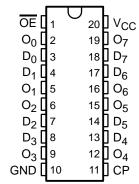
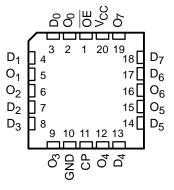
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- Function, Pinout, and Drive Compatible With FCT and F Logic
- Reduced V<sub>OH</sub> (Typically = 3.3 V) Versions of Equivalent FCT Functions
- Edge-Rate Control Circuitry for Significantly Improved Noise Characteristics
- I<sub>off</sub> Supports Partial-Power-Down Mode Operation
- Matched Rise and Fall Times
- Fully Compatible With TTL Input and Output Logic Levels
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)
- Edge-Triggered D-Type Inputs
- 250-MHz Typical Switching Rate
- CY54FCT374T
  - 32-mA Output Sink Current
  - 12-mA Output Source Current
- CY74FCT374T
  - 64-mA Output Sink Current
  - 32-mA Output Source Current
- 3-State Outputs

#### CY54FCT374T . . . D PACKAGE CY74FCT374T . . . P, Q, OR SO PACKAGE (TOP VIEW)



## CY54FCT374T . . . L PACKAGE (TOP VIEW)



### description

The 'FCT374T devices are high-speed, low-power, octal D-type flip-flops, featuring separate D-type inputs for each flip-flop. These devices have 3-state outputs for bus-oriented applications. A buffered clock (CP) and output-enable ( $\overline{OE}$ ) inputs are common to all flip-flops. The eight flip-flops in the 'FCT374T store the state of their individual D inputs that meet the setup-time and hold-time requirements on the low-to-high CP transition. When  $\overline{OE}$  is low, the contents of the eight flip-flops are available at the outputs. When  $\overline{OE}$  is high, the outputs are in the high-impedance state. The state of  $\overline{OE}$  does not affect the state of the flip-flops.

These devices are fully specified for partial-power-down applications using I<sub>off</sub>. The I<sub>off</sub> circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



### **ORDERING INFORMATION**

TA	PAC	KAGE†	SPEED (ns)	ORDERABLE PART NUMBER	TOP-SIDE Marking
	QSOP - Q	Tape and reel	5.2	CY74FCT374CTQCT	FCT374C
	SOIC - SO	Tube	5.2	CY74FCT374CTSOC	FCT374C
	3010 - 30	Tape and reel	5.2	CY74FCT374CTSOCT	FC1374C
DIP – P		Tube	6.5	CY74FCT374ATPC	CY74FCT374ATPC
4000 to 0500	QSOP - Q	Tape and reel	6.5	CY74FCT374ATQCT	FCT374A
–40°C to 85°C	SOIC - SO	Tube		CY74FCT374ATSOC	FCT374A
	3010 - 30	Tape and reel	6.5	CY74FCT374ATSOCT	FC1374A
	QSOP - Q	Tape and reel	10	CY74FCT374TQCT	FCT374
	SOIC - SO	Tube	10	CY74FCT374TSOC	FCT374
	3010 - 30	Tape and reel	10	CY74FCT374TSOCT	FC13/4
	CDIP – D	Tube	6.2	CY54FCT374CTDMB	
	LCC – L	Tube	6.2	CY54FCT374CTLMB	
_55°C to 125°C	CDIP – D	Tube	7.2	CY54FCT374ATDMB	
-55 0 10 125 0	LCC – L	Tube	7.2	CY54FCT374ATLMB	
	CDIP – D	Tube	11	CY54FCT374TDMB	
	LCC – L	Tube	11	CY54FCT374TLMB	

<sup>†</sup> Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

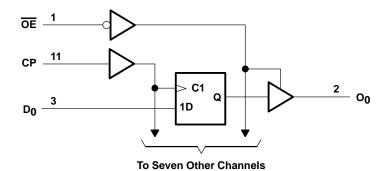
### **FUNCTION TABLE**

	INPUTS		OUTPUT
D	СР	0	
Н	1	L	Н
L	$\uparrow$	L	L
Х	Χ	Н	Z

H = High logic level, L = Low logic level,

X = Don't care, Z = High-impedance state, ↑ = Low-to-high clock transition

## logic diagram (positive logic)





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

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, θ <sub>JA</sub> (see Note 1)	): P package		69°C/W
	Q package		68°C/W
	SO package		58°C/W
Ambient temperature range with power applied	d, T <sub>A</sub>	–65°C	to 135°C
Storage temperature range, T <sub>stq</sub>	• • • • • • • • • • • • • • • • • • • •	–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.

