

Features

- Operation Voltage Range: 4.5~5.5V
- Low Power Dissipation: $I_{CC} = 1\mu A$ (Max.) @25°C
- Inputs are TTL-Voltage Compatible
- 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 SN74AHCT1G126DCKR-TP is a single bus buffer gate with 3-state output controlled by enable input (OE). When OE is LOW and the output is disabled.

Applications

- Motor control: Communication induction
- Graphics card
- Advanced Driver Assistance Systems (ADAS)
- Motor Drive&Control
- DLP positive projection system
- Server motherboard

Logic Diagram

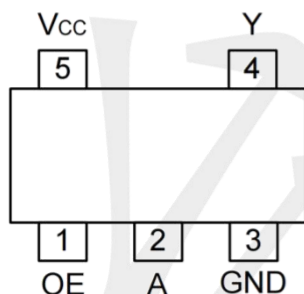


Logic symbol



IEC logic symbol

Pin Configuratio



SOT353

Function Table

INPUT(OE)	INPUT(A)	OUTPUT(Y)
H	L	L
H	H	H
L	X	Z

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

ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified) (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.5 ~ 7	V
Input Voltage	V _{IN}	-0.5 ~ 7	V
Output Voltage	V _{OUT}	-0.5 ~ V _{CC} +0.5	V
Input Clamp Current	I _{IK}	-20	mA
Output Clamp Current	I _{OK}	±20	mA
Output Current	I _{OUT}	±25	mA
V _{CC} or GND Current	I _{CC}	±50	mA
Storage Temperature	T _{STG}	-65 ~ +150	°C

Notes: 1. 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.

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

STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	TA=25°C			TA=-40°C~+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Input Voltage	High-Level	VIH	VCC=4.5V~5.5V	2	--	--	2	--	--	V
	Low-Level	VIL	VCC=4.5V~5.5V	--	--	0.8	--	--	0.8	V
Output Voltage	High-Level	VOH	VCC=4.5V, IOH=-50μA	4.4	4.5	--	--	4.4	--	V
			VCC=4.5V, IOH=-8mA	3.94	--	--	--	3.7	--	V
	Low-Level	VOL	VCC=4.5V, IOL=50μA	--	--	0.1	--	--	0.1	V
			VCC=4.5V, IOL=8mA	--	--	0.36	--	--	0.55	V
Input Leakage Current		II(LEAK)	VCC=0V~5.5V, VIN=VCC or GND	--	--	--	--	--	2	μA
Output Current, OFF-state		IOZ	VCC=5.5V, VOUT=VCC or GND	--	--	--	--	--	±10	μA
Quiescent Supply Current		IQ	VCC=5.5V, VIN=VCC or GND IOUT=0	--	--	--	--	--	40	μA
Additional Quiescent Supply Current		ΔICC	VCC=5.5V, One input at 3.4V, Other input at VCC or GND	--	--	--	--	--	1.5	mA

DYNAMIC CHARACTERISTICS

(Input: $t_R, t_F \leq 3\text{ns}$; $\text{PRR} \leq 1\text{MHz}$, Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A = 25^\circ\text{C}$			$T_A = -40^\circ\text{C} \sim +125^\circ\text{C}$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from A to Y	t_{PLH}	$V_{CC} = 5V \pm 0.5V, C_L = 15\text{pF}$	--	3.8	5.5	1	--	8	ns
	t_{PHL}		--	3.8	5.5	1	--	8	ns
Turn-on time OE to Y	t_{PZH}		--	3.6	5.1	1	--	6.5	ns
	t_{PZL}		--	3.6	5.1	1	--	6.5	ns
Turn-off time OE to Y	t_{PHZ}		--	4.6	6.8	1	--	8.5	ns
	t_{PLZ}		--	4.6	6.8	1	--	8.5	ns
Propagation delay from A to Y	t_{PLH}	$V_{CC} = 5V \pm 0.5V, C_L = 50\text{pF}$	--	5.3	7.5	1	--	10.5	ns
	t_{PHL}		--	5.3	7.5	1	--	10.5	ns
Turn-on time OE to Y	t_{PZH}		--	5.1	7.1	1	--	9	ns
	t_{PZL}		--	5.1	7.1	1	--	9	ns
Turn-off time OE to Y	t_{PHZ}		--	6.1	8.8	1	--	11.5	ns
	t_{PLZ}		--	6.1	8.8	1	--	11.5	ns

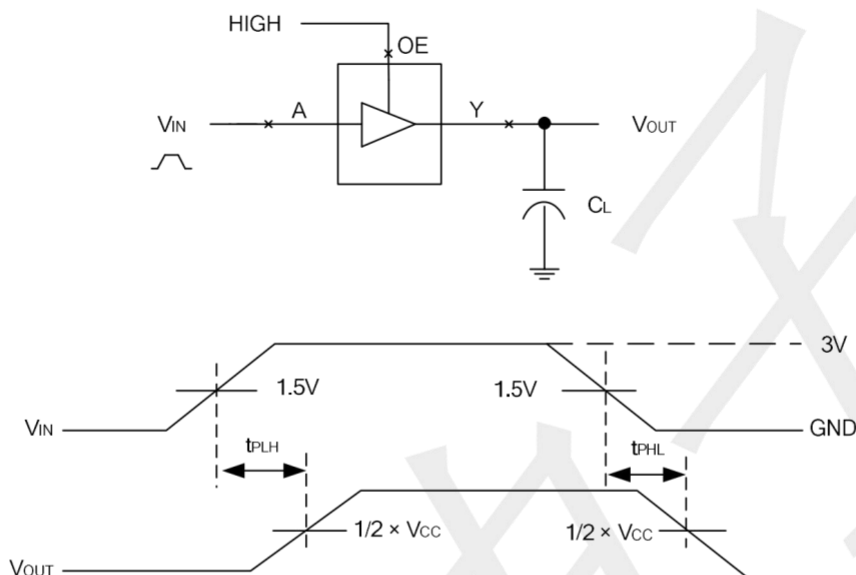
OPERATING CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}	$V_{CC} = 5V, V_{IN} = V_{CC}$ or GND	--	4	10	pF
Output Capacitance	C_{OUT}	$V_{CC} = 5V, V_{OUT} = V_{CC}$ or GND	--	10	--	pF
Power Dissipation Capacitance	C_{PD}	No load, $f = 1\text{MHz}, V_{CC} = 5V$	--	14	--	pF

RECOMMENDED OPERATING COMDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5	--	5.5	V
Input Voltage	V_{IN}		0	--	5.5	V
Output Voltage	V_{OUT}		0	--	V_{CC}	V
Input Transition Rise or Fall Rate	$\Delta t / \Delta V$	$V_{CC} = 5.0 \pm 0.5V$	--	--	20	ns/V
Operating Temperature	T_A		-40	--	+125	$^\circ\text{C}$

TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

Fig-1 Propagation delay from A to Y

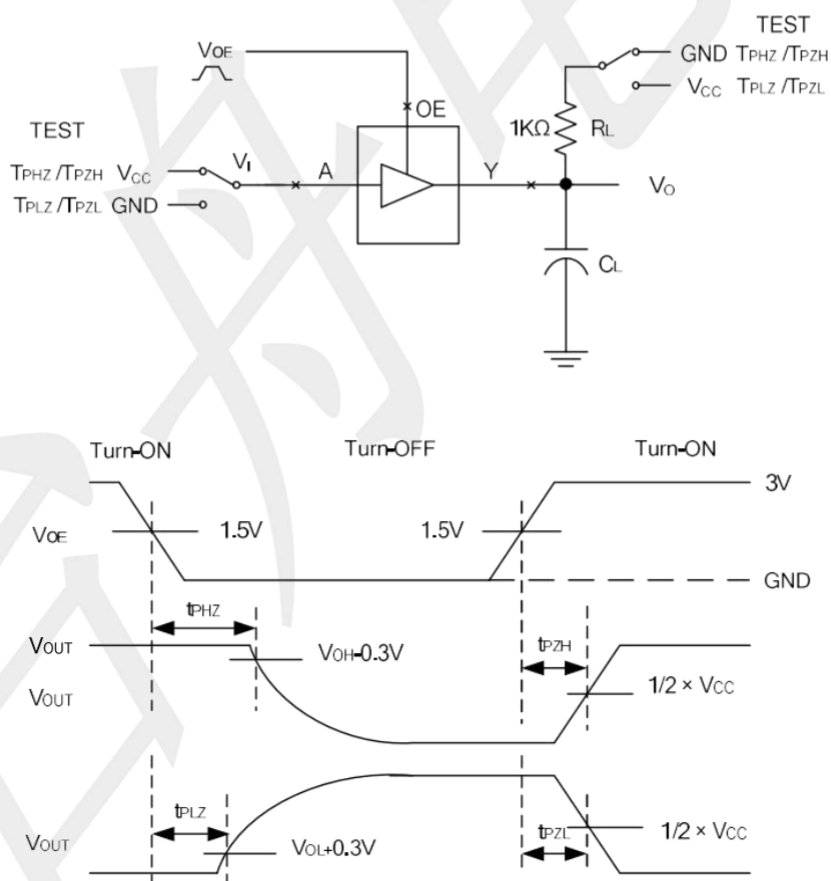
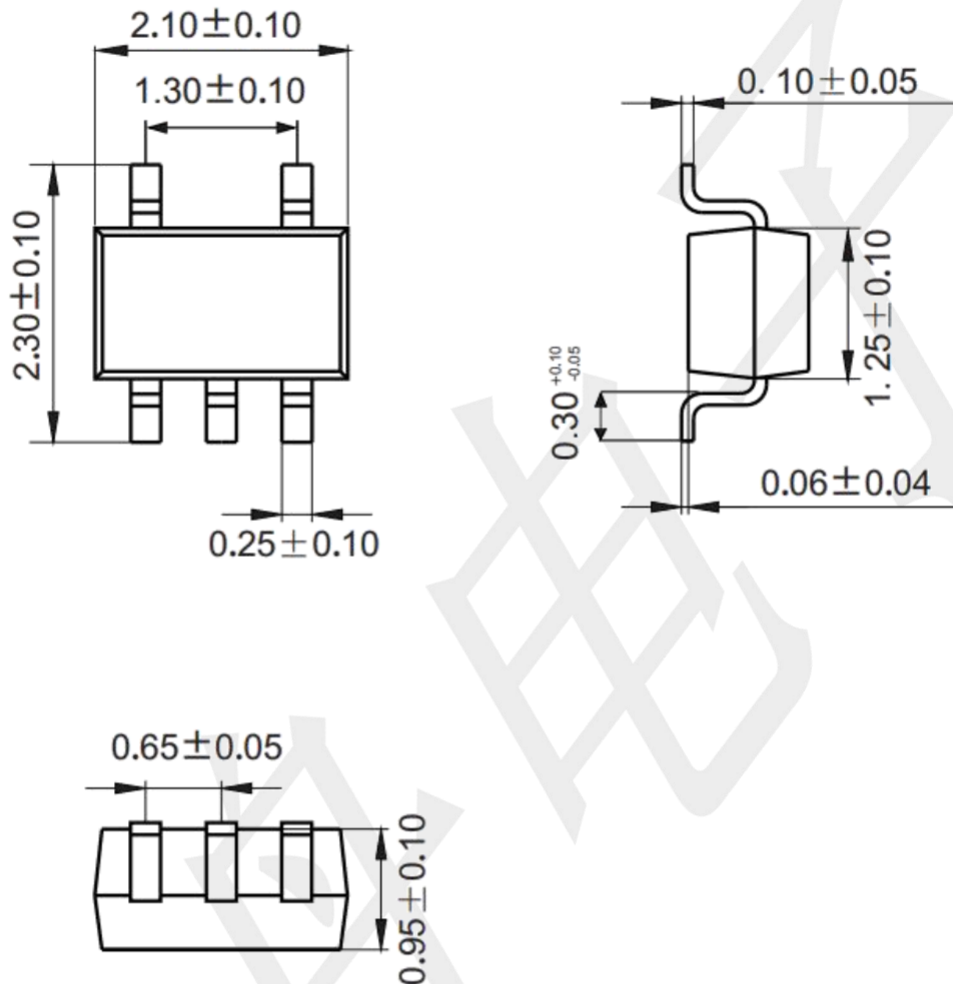


Fig-2 The turn-on and turn-off times.

Package information (Unit: mm)

SOT353



Mounting Pad Layout (Unit: mm)

