 Units / Rail |
| MC74ACT273NG | PDIP-20 (Pb-Free) | 18 Units / Rail |
| MC74AC273DW | SOIC-20WB | 38 Units / Rail |
| MC74AC273DWG | SOIC-20WB (Pb-Free) | 38 Units / Rail |
| MC74AC273DWR2 | SOIC-20WB | 1000 / Tape & Reel |
| MC74AC273DWR2G | SOIC-20WB (Pb-Free) | 1000 / Tape & Reel |
| MC74AC273DTR2 | TSSOP-20* | 2500 / Tape & Reel |
| MC74AC273DTR2G | TSSOP-20* | 2500 / Tape & Reel |
| MC74ACT273DW | SOIC-20WB | 38 Units / Rail |
| MC74ACT273DWG | SOIC-20WB (Pb-Free) | 38 Units / Rail |
| MC74ACT273DWR2 | SOIC-20WB | 1000 / Tape & Reel |
| MC74ACT273DWR2G | SOIC-20WB (Pb-Free) | 1000 / Tape & Reel |
| MC74ACT273DTR2 | TSSOP-20* | 2500 / Tape & Reel |
| MC74ACT273DTR2G | TSSOP-20* | 2500 / Tape & Reel |
| MC74AC273MEL | SOEIAJ-20 | 2000 / Tape & Reel |
| MC74AC273MELG | SOEIAJ-20 (Pb-Free) | 2000 / Tape & Reel |
| MC74ACT273M | SOEIAJ-20 | 40 Units / Rail |
| MC74ACT273MG | SOEIAJ-20 (Pb-Free) | 40 Units / Rail |
| MC74ACT273MEL | SOEIAJ-20 | 2000 / Tape & Reel |
| MC74ACT273MELG | SOEIAJ-20 (Pb-Free) | 2000 / Tape & Reel |

†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.

*This package is inherently Pb-Free.

MC74AC273, MC74ACT273

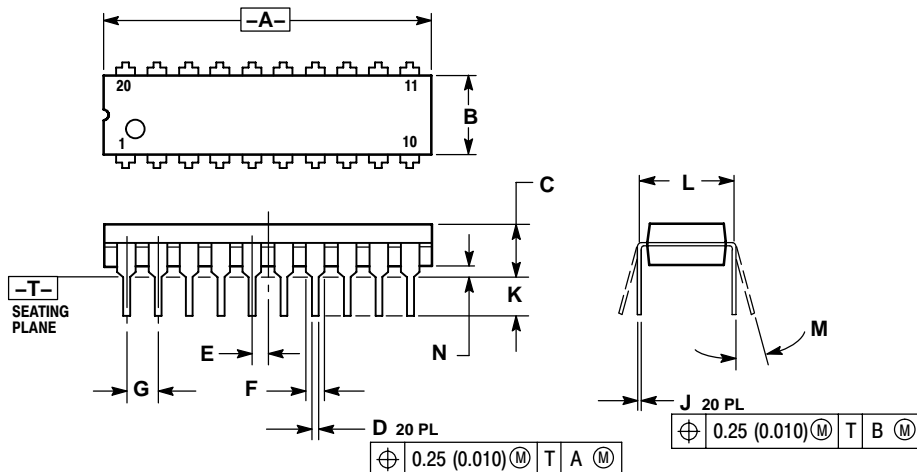
MARKING DIAGRAMS



A = Assembly Location
 WL, L = Wafer Lot
 YY, Y = Year
 WW, W = Work Week
 G or ▪ = Pb-Free Package
 (Note: Microdot may be in either location)