### recommended operating conditions (see Note 2)

		CY!	54FCT37	'4T	4.75 5 5		4T	UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Vcc	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
VIH	High-level input voltage	2			2			V
$V_{IL}$	Low-level input voltage			0.8			0.8	V
ІОН	High-level output current			-12			-32	mA
loL	Low-level output current			32			64	mA
TA	Operating free-air temperature	-55		125	-40		85	°C

NOTE 2: All unused inputs of the device must be held at  $V_{CC}$  or GND to ensure proper device operation.



NOTE 1: The package thermal impedance is calculated in accordance with JESD 51-7.

## CY54FCT374T, CY74FCT374T 8-BIT REGISTERS WITH 3-STATE OUTPUTS

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

DADAMETER		TEGT COMPLETE	CY	54FCT37	4T	CY	74FCT37	4T	UNIT	
PARAMETER		TEST CONDITIO	JNS	MIN	TYP <sup>†</sup>	MAX	MIN	TYP <sup>†</sup>	MAX	UNII
Vers	V <sub>CC</sub> = 4.5 V,	I <sub>IN</sub> = -18 mA			-0.7	-1.2				V
VIK	$V_{CC} = 4.75 \text{ V},$	$I_{IN} = -18 \text{ mA}$						-0.7	-1.2	V
	$V_{CC} = 4.5 \text{ V},$	$I_{OH} = -12 \text{ mA}$		2.4	3.3					
Voн	V <sub>CC</sub> = 4.75 V	$I_{OH} = -32 \text{ mA}$					2			V
	VCC = 4.75 V	$I_{OH} = -15 \text{ mA}$					2.4	3.3		
VOL	$V_{CC} = 4.5 \text{ V},$	$I_{OL} = 32 \text{ mA}$			0.3	0.55				<
VOL	$V_{CC} = 4.75 \text{ V},$	$I_{OL} = 64 \text{ mA}$						0.3	0.55	V
$V_{hys}$	All inputs				0.2			0.2		V
1.	$V_{CC} = 5.5 \text{ V},$	$V_{IN} = V_{CC}$				5				μΑ
lį	$V_{CC} = 5.25 \text{ V},$	$V_{IN} = V_{CC}$							5	μΑ
1	$V_{CC} = 5.5 \text{ V},$	$V_{1N} = 2.7 \text{ V}$				±1				μΑ
lін	$V_{CC} = 5.25 \text{ V},$	$V_{1N} = 2.7 \text{ V}$							±1	μΑ
ļ <sub>1</sub>	$V_{CC} = 5.5 \text{ V},$	$V_{IN} = 0.5 V$				±1				μΑ
IIL	$V_{CC} = 5.25 \text{ V},$	$V_{IN} = 0.5 V$							±1	μΛ
l <sub>off</sub>	$V_{CC} = 0 V$ ,	V <sub>OUT</sub> = 4.5 V				±1			±1	μΑ
los‡	$V_{CC} = 5.5 \text{ V},$	$V_{OUT} = 0 V$		-60	-120	-225				mA
108+	$V_{CC} = 5.25 \text{ V},$	$V_{OUT} = 0 V$					-60	-120	-225	ША
lozu	$V_{CC} = 5.5 \text{ V},$	$V_{IN} = 2.7 \text{ V}$				10				μΑ
IOZH	$V_{CC} = 5.25 \text{ V},$	$V_{IN} = 2.7 \text{ V}$							10	μΑ
lozu	$V_{CC} = 5.5 \text{ V},$	$V_{IN} = 0.5 V$				-10				μΑ
IOZL	$V_{CC} = 5.25 \text{ V},$	$V_{1N} = 0.5 V$							-10	μΑ
las	$V_{CC} = 5.5 \text{ V},$	$V_{IN} \leq 0.2 V$	$V_{IN} \ge V_{CC} - 0.2 V$		0.1	0.2				mA
lcc	V <sub>CC</sub> = 5.25 V,	V <sub>IN</sub> ≤ 0.2 V,	$V_{IN} \ge V_{CC} - 0.2 V$					0.1	0.2	IIIA
Aloo	V <sub>C</sub> C = 5.5 V, V <sub>I</sub>	$N = 3.4 \text{ V}$ , $f_1 = 0$ ,	Outputs open		0.5	2				mA
∆ICC	V <sub>CC</sub> = 5.25 V, V	IN = 3.4 V\$, f <sub>1</sub> = 0	, Outputs open					0.5	2	IIIA

