

TOSHIBA CMOS Linear Integrated Circuit Silicon Monolithic

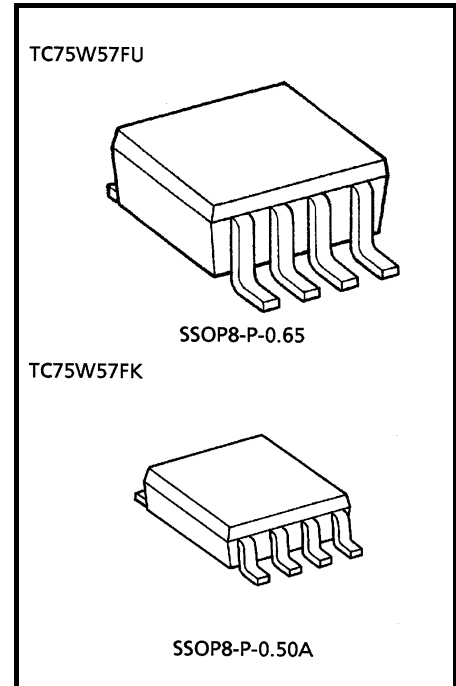
TC75W57FU, TC75W57FK

Dual Comparator

TC75W57 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 local IC's such as TTL and CMOS circuits.

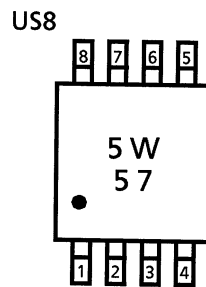
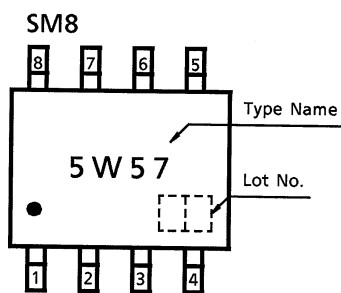
Features

- Low supply current: $I_{DD} = 200\mu A$ (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

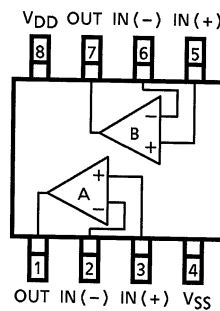


Weight
 SSOP8-P-0.65: 0.021g (typ.)
 SSOP8-P-0.50A: 0.01g (typ.)

Marking (Top View)



Pin Connection (Top View)



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} | $V_{SS} \sim V_{DD}$ | V |
| Output current | I_{OUT} | ± 35 | mA |
| Power dissipation | P_D | 250 (TC75W57FU) | mW |
| | | 200 (TC75W57FK) | |
| Operating temperature | T_{opr} | -40~85 | °C |
| Storage temperature | T_{stg} | -55~125 | °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 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.

