



## 74 Series Noise Cancellation GHz Logic

### FEATURES:

- . Patented technology
- . Operating frequency up to 1.125GHz with 2pf load
- . Operating frequency up to 700MHz with 5pf load
- . Operating frequency up to 300MHz with 15pf load
- . Operating frequency up to 100MHz with 50pf load
- . VCC Operates from 1.65V to 3.6V
- . Propagation delay < 1.5ns max with 15pf load
- . Low input capacitance: 4pf typical
- . Available in 20pin TSSOP package

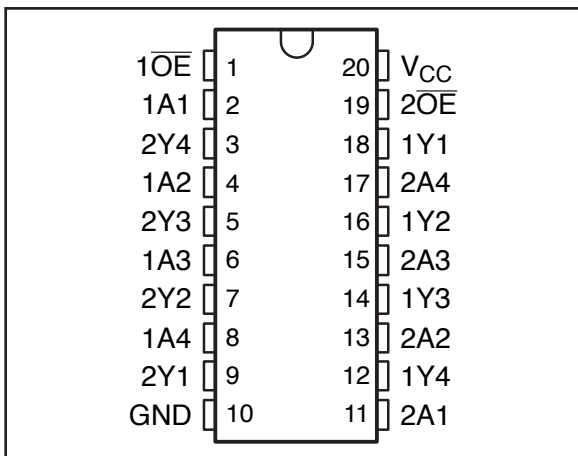
### DESCRIPTION:

Potato Semiconductor's PO74G244A is designed for world top performance using submicron CMOS technology to achieve 1.125GHz TTL /CMOS output frequency with less than 1.5ns propagation delay. This Octal bus buffer gate is designed for 1.65-V to 3.6-V VCC operation.

The PO74G244A features independent line driver switch 3-state outputs. Each output is disabled when the associated output- enable(OE) input is high.

Inputs can be driven from either 3.3V or 5V devices. This feature allows the use of these devices as translators in a mixed 3.3V/5V system environment.

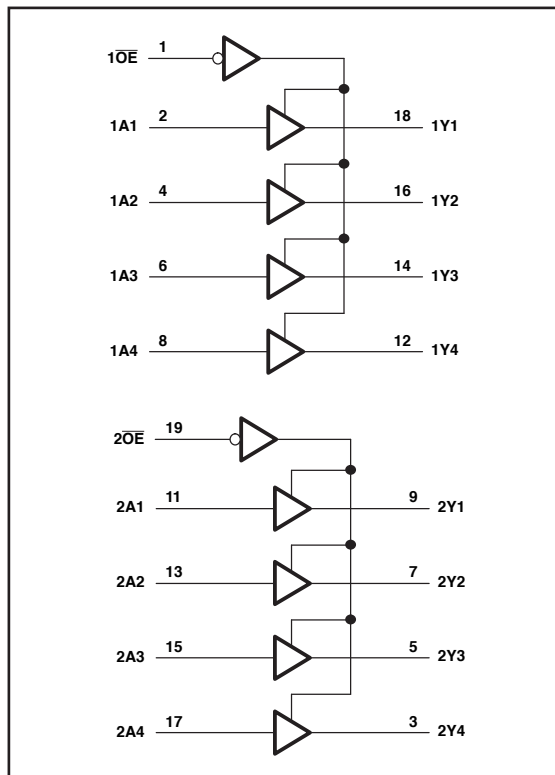
### Pin Configuration



### Pin Description

INPUTS		OUTPUT
OE	A	Y
L	H	H
L	L	L
H	X	Z

### Logic Block Diagram



**74 Series Noise Cancellation GHz Logic****Maximum Ratings**

Description	Max	Unit
Storage Temperature	-65 to 150	°C
Operation Temperature	-40 to 85	°C
Operation Voltage	-0.5 to +4.6	V
Input Voltage	-0.5 to +5.5	V
Output Voltage	-0.5 to V <sub>cc</sub> +0.5	V

**Note:**

stresses greater than listed under Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability specification is not implied.

