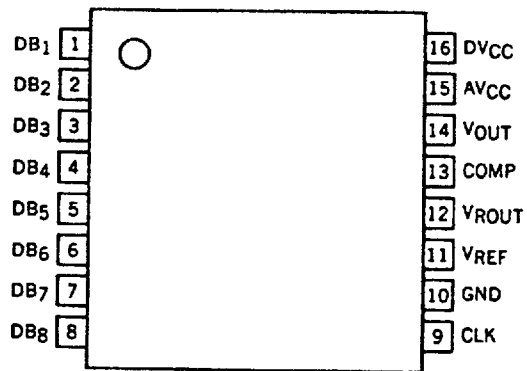


PIN CONNECTION (Top View)



| PIN NO. | SYMBOL | PIN NAME | PIN NO. | SYMBOL | PIN NAME |
|---------|-----------------|---------------------|---------|--------|--------------------------|
| 1 | DB ₁ | Digital input (MSB) | 9 | CLK | Clock input |
| 2 | DB ₂ | Digital input (2nd) | 10 | GND | Ground |
| 3 | DB ₃ | Digital input (3rd) | 11 | VREF | Reference voltage input |
| 4 | DB ₄ | Digital input (4th) | 12 | VROUT | Reference voltage output |
| 5 | DB ₅ | Digital input (5th) | 13 | COMP | Phase compensation pin |
| 6 | DB ₆ | Digital input (6th) | 14 | VOUT | Voltage output |
| 7 | DB ₇ | Digital input (7th) | 15 | AVCC | Analog power supply |
| 8 | DB ₈ | Digital input (LSB) | 16 | DVCC | Digital power supply |

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

| | | | |
|-----------------------------|--------------------|------------------------|------------------|
| Power Voltage | AV_{CC}, DV_{CC} | -0.3 to +6.0 | V |
| Pin Input Voltage | V_{IN} | -0.3 to $V_{CC} + 0.3$ | V |
| Operation Temperature Range | T_{opt} | -20 to +75 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -40 to +125 | $^\circ\text{C}$ |
| Package Allowable Loss | P_D | 560 | mW |

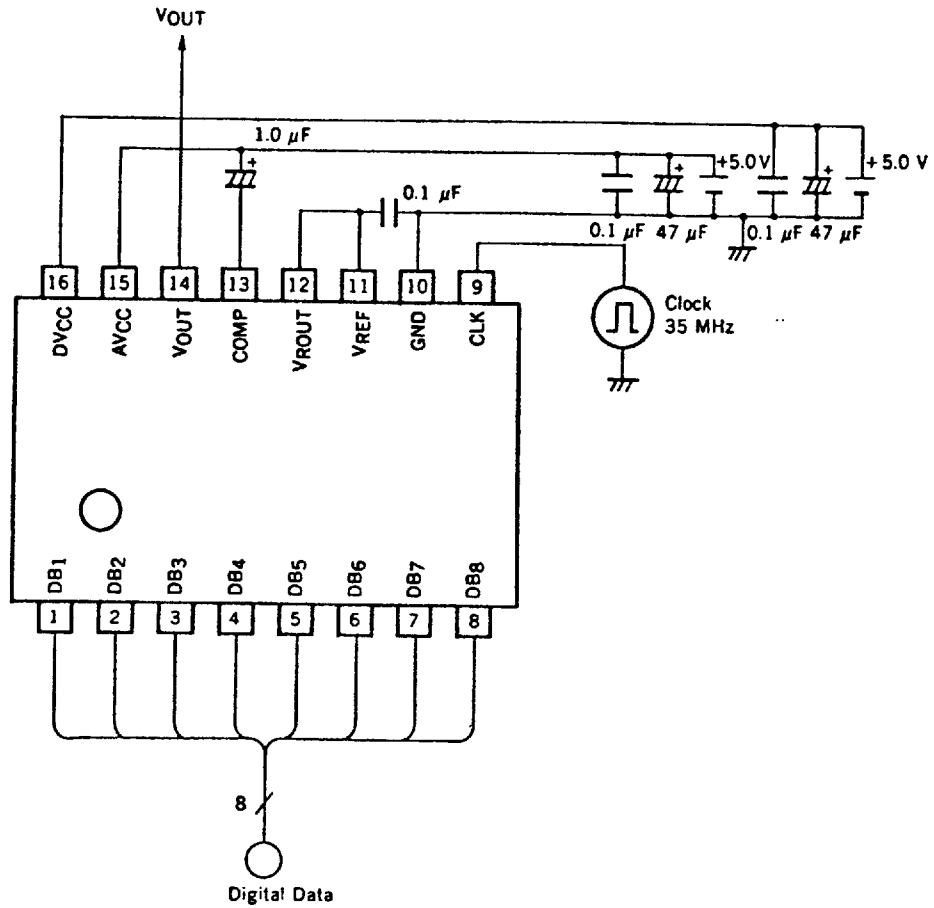
RECOMMENDED OPERATING CONDITIONS ($T_a = -20$ to $+75\text{ }^\circ\text{C}$)

