

TOSHIBA CMOS LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

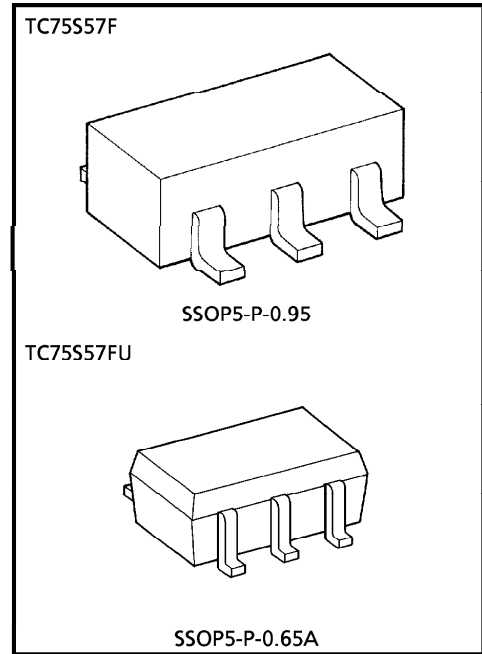
# TC75S57F, TC75S57FU

## SINGLE COMPARATOR

TC75S57F, TC75S57FU are CMOS type general-purpose single 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.

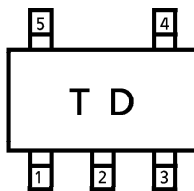
### FEATURES

- Low supply current :  $I_{DD} = 100\mu A$  (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

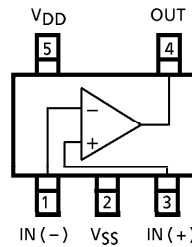


Weight  
 SSOP5-P-0.95 : 0.014g (Typ.)  
 SSOP5-P-0.65A : 0.006g (Typ.)

### MARKING (TOP VIEW)



### PIN CONNECTION (TOP VIEW)



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**MAXIMUM RATINGS** (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
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>	200	mW
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.

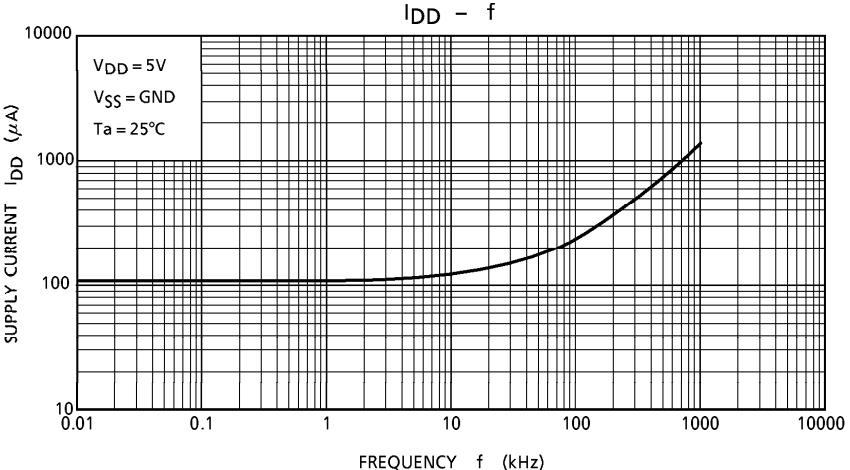
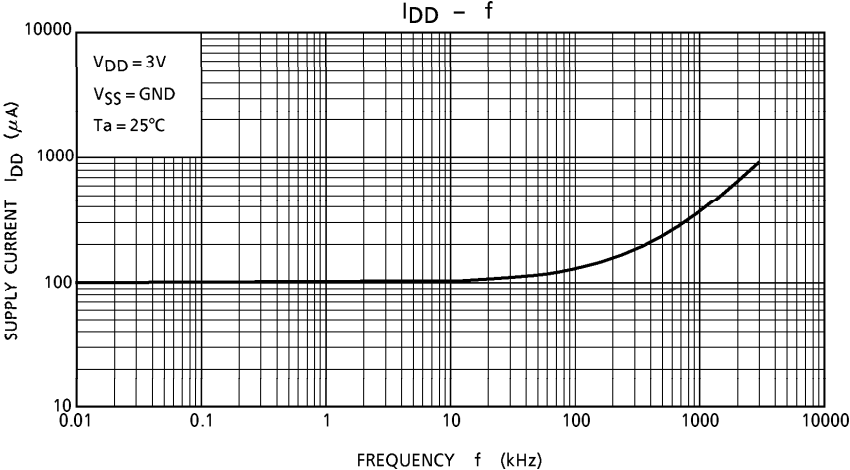
ELECTRICAL CHARACTERISTICS ( $V_{DD} = 5V$ ,  $V_{SS} = GND$ ,  $T_a = 25^\circ C$ )

