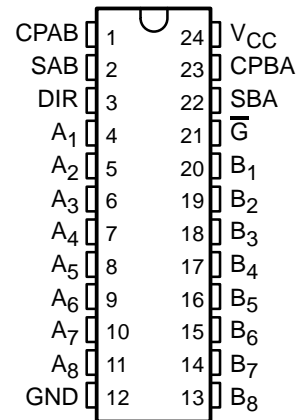- **Function, Pinout, and Drive Compatible With FCT and F Logic**
- **Reduced V_{OH} (Typically = 3.3 V) Versions of Equivalent FCT Functions**
- **Edge-Rate Control Circuitry for Significantly Improved Noise Characteristics**
- **I_{off} Supports Partial-Power-Down Mode Operation**
- **Matched Rise and Fall Times**
- **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)**
- **Independent Register for A and B Buses**
- **CY54FCT646T**
  - **48-mA Output Sink Current**
  - **12-mA Output Source Current**
- **CY74FCT646T**
  - **64-mA Output Sink Current**
  - **32-mA Output Source Current**
- **3-State Outputs**

CY54FCT646T . . . D PACKAGE
CY74FCT646T . . . Q OR SO PACKAGE
(TOP VIEW)

CPAB	1	24	V_{CC}
SAB	2	23	CPBA
DIR	3	22	SBA
A_1	4	21	$\overline{G}$
A_2	5	20	B_1
A_3	6	19	B_2
A_4	7	18	B_3
A_5	8	17	B_4
A_6	9	16	B_5
A_7	10	15	B_6
A_8	11	14	B_7
GND	12	13	B_8

CY54FCT646T . . . L PACKAGE
(TOP VIEW)

Top pins: DIR(4), SAB(3), CPAB(2), NC(1), V_{CC}(28), CPBA(27), SBA(26)

Left			Right	
A_1	5		25	$\overline{G}$
A_2	6		24	B_1
$A3$	7		23	B_2
NC	8		22	NC
A_4	9		21	B_3
A_5	10		20	B_4
A_6	11		19	B_5

Bottom pins: A_7(12), A_8(13), GND(14), NC(15), B_8(16), B_7(17), B_6(18)
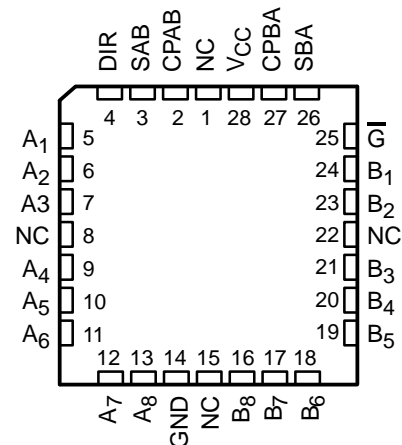
NC – No internal connection

description

The 'FCT646T devices consist of a bus transceiver circuit with 3-state, D-type flip-flops, and control circuitry arranged for multiplexed transmission of data directly from the input bus or from the internal registers. Data on the A or B bus is clocked into the registers as the appropriate clock pin goes to a high logic level. Output-enable ($\overline{G}$) and direction (DIR) inputs control the transceiver function. In the transceiver mode, data present at the high-impedance port can be stored in either the A or B register, or in both. Select controls (SAB, SBA) can multiplex stored and real-time (transparent mode) data. DIR determines which bus receives data when $\overline{G}$ is low. In the isolation mode ($\overline{G}$ is high), A data can be stored in the B register and/or B data can be stored in the A register.

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.

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.

