

TOSHIBA CMOS Linear Integrated Circuit Silicon Monolithic

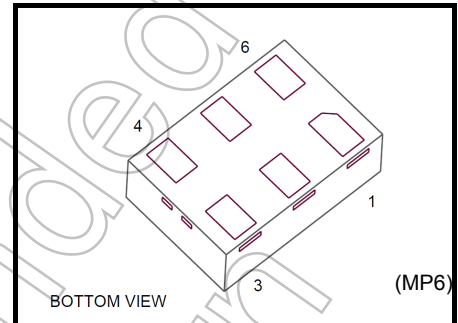
TC75S201L6X

Single Comparator

TC75S201L6X is a CMOS type general-purpose single comparator. The device can operate a single power supply and a lower supply current than a conventional bipolar general-purpose comparator. This device's push-pull output stage can be directly connected to CMOS logic ICs.

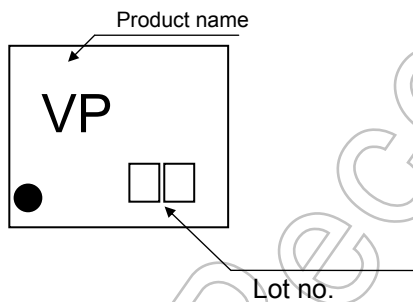
Features

- Full-Range Input/Output
- Small package
- Low input bias current
- Single power supply operation
- Low supply current: $I_{DD} = 20\mu A$ (typ.) @ $V_{DD} = 3.0 V$
- Push-pull output circuit

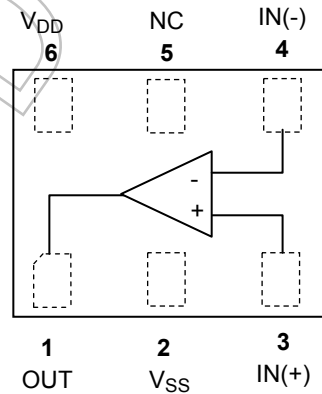


Weight: 2.0 mg (typ.)

Marking (Top View)



Pin Assignment (Top view)



Start of commercial production
2011-10

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Unit
Supply voltage	V_{DD}	± 2.3 or 4.6	V
Differential input voltage ⁽¹⁾	ΔV_{IN}	± 4.6	V
Input voltage	V_{IN}	V_{SS} to V_{DD}	V
Output current	I_{OUT}	± 35	mA
Power dissipation	P_D	250 (Note1)	mW
Operating temperature	T_{opr}	-40 to 85	°C
Storage temperature	T_{stg}	-55 to 125	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note: Since this product sometimes brings about latch-up, which is peculiar to CMOS devices, note the following points:

- Don't raise the voltage level of the output pins beyond V_{DD} , nor lower it below V_{SS} . Consider the timing for power supply, too.
- Don't let any abnormal noise enter the device.

Note 1: Mounted on an FR4 board.

Operating Ranges ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Supply voltage	V_{DD}	1.5 to 4.6	V
	V_{DD}, V_{SS}	± 0.75 to ± 2.3	

Electrical Characteristics ($V_{DD} = 3.0\text{ V}$, $V_{SS} = \text{GND}$, $T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	V_{IO}	—	—	± 1	± 6	mV
Input offset current	I_{IO}	—	—	1	—	μA
Input bias current	I_I	—	—	1	—	μA
Common-mode input voltage range	V_{ICM}	—	0	—	3.0	V
Supply current	I_{DD} (Note)	—	—	20	44	μA
Sink current	I_{SINK}	$V_{OL} = 0.5\text{ V}$	6	18	—	mA
Source current	I_{SOURCE}	$V_{OH} = 2.5\text{ V}$	3	15	—	mA
High-level Output voltage	V_{OL}	$I_{SINK} = 5.0\text{ mA}$	—	0.15	0.35	V
Low-level Output voltage	V_{OH}	$I_{SOURCE} = 5.0\text{ mA}$	2.65	2.85	—	
Propagation delay time (L/H)	t_{PLH}	Over drive = 100 mV	—	600	—	ns
Propagation delay time (H/L)	t_{PHL}	Over drive = 100 mV	—	1000	—	ns
Response time	t_{TLH}	Over drive = 100 mV	—	30	—	ns
	t_{THL}	Over drive = 100 mV	—	24	—	

(Note): Since this product causes an increase in current consumption with a rise in operational frequency, make sure that power consumption does not exceed the allowable dissipation.

