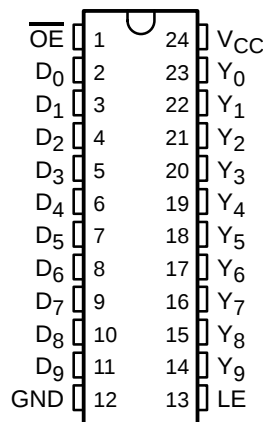


# CY54FCT841T, CY74FCT841T 10-BIT LATCHES WITH 3-STATE OUTPUTS

SCCS035A – SEPTEMBER 1994 – REVISED OCTOBER 2001

- Function, Pinout, and Drive Compatible With FCT, F, and AM29841 Logic
- Reduced  $V_{OH}$  (Typically = 3.3 V) Versions of Equivalent FCT Functions
- Edge-Rate Control Circuitry for Significantly Improved Noise Characteristics
- $I_{off}$  Supports Partial-Power-Down Mode Operation
- Matched Rise and Fall Times
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)
- Fully Compatible With TTL Input and Output Logic Levels
- High-Speed Parallel Latches
- Buffered Common Latch-Enable Input
- 3-State Outputs
- CY54FCT841T
  - 32-mA Output Sink Current
  - 12-mA Output Source Current
- CY74FCT841T
  - 64-mA Output Sink Current
  - 32-mA Output Source Current

CY54FCT841T . . . D PACKAGE  
CY74FCT841T . . . P, Q, OR SO PACKAGE  
(TOP VIEW)



## description

The 'FCT841T bus-interface latches are designed to eliminate additional packages required to buffer existing latches and provide additional data width for wider address/data paths or buses carrying parity. The 'FCT841T devices are buffered 10-bit-wide versions of the FCT373 function.

The 'FCT841T devices' high-performance interface is designed for high-capacitance-load drive capability, while providing low-capacitance bus loading at both inputs and outputs. Outputs are designed for low-capacitance bus loading in the high-impedance state.

These devices are fully specified for partial-power-down applications using  $I_{off}$ . The  $I_{off}$  circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

PIN DESCRIPTION

| NAME            | I/O | DESCRIPTION                                                                                                                                                   |
|-----------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D               | I   | Latch data inputs                                                                                                                                             |
| LE              | I   | Latch-enable input. The latches are transparent when LE is high. Input data is latched on the high-to-low transition.                                         |
| Y               | O   | 3-state latch outputs                                                                                                                                         |
| $\overline{OE}$ | I   | Output-enable control. When $\overline{OE}$ is low, the outputs are enabled. When $\overline{OE}$ is high, the outputs are in the high-impedance (off) state. |



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PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS  
INSTRUMENTS**

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On products compliant to MIL-PRF-38535, all parameters are tested unless otherwise noted. On all other products, production processing does not necessarily include testing of all parameters.

CY54FCT841T, CY74FCT841T  
 10-BIT LATCHES  
 WITH 3-STATE OUTPUTS

SCCS035A – SEPTEMBER 1994 – REVISED OCTOBER 2001

ORDERING INFORMATION

| T <sub>A</sub> | PACKAGE†  |               | SPEED (ns) | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|----------------|-----------|---------------|------------|-----------------------|------------------|
| –40°C to 85°C  | QSOP – Q  | Tape and reel | 5.5        | CY74FCT841CTQCT       | FCT841C          |
|                | SOIC – SO | Tube          | 5.5        | CY74FCT841CTSOC       | FCT841C          |
|                |           | Tape and reel | 5.5        | CY74FCT841CTSOCT      |                  |
|                | DIP – P   | Tube          | 6.5        | CY74FCT841BTPC        | CY74FCT841BTPC   |
|                | SOIC – SO | Tube          | 9          | CY74FCT841ATSOC       | FCT841A          |
|                |           | Tape and reel | 9          | CY74FCT841ATSOCT      |                  |
| –55°C to 125°C | CDIP – D  | Tube          | 10         | CY54FCT841ATDMB       |                  |

