ASMedia Technology

ASM1456 Datasheet

SATA 6G Mux/Demux Switch

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Environmentally hazardous materials are not used in this product.

Preliminary **subject to change without notice**

Revision History

Rev.	Date	Description
0.1	Jan. 15, 2010	Initial Release
1.0	March, 15, 2010	Update the electrical characteristics

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General Description

ASM1456 is a 2-differential-channel signal switch which is used to mux/demux high speed signals. It support 1:2 or 2:1 multiplexer/demultiplexer switch with low On-Resistance, low crosstalk, operating at 1.8V supply. ASM1456 is designed for SATA 6G switch application in computers, consumer electronics, instrumentation, with high signal performance and protected against high ESD ability.

Application

- ◇ Notebook
- ◇ Inductry PC
- ◇ Docking Station

Features

- ◇ SATA 6G Switch
- ◇ 2 Differential Channel 2:1 Mux/DeMux
- ◇ -3dB Bandwidth: 9GHz
- ◇ Low Crosstalk: -21dB @ 6.0GHz
- ◇ Low Off Isolation: -25dB @ 6.0GHz
- ◇ Low Insertion Loss: -1.9dB @ 6.0GHz
- ◇ VDD operating range: 1.8V+/-5%
- ◇ HBM ESD > 4KV

Package Type

- ◇ Green Package TQFN 28L (Pb-free)

Functional Diagram

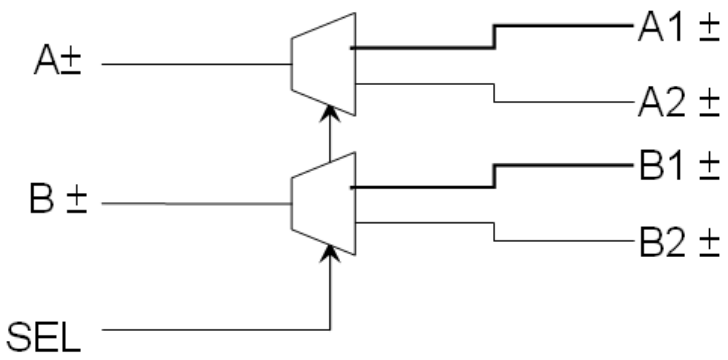

Figure 1: Functional Diagram of ASM1456

Truth Table

SEL	Descriptions
L	(A±, B±) to (A1±, B1±)
H	(A±, B±) to (A2±, B2±)

Pinout Diagrams

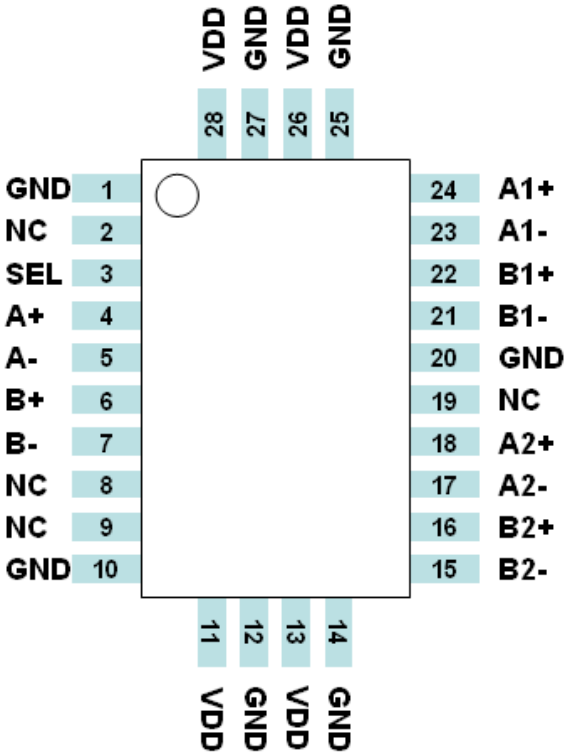

Figure 2: ASM1456 Pinout

Pin Descriptions

This section provides a detailed description of each signal. The following notations are used to describe the signal type.

Pin Name	Descriptions
A±, B±, A1±, B1±, A2±, B2±	Data Signals
SEL	Select Input
VDD	Power
VSS	Ground

Electrical Characteristics

Absolute Maximum Ratings

Power Supply	-0.5V to +2.5V
DC Input Voltage	-0.5V to VDD
Storage Temperature	-65ºC to 150ºC

Power Supply Characteristics (Recommended Operating Conditions)

Symbols	Parameter	Conditions	Min.	Typ.	Max.	Units
IDD	Quiescent Power Supply Current	VIN = 0V or VDD			1.1	mA

