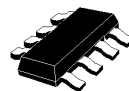


DUAL BUS BUFFER NON INVERTED (3-STATE)

- HIGH SPEED: $t_{PD} = 3.8ns$ (TYP.) at $V_{CC} = 5V$
- LOW POWER DISSIPATION:
 $I_{CC} = 1\mu A$ (MAX.) at $T_A = 25^\circ C$
- POWER DOWN PROTECTION ON INPUTS AND OUTPUTS
- COMPATIBLE WITH TTL LEVEL:
 $V_{IH} = 2.0V$ (MIN), $V_{IL} = 0.8V$ (MAX)
- SYMMETRICAL OUTPUT IMPEDANCE:
 $|I_{OH}| = I_{OL} = 8mA$ (MIN) at $V_{CC} = 4.5V$
- BALANCED PROPAGATION DELAYS:
 $t_{PLH} \cong t_{PHL}$
- OPERATING VOLTAGE RANGE:
 $V_{CC}(OPR) = 4.5V$ to $5.5V$
- IMPROVED LATCH-UP IMMUNITY

DESCRIPTION

The 74V2T241 is an advanced high-speed CMOS DUAL BUS BUFFER NON INVERTER fabricated with sub-micron silicon gate and double-layer metal wiring C²MOS technology. It has one active-high and one active-low output enable. Power down protection is provided on all



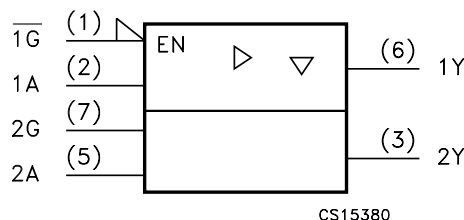
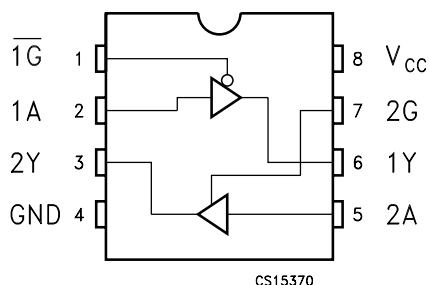
SOT23-8L

ORDER CODES

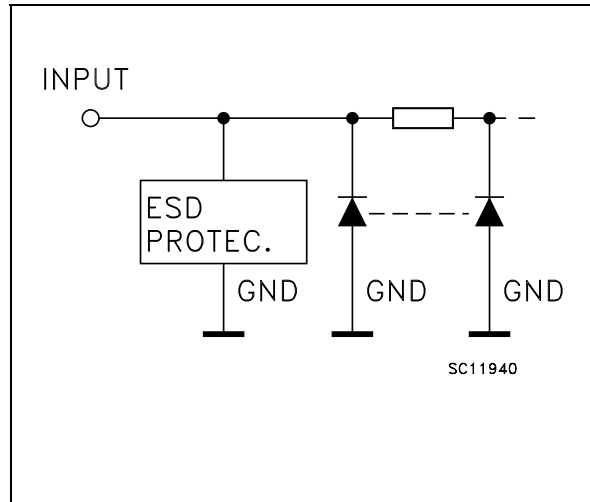
PACKAGE	T & R
SOT23-8L	74V2T241STR

inputs and outputs and 0 to 7V can be accepted on inputs with no regard to the supply voltage. This device can be used to interface 5V to 3V systems and it is ideal for portable applications like personal digital assistant, camcorder and all battery-powered equipment. All inputs and outputs are equipped with protection circuits against static discharge, giving them ESD immunity and transient excess voltage.