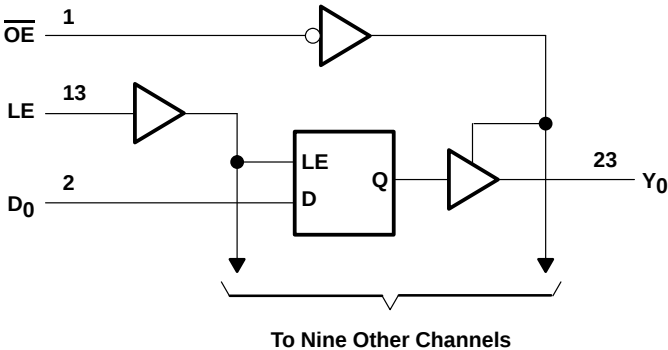
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

FUNCTION TABLE

| INPUTS          |    |   | INTERNAL OUTPUTS |    | FUNCTION    |
|-----------------|----|---|------------------|----|-------------|
| $\overline{OE}$ | LE | D | O                | Y  |             |
| H               | X  | X | X                | Z  | Z           |
| H               | H  | L | L                | Z  |             |
| H               | H  | H | H                | Z  |             |
| H               | L  | X | NC               | Z  | Latched (Z) |
| L               | H  | L | L                | L  | Transparent |
| L               | H  | H | H                | H  |             |
| L               | L  | X | NC               | NC | Latched     |

H = High logic level, L = Low logic level, X = Don't care, NC = No change, Z = High-impedance state

logic diagram (positive logic)



# CY54FCT841T, CY74FCT841T

## 10-BIT LATCHES

### WITH 3-STATE OUTPUTS

SCCS035A – SEPTEMBER 1994 – REVISED OCTOBER 2001

#### absolute maximum ratings over operating free-air temperature range (unless otherwise noted)<sup>†</sup>

|                                                                  |                |
|------------------------------------------------------------------|----------------|
| Supply voltage range to ground potential                         | –0.5 V to 7 V  |
| DC input voltage range                                           | –0.5 V to 7 V  |
| DC output voltage range                                          | –0.5 V to 7 V  |
| DC output current (maximum sink current/pin)                     | 120 mA         |
| Package thermal impedance, $\theta_{JA}$ (see Note 1): P package | 67°C/W         |
| (see Note 2): Q package                                          | 61°C/W         |
| (see Note 2): SO package                                         | 46°C/W         |
| Ambient temperature range with power applied, $T_A$              | –65°C to 135°C |
| Storage temperature range, $T_{Stg}$                             | –65°C to 150°C |

<sup>†</sup> Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

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.

#### recommended operating conditions (see Note 3)

|                                      | CY54FCT841T |     |     | CY74FCT841T |     |      | UNIT |
|--------------------------------------|-------------|-----|-----|-------------|-----|------|------|
|                                      | MIN         | NOM | MAX | MIN         | NOM | MAX  |      |
| $V_{CC}$ Supply voltage              | 4.5         | 5   | 5.5 | 4.75        | 5   | 5.25 | V    |
| $V_{IH}$ High-level input voltage    | 2           |     |     | 2           |     |      | V    |
| $V_{IL}$ Low-level input voltage     |             |     | 0.8 |             |     | 0.8  | V    |
| $I_{OH}$ High-level output current   |             |     | –12 |             |     | –32  | mA   |
| $I_{OL}$ Low-level output current    |             |     | 32  |             |     | 64   | mA   |
| $T_A$ Operating free-air temperature | –55         |     | 125 | –40         |     | 85   | °C   |

NOTE 3: All unused inputs of the device must be held at  $V_{CC}$  or GND to ensure proper device operation.