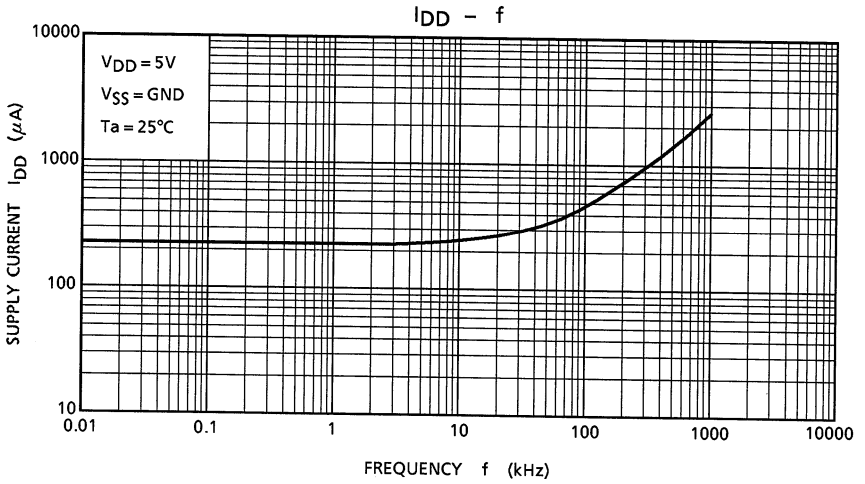
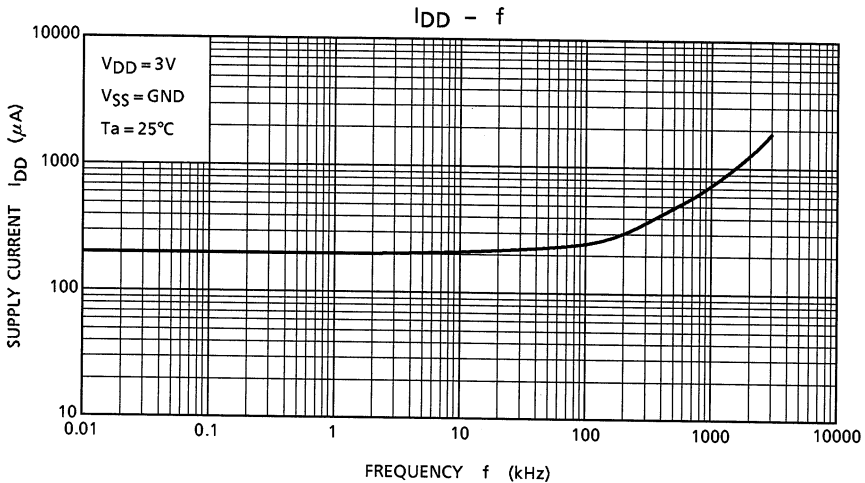
Electrical Characteristics ($V_{DD} = 5V$, $V_{SS} = GND$, $T_a = 25^\circ C$)

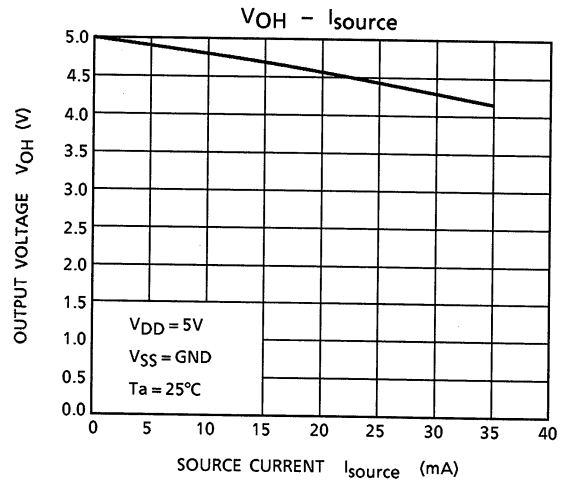
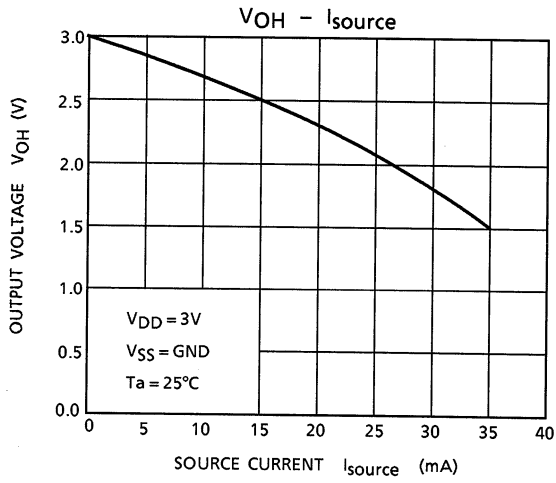
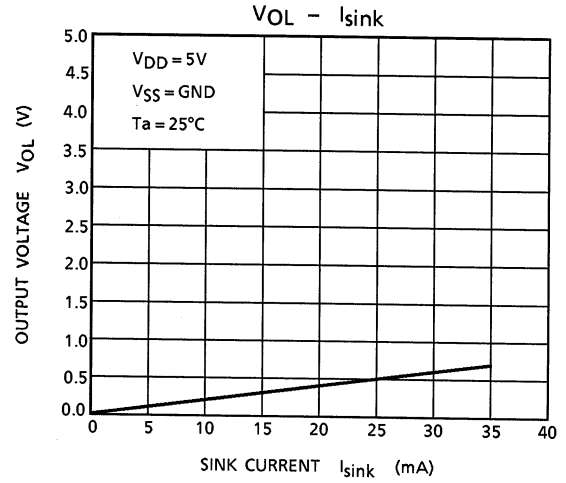
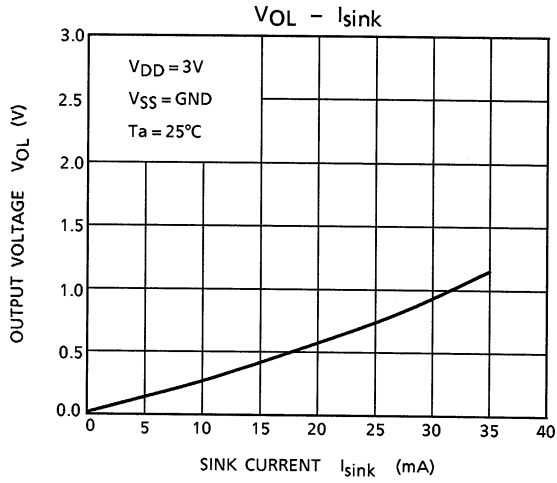
| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|-----------------------------------|-----------------|--------------|----------------------|-----|---------|---------|---------|
| Input offset voltage | V_{IO} | — | — | — | ± 1 | ± 7 | mV |
| Input offset current | 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) | — | — | — | 220 | 440 | 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) | — | — | — | 200 | 400 | 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.