TEXAS INSTRUMENTS

PIN DESCRIPTION

NAME	DESCRIPTION
A	Data register A inputs, data register B outputs
B	Data register B inputs, data register A outputs
CPAB, CPBA	Clock-pulse inputs
SAB, SBA	Output data-source-select inputs
DIR, $\overline{\text{G}}$	Output-enable inputs

ORDERING INFORMATION

T$_A$	PACKAGE†		SPEED (ns)	ORDERABLE PART NUMBER	TOP-SIDE MARKING
−40°C to 85°C	QSOP – Q	Tape and reel	5.4	CY74FCT646CTQCT	FCT646C
	SOIC – SO	Tube	5.4	CY74FCT646CTSOC	FCT646C
		Tape and reel	5.4	CY74FCT646CTSOCT	
	QSOP – Q	Tape and reel	6.3	CY74FCT646ATQCT	FCT646A
	SOIC – SO	Tube	6.3	CY74FCT646ATSOC	FCT646A
		Tape and reel	6.3	CY74FCT646ATSOCT	
	QSOP – Q	Tape and reel	9	CY74FCT646TQCT	FCT646
	SOIC – SO	Tube	9	CY74FCT646TSOC	FCT646
		Tape and reel	9	CY74FCT646TSOCT	
−55°C to 125°C	LCC – L	Tube	6	CY54FCT646CTLMB	
	CDIP – D	Tube	7.7	CY54FCT646ATDMB	
	LCC – L	Tube	7.7	CY54FCT646ATLMB	
		Tube	11	CY54FCT646TLMB	

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

FUNCTION TABLE

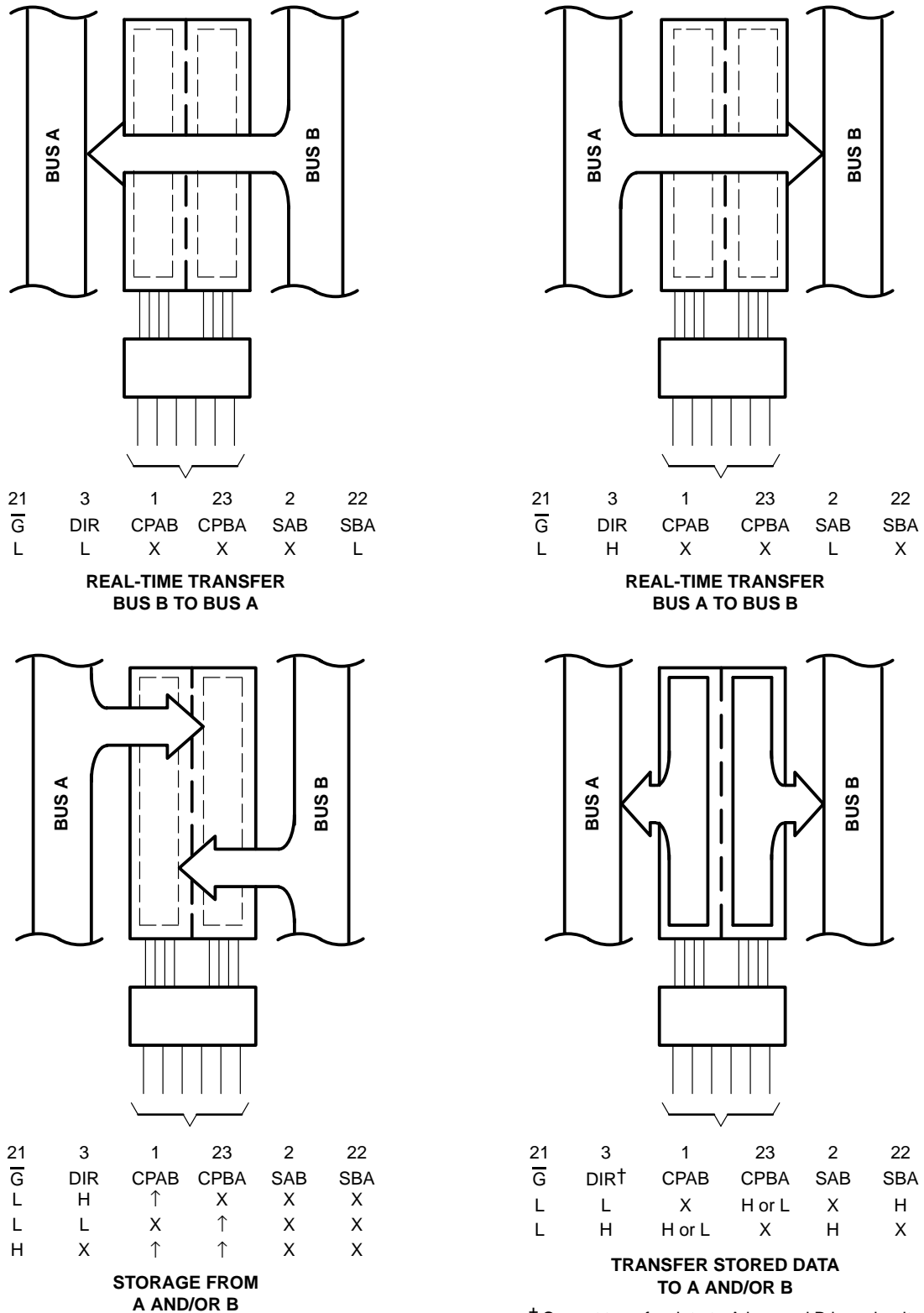| INPUTS						DATA I/O‡		OPERATION OR FUNCTION
$\overline{\text{G}}$	DIR	CPAB	CPBA	SAB	SBA	A$_1$–A$_8$	B$_1$–B$_8$	
H	X	H or L	H or L	X	X	Input	Input	Isolation
H	X	↑	↑	X	X	Input	Input	Store A and B data
L	L	X	X	X	L	Output	Input	Real-time B data to A bus
L	L	X	H or L	X	H	Output	Input	Stored B data to A bus
L	H	X	X	L	X	Input	Output	Real-time A data to B bus
L	H	H or L	X	H	X	Input	Output	Stored A data to B bus