**DC Electrical Characteristics**

Symbol	Description	Test Conditions	Min	Typ	Max	Unit
<b>V<sub>OH</sub></b>	Output High voltage	V <sub>cc</sub> =3V Vin=V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> = -12mA	<b>2.4</b>	<b>3</b>	<b>-</b>	<b>V</b>
<b>V<sub>OL</sub></b>	Output Low voltage	V <sub>cc</sub> =3V Vin=V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> =12mA	<b>-</b>	<b>0.3</b>	<b>0.5</b>	<b>V</b>
<b>V<sub>IH</sub></b>	Input High voltage	Guaranteed Logic HIGH Level (Input Pin)	<b>2</b>	<b>-</b>	<b>5.5</b>	<b>V</b>
<b>V<sub>IL</sub></b>	Input Low voltage	Guaranteed Logic LOW Level (Input Pin)	<b>-0.5</b>	<b>-</b>	<b>0.8</b>	<b>V</b>
<b>I<sub>IH</sub></b>	Input High current	V <sub>cc</sub> = 3.6V and Vin = 5.5V	<b>-</b>	<b>-</b>	<b>1</b>	<b>uA</b>
<b>I<sub>IL</sub></b>	Input Low current	V <sub>cc</sub> = 3.6V and Vin = 0V	<b>-</b>	<b>-</b>	<b>-1</b>	<b>uA</b>
<b>V<sub>IK</sub></b>	Clamp diode voltage	V <sub>cc</sub> = Min. And I <sub>IN</sub> = -18mA	<b>-</b>	<b>-0.7</b>	<b>-1.2</b>	<b>V</b>

**Notes:**

1. For conditions shown as Max. or Min., use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at V<sub>cc</sub> = 3.3V, 25 °C ambient.
3. This parameter is guaranteed but not tested.
4. Not more than one output should be shorted at one time. Duration of the test should not exceed one second.
5. V<sub>OH</sub> = V<sub>cc</sub> – 0.6V at rated current



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### Power Supply Characteristics

Symbol	Description	Test Conditions (1)	Min	Typ	Max	Unit
<b>I<sub>ccQ</sub></b>	Quiescent Power Supply Current	V <sub>cc</sub> =Max, V <sub>in</sub> =V <sub>cc</sub> or GND	-	<b>0.1</b>	<b>30</b>	<b>uA</b>
<b>ΔI<sub>cc</sub></b>	Power Supply Current per Input High	V <sub>cc</sub> =Max, V <sub>in</sub> = V <sub>cc</sub> -0.6V	-	<b>50</b>	<b>300</b>	<b>uA</b>

**Notes:**

1. For conditions shown as Max. or Min., use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at V<sub>cc</sub> = 3.3V, 25°C ambient.
3. This parameter is guaranteed but not tested.
4. Not more than one output should be shorted at one time. Duration of the test should not exceed one second.
5. VoH = V<sub>cc</sub> – 0.6V at rated current

### Capacitance

Parameters (1)	Description	Test Conditions	Typ	Unit
<b>C<sub>in</sub></b>	Input Capacitance	V <sub>in</sub> = 0V	<b>4</b>	<b>pF</b>
<b>C<sub>out</sub></b>	Output Capacitance	V <sub>out</sub> = 0V	<b>6</b>	<b>pF</b>

**Notes:**

- 1 This parameter is determined by device characterization but not production tested.

### Switching Characteristics

Symbol	Description	Test Conditions (1)	Max	Unit
<b>t<sub>PLH</sub></b>	Propagation Delay A to Y	CL = 15pF	<b>1.5</b>	<b>ns</b>
<b>t<sub>PHL</sub></b>	Propagation Delay A to Y	CL = 15pF	<b>1.5</b>	<b>ns</b>
<b>t<sub>PZH</sub> or t<sub>PZL</sub></b>	Output Enable Time	CL = 15pF	<b>2.5</b>	<b>ns</b>
<b>t<sub>PHZ</sub> or t<sub>PLZ</sub></b>	Output Disable Time	CL = 15pF	<b>2.5</b>	<b>ns</b>
<b>t<sub>r</sub>/t<sub>f</sub></b>	Rise/Fall Time	0.8V – 2.0V	<b>0.8</b>	<b>ns</b>
<b>f<sub>max</sub></b>	Input Frequency	CL = 50 pF	<b>100</b>	<b>MHz</b>
<b>f<sub>max</sub></b>	Input Frequency	CL =15pF	<b>300</b>	<b>MHz</b>
<b>f<sub>max</sub></b>	Input Frequency	CL = 5pF	<b>750</b>	<b>MHz</b>
<b>f<sub>max</sub></b>	Input Frequency	CL = 2pF	<b>1125</b>	<b>MHz</b>

