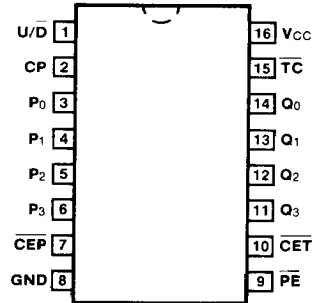


✓ **54LS/74LS169** 010495

**SYNCHRONOUS BI-DIRECTIONAL  
MODULO-16 BINARY COUNTER**

**CONNECTION DIAGRAM  
PINOUT A**

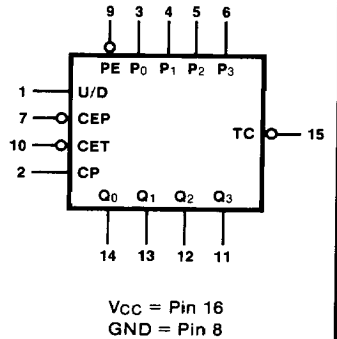


**DESCRIPTION** — The '169 is a fully synchronous 4-stage up/down counter featuring a preset capability for programmable operation, carry lookahead for easy cascading and a U/D input to control the direction of counting. All state changes, whether in counting or parallel loading, are initiated by the LOW-to-HIGH transition of the clock. For a functional description and detail specifications, please refer to the '168 data sheet.

**ORDERING CODE:** See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		V <sub>CC</sub> = +5.0 V ±5%, T <sub>A</sub> = 0°C to +70°C	V <sub>CC</sub> = +5.0 V ±10%, T <sub>A</sub> = -55°C to +125°C	
Plastic DIP (P)	A	74LS169PC		9B
Ceramic DIP (D)	A	74LS169DC	54LS169DM	6B
Flatpak (F)	A	74LS169FC	54LS169FM	4L

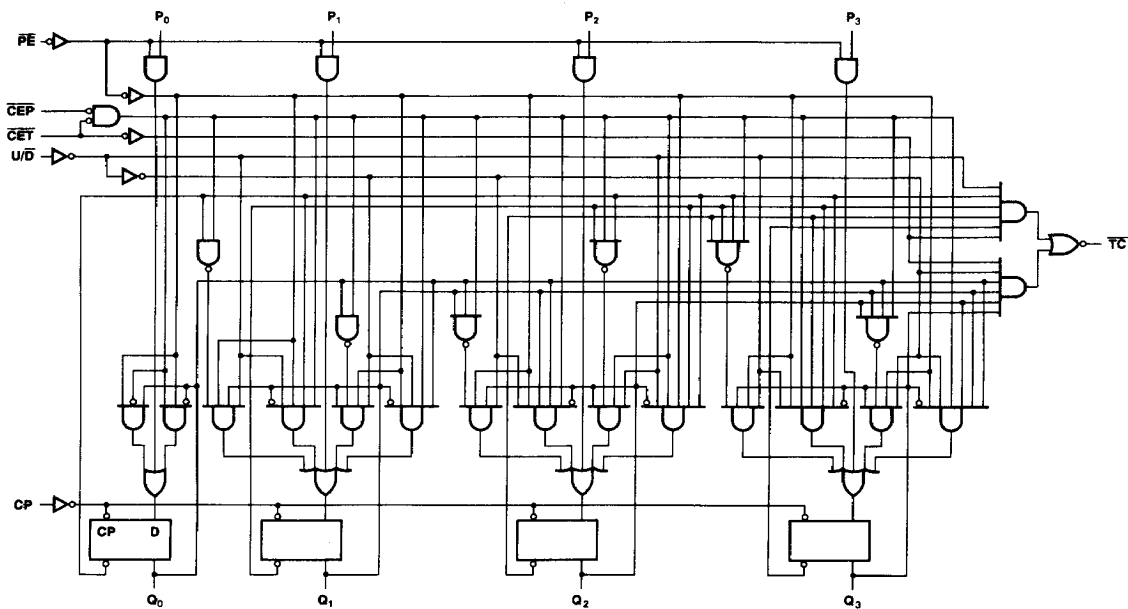
**LOGIC SYMBOL**



**INPUT LOADING/FAN-OUT:** See Section 3 for U.L. definitions

PIN NAMES	DESCRIPTION	54/74LS (U.L.) HIGH/LOW
CEP	Count Enable Parallel Input (Active LOW)	0.5/0.25
CET	Count Enable Trickle Input (Active LOW)	1.0/0.5
CP	Clock Pulse Input (Active Rising Edge)	0.5/0.25
P <sub>0</sub> — P <sub>3</sub>	Parallel Data Inputs	0.5/0.25
PE	Parallel Enable Input (Active LOW)	0.5/0.25
U/D	Up-Down Count Control Input	0.5/0.25
Q <sub>0</sub> — Q <sub>3</sub>	Flip-flop Outputs	10/5.0 (2.5)
TC	Terminal Count Output (Active LOW)	10/5.0 (2.5)

LOGIC DIAGRAM



4

MODE SELECT TABLE

$\overline{PE}$	$\overline{CEP}$	$\overline{CET}$	$U/\overline{D}$	Action on Rising Clock Edge
L	X	X	X	Load ( $P_n \rightarrow Q_n$ )
H	L	L	H	Count Up (increment)
H	L	L	L	Count Down (decrement)
H	H	X	X	No Change (Hold)
H	X	H	X	No Change (Hold)

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial

STATE DIAGRAM

