

# SN54174, SN54175, SN54LS174, SN54LS175, SN54S174, SN54S175, SN74174, SN74175, SN74LS174, SN74LS175, SN74S174, SN74S175 HEX/QUADRUPLE D-TYPE FLIP-FLOPS WITH CLEAR

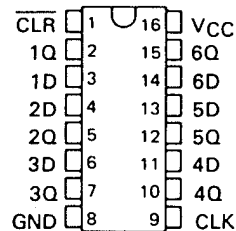
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'174, 'LS174, 'S174 ... HEX D-TYPE FLIP-FLOPS  
'175, 'LS175, 'S175 ... QUADRUPLE D-TYPE FLIP-FLOPS

- '174, 'LS174, 'S174 Contain Six Flip-Flops with Single-Rail Outputs
- '175, 'LS175, 'S175 Contain Four Flip-Flops with Double-Rail Outputs
- Three Performance Ranges Offered: See Table Lower Right
- Buffered Clock and Direct Clear Inputs
- Individual Data Input to Each Flip-Flop
- Applications include:
  - Buffer/Storage Registers
  - Shift Registers
  - Pattern Generators

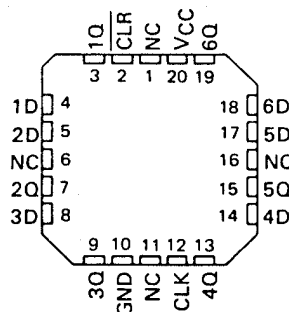
SN54174, SN54LS174, SN54S174 ... J OR W PACKAGE  
SN74174 ... N PACKAGE  
SN74LS174, SN74S174 ... D OR N PACKAGE

(TOP VIEW)



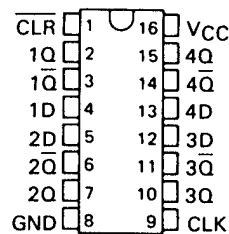
SN54LS174, SN54S174 ... FK PACKAGE

(TOP VIEW)



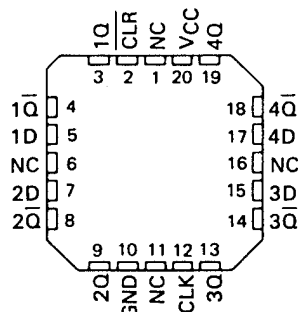
SN54175, SN54LS175, SN54S175 ... J OR W PACKAGE  
SN74175 ... N PACKAGE  
SN74LS175, SN74S175 ... D OR N PACKAGE

(TOP VIEW)



SN54LS175, SN54S175 ... FK PACKAGE

(TOP VIEW)



NC – No internal connection

## description

These monolithic, positive-edge-triggered flip-flops utilize TTL circuitry to implement D-type flip-flop logic. All have a direct clear input, and the '175, 'LS175, and 'S175 feature complementary outputs from each flip-flop.

Information at the D inputs meeting the setup time requirements is transferred to the Q outputs on the positive-going edge of the clock pulse. Clock triggering occurs at a particular voltage level and is not directly related to the transition time of the positive-going pulse. When the clock input is at either the high or low level, the D input signal has no effect at the output.

These circuits are fully compatible for use with most TTL circuits.

FUNCTION TABLE  
(EACH FLIP-FLOP)

INPUTS			OUTPUTS	
CLEAR	CLOCK	D	Q	Q̄†
L	X	X	L	H
H	↑	H	H	L
H	↑	L	L	H
H	L	X	Q <sub>0</sub>	Q̄ <sub>0</sub>

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↑ = transition from low to high level

Q<sub>0</sub> = the level of Q before the indicated steady-state input conditions were established.

† = '175, 'LS175, and 'S175 only

TYPES	TYPICAL	TYPICAL
	MAXIMUM	POWER
	CLOCK	DISSIPATION
FREQUENCY PER FLIP-FLOP		
'174, '175	35 MHz	38 mW
'LS174, 'LS175	40 MHz	14 mW
'S174, 'S175	110 MHz	75 mW

