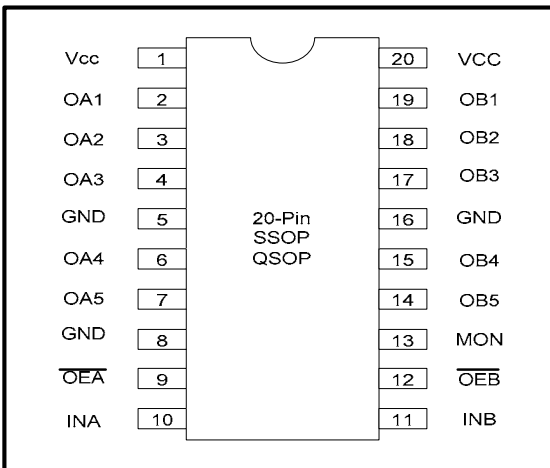


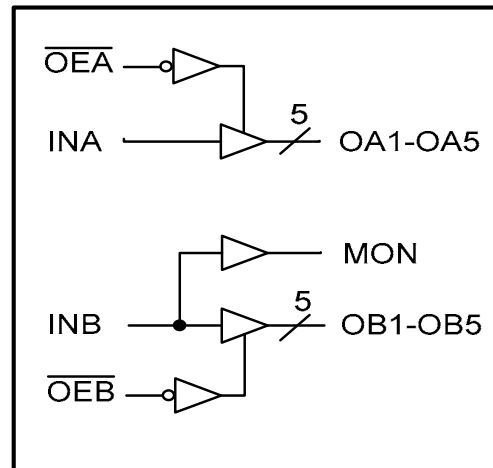
**800MHz TTL/CMOS Potato Chip**

<b>FEATURES:</b>	<b>DESCRIPTION:</b>
<ul style="list-style-type: none"> <li>. Patented technology</li> <li>. Operating frequency up to 800MHz with 2pf load</li> <li>. Operating frequency up to 600MHz with 5pf load</li> <li>. Operating frequency up to 300MHz with 15pf load</li> <li>. Operating frequency up to 100MHz with 50pf load</li> <li>. Very low output pin to pin skew &lt; 80ps</li> <li>. Very low pulse skew &lt; 300ps</li> <li>. VCC = 1.65V to 3.6V</li> <li>. Propagation delay &lt; 2.4ns max with 15pf load</li> <li>. Low input capacitance: 3pf typical</li> <li>. Dual 1:5 fanout</li> <li>. Available in 20pin 300mil wide SOIC package</li> <li>. Available in 20pin 150mil wide QSOP package</li> <li>. Available in 20pin 209mil wide SSOP package</li> </ul>	<p>Potato Semiconductor's PO49FCT3805B is designed for world top performance using submicron CMOS technology to achieve 800MHz TTL output frequency with less than 80ps output pin to pin skew.</p> <p>PO49FCT3805B is a 1.65V to 3.6V CMOS Dual 1 input to 5 outputs Buffered driver to achieve 800MHz output frequency. Typical applications are clock and signal distribution.</p> <p>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.</p>

**Pin Configuration**



**Logic Block Diagram**



**Pin Description**

Pin Name	Description
INA, INB	Signal or clock Inputs
$\overline{OE}A, \overline{OE}B$	Hi-Z State Output Enable Inputs (Active LOW)
OAn, OBn	Signal or clock Outputs
MON	Monitor Output
Vcc, GND	Power, Ground

Inputs		Outputs	
$\overline{OE}A, \overline{OE}B$	INA, INB	OAn, OBn	MON
L	L	L	L
L	H	H	H
H	L	Z	L
H	H	Z	H

## 800MHz TTL/CMOS Potato Chip

### 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 V <sub>in</sub> =V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> = -12mA	<b>2.4</b>	<b>3</b>	-	<b>V</b>
<b>V<sub>OL</sub></b>	Output Low voltage	V <sub>cc</sub> =3V V <sub>in</sub> =V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> =12mA	-	<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>+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>0.8</b>	<b>V</b>
<b>I<sub>IH</sub></b>	Input High current	V <sub>cc</sub> = 3.6V and V <sub>in</sub> = 5.5V	-	-	<b>50</b>	<b>uA</b>
<b>I<sub>IOZH</sub></b>	High Impedance Output current	V <sub>cc</sub> = 3.6V and V <sub>o</sub> = V <sub>cc</sub>	-	-	<b>1</b>	<b>uA</b>
<b>I<sub>IOZL</sub></b>	High Impedance Output current	V <sub>cc</sub> = 3.6V and V <sub>o</sub> = 0V	-	-	<b>-1</b>	<b>uA</b>
<b>I<sub>IL</sub></b>	Input Low current	V <sub>cc</sub> = 3.6V and V <sub>in</sub> = 0V	-	-	<b>-50</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>-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

## 800MHz TTL/CMOS Potato Chip

### Power Supply Characteristics

Symbol	Description	Test Conditions (1)	Min	Typ	Max	Unit
<b>Iccq</b>	Quiescent Power Supply Current	Vcc=Max, Vin=Vcc or GND	-	<b>0.1</b>	<b>30</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 Vcc = 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.

### Capacitance (TA= +25°C, f= 1MHz)

Parameters (1)	Description	Test Conditions	Typ	Max	Unit
<b>Cin</b>	Input Capacitance	Vin = 0V	<b>3</b>	<b>4</b>	<b>pF</b>
<b>Cout</b>	Output Capacitance	Vout = 0V	-	<b>6</b>	<b>pF</b>

**Notes:**

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

### Switching Characteristics

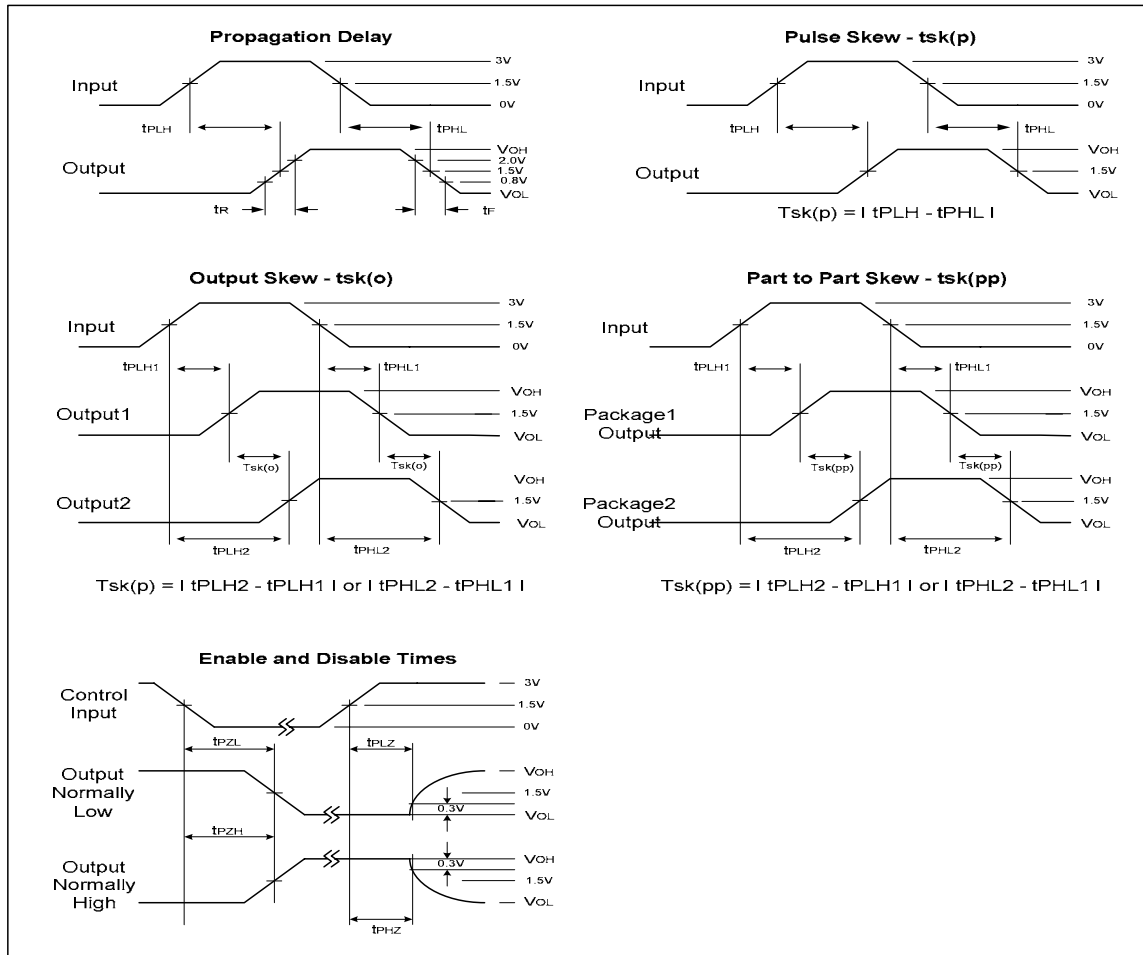
Symbol	Description	Test Conditions (1)	Max	Unit
<b>tPLH &amp; tPHL</b>	Propagation Delay INA to OAn, INB to OBn	CL = 15pF	<b>2.4</b>	<b>ns</b>
<b>tpZH or tpZL</b>	Output Enable Time	CL = 15pF	<b>2.5</b>	<b>ns</b>
<b>tpHZ or tpLZ</b>	Output Disable Time	CL = 15pF	<b>2.5</b>	<b>ns</b>
<b>tr/tf</b>	Rise/Fall Time	0.8V – 2.0V	<b>0.8</b>	<b>ns</b>
<b>tsk(p)</b>	Pulse Skew (Same Package)	CL = 15pF, 125MHz	<b>300</b>	<b>ps</b>
<b>tsk(o)</b>	Output Pin to Pin Skew (Same Package)	CL = 15pF, 125MHz	<b>80</b>	<b>ps</b>
<b>tsk(pp)</b>	Output Skew (Different Package)	CL = 15pF, 125MHz	<b>400</b>	<b>ps</b>
<b>fmax</b>	Input Frequency	CL = 50pF	<b>100</b>	<b>MHz</b>
<b>fmax</b>	Input Frequency	CL = 15pF	<b>300</b>	<b>MHz</b>
<b>fmax</b>	Input Frequency	CL = 5pF	<b>600</b>	<b>MHz</b>
<b>fmax</b>	Input Frequency	CL = 2pF	<b>800</b>	<b>MHz</b>

