

Non-inverting 1-to-2 Demultiplexer with 3-state Deselected

General Description

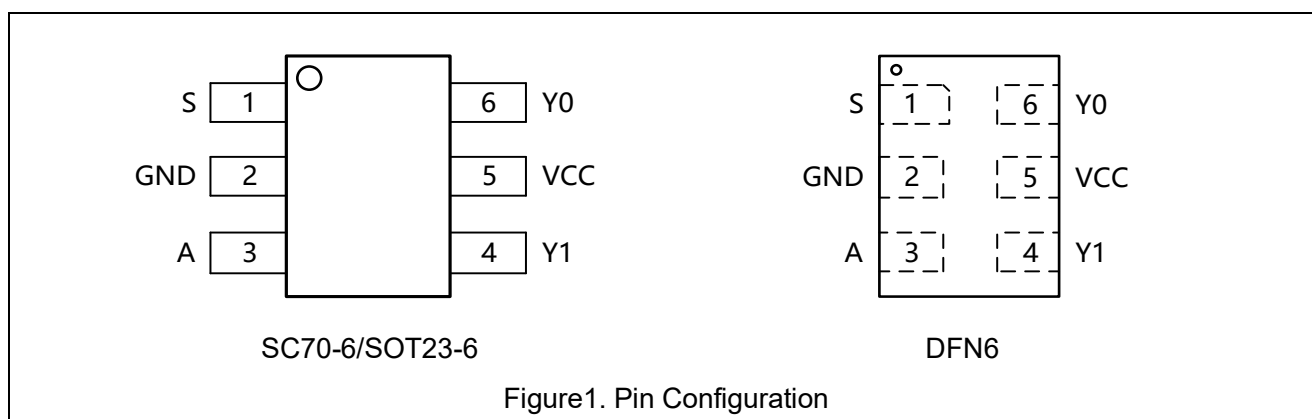
The ET74HCT1G18 is a high-performance non-inverting 1-to-2 demultiplexer. With the Select input [S] at Low, data at A is passed to Y0 and Y1 is set to high impedance. With the Select input [S] at High, data at A is passed to Y1 and Y0 is set to high impedance. The device operates over the voltage range from 4.5V to 5.5V.

Features

- Designed for 4.5V to 5.5V V_{CC} Operation
- Over-voltage Tolerant Inputs Accept Voltages to 5.5V
- $\pm 8\text{mA}$ Balanced Output Sink and Source Capability
- Near Zero Static Supply Current Substantially Reduces System Power Requirements
- These Devices are Pb-Free and RoHS Compliant
- ESD Protection Complies with JESD22 Standard
 - HBM: $\pm 4000\text{V}$ Pass (JEDEC JS-001)
 - CDM: $\pm 1000\text{V}$ Pass (JEDEC JS-002)
- Latch-up Performance Exceeds $\pm 100\text{mA}$ per JEDEC JESD78F
- Part No. and Package Information

Part No.	Package	Packing Option	MSL
ET74HCT1G18	SC70-6 (1.3mm $\times$ 2.1mm)	Tape and Reel, 3K/Reel	1
ET74HCT1G18T	SOT23-6 (1.6mm $\times$ 2.9mm)	Tape and Reel, 3K/Reel	3
ET74HCT1G18Y	DFN6 (1.0mm $\times$ 1.5mm)	Tape and Reel, 3K/Reel	1