PIN CONNECTION AND IEC LOGIC SYMBOLS



INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

PIN N°	SYMBOL	NAME AND FUNCTION
1, 7	$\overline{1G}$, 2G	Output Enable Inputs
2, 5	1A, 2A	Data Inputs
3, 6	2Y, 1Y	Data Outputs
4	GND	Ground (0V)
8	V _{CC}	Positive Supply Voltage

TRUTH TABLE

$\overline{1G}$	2G	A	Y
L	H	L	L
L	H	H	H
H	L	X	Z

X: "H" or "L"

Z: High Impedance

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	-0.5 to +7.0	V
V _I	DC Input Voltage	-0.5 to +7.0	V
V _O	DC Output Voltage (see note 1)	-0.5 to +7.0	V
V _O	DC Output Voltage (see note 2)	-0.5 to V _{CC} + 0.5	V
I _{IK}	DC Input Diode Current	- 20	mA
I _{OK}	DC Output Diode Current	- 20	mA
I _O	DC Output Current	± 25	mA
I _{CC} or I _{GND}	DC V _{CC} or Ground Current	± 50	mA
T _{stg}	Storage Temperature	-65 to +150	°C
T _L	Lead Temperature (10 sec)	260	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

1) V_{CC}=0V or $\overline{nG}$ =V_{CC}(Output in High Impedance state)

2) High or Low State

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	4.5 to 5.5	V
V _I	Input Voltage	0 to 5.5	V
V _O	Output Voltage (see note 1)	0 to 5.5	V
V _O	Output Voltage (see note 2)	0 to V _{CC}	V
T _{op}	Operating Temperature	-55 to 125	°C
dt/dv	Input Rise and Fall Time (note 3) (V _{CC} = 5.0 ± 0.5V)	0 to 20	ns/V

1) V_{CC}=0V or Output in High Impedance state

2) High or Low State

3) V_{IN} from 0.8 to 2.0V

DC SPECIFICATIONS

Symbol	Parameter	Test Condition		Value						Unit	
		V _{CC} (V)		T _A = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.		Max.
V _{IH}	High Level Input Voltage	4.5 to 5.5		0.8			0.8		0.8		V
V _{IL}	Low Level Input Voltage	4.5 to 5.5				2.0		2.0		2.0	V
V _{OH}	High Level Output Voltage	4.5	I _O =-50 μA	4.4	4.5		4.4		4.4		V
		4.5	I _O =-8 mA	3.94			3.8		3.7		
V _{OL}	Low Level Output Voltage	4.5	I _O =50 μA		0.0	0.1		0.1		0.1	V
		4.5	I _O =8 mA			0.36		0.44		0.44	
I _{OZ}	High Impedance Output Leakage Current	5.5	V _I = V _{IH} or V _{IL} V _O = 5.5 or GND			±0.25		± 2.5		± 2.5	μA
I _I	Input Leakage Current	0 to 5.5	V _I = 5.5V or GND			± 0.1		± 1		± 1	μA
I _{OPD}	Power down Output Leakage Current	0	V _O = 5.5			0.5		5		10	μA
I _{CC}	Quiescent Supply Current	5.5	V _I = V _{CC} or GND			1		10		10	μA

AC ELECTRICAL CHARACTERISTICS (Input t_r = t_f = 3ns)

Symbol	Parameter	Test Condition			Value							Unit
		V _{CC} (V)	C _L (pF)		T _A = 25°C			-40 to 85°C		-55 to 125°C		
					Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
t _{PLH} t _{PHL}	Propagation Delay Time	5.0 ^(**)	15			3.8	5.5	1.0	6.5	1.0	7.5	ns
		5.0 ^(**)	50			4.3	6.5	1.0	7.5	1.0	8.5	
t _{PLZ} t _{PHZ}	Output Disable Time	5.0 ^(**)	15	R _L = 1 KΩ		3.6	5.0	1.0	6.0	1.0	7.0	ns
		5.0 ^(**)	50	R _L = 1 KΩ		5.1	7.0	1.0	8.0	1.0	9.0	
t _{PZL} t _{PZH}	Output Enable Time	5.0 ^(**)	15	R _L = 1 KΩ		3.7	5.9	1.0	7.0	1.0	8.0	ns
		5.0 ^(**)	50	R _L = 1 KΩ		4.1	6.5	1.0	7.5	1.0	8.5	