H = High logic level, L = Low logic level, ↑ = Low-to-high transition, X = Don't care
‡ The data output functions can be enabled or disabled by various signals at the $\overline{\text{G}}$ or DIR inputs. Data input functions always are enabled, i.e., data at the bus pins is stored on every low-to-high transition of the clock inputs.

21	3	1	23	2	22
$\overline{G}$	DIR	CPAB	CPBA	SAB	SBA
L	L	X	X	X	L

REAL-TIME TRANSFER
BUS B TO BUS A

21	3	1	23	2	22
$\overline{G}$	DIR	CPAB	CPBA	SAB	SBA
L	H	X	X	L	X

REAL-TIME TRANSFER
BUS A TO BUS B

21	3	1	23	2	22
$\overline{G}$	DIR	CPAB	CPBA	SAB	SBA
L	H	↑	X	X	X
L	L	X	↑	X	X
H	X	↑	↑	X	X

STORAGE FROM
A AND/OR B

21	3	1	23	2	22
$\overline{G}$	DIR†	CPAB	CPBA	SAB	SBA
L	L	X	H or L	X	H
L	H	H or L	X	H	X

TRANSFER STORED DATA
TO A AND/OR B

† Cannot transfer data to A bus and B bus simultaneously.

Figure 1. Bus-Management Functions

logic diagram (positive logic)
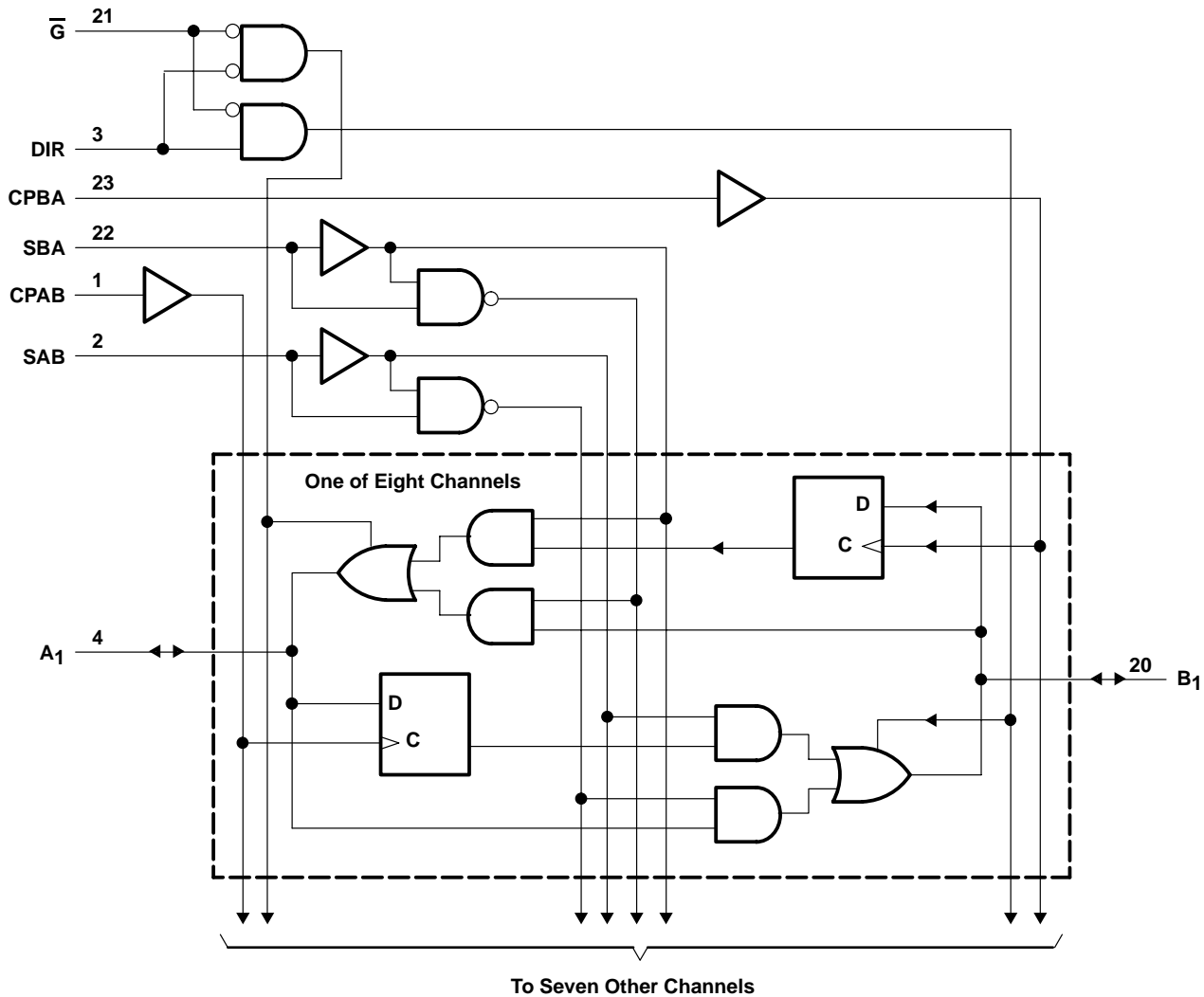
Pin numbers shown are for the Q and SO packages.

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_{JA} (see Note 1): Q package .... 61°C/W
                                           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

[†] 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.

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

recommended operating conditions (see Note 2)

		CY54FCT646T			CY74FCT646T			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			48			64	mA
T_A	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.

