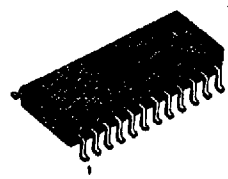
## LEAD BATTERY CHARGE CONTROLLER

The KA7560 is a IC for charging control of lead battery. Charging current is controlled by detecting voltage difference between battery ports.

24-SOP-375



## FEATURES

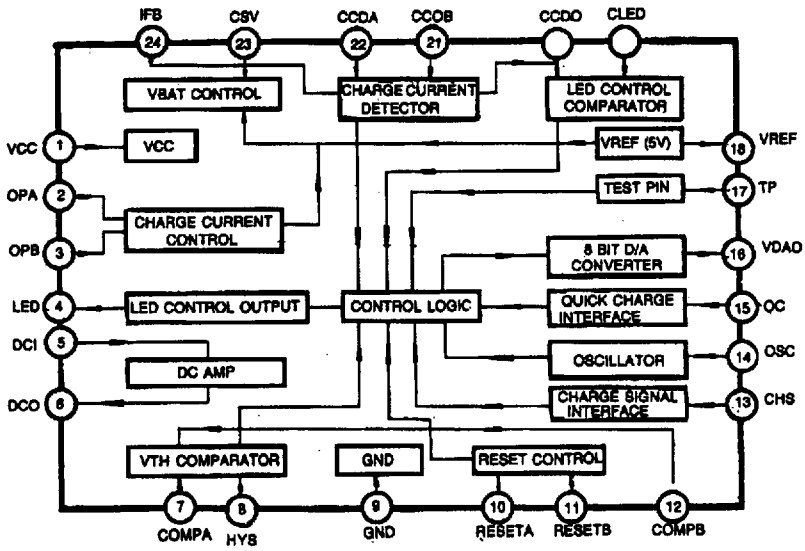
- Charging current linearly decreases when battery charging ends, by detecting battery voltage.
- Charging time is possible in about 1 hour (It can be changed by battery condition)
- Charging current ($I_{CHG(MAX)}$) can be adjusted by selecting external resistor value properly.

## ORDERING INFORMATION

| Device | Package | Operating Temperature |
|---|---|---|
| KA7560G | Chip | |
| KA7560D | 24-SOP-375 | -20 ~ + 75℃ |

24 SOP: Underdevelopment

## BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 20 | V |
| Supply Current | $I_{CC}$ | 33 | mA |
| Power Dissipation | $P_D$ | 660 | mW |
| Operating Temperature | $T_{OPR}$ | - 20 ~ + 75 | ℃ |
| Storage Temperature | $T_{STG}$ | - 55 ~ + 150 | ℃ |

