74AUP1G74XXDO8G
Low Power Single D-Type Positive Edge-Triggered Flip-Flop with Clear and Preset

GENERAL DESCRIPTION

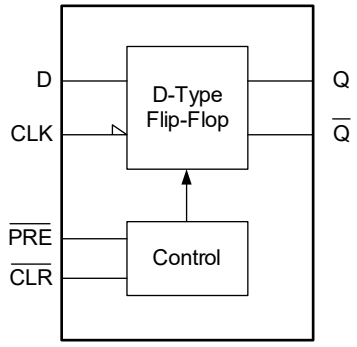
The 74AUP1G74XXDO8G is a low power single positive edge-triggered D-type flip-flop with clear and preset functions. This device can operate in the supply voltage range from 0.8V to 3.6V.

No matter what the levels of the other inputs are, the preset ($\overline{PRE}$) input or clear ($\overline{CLR}$) input can be pulled low to set or reset the outputs. When the preset input and clear input are held high, data at the D input that suffices for setup time purposes is moved to the Q output on the low-to-high clock transition. After the hold time interval, data at the D input can be changed without any influence on output levels. Clock triggering appears at a voltage level which is uncorrelated with the rise time of the clock pulse.

This device is highly suitable for partial power-down applications using power-off leakage current (I_{OFF}) circuit.

The 74AUP1G74XXDO8G is available in a Green XTDFN-1.4×1-8L package. It operates over a temperature range of -40℃ to +125℃.

LOGIC DIAGRAM



FEATURES

- **Wide Supply Voltage Range: 0.8V to 3.6V**
- **Inputs Accept Voltages Higher than the Supply Voltage and up to 3.6V**
- **Low Static Power Dissipation: I_{CC} = 1μA (MAX)**
- **Low Dynamic Power Dissipation: C_{PD} = 6.5pF (TYP) at V_{CC} = 3.3V**
- **Input Capacitance: C_I = 4.5pF (TYP)**
- **Propagation Delay: t_{PD} = 9.1ns (MAX) at V_{CC} = 3.3V**
- **The Overshoot and Undershoot are Less than 10% of V_{CC}**
- **Latch-Up Performance (> 100mA) Meets JESD 78 Class II Standard**
- **Outputs in High-Impedance State when V_{CC} = 0V**
- **-40℃ to +125℃ Operating Temperature Range**
- **Available in a Green XTDFN-1.4×1-8L Package**

FUNCTION TABLE

INPUTS				OUTPUTS	
$\overline{PRE}$	$\overline{CLR}$	CLK	D	Q	$\overline{Q}$
L	H	*X*	*X*	H	L
X	L	*X*	*X*	L	H
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	L	*X*	Q_0	$\overline{Q}_0$

H = High Voltage Level

L = Low Voltage Level

↑ = Low-to-High Clock Transition

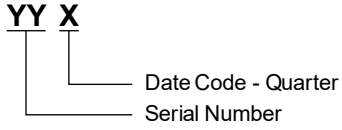
X = Don't Care

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
74AUP1G74XXDO8G	XTDFN-1.4×1-8L	-40℃ to +125℃	74AUP1G74XXDO8G/TR	01X	Tape and Reel, 5000

MARKING INFORMATION

NOTE: X = Date Code.



Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage Range, V_{CC} ..... -0.5V to 4.6V
Input Voltage Range, V_I (1) ..... -0.5V to 4.6V
Output Voltage Range, V_O (1)
High-State or Low-State..... -0.5V to MIN(4.6V, V_{CC} + 0.5V)
Power-Off State ..... -0.5V to 4.6V
Input Clamp Current, I_{IK} (V_I < 0V) .....-50mA
Output Clamp Current, I_{OK} (V_O < 0V) .....-50mA
Continuous Output Current, I_O .....±20mA
Continuous Current through V_{CC} or GND.....±50mA
Junction Temperature (2) .....+150℃
Storage Temperature Range .....-65℃ to +150℃
Lead Temperature (Soldering, 10s).....+260℃
ESD Susceptibility (3) (4)
HBM.....±6000V
CDM .....±1000V

NOTES:

1. The input and output voltage ratings may be exceeded if the input and output clamp current ratings are observed.

2. The performance capability of a high-performance integrated circuit in conjunction with its thermal environment can create junction temperatures which are detrimental to reliability.

