

TOSHIBA CMOS LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

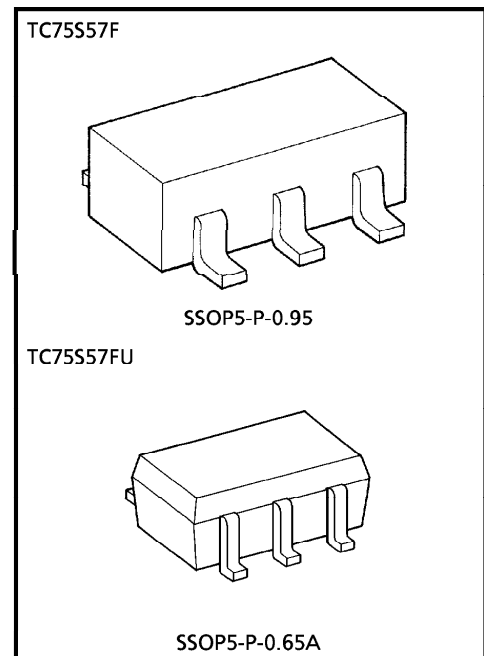
TC75S57F, TC75S57FU

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.

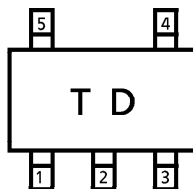
FEATURES

- 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

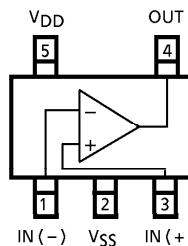


Weight
 SSOP5-P-0.95 : 0.014g (Typ.)
 SSOP5-P-0.65A : 0.006g (Typ.)

MARKING (TOP VIEW)



PIN CONNECTION (TOP VIEW)



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MAXIMUM RATINGS ($T_a = 25^{\circ}\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{DD}, V_{SS}	± 3.5 or 7	V
Differential Input Voltage	DV_{IN}	± 7	V
Input Voltage	V_{IN}	$V_{SS} \sim V_{DD}$	V
Output Current	I_{OUT}	± 35	mA
Power Dissipation	P_D	200	mW
Operating Temperature	T_{opr}	$-40 \sim 85$	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	$-55 \sim 125$	$^{\circ}\text{C}$

(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_{DD} , nor lower it below V_{SS} . Consider the timing for power supply, too.
- Don't let any abnormal noise enter the device.

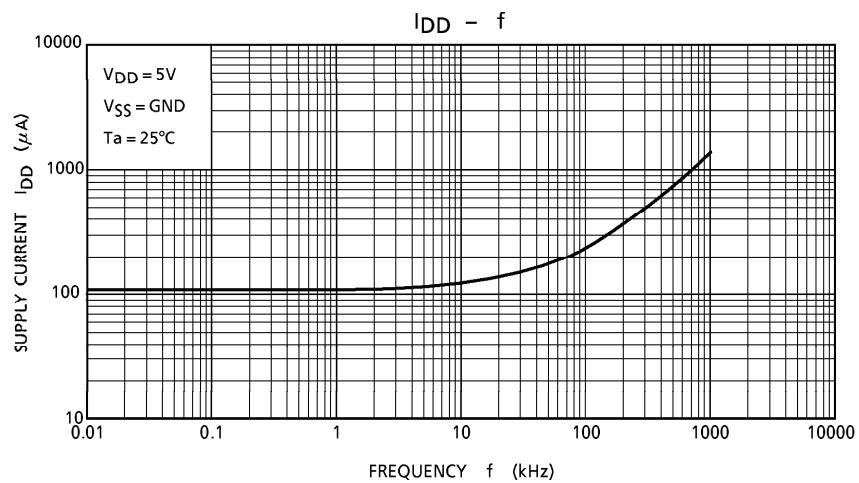
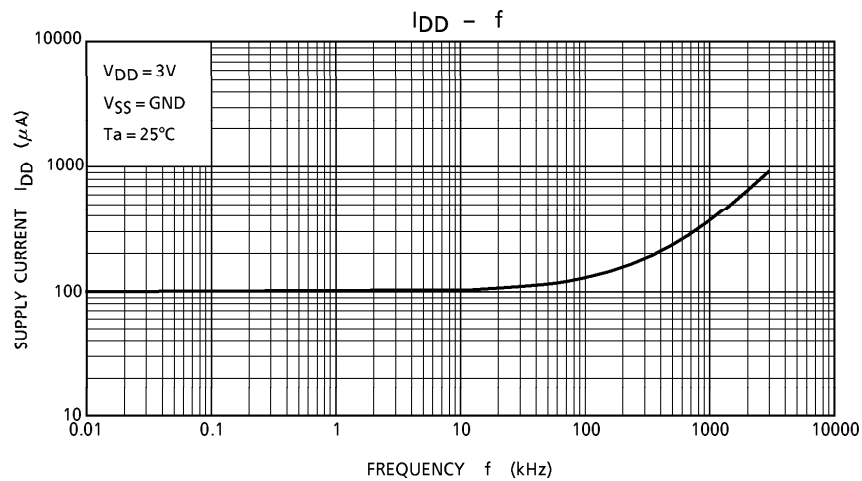
ELECTRICAL CHARACTERISTICS ($V_{DD} = 5V$, $V_{SS} = GND$, $T_a = 25^\circ C$)