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

PARAMETER	TEST CONDITIONS		CY54FCT646T			CY74FCT646T			UNIT
			MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5$ V,	$I_{IN} = -18$ mA		−0.7	−1.2				V
	$V_{CC} = 4.75$ V,	$I_{IN} = -18$ mA					−0.7	−1.2	
V_{OH}	$V_{CC} = 4.5$ V,	$I_{OH} = -12$ mA	2.4	3.3					V
	$V_{CC} = 4.75$ V	$I_{OH} = -32$ mA				2			
		$I_{OH} = -15$ mA				2.4	3.3		
V_{OL}	$V_{CC} = 4.5$ V,	$I_{OL} = 48$ mA		0.3	0.55				V
	$V_{CC} = 4.75$ V,	$I_{OL} = 64$ mA					0.3	0.55	
V_{hys}	All inputs			0.2			0.2		V
I_I	$V_{CC} = 5.5$ V,	$V_{IN} = V_{CC}$			5				µA
	$V_{CC} = 5.25$ V,	$V_{IN} = V_{CC}$						5	
I_{IH}	$V_{CC} = 5.5$ V,	$V_{IN} = 2.7$ V			±1				µA
	$V_{CC} = 5.25$ V,	$V_{IN} = 2.7$ V						±1	
I_{IL}	$V_{CC} = 5.5$ V,	$V_{IN} = 0.5$ V			±1				µA
	$V_{CC} = 5.25$ V,	$V_{IN} = 0.5$ V						±1	
I_{OZH}	$V_{CC} = 5.5$ V,	$V_{OUT} = 2.7$ V			10				µA
	$V_{CC} = 5.25$ V,	$V_{OUT} = 2.7$ V						10	
I_{OZL}	$V_{CC} = 5.5$ V,	$V_{OUT} = 0.5$ V			−10				µA
	$V_{CC} = 5.25$ V,	$V_{OUT} = 0.5$ V						−10	
I_{OS}‡	$V_{CC} = 5.5$ V,	$V_{OUT} = 0$ V	−60	−120	−225				mA
	$V_{CC} = 5.25$ V,	$V_{OUT} = 0$ V				−60	−120	−225	
I_{off}	$V_{CC} = 0$ V,	$V_{OUT} = 4.5$ V			±1			±1	µA
I_{CC}	$V_{CC} = 5.5$ V,	$V_{IN} \leq 0.2$ V, $V_{IN} \geq V_{CC} - 0.2$ V		0.1	0.2				mA
	$V_{CC} = 5.25$ V,	$V_{IN} \leq 0.2$ V, $V_{IN} \geq V_{CC} - 0.2$ V					0.1	0.2	
ΔI_{CC}	$V_{CC} = 5.5$ V, $V_{IN} = 3.4$ V§, $f_1 = 0$, Outputs open			0.5	2				mA
	$V_{CC} = 5.25$ V, $V_{IN} = 3.4$ V§, $f_1 = 0$, Outputs open						0.5	2	
I_{CCD}¶	$V_{CC} = 5.5$ V, One input switching at 50% duty cycle, Outputs open, $\overline{G}$ = DIR = GND, SAB = $\overline{SBA}$ = GND, $V_{IN} \leq 0.2$ V or $V_{IN} \geq V_{CC} - 0.2$ V			0.06	0.12				mA/MHz
	$V_{CC} = 5.25$ V, One input switching at 50% duty cycle, Outputs open, $\overline{G}$ = DIR = GND, SAB = $\overline{SBA}$ = GND, $V_{IN} \leq 0.2$ V or $V_{IN} \geq V_{CC} - 0.2$ V						0.06	0.12	

† Typical values are at $V_{CC} = 5$ V, $T_A = 25°$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 ($V_{IN} = 3.4$ V); all other inputs at V_{CC} or GND

