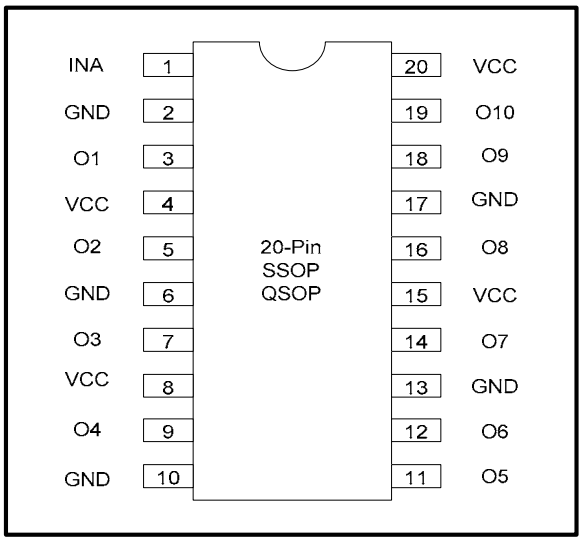
PO49FCT32807G

1.2V - 3.6V 1:10 CMOS Clock Driver

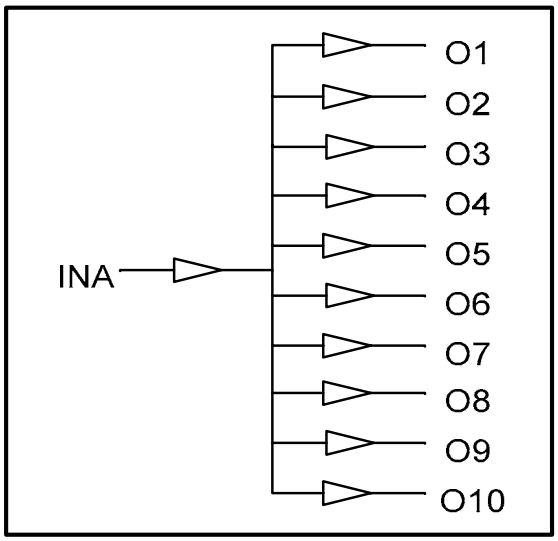
400MHz Noise Cancellation TTL/CMOS Potato Chip

FEATURES:	DESCRIPTION:
. Operating frequency up to 400MHz with 2pf load . Operating frequency up to 350MHz with 5pf load . Operating frequency up to 280MHz with 15pf load . Operating frequency up to 100MHz with 50pf load . Very low output pin to pin skew < 300ps . Very low pulse skew < 200ps . VCC = 1.2V to 3.6V . Propagation delay < 2.5 ns max with 15pf load . Low input capacitance: 3pf typical . 1:10 fanout . Available in 20pin 150mil wide QSOP package . Available in 20pin 300mil wide SOIC package	Potato Semiconductor's PO49FCT32807G is designed for world top performance using submicron CMOS technology to achieve 400MHz output frequency with less than 300ps output skew. PO49FCT32807G is a 3.3V CMOS 1 input to 10 Output Buffered Driver with integrated series damping resistors on all outputs to match 50 ohm transmission line impedance. Typical applications are clock and signal distribution.

Pin Configuration



Logic Block Diagram



Pin Description

Pin Name	Description
INA	Input
O1 to O10	Outputs

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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 Vcc+0.5	V
Output Voltage	-0.5 to Vcc+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
V_{OH}	Output High voltage	Vcc=3V Vin=VIH or VIL, IOH= -8mA	2.4	3	-	V
V_{OL}	Output Low voltage	Vcc=3V Vin=VIH or VIL, IOH=12mA	-	0.4	0.5	V
V_{IH}	Input High voltage	Guaranteed Logic HIGH Level (Input Pin)	2	-	Vcc	V
V_{IL}	Input Low voltage	Guaranteed Logic LOW Level (Input Pin)	-0.5	-	0.8	V
I_{IH}	Input High current	Vcc = 3.6V and Vin = 3.6V	-	-	1	uA
I_{IL}	Input Low current	Vcc = 3.6V and Vin = 0V	-	-	-1	uA
V_{IK}	Clamp diode voltage	Vcc = Min. And I_{IN} = -18mA	-	-0.7	-1.2	V
Rs	Series Resistor			22		Ω

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.
5. VoH = Vcc – 0.6V at rated current

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Power Supply Characteristics

Symbol	Description	Test Conditions (1)	Min	Typ	Max	Unit
I_{CCQ}	Quiescent Power Supply Current	Vcc=Max, Vin=Vcc or GND	-	0.1	30	uA

