

74F379

Quad Parallel Register with Enable

General Description

The 'F379 is a 4-bit register with buffered common Enable. This device is similar to the 'F175 but features the common Enable rather than common Master Reset.

- Buffered positive edge-triggered clock
- Buffered common enable input
- True and complement outputs
- Guaranteed 4000V minimum ESD protection

Features

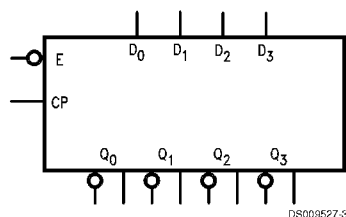
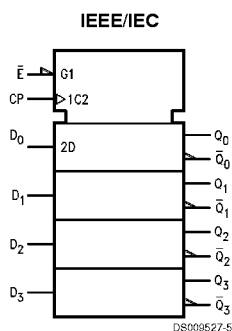
- Edge triggered D-type inputs

Ordering Code:

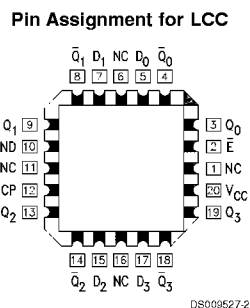
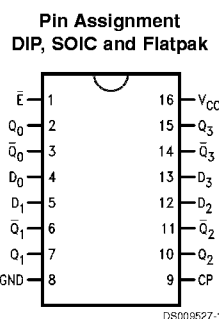
Commercial	Military	Package Number	Package Description
74F379PC		N16E	16-Lead (0.300" Wide) Molded Dual-In-Line
	54F379DM (QB)	J16A	16-Lead Ceramic Dual-In-Line
74F379SC (Note 1)		M16A	16-Lead (0.300" Wide) Molded Small Outline, JEDEC
74F379SJ (Note 1)		M16D	16-Lead (0.300" Wide) Molded Small Outline, EIAJ
	54F379FM (QB)	W16A	16-Lead Cerpack
	54F379LM (QB)	E20A	20-Lead Ceramic Leadless Chip Carrier, Type C

Note 1: Devices also available in 13" reel. Use suffix = SCX and SJX.

Logic Symbols



Connection Diagrams



Unit Loading/Fan Out

Pin Names	Description	54F/74F	
		U.L. HIGH/LOW	Input I_{IH}/I_{IL} Output I_{OH}/I_{OL}
$\bar{E}$	Enable Input (Active LOW)	1.0/1.0	20 μA /-0.6 mA
D_0 - D_3	Data Inputs	1.0/1.0	20 μA /-0.6 mA
CP	Clock Pulse Input (Active Rising Edge)	1.0/1.0	20 μA /-0.6 mA
Q_0 - Q_3	Flip-Flop Outputs	50/33.3	-1 mA/20 mA
$\bar{Q}_0$ - $\bar{Q}_3$	Complement Outputs	50/33.3	-1 mA/20 mA

Functional Description

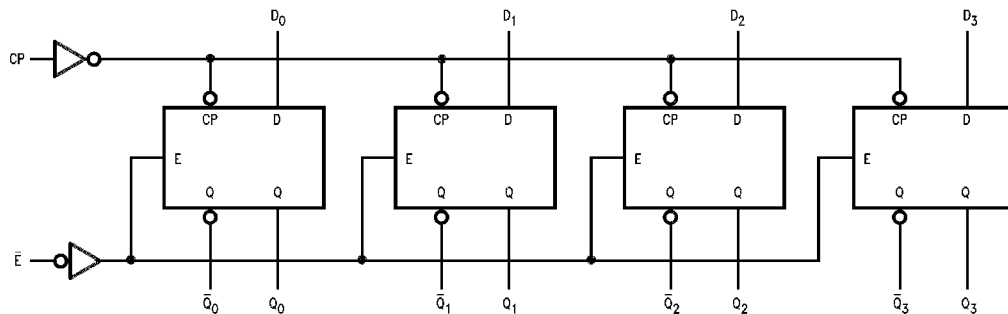
The 'F379 consists of four edge-triggered D-Type flip-flops with individual D inputs and Q and $\bar{Q}$ outputs. The Clock (CP) and Enable ($\bar{E}$) inputs are common to all flip-flops. When the $\bar{E}$ is input HIGH, the register will retain the present data independent of the CP input. The D_n and $\bar{E}$ inputs can change when the clock is in either state, provided that the recommended setup and hold times are observed.