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

TEXAS
INSTRUMENTS

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

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

PARAMETER	TEST CONDITIONS			CY54FCT646T			CY74FCT646T			UNIT
				MIN	TYP†	MAX	MIN	TYP†	MAX	
I_C#	V_{CC} = 5.5 V, f_0 = 10 MHz, Outputs open, $\overline{G}$ = DIR = GND, SAB = $\overline{SBA}$ = GND	One bit switching at f_1 = 5 MHz at 50% duty cycle	$V_{IN} \leq 0.2$ V or $V_{IN} \geq V_{CC} - 0.2$ V		0.7	1.4				mA
			V_{IN} = 3.4 V or GND		1.2	3.4				
		Eight bits switching at f_1 = 5 MHz at 50% duty cycle	$V_{IN} \leq 0.2$ V or $V_{IN} \geq V_{CC} - 0.2$ V		2.8	5.6‖				
			V_{IN} = 3.4 V or GND		5.1	14.6‖				
	V_{CC} = 5.25 V, f_0 = 10 MHz, Outputs open, $\overline{G}$ = DIR = GND, SAB = $\overline{SBA}$ = GND	One bit switching at f_1 = 5 MHz at 50% duty cycle	$V_{IN} \leq 0.2$ V or $V_{IN} \geq V_{CC} - 0.2$ V					0.7	1.4	mA
			V_{IN} = 3.4 V or GND					1.2	3.4	
		Eight bits switching at f_1 = 5 MHz at 50% duty cycle	$V_{IN} \leq 0.2$ V or $V_{IN} \geq V_{CC} - 0.2$ V					2.8	5.6‖	
			V_{IN} = 3.4 V or GND					5.1	14.6‖	
C_i					6	10		6	10	pF
C_o					8	12		8	12	pF

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
ΔI_{CC} = Power-supply current for a TTL high input (V_{IN} = 3.4 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.

TEXAS
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POST OFFICE BOX 655303 ● DALLAS, TEXAS 75265

timing requirements over recommended operating free-air temperature range (unless otherwise noted) (see Figure 2)

		CY54FCT646T		CY54FCT646AT		CY54FCT646CT		UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	
t_w	Pulse duration	6		5		5		ns
t_{su}	Setup time, data before CPAB↑ or CPBA↑	4.5		2		2		ns
t_h	Hold time, data after CPAB↑ or CPBA↑	2		1.5		1.5		ns

timing requirements over recommended operating free-air temperature range (unless otherwise noted) (see Figure 2)

		CY74FCT646T		CY74FCT646AT		CY74FCT646CT		UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	
t_w	Pulse duration	6		5		5		ns
t_{su}	Setup time, data before CPAB↑ or CPBA↑	4		2		2		ns
t_h	Hold time, data after CPAB↑ or CPBA↑	2		1.5		1.5		ns

