



**Maximum Ratings**<sup>(1, 2)</sup>

(Above which the useful life may be impaired. For user guidelines, not tested.)

Storage Temperature ..... -65°C to +150°C  
 Ambient Temperature with Power Applied ..... -65°C to +135°C  
 Supply Voltage to Ground Potential ..... -0.5V to +7.0V  
 DC Input Voltage ..... -0.5V to +7.0V  
 DC Output Voltage ..... -0.5V to +7.0V  
 DC Output Current (Maximum Sink Current/Pin) ..... 120 mA  
 Power Dissipation ..... 0.5W

Static Discharge Voltage ..... >2000V (per MIL-STD-883, Method 3015)

**Operating Range**

Range	Range	Ambient Temperature	V <sub>CC</sub>
Commercial	CT	0°C to +70°C	5V ± 5%
Commercial	T, AT	-40°C to +85°C	5V ± 5%
Military <sup>(4)</sup>	All	-55°C to +125°C	5V ± 10%

**Electrical Characteristics Over the Operating Range**

Parameter	Description	Test Conditions	Min.	Typ. <sup>(5)</sup>	Max.	Unit
V <sub>OHI</sub>	Output HIGH Voltage	V <sub>CC</sub> = Min., I <sub>OHI</sub> = -15 mA Com'l	2.4	3.3		V
		V <sub>CC</sub> = Min., I <sub>OHI</sub> = -12 mA Mil	2.4	3.3		V
V <sub>OIL</sub>	Output LOW Voltage	V <sub>CC</sub> = Min., I <sub>OIL</sub> = 12 mA Com'l		0.3	0.55	V
		V <sub>CC</sub> = Min., I <sub>OIL</sub> = 12 mA Mil		0.3	0.55	V
R <sub>OUT</sub>	Output Resistance	V <sub>CC</sub> = Min., I <sub>OIL</sub> = 12 mA Com'l	20	25	40	Ω
		V <sub>CC</sub> = Min., I <sub>OIL</sub> = 12 mA Mil		25		Ω
V <sub>IHI</sub>	Input HIGH Voltage		2.0			V
V <sub>ILI</sub>	Input LOW Voltage				0.8	V
V <sub>HI</sub>	Hysteresis <sup>(6)</sup>	All inputs		0.2		V
V <sub>IK</sub>	Input Clamp Diode Voltage	V <sub>CC</sub> = Min., I <sub>IK</sub> = -18 mA		-0.7	-1.2	V
I <sub>IHI</sub>	Input HIGH Current	V <sub>CC</sub> = Max., V <sub>IN</sub> = 2.7V			±1	μA
I <sub>ILI</sub>	Input LOW Current	V <sub>CC</sub> = Max., V <sub>IN</sub> = 0.5V			±1	μA
I <sub>OZH</sub>	Off State HIGH-Level Output Current	V <sub>CC</sub> = Max., V <sub>OUT</sub> = 2.7V			10	μA
I <sub>OZL</sub>	Off State LOW-Level Output Current	V <sub>CC</sub> = Max., V <sub>OUT</sub> = 0.5V			-10	μA
I <sub>OS</sub>	Output Short Circuit Current <sup>(7)</sup>	V <sub>CC</sub> = Max., V <sub>OUT</sub> = 0.0V	-60	-120	-225	mA
I <sub>OFF</sub>	Power-Off Disable	V <sub>CC</sub> = 0V, V <sub>OUT</sub> = 4.5V			±1	μA

**Capacitance<sup>(6)</sup>**

Parameter	Description	Test Conditions	Typ. <sup>(5)</sup>	Max.	Unit
C <sub>IN</sub>	Input Capacitance		5	10	pF
C <sub>OUT</sub>	Output Capacitance		9	12	pF

**Notes:**

- Unless otherwise noted, these limits are over the operating free-air temperature range.
- Unused inputs must always be connected to an appropriate logic voltage level, preferably either V<sub>CC</sub> or ground.
- <sup>(4)</sup> T<sub>A</sub> is the "storage or" case temperature.
- <sup>(5)</sup> Typical values are at V<sub>CC</sub> = 5.0V, T<sub>A</sub> = +25°C ambient.
- <sup>(6)</sup> This parameter is guaranteed but not tested.
- 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 parametric tests. In any sequence of parameter tests, I<sub>OS</sub> tests should be performed last.

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Switching Characteristics Over the Operating Range

Parameter	Description	FCT2257T				FCT2257AT				Unit	Fig. No. <sup>[13]</sup>
		Military		Commercial		Military		Commercial			
		Min. <sup>[12]</sup>	Max.	Min. <sup>[12]</sup>	Max.	Min. <sup>[12]</sup>	Max.	Min. <sup>[12]</sup>	Max.		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay I <sub>0</sub> , I <sub>b</sub> to Y	1.5	7.0	1.5	6.0	1.5	5.8	1.5	5.0	ns	1, 3
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay S to O	1.5	12.0	1.5	10.5	1.5	6.1	1.5	7.0	ns	1, 3
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time	1.5	10.0	1.5	8.5	1.5	8.0	1.5	7.0	ns	1, 7, 8
t <sub>PLZ</sub> t <sub>PLZ</sub>	Output Disable Time	1.5	8.0	1.5	6.0	1.5	5.8	1.5	5.5	ns	1, 7, 8

Parameter	Description	FCT2257CT		Unit	Fig. No. <sup>[13]</sup>
		Commercial			
		Min. <sup>[12]</sup>	Max.		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay I <sub>0</sub> , I <sub>b</sub> to Y	1.5	4.3	ns	1, 3
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay S to O	1.5	5.2	ns	1, 3
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time	1.5	6.0	ns	1, 7, 8
t <sub>PLZ</sub> t <sub>PLZ</sub>	Output Disable Time	1.5	5.0	ns	1, 7, 8

Ordering Information

Speed (ns)	Ordering Code	Package Name	Package Type	Operating Range
4.3	CY74FCT2257CTPC	P1	16-Lead (300-Mil) Molded DIP	Commercial
	CY74FCT2257CTQC	O1	16-Lead (150-Mil) QSOP	
	CY74FCT2257CTSOC	S1	16-Lead (300-Mil) Molded SOIC	
5.0	CY74FCT2257ATPC	P1	16-Lead (300-Mil) Molded DIP	Commercial
	CY74FCT2257ATQC	O1	16-Lead (150-Mil) QSOP	
	CY74FCT2257ATSOC	S1	16-Lead (300-Mil) Molded SOIC	
5.8	CY54FCT2257ATDMB	D2	16-Lead (300-Mil) CerDIP	Military
	CY54FCT2257ATLMB	L61	20-Pin Square Leadless Chip Carrier	
6.0	CY74FCT2257TPC	P1	16-Lead (300-Mil) Molded DIP	Commercial
	CY74FCT2257TQC	O1	16-Lead (150-Mil) QSOP	
	CY74FCT2257TSOC	S1	16-Lead (300-Mil) Molded SOIC	
7.0	CY54FCT2257TDMR	D2	16-Lead (300-Mil) CerDIP	Military
	CY54FCT2257TLMB	L61	20-Pin Square Leadless Chip Carrier	

Notes:  
 12. Minimum limits are guaranteed but not tested on Propagation Delays.  
 13. See "Parameter Measurement Information" in the General Information Section.  
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