Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

1.8/3.3V High-Bandwidth 6-channel, 2:1 Mux/DeMux with switched Pull-ups

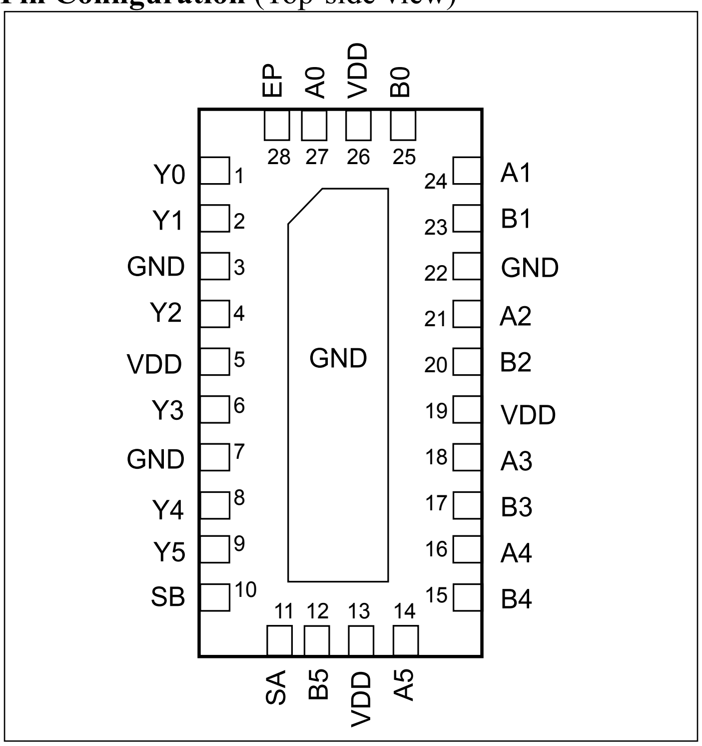
Features

- Near-Zero propagation delay
- 5Ω switches connect inputs to outputs
- Signal passing bandwidth, 400 MHz
- Rail-to-Rail™ switching
- 1.8V to 3.3V supply voltage operation
- Supports live insertion and hot-swap
- Industrial operating temperature: -40ºC to +85ºC
- 2KV ESD HBM
- Latch-up performance >250mA per JESD17
- Packaging: 28-contact TQFN (3.5 x 5.0, 0.5mm pad pitch)

Applications

- Memory card switching
- Photo printers
- Mobile devices

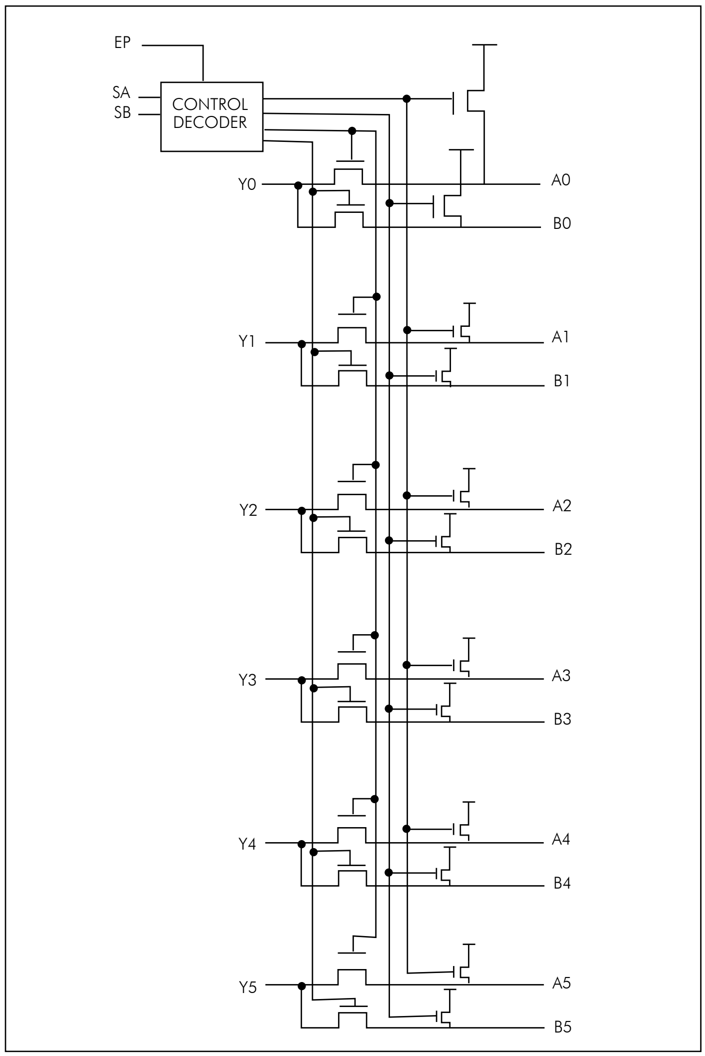
Pin Configuration (Top-side view)