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|----------------------------------|--------------------|------|------|------|---------------|-----------------|
| Power Voltage | AV_{CC}, DV_{CC} | 4.75 | 5.0 | 5.25 | V | GND = 0 |
| Analog Reference Voltage | V_{REF} | 3.70 | 4.00 | 4.30 | V | |
| Digital Input High Level Voltage | V_{INDH} | 2.0 | - | - | V | |
| Digital Input Low Level Voltage | V_{INDL} | - | - | 0.8 | V | |
| Sampling Frequency | f_{smp} | - | - | 35 | MHz | |
| Data Input Set Up Time | t_s | 15.0 | - | - | ns | |
| Data Input Hold Time | t_h | 4.0 | - | - | ns | |
| Sampling Clock High Pulse Width | t_{PWH} | 10 | - | 1000 | ns | |
| Sampling Clock Low Pulse Width | t_{PWL} | 10 | - | 1000 | ns | |
| Compensation Capacity | C_{comp} | 1.0 | - | - | μF | |

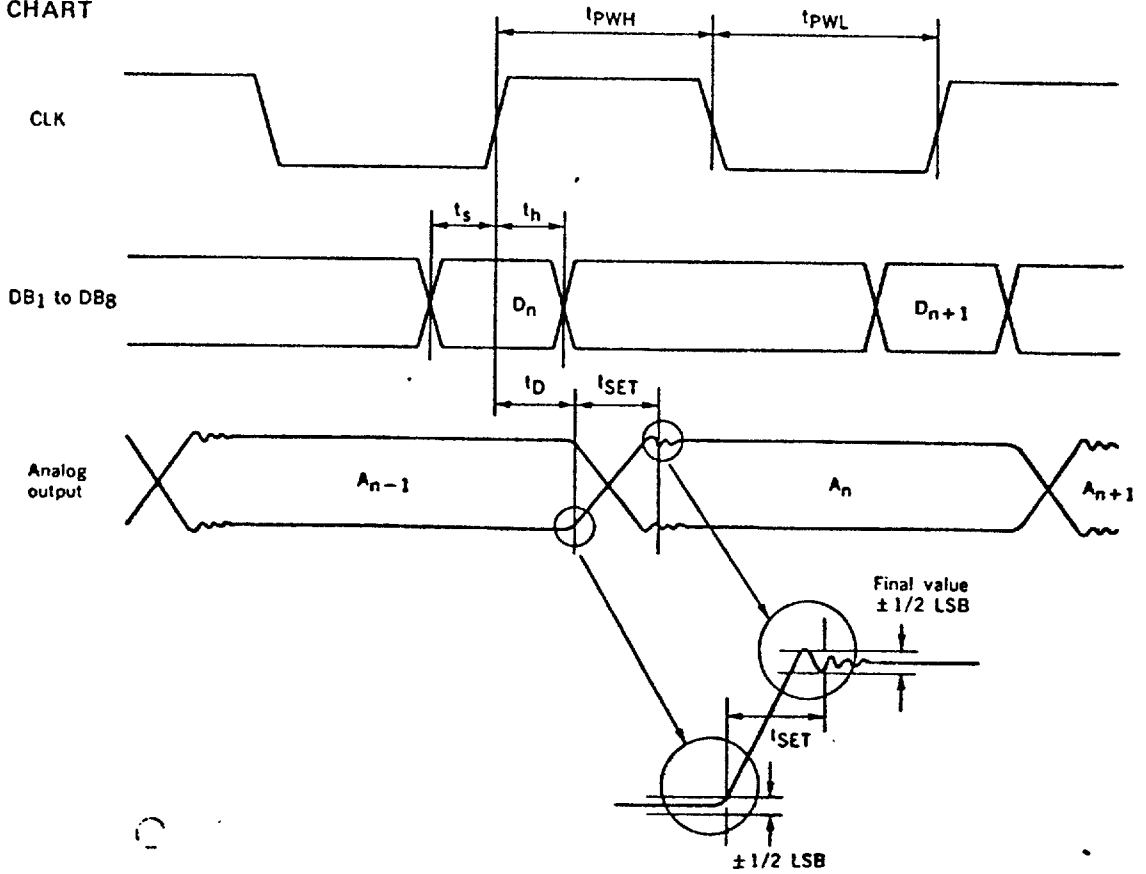
ELECTRIC CHARACTERISTICS ($T_a = -20$ to $+75\text{ }^\circ\text{C}$, $AV_{CC} = DV_{CC} = 5 \pm 0.25\text{ V}$)