<sup>&</sup>lt;sup>†</sup> 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, IOS tests should be performed last.

<sup>§</sup> Per TTL-driven input (V<sub>IN</sub> = 3.4 V); all other inputs at V<sub>CC</sub> or GND

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

BARAMETER		TEST SOMBITIO	NO.	CY	′54FCT37	'4T	CY	74FCT37	'4T	
PARAMETER		TEST CONDITIO	ons .	MIN	TYP <sup>†</sup>	MAX	MIN	TYP <sup>†</sup>	MAX	UNIT
loop¶		itputs open, g at 50% duty cycle IN ≥ VCC – 0.2 V	e, <del>OE</del> = GND,		0.06	0.12				mA/
ICCD¶		outputs open, g at 50% duty cycle $IN \ge V_{CC} - 0.2 V$	e, <del>OE</del> = GND,					0.06	0.12	MHz
		One bit switching at f <sub>1</sub> = 5 MHz	$V_{IN} \le 0.2 \text{ V or}$ $V_{IN} \ge V_{CC} - 0.2 \text{ V}$		0.7	1.4				
	$V_{CC} = 5.5 \text{ V},$ $f_0 = 10 \text{ MHz},$	Cycle	V <sub>IN</sub> = 3.4 V or GND		1.2	3.4				
	Outputs open, OE = GND	Eight bits switching at f <sub>1</sub> = 2.5 MHz	$V_{IN} \le 0.2 \text{ V or}$ $V_{IN} \ge V_{CC} - 0.2 \text{ V}$		1.6	3.2				
lo lo		at 50% duty cycle	V <sub>IN</sub> = 3.4 V or GND		3.9	12.2				mA
IC		One bit switching at f <sub>1</sub> = 5 MHz	$V_{IN} \le 0.2 \text{ V or}$ $V_{IN} \ge V_{CC} - 0.2 \text{ V}$					0.7	1.4	IIIA
	$V_{CC} = 5.25 \text{ V},$ $f_0 = 10 \text{ MHz},$	at 50% duty cycle	V <sub>IN</sub> = 3.4 V or GND					1.2	3.4	
	Outputs open, OE = GND		3.2							
		at 50% duty cycle	V <sub>IN</sub> = 3.4 V or GND					3.9	12.2	
Ci					5	10		5	10	pF
Co					9	12		9	12	pF

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

Where:

I<sub>C</sub> = Total supply current

ICC = 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<sub>H</sub> = Duty cycle for TTL inputs high N<sub>T</sub> = Number of TTL inputs at D<sub>H</sub>

I<sub>CCD</sub> = Dynamic current caused by an input transition pair (HLH or LHL)

= Clock frequency for registered devices, otherwise zero

f<sub>1</sub> = 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<sub>CC</sub> formula.



 $<sup>\</sup>P$  This parameter is derived for use in total power-supply calculations.