Description

The PI3G612 is a 3-port, 6-channel, 1:2 multiplexer/demultiplexer. It features switched 100 K-Ohm active pull-ups on output ports A and B to prevent disconnected floating signals and thereby reduce system noise and power. The Y port can be connected to either the A or B ports, or alternatively both ports can be isolated, disconnected, or all connected. When the EP pin is low, the pull-up transistors are off. When EP is high, the pull-up transistors are on. If EP is not connected, an internal pull-down will turn the pull-up off. If pull-ups are not used, EP should be connected to ground. The PI3G612 has a wide operating voltage range, very low power consumption and small packaging suitable for mobile, and handheld equipment.

Block Diagram



Pin Description

Pin Name	Description
A_X, B_X, Y_X	Data I/O
SA, SB	Channel Select Inputs
EP	Pull-ups Enable
GND	Ground
V_{DD}	Power

Truth Table

Control Inputs			Switch State[1]		Pullup State	Function[2]
EP	SB	SA	Bx	Ax		
0	0	0	Open	Open	Off	Y, A, B all disconnected and Hi-Z
0	0	1	Open	Closed	Off	Y=A, B =Hi-Z
0	1	0	Closed	Open	Off	Y=B, A =Hi-Z
0	1	1	Closed	Closed	Off	Y=A=B
1	0	0	Open	Open	On	Y, A, B all disconnected; Y=Hi-Z; A & B pull to V_{DD}
1	0	1	Open	Closed	On	Y=A; A & B pull toV_{DD}
1	1	0	Closed	Open	On	Y=B; A& B pull to V_{DD}
1	1	1	Closed	Closed	On	Y=A=B; A& B pull to V_{DD}

Notes:
1. For the group of 6 transistor switches connecting to the Ax or Bx signals.
2. Function for stand-alone device (no other signal source connected)

Maximum Ratings

(Above which the useful life may be impaired. For user guidelines, not tested.)

Storage Temperature	–65°C to +150°C
Ambient Temperature with Power Applied	–40°C to +85°C
Supply Voltage to Ground Potential	–0.5V to +4.6V
DC Input Voltage	–0.5V to +6.0V
DC Output Current	120mA
Power Dissipation	0.5W

Note:
Stresses greater than those 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.