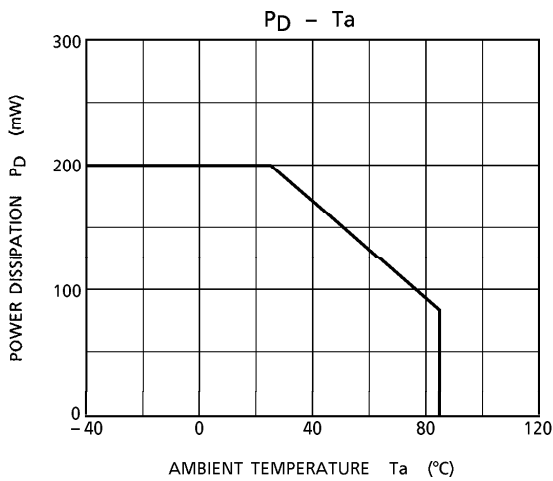
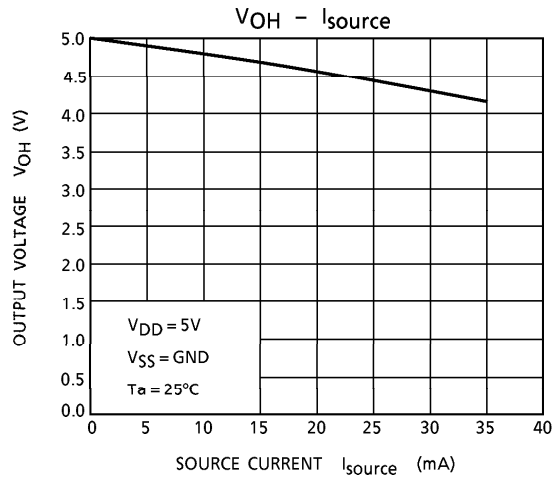
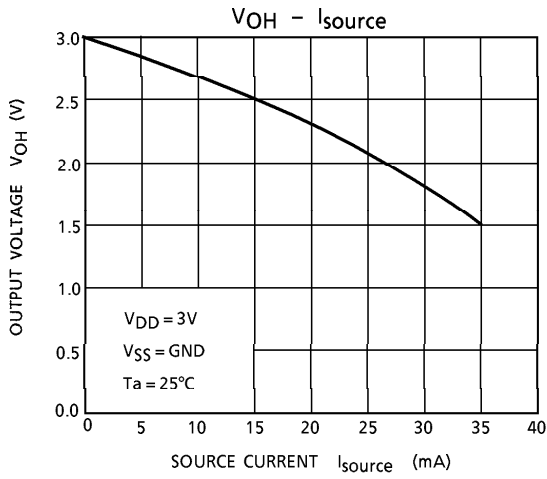
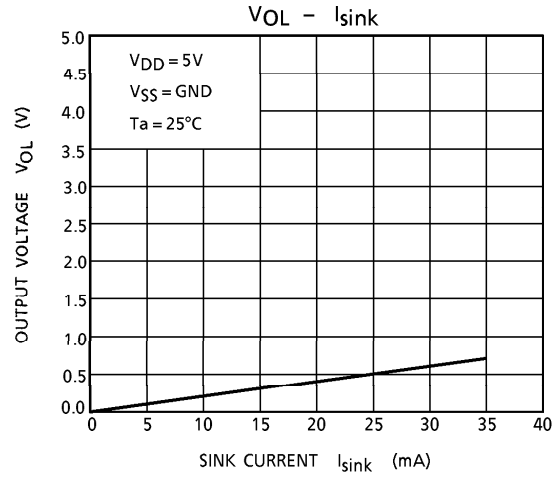
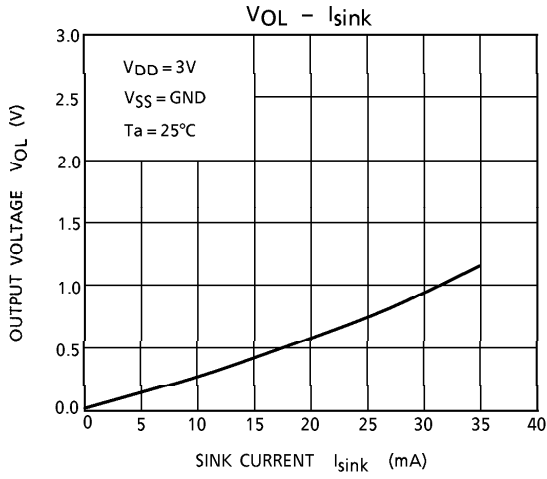
CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	—	—	—	$\pm 1$	$\pm 7$	mV
Input Offset Current	$I_{IO}$	—	—	—	1	—	pA
Input Bias Current	$I_I$	—	—	—	1	—	pA
Common Mode Input Voltage	$CMV_{IN}$	—	—	0	—	4.1	V
Supply Current	$I_{DD}$ (Note)	—	—	—	110	220	$\mu A$
Voltage Gain	$G_V$	—	—	—	94	—	dB
Sink Current	$I_{sink}$	—	$V_{OL} = 0.5V$	13	25	—	mA
Source Current	$I_{source}$	—	$V_{OH} = 4.5V$	9	21	—	mA
Output Voltage	$V_{OL}$	—	$I_{sink} = 5.0mA$	—	0.1	0.3	V
	$V_{OH}$	—	$I_{source} = 5.0mA$	4.7	4.9	—	
Operating Supply Voltage	$V_{DD}$	—	—	1.8	—	7.0	V
Propagation Delay Time (Turn ON)	$t_{PLH}$ (1)	—	Over drive = 100mV	—	140	—	ns
	$t_{PLH}$ (2)	—	TTL step input	—	90	—	
Propagation Delay Time (Turn OFF)	$t_{PHL}$ (1)	—	Over drive = 100mV	—	90	—	ns
	$t_{PHL}$ (2)	—	TTL step input	—	70	—	
Response Time	$t_{TLH}$	—	Over drive = 100mV	—	11	—	ns
	$t_{THL}$	—	Over drive = 100mV	—	7	—	

