

TOSHIBA CMOS LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

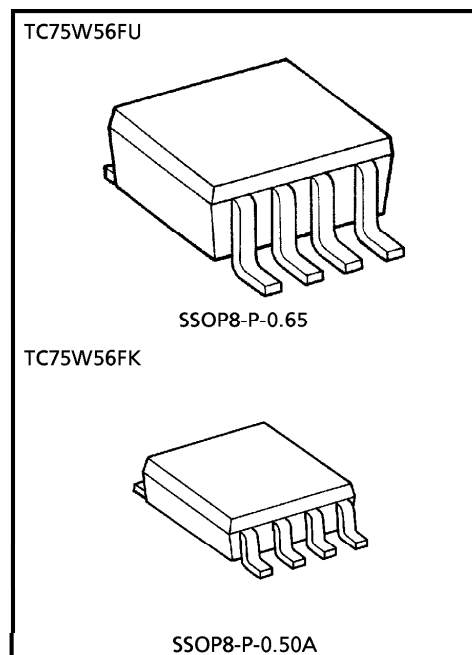
# TC75W56FU, TC75W56FK

## DUAL COMPARATOR

TC75W56 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 push-pull output can connect directly to logical IC's such as TTL and CMOS circuits.

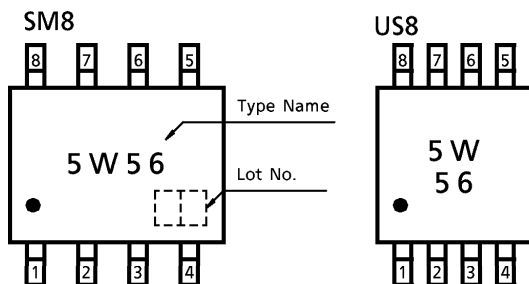
### FEATURES

- Low supply current :  $I_{DD} = 20\mu A$  (Typ.)
- Single power supply operation
- Wide common mode input voltage range :  $V_{SS} \sim V_{DD} - 0.9V$
- Push-pull output circuit
- Low input bias current
- Small package

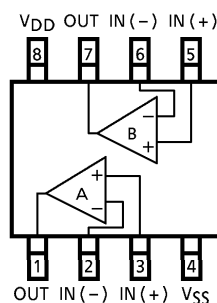


Weight  
 SSOP8-P-0.65 : 0.021g (Typ.)  
 SSOP8-P-0.50A : 0.01g (Typ.)

### MARKING (TOP VIEW)



### PIN CONNECTION (TOP VIEW)



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**MAXIMUM RATINGS** (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	N
Supply Voltage	V <sub>DD</sub> , V <sub>SS</sub>	± 3.5 or 7	V
Differential Input Voltage	DV <sub>IN</sub>	± 7	V
Input Voltage	V <sub>IN</sub>	V <sub>SS</sub> ~V <sub>DD</sub>	V
Output Current	I <sub>OUT</sub>	± 35	mA
Power Dissipation	P <sub>D</sub>	250 (SM8)	mW
		200 (US8)	
Operating Temperature	T <sub>opr</sub>	- 40~85	°C
Storage Temperature	T <sub>stg</sub>	- 55~125	°C

(Note) Since this product sometimes brings about latchup, which is peculiar to CMOS devices, note the following points :

- Don't raise the voltage level of I/O pins beyond V<sub>DD</sub>, nor lower it below V<sub>SS</sub>. Consider the timing for power supply, too.
- Don't let any abnormal noise enter the device.