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|---------------------------------------|------------|------|------|-----------|------|--|
| Power consumption | I_{CC} | | 18 | 27 | mA | $T_a = 25\text{ }^\circ\text{C}$ |
| Integral Linearity Error | ILE | | | ± 0.5 | LSB | $T_a = 0$ to $+75\text{ }^\circ\text{C}$ |
| Differential Linearity Error | DLE | | | ± 0.5 | LSB | $T_a = 0$ to $+75\text{ }^\circ\text{C}$ |
| Output Voltage Full-Scale Precision | V_{OFS} | 0.85 | 1.0 | 1.15 | V | $AV_{CC} = DV_{CC} = 5.0\text{ V}$, $V_{REF} = 4.0\text{ V}$ This precision is the difference between the full-scale output voltage and zero-scale output voltage. |
| Reference Power Supply Output Voltage | V_{ROUT} | 3.8 | 4.0 | 4.2 | V | $AV_{CC} = DV_{CC} = 5.0\text{ V}$ |
| Output Delay Time | t_D | | 15 | 25 | ns | |
| Setting Time | t_{SET} | | 25 | 40 | ns | $C_L = 5\text{ pF}$ |

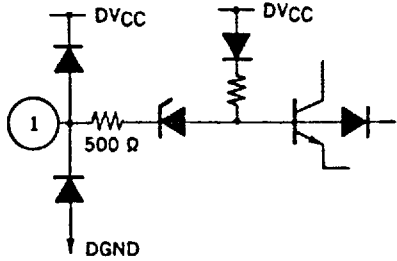
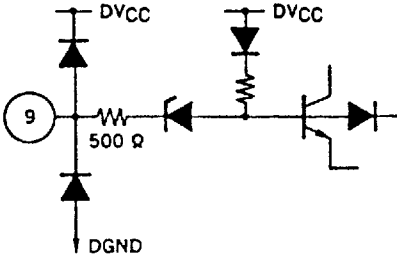

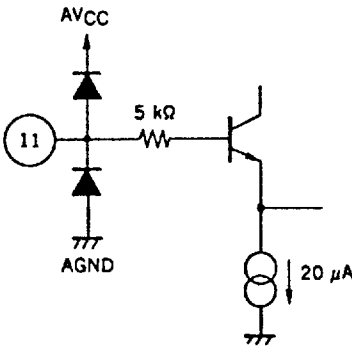
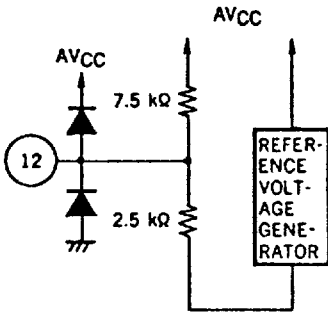
MEASUREMENT CIRCUIT

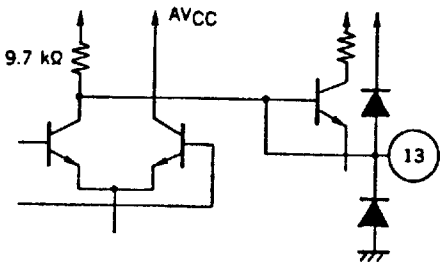
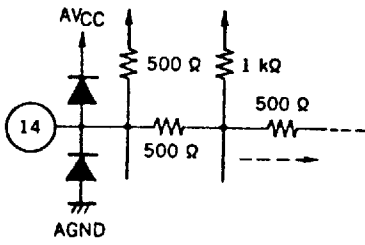