PACKAGE DIMENSIONS

PDIP-20
 N SUFFIX
 CASE 738-03
 ISSUE E



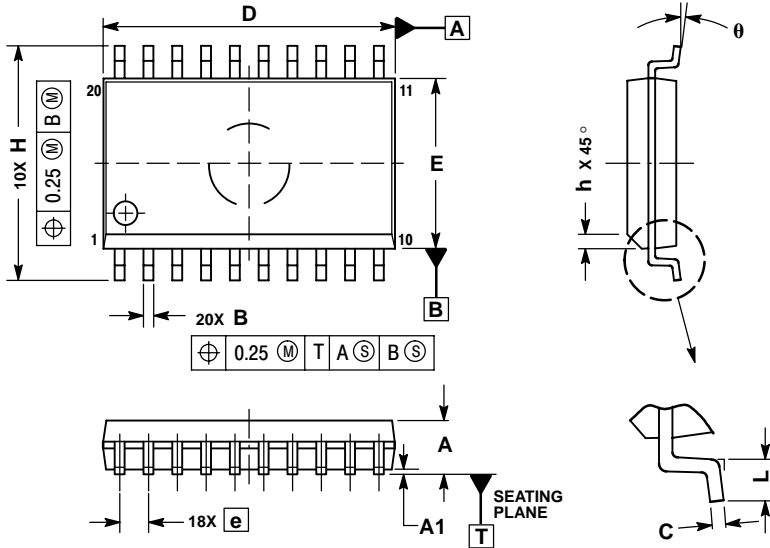
- NOTES:
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - CONTROLLING DIMENSION: INCH.
 - DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 - DIMENSION B DOES NOT INCLUDE MOLD FLASH.

| 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 |

MC74AC273, MC74ACT273

PACKAGE DIMENSIONS

SOIC-20 WB
DW SUFFIX
CASE 751D-05
ISSUE G

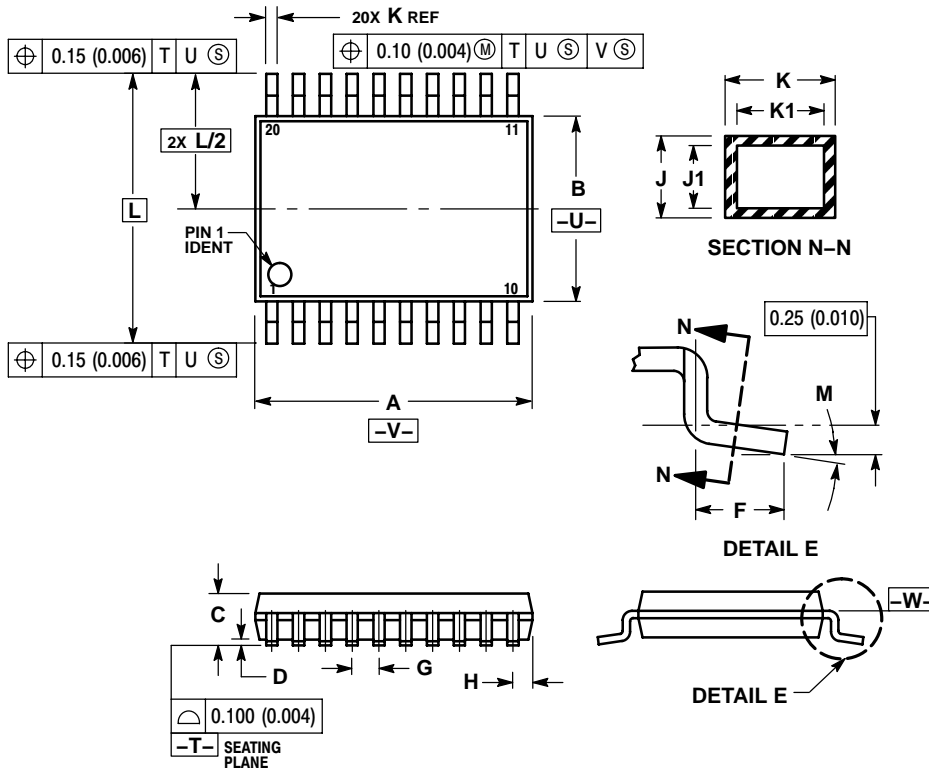


NOTES:

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.

| MILLIMETERS | |
|-------------|-------------|
| DIM | 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 |
| θ | 0° 7° |

TSSOP-20
D5 SUFFIX
CASE 948E-02
ISSUE B



NOTES:

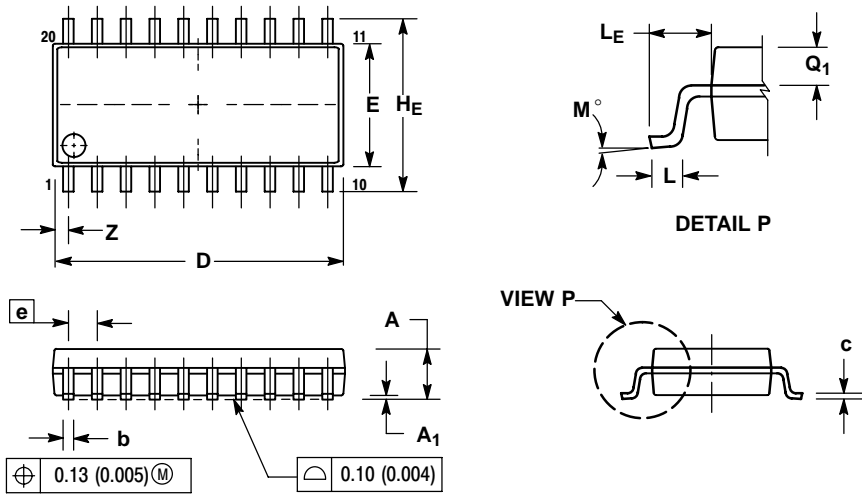
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

| MILLIMETERS | | INCHES | |
|-------------|-----------|-----------|-------|
| DIM | MIN MAX | MIN | MAX |
| A | 6.40 6.60 | 0.252 | 0.260 |
| B | 4.30 4.50 | 0.169 | 0.177 |
| C | --- | --- | 0.047 |
| D | 0.05 0.15 | 0.002 | 0.006 |
| F | 0.50 0.75 | 0.020 | 0.030 |
| G | 0.65 BSC | 0.026 BSC | |
| H | 0.27 0.37 | 0.011 | 0.015 |
| J | 0.09 0.20 | 0.004 | 0.008 |
| J1 | 0.09 0.16 | 0.004 | 0.006 |
| K | 0.19 0.30 | 0.007 | 0.012 |
| K1 | 0.19 0.25 | 0.007 | 0.010 |
| L | 6.40 BSC | 0.252 BSC | |
| M | 0° 8° | 0° 8° | |

MC74AC273, MC74ACT273

PACKAGE DIMENSIONS

SOEIAJ-20
M SUFFIX
CASE 967-01
ISSUE A



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS AND ARE MEASURED AT THE PARTING LINE. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
5. THE LEAD WIDTH DIMENSION (b) DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT. MINIMUM SPACE BETWEEN PROTRUSIONS AND ADJACENT LEAD TO BE 0.46 (0.018).

| DIM | MILLIMETERS | | INCHES | |
|----------------|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | --- | 2.05 | --- | 0.081 |
| A ₁ | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 0.35 | 0.50 | 0.014 | 0.020 |
| c | 0.15 | 0.25 | 0.006 | 0.010 |
| D | 12.35 | 12.80 | 0.486 | 0.504 |
| E | 5.10 | 5.45 | 0.201 | 0.215 |
| e | 1.27 BSC | | 0.050 BSC | |
| HE | 7.40 | 8.20 | 0.291 | 0.323 |
| L | 0.50 | 0.85 | 0.020 | 0.033 |
| LE | 1.10 | 1.50 | 0.043 | 0.059 |
| M | 0° | 10° | 0° | 10° |
| Q ₁ | 0.70 | 0.90 | 0.028 | 0.035 |
| Z | --- | 0.81 | --- | 0.032 |

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