## ELECTRICAL CHARACTERISTICS ($V_{CC}$ = 18V, $T_J$ = 25℃)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Supply Current | $I_{CC}$ | Fig. 1 | 13.5 | 19.0 | 24.5 | mA |
| Reference Voltage | $V_{REF}$ | Fig. 1 | 4.4 | 5.0 | 5.5 | V |
| Low Input Voltage | $V_{IL}$ | Fig. 3 | 3.8 | 5.0 | 6.2 | V |
| $V_H$ Low Voltage | $V_{VHL}$ | Fig. 2 | — | 0.2 | 0.5 | V |
| $V_H$ Leakage Current | $I_{LKG}$ | Fig. 4 | -12 | — | 12 | μA |
| DC Voltage Gain | $A_V$ | Fig. 5 | 3.36 | 4.0 | 4.64 | |
| Oscillator Frequency | f | Fig. 6 | 18 | 20 | 22 | Hz |
| LED Low Voltage | $V_{LED}$ | Fig. 7 | — | 0.4 | 1.0 | V |
| LED Leakage Current | $I_{LKG(LED)}$ | Fig. 7 | -10 | — | 10 | μA |
| IFB Low Voltage | $I_{IFBL}$ | Fig. 8 | — | 1.3 | 2.1 | V |
| DAO High Voltage | $V_{DAOH}$ | Fig. 10 | 2.5 | 3.6 | 4.9 | V |
| DAO Low Voltage | $V_{LAOI}$ | Fig. 10 | 0.05 | 0.13 | 0.25 | V |
| Linearity | $A_{V20}$ | Fig. 9 | 0.7 | 1.0 | 1.3 | — |
| Bit 1 Voltage | $\Delta V_1$ | Fig. 10 | 10 | 13 | 18 | mV |
| Bit 2 Voltage | $\Delta V_2$ | Fig. 10 | 20 | 25 | 37 | mV |
| Bit 3 Voltage | $\Delta V_3$ | Fig. 10 | 40 | 54 | 75 | mV |
| Bit 4 Voltage | $\Delta V_4$ | Fig. 10 | 80 | 120 | 150 | mV |
| Bit 5 Voltage | $\Delta V_5$ | Fig. 10 | 160 | 240 | 300 | mV |
| Bit 6 Voltage | $\Delta V_6$ | Fig. 10 | 320 | 440 | 600 | mV |
| Bit 7 Voltage | $\Delta V_7$ | Fig. 10 | 640 | 880 | 1200 | mV |
| Bit 8 Voltage | $\Delta V_8$ | Fig. 10 | 1280 | 1720 | 2400 | mV |