 $<sup>^{\#}</sup>$ IC = ICC +  $\Delta$ ICC × DH × NT + ICCD ( $f_0/2 + f_1 \times N_1$ )

## CY54FCT374T, CY74FCT374T 8-BIT REGISTERS WITH 3-STATE OUTPUTS

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

		CY54FC	T374T	CY54FCT	374AT	CY54FCT	374CT	UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	UNIT
t <sub>W</sub>	Pulse duration, CP high or low	7		6		6		ns
t <sub>su</sub>	Setup time, data before CP↑	2		2		2		ns
t <sub>h</sub>	Hold time, data after CP↑	1.5		1.5		1.5		ns

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

		CY74FC	T374T	CY74FCT	374AT	CY74FCT	374CT	UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	UNIT
t <sub>W</sub>	Pulse duration, CP high or low	7		5		5		ns
t <sub>su</sub>	Setup time, data before CP↑	2		2		2		ns
t <sub>h</sub>	Hold time, data after CP↑	1.5		1.5		1.5		ns

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

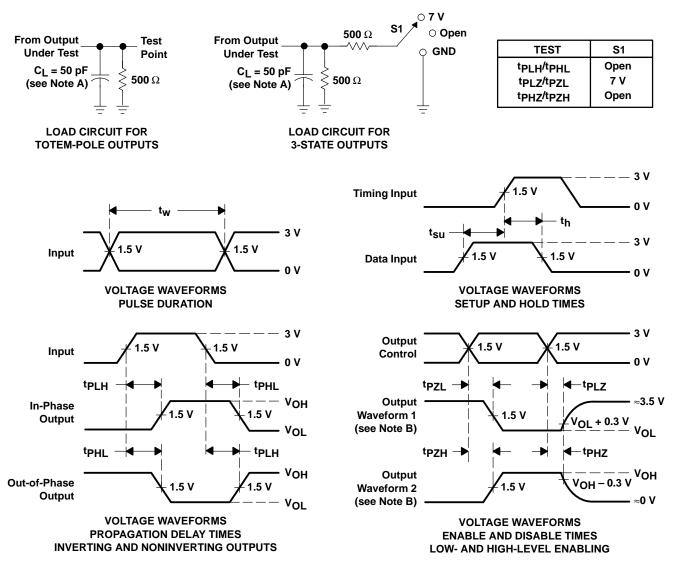
PARAMETER	FROM	то	CY54FC	CY54FCT374T		CY54FCT374AT		CY54FCT374CT	
PARAMETER	(INPUT)	(OUTPUT)	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
t <sub>PLH</sub>	СР	0	2	11	2	7.2	2	6.2	20
tpHL	CF	O	2	11	2	7.2	2	6.2	ns
<sup>t</sup> PZH	ŌĒ	0	1.5	14	1.5	7.5	1.5	6.2	20
t <sub>PZL</sub>	OE	O	1.5	14	1.5	7.5	1.5	6.2	ns
<sup>t</sup> PHZ	ŌĒ	0	1.5	8	1.5	6.5	1.5	5.7	ns
tPLZ	OE	O	1.5	8	1.5	6.5	1.5	5.7	115

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

DADAMETED	FROM	то	CY74FC	CY74FCT374T		Г374АТ	CY74FCT374CT		UNIT
PARAMETER	(INPUT)	(OUTPUT)	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
<sup>t</sup> PLH	СР	0	2	10	2	6.5	2	5.2	ne
<sup>t</sup> PHL	GF GF		2	10	2	6.5	2	5.2	ns
<sup>t</sup> PZH	<del>OE</del>	0	1.5	12.5	1.5	6.5	1.5	5.5	20
<sup>t</sup> PZL	OE .	U	1.5	12.5	1.5	6.5	1.5	5.5	ns
<sup>t</sup> PHZ	<del>OE</del>	0	1.5	8	1.5	5.5	1.5	5	20
t <sub>PLZ</sub>	]			1.5	8	1.5	5.5	1.5	5



#### PARAMETER MEASUREMENT INFORMATION



NOTES: A. C<sub>L</sub> 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





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### **PACKAGING INFORMATION**

Orderable Device	Status	Package Type	Package Drawing	Pins	Package Qty	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking	Samples
5962-9221802M2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	(4/5) 5962- 9221802M2A CY54FCT 374TLMB	Samples
5962-9221802MRA	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9221802MR A CY54FCT374TDMB	Samples
5962-9221804M2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9221804M2A CY54FCT 374ATLMB	Samples
5962-9221804MRA	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9221804MR A CY54FCT374ATDM B	Samples
5962-9221806M2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9221806M2A CY54FCT 374CTLMB	Samples
5962-9222203M2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9222203M2A CY54FCT 574ATLMB	Samples
5962-9222203MRA	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9222203MR A	Samples
5962-9222205MRA	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9222205MR A	Samples
CY54FCT374ATDMB	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9221804MR A CY54FCT374ATDM B	Samples
CY54FCT374ATLMB	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type		5962- 9221804M2A CY54FCT 374ATLMB	Samples
CY54FCT374CTLMB	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9221806M2A	Samples