DC Electrical Characteristics, 3.3V Supply (Over the Operating Range, T_A = –40°C to +85°C, V_{DD} = 3.3V ±10%)

Parameters	Description	Test Conditions(1)	Min.	Typ(2)	Max.	Units
V_{IH}	Input HIGH Voltage	Guaranteed Logic HIGH Level	2.0			V
V_{IL}	Input LOW Voltage	Guaranteed Logic LOW Level	–0.5		0.8	
V_{IK}	Clamp Diode Voltage	V_{DD} = Min., I_{IN} = –18 mA		–0.75	–1.2	
I_{IH}	Input HIGH Current	V_{DD} = Max., V_{IN} = V_{DD}			±1	µA
I_{IL}	Input LOW Current	V_{DD} = Max., V_{IN} = GND			±1	
I_{OZH}	High Impedance Output Current	0 ≤ Y, In ≤ V_{DD}			±25	
R_{ON}	Switch On-Resistance(3)	V_{DD} = Min., V_{IN} = 0V, I_{ON} = 24mA		2	3.3	Ohm
		V_{DD} = Min., V_{IN} = 2.4V, I_{ON} = 12 mA		2.6	4.3	

DC Electrical Characteristics, 1.8V Supply (Over Operating Range, T_A = –40°C to +85°C, V_{DD} = 1.8V ± 10%)

Parameters(4)	Description	Test Conditions (1)	Min.	Typ. (2)	Max.	Units
V_{IH}	Input HIGH Voltage	Guaranteed Logic HIGH Level	1.1	–	V_{DD} + 0.3	V
V_{IL}	Inout LOW Voltage	Guaranteed Logic LOW Level	–0.3	–	0.5	
V_{IK}	Clamp Diode Voltage	V_{DD} = Max., I_{IN} = –6mA	–	–0.7	–1.8	
I_{IH}	Input HIGH Current	V_{DD} = Max., V_{IN} = V_{DD}	–	–	±1	µA
I_{IL}	Input LOW Current	V_{DD} = Max., V_{IN} = GND	–	–	±1	
I_{OZH}	High Impedance Current	0 ≤ Y, In ≤ V_{DD}	–	–	±10	
R_{ON}	Switch On-Resistance(3)	V_{DD} = 1.5V, V_{IN} = 0V, I_{ON} = 24mA	–	2.6	4	Ohm
		V_{DD} = 1.5V, V_{IN} = 1.3V, I_{ON} = 12mA	–	5.5	8	

Notes:
1. For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at nominal V_{DD}, T_A = 25°C ambient and maximum loading.
3. Measured by the voltage drop between Y and In pin at indicated current through the switch. On-Resistance is determined by the lower of the voltages on the two (Y, In) pins.
4. This parameter is determined by device characterization but is not production tested.

Capacitance (T_A = 25°C f = 1 MHz)

Parameters	Description	Test Conditions	Typ.	Units
C_{IN}	Input Capacitance (Control)	V_{IN} = 0V	2	pF
$C_{OFF(IN)}$	In Capacitance, Switch Off		4	
C_{ON}	In Capacitance, Switch On		15	

Power Supply Characteristics

Parameters	Description	Test Conditions(1)	Min.	Typ.	Max.	Units
I_{CC}	Quiescent Power Supply Current Vcontrol (EP, SB, SA) = GND or V_{DD}	V_{DD} = 3.3 V			120	µA
		V_{DD} = 1.8 V			10	

Notes:
1. For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device.

Dynamic Electrical Characteristics Over the Operating Range (T_A = -40º to +85º, V_{DD} = 3.3V ± 10%)

Parameter	Description	Test Condition	Min.	Typ.	Max.	Units
BW	-3dB Bandwidth	See Test Diagram (C_L = 0pF)		400		MHz

