

FEATURES

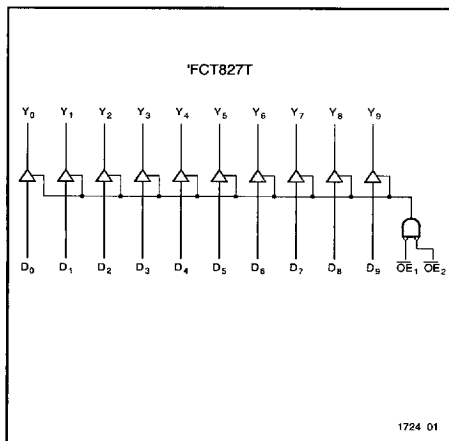
- Function, Pinout and Drive Compatible with the FCT, F and AM29827 Logic
- FCT-C speed at 4.4ns max. (Com'I)
FCT-A speed at 5.0ns max. (Com'I)
- Reduced V_{OH} (typically = 3.3V) versions of Equivalent FCT functions
- Edge-rate Control Circuitry for Significantly Improved Noise Characteristics
- Power-off disable feature
- Matched Rise and Fall times
- Fully Compatible with TTL Input and Output Logic Levels
- 64 mA Sink Current (Com'I), 32 mA (Mil)
15 mA Source Current (Com'I), 12 mA (Mil)

DESCRIPTION

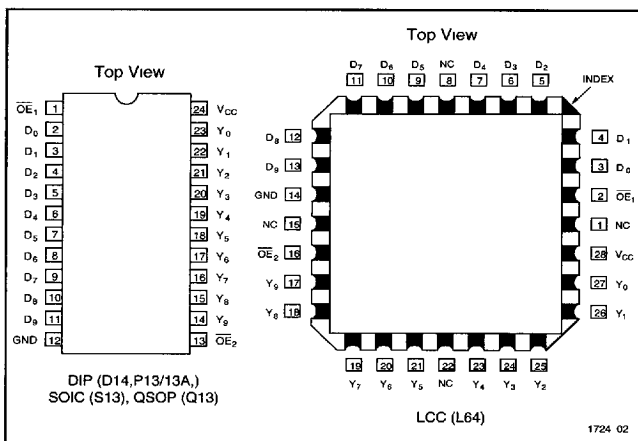
The 'FCT827T 10-bit bus drivers provide high-performance bus interface buffering for wide data/address paths or buses carrying parity. The 10-bit buffers have NOR-ed output enables for maximum control flexibility. The 'FCT827T family of devices is designed for high-capacitance

load drive capability, while providing low-capacitance bus loading at both inputs and outputs. All inputs have clamp diodes and all outputs are designed for low-capacitance bus loading in the high impedance state. The 'FCT827T is non-inverting.

LOGIC BLOCK DIAGRAM



PIN CONFIGURATIONS



ABSOLUTE MAXIMUM RATINGS^{1,2}

Symbol	Parameter	Value	Unit
T_{STG}	Storage Temperature	-65 to +150	°C
T_A	Ambient Temperature Under Bias	-65 to +135	°C
V_{CC}	V_{CC} Potential to Ground	-0.5 to +7.0	V
P_T	Power Dissipation	0.5	W

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Symbol	Parameter	Value	Unit
I_{OUTPUT}	Current Applied to Output	120	mA
V_{IN}	Input Voltage	-0.5 to +7.0	V
V_{OUT}	Voltage Applied to Output	-0.5 to +7.0	V

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Notes:

1. Operation beyond the limits set forth in the above table may impair the useful life of the device. Unless otherwise noted, these limits are over the operating free-air temperature range.

2. Unused inputs must always be connected to an appropriate logic voltage level, preferably either V_{CC} or ground.

RECOMMENDED OPERATING CONDITIONS

Free Air Ambient Temperature	Min	Max
Military	-55°C	+125°C
Commercial	0°C	+70°C

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Supply Voltage (V_{CC})	Min	Max
Military	+4.5V	+5.5V
Commercial	+4.75V	+5.25V

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DC ELECTRICAL CHARACTERISTICS (Over recommended operating conditions)