Pin Configuration

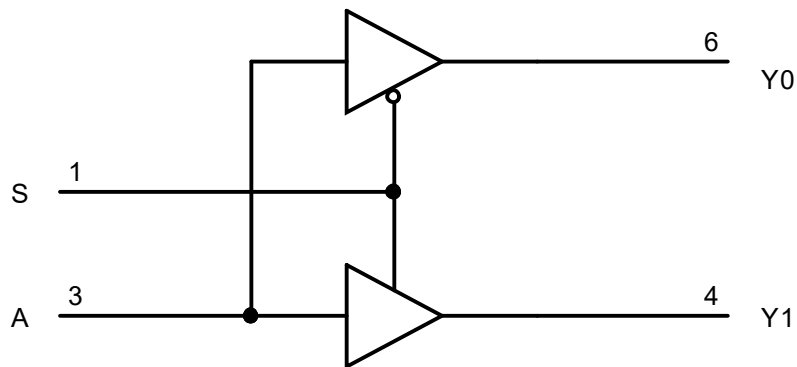


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Pin Function

Pin No.	Pin Name	Pin Function
1	S	Demultiplexer Select
2	GND	Ground
3	A	Data Input
4	Y1	Output 2
5	VCC	Power
6	Y0	Output 1

Block Diagram



Functional Table

Input		Output	
S	A	Y0	Y1
L	L	L	Z
L	H	H	Z
H	L	Z	L
H	H	Z	H

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Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_{CC}	DC Supply Voltage		-0.5 to 7.0	V
V_I	DC Input Voltage ⁽¹⁾		$-0.5 \leq V_I \leq 7.0$	V
V_O	DC Output Voltage Output in Higher or Low State		-0.5 to $V_{CC} + 0.5$	V
I_{IK}	DC Input Diode Current, $V_I < GND$		-20	mA
I_{OK}	DC Output Diode Current, $V_O < GND$, $V_O > V_{CC}$		± 20	mA
I_O	DC Output Sink Current		± 25	mA
I_{CC}	DC Supply Current per Supply Pin		50	mA
I_{GND}	DC Ground Current per Supply Pin		-50	mA
T_{STG}	Storage Temperature Range		-65 to 150	°C
T_L	Lead Temperature, Soldering 10 Seconds		260	°C
T_J	Max Junction Temperature		150	°C
V_{ESD}	ESD Classification	Human Body Model ⁽²⁾	± 4000	V
		Charged Device Model ⁽³⁾	± 1000	
I_{LU}	Max Latch up Current Above V_{CC} and GND at 125°C ⁽⁴⁾		± 100	mA

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Note1: I_O absolute maximum rating must be observed.

Note2: HBM tested per JEDEC JS-001;

Note3: CDM tested per JEDEC JS-002;

Note4: Latch up Current Maximum Rating tested per JEDEC JESD78F.

Thermal Characteristics

Symbol	Package	Ratings	Value	Unit
$R_{\theta JA}$	SC70-6	Thermal Characteristics, Thermal Resistance, Junction-to-Air	280	°C/W
	SOT23-6		180	
	DFN6		440	
P_D	SC70-6	Power Dissipation in Still Air at 85°C	230	mW
	SOT23-6		360	
	DFN6		150	

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Recommended Operating Conditions

Symbol	Parameter		Min	Max	Unit
V _{CC}	DC Supply Voltage Operating		4.5	5.5	V
V _I	DC Input Voltage		0	V _{CC}	V
V _O	DC Output Voltage (High or Low State)		0	V _{CC}	V
T _A	Operating Temperature Range		-40	125	°C
t _r , t _f	Input Rise and Fall Time	V _{CC} = 4.5V to 5.5V	0	20	ns/V

