



Features

- 8-bit Counter With Register
- Parallel Register Outputs
- Low power dissipation
- High Speed Counter Up To 20MHZ
- High Driving Capability ($I_{OL} = 24mA$, $V_{OL} = 0.5V$)
- Single 5V Power Supply
- All Inputs and Outputs Directly TTL Compatible
- Drive Up To 20TTL Load (min.)

Description

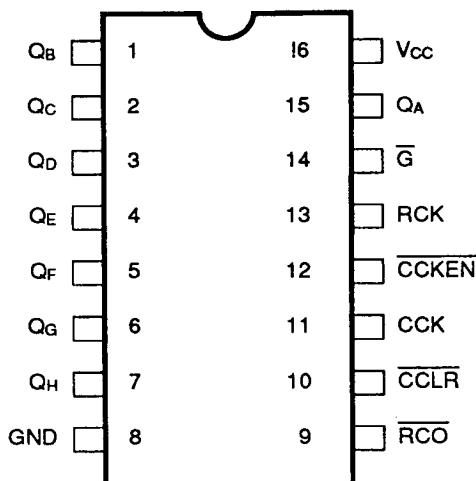
This device contains an 8-bit binary counter that feeds an 8-bit storage register. The storage register has parallel Tri-state outputs $Q_A \sim Q_H$ enabled by $\overline{G}=0$. Separate clocks, CCK and RCK, are provided for both the binary counter and storage register. The binary counter features a direct clear input \overline{CCLR} and a count enable input \overline{CCKEN} . A ripple carry output \overline{RCO} is provided for cascading application. Expansion is easily accomplished for two stages by connecting \overline{RCO} of the first stage to \overline{CCKEN} of the second stage. Cascading for large count chains can be accomplished by connecting \overline{RCO} of each stage to CCK of the following stage.

Both the counter and register clocks are positive-edge triggered. The counter state will always be one count ahead of the register when connecting both clocks together.

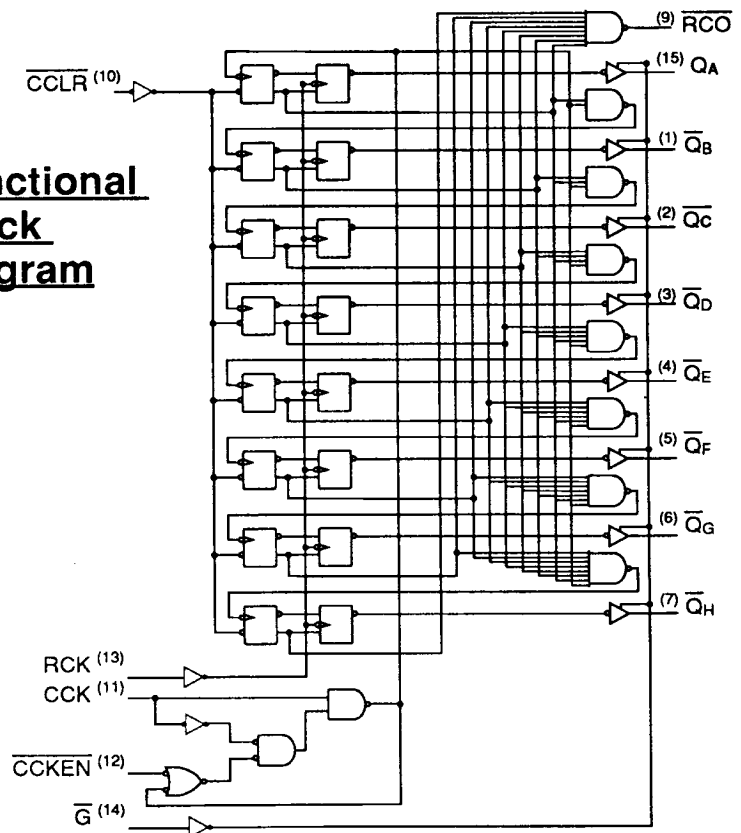
Pin Names:

$Q_A \sim Q_H$	Register Output	\overline{CCLR}	Counter Clear, Active Low
RCK	Register Clock, Positive Trigger	\overline{CCKEN}	Counter Clock Enable, Active Low
CCK	Counter Clock, Positive Trigger	V_{CC}	Power
\overline{RCO}	Ripple Carry Output	GND	Ground
\overline{G}	Output Enable, Active Low		

Pin Configuration



Functional Block Diagram



Absolute Maximum Ratings:

Symbol	Item	Rating
V _{TERM}	Terminal Voltage with Respect to GND	-0.3V ~ 7.0V
T _{STG}	Storage Temperature	-55°C ~ +125°C
T _{OPR}	Operating Temperature	0°C ~ +70°C

Note:

1. Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Recommended D. C. Operating Levels: (TA = 0°C ~ +70°C)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V _{CC}	Supply Voltage	4.5	5.0	5.5	V
V _{IH}	Input High Voltage	2.2	-	V _{CC} +0.3	V
V _{IL}	Input Low Voltage	-0.3	-	0.8	V

Capacitance:

Symbol	Parameter	Min.	Typ.	Max.	Unit
C _{IN}	Input Capacitance	-	5	10	pF
C _{OUT}	Output Capacitance	-	5	10	pF

Note: This parameter is periodically sampled and is not 100% tested.

D. C. Characteristics (TA=25°C, V_{CC}=5V)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _{LI}	Input Leakage Current	0=V _{IN} =V _{CC}	-	-	1	μA
I _{LO}	Output Leakage Current	0=V _O =V _{CC}	-	-	5	μA
I _{SB}	Standby Current	V _{IN} =V _{CC} -2.0V or V _{IN} =0.2V	-	-	10	μA
I _{OH}	High-Level Output Current on Q _A ~Q _H	V _{OH} =3.0V	-	-	-2.6	mA
I _{OL}	Low-Level Output Current on Q _A ~Q _H	V _{OL} =0.5V	-	-	24	mA
I _{OHR}	High-Level Output Current on \overline{RCO}	V \overline{RCO} =3.4V	-	-	0.4	mA
I _{OLR}	Low-Level Output Current on \overline{RCO}	V \overline{RCO} =0.5V	-	-	8	mA
V _{IL}	Input Low Voltage		-0.3	-	0.8	V
V _{IH}	Input High Voltage		2.0	-	V _{CC} +0.3	V

A. C. Characteristics (TA=25°, V_{CC}=5V)

A. C. Test Conditions: Input pulse level=0V ~ 3.0V
Input Rise & fall times=5ns & timing reference level=1.5V

Symbol	Parameter	Min.	Typ.	Max.	Units	Condition
f _{MAX}	Clock Frequency CCK/CCR	20	35	-	MHZ	
t _{WC}	Pulse Width of CCK/CCR	20	-	-	ns	Recommended Value
t _{WR}	Pulse Width of \overline{CCLR}	20	-	-	ns	Recommended Value
t _{EC}	Count Enable Time \overline{CCKEN} Low Before CCK↑	20	-	-	ns	Recommended Value
t _{SR}	Clear Inactive Set-Up \overline{CCLR} Go High Before CCK↑	20	-	-	ns	Recommended Value
t _{CKRCH}	CCK↑ to \overline{RCO} ↑	-	15	-	ns	
t _{CKRCL}	CCK↑ to \overline{RCO} ↓	-	20	-	ns	CL=15 pf
t _{CLRCH}	\overline{CCLR} ↓ to \overline{RCO} ↑	-	20	-	ns	RL=2K ohm
t _{CKQH}	RCK↑ to Q↑	-	15	-	ns	
t _{CKQL}	RCK↑ to Q↓	-	20	-	ns	CL=45 pf
t _{GQZL}	Q from HI-Z to Low, When \overline{G} ↓	-	15	-	ns	RL=667 ohm
t _{GQZH}	Q from HI-Z to High, When \overline{G} ↓	-	20	-	ns	
t _{GQHZ}	Q from High to HI-Z, When \overline{G} ↑	-	15	-	ns	CL=5 pf
t _{GQLZ}	Q from High to HI-Z, When \overline{G} ↑	-	15	-	ns	RL=667 ohm



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