Switching Characteristics over 3.3V Operating Range

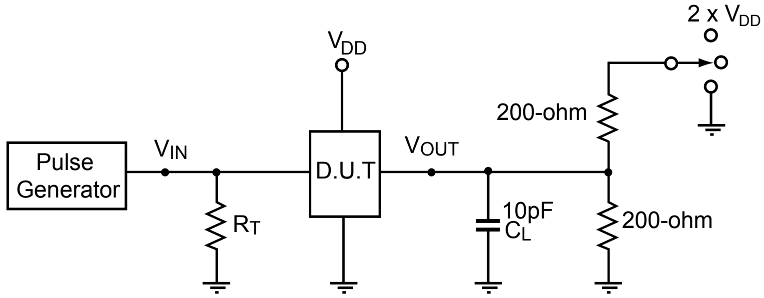
Parameters	Description	Conditions(1)	Min.	Max.	Units
t_{PLH} t_{PHL}	Propagation Delay(2,3) Y to (A or B), (A or B) to Y	See Test Diagram		0.3	ns
t_{PZH} t_{PZL}	Enable Time S to (Y, A or B)	See Test Diagram	1.5	10	
t_{PHZ} t_{PLZ}	Disable Time S to (Y, A or B)		1.5	10	

Switching Characteristics over 1.8V Operating Range

Parameters	Description	Conditions(1)	Min.	Max.	Units
t_{PLH} t_{PHL}	Propagation Delay(2,3) Y to (A, or B), or (A, or B) to Y	See Test Diagram		0.3	ns
t_{PZH} t_{PZL}	Enable Time S to (Y, A, or B)	See Test Diagram	1.5	25.0	
t_{PHZ} t_{PLZ}	Disable Time S to (Y, A, or B)		1.5	25.0	

Notes:
1. See test circuit and waveforms.
2. This parameter is guaranteed but not tested on Propagation Delays.
3. The switch contributes no propagational delay other than the RC delay of the On-Resistance of the switch and the load capacitance. The time constant for the switch alone is of the order of 0.30ns for 10pF load. Since this time constant is much smaller than the rise/fall times of typical driving signals, it adds very little propagational delay to the system. Propagational delay of the switch when used in a system is determined by the driving circuit on the driving side of the switch and its interaction with the load on the driven side.

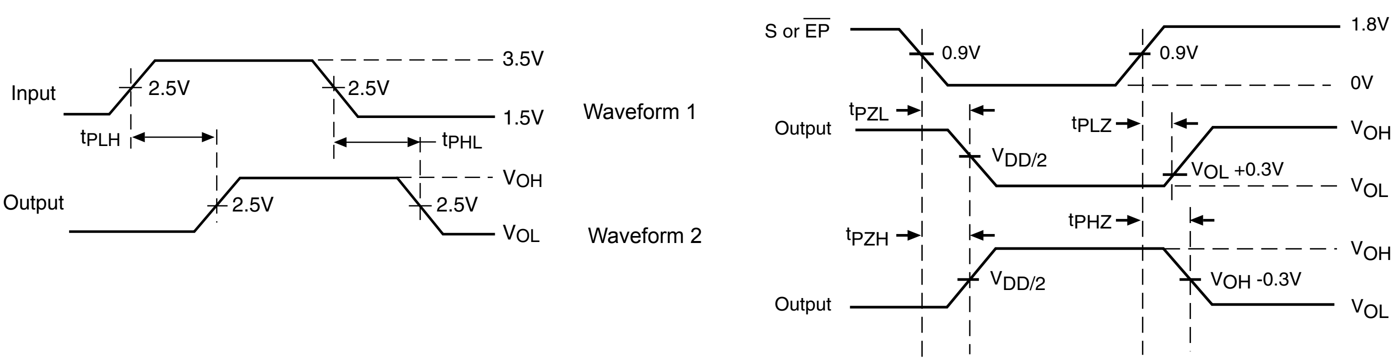
Test Circuit for Electrical Characteristics(1-5)



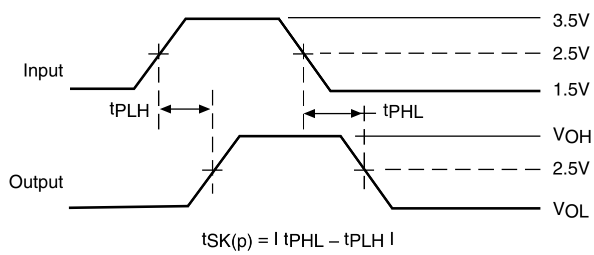
Notes:

1. C_L = Load capacitance: includes jig and probe capacitance.
2. R_T = Termination resistance: should be equal to Z_{OUT} of the Pulse Generator
3. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
4. All input impulses are supplied by generators having the following characteristics: PRR ≤ MHz, Z_O = 50Ω, t_R ≤ 2.5ns, t_F ≤ 2.5ns.
5. The outputs are measured one at a time with one transition per measurement.