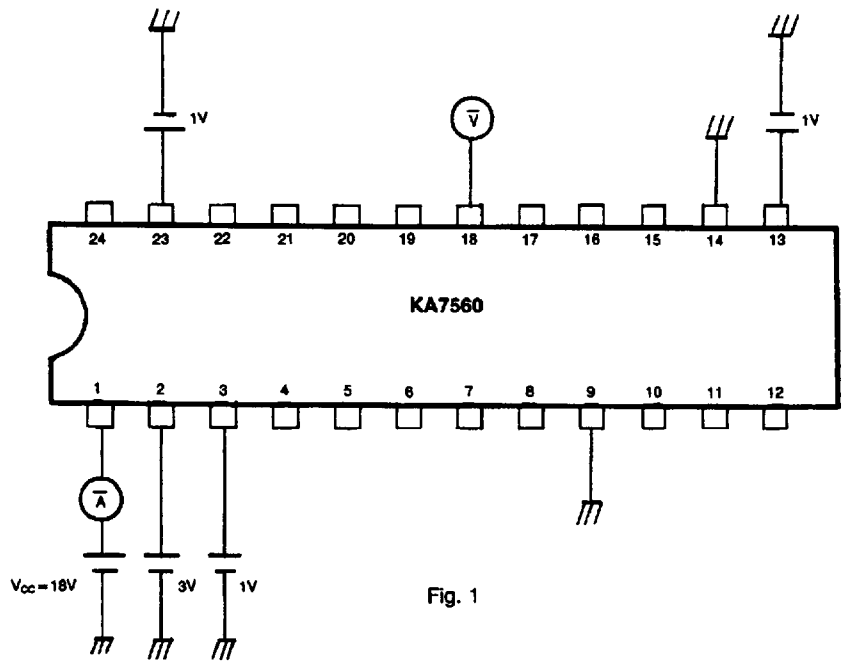



Fig. 1

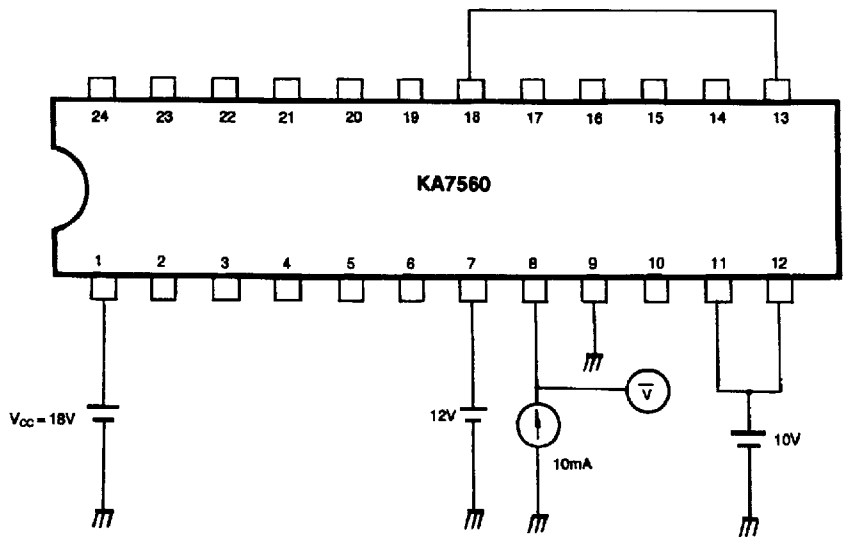



Fig. 2

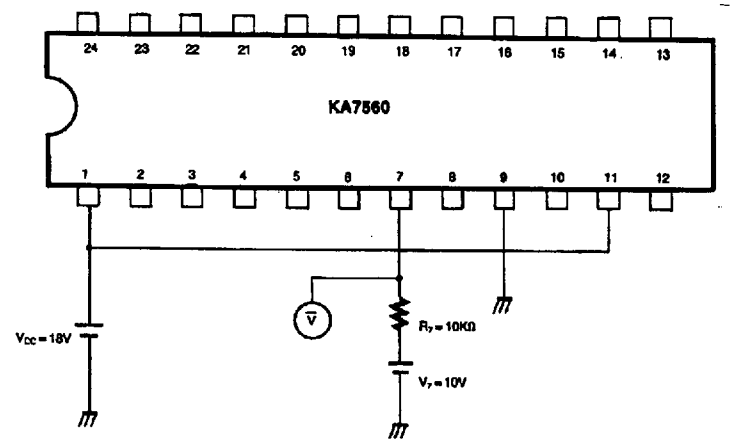
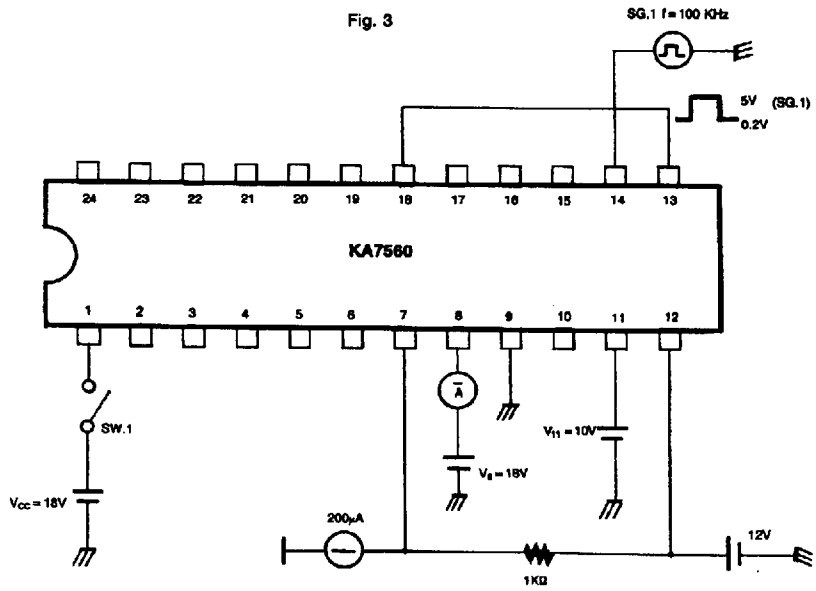



