

TC74VCX16721FT**LOW-VOLTAGE 20-BIT D-TYPE FLIP-FLOP
WITH 3.6V TOLERANT INPUTS AND OUTPUTS**

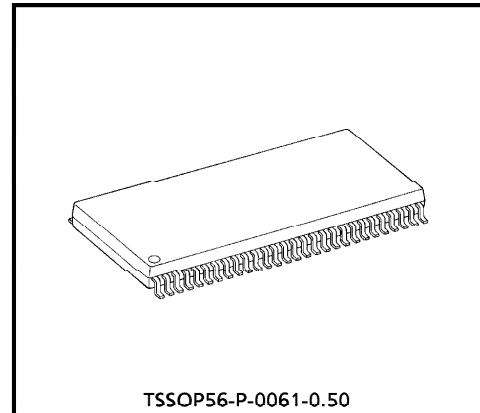
The TC74VCX16721FT is a high performance CMOS 20-bit D-TYPE FLIP-FLOP. Designed for use in 1.8, 2.5 or 3.3 Volt systems, it achieves high speed operation while maintaining the CMOS low power dissipation.

It is also designed with over voltage tolerant inputs and outputs up to 3.6V.

The TC74VCX16721FT is edge-triggered D-type flip-flop with qualified clock storage. On the positive transition of the clock (CK) input, the device provides true data at the Q outputs if the clock-enable ($\overline{\text{CKEN}}$) input is low. If $\overline{\text{CKEN}}$ is high, no data is stored.

When the $\overline{\text{OE}}$ input is high, the outputs are in a high impedance state. This device is designed to be used with 3-state memory address drivers, etc.

All inputs are equipped with protection circuits against static discharge.



Weight : 0.25g (Typ.)

FEATURES

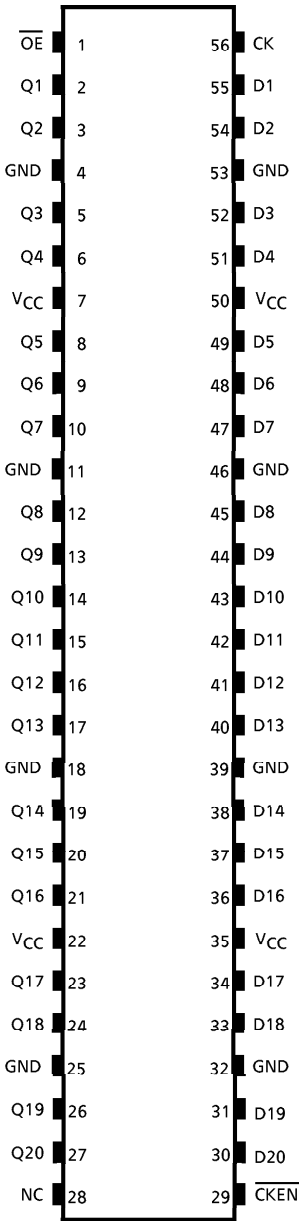
- Low Voltage Operation $V_{CC} = 1.8 \sim 3.6V$
- High Speed Operation : $t_{pd} = \text{TBD (max.)}$ at $V_{CC} = 3.0 \sim 3.6V$
: $t_{pd} = \text{TBD (max.)}$ at $V_{CC} = 2.3 \sim 2.7V$
: $t_{pd} = \text{TBD (max.)}$ at $V_{CC} = 1.8V$
- 3.6V Tolerant inputs and outputs.
- Output Current : $I_{OH} / I_{OL} = \pm 24\text{mA (min.)}$ at $V_{CC} = 3.0V$
: $I_{OH} / I_{OL} = \pm 18\text{mA (min.)}$ at $V_{CC} = 2.3V$
: $I_{OH} / I_{OL} = \pm 6\text{mA (min.)}$ at $V_{CC} = 1.8V$
- Latch-up Performance : $\pm 300\text{mA}$
- ESD Performance : Human Body Model $> \pm 2000V$
: Machine Model $> \pm 200V$
- Package : TSSOP
(Thin Shrink Small Outline Package)
- Power Down Protection is provided on all inputs and outputs.