Note5: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

Electrical Characteristics

DC Electrical Characteristics

Symbol	Parameter	Condition	V_{CC} (V)	$T_A = 25^\circ C$			$-40^\circ C \leq T_A \leq 125^\circ C$		Unit
				Min	Typ	Max	Min	Max	
V_{IH}	High-Level Input Voltage		4.5	2			2		V
			5.5	2			2		
V_{IL}	Low-Level Input Voltage		4.5			0.8		0.8	V
			5.5			0.8		0.8	
V_{OH}	High-Level Output Voltage	$I_{OH} = -50\mu A$	4.5	4.4	4.5		4.4		V
		$I_{OH} = -8mA$	4.5	3.94			3.8		
V_{OL}	Low-Level Output Voltage	$I_{OL} = 50\mu A$	4.5			0.1		0.1	V
		$I_{OL} = 8mA$	4.5			0.36		0.44	
I_I	Input Current	$V_I = 5.5V \text{ or } GND$	0~5.5			± 0.1		± 1	μA
I_{OZ}	OFF-state Output Current	$V_O = V_{CC} \text{ or } GND$	5.5			± 0.25		± 2.5	μA
I_{CC}	Supply Current	$V_I = V_{CC} \text{ or } GND, I_O = 0mA$	5.5			1.0		10	μA
$\Delta I_{CC}^{(6)}$	Change in Supply Current	One Input at 3.4 V, Other Inputs at V_{CC} or GND	5.5			1.35		1.5	mA

Note6: This is the increase in supply current for each input at one of the specified TTL voltage levels, rather than 0V or V_{CC} .

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AC Electrical Characteristics

$t_r = t_f = 3\text{ns}$

Symbol	Parameter	Condition	$V_{CC}(\text{V})$	$T_A = 25^\circ\text{C}$			$-40^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		Unit
				Min	Typ	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation Delay	$C_L = 50\text{pF}$	4.5		14	25		29	ns
		$C_L = 15\text{pF}$	5.0		12				
t_{PZL} t_{PZH}	Output Enable Time	$C_L = 50\text{pF}$	4.5		12	30		34	ns
t_{PLZ} t_{PHZ}	Output Disable Time	$C_L = 50\text{pF}$	4.5		13	26		30	ns

Capacitance Characteristics

$V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$

Symbol	Parameter	Condition	Typ	Unit
C_I	Input Capacitance	$V_I = V_{CC}$ or GND	4	pF
C_{PD} (7)	Power Dissipation Capacitance	No Load, $f = 1\text{MHz}$	14	pF

Note7: C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o)$ where:

f_i = input frequency in MHz;

f_o = output frequency in MHz;

C_L = output load capacitance in pF;

V_{CC} = supply voltage in V;

N = number of inputs switching;

$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of outputs.

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AC Test Circuit

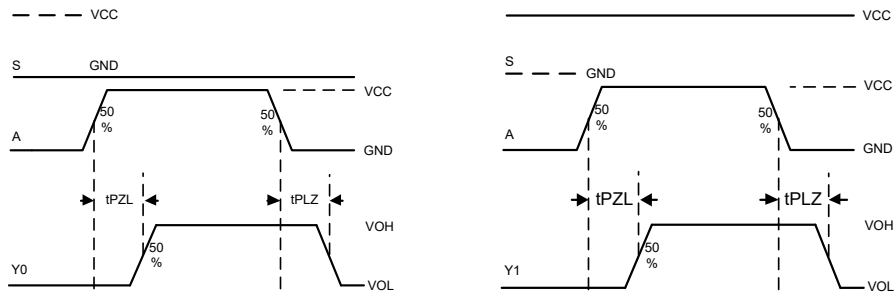


Figure3. Switching Waveform

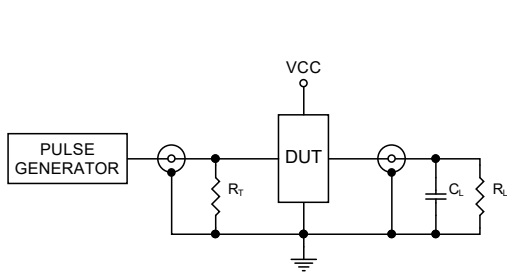
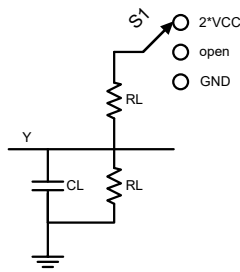