(**) Voltage range is 5.0V ± 0.5V

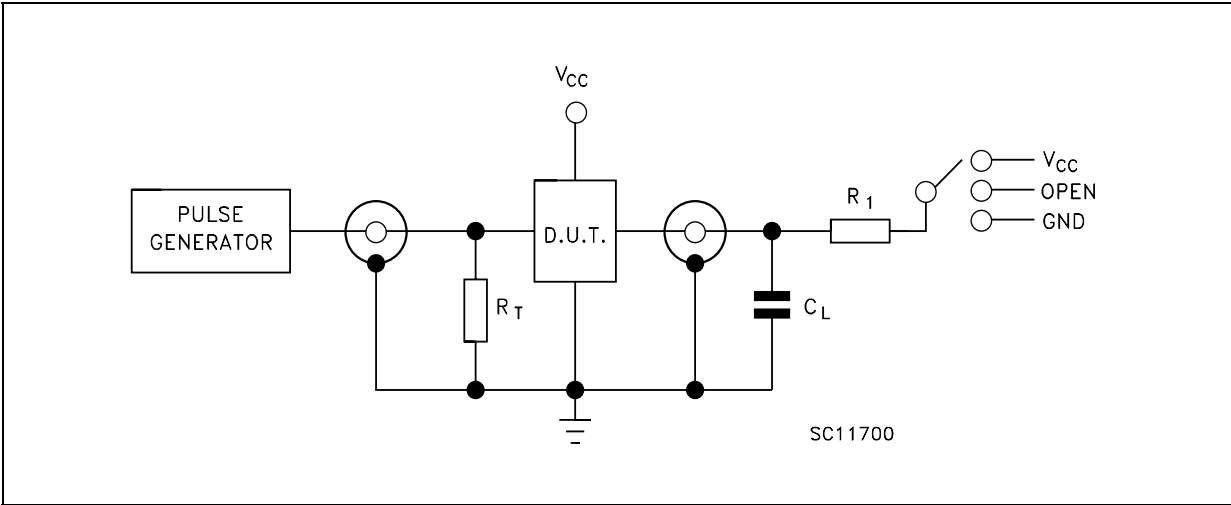
CAPACITIVE CHARACTERISTICS

Symbol	Parameter	Test Condition	Value							Unit
			T _A = 25°C			-40 to 85°C		-55 to 125°C		
			Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
C _{IN}	Input Capacitance			4	10		10		10	pF
C _{OUT}	Output Capacitance			6						pF
C _{PD}	Power Dissipation Capacitance (note 1)			14						pF

1) C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average current can be obtained by the following equation. I_{CC(OPR)} = C_{PD} × V_{CC} × f_{IN} + I_{CC}/2



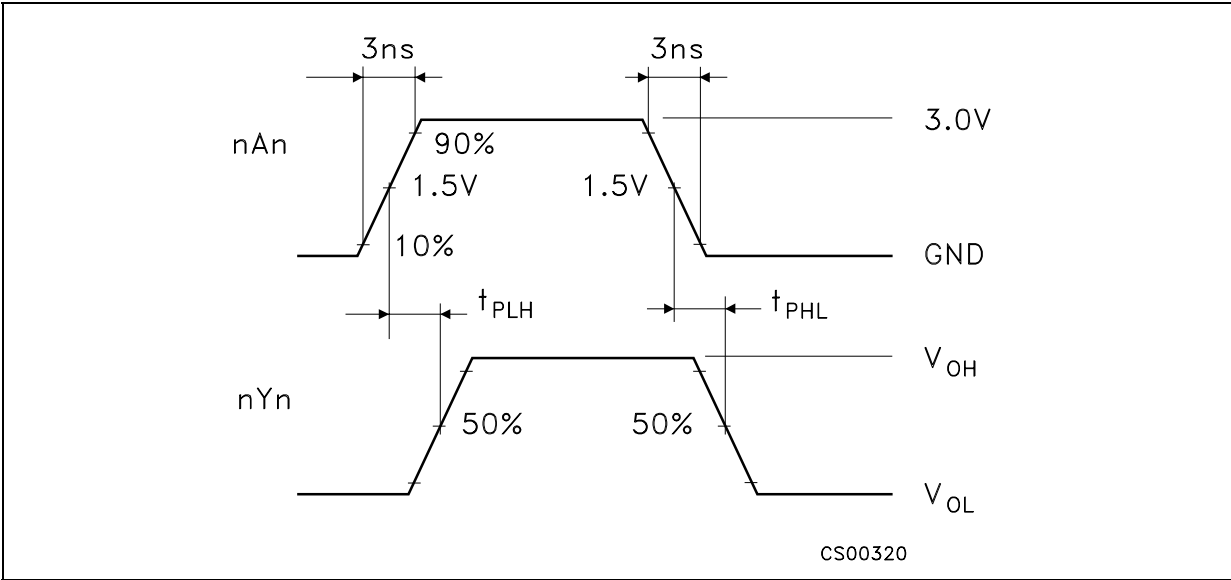
TEST CIRCUIT TEST CIRCUIT

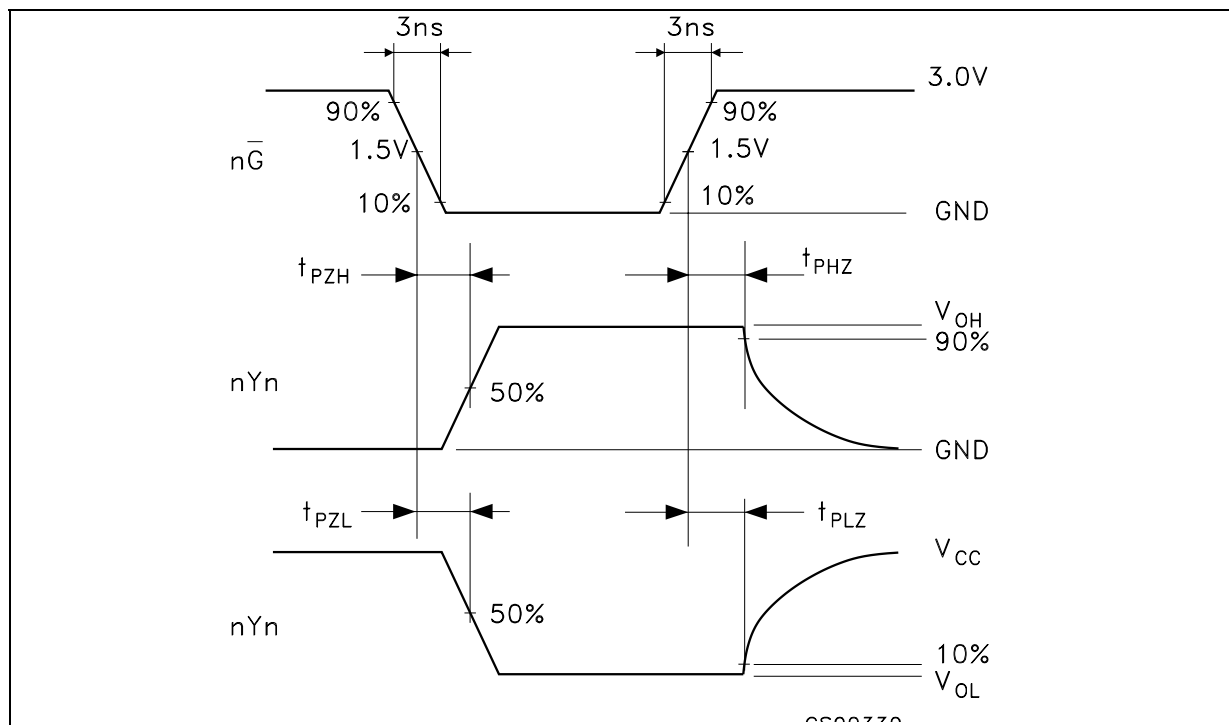


TEST	SWITCH
t_{PLH}, t_{PHL}	Open
t_{PZL}, t_{PLZ}	V_{CC}
t_{PZH}, t_{PHZ}	GND

$C_L = 15/50\text{pF}$ or equivalent (includes jig and probe capacitance)
 $R_1 = 1\text{K}\Omega$ or equivalent
 $R_T = Z_{OUT}$ of pulse generator (typically 50Ω)