Fig. 3



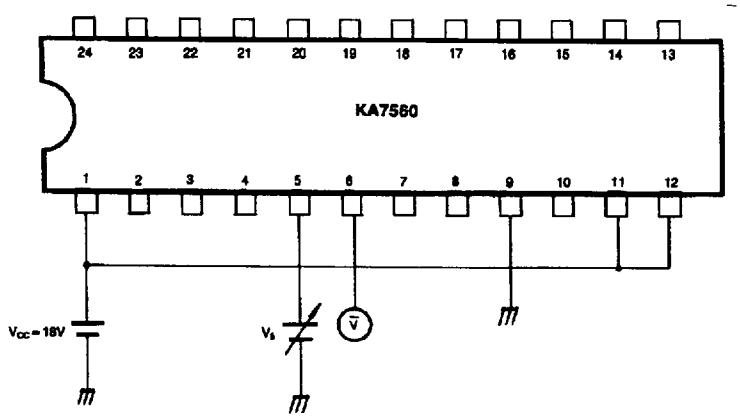



Fig. 5

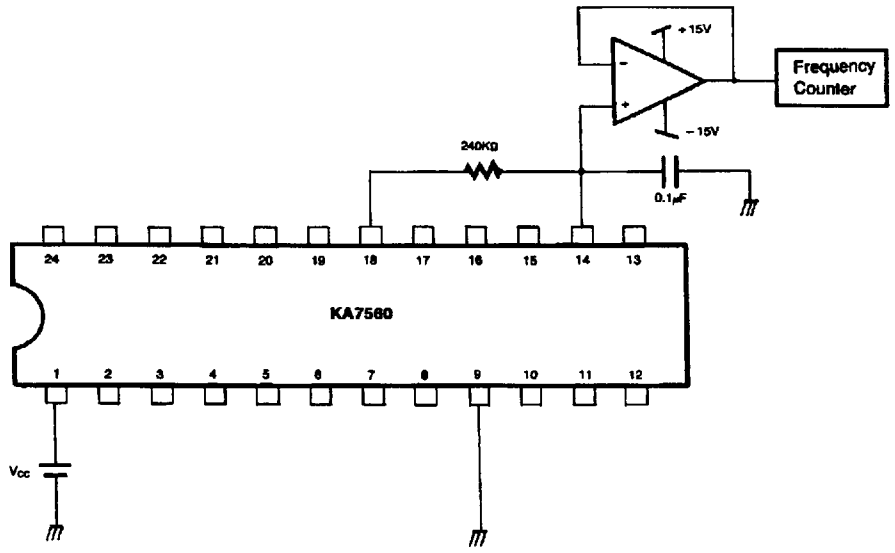



Fig. 6

