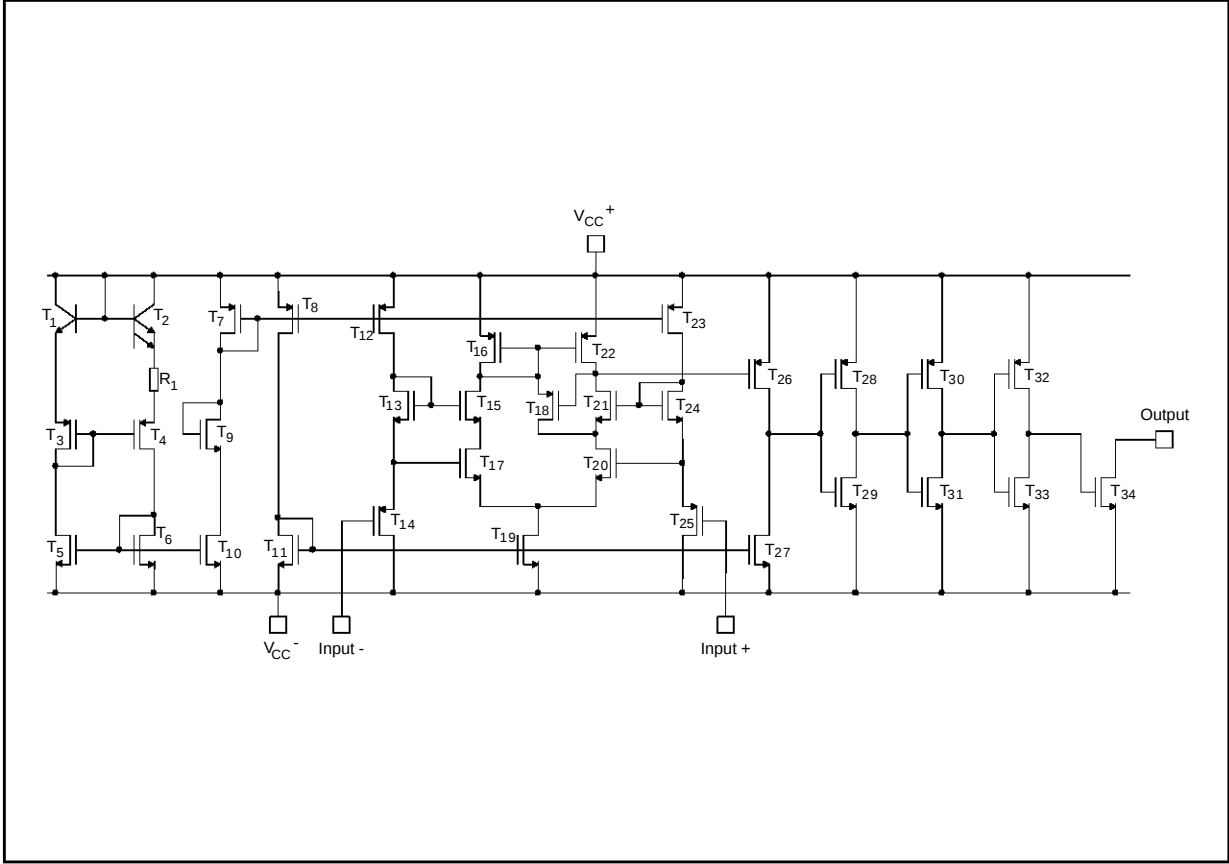


# TS374C,I,M

## SCHEMATIC DIAGRAM (for 1/4 TS374)



## MAXIMUM RATINGS

| Symbol       | Parameter                                          | Value                                  | Unit               |
|--------------|----------------------------------------------------|----------------------------------------|--------------------|
| $V_{CC}^{+}$ | Supply Voltage - (note 1)                          | 18                                     | V                  |
| $V_{id}$     | Differential Input Voltage - (note 2)              | $\pm 18$                               | V                  |
| $V_i$        | Input Voltage - (note 3)                           | 18                                     | V                  |
| $V_o$        | Output Voltage                                     | 18                                     | V                  |
| $I_o$        | Output Current                                     | 20                                     | mA                 |
|              | Duration of Output Short-Circuit to GND - (note 4) | Infinite                               |                    |
| $T_{oper}$   | Operating Free-Air Temperature Range               | 0 to +70<br>-40 to +125<br>-55 to +125 | $^{\circ}\text{C}$ |
| $T_{stg}$    | Storage Temperature Range                          | -65 to +150                            | $^{\circ}\text{C}$ |

