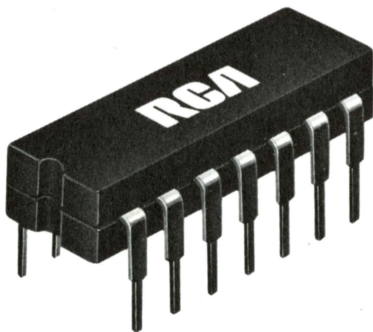


Great New Opportunities...

for logic-system-design engineers to:

- achieve outstanding high performance
- simplify designs
- improve reliability
- realize substantial cost savings



RCA Introduces the CD4000E Series of Economy-Priced COS|MOS IC's...

and opens a broad new range of logic-system applications for the unique COS|MOS technology. Look at the features of this new plastic-packaged series of digital IC's that invite your innovation:

Wide operating temperature range

Guaranteed operation over a -40°C to $+85^{\circ}\text{C}$ operating-temperature range. Storage-temperature range of -65°C to $+150^{\circ}\text{C}$.

Ultra-low power dissipation

- Gates — $P_T = 50 \text{ nW/pkg}$ (typ) at $V_{DD} = 10 \text{ V}$
- MSI circuits — $P_T = 10 \mu\text{W}$ (typ) at $V_{DD} = 10 \text{ V}$

Use smaller power supplies, eliminate cooling hardware, do away with sophisticated power-supply regulators and achieve tighter packaging densities and lighter weight in both portable battery or line-operated logic equipments.

Operation over wide range of supply voltages

Select your operating voltage from a broad 5 to 15 V range and use a single unregulated, less-expensive voltage supply.

High dc and dynamic noise immunity

Take advantage of the high 4.5 V [(typ) at $V_{DD} = 10 \text{ V}$] noise immunity of both gate level and MSI circuits, which remains constant over the full operating-temperature range. Design complete COS|MOS logic systems unequaled in tolerance to external noise or input signal variations.

Speed

- Gates — propagation delay (t_{pd}) = 50 ns (typ) at $V_{DD} = 10 \text{ V}$, $C_L = 15 \text{ pF}$
- MSI circuits — clock pulse frequency (f_{CL}) = 2.5 MHz (typ) at $V_{DD} = 10 \text{ V}$

Single phase clock

Simplify timing considerations.

Clock voltage equal to supply voltage

Use same power source for clock/logic voltage.

Protected inputs and outputs

Design with assurance that: the inputs and outputs of all COS|MOS IC's are protected against electrostatic effects; buffered outputs isolate these IC's from external noise and effects of loading.

Compatible gate level and MSI functions

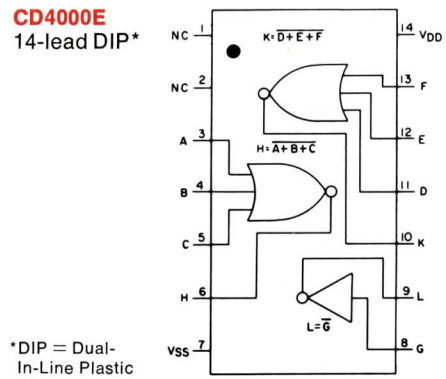
RCA demonstrates continued leadership in COS|MOS production-technology by making this broad new line of proven plastic-packaged gate-level and MSI circuits available to you off-the-shelf and in production quantities. Write to RCA Commercial Engineering, Harrison, N.J. 07029 for a copy of "Reliability Data for RCA COS|MOS Types in Plastic Packages — CD4000E Series", Form No. RIC-103. For price and delivery information on all RCA COS|MOS IC's, contact your local RCA Sales Office or your RCA Distributor.