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

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

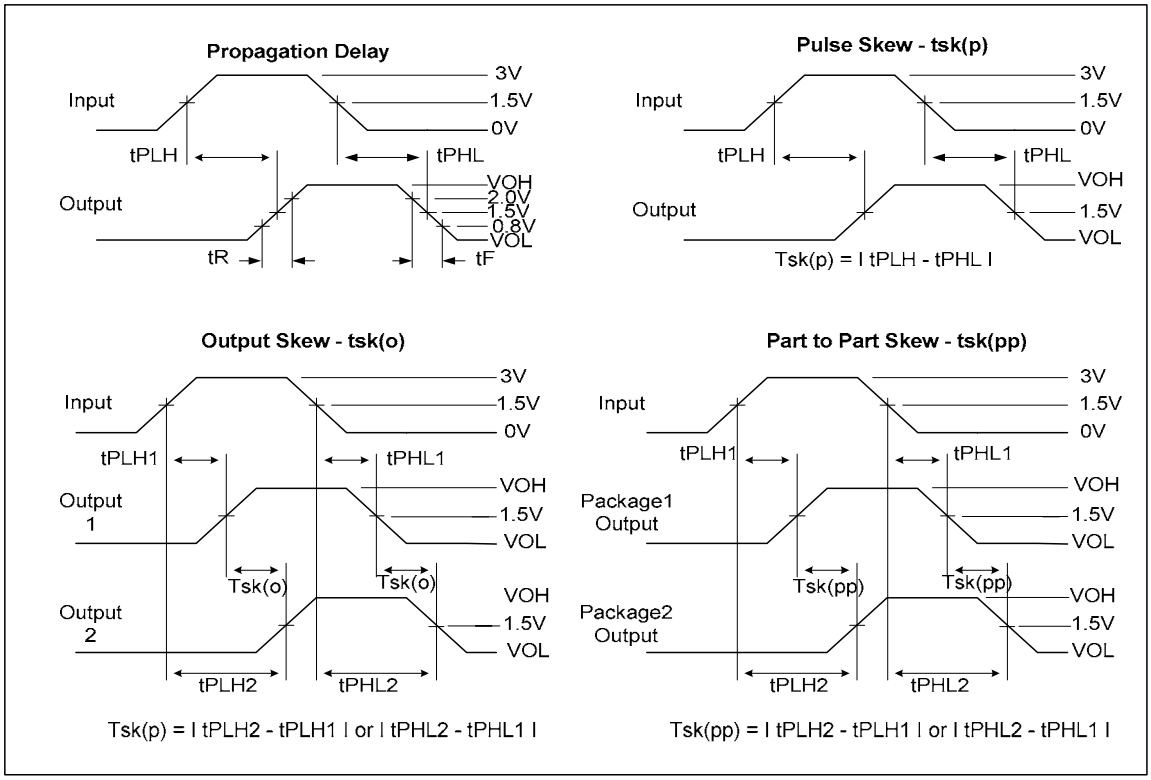
Notes:
1 This parameter is determined by device characterization but not production tested.

Switching Characteristics

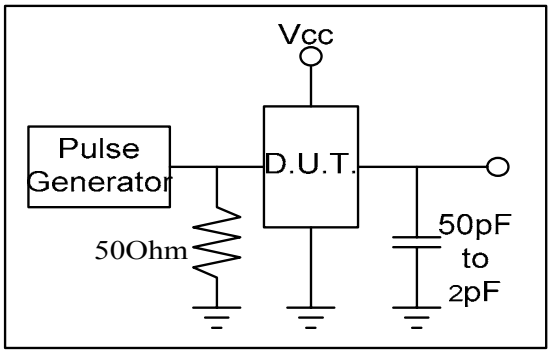
Symbol	Description	Test Conditions (1)	Max	Unit
t_{PLH}	Propagation Delay A to Bn	CL = 15pF	2.5	ns
t_{PHL}	Propagation Delay A to Bn	CL = 15pF	2.5	ns
tr/tf	Rise/Fall Time	0.8V – 2.0V	1	ns
tsk(p)	Pulse Skew (Same Package)	CL = 15pF, 125MHz	0.2	ns
tsk(o)	Output Pin to Pin Skew (Same Package)	CL = 15pF, 125MHz	0.3	ns
tsk(pp)	Output Skew (Different Package)	CL = 15pF, 125MHz	0.4	ns
fmax	Input Frequency	CL = 50pF	100	MHz
fmax	Input Frequency	CL =15pF	280	MHz
fmax	Input Frequency	CL = 5pF	350	MHz
fmax	Input Frequency	CL = 2pF	400	MHz