Electrical Characteristics ($V_{DD} = 1.8\text{ V}$, $V_{SS} = \text{GND}$, $T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	V_{IO}	—	—	± 1	± 6	mV
Input offset current	I_{IO}	—	—	1	—	μA
Input bias current	I_I	—	—	1	—	μA
Common-mode input voltage range	V_{ICM}	—	0	—	1.8	V
Supply current	I_{DD} (Note)	—	—	17	40	μA
Sink current	I_{SINK}	$V_{OL} = 0.5\text{ V}$	3.0	8.0	—	mA
Source current	I_{SOURCE}	$V_{OH} = 1.3\text{ V}$	1.0	6.4	—	mA
High-level Output voltage	V_{OL}	$I_{SINK} = 3.0\text{ mA}$	—	0.15	0.35	V
Low-level Output voltage	V_{OH}	$I_{SOURCE} = 3.0\text{ mA}$	1.45	1.65	—	
Propagation delay time (L/H)	t_{PLH}	Over drive = 100 mV	—	590	—	ns
Propagation delay time (H/L)	t_{PHL}	Over drive = 100 mV	—	1000	—	
Response time	t_{TLH}	Over drive = 100 mV	—	26	—	ns
	t_{THL}	Over drive = 100 mV	—	33	—	

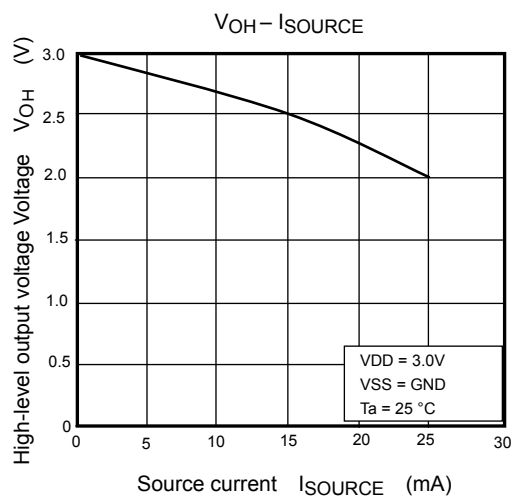
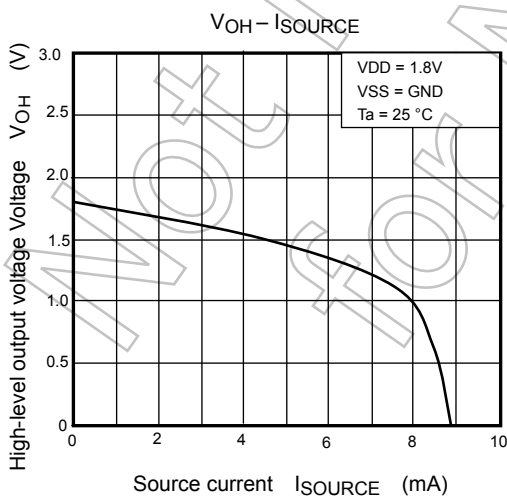
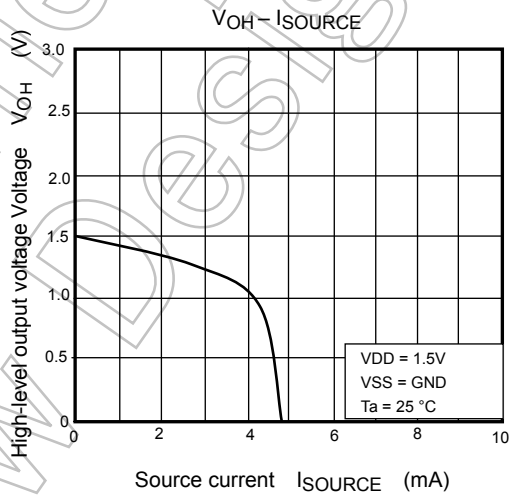
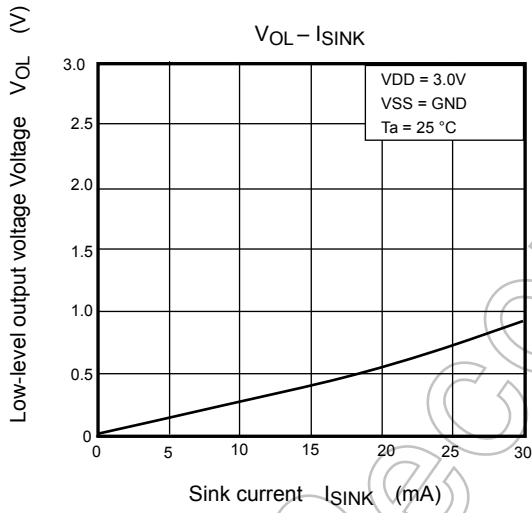
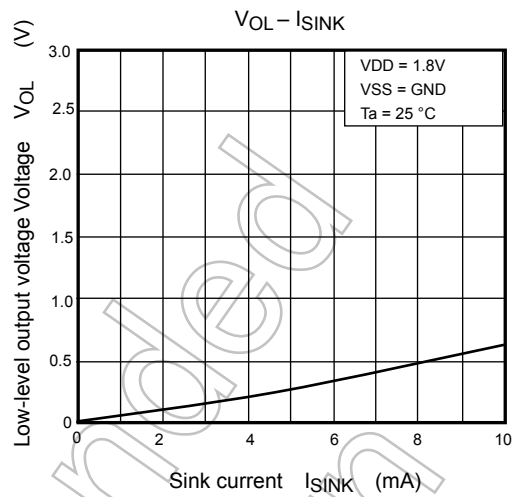