TIMING CHART

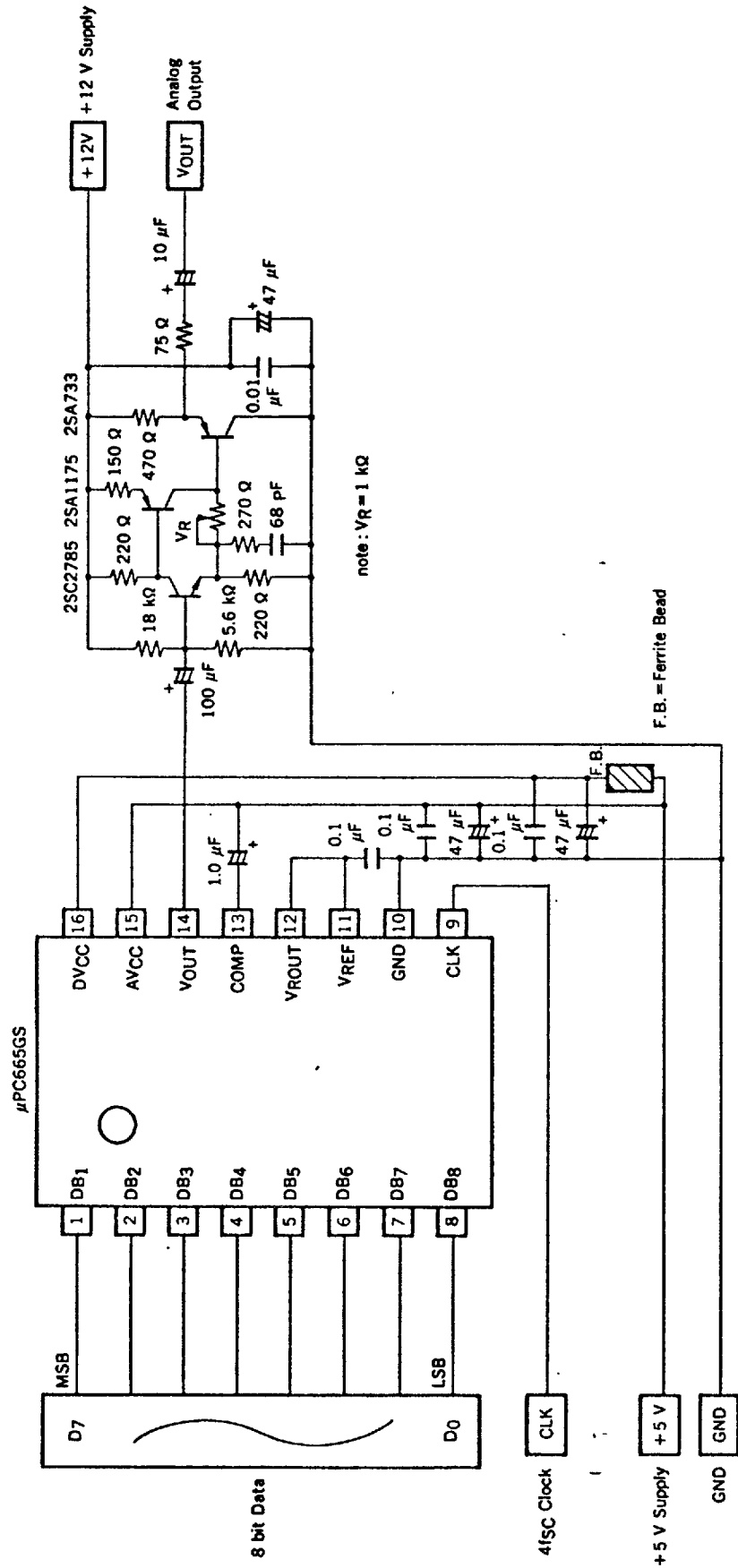


DESCRIPTION OF PINS

| PIN NO. | EQUIVALENT CIRCUIT | FUNCTIONS |
|------------------------|---|---|
| 1, 2, 3, 4, 5, 6, 7, 8 |  | <p>1 : Digital input (MSB) 2 : Digital input (2nd) 3 : Digital input (3rd) 4 : Digital input (4th) 5 : Digital input (5th) 6 : Digital input (6th) 7 : Digital input (7th) 8 : Digital input (LSB)</p> |
| 9 |  | <p>9 : Clock input</p> |
| 10 |  | <p>Grounding pin</p> |
| 11 |  | <p>Reference voltage input pin. The output full-scale range is set according to the voltage applied to this pin. Apply standard 4.0 V. When no adjustment is necessary, connect the output from pin 12 directly to this pin.</p> |
| 12 |  | <p>12 : Voltage output pin of the incorporated reference voltage generating circuit. This pin has high output impedance, and must be connected with a high impedance element.</p> |