Symbol	Parameter		Min	Typ ¹	Max	Units	V_{CC}	Conditions
V_{IH}	Input HIGH Voltage		2.0			V		
V_{IL}	Input LOW Voltage				0.8	V		
V_H	Hysteresis			0.2		V		All inputs
V_{IK}	Input Clamp Diode Voltage			-0.7	-1.2	V	MIN	$I_{IN} = -18mA$
V_{OH}	Output HIGH Voltage	Military	2.4	3.3		V	MIN	$I_{OH} = -12mA$
		Commercial	2.4	3.3		V	MIN	$I_{OH} = -15mA$
V_{OL}	Output LOW Voltage	Military		0.3	0.5	V	MIN	$I_{OL} = 32mA$
		Commercial		0.3	0.5	V	MIN	$I_{OL} = 48mA$
		Commercial		0.3	0.5	V	MIN	$I_{OL} = 64mA$
I_I	Input HIGH Current				20	μA	MAX	$V_{IN} = V_{CC}$
I_{IH}	Input HIGH Current				5	μA	MAX	$V_{IN} = 2.7V$
I_{IL}	Input LOW Current				-5	μA	MAX	$V_{IN} = 0.5V$
I_{OZH}	Off State I_{OUT} HIGH-Level Output Current				10	μA	MAX	$V_{OUT} = 2.7V$
I_{OZL}	Off State I_{OUT} LOW-Level Output Current				-10	μA	MAX	$V_{OUT} = 0.5V$
I_{OS}	Output Short Circuit Current ²		-60	-120	-225	mA	MAX	$V_{OUT} = 0.0V$
I_{OFF}	Power-off Disable				100	μA	0V	$V_{OUT} = 4.5V$
C_{IN}	Input Capacitance ³			6	10	pF	MAX	All inputs
C_{OUT}	Output Capacitance ³			8	12	pF	MAX	All outputs
I_{CC}	Quiescent Power Supply Current			0.2	1.5	mA	MAX	$V_{IN} \leq 0.2V$, $V_{IN} \geq V_{CC} - 0.2V$

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Notes:

1. Typical values are at $V_{CC} = 5.0V$, $T_A = +25^\circ C$ ambient.
 2. 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 in order to minimize internal chip heating and more accurately reflect

operational values. Otherwise prolonged shorting of a high output may raise the chip temperature well above normal and thereby cause invalid readings in other parameter tests. In any sequence of parameter tests, I_{OS} tests should be performed last.

3. This parameter is guaranteed but not tested.

DC CHARACTERISTICS (Over recommended operating conditions unless otherwise specified.)

Symbol	Parameter	Typ ¹	Max	Units	Conditions
ΔI_{CC}	Quiescent Power Supply Current (TTL inputs) ²	0.5	2.0	mA	$V_{CC} = \text{MAX}$, $V_{IN} = 3.4V^2$, $f_1 = 0$, Outputs Open
I_{CCD}	Dynamic Power Supply Current ³	0.15	0.25	mA/ MHz	$V_{CC} = \text{MAX}$, One Input Toggling, 50% Duty Cycle, Outputs Open, $\overline{OE}_1 = \overline{OE}_2 = \text{GND}$, $V_{IN} \leq 0.2V$ or $V_{IN} \geq V_{CC} - 0.2V$
I_C	Total Power Supply Current ⁵	1.7	4.0	mA	$V_{CC} = \text{MAX}$, 50% Duty Cycle, Outputs Open, One Bit Toggling at $f_1 = 10\text{MHz}$, $\overline{OE}_1 = \overline{OE}_2 = \text{GND}$, $V_{IN} \leq 0.2V$ or $V_{IN} \geq V_{CC} - 0.2V$
		2.0	5.0	mA	$V_{CC} = \text{MAX}$, 50% Duty Cycle, Outputs Open, One Bit Toggling at $f_1 = 10\text{MHz}$, $\overline{OE}_1 = \overline{OE}_2 = \text{GND}$, $V_{IN} = 3.4V$ or $V_{IN} = \text{GND}$
		3.2	6.5 ⁴	mA	$V_{CC} = \text{MAX}$, 50% Duty Cycle, Outputs Open, Eight Bits Toggling at $f_1 = 2.5\text{MHz}$, $\overline{OE}_1 = \overline{OE}_2 = \text{GND}$, $V_{IN} \leq 0.2V$ or $V_{IN} \geq V_{CC} - 0.2V$
		5.2	14.5 ⁴	mA	$V_{CC} = \text{MAX}$, 50% Duty Cycle, Outputs Open, Eight Bits Toggling at $f_1 = 2.5\text{MHz}$, $\overline{OE}_1 = \overline{OE}_2 = \text{GND}$, $V_{IN} = 3.4V$ or $V_{IN} = \text{GND}$

Notes:

- Typical values are at $V_{CC} = 5.0V$, $+25^\circ\text{C}$ ambient.
- Per TTL driven input ($V_{IN} = 3.4V$); all other inputs at V_{CC} or GND.
- This parameter is not directly testable, but is derived for use in Total Power Supply calculations.
- Values for these conditions are examples of the I_{CC} formula. These limits are guaranteed but not tested.
- $I_C = I_{\text{QUIESCENT}} + I_{\text{INPUTS}} + I_{\text{DYNAMIC}}$
 $I_C = I_{CC} + \Delta I_{CC} D_H N_T + I_{CCD} (f_1/2 + f_1 N_i)$
 I_{CC} = Quiescent Current with CMOS input levels
 ΔI_{CC} = Power Supply Current for a TTL High Input ($V_{IN} = 3.4V$)

- 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 Register Devices (Zero for Non-Register Devices)
 f_1 = Input Frequency
 N_i = Number of Inputs at f_1
All currents are in milliamps and all frequencies are in megahertz.