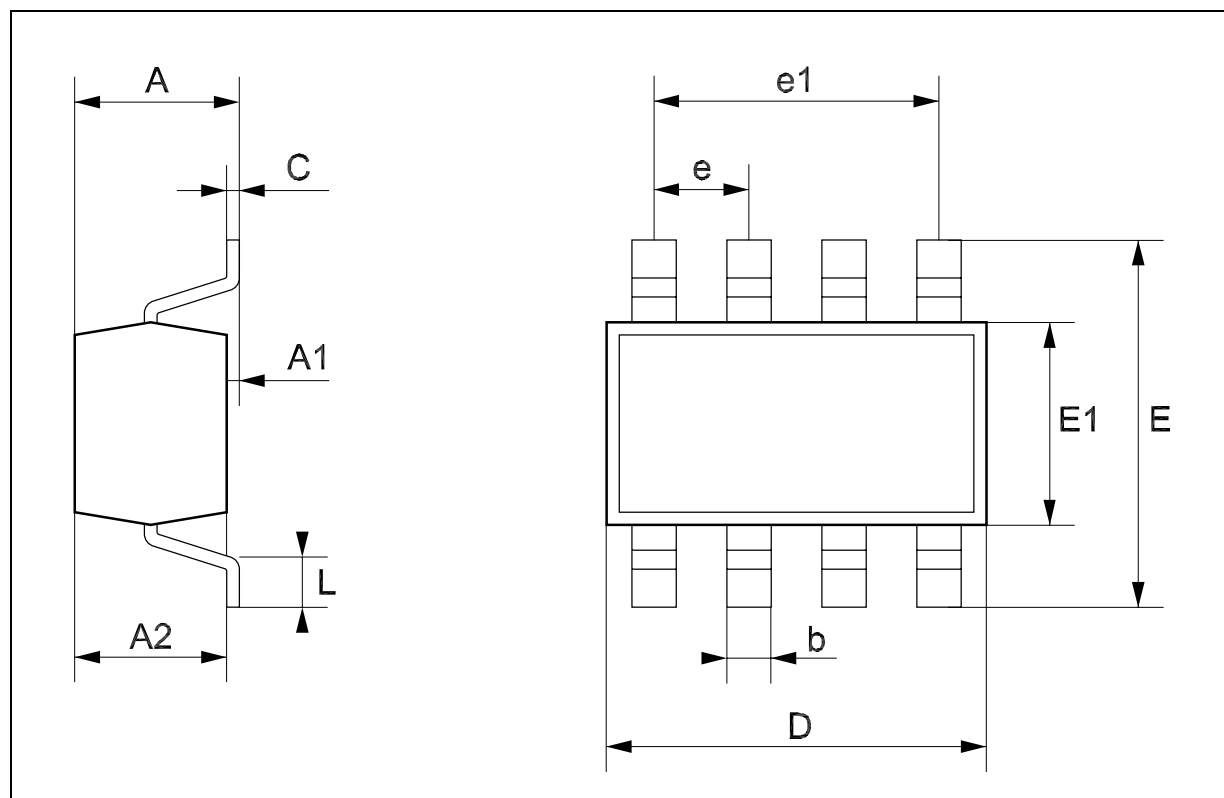
WAVEFORM 1 : PROPAGATION DELAYS (f=1MHz; 50% duty cycle)



WAVEFORM 2: OUTPUT ENABLE AND DISABLE TIME ($f=1\text{MHz}$; 50% duty cycle)