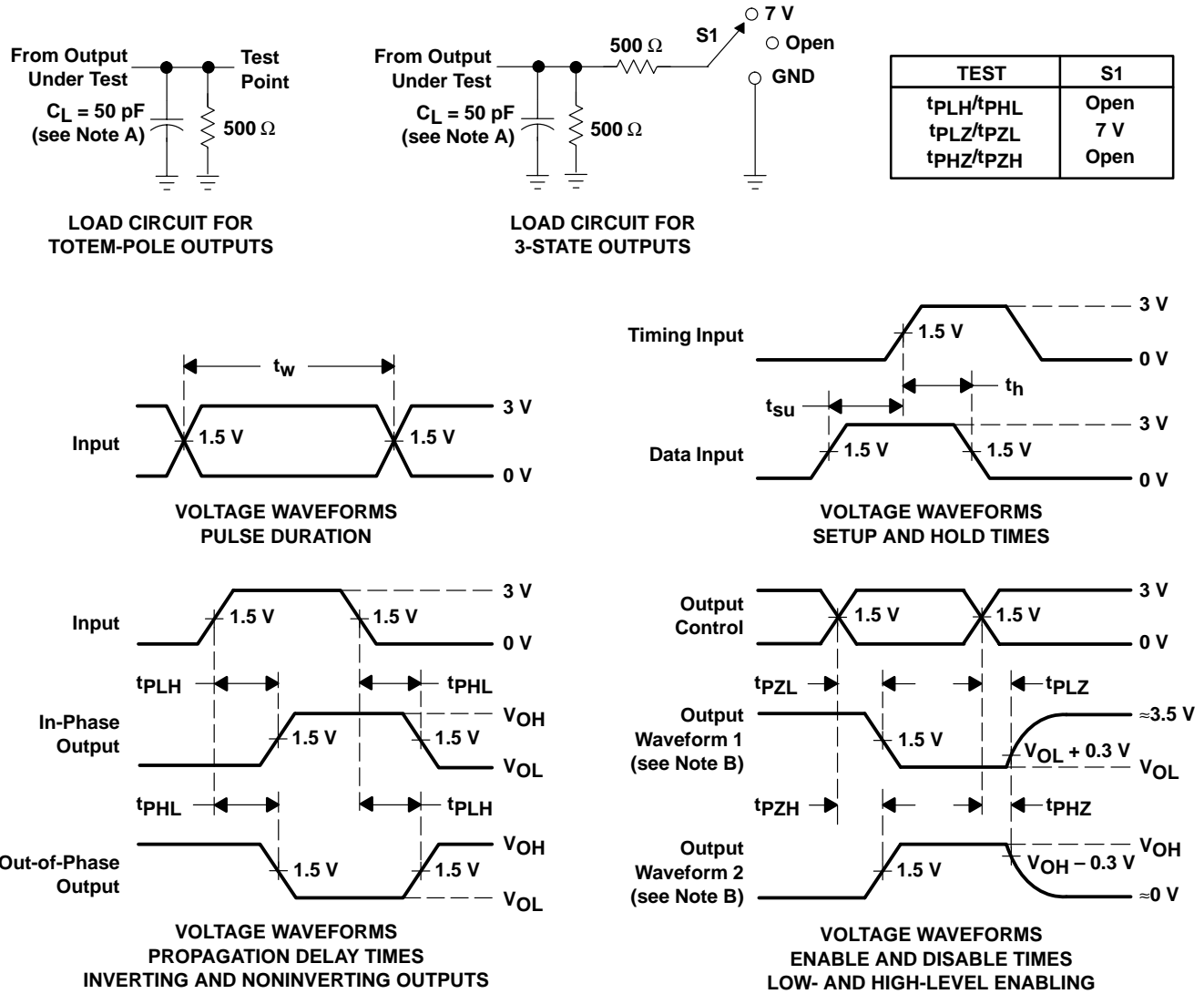**switching characteristics over operating free-air temperature range (see Figure 2)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	CY54FCT646T		CY54FCT646AT		CY54FCT646CT		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	B or A	2	11	2	7.7	1.5	6	ns
t_{PHL}			2	11	2	7.7	1.5	6	
t_{PZH}	DIR	A or B	2	15	2	10.5	1.5	8.9	ns
t_{PZL}			2	15	2	10.5	1.5	8.9	
t_{PHZ}	$\overline{G}$ and DIR	A or B	2	11	2	7.7	1.5	7.7	ns
t_{PLZ}			2	11	2	7.7	1.5	7.7	
t_{PLH}	CPAB or CPBA	A or B	2	10	2	7	1.5	6.3	ns
t_{PHL}			2	10	2	7	1.5	6.3	
t_{PLH}	SBA or SAB	A or B	2	12	2	8.4	1.5	7	ns
t_{PHL}			2	12	2	8.4	1.5	7	

switching characteristics over operating free-air temperature range (see Figure 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	CY74FCT646T		CY74FCT646AT		CY74FCT646CT		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	B or A	1.5	9	1.5	6.3	1.5	5.4	ns
t_{PHL}			1.5	9	1.5	6.3	1.5	5.4	
t_{PZH}	DIR	A or B	1.5	14	1.5	9.8	1.5	7.8	ns
t_{PZL}			1.5	14	1.5	9.8	1.5	7.8	
t_{PHZ}	$\overline{G}$ and DIR	A or B	1.5	9	1.5	6.3	1.5	6.3	ns
t_{PLZ}			1.5	9	1.5	6.3	1.5	6.3	
t_{PLH}	CPAB or CPBA	A or B	1.5	9	1.5	6.3	1.5	5.7	ns
t_{PHL}			1.5	9	1.5	6.3	1.5	5.7	
t_{PLH}	SBA or SAB	A or B	1.5	11	1.5	7.7	1.5	6.2	ns
t_{PHL}			1.5	11	1.5	7.7	1.5	6.2	

