

Features

- Operate from 1.65V to 5.5V
- Inputs Accept Voltages to 5.5V
- High Noise Immunity
- Low Power Dissipation
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

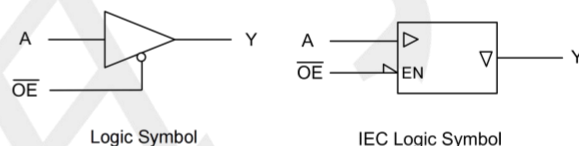
General Description

The TP74LVC1G125 is a single bus buffer/line driver with 3-state output. When the output enable ($\overline{OE}$) is high the output will be disabled. In contrast, when the $\overline{OE}$ is low, true data will pass from A input to the Y output. This device has power-down protective circuit to prevent the device from destruction when it is powered down.

Applications

- AV Receiver
- Audio Dock: Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power: Telecom/Server AC/DC Supply: Single Controller: Analog and Digital
- Solid State Drive(SSD): Client and Enterprise
- Wireless Headset, Keyboard, and Mouse

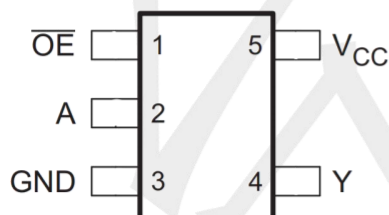
Logic Diagram



Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	Marking
TP74LVC1G125S5	SOT23-5	Tape and Reel, 3000	S125
TP74LVC1G125C5	SOT353	Tape and Reel, 3000	C125
TP74LVC1G125X5	SOT553	Tape and Reel, 4000	CM7
TP74LVC1G125D6	DFN1X1-6	Tape and Reel, 5000	CM
TP74LVC1G125N6	DFN1510-6	Tape and Reel, 5000	DM
TP74LVC1G125P6	DFN0808-4	Tape and Reel, 3000	R4

Pin Configuration



SOT23-5 / SOT353 / SOT553

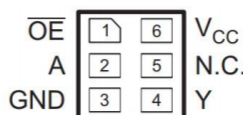
Function Table

INPUT($\overline{OE}$)	INPUT(A)	OUTPUT(Y)
L	L	L
L	H	H
H	X	Z

Note: H: HIGH voltage level; L: LOW voltage level; X=don't care; Z=high-impedance OFF-state.



DFN1510-6



DFN1X1-6



DFN0808-4

Absolute Maximum Ratings

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5 ~ +6.5	V
Input Voltage	V _{IN}		-0.5 ~ +6.5	V
Output Voltage	V _{OUT}	Enable mode	-0.5 ~ V _{CC} + 0.5	V
		Disable mode	-0.5 ~ +6.5	V
		Power-down mode	-0.5 ~ +6.5	V
V _{CC} or GND Current	I _{CC}	Output in the Power-off state	±100	mA
Continuous Output Current	I _{OUT}	V _{OUT} =0~V _{CC}	±50	mA
Input Clamp Current	I _{IK}	V _{IN} <0	-50	mA
Output Clamp Current	I _{OK}	V _{OUT} <0	-50	mA
Storage Temperature Range	T _{STG}		-65 ~ +150	°C
Junction to Ambient	θ_{JA}	SOT-23-5	230	°C/W
		SOT353	280	°C/W
		SOT553	250	°C/W
		DFN1X1-6	460	°C/W
		DFN1510-6	440	°C/W
		DFN0808-4	340	°C/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Recommended Operating Conditions

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}	Operating	1.65	--	5.5	V
Input Voltage	V _{IN}		0	--	5.5	V
Output Voltage	V _{OUT}	V _{CC} =1.65V ~ 5.5V; Enable mode	0	--	V _{CC}	V
		V _{CC} =1.65V ~ 5.5V; Disable mode	0	--	5.5	V
		V _{CC} =0V; Power-down mode	0	--	5.5	V
Input Transition Rise or Fall Rate	t _R /t _F	V _{CC} =1.65V ~ 2.7V	--	--	20	ns/V
		V _{CC} =2.7V ~ 5.5V	--	--	10	ns/V
Operating Temperature	T _A		-40	--	125	°C

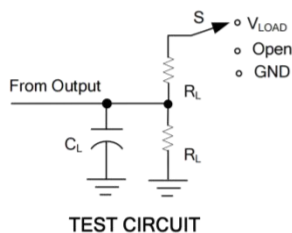
Electrical Characteristics (unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	TA=25°C			TA=-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V ~ 1.95V	0.65×V _{CC}	--	--	0.65×V _{CC}	--	--	V
		V _{CC} =2.3V ~ 2.7V	1.7	--	--	1.7	--	--	V
		V _{CC} =3V ~ 3.6V	2	--	--	2	--	--	V
		V _{CC} =4.5V ~ 5.5V	0.7×V _{CC}	--	--	0.7×V _{CC}	--	--	V
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V ~ 1.95V	--	--	0.35×V _{CC}	--	--	0.35×V _{CC}	V
		V _{CC} =2.3V ~ 2.7V	--	--	0.7	--	--	0.7	V
		V _{CC} =3V ~ 3.6V	--	--	0.8	--	--	0.8	V
		V _{CC} =4.5V ~ 5.5V	--	--	0.35×V _{CC}	--	--	0.35×V _{CC}	V
High-Level Output Voltage	V _{OH}	V _{CC} =1.65 ~ 5.5V, I _{OH} =-100μA	V _{CC} -0.1	--	--	V _{CC} -0.1	--	--	V
		V _{CC} =1.65V, I _{OH} =-4mA	1.2	--	--	0.95	--	--	V
		V _{CC} =2.3V, I _{OH} =-8mA	1.9	--	--	1.7	--	--	V
		V _{CC} =2.7V, I _{OH} =-12mA	2.2	--	--	1.9	--	--	V
		V _{CC} =3.0V, I _{OH} =-24mA	2.3	--	--	2	--	--	V
		V _{CC} =4.5V, I _{OH} =-32mA	3.8	--	--	3.4	--	--	V
Low-Level Output Voltage	V _{OL}	V _{CC} =1.65 ~ 5.5V, I _{OL} =100μA	--	--	0.1	--	--	0.1	V
		V _{CC} =1.65V, I _{OL} =4mA	--	--	0.45	--	--	0.7	V
		V _{CC} =2.3V, I _{OL} =8mA	--	--	0.3	--	--	0.45	V
		V _{CC} =3.0V, I _{OL} =16mA	--	--	0.4	--	--	0.6	V
		V _{CC} =3.0V, I _{OL} =24mA	--	--	0.55	--	--	0.8	V
		V _{CC} =4.5V, I _{OL} =32mA	--	--	0.55	--	--	0.8	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 5.5V, V _{IN} =5.5V or GND	--	±0.1	±5	--	--	±5	μA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V	--	±0.1	±10	--	--	±10	μA
Quiescent Supply Current	I _Q	V _{CC} =1.65 ~ 5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0A	--	±0.1	10	--	--	±10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI _Q	V _{CC} =3 ~ 5.5V, One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND	--	5	500	--	--	500	μA

SWITCHING CHARACTERISTICS (unless otherwise specified)

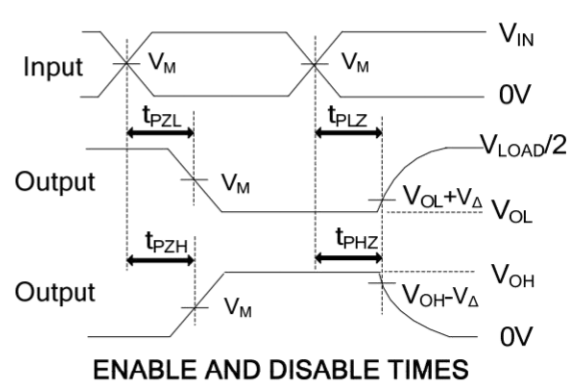
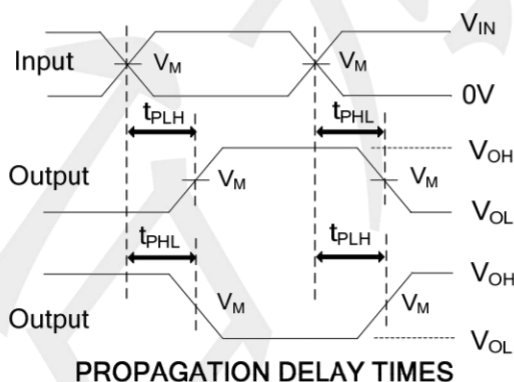
PARAMETER	SYMBOL	TEST Conditions		TA=25°C			TA=-40°C~+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input A to Output Y	t _{PLH} / t _{PHL}	CL=30pF	V _{CC} =1.8±0.15V, R _L =1KΩ	1	12	19	--	--	21	nS
			V _{CC} =2.5±0.2V, R _L =500Ω	0.5	8	15	--	--	17	nS
		CL=50pF R _L =500Ω	V _{CC} =2.7V	0.5	6	12	--	--	14	nS
			V _{CC} =3.3±0.3V	0.5	5	9	--	--	11	nS
			V _{CC} =5±0.5V	0.5	3	7	--	--	9	nS
3-State Output Enable Time From Input OE to Output Y	t _{PZH} / t _{PZL}	CL=30pF	V _{CC} =1.8±0.15V, R _L =1KΩ	1	10	19	--	--	21	nS
			V _{CC} =2.5±0.2V, R _L =500Ω	0.5	7	15	--	--	17	nS
		CL=50pF R _L =500Ω	V _{CC} =2.7V	0.5	6	12	--	--	14	nS
			V _{CC} =3.3±0.3V	0.5	5	9	--	--	11	nS
			V _{CC} =5±0.5V	0.5	4	7	--	--	9	nS
3-State Output Disable Time From Input OE to Output Y	t _{PLZ} / t _{PHZ}	CL=30pF	V _{CC} =1.8±0.15V, R _L =1KΩ	1	5	10	--	--	12	nS
			V _{CC} =2.5±0.2V, R _L =500Ω	0.5	4	8	--	--	10	nS
		CL=50pF R _L =500Ω	V _{CC} =2.7V	0.5	4	7	--	--	9	nS
			V _{CC} =3.3±0.3V	0.5	3	6	--	--	8	nS
			V _{CC} =5±0.5V	0.5	3	5	--	--	7	nS

TEST CIRCUIT AND WAVEFORMS



TEST	S
t _{PLH} /t _{PHL}	Open
t _{PHZ} /t _{PZH}	GND
t _{PLZ} /t _{PZL}	V _{LOAD}

V _{CC}	INPUTS		V _M	V _{LOAD}	V _Δ	C _L	R _L
	V _{IN}	t _r , t _f					
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	2 x V _{CC}	0.15V	30pF	1KΩ
2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	2 x V _{CC}	0.15V	30pF	500Ω
2.7V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
3.3V±0.3V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	2 x V _{CC}	0.3V	50pF	500Ω



Note: C_L includes probe and jig capacitance.

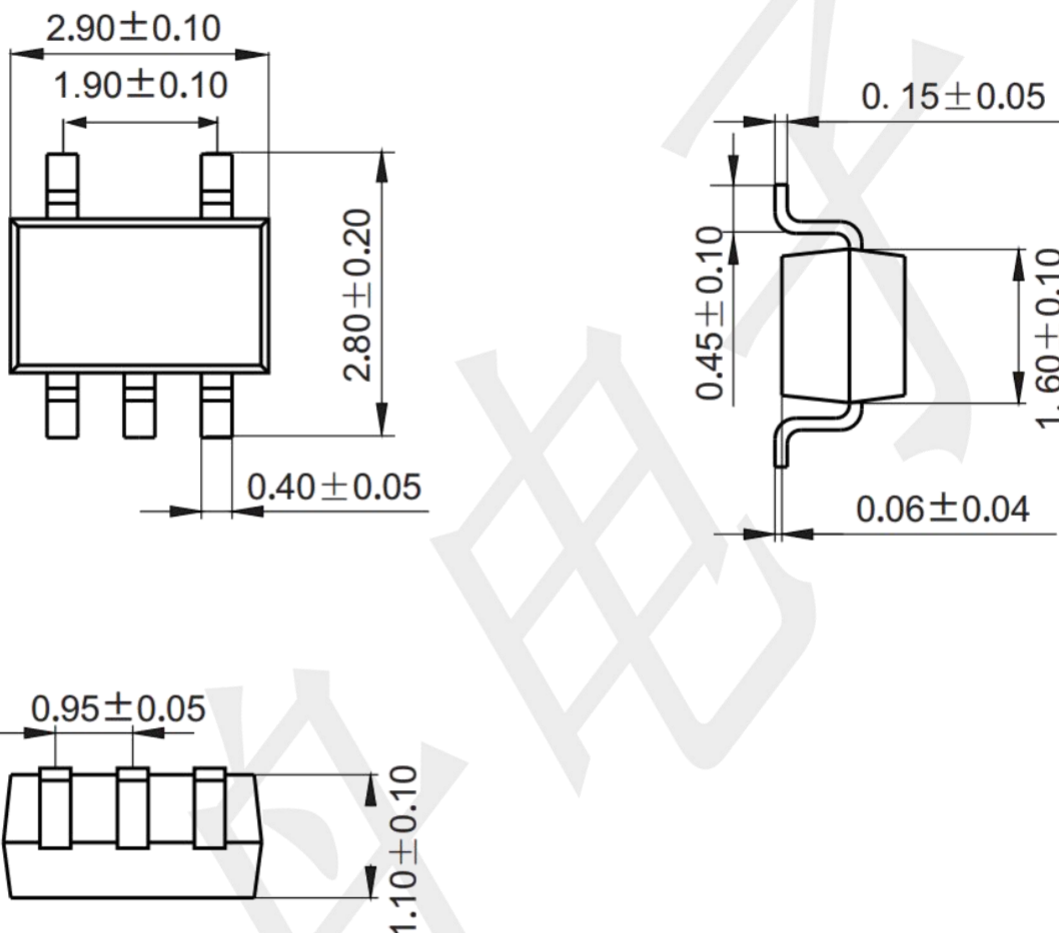
All input pulses are supplied by generators having the following characteristics: P_{RR} ≤10MHz, Z_O = 50Ω.

Notes: 1. C_L includes probe and jig capacitance.

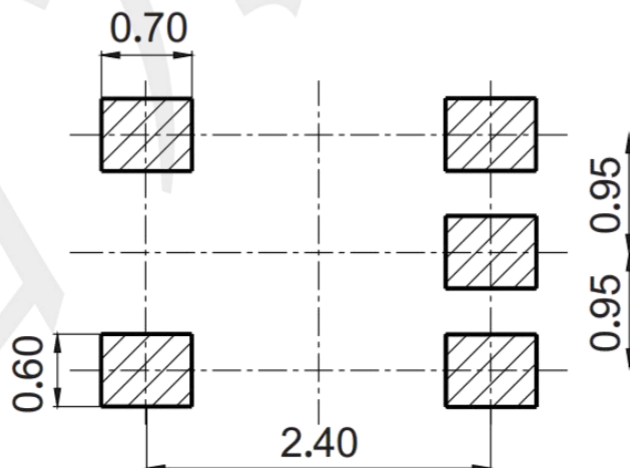
2. All input pulses are supplied by generators having the following characteristics: P_{RR} ≤10MHz, Z_O = 50Ω.

Package information

SOT23-5 (Unit: mm)

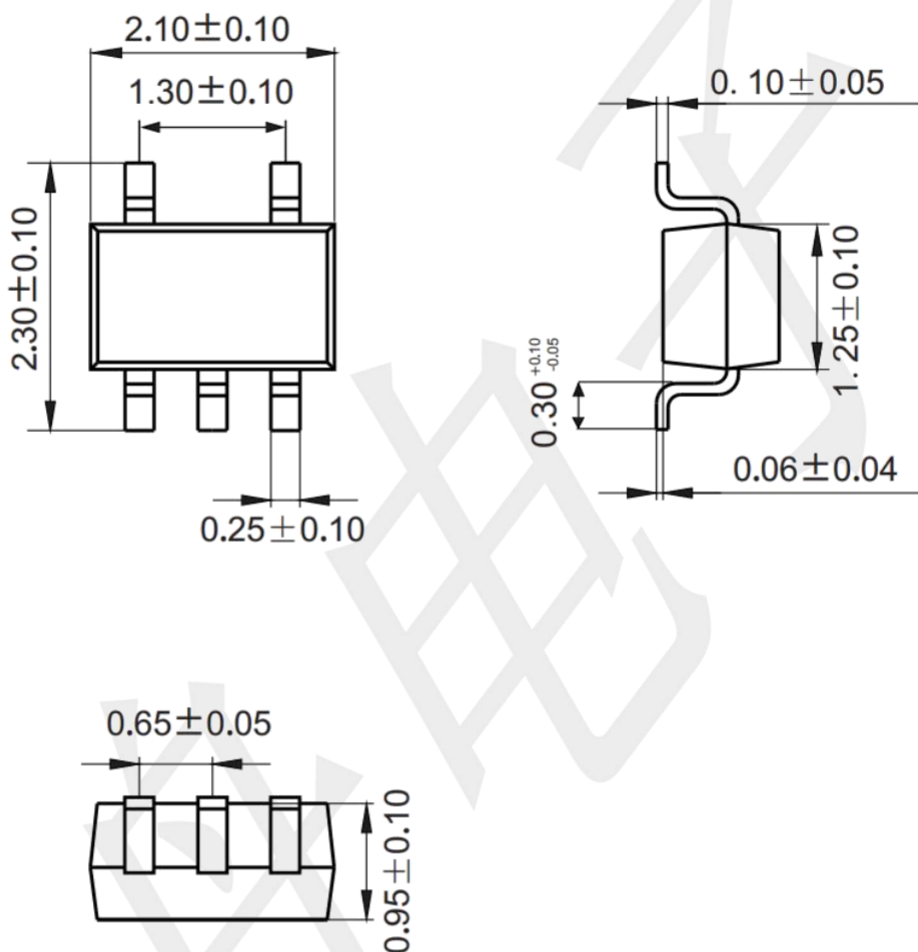


Mounting Pad Layout (unit: mm)

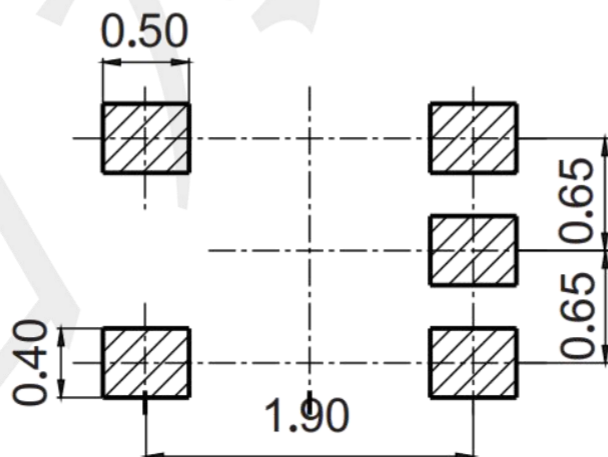


Package information

SOT353 (Unit: mm)

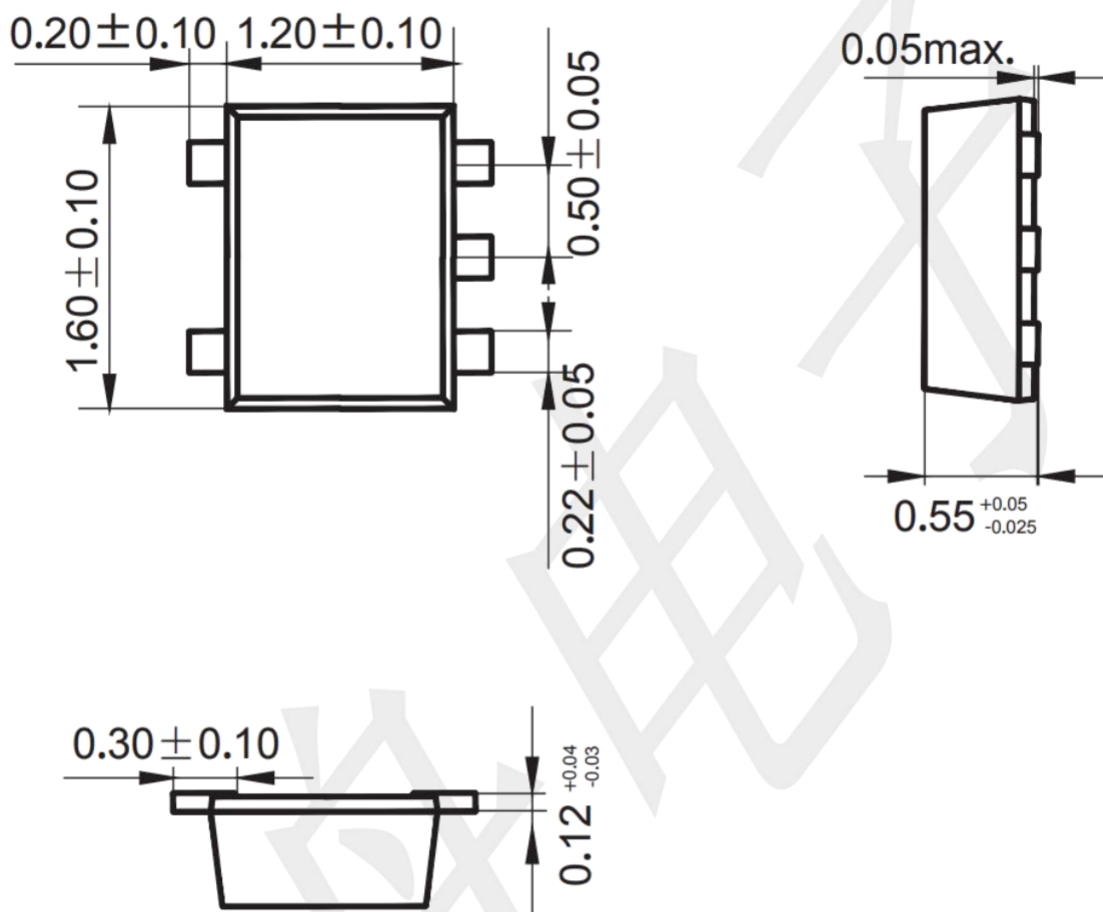


Mounting Pad Layout (unit: mm)

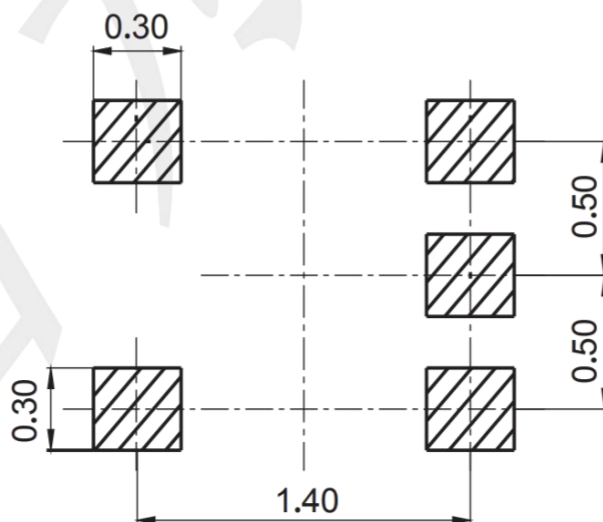


Package information

SOT553 (unit: mm)

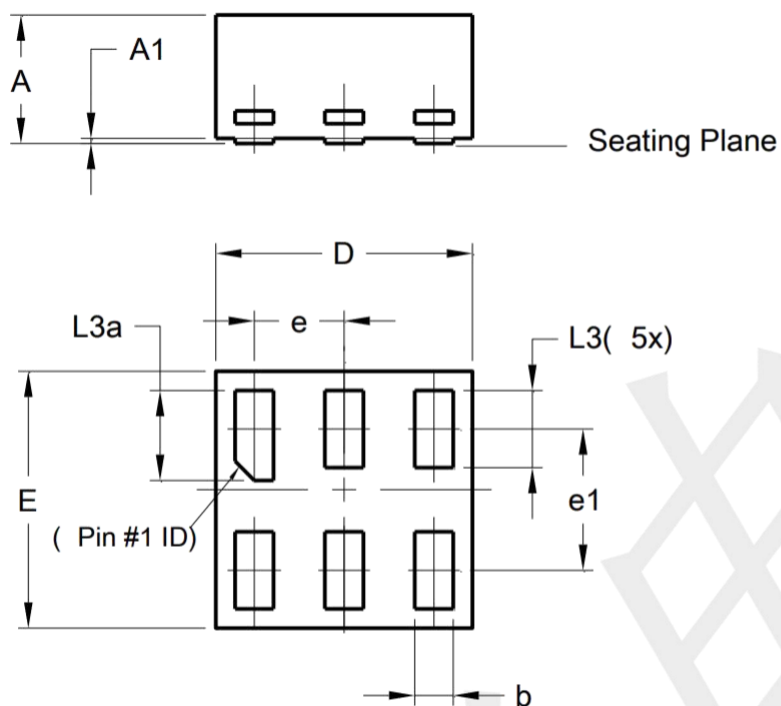


Mounting Pad Layout (unit: mm)



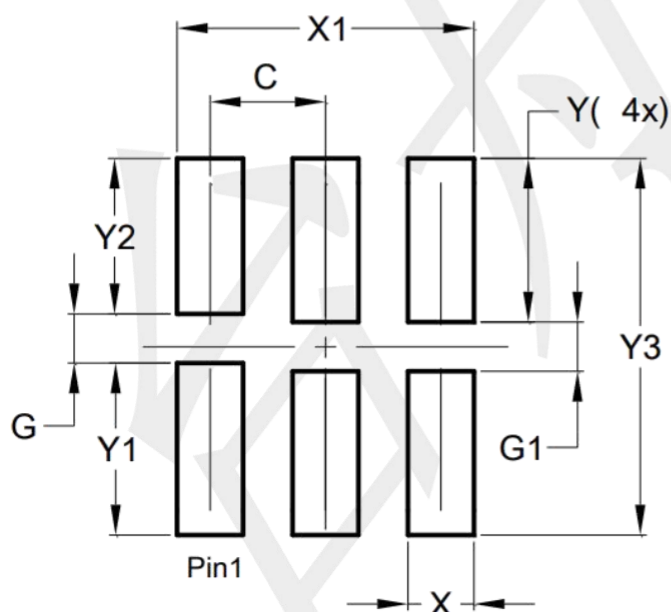
Package information

DFN1X1-6 (unit: mm)



DFN1010-6 (Type B)			
Dim	Min	Max	Typ
A	-	0.50	0.39
A1	-	0.04	-
b	0.12	0.20	0.15
D	0.95	1.050	1.00
E	0.95	1.050	1.00
e	0.35 BSC		
e1	0.55 BSC		
L3	0.27	0.30	0.30
L3a	0.32	0.40	0.35
All Dimensions in mm			

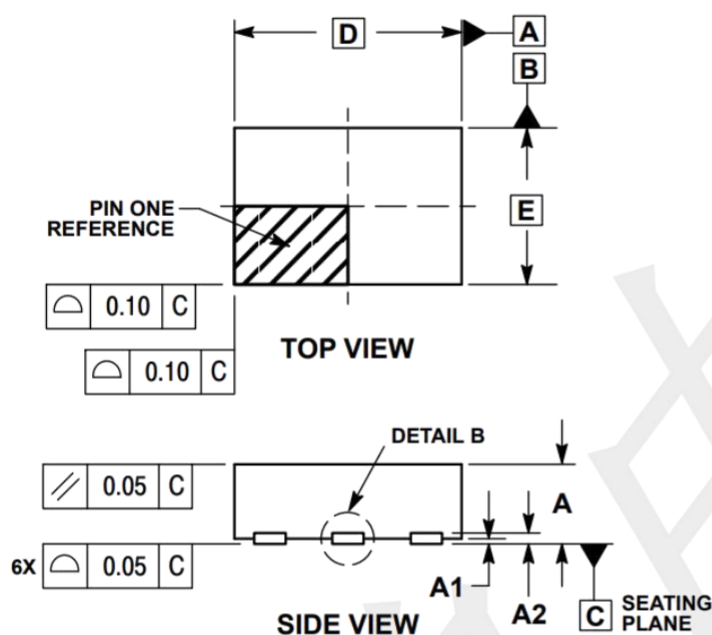
Mounting Pad Layout (unit: mm)



Dimensions	Value (in mm)
C	0.350
G	0.150
G1	0.150
X	0.200
X1	0.900
Y	0.500
Y1	0.525
Y2	0.475
Y3	1.150

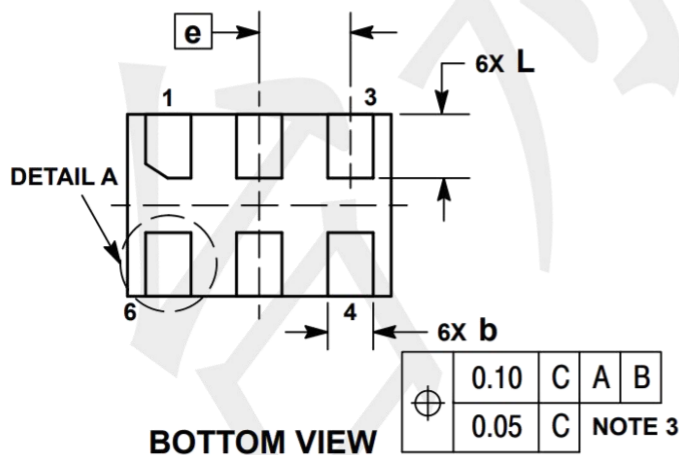
Package information

DFN1510-6 (unit: mm)

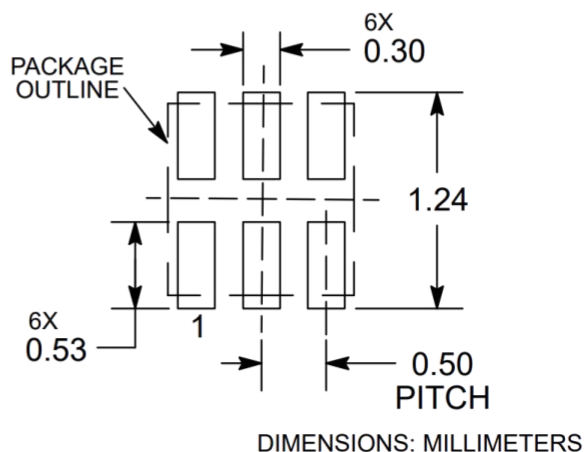


DIM	MILLIMETERS	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A2	0.07 REF	
b	0.20	0.30
D	1.45 BSC	
E	1.00 BSC	
e	0.50 BSC	
L	0.30	0.40
L1	---	0.15

Mounting Pad Layout (unit: mm)

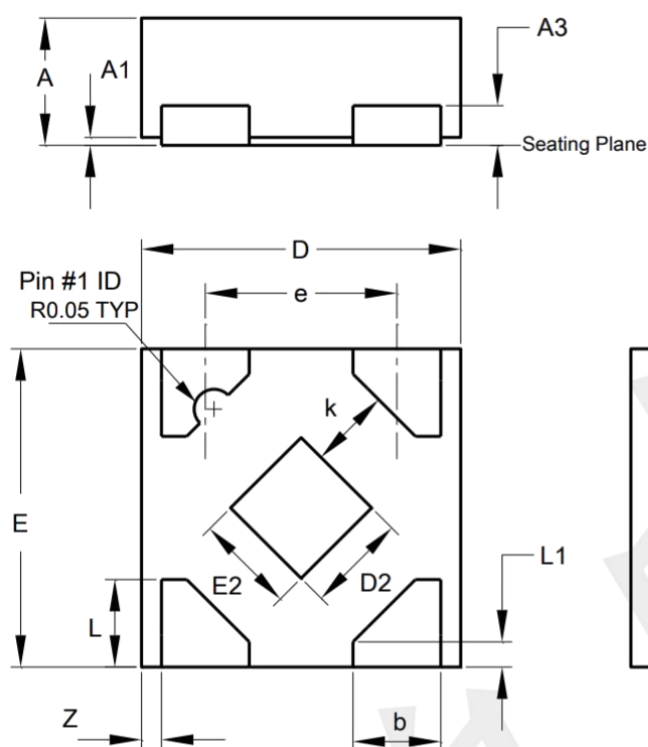


MOUNTING FOOTPRINT



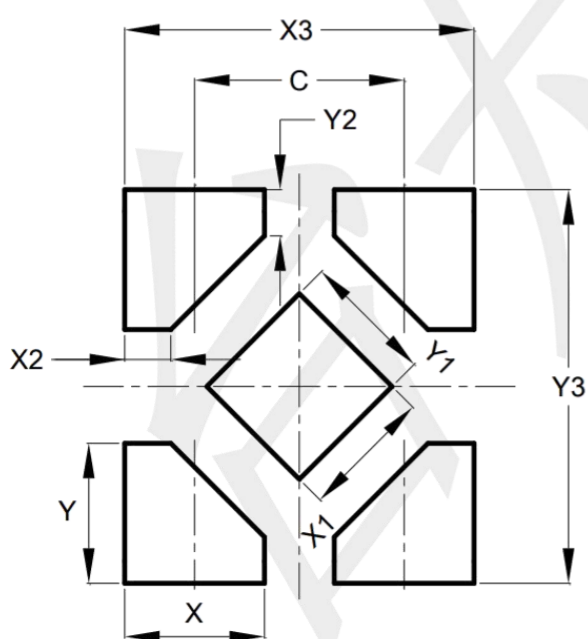
Package information

DFN0808-4 (unit: mm)



DFN0808-4			
Dim	Min	Max	Typ
A	0.25	0.35	0.30
A1	0	0.04	0.02
A3	-	-	0.13
b	0.17	0.27	0.22
D	0.75	0.85	0.80
D2	0.15	0.35	0.25
E	0.75	0.85	0.80
E2	0.15	0.35	0.25
e	-	-	0.48
k	0.20	-	-
L	0.17	0.27	0.22
L1	0.02	0.12	0.07
z	-	-	0.05
All Dimensions in mm			

Mounting Pad Layout (unit: mm)



Dimensions	Value
C	0.480
X	0.320
X1	0.300
X2	0.106
X3	0.800
Y	0.320
Y1	0.300
Y2	0.106
Y3	0.900