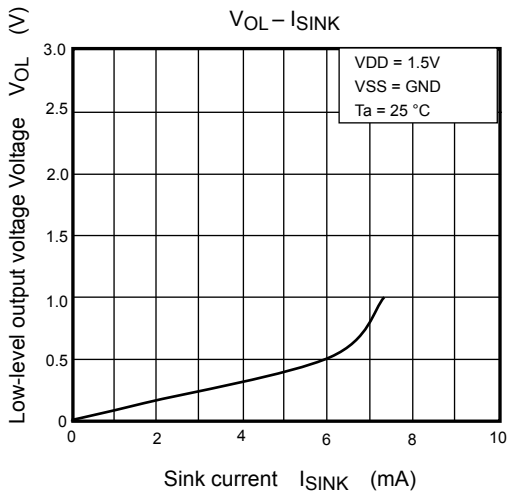
(Note): Since this product causes an increase in current consumption with a rise in operational frequency, make sure that power consumption does not exceed the allowable dissipation.

Electrical Characteristics ($V_{DD} = 1.5\text{ V}$, $V_{SS} = \text{GND}$, $T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	V_{IO}	—	—	± 1	± 6	mV
Input offset current	I_{IO}	—	—	1	—	μA
Input bias current	I_I	—	—	1	—	μA
Common-mode input voltage range	V_{ICM}	—	0	—	1.5	V
Supply current	I_{DD} (Note)	—	—	18	36	μA
Sink current	I_{SINK}	$V_{OL} = 0.5\text{ V}$	1.0	5.9	—	mA
Source current	I_{SOURCE}	$V_{OH} = 1.0\text{ V}$	0.5	4.3	—	mA
High-level Output voltage	V_{OL}	$I_{SINK} = 1.5\text{ mA}$	—	0.15	0.35	V
Low-level Output voltage	V_{OH}	$I_{SOURCE} = 1.5\text{ mA}$	1.15	1.35	—	
Propagation delay time (L/H)	t_{PLH}	Over drive = 100 mV	—	600	—	ns
Propagation delay time (H/L)	t_{PHL}	Over drive = 100 mV	—	1000	—	
Response time	t_{TLH}	Over drive = 100 mV	—	30	—	ns
	t_{THL}	Over drive = 100 mV	—	42	—	