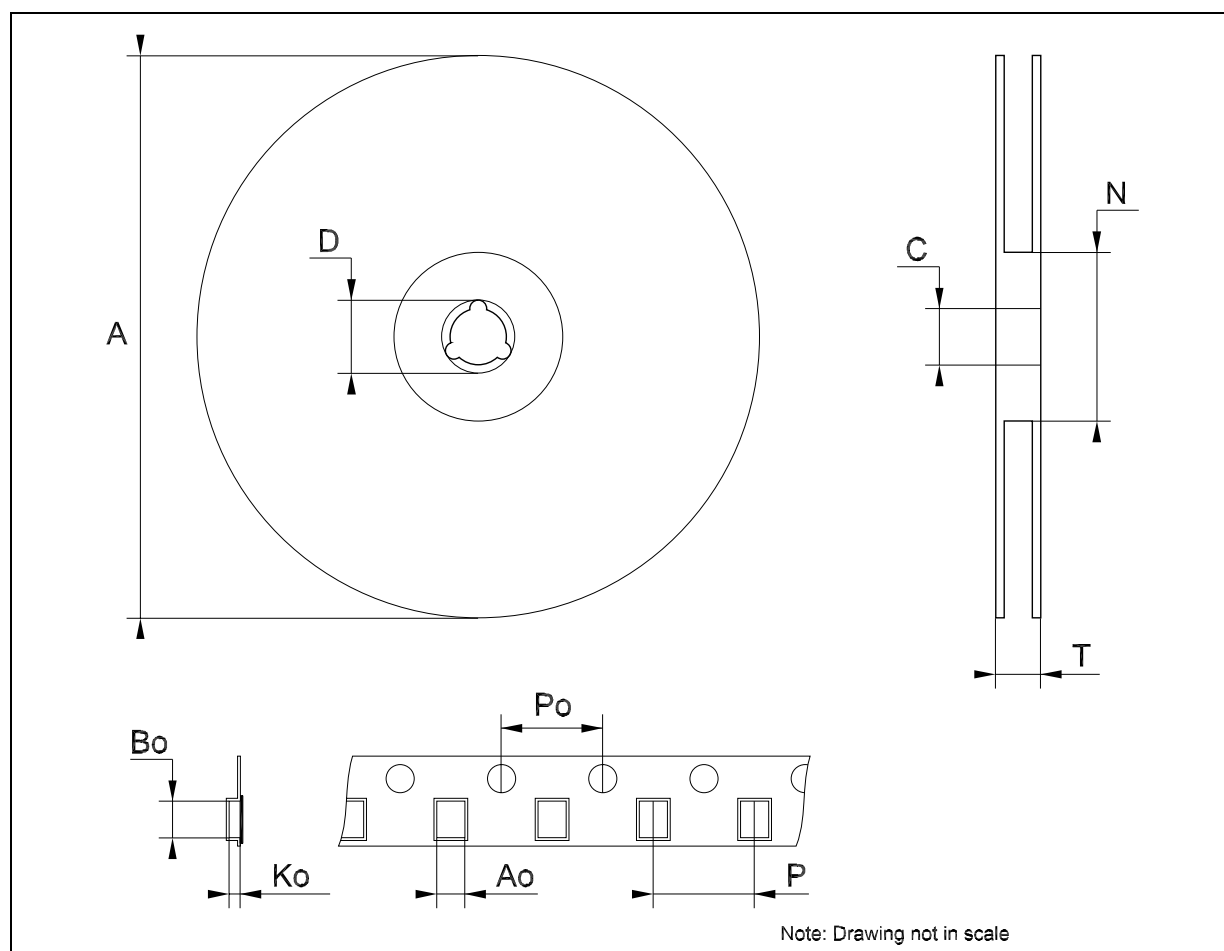
SOT23-8L MECHANICAL DATA

DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	0.90		1.45	35.4		57.1
A1	0.00		0.15	0.0		5.9
A2	0.90		1.30	35.4		51.2
b	0.22		0.38	8.6		14.9
C	0.09		0.20	3.5		7.8
D	2.80		3.00	110.2		118.1
E	2.60		3.00	102.3		118.1
E1	1.50		1.75	59.0		68.8
e	0	.65			25.6	
e1		1.95			76.7	
L	0.35		0.55	13.7		21.6



Tape & Reel SOT23-xL MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			180			7.086
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			14.4			0.567
Ao	3.13	3.23	3.33	0.123	0.127	0.131
Bo	3.07	3.17	3.27	0.120	0.124	0.128
Ko	1.27	1.37	1.47	0.050	0.054	0.058
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	3.9	4.0	4.1	0.153	0.157	0.161



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