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

Test Waveforms



Test Circuit



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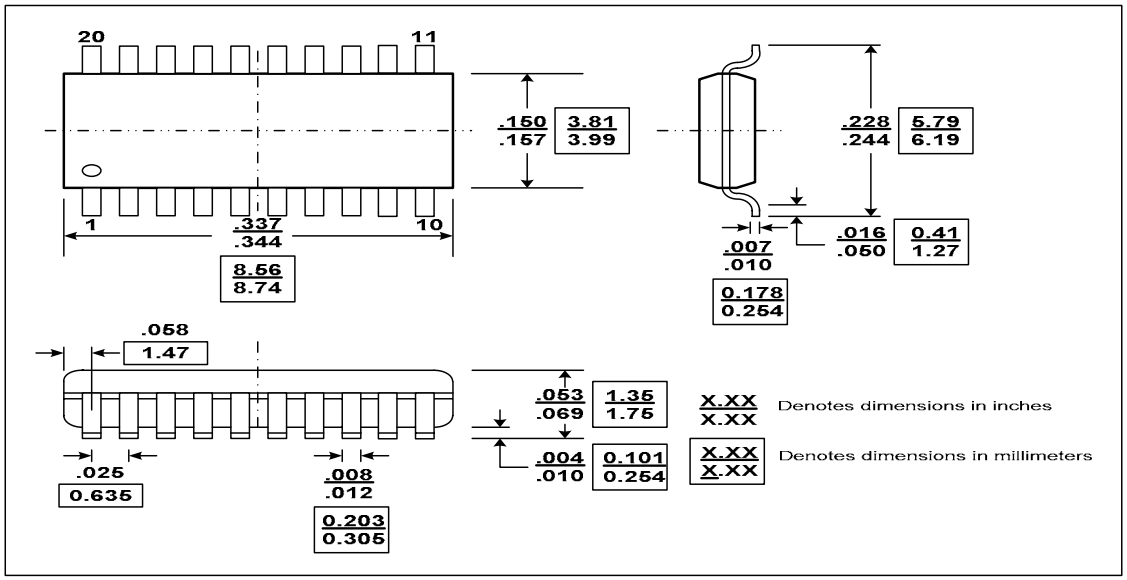
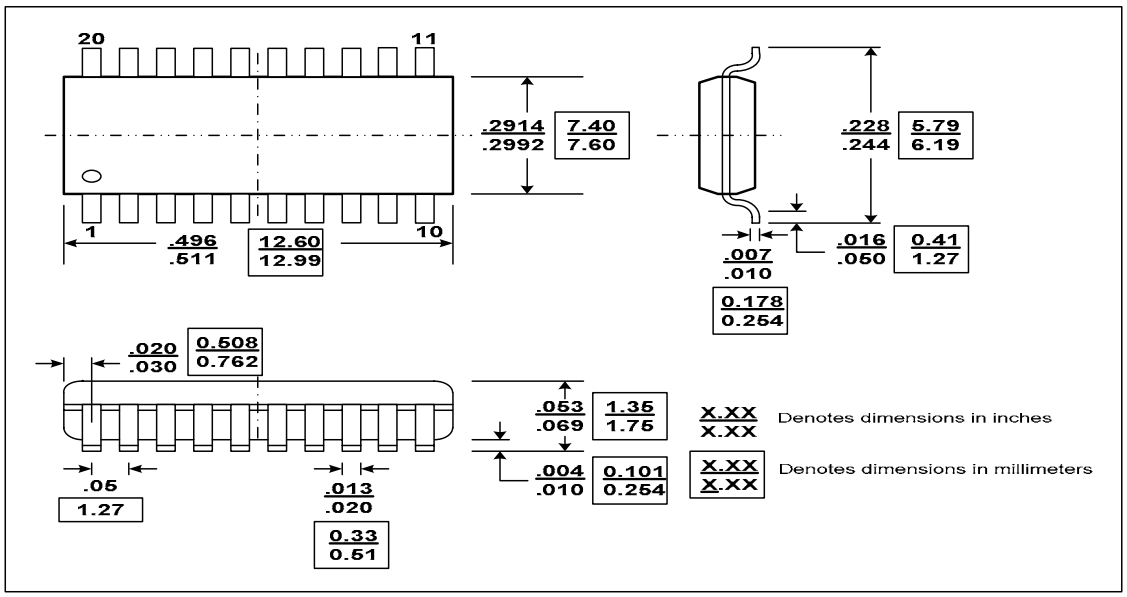
Packaging Mechanical Drawing: 20 pin QSOP