Figure4. Test Circuit $R_T = 50\Omega(\text{typ})$



Test	Switch
t_{PD}	Open
t_{PZL}, t_{PLZ}	$2 \cdot V_{CC}$
t_{PZH}, t_{PHZ}	GND

Figure5. Output Enable/Disable Time Test Circuit

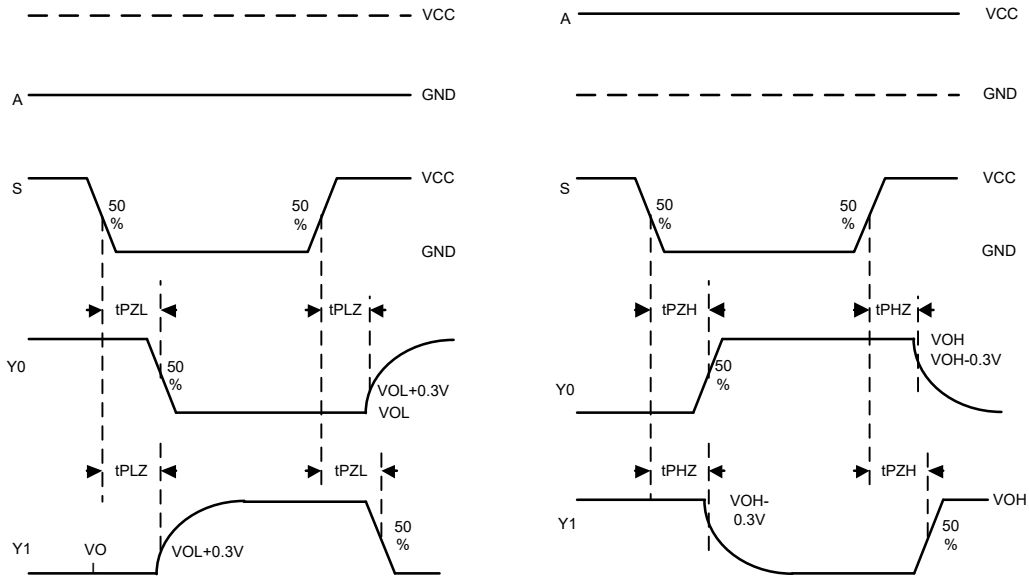
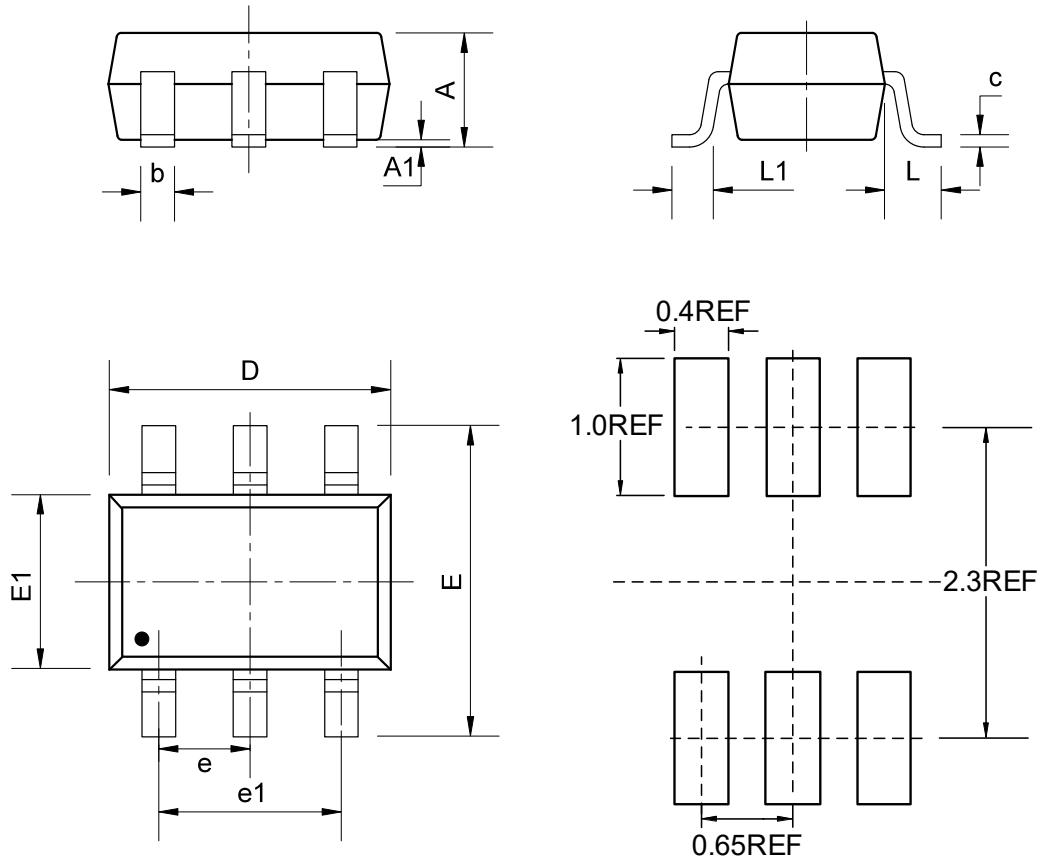