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FUNCTION TABLES

'FCT827T (Non-Inverting)

Inputs			Outputs	Function
$\overline{OE}_1$	$\overline{OE}_2$	D_1	Y_1	
L	L	L	L	Transparent
L	L	H	H	
H	X	X	Z	Three-State
X	H	X	Z	

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Note:

H = High, L = Low, X = Don't Care, Z = High Impedance

AC CHARACTERISTICS

Sym.	Parameter	Test Conditions	'FCT827AT				'FCT827BT				'FCT827CT				Units	Fig. No.*
			MIL		COM'L		MIL		COM'L		MIL		COM'L			
			Min. ¹	Max.	Min. ¹	Max.	Min. ¹	Max.	Min. ¹	Max.	Min. ¹	Max.	Min. ¹	Max.		
t_{PLH} t_{PHL}	Propagation Delay from D ₁ to Y ₁ 'FCT827T	C _L = 50pF R _L = 500Ω	–	9.0	–	8.0	–	6.5	–	5.0	–	5.0	–	4.4	ns	1,3
t_{PLH} t_{PHL}	Propagation Delay from D ₁ to Y ₁ 'FCT827T	C _L = 300pF ² R _L = 500Ω	–	17.0	–	15.0	–	14.0	–	13.0	–	11.0	–	10.0	ns	1,3
t_{PLH} t_{PHL}	Propagation Delay from D ₁ to Y ₁ 'FCT828T	C _L = 50pF R _L = 500Ω	–	10.0	–	9.0	–	6.5	–	5.5	–	5.0	–	4.4	ns	1,2
t_{PLH} t_{PHL}	Propagation Delay from D ₁ to Y ₁ 'FCT828T	C _L = 300pF ² R _L = 500Ω	–	16.0	–	14.0	–	14.0	–	13.0	–	11.0	–	10.0	ns	1,2
t_{PZH} t_{PZL}	Output Enable Time OE to Y ₁	C _L = 50pF R _L = 500Ω	–	13.0	–	12.0	–	9.0	–	8.0	–	8.0	–	7.0	ns	1,7,8
t_{PZH} t_{PZL}	Output Enable Time OE to Y ₁	C _L = 300pF ² R _L = 500Ω	–	25.0	–	23.0	–	16.0	–	15.0	–	15.0	–	14.0	ns	1,7,8
t_{PHZ} t_{PHL}	Output Disable Time OE to Y ₁	C _L = 5pF ² R _L = 500Ω	–	9.0	–	9.0	–	7.0	–	6.0	–	6.7	–	5.7	ns	1,7,8
t_{PHZ} t_{PHL}	Output Disable Time OE to Y ₁	C _L = 50p R _L = 500Ω	–	10.0	–	10.0	–	8.0	–	7.0	–	7.0	–	6.0	ns	1,7,8

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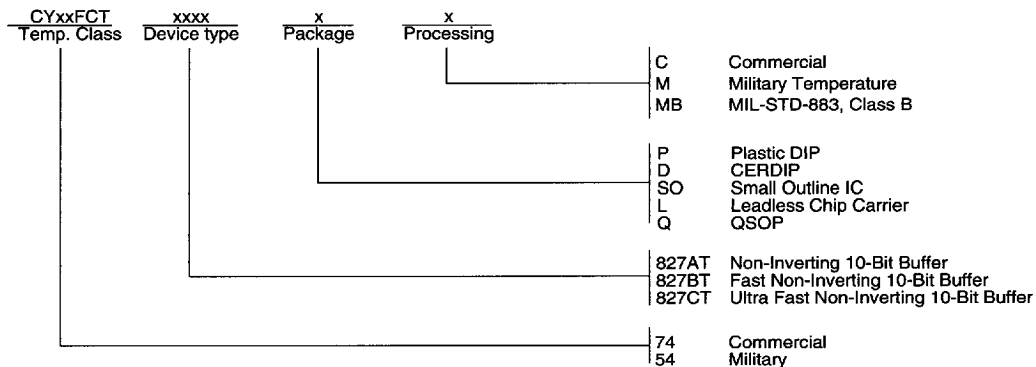
Notes:

1. Minimum limits are guaranteed but not tested on Propagation Delays.

2. These parameters are guaranteed but not tested.

* See "Parameter Measurement Information" in the General Information Section.

ORDERING INFORMATION



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