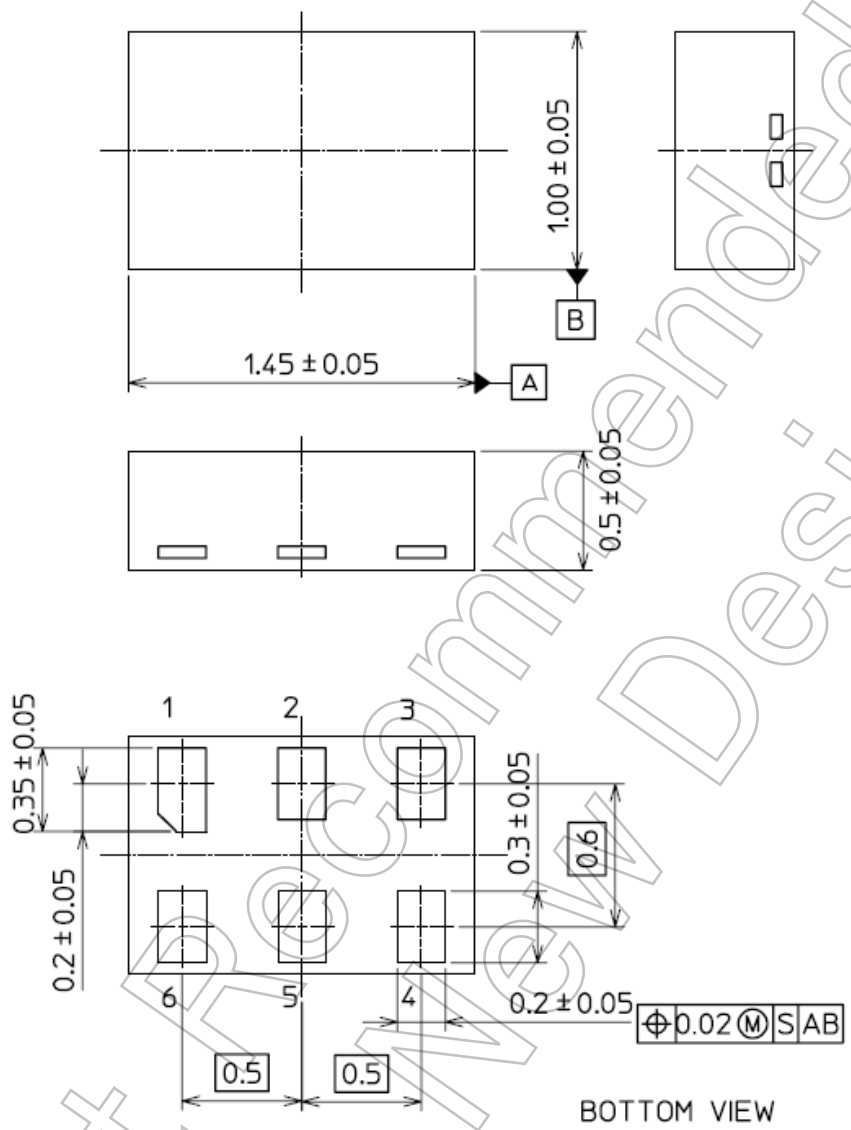
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Not Recommended for New Design



Package Dimensions

Unit: mm



Weight : 2.0 mg (typ.)

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