Figure6. Output Enable/Disable Waveform

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Package Dimension

SC70-6 (1.3mm × 2.1mm)



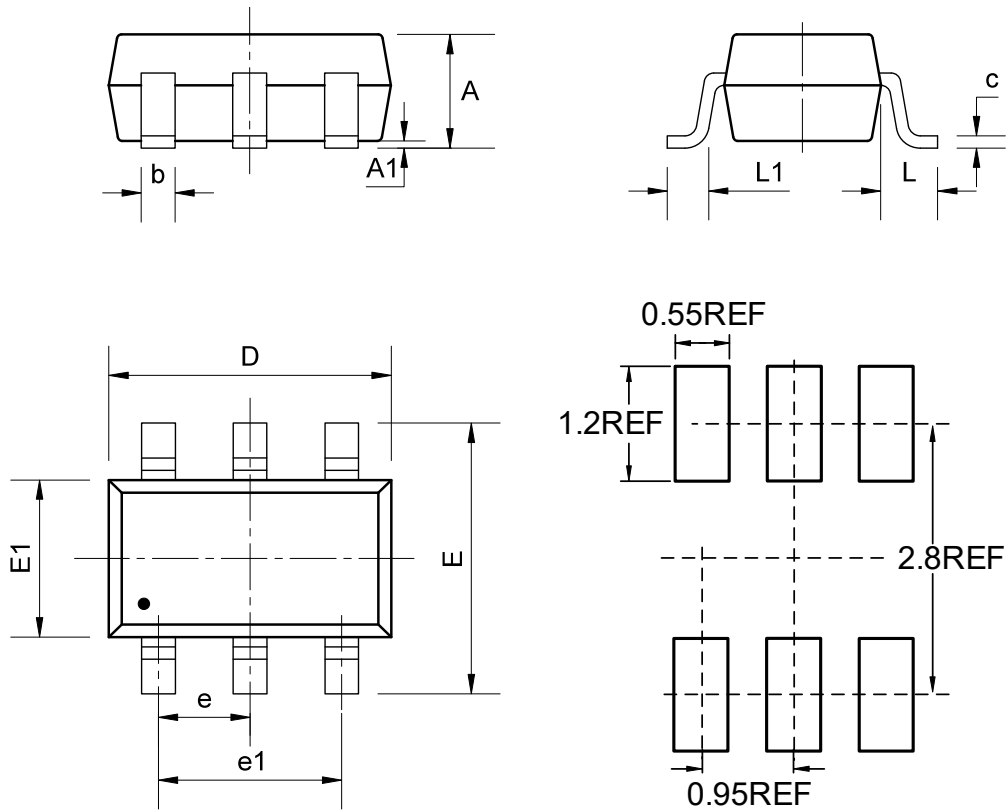
COMMON DIMENSIONS

(Unit: mm)