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	$V_{IO}$	—	—	—	$\pm 1$	$\pm 7$	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)	—	—	—	100	200	$\mu A$
Sink Current	$I_{sink}$	—	$V_{OL} = 0.5V$	6	18	—	mA
Source Current	$I_{source}$	—	$V_{OH} = 2.5V$	3	15	—	mA
Output Voltage	$V_{OL}$	—	$I_{sink} = 5.0mA$	—	0.15	0.35	V
	$V_{OH}$	—	$I_{source} = 5.0mA$	2.65	2.85	—	
Propagation Delay Time (Turn ON)	$t_{PLH}$	—	Over drive = 100mV	—	110	—	ns
Propagation Delay Time (Turn OFF)	$t_{PHL}$	—	Over drive = 100mV	—	90	—	ns
Response Time	$t_{TLH}$	—	Over drive = 100mV	—	7	—	ns
	$t_{THL}$	—	Over drive = 100mV	—	8	—	

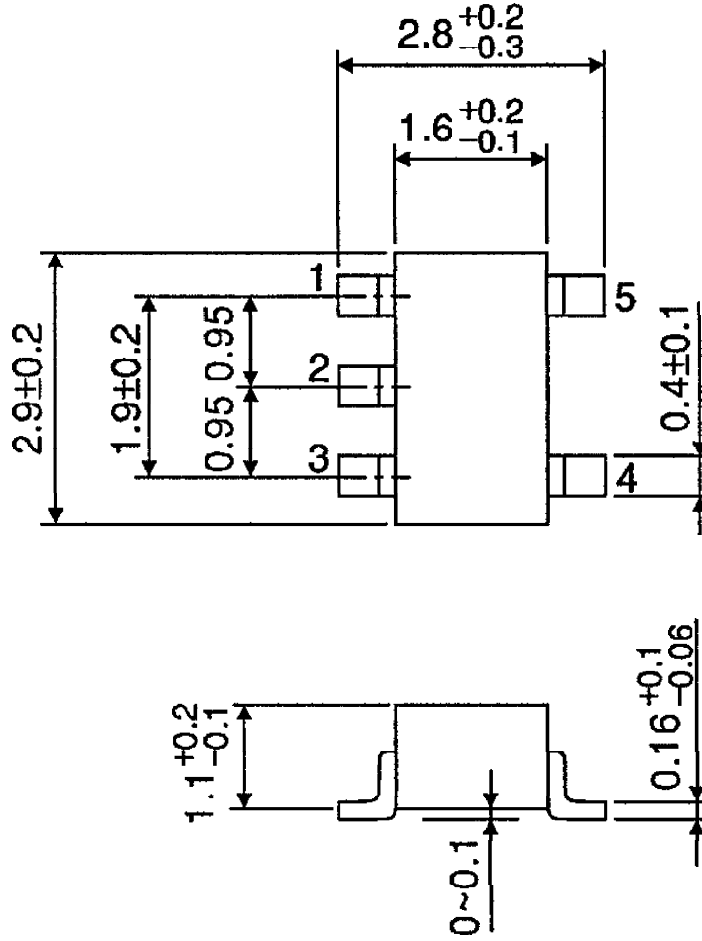
(Note) Since this product causes an increase in current consumption with a rise in operational frequency, make sure that power consumption does not exceed the allowable dissipation.





OUTLINE DRAWING  
SSOP5-P-0.95

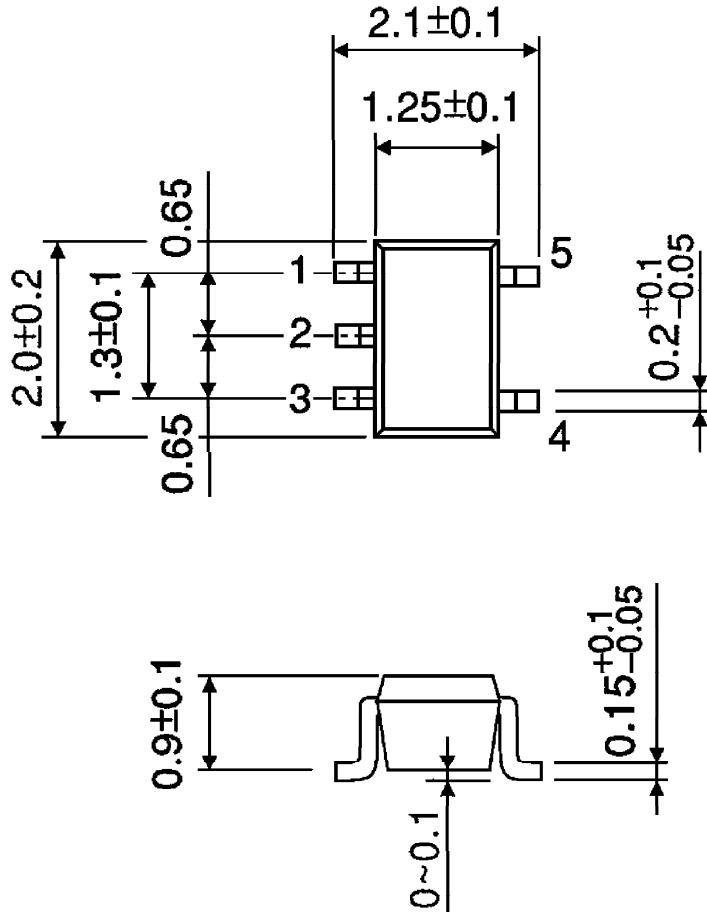
Unit : mm



Weight : 0.014g (Typ.)

OUTLINE DRAWING  
SSOP5-P-0.65A

Unit : mm



Weight : 0.006g (Typ.)