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

TEXAS  
INSTRUMENTS

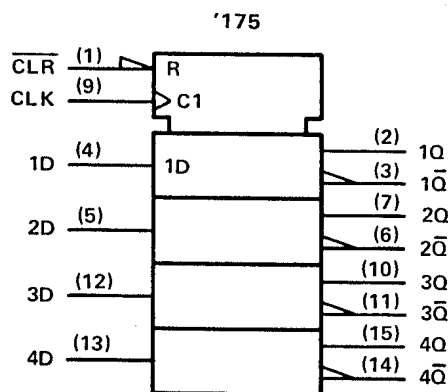
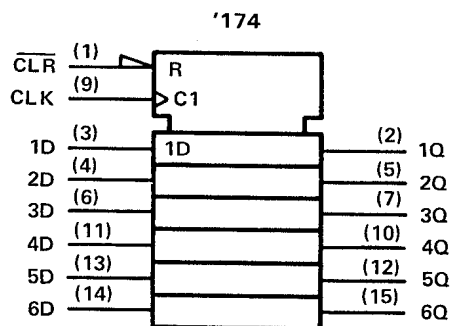
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# SN54174, SN54175, SN54LS174, SN54LS175, SN54S174, SN54S175, SN74174, SN74175, SN74LS174, SN74LS175, SN74S174, SN74S175 HEX/QUADRUPLE D-TYPE FLIP-FLOPS WITH CLEAR

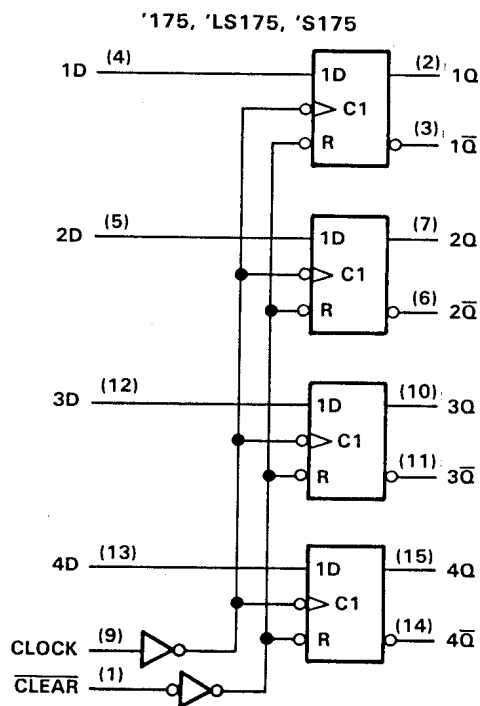
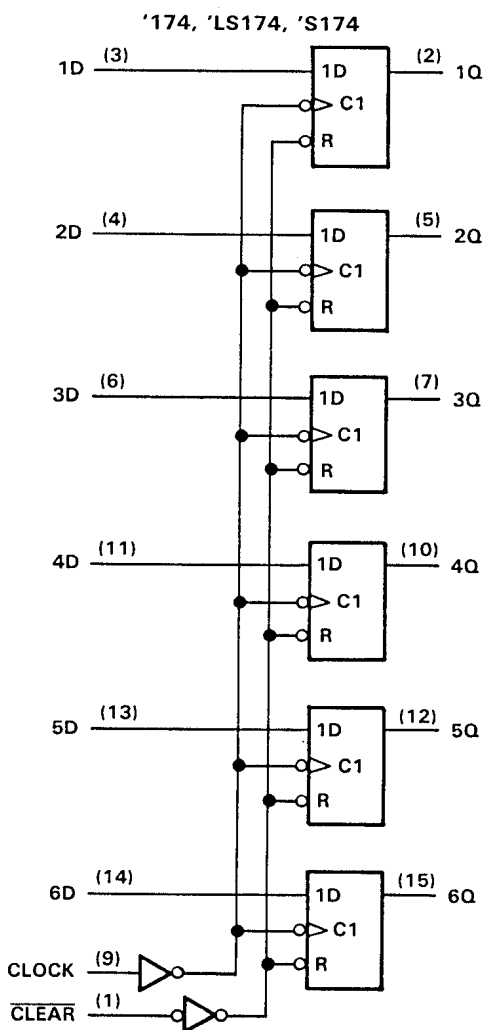
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## logic symbols†



†These symbols are in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12. Pin numbers shown are for D, J, N, and W packages.

## logic diagrams (positive logic)



Pin numbers shown are for D, J, N, and W packages.



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**PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
JM38510/01702BEA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
JM38510/01702BFA	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI
JM38510/07105BEA	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/07105BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/07106BEA	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30106B2A	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30106BEA	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30106BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30107B2A	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30107BEA	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30107BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30107SEA	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
JM38510/30107SFA	ACTIVE	CFP	W	16	1	TBD	Call TI	Level-NC-NC-NC
SN54175J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
SN54LS174J	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
SN54LS175J	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
SN54S174J	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
SN54S175J	ACTIVE	CDIP	J	16	1	TBD	Call TI	Level-NC-NC-NC
SN74174N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74175N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74175N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS174D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS174DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS174DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS174DRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS174J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
SN74LS174N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74LS174N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS174NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74LS174NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS174NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS175D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS175DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS175DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM