

TOSHIBA CMOS Linear Integrated Circuit Silicon Monolithic

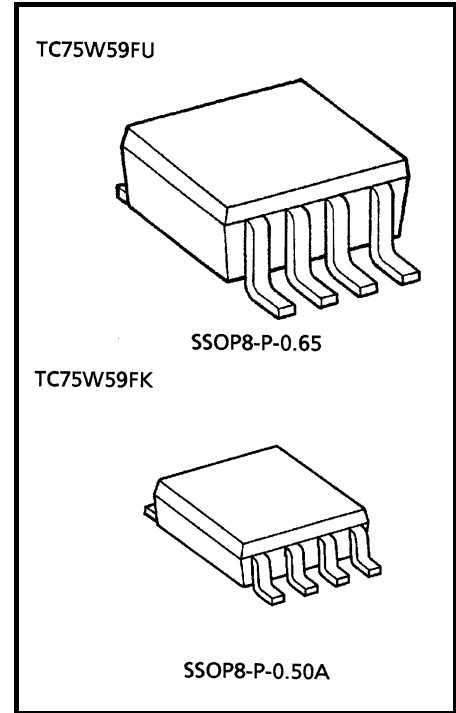
TC75W59FU, TC75W59FK

Dual Comparator

TC75W59 is a CMOS type general-purpose dual comparator capable of single power supply operation and using lower supply currents than the conventional bipolar comparators. Its open drain output forms wired OR with other open drain outputs.

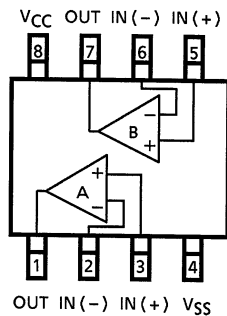
Features

- Low supply current: $I_{DD} = 200\mu A$ (typ.)
- Single power supply operation
- Wide common mode input voltage range: V_{SS} to $V_{DD}-0.9V$
- Open drain output circuit
- Low input bias current
- Small package

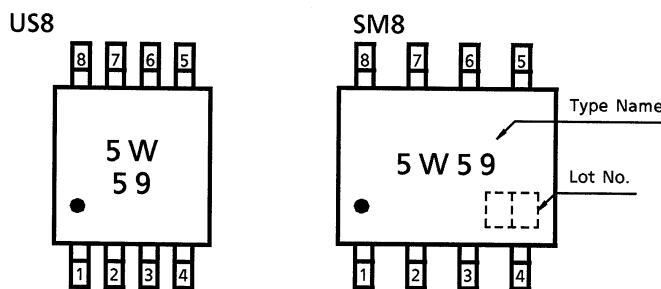


Weight
 SSOP8-P-0.65: 0.021g (typ.)
 SSOP8-P-0.50A: 0.01g (typ.)

Marking (Top View)



Pin Connection (Top View)



Start of commercial production
 1997-05

Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	N
Supply voltage	V_{DD}, V_{SS}	± 3.5 or 7	V
Differential input voltage	DV_{IN}	± 7	V
Input voltage	V_{IN}	V_{SS} to V_{DD}	V
Output current	I_O	± 35	mA
Power dissipation	P_D	250 (TC75W59FU)	mW
		200 (TC75W59FK)	
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 latchcap, which is peculiar to CMOS devices, note the following points:

- Don't raise the voltage level of I/O 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.

Electrical Characteristics ($V_{DD} = 5V$, $V_{SS} = GND$, $T_a = 25^{\circ}C$)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	V_{IO}	—	—	—	± 1	± 7	mV
Input offset current	I_{IO}	—	—	—	1	—	pA
Input bias current	I_I	—	—	—	1	—	pA
Common mode input voltage	CMV_{IN}	—	—	0	—	4.1	V
Supply current	I_{DD} (Note)	—	—	—	220	440	μA
Voltage gain	G_V	—	—	—	94	—	dB
Sink current	I_{sink}	—	$V_{OL} = 0.5V$	13	25	—	mA
Output leak current	I_{LEAK}	—	$V_O = 5V$	—	5	—	nA
Output voltage	V_{OL}	—	$I_{sink} = 5.0mA$	—	0.1	0.3	V
Operating supply voltage	V_{DD}	—	—	1.8	—	7.0	V
Propagation delay time (turn on)	t_{PLH} (1)	—	Over drive = 100mV	—	200	—	ns
	t_{PLH} (2)	—	TTL step input	—	140	—	
Propagation delay time (turn off)	t_{PHL} (1)	—	Over drive = 100mV	—	80	—	ns
	t_{PHL} (2)	—	TTL step input	—	60	—	
Response time	t_{TLH}	—	Over drive = 100mV	—	160	—	ns
	t_{THL}	—	Over drive = 100mV	—	3	—	

Electrical Characteristics ($V_{DD} = 3V$, $V_{SS} = GND$, $T_a = 25^{\circ}C$)

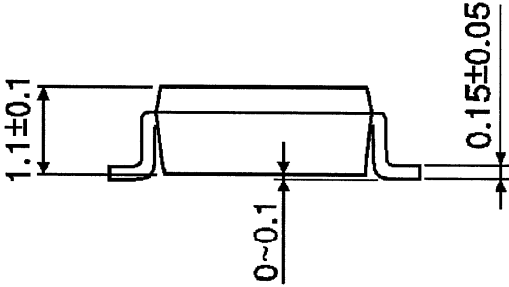
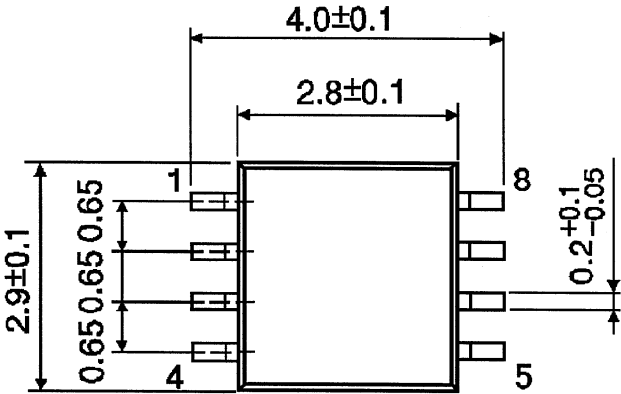
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	V_{IO}	—	—	—	± 1	± 7	mV
Input offset current	I_{IO}	—	—	—	1	—	pA
Input bias current	I_I	—	—	—	1	—	pA
Common mode input voltage	CMV_{IN}	—	—	0	—	2.1	V
Supply current	I_{DD} (Note)	—	—	—	200	400	μA
Sink current	I_{sink}	—	$V_{OL} = 0.5V$	6	18	—	mA
Output leak current	I_{LEAK}	—	$V_O = 3V$	—	5	—	nA
Output voltage	V_{OL}	—	$I_{sink} = 5.0mA$	—	0.15	0.35	V
Propagation delay time (turn on)	t_{PLH}	—	Over drive = 100mV	—	160	—	ns
Propagation delay time (turn off)	t_{PHL}	—	Over drive = 100mV	—	70	—	ns
Response time	t_{TLH}	—	Over drive = 100mV	—	170	—	ns
	t_{THL}	—	Over drive = 100mV	—	3	—	

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.

Package Dimensions

SSOP8-P-0.65

Unit: mm

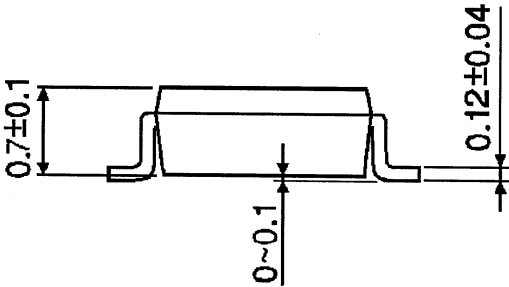
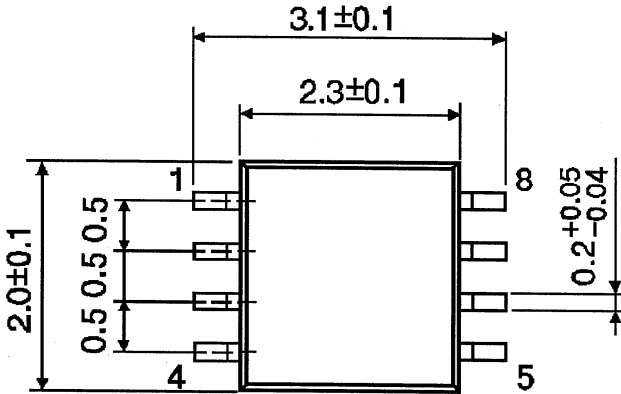


Weight: 0.021g (typ.)

Package Dimensions

SSOP8-P-0.50A

Unit: mm



Weight: 0.01g (typ.)

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