Truth Table

Inputs			Outputs	
$\bar{E}$	CP	D_n	Q_n	$\bar{Q}_n$
H	—	X	NC	NC
L	—	H	H	L
L	—	L	L	H

H = HIGH Voltage Level
 L = LOW Voltage Level
 X = Immaterial
 — = LOW-to-HIGH Transition
 NC = No Change

Logic Diagram



D8009527-4

Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

Absolute Maximum Ratings (Note 2)

Storage Temperature	–65°C to +150°C
Ambient Temperature under Bias	–55°C to +125°C
Junction Temperature under Bias	–55°C to +175°C
Plastic	–55°C to +150°C
V _{CC} Pin Potential to Ground Pin	–0.5V to +7.0V
Input Voltage (Note 3)	–0.5V to +7.0V
Input Current (Note 3)	–30 mA to +5.0 mA
Voltage Applied to Output in HIGH State (with V _{CC} = 0V)	
Standard Output	–0.5V to V _{CC}
3-STATE Output	–0.5V to +5.5V
Current Applied to Output in LOW State (Max)	twice the rated I _{OL} (mA)

ESD Last Passing Voltage (Min)

4000V

Recommended Operating Conditions

Free Air Ambient Temperature	
Military	–55°C to +125°C
Commercial	0°C to +70°C
Supply Voltage	
Military	+4.5V to +5.5V
Commercial	+4.5V to +5.5V

Note 2: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 3: Either voltage limit or current limit is sufficient to protect inputs.

DC Electrical Characteristics

Symbol	Parameter			54F/74F		Units	V _{CC}	Conditions
				Min	Typ			
V _{IH}	Input HIGH Voltage			2.0		V		Recognized as a HIGH Signal
V _{IL}	Input LOW Voltage			0.8		V		Recognized as a LOW Signal
V _{CD}	Input Clamp Diode Voltage			−1.2		V	Min	I _{IN} = −18 mA
V _{OH}	Output HIGH Voltage	54F 10% V _{CC}	2.5		V	Min	I _{OH} = −1 mA	
		74F 10% V _{CC}	2.5				I _{OH} = −1 mA	
		74F 5% V _{CC}	2.7				I _{OH} = −1 mA	
V _{OL}	Output LOW Voltage	54F 10% V _{CC}	0.5		V	Min	I _{OL} = 20 mA	
		74F 10% V _{CC}	0.5				I _{OL} = 20 mA	
I _{IH}	Input HIGH Current	54F	20.0		μA	Max	V _{IN} = 2.7V	
		74F	5.0					
I _{BVI}	Input HIGH Current Breakdown Test	54F	100		μA	Max	V _{IN} = 7.0V	
I _{CEX}	Output HIGH Leakage Current	54F	250		μA	Max	V _{OUT} = V _{CC}	
		74F	50					
V _{ID}	Input Leakage Test	74F	4.75		V	0.0	I _{ID} = 1.9 μA All Other Pins Grounded	
I _{OD}	Output Leakage Circuit Current	74F	3.75		μA	0.0	V _{IOD} = 150 mV All Other Pins Grounded	
I _{IL}	Input LOW Current		−0.6		mA	Max	V _{IN} = 0.5V	
I _{OS}	Output Short-Circuit Current		−60	−150	mA	Max	V _{OUT} = 0V	
I _{CCL}	Power Supply Current		28	40	mA	Max	V _O = LOW	