TEXAS
INSTRUMENTS

PARAMETER MEASUREMENT INFORMATION

TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	7 V
t_{PHZ}/t_{PZH}	Open

LOAD CIRCUIT FOR TOTEM-POLE OUTPUTS

LOAD CIRCUIT FOR 3-STATE OUTPUTS

VOLTAGE WAVEFORMS PULSE DURATION

VOLTAGE WAVEFORMS SETUP AND HOLD TIMES

VOLTAGE WAVEFORMS PROPAGATION DELAY TIMES INVERTING AND NONINVERTING OUTPUTS

VOLTAGE WAVEFORMS ENABLE AND DISABLE TIMES LOW- AND HIGH-LEVEL ENABLING

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 2. Load Circuit and Voltage Waveforms

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
5962-9222301M3A	ACTIVE	LCCC	FK	28	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9222301M3A	Samples
5962-9222303M3A	ACTIVE	LCCC	FK	28	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9222303M3A CY54FCT 646ATLMB	Samples
5962-9222303MLA	ACTIVE	CDIP	JT	24	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9222303ML A CY54FCT646ATDM B	Samples
5962-9222305M3A	ACTIVE	LCCC	FK	28	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9222305M3A CY54FCT 646CTLMB	Samples
CY54FCT646ATDMB	ACTIVE	CDIP	JT	24	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9222303ML A CY54FCT646ATDM B	Samples
CY54FCT646ATLMB	ACTIVE	LCCC	FK	28	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9222303M3A CY54FCT 646ATLMB	Samples
CY54FCT646CTLMB	ACTIVE	LCCC	FK	28	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9222305M3A CY54FCT 646CTLMB	Samples
CY74FCT646ATQCT	ACTIVE	SSOP	DBQ	24	2500	RoHS & Green	NIPDAU	Level-2-260C-1 YEAR	-40 to 85	FCT646A	Samples
CY74FCT646ATSOC	ACTIVE	SOIC	DW	24	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT646A	Samples
CY74FCT646ATSOCT	ACTIVE	SOIC	DW	24	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT646A	Samples
CY74FCT646ATSOCTE4	ACTIVE	SOIC	DW	24	2000	TBD	Call TI	Call TI	-40 to 85		Samples
CY74FCT646CTSOC	ACTIVE	SOIC	DW	24	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT646C	Samples

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
CY74FCT646TSOC	ACTIVE	SOIC	DW	24	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT646	Samples
CY74FCT646TSOCT	ACTIVE	SOIC	DW	24	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	FCT646	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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(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 finish/Ball material - Orderable Devices 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.

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![Texas Instruments logo] **PACKAGE MATERIALS INFORMATION**

TAPE AND REEL INFORMATION

REEL DIMENSIONS

TAPE DIMENSIONS

A0	Dimension designed to accommodate the component width
B0	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	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
CY74FCT646ATQCT	SSOP	DBQ	24	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
CY74FCT646ATSOCT	SOIC	DW	24	2000	330.0	24.4	10.75	15.7	2.7	12.0	24.0	Q1
CY74FCT646TSOCT	SOIC	DW	24	2000	330.0	24.4	10.75	15.7	2.7	12.0	24.0	Q1

PACKAGE MATERIALS INFORMATION

TAPE AND REEL BOX DIMENSIONS

*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
CY74FCT646ATQCT	SSOP	DBQ	24	2500	356.0	356.0	35.0
CY74FCT646ATSOCT	SOIC	DW	24	2000	350.0	350.0	43.0
CY74FCT646TSOCT	SOIC	DW	24	2000	350.0	350.0	43.0

PACKAGE MATERIALS INFORMATION

TUBE

*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
CY74FCT646ATSOC	DW	SOIC	24	25	506.98	12.7	4826	6.6
CY74FCT646CTSOC	DW	SOIC	24	25	506.98	12.7	4826	6.6
CY74FCT646TSOC	DW	SOIC	24	25	506.98	12.7	4826	6.6

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