SYMBOL	MIN	NOM	MAX
A	-	-	1.10
A1	0.00	-	0.15
b	0.15	-	0.35
c	0.08	-	0.20
D	2.00	2.10	2.30
e	0.65BSC		
e1	1.30BSC		
E	2.15	2.30	2.50
E1	1.15	1.30	1.45
L	0.50REF		
L1	0.33REF		

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SOT23-6 (1.6mm × 2.9mm)



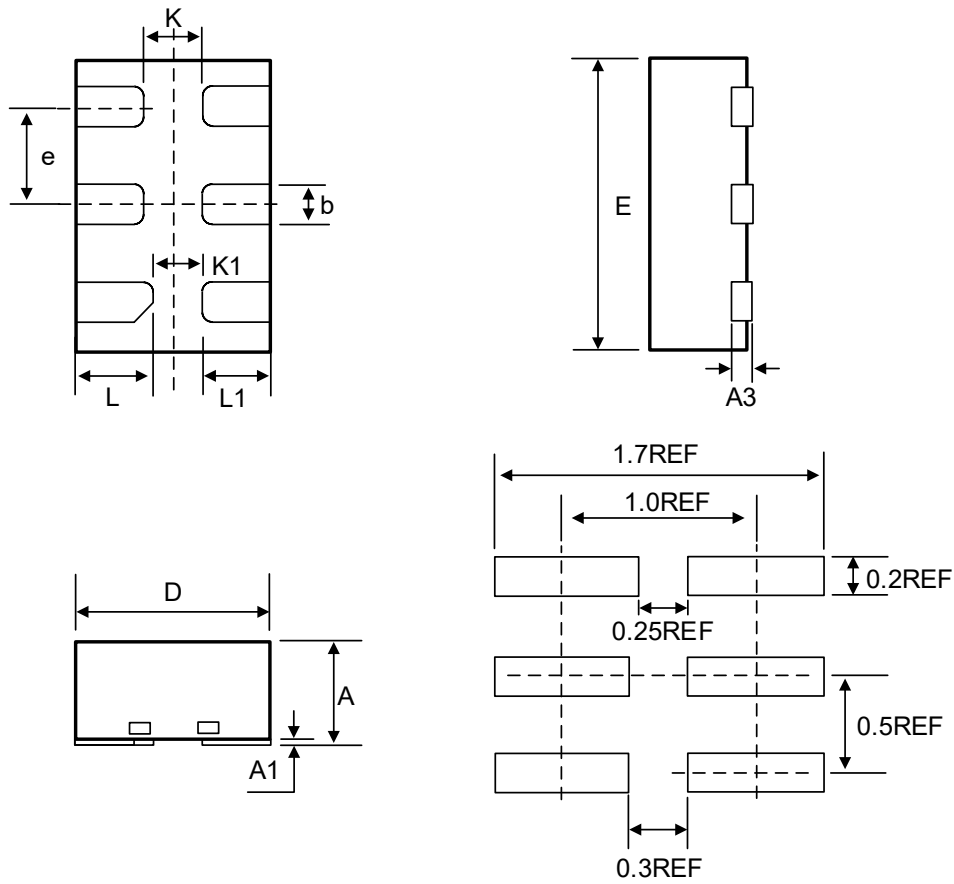
COMMON DIMENSIONS

(Unit: mm)

SYMBOL	MIN	NOM	MAX
A	-	-	1.45
A1	0.00	-	0.15
b	0.28	0.35	0.50
c	0.08	0.15	0.22
D	2.75	2.9	3.05
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
E	2.60	2.80	3.00
E1	1.45	1.6	1.75
L	0.60REF		
L1	0.30	0.45	0.60

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DFN6 (1.0mm × 1.5mm)