AC Electrical Characteristics

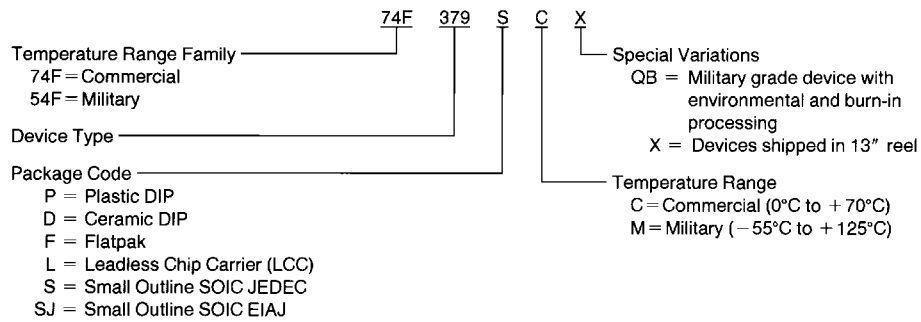
Symbol	Parameter	74F			54F		74F		Units
		T _A = +25°C V _{CC} = +5.0V C _L = 50 pF			T _A , V _{CC} = Mil C _L = 50 pF		T _A , V _{CC} = Com C _L = 50 pF		
		Min	Typ	Max	Min	Max	Min	Max	
f _{max}	Maximum Clock Frequency	100	140		75		100		MHz
t _{PLH}	Propagation Delay	3.5	5.0	6.5	3.0	8.5	3.5	7.5	ns
t _{PHL}	CP to Q _n , $\overline{Q}_n$	5.0	6.5	8.5	4.0	10.0	5.0	9.5	

AC Operating Requirements

Symbol	Parameter	74F		54F		74F		Units
		T _A = +25°C V _{CC} = +5.0V		T _A , V _{CC} = Mil		T _A , V _{CC} = Com		
		Min	Max	Min	Max	Min	Max	
t _s (H)	Setup Time, HIGH or LOW	3.0		4.0		3.0		ns
t _s (L)	D _n to CP	3.0		4.0		3.0		
t _h (H)	Hold Time, HIGH or LOW	1.0		2.0		1.0		
t _h (L)	D _n to CP	1.0		2.0		1.0		
t _s (H)	Setup Time, HIGH or LOW	6.0		8.0		6.0		ns
t _s (L)	E̅ to CP	6.0		8.0		6.0		
t _h (H)	Hold Time, HIGH or LOW	0		0		0		
t _h (L)	E̅ to CP	0		0		0		
t _w (H)	CP Pulse Width	4.0		5.0		4.0		ns
t _w (L)	HIGH or LOW	5.0		7.0		5.0		

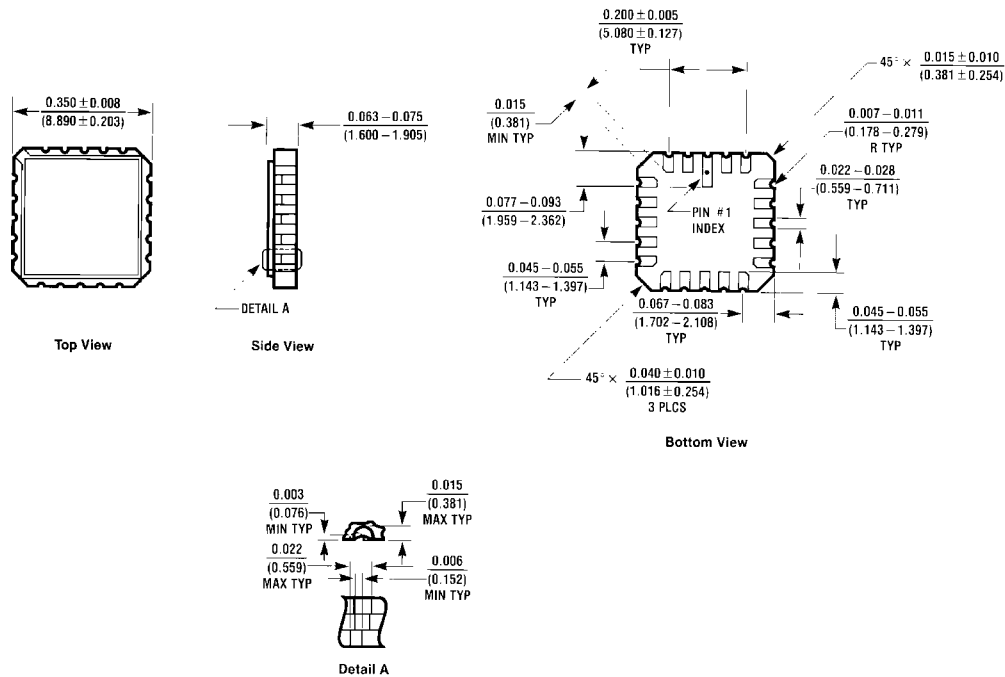
Ordering Information

The device number is used to form part of a simplified purchasing code where the package type and temperature range are defined as follows:



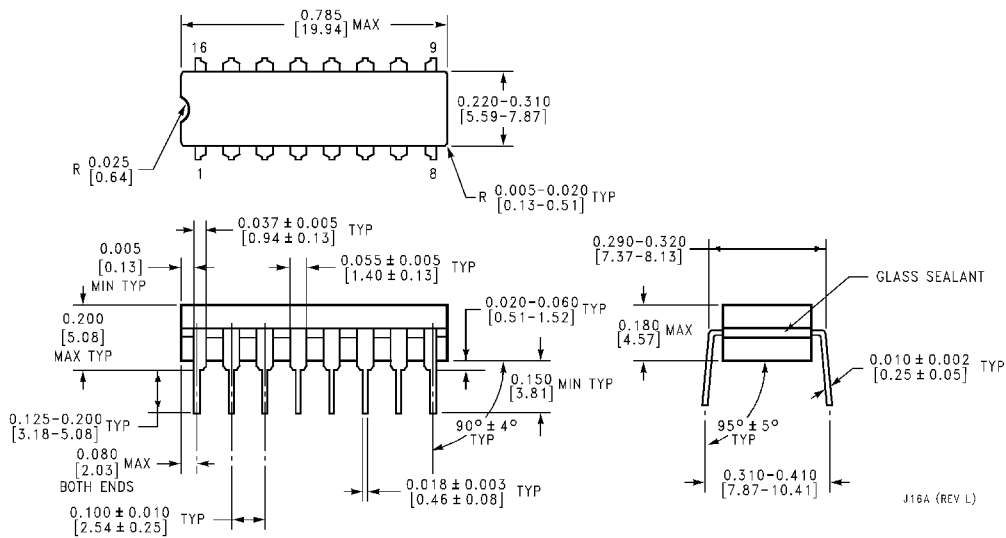
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Physical Dimensions inches (millimeters) unless otherwise noted

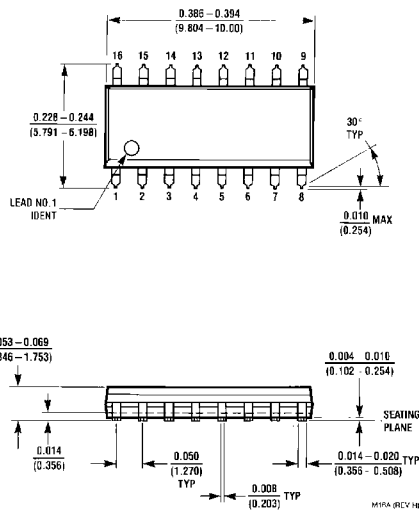


EX-A (REV D)

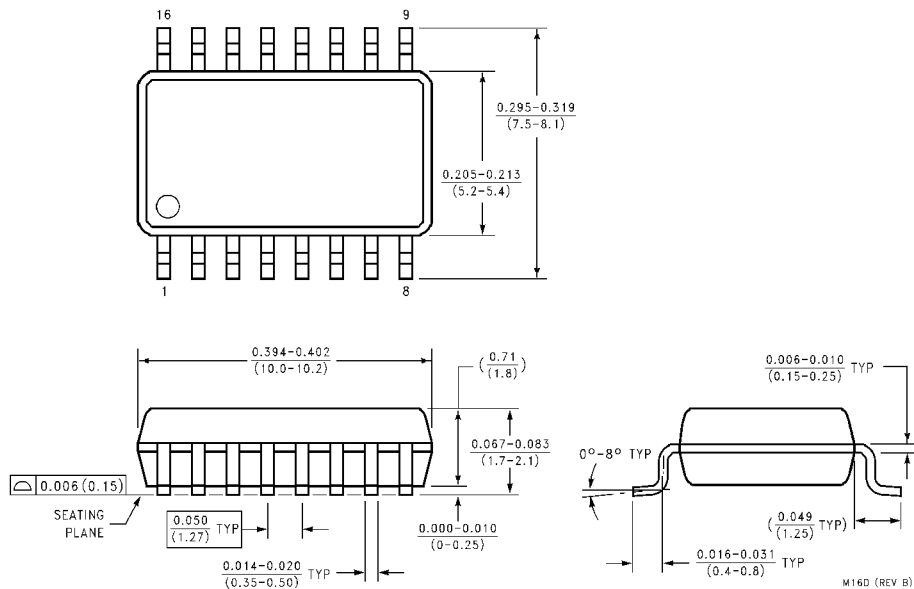
**20-Lead Ceramic Leadless Chip Carrier (L)
Package Number E20A**