# CY54FCT841T, CY74FCT841T

## 10-BIT LATCHES

### WITH 3-STATE OUTPUTS

SCCS035A – SEPTEMBER 1994 – REVISED OCTOBER 2001

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER         | TEST CONDITIONS                                                                                                                                                                                     | CY54FCT841T |      |         | CY74FCT841T |      |         | UNIT          |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------|---------|-------------|------|---------|---------------|
|                   |                                                                                                                                                                                                     | MIN         | TYP† | MAX     | MIN         | TYP† | MAX     |               |
| $V_{IK}$          | $V_{CC} = 4.5 \text{ V}$ , $I_{IN} = -18 \text{ mA}$                                                                                                                                                | -0.7        | -1.2 |         |             |      |         | V             |
|                   | $V_{CC} = 4.75 \text{ V}$ , $I_{IN} = -18 \text{ mA}$                                                                                                                                               |             |      |         | -0.7        | -1.2 |         |               |
| $V_{OH}$          | $V_{CC} = 4.5 \text{ V}$ , $I_{OH} = -12 \text{ mA}$                                                                                                                                                | 2.4         | 3.3  |         |             |      |         | V             |
|                   | $V_{CC} = 4.75 \text{ V}$ , $I_{OH} = -32 \text{ mA}$                                                                                                                                               |             |      |         | 2           |      |         |               |
|                   | $V_{CC} = 4.75 \text{ V}$ , $I_{OH} = -15 \text{ mA}$                                                                                                                                               |             |      |         | 2.4         | 3.3  |         |               |
| $V_{OL}$          | $V_{CC} = 4.5 \text{ V}$ , $I_{OL} = 32 \text{ mA}$                                                                                                                                                 | 0.3         | 0.55 |         |             |      |         | V             |
|                   | $V_{CC} = 4.75 \text{ V}$ , $I_{OL} = 64 \text{ mA}$                                                                                                                                                |             |      |         | 0.3         | 0.55 |         |               |
| $V_{hys}$         | All inputs                                                                                                                                                                                          | 0.2         |      |         | 0.2         |      |         | V             |
| $I_I$             | $V_{CC} = 5.5 \text{ V}$ , $V_{IN} = V_{CC}$                                                                                                                                                        |             |      | 5       |             |      |         | $\mu\text{A}$ |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{IN} = V_{CC}$                                                                                                                                                       |             |      |         |             |      | 5       |               |
| $I_{IH}$          | $V_{CC} = 5.5 \text{ V}$ , $V_{IN} = 2.7 \text{ V}$                                                                                                                                                 |             |      | $\pm 1$ |             |      |         | $\mu\text{A}$ |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{IN} = 2.7 \text{ V}$                                                                                                                                                |             |      |         |             |      | $\pm 1$ |               |
