Description：

CD4027 is a single monolithic chip integratedcircuitcontaining two identical complementary-symmetry J-K master-slave flip-flops. Each flip-flophas provisions for individual J, K,Set,Reset, andClock input signals. Buffered Q and Q signals areprovided as outputs.This input-output arrangementprovidesfor compatibleoperation with theCD4013B dual D type flip-flop.
The CD4027 is useful in performing controlregister, and toggle functions. Logic levels presentat the J and K inputs along with internal self-steering control the state of each flip-flop;
changes in the flip-
flop state are synchronous with the positive-going transition of the clock pulse. Set and
reset functions are independent of the clock andare initiated when a high level signal is present ateither the Set or Reset input.

Features

-Set - Reset capability

-Static flip-flop operation retains state
indefinitely with clock level either “High” or
“Low”

-Standardized symmetrical output
characteristics

-100% tested for quiescent current at 18V

-Maximum input current of 1μA at 18V and 25℃

-5V,10V, and 15V parametric ratings

Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V_{DD}	DC Supply Voltage Range (Voltage Referenced to VSS Terminals)	-0.5	20	V
V_I	Input Voltage Range, All Inputs	0.5	VDD+0.5	V
P_D	Power Dissipation		500	mW
T_J	Junction Temperature		125	℃
T_{OP}	Operating Temperature	-40	85	℃

Absolute maximum ratings are those values beyond which the device could be permanently damaged,These are stress ratings only,which do not imply functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions.

Pin Assignment：

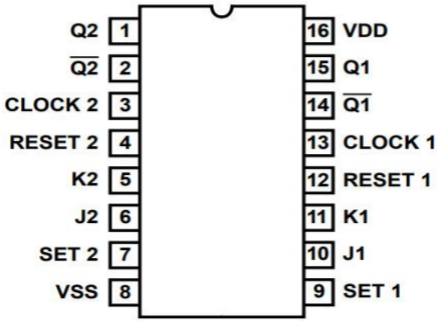


Figure2.1 TopView

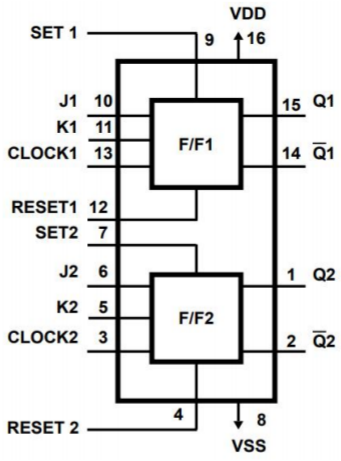


Figure 2.2 Functional Diagram

PIN No.	NAME	I/O	FUNCTION
1	Q2	O	Q Output for Channel 2
2	$\overline{Q2}$	O	Inverted Q Output for Channel 2
3	CLOCK2	I	Clock Input for Channel 2
4	RESET2	I	Reset Input for Channel 2
5	K2	I	K Input for Channel 2
6	J2	I	J Input for Channel 2
7	SET2	I	Set Input for Channel 2
8	VSS		Ground
9	SET1	I	Set Input for Channel 1
10	J1	I	J Input for Channel 1
11	K1	I	K Input for Channel 1
12	RESET1	I	Reset Input for Channel 1
13	CLOCK1	I	Clock Input for Channel 1
14	$\overline{Q1}$	O	Inverted Q Output for Channel 1
15	Q1	O	Q Output for Channel 1
16	VDD		Supply Voltage

Logic Diagram

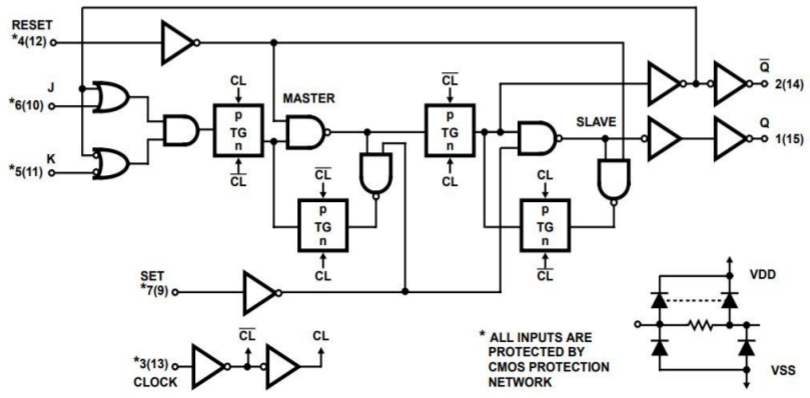


Figure 3.1：CD4027 Logic Diagram(One of Two Identical J-K Flip-Flops)

TruthTable

Clock	Present State					Next State	
	Input				Output	Output	
	J	K	S	R	Q	Q	$\overline{Q}$
↑	1	X	0	0	0	1	0
↑	X	0	0	0	1	1	0
↑	0	X	0	0	0	0	1
↑	X	1	0	0	1	0	1
↓	X	X	0	0	X	No Change	
X	X	X	1	0	X	1	0
X	X	X	0	1	X	0	1
X	X	X	1	1	X	1	1

X = Don't Care, 1 ≡ High State, 0 ≡ Low State,↑=positive-going transition,↓=negative-going transition