Great New Opportunities RCA COS/MOS Digital Integrated Circuits



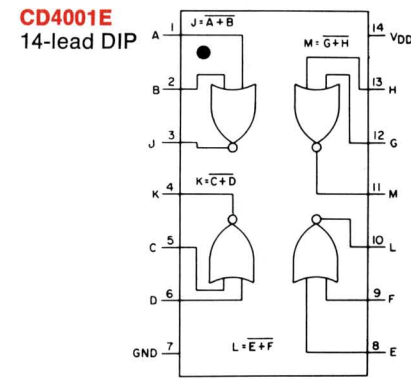
Gates Positive Logic

Dual 3-Input NOR Gate Plus Inverter

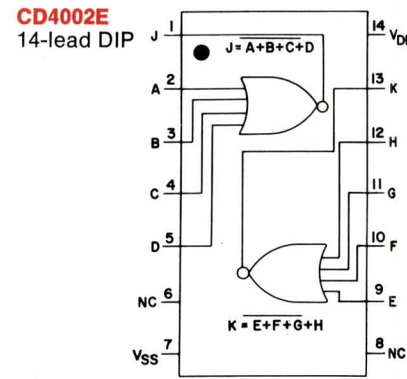


*DIP = Dual-In-Line Plastic

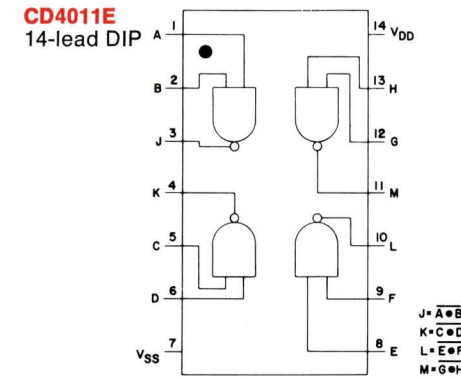
Quad 2-Input NOR Gate



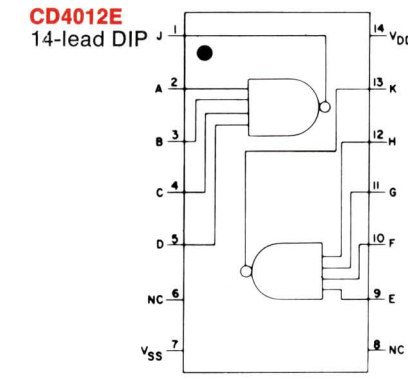
Dual 4-Input NOR Gate



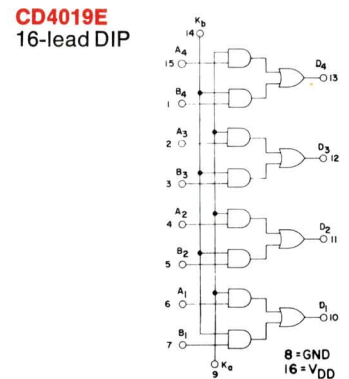
Quad 2-Input NAND Gate



Dual 4-Input NAND Gate

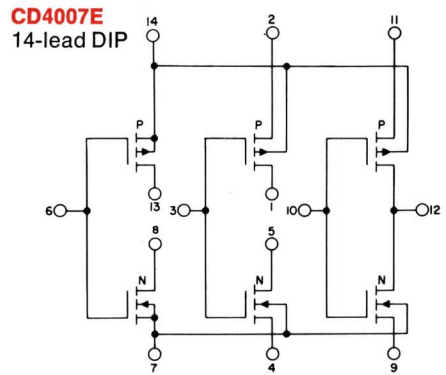


Quad AND-OR Select Gate



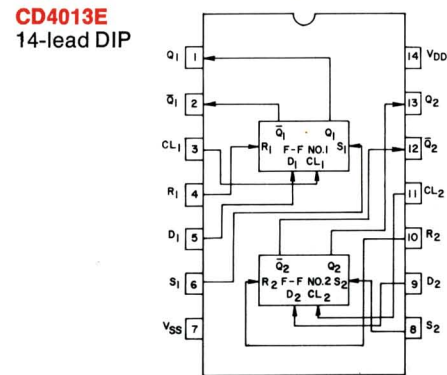
Gates Positive Logic

Dual Complementary Pair Plus Inverter



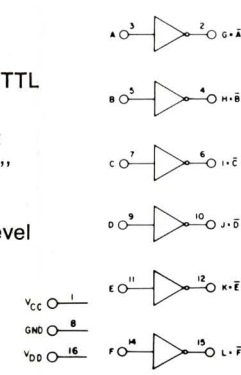
Flip-Flops

Dual D-Type with Set/Reset Capability



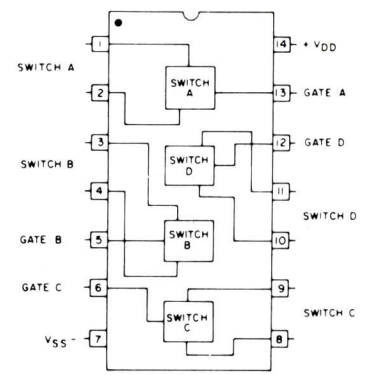
Hex Buffers|Logic-Level Converters

- CD4009E**
16-lead DIP
- COS/MOS to DTL/TTL hex converter
 - COS/MOS current "sink" or "source" (driver)
 - COS/MOS logic-level converter



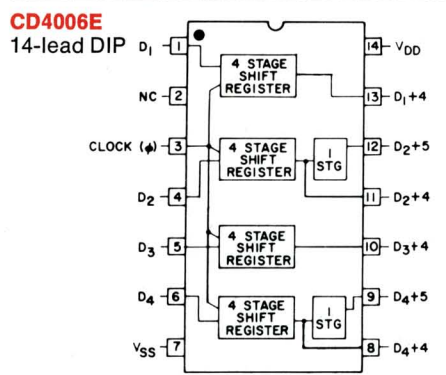
Multiplexers

- CD4016E**
14-lead DIP
- Analog signal switching/multiplexing
 - Signal gating
 - Squelch control
 - Chopper
 - Digital signal switching/multiplexing
 - COS/MOS logic implementation and breadboarding