**Notes:**

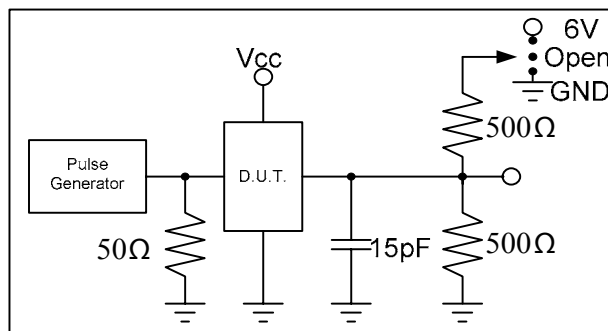
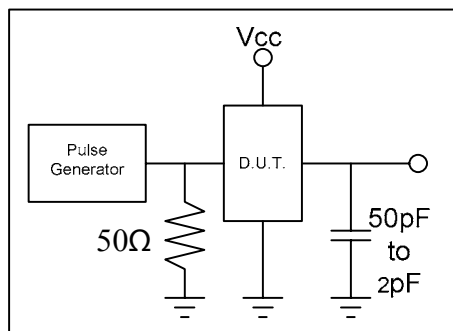
1. See test circuits and waveforms.
2. tpLH, tPHL, tsk(p), and tsk(o) are production tested. All other parameters guaranteed but not production tested.
3. Airflow of 1m/s is recommended for frequencies above 133MHz