| $I_{IL}$          | $V_{CC} = 5.5 \text{ V}$ , $V_{IN} = 0.5 \text{ V}$                                                                                                                                                 |             |      | $\pm 1$ |             |      |         | $\mu\text{A}$ |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{IN} = 0.5 \text{ V}$                                                                                                                                                |             |      |         |             |      | $\pm 1$ |               |
| $I_{OZH}$         | $V_{CC} = 5.5 \text{ V}$ , $V_{OUT} = 2.7 \text{ V}$                                                                                                                                                |             |      | 10      |             |      |         | $\mu\text{A}$ |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{OUT} = 2.7 \text{ V}$                                                                                                                                               |             |      |         |             |      | 10      |               |
| $I_{OZL}$         | $V_{CC} = 5.5 \text{ V}$ , $V_{OUT} = 0.5 \text{ V}$                                                                                                                                                |             |      | -10     |             |      |         | $\mu\text{A}$ |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{OUT} = 0.5 \text{ V}$                                                                                                                                               |             |      |         |             |      | -10     |               |
| $I_{OS}^\ddagger$ | $V_{CC} = 5.5 \text{ V}$ , $V_{OUT} = 0 \text{ V}$                                                                                                                                                  | -60         | -120 | -225    |             |      |         | mA            |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{OUT} = 0 \text{ V}$                                                                                                                                                 |             |      |         | -60         | -120 | -225    |               |
| $I_{off}$         | $V_{CC} = 0 \text{ V}$ , $V_{OUT} = 4.5 \text{ V}$                                                                                                                                                  |             |      | $\pm 1$ |             |      | $\pm 1$ | $\mu\text{A}$ |
| $I_{CC}$          | $V_{CC} = 5.5 \text{ V}$ , $V_{IN} \leq 0.2 \text{ V}$ , $V_{IN} \geq V_{CC} - 0.2 \text{ V}$                                                                                                       | 0.1         | 0.2  |         |             |      |         | mA            |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{IN} \leq 0.2 \text{ V}$ , $V_{IN} \geq V_{CC} - 0.2 \text{ V}$                                                                                                      |             |      |         | 0.1         | 0.2  |         |               |
| $\Delta I_{CC}$   | $V_{CC} = 5.5 \text{ V}$ , $V_{IN} = 3.4 \text{ V}^\S$ , $f_1 = 0$ , Outputs open                                                                                                                   | 0.5         | 2    |         |             |      |         | mA            |
|                   | $V_{CC} = 5.25 \text{ V}$ , $V_{IN} = 3.4 \text{ V}^\S$ , $f_1 = 0$ , Outputs open                                                                                                                  |             |      |         | 0.5         | 2    |         |               |
| $I_{CCD}^\P$      | $V_{CC} = 5.5 \text{ V}$ , One input switching at 50% duty cycle, Outputs open, $\overline{OE} = \text{GND}$ , $LE = V_{CC}$ , $V_{IN} \leq 0.2 \text{ V}$ or $V_{IN} \geq V_{CC} - 0.2 \text{ V}$  | 0.06        | 0.12 |         |             |      |         | mA/ MHz       |
|                   | $V_{CC} = 5.25 \text{ V}$ , One input switching at 50% duty cycle, Outputs open, $\overline{OE} = \text{GND}$ , $LE = V_{CC}$ , $V_{IN} \leq 0.2 \text{ V}$ or $V_{IN} \geq V_{CC} - 0.2 \text{ V}$ |             |      |         | 0.06        | 0.12 |         |               |

† Typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ\text{C}$ .

‡ Not more than one output should be shorted at a time. Duration of short should not exceed one second. The use of high-speed test apparatus and/or sample-and-hold techniques are preferable to minimize internal chip heating and more accurately reflect operational values. Otherwise, prolonged shorting of a high output can raise the chip temperature well above normal and cause invalid readings in other parametric tests. In any sequence of parameter tests,  $I_{OS}$  tests should be performed last.

§ Per TTL-driven input ( $V_{IN} = 3.4 \text{ V}$ ); all other inputs at  $V_{CC}$  or GND

¶ This parameter is derived for use in total power-supply calculations.



**CY54FCT841T, CY74FCT841T**  
**10-BIT LATCHES**  
**WITH 3-STATE OUTPUTS**

SCCS035A – SEPTEMBER 1994 – REVISED OCTOBER 2001

**electrical characteristics over recommended operating free-air temperature range (unless otherwise noted) (continued)**

| PARAMETER                   | TEST CONDITIONS                                                                 |                                                                       |                                                                         | CY54FCT841T |      | CY74FCT841T |      | UNIT |
|-----------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------|-------------|------|-------------|------|------|
|                             |                                                                                 |                                                                       |                                                                         | MIN         | TYP† | MAX         | MIN  |      |
| I <sub>C</sub> <sup>#</sup> | V <sub>CC</sub> = 5.5 V,<br>Outputs open,<br>OE = GND,<br>LE = V <sub>CC</sub>  | One bit switching<br>at f <sub>1</sub> = 10 MHz<br>at 50% duty cycle  | V <sub>IN</sub> ≤ 0.2 V or<br>V <sub>IN</sub> ≥ V <sub>CC</sub> – 0.2 V | 0.7         | 1.4  |             |      | mA   |
|                             |                                                                                 |                                                                       | V <sub>IN</sub> = 3.4 V or GND                                          | 1           | 2.4  |             |      |      |
|                             |                                                                                 | 10 bits switching<br>at f <sub>1</sub> = 2.5 MHz<br>at 50% duty cycle | V <sub>IN</sub> ≤ 0.2 V or<br>V <sub>IN</sub> ≥ V <sub>CC</sub> – 0.2 V | 1           | 3.2  |             |      |      |
|                             |                                                                                 |                                                                       | V <sub>IN</sub> = 3.4 V or GND                                          | 4.1         | 13.2 |             |      |      |
|                             | V <sub>CC</sub> = 5.25 V,<br>Outputs open,<br>OE = GND,<br>LE = V <sub>CC</sub> | One bit switching<br>at f <sub>1</sub> = 10 MHz<br>at 50% duty cycle  | V <sub>IN</sub> ≤ 0.2 V or<br>V <sub>IN</sub> ≥ V <sub>CC</sub> – 0.2 V |             |      | 0.7         | 1.4  |      |
|                             |                                                                                 |                                                                       | V <sub>IN</sub> = 3.4 V or GND                                          |             |      | 1           | 2.4  |      |
|                             |                                                                                 | 10 bits switching<br>at f <sub>1</sub> = 2.5 MHz<br>at 50% duty cycle | V <sub>IN</sub> ≤ 0.2 V or<br>V <sub>IN</sub> ≥ V <sub>CC</sub> – 0.2 V |             |      | 1           | 3.2  |      |
|                             |                                                                                 |                                                                       | V <sub>IN</sub> = 3.4 V or GND                                          |             |      | 4.1         | 13.2 |      |
| C <sub>i</sub>              |                                                                                 |                                                                       |                                                                         | 5           | 10   | 5           | 10   | pF   |
| C <sub>0</sub>              |                                                                                 |                                                                       |                                                                         | 9           | 12   | 9           | 12   | pF   |

† Typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ\text{C}$ .

#  $I_C = I_{CC} + \Delta I_{CC} \times D_H \times N_T + I_{CCD} (f_0/2 + f_1 \times N_1)$

Where:

$I_C$  = Total supply current

$I_{CC}$  = Power-supply current with CMOS input levels

$\Delta I_{CC}$  = Power-supply current for a TTL high input ( $V_{IN} = 3.4 \text{ V}$ )

$D_H$  = Duty cycle for TTL inputs high

$N_T$  = Number of TTL inputs at  $D_H$

$I_{CCD}$  = Dynamic current caused by an input transition pair (HLH or LHL)

$f_0$  = Clock frequency for registered devices, otherwise zero

$f_1$  = Input signal frequency

$N_1$  = Number of inputs changing at  $f_1$

All currents are in milliamperes and all frequencies are in megahertz.

|| Values for these conditions are examples of the  $I_{CC}$  formula.

**timing requirements over recommended operating free-air temperature range (unless otherwise noted) (see Figure 1)**

|          |                                      | CY54FCT841AT |     | CY74FCT841AT |     | CY74FCT841BT |     | CY74FCT841CT |     | UNIT |
|----------|--------------------------------------|--------------|-----|--------------|-----|--------------|-----|--------------|-----|------|
|          |                                      | MIN          | MAX | MIN          | MAX | MIN          | MAX | MIN          | MAX |      |
| $t_W$    | Pulse duration, LE high              | 5            |     | 4            |     | 4            |     | 4            |     | ns   |
| $t_{SU}$ | Setup time, data before $LE\uparrow$ | 2.5          |     | 2.5          |     | 2.5          |     | 2.5          |     | ns   |
| $t_H$    | Hold time, data after $LE\uparrow$   | 3            |     | 2.5          |     | 2.5          |     | 2.5          |     | ns   |