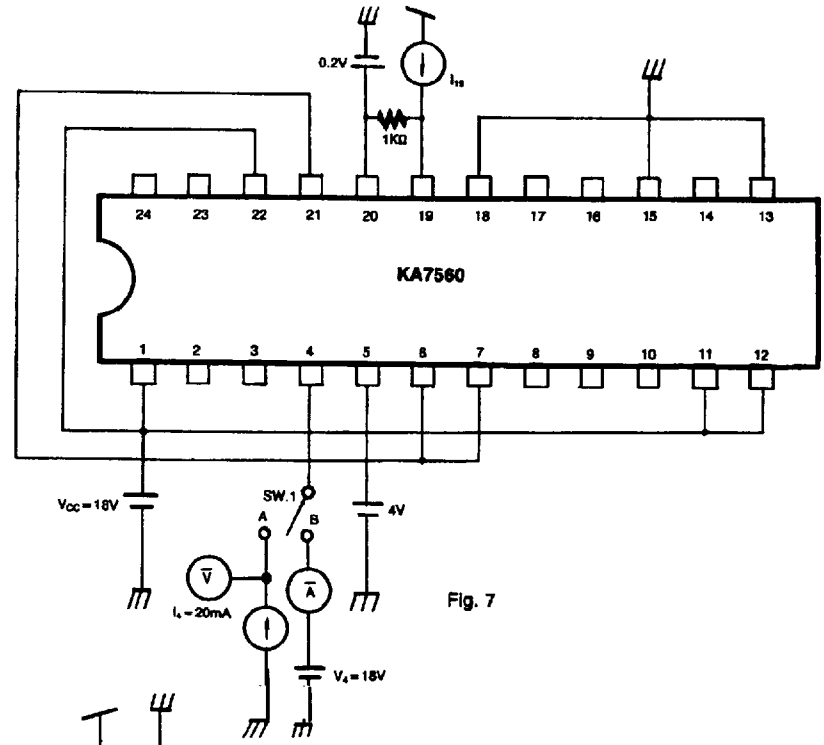



Fig. 7

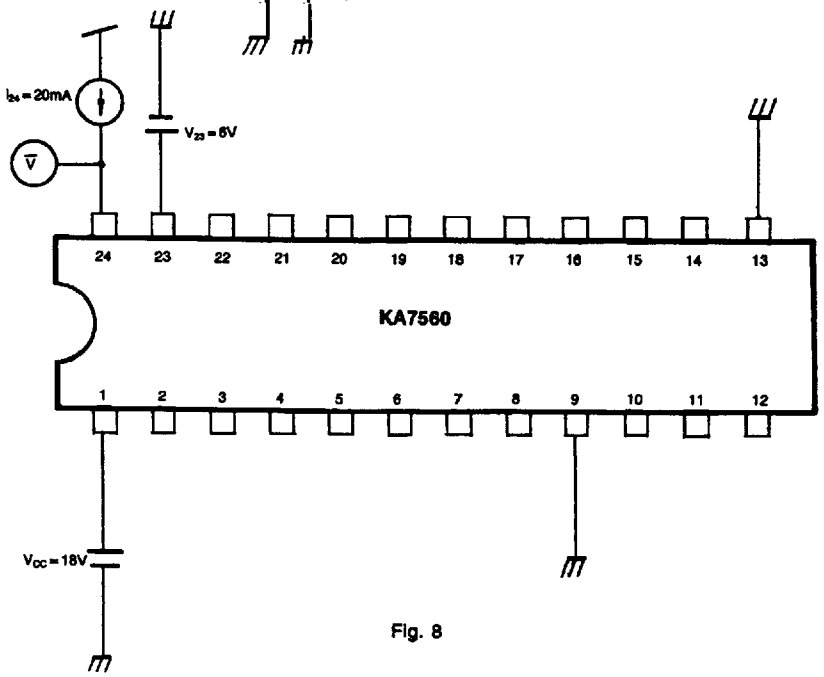



Fig. 8