COMMON DIMENSIONS

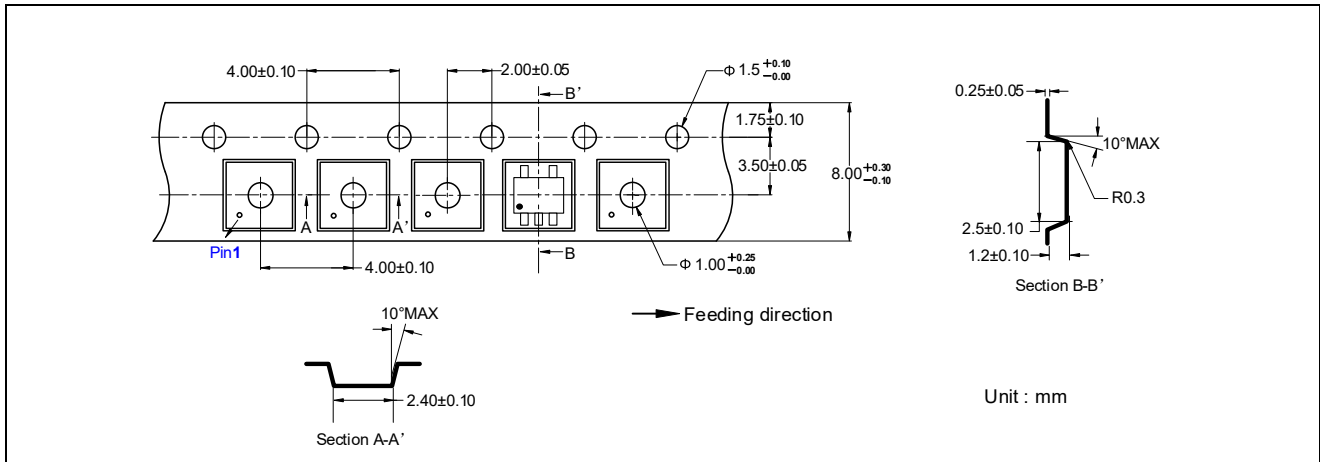
(Unit: mm)

SYMBOL	MIN	NOM	MAX
A	0.50	--	0.60
A1	0.00	0.02	0.05
A3	0.10REF		
b	0.15	0.20	0.25
D	0.90	1.00	1.10
E	1.40	1.50	1.60
e	0.50BSC		
K	0.30REF		
K1	0.25REF		
L	0.35	0.40	0.45
L1	0.30	0.35	0.40

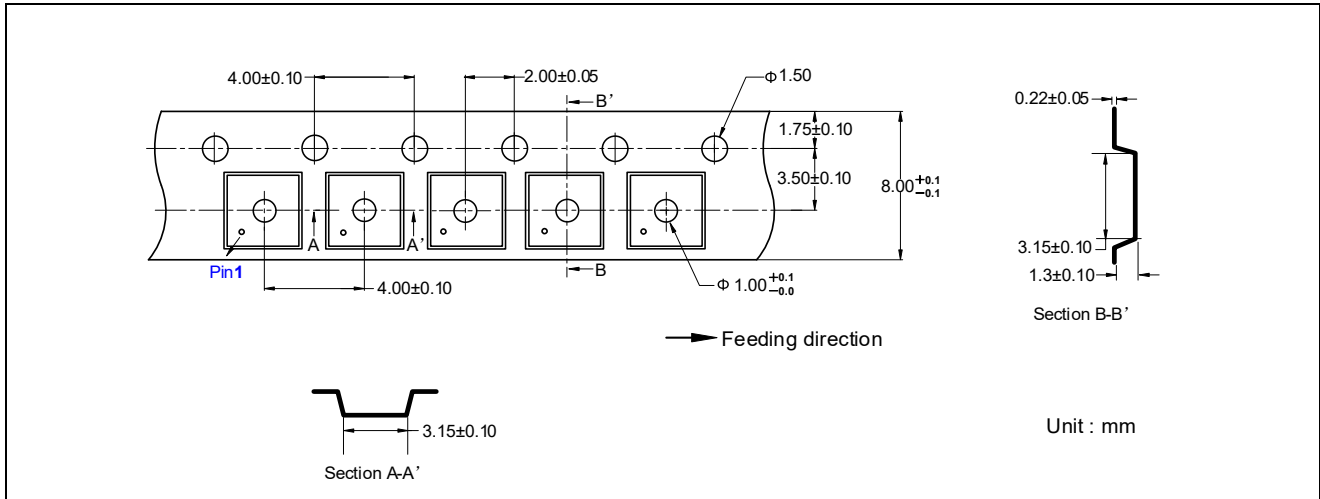
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Tape Information