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)

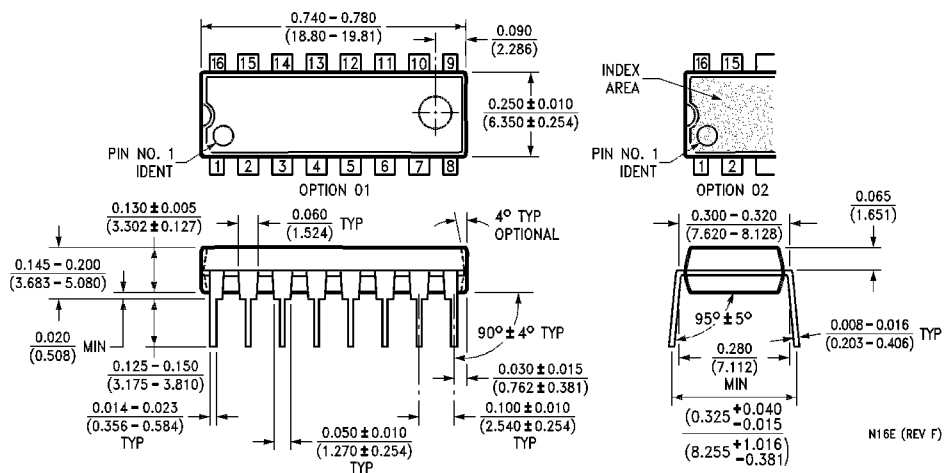
16-Lead Ceramic Dual-In-Line Package (D)
Package Number J16A



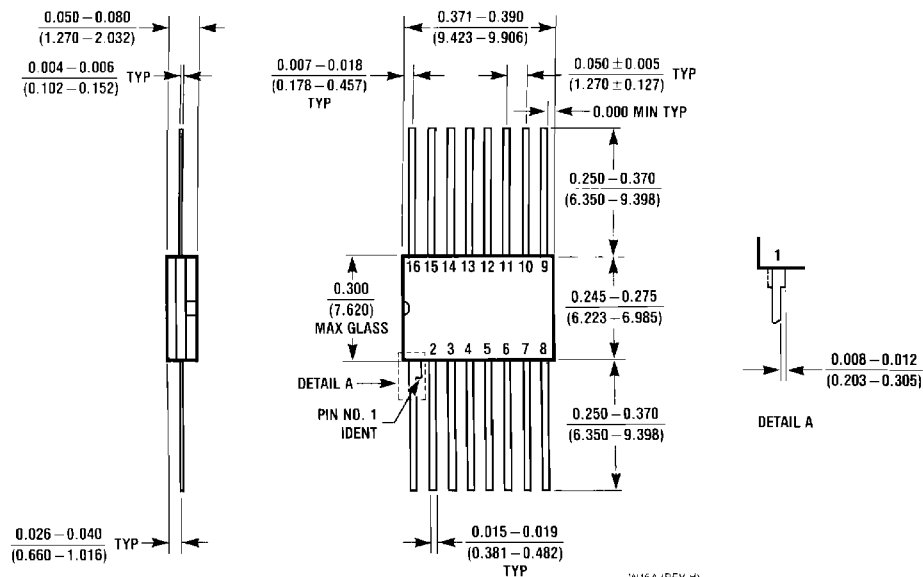
**16-Lead (0.150" Wide) Molded Small Outline Integrated Circuit (S)
Package Number M16A**

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)

**16-Lead (0.300" Wide) Molded Small Outline Package, EIAJ (SJ)
Package Number M16D**



16-Lead (0.300" Wide) Molded Dual-In-Line Package (P)
Package Number N16E

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)

16-Lead Ceramic Flatpak (F)
Package Number W16A

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