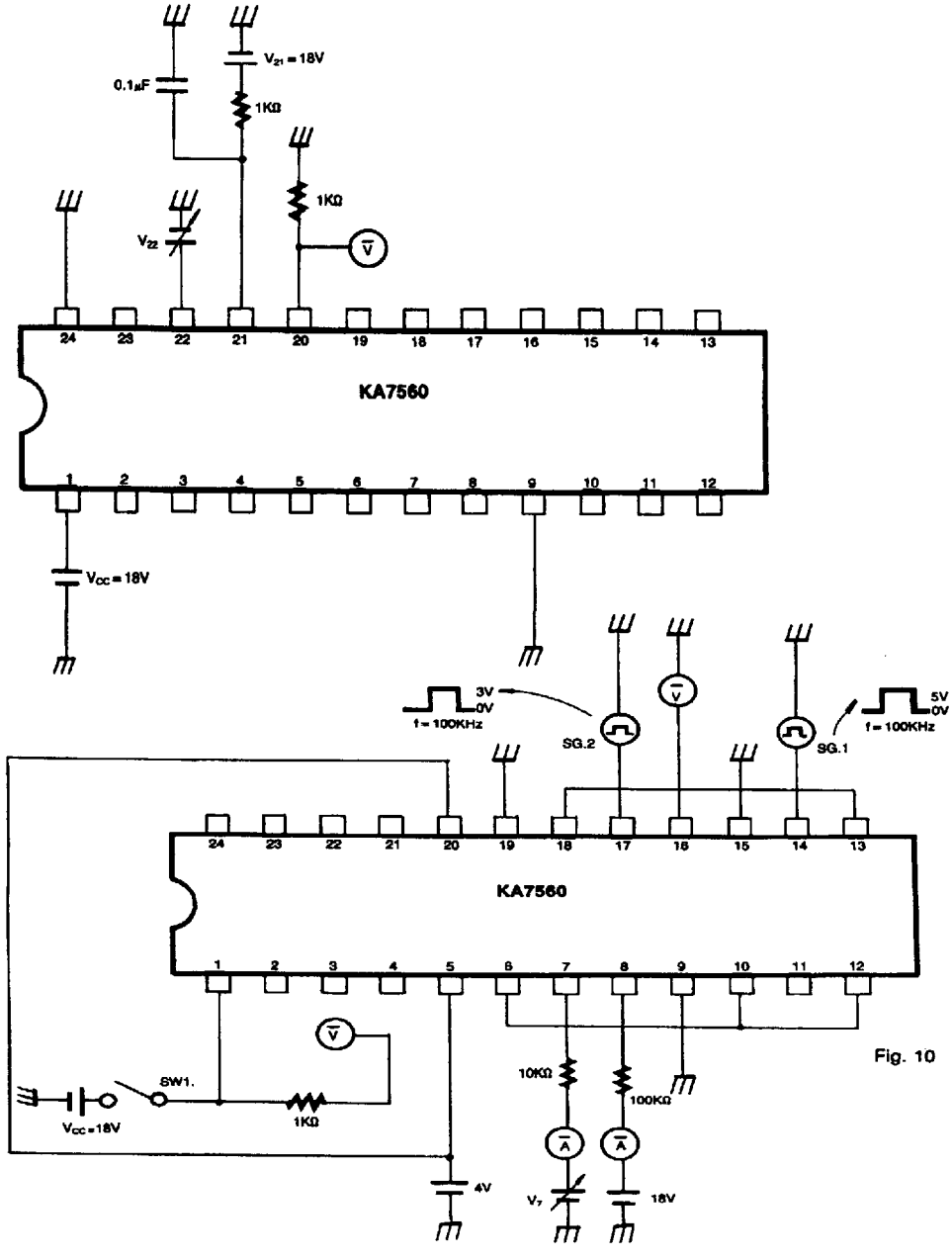



Fig. 10

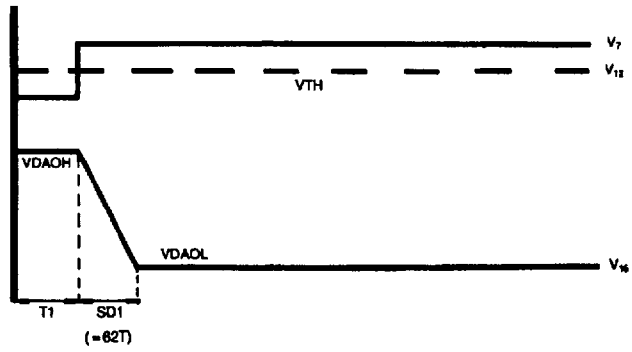



Fig. 11 T1<64T, 5BIT STEP-DOWN

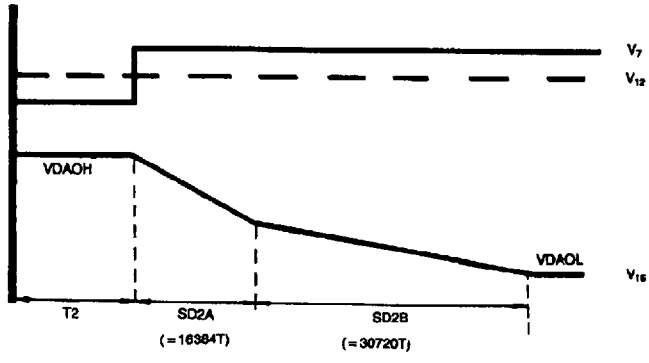
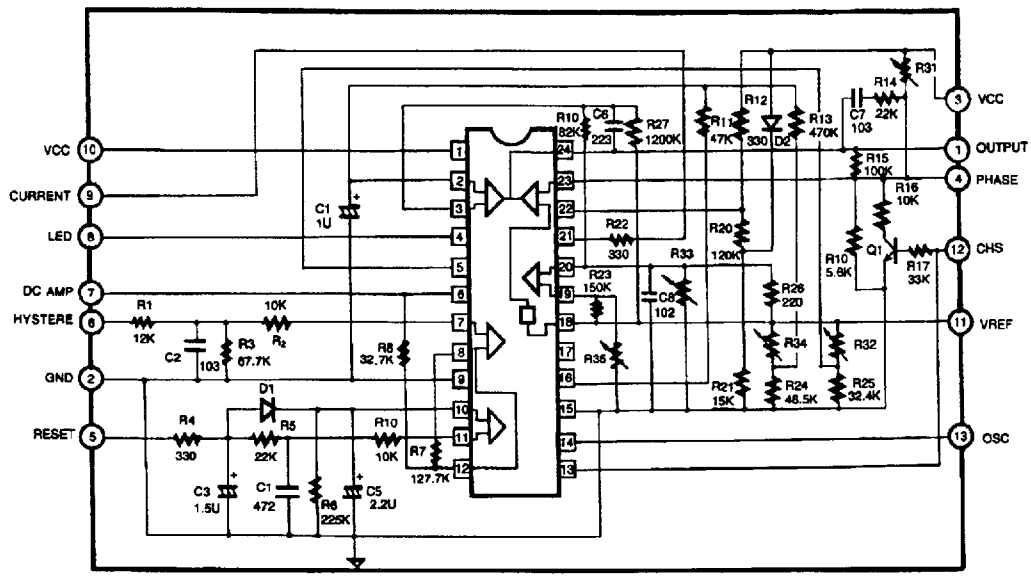
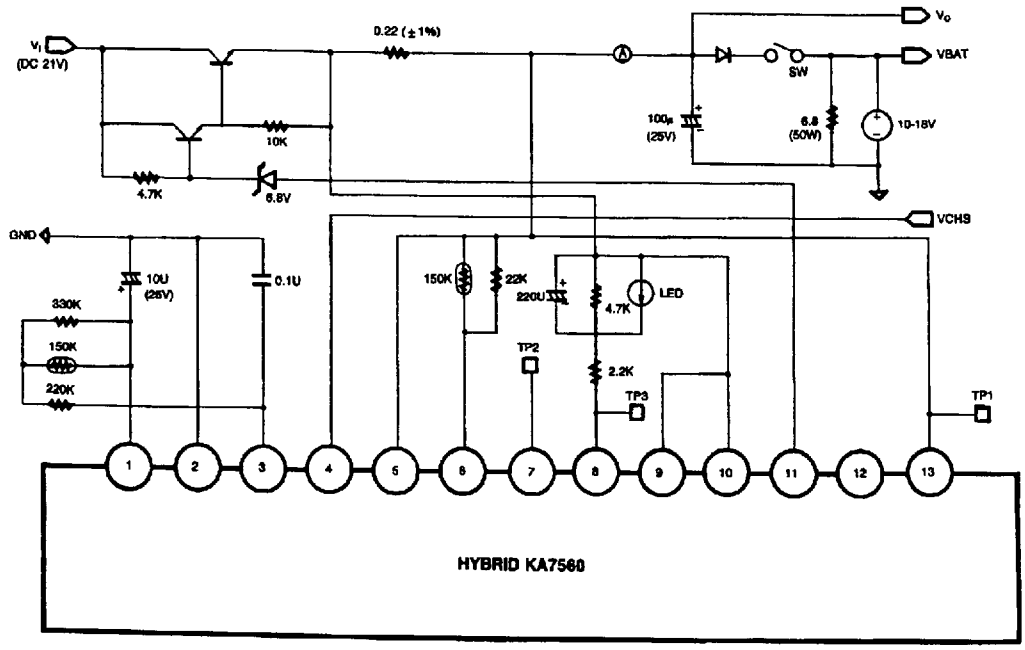