**Notes :** 1. All voltage values, except differential voltage, are with respect to network ground terminal.  
2. Differential voltages are the non-inverting input terminal with respect to the inverting input terminal.  
3. The magnitude of the input and the output voltages must never exceed the magnitude of the positive supply voltage.  
4. Short circuit from outputs to  $V_{CC}^{+}$  can cause excessive heating and eventual destruction.

## OPERATING CONDITIONS

| Symbol       | Parameter                       | Value                   | Unit |
|--------------|---------------------------------|-------------------------|------|
| $V_{CC}^{+}$ | Supply Voltage                  | 3 to 16                 | V    |
| $V_{icm}$    | Common Mode Input Voltage Range | 0 to $V_{CC}^{+} - 1.5$ | V    |

**ELECTRICAL CHARACTERISTICS**
 $V_{CC}^+ = 5V$ ,  $V_{CC}^- = 0V$ ,  $T_{amb} = 25^{\circ}C$  (unless otherwise specified)

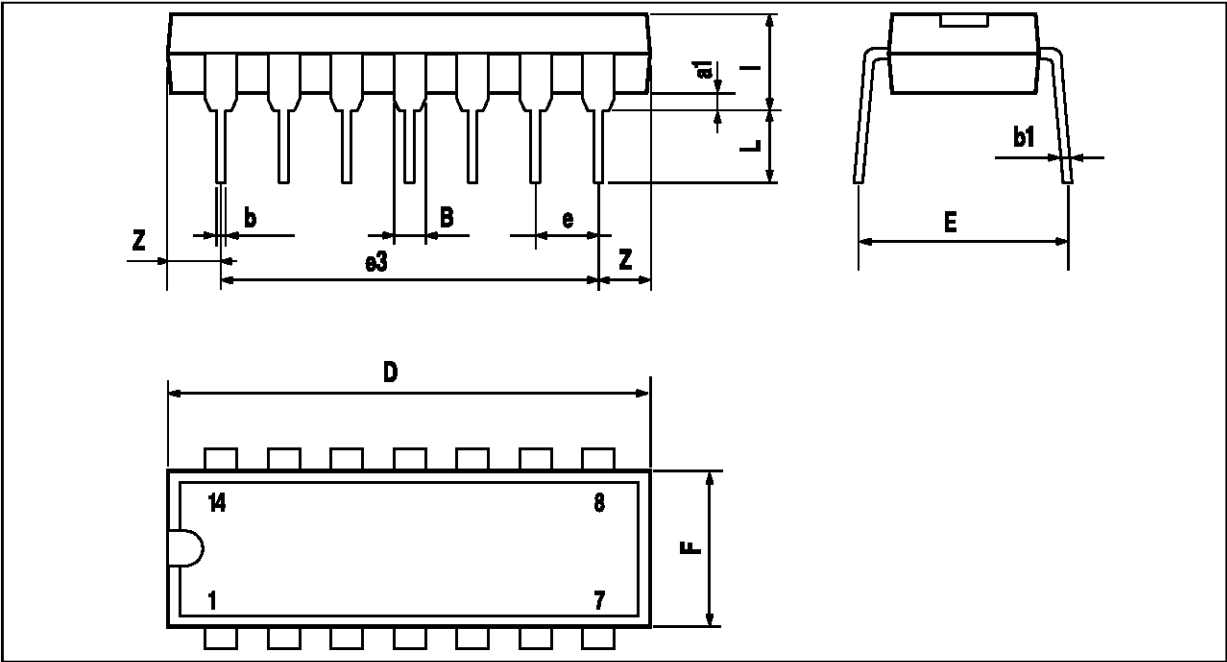
| Symbol    | Parameter                                                                                                                                          | Min.                                                                   | Typ. | Max.       | Unit          |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------|------------|---------------|
| $V_{io}$  | Input Offset Voltage ( $V_{ic} = V_{icm \text{ min.}}$ ) - (note 1)<br>$T_{amb} = 25^{\circ}C$<br>$T_{min.} \leq T_{amb} \leq T_{max.}$            |                                                                        | 2    | 10<br>12   | mV            |
| $I_{io}$  | Input Offset Current - (note 2)<br>$T_{amb} = 25^{\circ}C$<br>$T_{min.} \leq T_{amb} \leq T_{max.}$<br>TS374C<br>TS374I/TS374M                     |                                                                        | 1    | 100<br>200 | pA            |