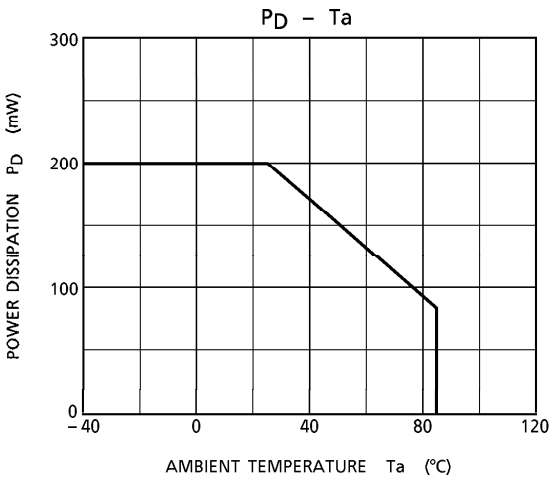
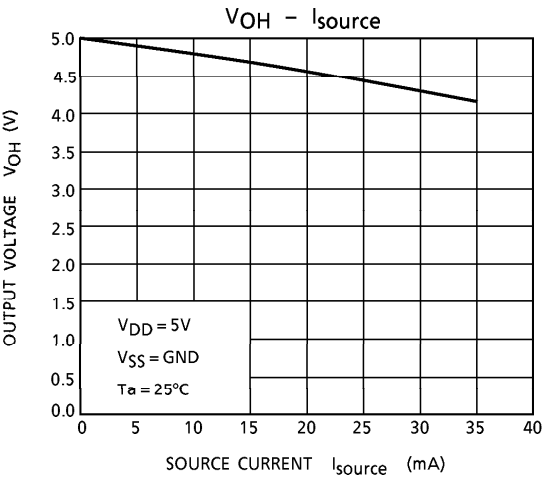
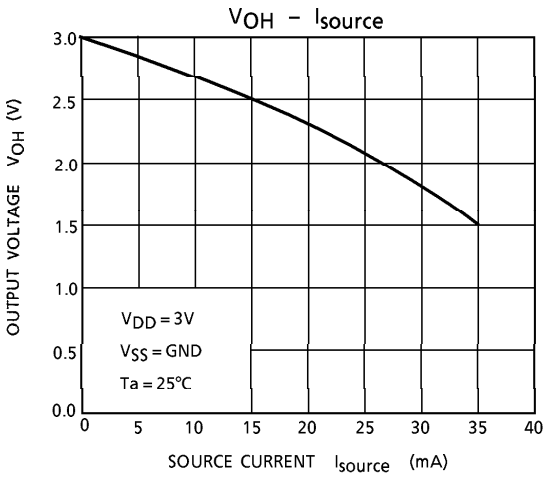
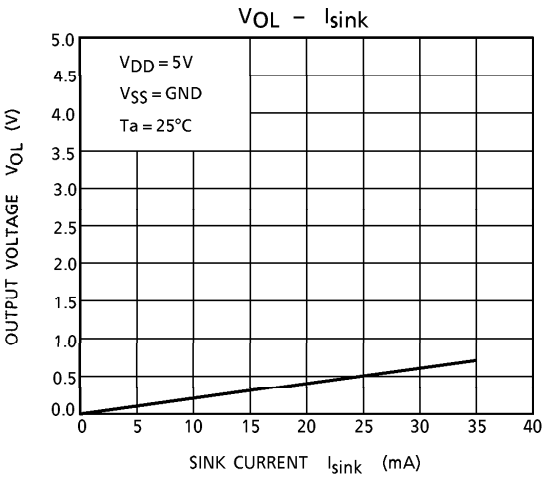
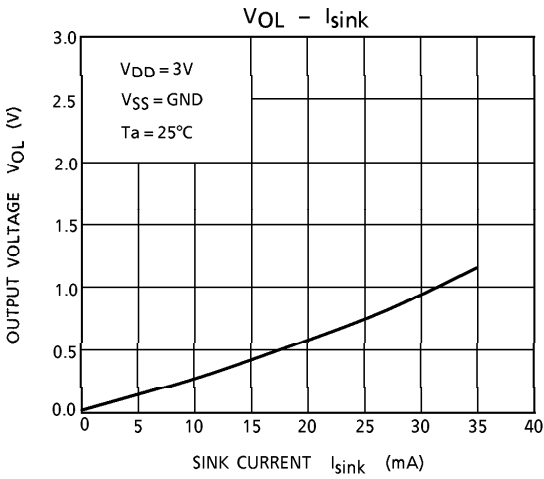
CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	—	—	—	± 1	± 7	mV
Input Offset Current	I_{IO}	—	—	—	1	—	pA
Input Bias Current	I_I	—	—	—	1	—	pA
Common Mode Input Voltage	CMV_{IN}	—	—	0	—	4.1	V
Supply Current	I_{DD} (Note)	—	—	—	110	220	μA
Voltage Gain	G_V	—	—	—	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}	—	—	—	± 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)	—	—	—	100	200	μA
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	—	

