



IDM29908 Quad-Gated Flip-Flop

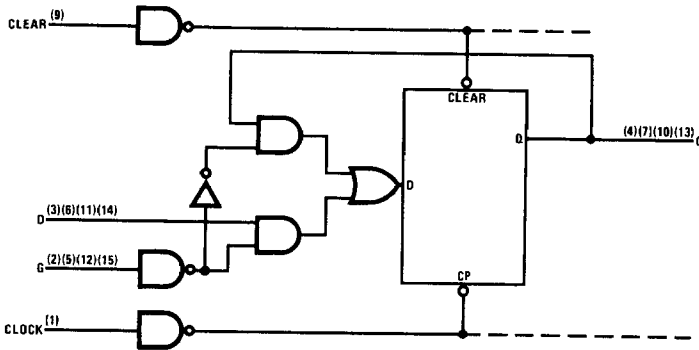
General Description

The IDM29908 is a quad-gated flip-flop with common clock, common clear, and separate gated control input. When a high level (logical 1) is applied to the gated input, entry of data into the flip-flop is inhibited.

Features and Benefits

- Positive-edge triggering
- Do-nothing state
- Buffered inputs
- Typical toggle rate – 30 MHz
- Typical power dissipation – 290 mW

Logic Diagram

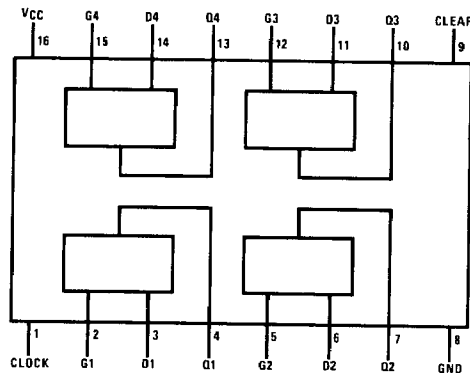


Truth Table

D	G	CLR	Q _{n+1}
H	L	L	H
L	L	L	L
X	H	L	Q _n
X	X	H	L*

*Asynchronous Transition
X = Don't Care

Connection Diagram



Absolute Maximum Ratings

Supply Voltage	-0.5V to +7.0V
Input Voltage	-0.5V to +5.5V
Output Voltage	-0.5V to +5.5V
Storage Temperature	-65°C to +150°C
Lead Temperature (Soldering, 10 seconds)	300°C

Operating Range

P/N	Ambient Temperature	V _{CC}
Com'1 IDM29908JC, NC	0°C to +70°C	4.75V to 5.25V
Mil IDM29908JM, JM/883	-55°C to +125°C	4.50V to 5.50V

Electrical Characteristics over recommended operating free-air temperature range (unless otherwise noted)

Symbol	Description	Conditions	Min	Typ (Note 1)	Max	Units
V _{IH}	High Level Input Voltage		2			V
V _{IL}	Low Level Input Voltage				0.8	V
V _I	Input Clamp Voltage	V _{CC} = Min I _I = -12 mA			1.5	V
I _{OH}	High Level Output Current				-800	μA
V _{OH}	High Level Output Voltage	V _{CC} = Min V _{IH} = 2V V _{IL} = Max I _{OH} = Max	2.4			
I _{OL}	Low Level Output Current				16	mA
V _{OL}	Low Level Output Voltage	V _{CC} = Min V _{IH} = 2V V _{IL} = Max I _{OL} = Max			0.4	V
I _I	Input Current at Maximum Input Voltage	V _{CC} = Max V _I = 5.5V			1.0	mA
I _{IH}	High Level Input Current	V _{CC} = Max V _I = 2.4V			40	μA
I _{IL}	Low Level Input Current	V _{CC} = Max V _I = 0.4V			-1.6	mA
I _{OS}	Short Circuit Output Current	V _{CC} = Max (Note 2)	18		-55	mA
I _{CC}	Supply Current	V _{CC} = Max (Note 3)		58	76	mA

Notes:

- All typical values are at V_{CC} = 5V, T_A = 25°C.
- Not more than one output should be shorted at a time.
- Supply current is measured with clear/clock at 3V, all other inputs at 0V.

Switching Characteristics V_{CC} = 5V, T_A = 25°C

Symbol	Description	From (Input)	To (Output)	Conditions	Min	Typ	Max	Units
f _{MAX}	Maximum Clock Frequency			C _L = 15 pF R _L = 400 Ω	20	30		MHz
t _{PLH}	Propagation Delay Time, Low-to-High Level Output	Clock	Q			17	24	ns
t _{PHL}	Propagation Delay Time, High-to-Low Level Output	Clock	Q			22	33	ns
t _{PHL}	Propagation Delay Time, High-to-Low Level Output	Clear	Q			21	31	ns
t _{W(CLOCK)}	Width of Clock Pulse				24	16		ns
t _{W(CLEAR)}	Width of Clear Pulse				27	18		ns
t _{SETUP}	Setup Time, D Inputs				24	16		ns
					30	21		ns
t _{HOLD}	Hold Time, All Inputs				0			ns

Ordering Information

Package Type	Package Number	Temperature Range	Order Number
Molded DIP	3	0°C to +70°C	IDM29908NC
Hermetic DIP	1 (2)	0°C to +70°C	IDM29908JC
Hermetic DIP	1 (2)	-55°C to +125°C	IDM29908JM
Hermetic DIP	1 (2)	-55°C to +125°C	IDM29908JM/883