# CY54FCT841T, CY74FCT841T

## 10-BIT LATCHES

### WITH 3-STATE OUTPUTS

SCCS035A – SEPTEMBER 1994 – REVISED OCTOBER 2001

#### switching characteristics over operating free-air temperature range (see Figure 1)

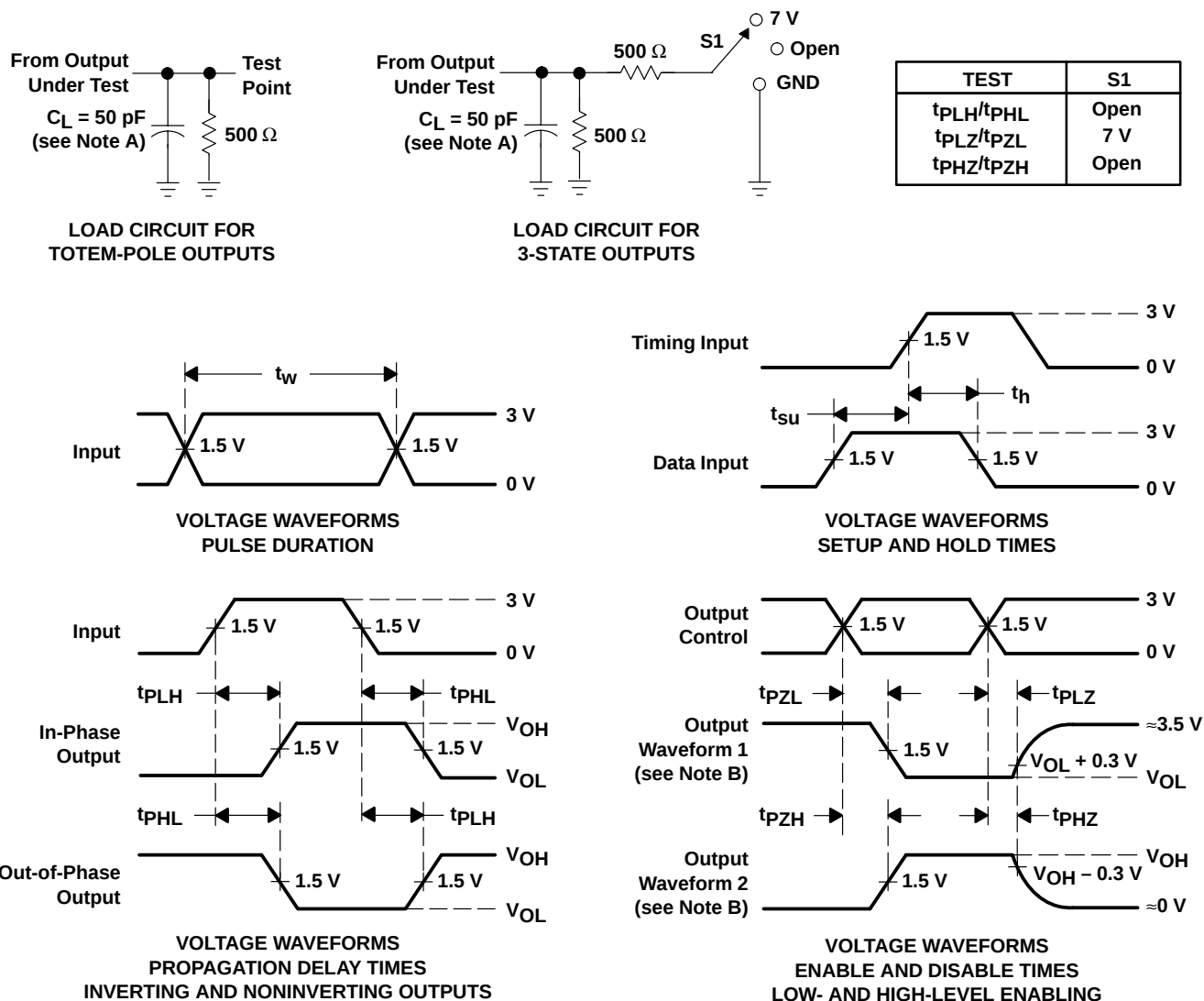
| PARAMETER        | FROM<br>(INPUT) | TO<br>(OUTPUT) | TEST LOAD                                          | CY54FCT841AT |     | CY74FCT841AT |      | UNIT |
|------------------|-----------------|----------------|----------------------------------------------------|--------------|-----|--------------|------|------|
|                  |                 |                |                                                    | MIN          | MAX | MIN          | MAX  |      |
| t <sub>PLH</sub> | D               | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 10  | 1.5          | 9    | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 10  | 1.5          | 9    |      |
| t <sub>PLH</sub> | D               | Y              | C <sub>L</sub> = 300 pF,<br>R <sub>L</sub> = 500 Ω | 1.5          | 15  | 1.5          | 13   | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 15  | 1.5          | 13   |      |
| t <sub>PLH</sub> | LE              | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 13  | 1.5          | 12   | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 13  | 1.5          | 12   |      |
| t <sub>PLH</sub> | LE              | Y              | C <sub>L</sub> = 300 pF,<br>R <sub>L</sub> = 500 Ω | 1.5          | 20  | 1.5          | 16   | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 20  | 1.5          | 16   |      |
| t <sub>PZH</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 13  | 1.5          | 11.5 | ns   |
| t <sub>PZL</sub> |                 |                |                                                    | 1.5          | 13  | 1.5          | 11.5 |      |
| t <sub>PZH</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 300 pF,<br>R <sub>L</sub> = 500 Ω | 1.5          | 25  | 1.5          | 23   | ns   |
| t <sub>PZL</sub> |                 |                |                                                    | 1.5          | 25  | 1.5          | 23   |      |
| t <sub>PHZ</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 5 pF,<br>R <sub>L</sub> = 500 Ω   | 1.5          | 9   | 1.5          | 7    | ns   |
| t <sub>PLZ</sub> |                 |                |                                                    | 1.5          | 9   | 1.5          | 7    |      |
| t <sub>PHZ</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 10  | 1.5          | 8    | ns   |
| t <sub>PLZ</sub> |                 |                |                                                    | 1.5          | 10  | 1.5          | 8    |      |

#### switching characteristics over operating free-air temperature range (see Figure 1)

| PARAMETER        | FROM<br>(INPUT) | TO<br>(OUTPUT) | TEST LOAD                                          | CY74FCT841BT |      | CY74FCT841CT |     | UNIT |
|------------------|-----------------|----------------|----------------------------------------------------|--------------|------|--------------|-----|------|
|                  |                 |                |                                                    | MIN          | MAX  | MIN          | MAX |      |
| t <sub>PLH</sub> | D               | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 6.5  | 1.5          | 5.5 | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 6.5  | 1.5          | 5.5 |      |
| t <sub>PLH</sub> | D               | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 13   | 1.5          | 13  | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 13   | 1.5          | 13  |      |
| t <sub>PLH</sub> | LE              | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 8    | 1.5          | 6.4 | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 8    | 1.5          | 6.4 |      |
| t <sub>PLH</sub> | LE              | Y              | C <sub>L</sub> = 300 pF,<br>R <sub>L</sub> = 500 Ω | 1.5          | 15.5 | 1.5          | 15  | ns   |
| t <sub>PHL</sub> |                 |                |                                                    | 1.5          | 15.5 | 1.5          | 15  |      |
| t <sub>PZH</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 8    | 1.5          | 6.5 | ns   |
| t <sub>PZL</sub> |                 |                |                                                    | 1.5          | 8    | 1.5          | 6.5 |      |
| t <sub>PZH</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 300 pF,<br>R <sub>L</sub> = 500 Ω | 1.5          | 14   | 1.5          | 12  | ns   |
| t <sub>PZL</sub> |                 |                |                                                    | 1.5          | 14   | 1.5          | 12  |      |
| t <sub>PHZ</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 5 pF,<br>R <sub>L</sub> = 500 Ω   | 1.5          | 6    | 1.5          | 5.7 | ns   |
| t <sub>PLZ</sub> |                 |                |                                                    | 1.5          | 6    | 1.5          | 5.7 |      |
| t <sub>PHZ</sub> | $\overline{OE}$ | Y              | C <sub>L</sub> = 50 pF,<br>R <sub>L</sub> = 500 Ω  | 1.5          | 7    | 1.5          | 6   | ns   |
| t <sub>PLZ</sub> |                 |                |                                                    | 1.5          | 7    | 1.5          | 6   |      |