3. For human body model (HBM), all pins comply with ANSI/ESDA/JEDEC JS-001 specifications.

4. For charged device model (CDM), all pins comply with ANSI/ESDA/JEDEC JS-002 specifications.

5. Unused input pins must be held at V_{CC} or GND to guarantee the device in normal operation.

OVERSTRESS CAUTION

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range, V_{CC} ..... 0.8V to 3.6V
Input Voltage Range, V_I (5) ..... 0V to 3.6V
Output Voltage Range, V_O
High-State or Low-State .....0V to V_{CC}
Power-Off State ..... 0V to 3.6V
High-Level Output Current, I_{OH}
V_{CC} = 0.8V ..... -20μA (MAX)
V_{CC} = 1.1V ..... -1.1mA (MAX)
V_{CC} = 1.4V ..... -1.7mA (MAX)
V_{CC} = 1.65V ..... -1.9mA (MAX)
V_{CC} = 2.3V ..... -3.1mA (MAX)
V_{CC} = 3.0V ..... -4.0mA (MAX)
Low-Level Output Current, I_{OL}
V_{CC} = 0.8V ..... 20μA (MAX)
V_{CC} = 1.1V ..... 1.1mA (MAX)
V_{CC} = 1.4V ..... 1.7mA (MAX)
V_{CC} = 1.65V ..... 1.9mA (MAX)
V_{CC} = 2.3V ..... 3.1mA (MAX)
V_{CC} = 3.0V ..... 4.0mA (MAX)
Input Transition Rise or Fall Rate, Δt/ΔV..... 200ns/V (MAX)
Operating Temperature Range..... -40℃ to +125℃

ESD SENSITIVITY CAUTION

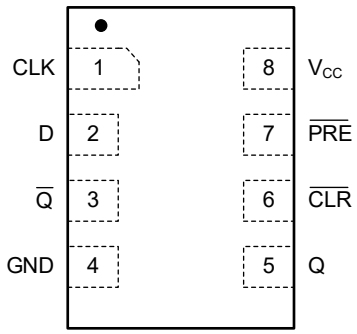
This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

PIN CONFIGURATION

(TOP VIEW)



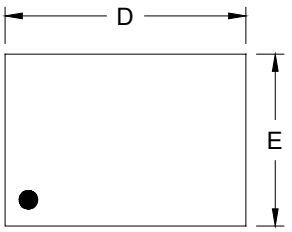
XTDFN-1.4×1-8L

PIN DESCRIPTION

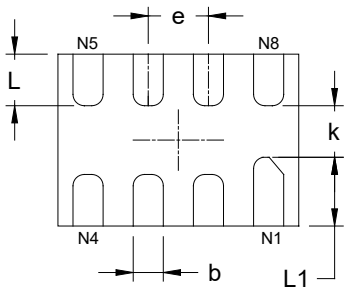
PIN	NAME	FUNCTION
1	CLK	Clock Input (Low-to-High Clock Transition, Edge-Triggered).
2	D	Data Input.
3	$\overline{Q}$	Complementary Output.
4	GND	Ground.
5	Q	Output.
6	$\overline{CLR}$	Clear Input (Active-Low).
7	$\overline{PRE}$	Preset Input (Active-Low).
8	V_{CC}	Supply Voltage.