| $I_{ib}$  | Input Bias Current - (note 2)<br>$T_{amb} = 25^{\circ}C$<br>$T_{min.} \leq T_{amb} \leq T_{max.}$<br>TS374C<br>TS374I/TS374M                       |                                                                        | 1    | 150<br>300 | pA            |
| $V_{icm}$ | Input Common Mode Voltage Range<br>$T_{amb} = 25^{\circ}C$<br>$T_{min.} \leq T_{amb} \leq T_{max.}$<br>TS374C<br>TS374I/TS374M                     | 0 to $V_{CC}^+ - 2$<br>0 to $V_{CC}^+ - 2.25$<br>0 to $V_{CC}^+ - 2.5$ |      |            | V             |
| $I_{OH}$  | High Level Output Current ( $V_{id} = 1V$ )<br>$T_{amb} = 25^{\circ}C$<br>$T_{min.} \leq T_{amb} \leq T_{max.}$<br>$V_{OH} = 5V$<br>$V_{OH} = 15V$ |                                                                        | 0.1  | 1          | nA<br>$\mu A$ |
| $V_{OL}$  | Low Level Output Voltage ( $V_{id} = -1V$ , $I_{OL} = 4mA$ )<br>$T_{amb} = 25^{\circ}C$<br>$T_{min.} \leq T_{amb} \leq T_{max.}$                   |                                                                        | 100  | 400<br>700 | mV            |
| $I_{OL}$  | Low Level Output Current ( $V_{id} = -1V$ , $V_{OL} = 1.5V$ )                                                                                      | 6                                                                      | 45   |            | mA            |
| $I_{CC}$  | Supply Current (4 comparators) ( $V_{id} = +1V$ , no load)                                                                                         |                                                                        | 0.6  | 1          | mA            |