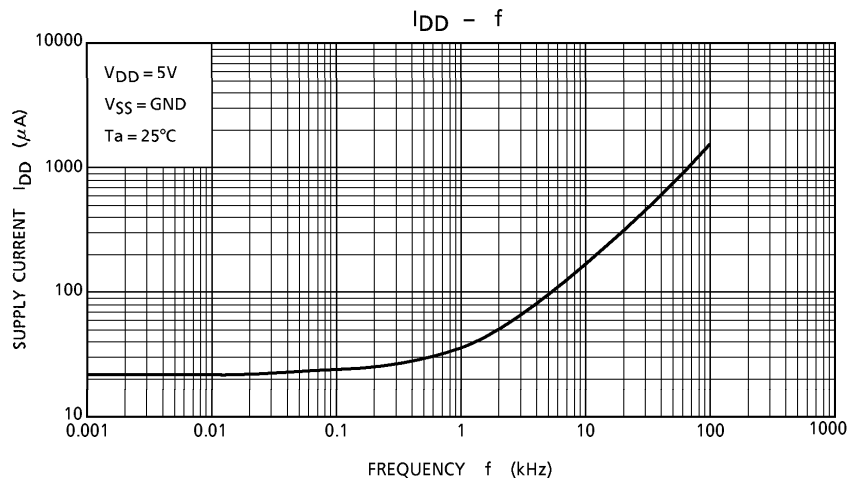
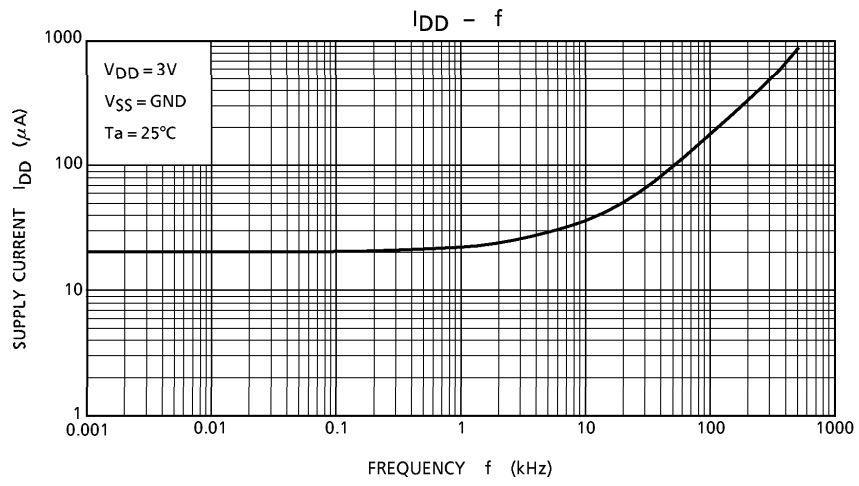
**ELECTRICAL CHARACTERISTICS (V<sub>DD</sub> = 5V, V<sub>SS</sub> = GND, Ta = 25°C)**