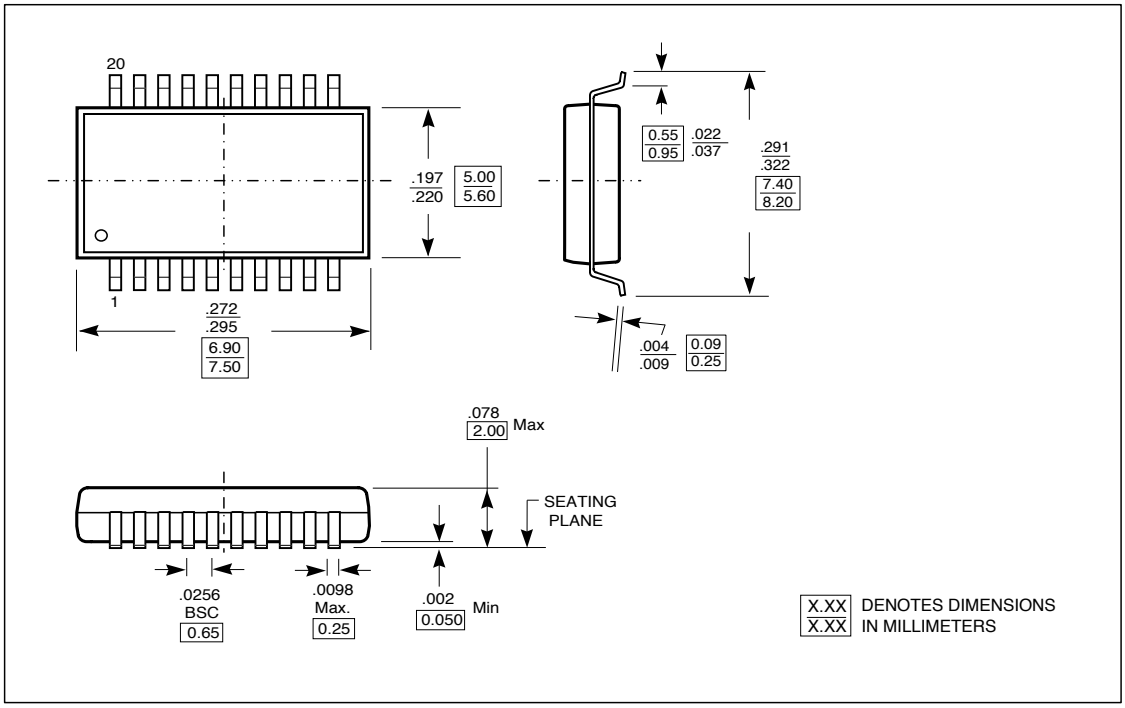


Packaging Mechanical Drawing: 20 pin SOIC



400MHz Noise Cancellation TTL/CMOS Potato Chip

Packaging Mechanical Drawing: 20 pin SSOP



IC Ordering Information

Ordering Code	Package		Top-Marking	T_A
PO49FCT32807ACU for Tube	20pin 300mil SOIC	Pb-free & Green	PO49FCT32807AC	-40°C to 85°C
PO49FCT32807ACR for Tape & Reel	20pin 300mil SOIC	Pb-free & Green	PO49FCT32807AC	-40°C to 85°C
PO49FCT32807AQU for Tube	20pin 150mil QSOP	Pb-free & Green	PO49FCT32807AQ	-40°C to 85°C
PO49FCT32807AQR for Tape & Reel	20pin 150mil QSOP	Pb-free & Green	PO49FCT32807AQ	-40°C to 85°C
PO49FCT32807ASSU for Tube	20pin 209mil SSOP	Pb-free & Green	PO49FCT32807ASS	-40°C to 85°C
PO49FCT32807ASSR for Tape & Reel	20pin 209mil SSOP	Pb-free & Green	PO49FCT32807ASS	-40°C to 85°C

IC Package Information

PACKAGE CODE	PACKAGE TYPE	TAPE WIDTH (mm)	TAPE PITCH (mm)	TAPE & REEL PIN 1 LOCATION	TAPE TRAILER LENGTH	QTY PER TAPE	TAPE LEADER LENGTH	QTY PER TUBE
C	20pin 300mil SOIC	24	12	Top Left Corner	26 (12″)	1000	43 (20″)	38
Q	20pin 150mil QSOP	16	8	Top Left Corner	39 (12″)	3000	64 (20″)	55
SS	20pin 209mil SSOP	16	12	Top Left Corner	26 (12″)	2000	43 (20″)	66