Electrical Characteristics

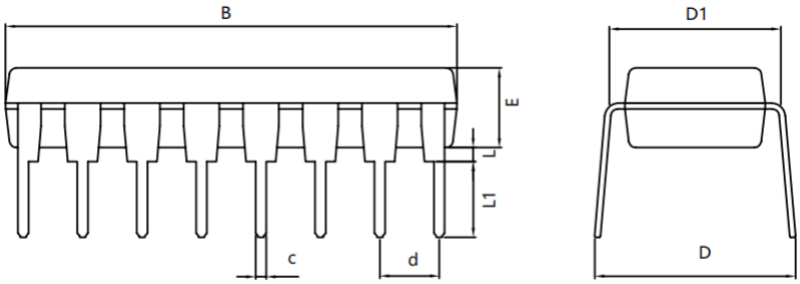
DC Specifications

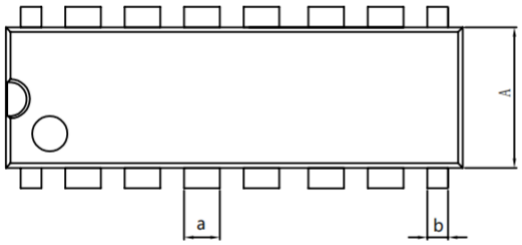
(T_a=25℃, voltages are referenced to VSS (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition			MIN	TYP	MAX	Unit
		VO	VIN	VDD				
I_{DD}	Supply Current	--	0,5	5	--	0	1	uA
		--	0,10	10	--	0	1	uA
		--	0,18	18	--	0	1	uA
I_{OL}	Low Level Output Current	0.4	0,5	5	1	3	--	mA
		0.5	0,10	10	4	8	--	mA
		1.5	0,15	15	15	30	--	mA
I_{OH}	High Level Output Current	4.6	0,5	5	-0.5	-1.5	--	mA
		2.5	0,5	5	-3	-7	--	mA
		9.5	0,10	10	-2	-4	--	mA
		13.5	0,15	15	-7	-14	--	mA
V_{OL}	Low Level Output Voltage	--	0,5	5	--	0	0.05	V
		--	0,10	10	--	0	0.05	V
		--	0,15	15	--	0	0.05	V
V_{OH}	High Level Output Voltage	--	0,5	5	4.95	5	--	V
		--	0,10	10	9.95	10	--	V
		--	0,15	15	14.95	15	--	V
V_{IL}	Low Level Input Voltage	0.5,4.5	--	5	--	--	1.5	V
		1,9	--	10	--	--	3	V
		1.5,13.5	--	15	--	--	4	V
V_{IH}	High Level Input Voltage	0.5,4.5	--	5	3.5	--	--	V
		1,9	--	10	7	--	--	V
		1.5,13.5	--	15	11	--	--	V
I_{IN}	Input Leakage Current	--	0,18	18	--	0	±1	uA

Pin Assignment：

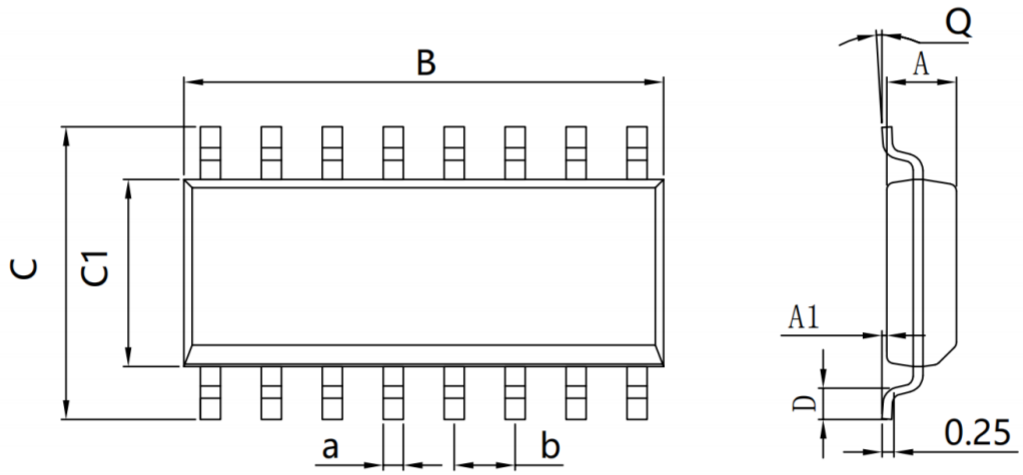
DIP16





Dimensions In Millimeters					
Symbol :	Min :	Max :	Symbol :	Min :	Max :
A	6.100	6.680	L	0.500	0.800
B	18.940	19.560	a	1.524 TYP	
D	8.200	9.200	b	0.889 TYP	
D1	7.42	7.820	c	0.457 TYP	
E	3.100	3.550	d	2.540 TYP	
L	0.500	0.800			

SOP16



Dimensions In Millimeters					
Symbol :	Min :	Max :	Symbol :	Min :	Max :
A	1.225	1.570	D	0.400	0.950
A1	0.100	0.250	Q	0°	8°
B	9.800	10.00	a	0.420 TYP	
C	5.800	6.250	b	1.270 TYP	
C1	3.800	4.000			