DC Electrical Characteristics for Video Switching

Symbols	Parameter	Conditions	Min.	Typ.	Max.	Units
VIN	Input Voltage Range for Switching pins		-0.5		1.2	V
VIH	Input HIGH Voltage of SEL		0.95			V
IIL	Input LOW Voltage of SEL		-0.5		0.89	V
VIK	Clamp Diode Voltage	I_{SEL}=-18mA	-0.9	-0.8	-0.6	V
IIH	Input HIGH Current	V_{SEL}=VDD			±0.1	uA
IIL	Input LOW Current	V_{SEL}=GND			±0.1	uA
RON	Switch On Resistance	V_{IN}=0~1.2V, I_{IN}=-10mA		5		Ω
RFLAT	On Resistance Flatness	V_{IN}=0~1.2V, I_{IN}=-10mA		4		Ω
△RON	On Resistance match	V_{IN}=0V, I_{IN}=-10mA		0.5	1	Ω

Capacitance (T_A=25^{0}C, f=1MHz)

Symbols	Parameter	Conditions	Min.	Typ.	Max.	Units
CIN	Input Capacitance	V_{SEL}=GND		TBD	TBD	pF
COFF	Port I Capacitance, Switch OFF	V_{SEL}=GND		0.6	1.1	pF
CON	Switch Capacitancem Switch ON	V_{SEL}=GND		1.5	2.8	pF

Dynamic Electrical Characteristics

Symbols	Parameter	Conditions	Min.	Typ.	Max.	Units
XTALK	Crosstalk	f=6GHz			-30	dB
OIRR	OFF Isolation	f=6GHz			-25	dB
ILOSS	Differential Insertion Loss	f=6GHz			-1.9	dB
BW	-3dB Bandwidth		2.5		8	GHz

Switching Characteristics

Symbols	Description	Min.	Typ.	Max.	Units
tPD	Propagation Delay		0.1		ns
tPZH, tPZL	Line Enable Time – SEL to Input/Output	0.5		6	ns
tPHZ, tPLZ	Line Disable Time – SEL to Input/Output	0.5		9	ns
tSK	Skew between opposite transitions of the same output (tPHL – tPLH)		0.1	0.2	ns

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Package Information

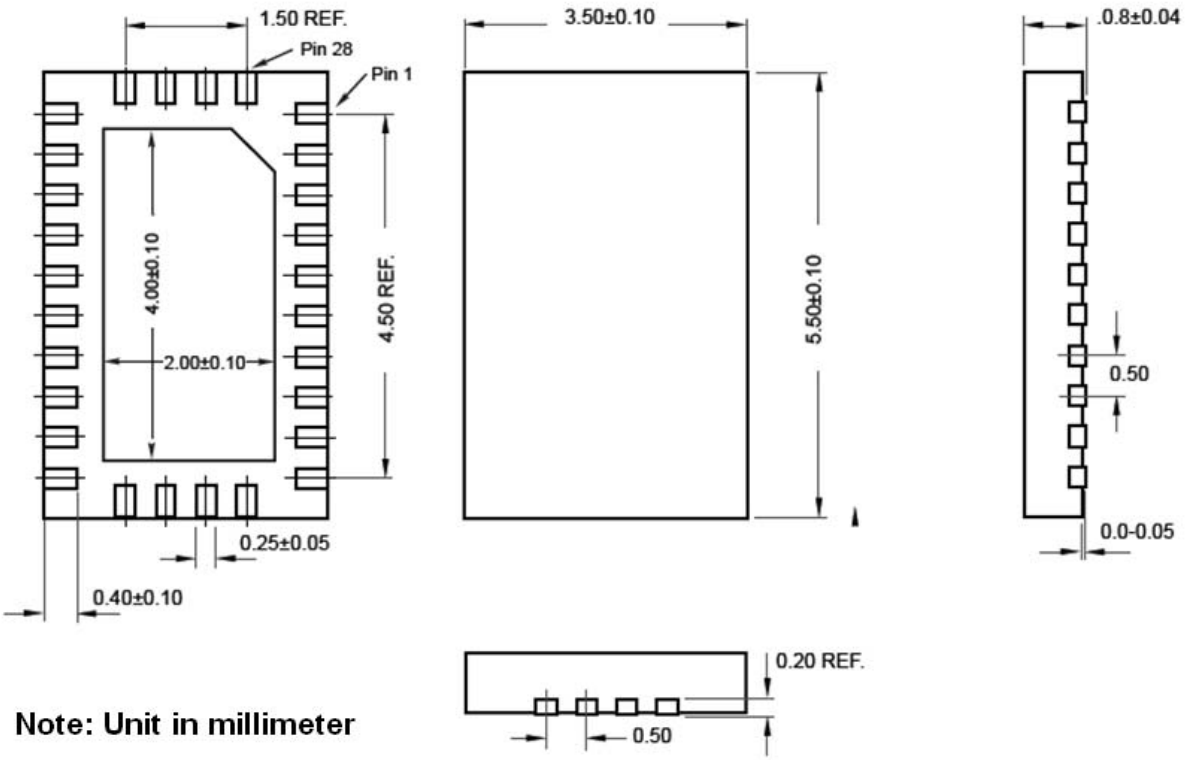

Figure 3: Mechanical Specification – TQFN 28L