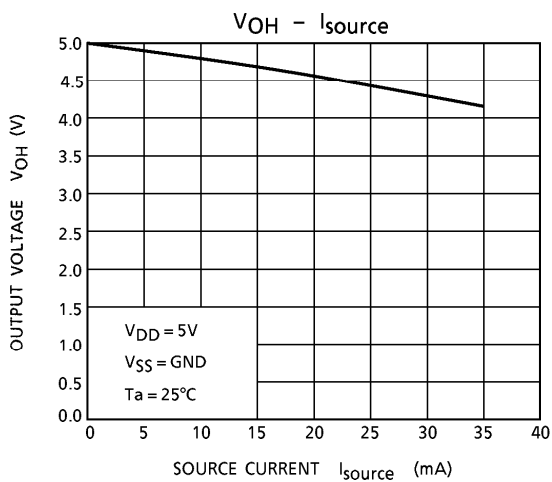
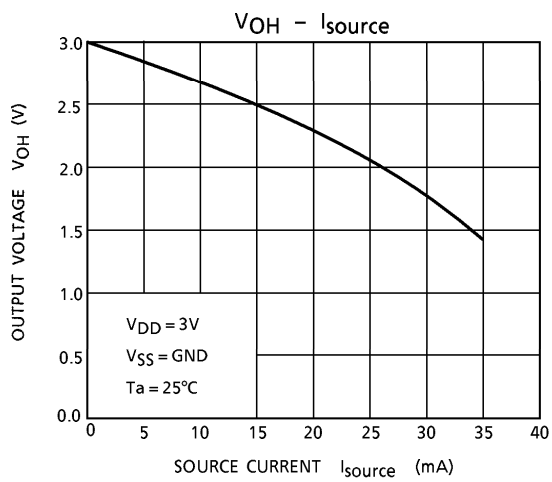
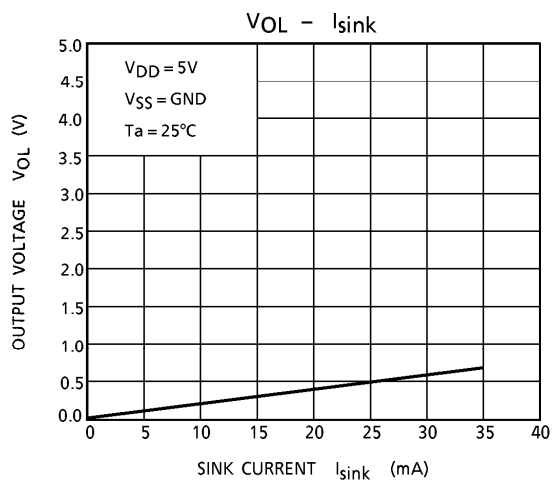
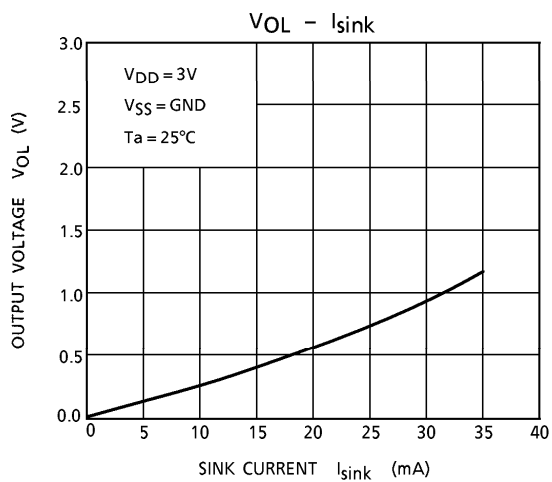
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	—	—	—	± 1	± 7	mV
Input Offset Current	I <sub>IO</sub>	—	—	—	1	—	pA
Input Bias Current	I <sub>I</sub>	—	—	—	1	—	pA
Common Mode Input Voltage	CMV <sub>IN</sub>	—	—	0	—	4.1	V
Supply Current	I <sub>DD</sub> (Note)	—	—	—	22	44	μA
Voltage Gain	G <sub>V</sub>	—	—	—	94	—	dB
Sink Current	I <sub>sink</sub>	—	V <sub>OL</sub> = 0.5V	13	25	—	mA
Source Current	I <sub>source</sub>	—	V <sub>OH</sub> = 4.5V	9	21	—	mA
Output Voltage	V <sub>OL</sub>	—	I <sub>sink</sub> = 5.0mA	—	0.1	0.3	V
	V <sub>OH</sub>	—	I <sub>source</sub> = 5.0mA	4.7	4.9	—	
Operating Supply Voltage	V <sub>DD</sub>	—	—	1.8	—	7.0	V
Propagation Delay Time (Turn ON)	t <sub>PLH</sub> (1)	—	Over drive = 100mV	—	680	—	ns
	t <sub>PLH</sub> (2)	—	TTL step input	—	500	—	
Propagation Delay Time (Turn OFF)	t <sub>PHL</sub> (1)	—	Over drive = 100mV	—	250	—	ns
	t <sub>PHL</sub> (2)	—	TTL step input	—	380	—	
Response Time	t <sub>TLH</sub>	—	Over drive = 100mV	—	60	—	ns
	t <sub>THL</sub>	—	Over drive = 100mV	—	8	—	

**ELECTRICAL CHARACTERISTICS (V<sub>DD</sub> = 3V, V<sub>SS</sub> = GND, Ta = 25°C)**

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	—	—	—	± 1	± 7	mV
Input Offset Current	I <sub>IO</sub>	—	—	—	1	—	pA
Input Bias Current	I <sub>I</sub>	—	—	—	1	—	pA
Common Mode Input Voltage	CMV <sub>IN</sub>	—	—	0	—	2.1	V
Supply Current	I <sub>DD</sub> (Note)	—	—	—	20	40	μA
Sink Current	I <sub>sink</sub>	—	V <sub>OL</sub> = 0.5V	6	18	—	mA
Source Current	I <sub>source</sub>	—	V <sub>OH</sub> = 2.5V	3	15	—	mA
Output Voltage	V <sub>OL</sub>	—	I <sub>sink</sub> = 5.0mA	—	0.15	0.35	V
	V <sub>OH</sub>	—	I <sub>source</sub> = 5.0mA	2.65	2.85	—	
Propagation Delay Time (Turn ON)	t <sub>PLH</sub>	—	Over drive = 100mV	—	550	—	ns
Propagation Delay Time (Turn OFF)	t <sub>PHL</sub>	—	Over drive = 100mV	—	250	—	ns
Response Time	t <sub>TLH</sub>	—	Over drive = 100mV	—	30	—	ns
	t <sub>THL</sub>	—	Over drive = 100mV	—	8	—	

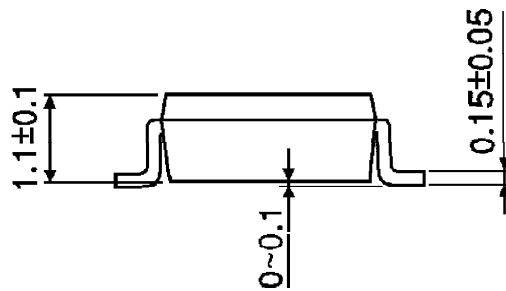
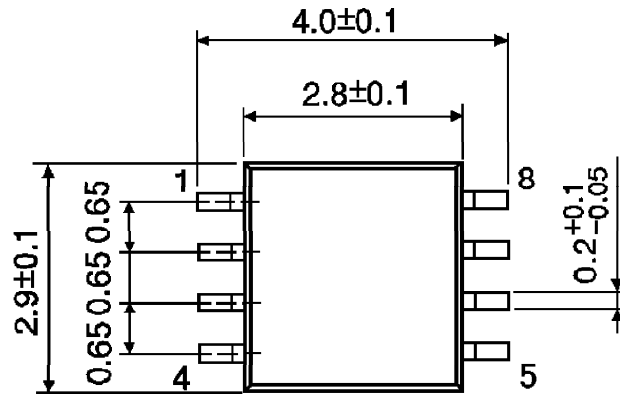
(Note) Since this product causes an increase in current consumption with a rise in operational frequency, make sure that power consumption does not exceed the allowable dissipation.





**OUTLINE DRAWING**  
SSOP8-P-0.65

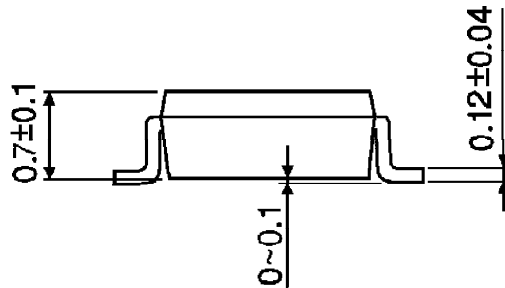
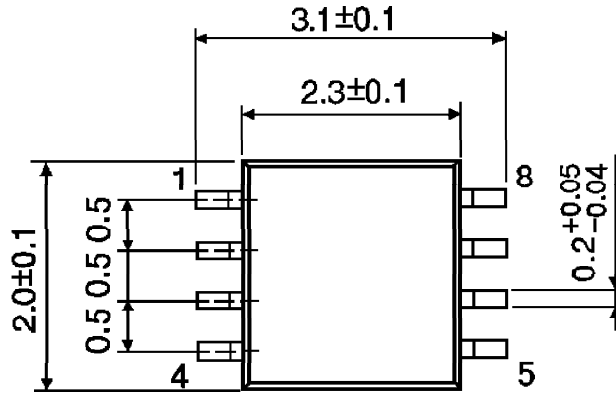
Unit : mm



Weight : 0.021g (Typ.)

**OUTLINE DRAWING**  
SSOP8-P-0.50A

Unit : mm



Weight : 0.01g (Typ.)