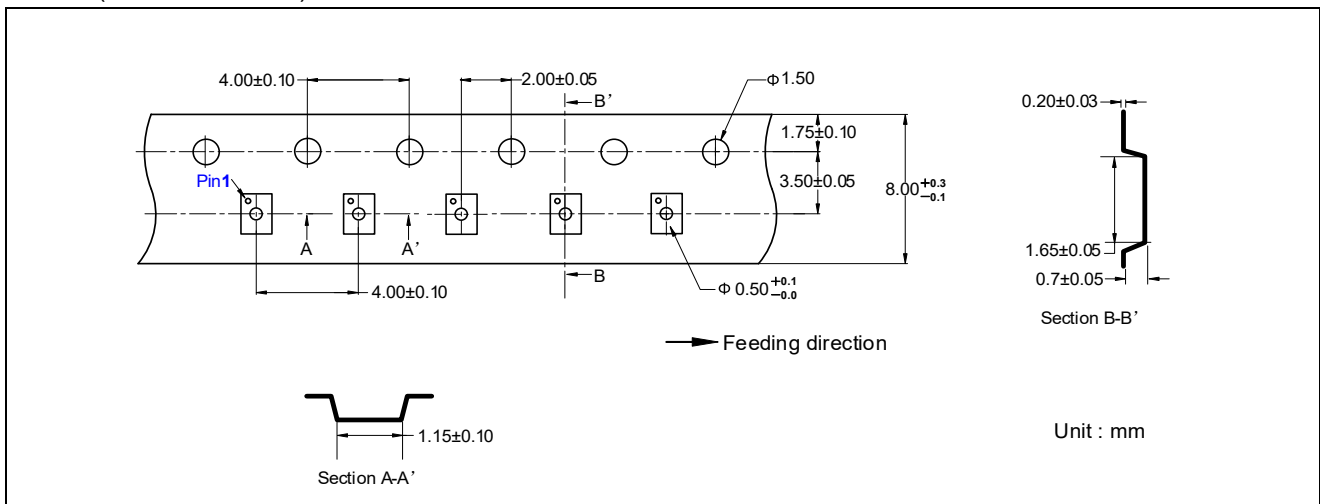
SC70-6 (1.3mm × 2.1mm)



SOT23-6 (1.6mm × 2.9mm)

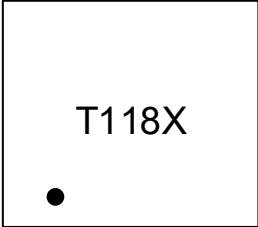
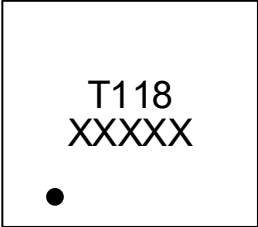


DFN6 (1.0mm × 1.5mm)



ET74HCT1G18

Marking Information

	
ET74HCT1G18	ET74HCT1G18T
T118 = Part Number	T118 = Part Number
X = Tracking Number	XXXXX = Tracking Number

Revision History and Checking Table

Version	Date	Revision Item	Modifier	Function & Spec Checking	Package & Tape Checking
1.0	2026-04-08	Official Version	Xu tao	Yang xiaoxu	Liu jiaying