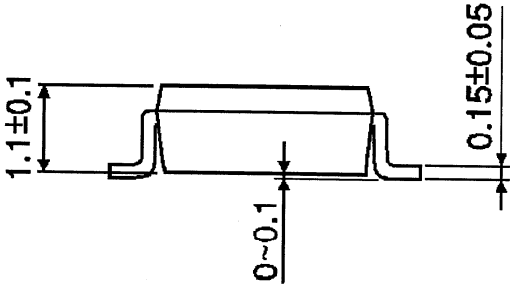
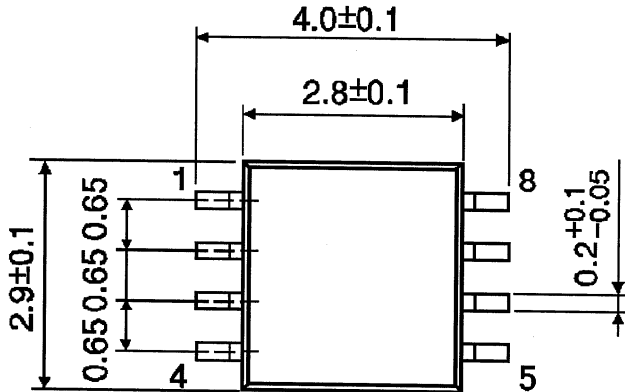




Package Dimensions

SSOP8-P-0.65

Unit: mm

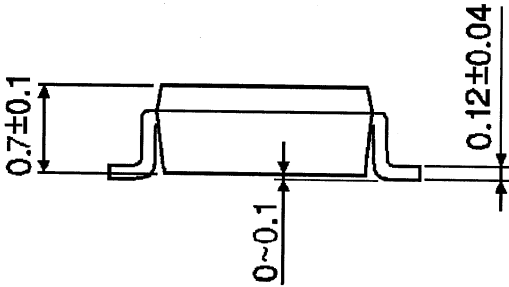
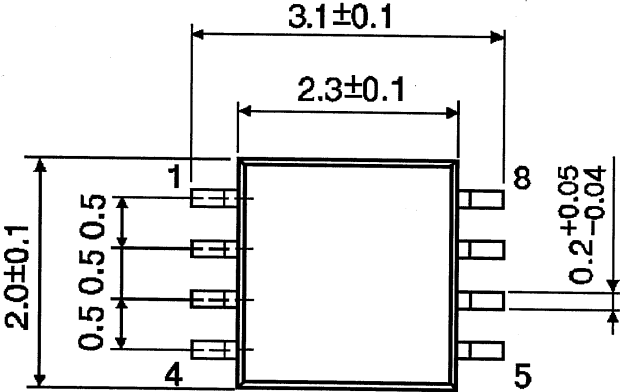


Weight: 0.021g(typ.)

Package Dimensions

SSOP8-P-0.50A

Unit: mm



Weight: 0.01g(typ.)

RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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