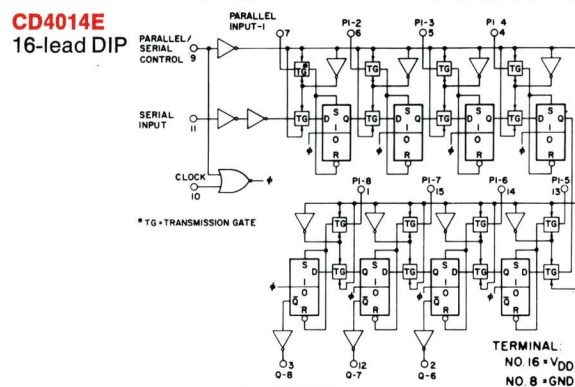


Static-Shift Registers MSI

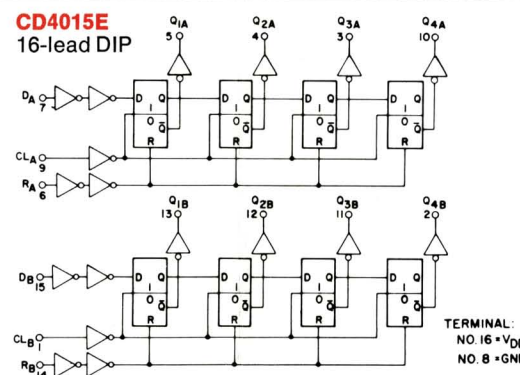
18-Stage



8-Stage Synchronous Parallel or Serial Input/Serial Output

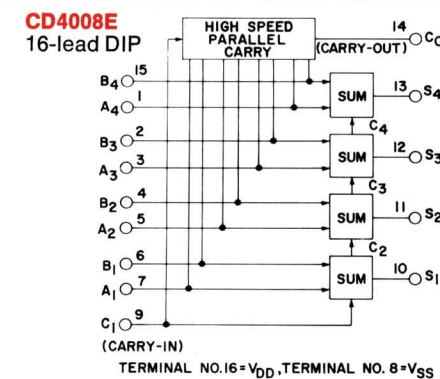


Dual 4-Stage Serial-Input/Parallel Output



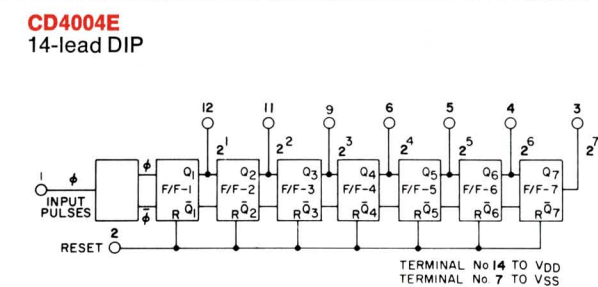
Adder MSI

4-Bit Binary Full-Adder with Parallel Carry-Out



Counters MSI

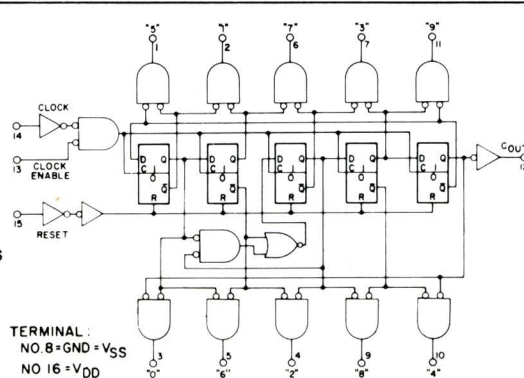
7-Stage Ripple Counter/Frequency Divider



Counters MSI

Decade Counter/Divider with 10 Decoded Outputs

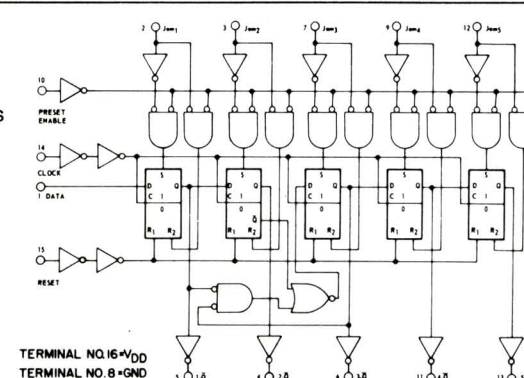
- CD4017E**
16-lead DIP
- Decade counter/decimal decode display applications
 - Frequency division
 - Counter control/timers
 - Divide by "N" counting
 - "N" = 2-10 with one CD4017E
 - "N" > 10 with multiple CD4017E's



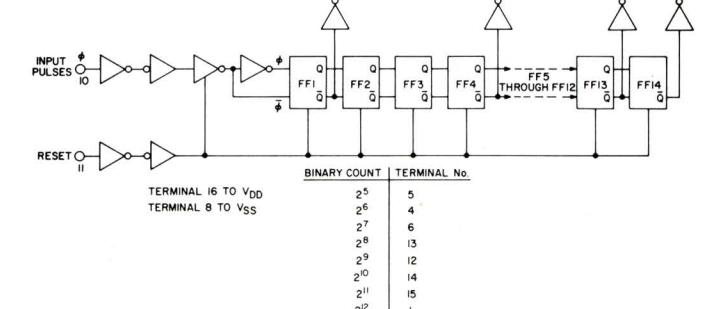
CD4018E 16-lead DIP

- Fixed and programmable divide-by-10,9,8,7,6,5,4,3,2 counters
- Fixed and programmable counters greater than 10
- Programmable decade counters
- Divide-by-"N" counters/frequency synthesizers
- Frequency division
- Counter control/timers

Presetable Divide By "N" Counter



CD4020E 16-lead DIP



Application Notes

ICAN-5593
Complementary MOS Transistor
Logic Integrated Circuits

ICAN-6176
Noise Immunity of COS|MOS
Integrated-Circuit Logic Gates

ICAN-6218
Gate-Oxide Protection Circuit in
RCA COS|MOS Digital Integrated
Circuits

ICAN-6267
Astable and Monostable
Oscillators Using RCA COS|MOS
Digital Integrated Circuits

ICAN-6324
Radiation Hardness of COS|MOS
Integrated Circuits

**Articles reprinted from technical
journals**

ST-3803
MOS Complementary Shift
Registers and Counters

ST-3973
An Introduction to COS|MOS
Integrated Circuits and Their
Applications in Digital-Circuit
Systems

ST-4001
COS|MOS IC's

Reports

RIC 103
Reliability Data for RCA COS|MOS
Types in Plastic Packages

For a copy of any of these papers
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of the COS|MOS IC's, please write to
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