**SWITCHING CHARACTERISTICS** ( $V_{CC}^+ = 5V$ ,  $T_{amb} = 25^{\circ}C$ )

| Symbol   | Parameter                                                                                                                                      | Min. | Typ.       | Max. | Unit |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------|------|------------|------|------|
| $t_{re}$ | Response Time ( $R_L = 5.1k\Omega$ connected to 5V, $C_L = 15pF$ - (note 3)<br>• 100mV input step with 5mV overdrive<br>• TTL level input step |      | 600<br>200 |      | ns   |

- Notes : 1. The specified offset voltage is the maximum value required to drive the output down to 400mV or up to 4V with  $R_L = 100k\Omega$  to  $V_{CC}^+$ .  
 2. Maximum values including unavoidable inaccuracies of the industrial test.  
 3. The response time which is specified is the interval between the input signal and the instant when the output signal crosses 1.4V.

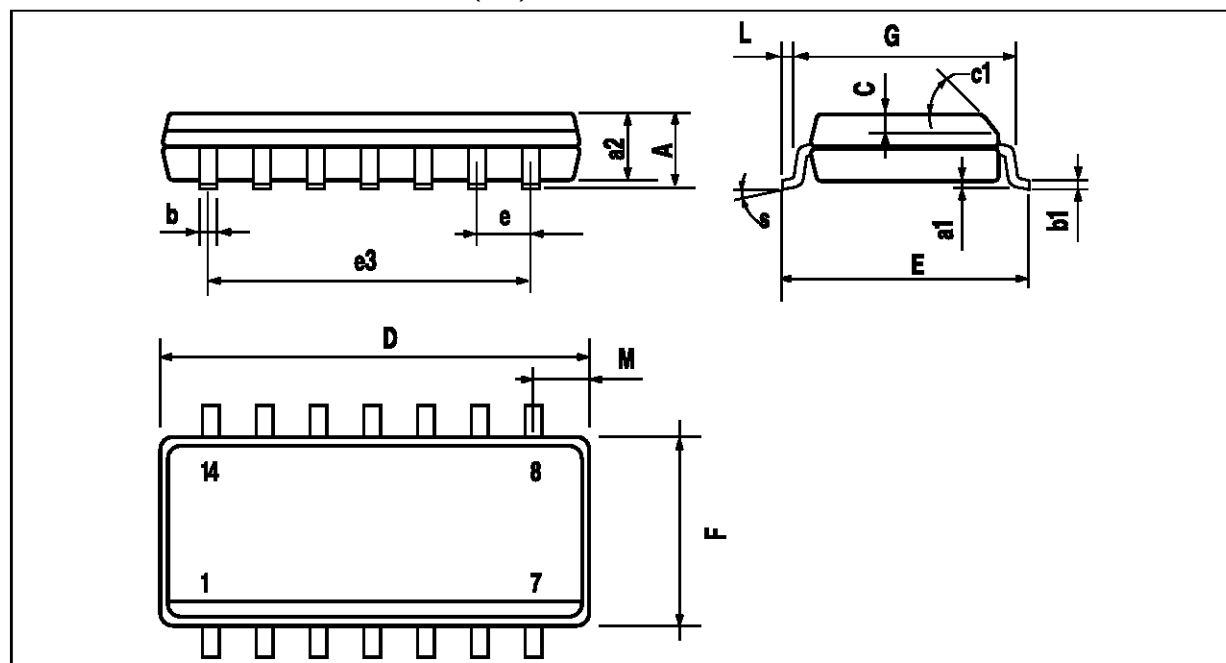
PACKAGE MECHANICAL DATA  
14 PINS - PLASTIC DIP



| Dimensions | Millimeters |       |      | Inches |       |       |
|------------|-------------|-------|------|--------|-------|-------|
|            | Min.        | Typ.  | Max. | Min.   | Typ.  | Max.  |
| a1         | 0.51        |       |      | 0.020  |       |       |
| B          | 1.39        |       | 1.65 | 0.055  |       | 0.065 |
| b          |             | 0.5   |      |        | 0.020 |       |
| b1         |             | 0.25  |      |        | 0.010 |       |
| D          |             |       | 20   |        |       | 0.787 |
| E          |             | 8.5   |      |        | 0.335 |       |
| e          |             | 2.54  |      |        | 0.100 |       |
| e3         |             | 15.24 |      |        | 0.600 |       |
| F          |             |       | 7.1  |        |       | 0.280 |
| i          |             |       | 5.1  |        |       | 0.201 |
| L          |             | 3.3   |      |        | 0.130 |       |
| Z          | 1.27        |       | 2.54 | 0.050  |       | 0.100 |

## PACKAGE MECHANICAL DATA

14 PINS - PLASTIC MICROPACKAGE (SO)



PM-SO14.EPS

| Dimensions | Millimeters |      |      | Inches |       |       |
|------------|-------------|------|------|--------|-------|-------|
|            | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A          |             |      | 1.75 |        |       | 0.069 |
| a1         | 0.1         |      | 0.2  | 0.004  |       | 0.008 |
| a2         |             |      | 1.6  |        |       | 0.063 |
| b          | 0.35        |      | 0.46 | 0.014  |       | 0.018 |
| b1         | 0.19        |      | 0.25 | 0.007  |       | 0.010 |
| C          |             | 0.5  |      |        | 0.020 |       |
| c1         | 45° (typ.)  |      |      |        |       |       |
| D          | 8.55        |      | 8.75 | 0.336  |       | 0.334 |
| E          | 5.8         |      | 6.2  | 0.228  |       | 0.244 |
| e          |             | 1.27 |      |        | 0.050 |       |
| e3         |             | 7.62 |      |        | 0.300 |       |
| F          | 3.8         |      | 4.0  | 0.150  |       | 0.157 |
| G          | 4.6         |      | 5.3  | 0.181  |       | 0.208 |
| L          | 0.5         |      | 1.27 | 0.020  |       | 0.050 |
| M          |             |      | 0.68 |        |       | 0.027 |
| S          | 8° (max.)   |      |      |        |       |       |

SO14.TBL

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