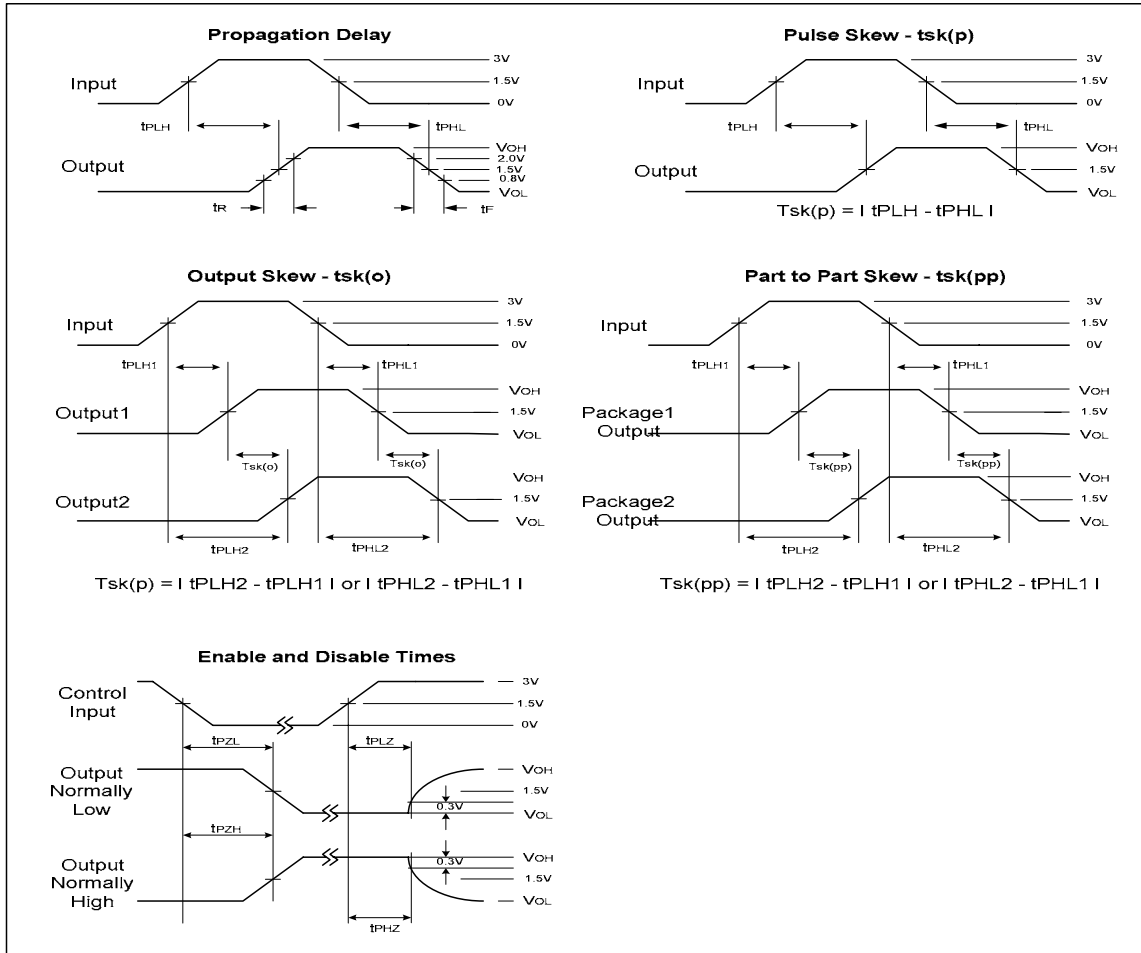
**Notes:**

1. See test circuits and waveforms.
2. t<sub>PLH</sub>, t<sub>PHL</sub>, t<sub>sk(p)</sub>, and t<sub>sk(o)</sub> are production tested. All other parameters guaranteed but not production tested.
3. Airflow of 1m/s is recommended for frequencies above 133MHz

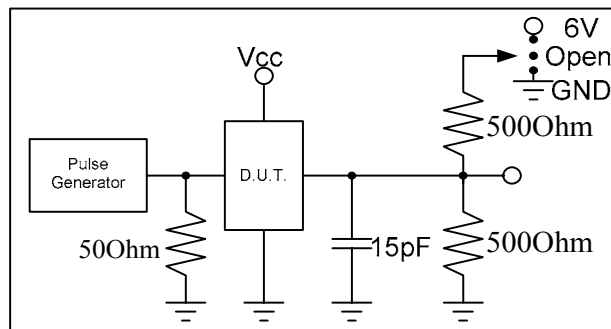
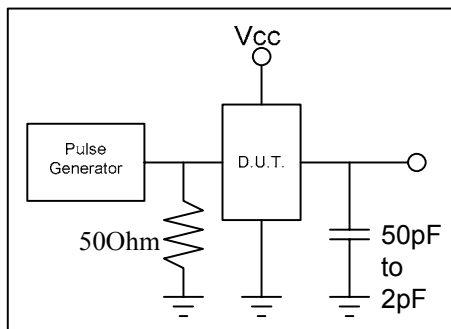


