

54LS/74LS169

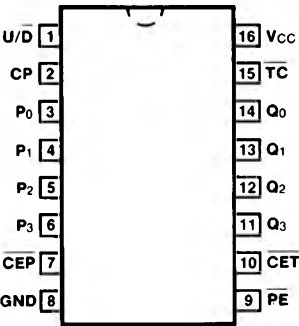
SYNCHRONOUS BI-DIRECTIONAL
MODULO-16 BINARY COUNTER

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.

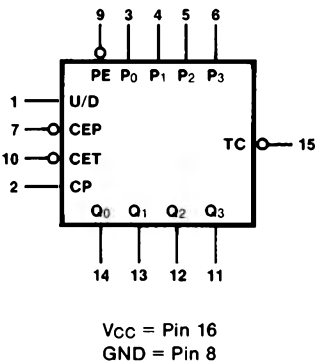
ORDERING CODE: See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		$V_{CC} = +5.0\text{ V} \pm 5\%$, $T_A = 0^{\circ}\text{C to } +70^{\circ}\text{C}$	$V_{CC} = +5.0\text{ V} \pm 10\%$, $T_A = -55^{\circ}\text{C to } +125^{\circ}\text{C}$	
Plastic DIP (P)	A	74LS169PC		9B
Ceramic DIP (D)	A	74LS169DC	54LS169DM	6B
Flatpak (F)	A	74LS169FC	54LS169FM	4L

CONNECTION DIAGRAM
PINOUT A



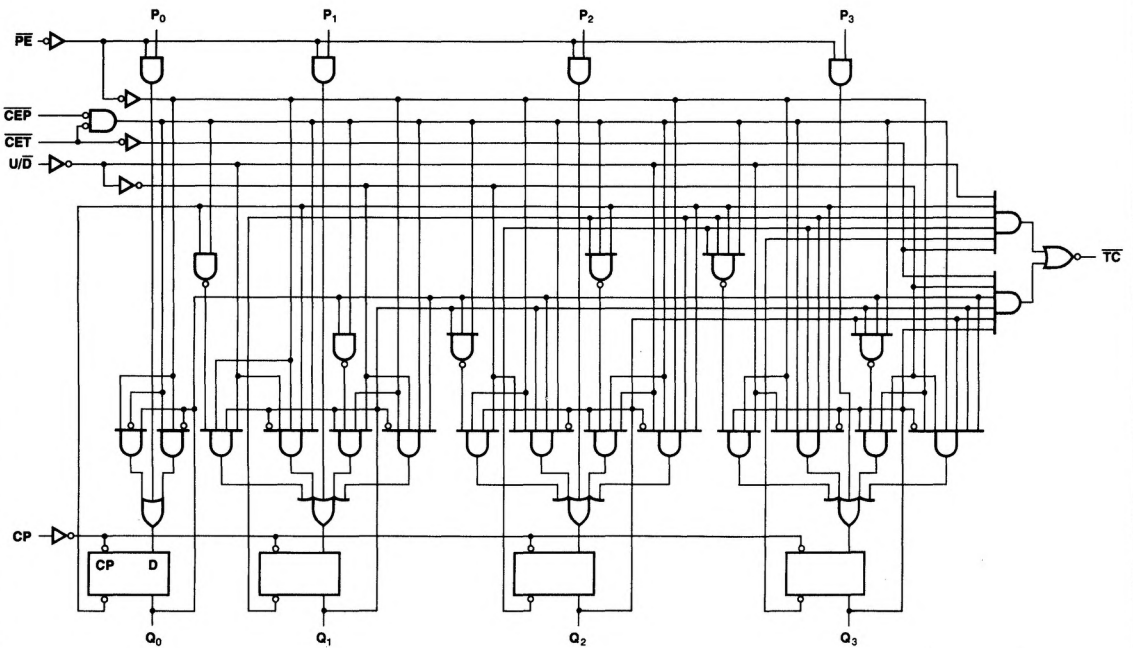
LOGIC SYMBOL



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

PIN NAMES	DESCRIPTION	54/74LS (U.L.) HIGH/LOW
$\overline{\text{CEP}}$	Count Enable Parallel Input (Active LOW)	0.5/0.25
$\overline{\text{CET}}$	Count Enable Trickle Input (Active LOW)	1.0/0.5
CP	Clock Pulse Input (Active Rising Edge)	0.5/0.25
$P_0 - P_3$	Parallel Data Inputs	0.5/0.25
$\overline{\text{PE}}$	Parallel Enable Input (Active LOW)	0.5/0.25
U/D	Up-Down Count Control Input	0.5/0.25
$Q_0 - Q_3$	Flip-flop Outputs	10/5.0 (2.5)
$\overline{\text{TC}}$	Terminal Count Output (Active LOW)	10/5.0 (2.5)

LOGIC DIAGRAM



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