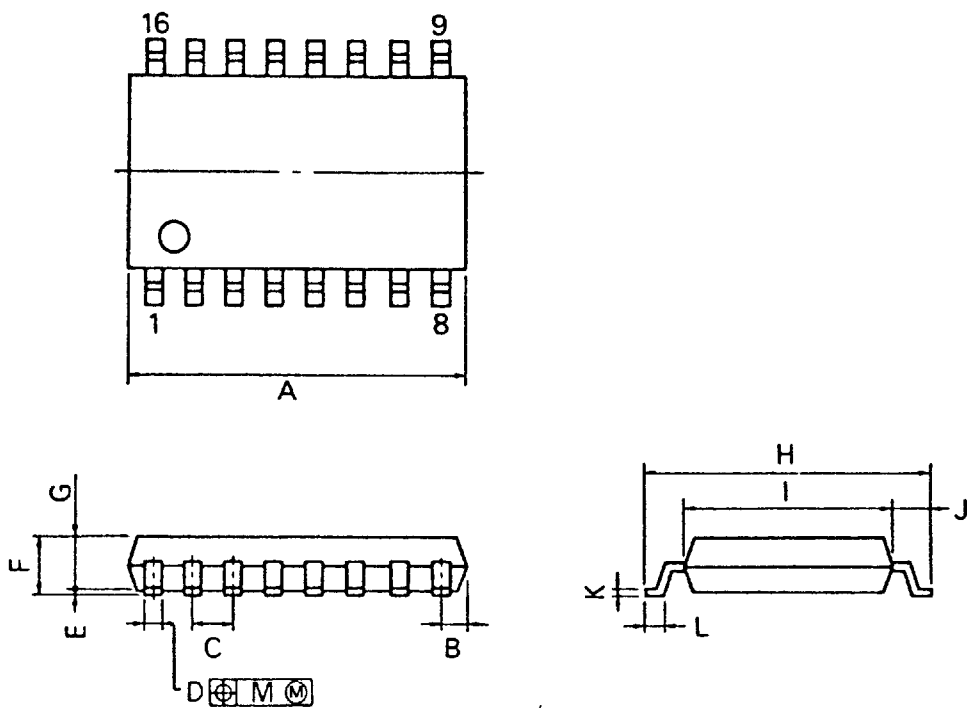
| PIN NO. | EQUIVALENT CIRCUIT | FUNCTIONS |
|---------|---|--|
| 13 |  | <p>Phase compensating capacitor connection pin for full-scale amplifier. The capacitor must be connected between this pin and analog power supply.</p> |
| 14 |  | <p>Analog signal output pin. The output resistance is approximately 333 Ω (TYP.).</p> |
| 15 |  | <p>Analog power pin</p> |
| 16 |  | <p>Digital power pin</p> |

APPLICATION



The application circuits and their parameters are for references only and are not intended for use in actual design-in's.

16PIN PLASTIC SOP (300 mil)



P16GM-50-300B-1

NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.

| ITEM | MILLIMETERS | INCHES |
|------|--|---|
| A | 10.46 MAX. | 0.412 MAX. |
| B | 0.78 MAX. | 0.031 MAX. |
| C | 1.27 (T.P.) | 0.050 (T.P.) |
| D | 0.40 ^{+0.10} _{-0.05} | 0.016 ^{+0.004} _{-0.003} |
| E | 0.1 ^{±0.1} | 0.004 ^{±0.004} |
| F | 1.8 MAX. | 0.071 MAX. |
| G | 1.55 | 0.061 |
| H | 7.7 ^{±0.3} | 0.303 ^{±0.012} |
| I | 5.6 | 0.220 |
| J | 1.1 | 0.043 |
| K | 0.20 ^{+0.10} _{-0.05} | 0.008 ^{+0.004} _{-0.003} |
| L | 0.6 ^{±0.2} | 0.024 ^{+0.008} _{-0.005} |
| M | 0.12 | 0.005 |