Switching Waveforms



Voltage Waveforms Enable and Disable Times

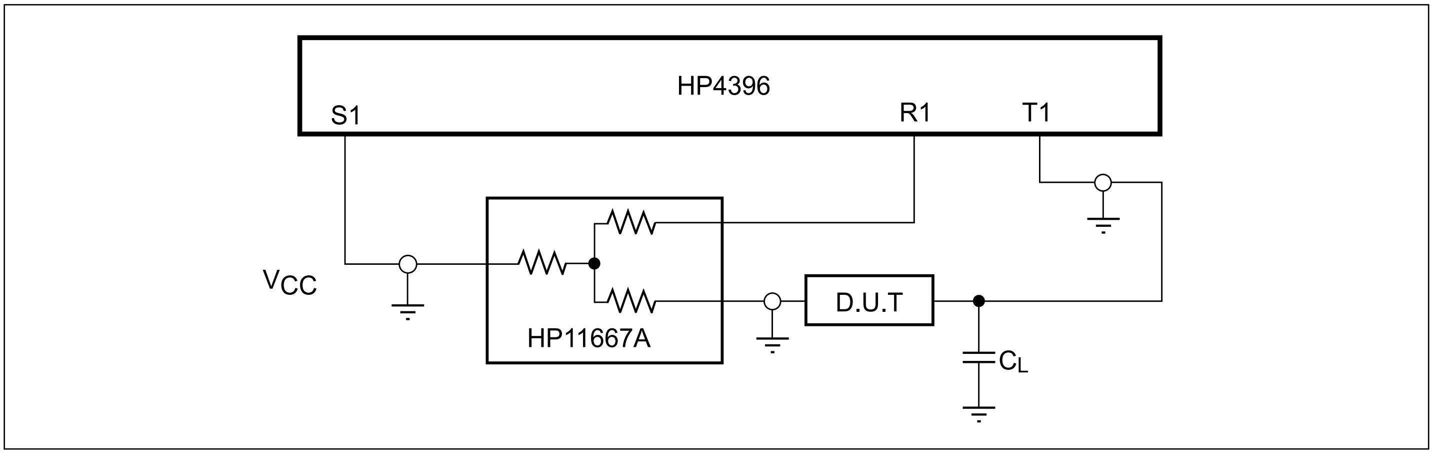


Pulse Skew - $t_{SK(p)}$

Switch Positions

Test	Switch
t_{PLZ}, t_{PZL}	2 x V_{DD}
t_{PHZ}, t_{PZH}	GND
Prop Delay	Open

Test Circuit for Dynamic Electrical Characteristics

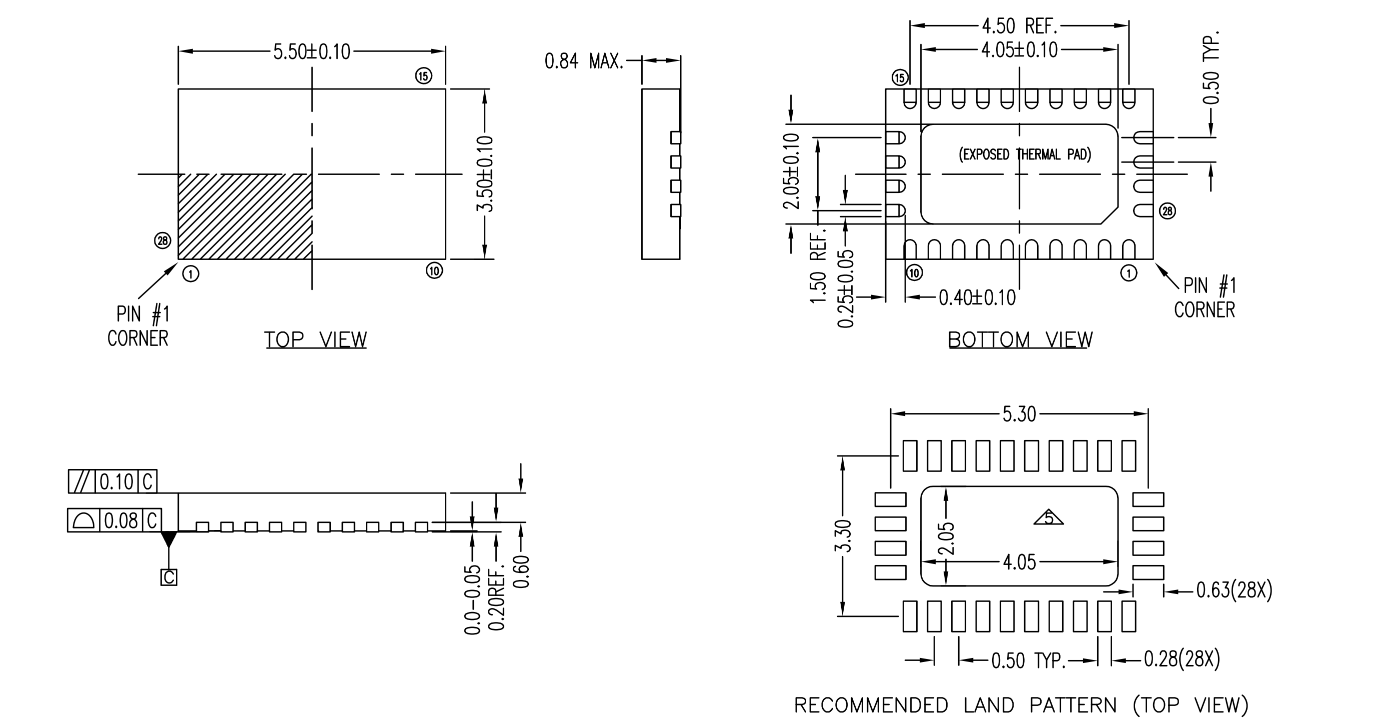


Applications Information

Logic Inputs

The logic control inputs can be driven up to 3.6V regardless of the supply voltage. For example, given a +3.3V supply, SA or SB maybe driven LOW to 0V and HIGH to 3.6V. Driving SA or SB Rail-to-Rail® minimizes power consumption.

Packaging Mechanical: 28-pin TQFN (ZH)



NOTE :
1. ALL DIMENSIONS ARE IN mm. ANGLES IN DEGREES.
2. COPLANARITY APPLIES TO THE EXPOSED THERMAL PAD AS WELL AS THE TERMINALS.
3. REFER JEDEC MO-220
4. RECOMMENDED LAND PATTERN IS FOR REFERENCE ONLY.
5. THERMAL PAD SOLDERING AREA (MESH STENCIL DESIGN IS RECOMMENDED).

PERICOM® Enabling Serial Connectivity

DATE: 07/11/12

DESCRIPTION: 28-Contact, Very Thin Quad Flat No-Lead, TQFN

PACKAGE CODE: ZH28

DOCUMENT CONTROL #: PD-2034 REVISION: C

Note: For latest package info, please check: http://www.pericom.com/products/packaging/mechanicals.php

Ordering Information

Ordering Code	Package Code	Package Description
PI3G612ZHE	ZH	28-contact, Very Thin Quad Flat No-Lead (TQFN)

Notes:
- Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
- E = Pb-free and Green
- X suffix = Tape/Reel