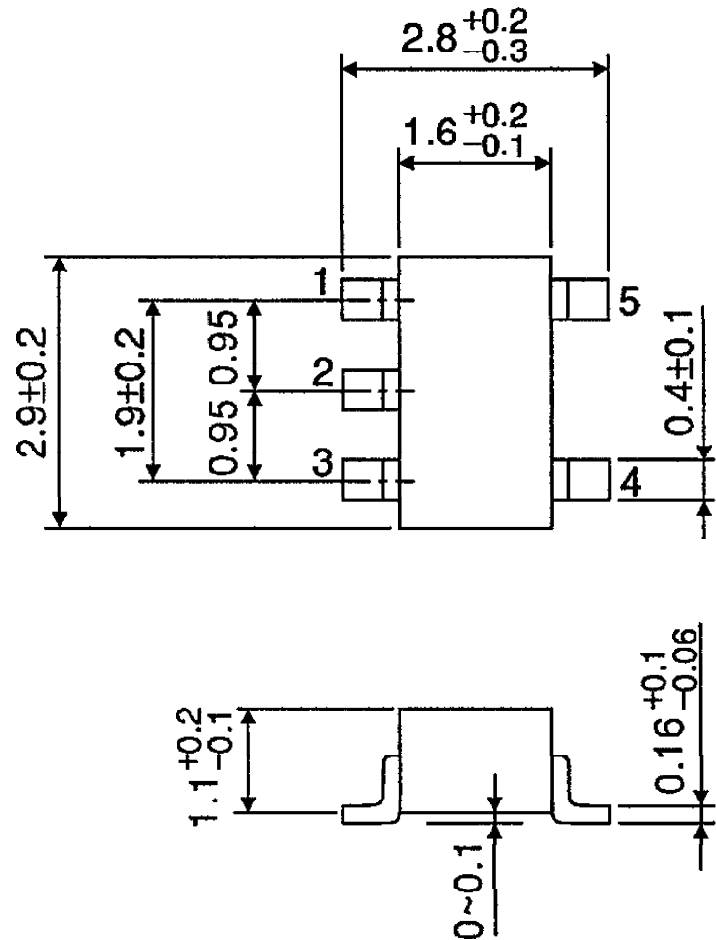
(Note) Since this product causes an increase in current consumption with a rise in operational frequency, make sure that power consumption does not exceed the allowable dissipation.





OUTLINE DRAWING
SSOP5-P-0.95

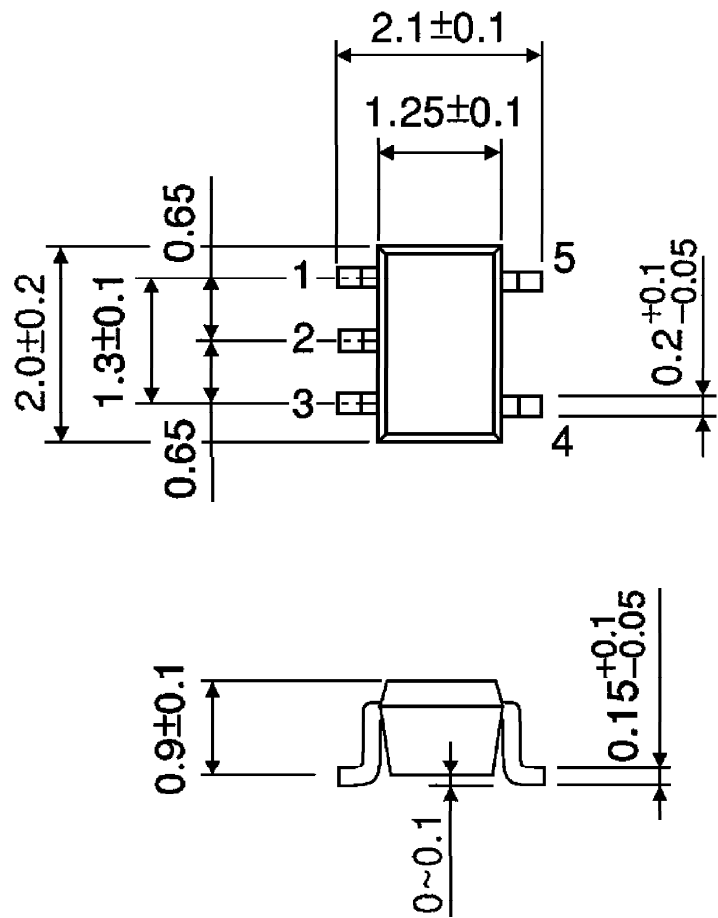
Unit : mm



Weight : 0.014g (Typ.)

OUTLINE DRAWING
SSOP5-P-0.65A

Unit : mm



Weight : 0.006g (Typ.)