PACKAGE OUTLINE DIMENSIONS

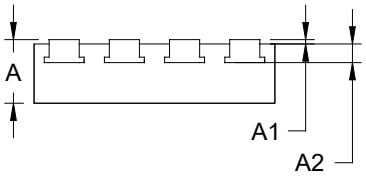
XTDFN-1.4×1-8L



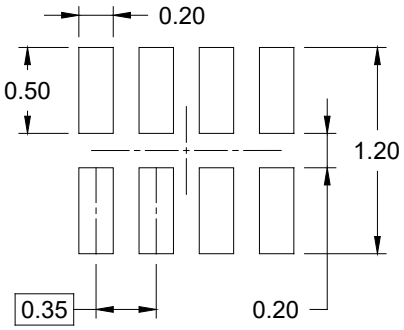
TOP VIEW



BOTTOM VIEW



SIDE VIEW



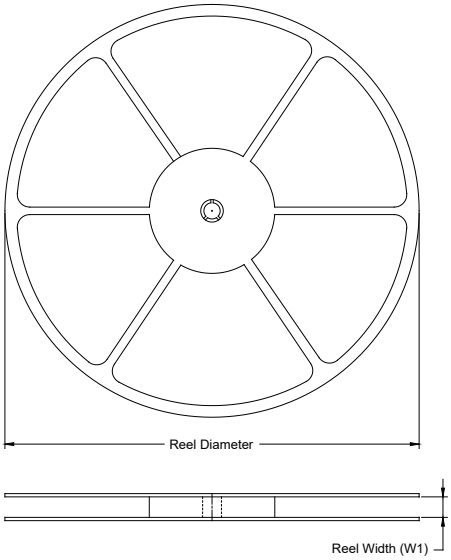
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.340	0.400	0.013	0.016
A1	0.000	0.050	0.000	0.002
A2	0.110 REF		0.004 REF	
D	1.350	1.450	0.053	0.057
E	0.950	1.050	0.037	0.041
k	0.200 MIN		0.008 MIN	
b	0.150	0.200	0.006	0.008
e	0.350 TYP		0.014 TYP	
L	0.250	0.350	0.010	0.014
L1	0.350	0.450	0.014	0.018

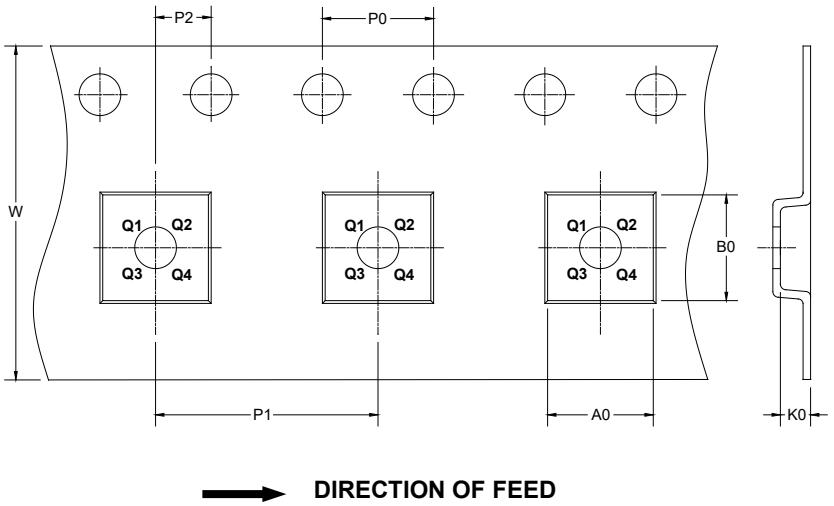
NOTE: This drawing is subject to change without notice.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



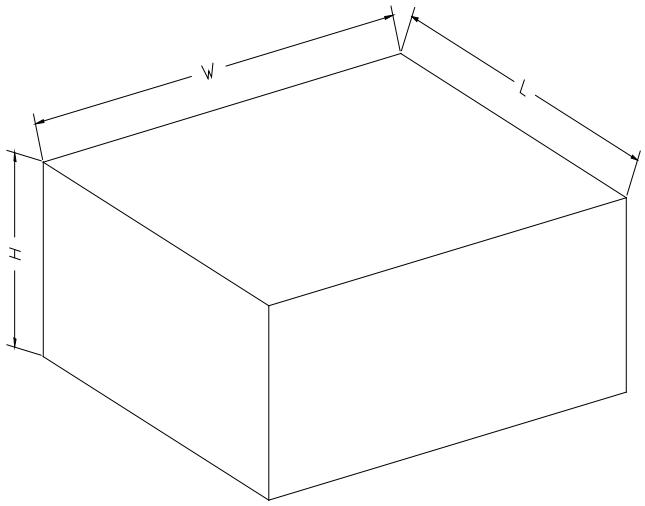
NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
XTDFN-1.4×1-8L	7"	9.5	1.15	1.60	0.50	4.0	4.0	2.0	8.0	Q1

DD0001

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
7″ (Option)	368	227	224	8
7″	442	410	224	18

DD0002