## PARAMETER MEASUREMENT INFORMATION



- NOTES: A.  $C_L$  includes probe and jig capacitance.  
 B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.  
 C. The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

## PACKAGING INFORMATION

| Orderable part number            | Status<br>(1) | Material type<br>(2) | Package   Pins  | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6) |
|----------------------------------|---------------|----------------------|-----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|---------------------|
| <a href="#">CY54FCT841ATDMB</a>  | Active        | Production           | CDIP (JT)   24  | 15   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | CY54FCT841ATDM<br>B |
| <a href="#">CY74FCT841ATSOC</a>  | Active        | Production           | SOIC (DW)   24  | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841A             |
| CY74FCT841ATSOC.B                | Active        | Production           | SOIC (DW)   24  | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841A             |
| <a href="#">CY74FCT841ATSOCT</a> | Active        | Production           | SOIC (DW)   24  | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841A             |
| CY74FCT841ATSOCT.B               | Active        | Production           | SOIC (DW)   24  | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841A             |
| <a href="#">CY74FCT841CTQCT</a>  | Active        | Production           | SSOP (DBQ)   24 | 2500   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | FCT841C             |
| CY74FCT841CTQCT.B                | Active        | Production           | SSOP (DBQ)   24 | 2500   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | FCT841C             |
| <a href="#">CY74FCT841CTSOC</a>  | Active        | Production           | SOIC (DW)   24  | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841C             |
| CY74FCT841CTSOC.B                | Active        | Production           | SOIC (DW)   24  | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841C             |
| <a href="#">CY74FCT841CTSOCT</a> | Active        | Production           | SOIC (DW)   24  | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841C             |
| CY74FCT841CTSOCT.B               | Active        | Production           | SOIC (DW)   24  | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | FCT841C             |

<sup>(1)</sup> **Status:** For more details on status, see our [product life cycle](#).

<sup>(2)</sup> **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

<sup>(3)</sup> **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

<sup>(4)</sup> **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

<sup>(5)</sup> **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

<sup>(6)</sup> **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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## TAPE AND REEL INFORMATION



\*All dimensions are nominal

| Device           | Package Type | Package Drawing | Pins | SPQ  | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|------------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| CY74FCT841ATSOCT | SOIC         | DW              | 24   | 2000 | 330.0              | 24.4               | 10.75   | 15.7    | 2.7     | 12.0    | 24.0   | Q1            |
| CY74FCT841CTQCT  | SSOP         | DBQ             | 24   | 2500 | 330.0              | 16.4               | 6.5     | 9.0     | 2.1     | 8.0     | 16.0   | Q1            |
| CY74FCT841CTSOCT | SOIC         | DW              | 24   | 2000 | 330.0              | 24.4               | 10.75   | 15.7    | 2.7     | 12.0    | 24.0   | Q1            |

## TAPE AND REEL BOX DIMENSIONS



\*All dimensions are nominal

| Device           | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|------------------|--------------|-----------------|------|------|-------------|------------|-------------|
| CY74FCT841ATSOCT | SOIC         | DW              | 24   | 2000 | 350.0       | 350.0      | 43.0        |
| CY74FCT841CTQCT  | SSOP         | DBQ             | 24   | 2500 | 353.0       | 353.0      | 32.0        |
| CY74FCT841CTSOCT | SOIC         | DW              | 24   | 2000 | 350.0       | 350.0      | 43.0        |

## TUBE



\*All dimensions are nominal

| Device            | Package Name | Package Type | Pins | SPQ | L (mm) | W (mm) | T (μm) | B (mm) |
|-------------------|--------------|--------------|------|-----|--------|--------|--------|--------|
| CY74FCT841ATSOC   | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |
| CY74FCT841ATSOC.B | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |
| CY74FCT841CTSOC   | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |
| CY74FCT841CTSOC.B | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |

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