**800MHz TTL/CMOS Potato Chip**

**Test Waveforms**

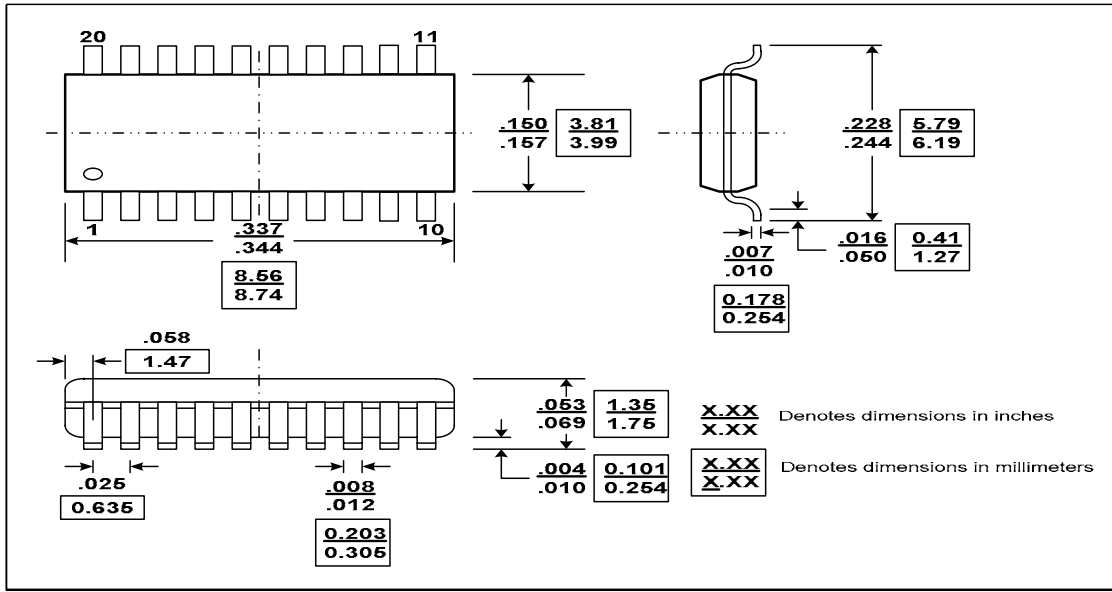


**Test Circuit**

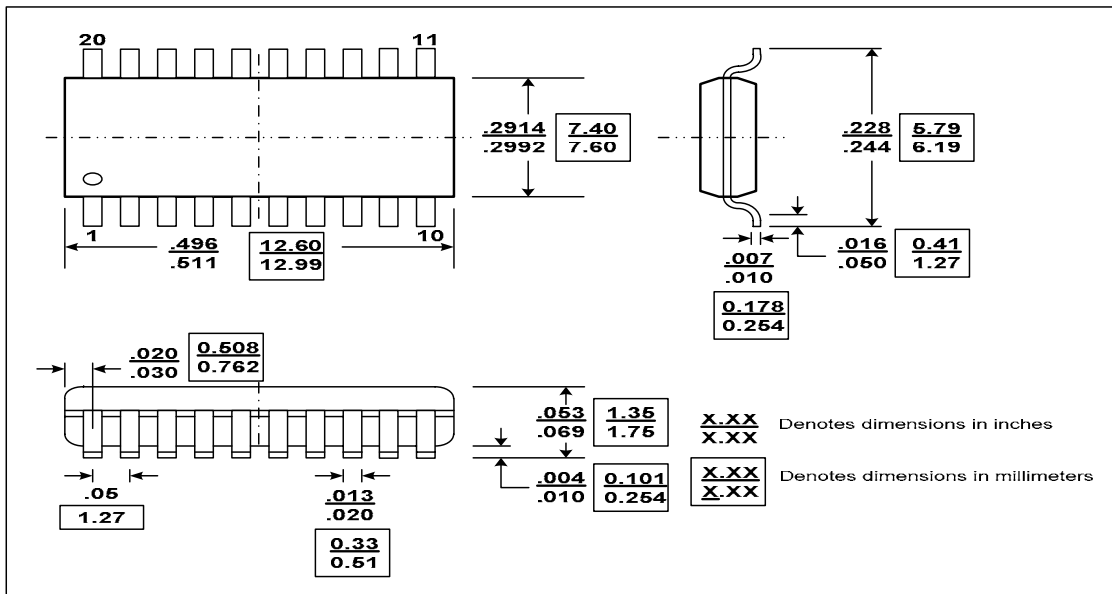


**800MHz TTL/CMOS Potato Chip**

**Packaging Mechanical Drawing: 20 pin QSOP**

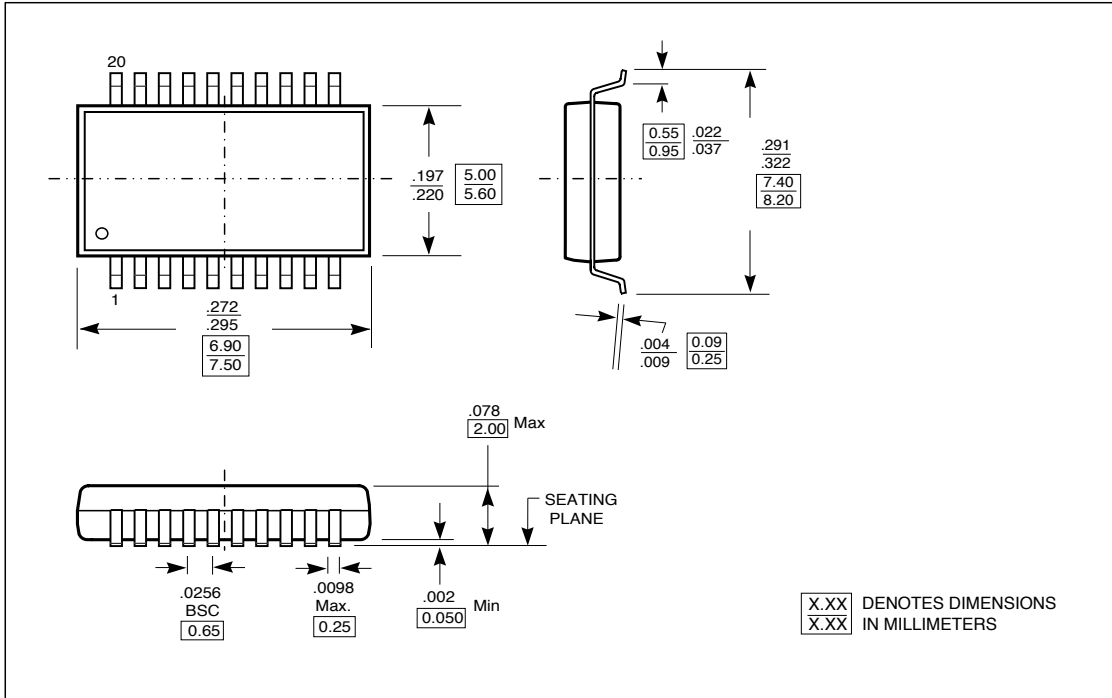


**Packaging Mechanical Drawing: 20 pin SOIC**



**800MHz TTL/CMOS Potato Chip**

**Packaging Mechanical Drawing: 20 pin SSOP**



**800MHz TTL/CMOS Potato Chip**

**Ordering Information**

Ordering Code	Package			Top-Marking	T <sub>A</sub>
PO49FCT3805BCU	20pin SOIC	Tube	Pb-free & Green	PO49FCT3805BC	-40°C to 85°C
PO49FCT3805BCR	20pin SOIC	Tape and reel	Pb-free & Green	PO49FCT3805BC	-40°C to 85°C
PO49FCT3805BQU	20-pin QSOP	Tube	Pb-free & Green	PO49FCT3805BQ	-40°C to 85°C
PO49FCT3805BQR	20-pin QSOP	Tape and reel	Pb-free & Green	PO49FCT3805BQ	-40°C to 85°C
PO49FCT3805BSU	20-pin SSOP	Tube	Pb-free & Green	PO49FCT3805BS	-40°C to 85°C
PO49FCT3805BSR	20-pin SSOP	Tape and reel	Pb-free & Green	PO49FCT3805BS	-40°C to 85°C