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Orderable Device	Status	Package Type	Package Drawing	Pins	Package Qty	Eco Plan	Lead/Ball Finish (6)	MSL Peak Temp	Op Temp (°C)	Device Marking (4/5)	Sample
										CY54FCT 374CTLMB	
CY54FCT374TDMB	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9221802MR A CY54FCT374TDMB	Sample
CY54FCT374TLMB	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9221802M2A CY54FCT 374TLMB	Sample
CY54FCT574ATLMB	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9222203M2A CY54FCT 574ATLMB	Sample
CY74FCT374ATPC	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	-40 to 85	CY74FCT374ATPC	Sample
CY74FCT374ATQCT	ACTIVE	SSOP	DBQ	20	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	FCT374A	Sample
CY74FCT374ATSOC	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT374A	Sample
CY74FCT374ATSOCT	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT374A	Sample
CY74FCT374CTSOC	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT374C	Sample
CY74FCT374TQCT	ACTIVE	SSOP	DBQ	20	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	FCT374	Sample
CY74FCT374TSOC	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT374	Sample
CY74FCT574ATQCT	ACTIVE	SSOP	DBQ	20	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	FCT574A	Sample
CY74FCT574ATSOC	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT574A	Sample
CY74FCT574ATSOCG4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT574A	Sample
CY74FCT574CTQCT	ACTIVE	SSOP	DBQ	20	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	FCT574C	Sample
CY74FCT574CTSOC	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT574C	Sample



## **PACKAGE OPTION ADDENDUM**

25-Oct-2016

Orderable Device	Status	Package Type	_	Pins	_	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking	Samples
	(1)		Drawing		Qty	(2)	(6)	(3)		(4/5)	
CY74FCT574TQCT	ACTIVE	SSOP	DBQ	20	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	FCT574	Samples
CY74FCT574TQCTG4	ACTIVE	SSOP	DBQ	20	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	FCT574	Samples
CY74FCT574TSOC	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT574	Samples

(1) 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.

(2) 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)

- (3) MSL, Peak Temp. The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.
- (4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.
- (5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.
- (6) Lead/Ball Finish Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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## **PACKAGE OPTION ADDENDUM**

25-Oct-2016

In no event shall TI's liabilit	ty arising out of such information	exceed the total purchase price	ce of the TI part(s) at issue in th	is document sold by TI to Cu	stomer on an annual basis.

## PACKAGE MATERIALS INFORMATION

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### TAPE AND REEL INFORMATION





	Dimension designed to accommodate the component width
	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



\*All dimensions are nominal

Device	Package Type	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
CY74FCT374ATQCT	SSOP	DBQ	20	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
CY74FCT374ATSOCT	SOIC	DW	20	2000	330.0	24.4	10.8	13.3	2.7	12.0	24.0	Q1
CY74FCT374TQCT	SSOP	DBQ	20	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
CY74FCT574ATQCT	SSOP	DBQ	20	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
CY74FCT574CTQCT	SSOP	DBQ	20	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
CY74FCT574TQCT	SSOP	DBQ	20	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1

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\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
CY74FCT374ATQCT	SSOP	DBQ	20	2500	367.0	367.0	38.0
CY74FCT374ATSOCT	SOIC	DW	20	2000	367.0	367.0	45.0
CY74FCT374TQCT	SSOP	DBQ	20	2500	367.0	367.0	38.0
CY74FCT574ATQCT	SSOP	DBQ	20	2500	367.0	367.0	38.0
CY74FCT574CTQCT	SSOP	DBQ	20	2500	367.0	367.0	38.0
CY74FCT574TQCT	SSOP	DBQ	20	2500	367.0	367.0	38.0

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