PRELIMINARY

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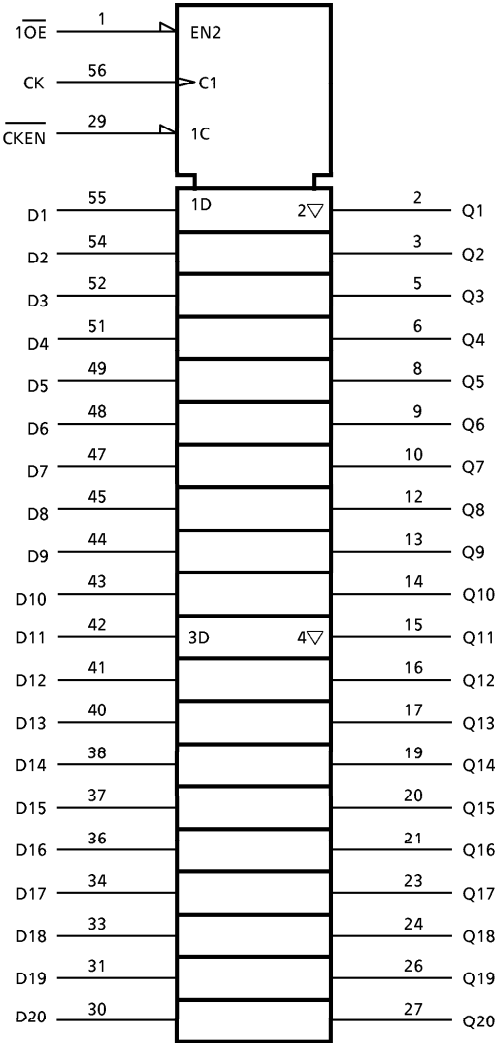
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PIN ASSIGNMENT



(TOP VIEW)

SYMBOL



PRELIMINARY

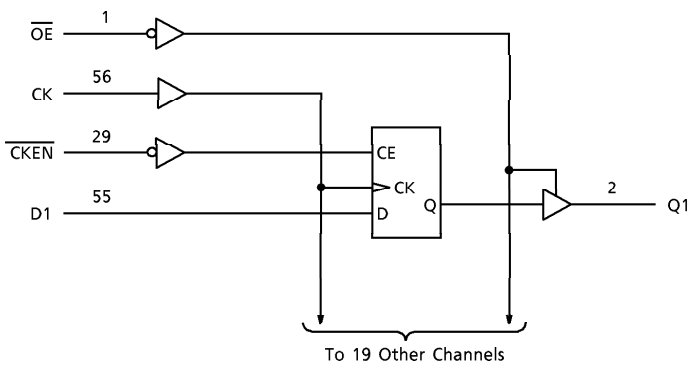
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TRUTH TABLE (each flip flop)

INPUTS				OUTPUTS Q
OE	CKEN	CK	D	
L	H	X	X	Q0
L	L		H	H
L	L		L	L
L	L		X	Q0
H	X	X	X	Z

SYSTEM DIAGRAM



PRELIMINARY

MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT
Power Supply Voltage	V_{CC}	- 0.5~4.6	V
DC Input Voltage	V_{IN}	- 0.5~4.6	V
DC Output Voltage	V_{OUT}	- 0.5~4.6 (Note 1)	V
		- 0.5~ V_{CC} + 0.5 (Note 2)	
Input Diode Current	I_{IK}	- 50	mA
Output Diode Current	I_{OK}	± 50 (Note 3)	mA
DC Output Current	I_{OUT}	± 50	mA
Power Dissipation	P_D	400	mW
DC V_{CC} / Ground Current Per Supply Pin	I_{CC} / I_{GND}	± 100	mA
Storage Temperature	T_{stg}	- 65~150	°C

- (Note 1) Off-State
(Note 2) High or Low State. I_{OUT} absolute maximum rating must be observed.
(Note 3) $V_{OUT} < GND$, $V_{OUT} > V_{CC}$