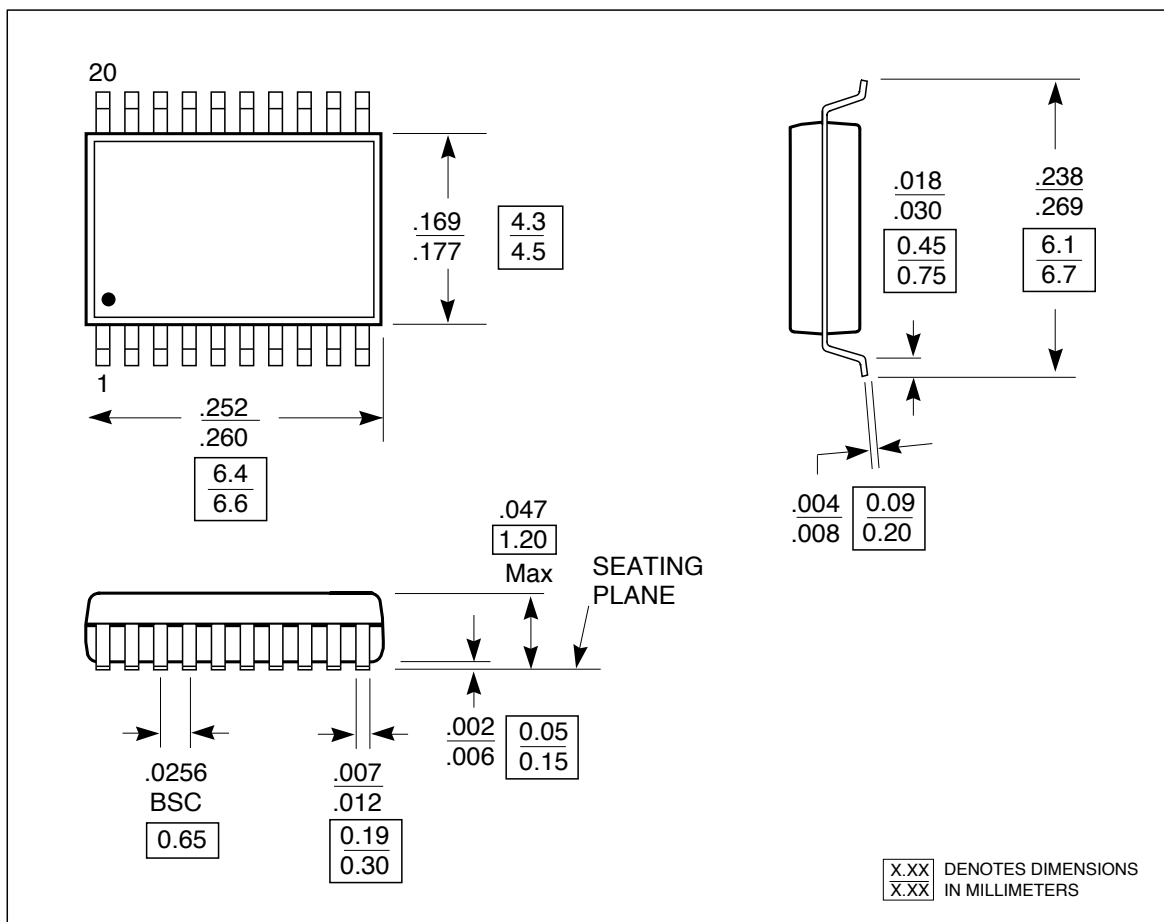
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## Test Waveforms



## Test Circuit



**74 Series Noise Cancellation GHz Logic****Packaging Mechanical Drawing: 20 pin TSSOP****IC Ordering Information**

Ordering Code	Package		Top-Marking	T <sub>A</sub>
PO74G244ASU for Tube	20pin TSSOP	Pb-free & Green	POTATO74G244AS	-40°C to 85°C
PO74G244ASR for Tape & Reel	20pin TSSOP	Pb-free & Green	POTATO74G244AS	-40°C to 85°C

**IC Package Information**

PACKAGE CODE	PACKAGE TYPE	TAPE WIDTH (mm)	TAPE PITCH (mm)	PIN 1 LOCATION	TAPE TRAILER LENGTH	QTY PER REEL	TAPE LEADER LENGTH	QTY PER TUBE
T	TSSOP 20	16	8	Top Left Corner	39 (12")	3000	64 (20")	74