Fig. 12 T2>64T, 8BIT STEP-DOWN ($V_{15}$ = GND)

* KA7560 Hybrid Application Example



## HYBRID KA7560 TEST & APPLICATION CIRCUIT



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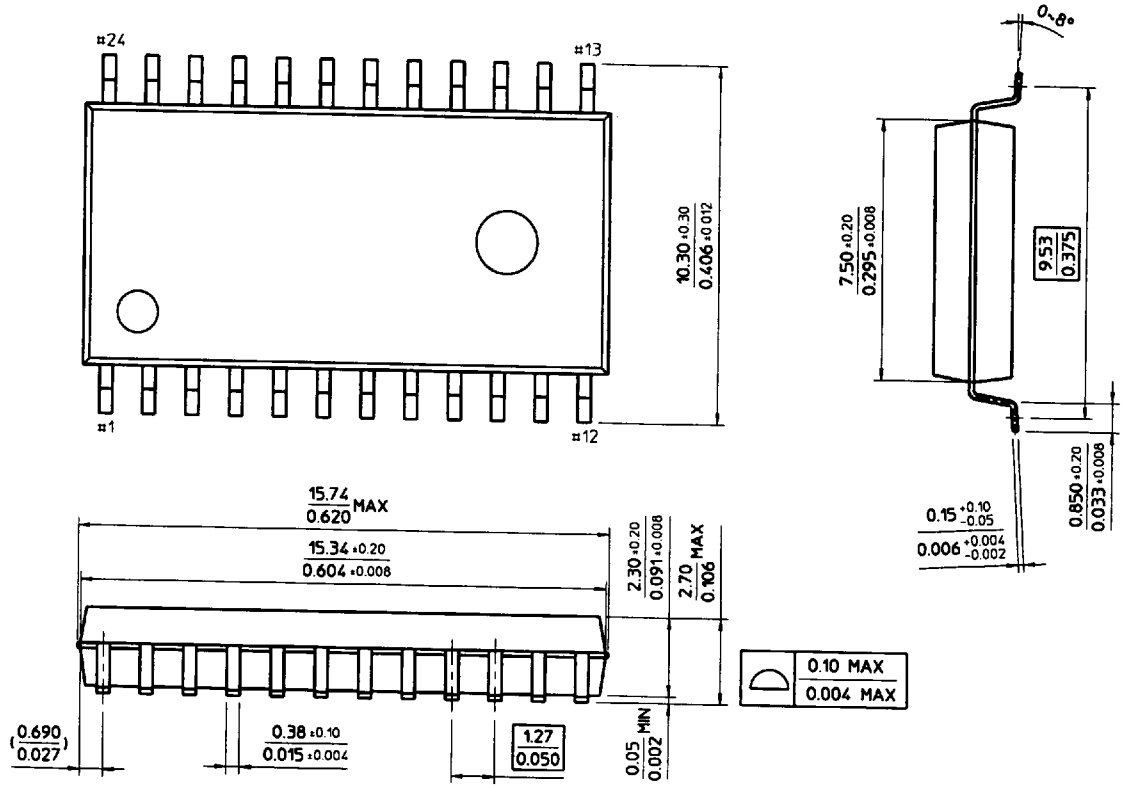
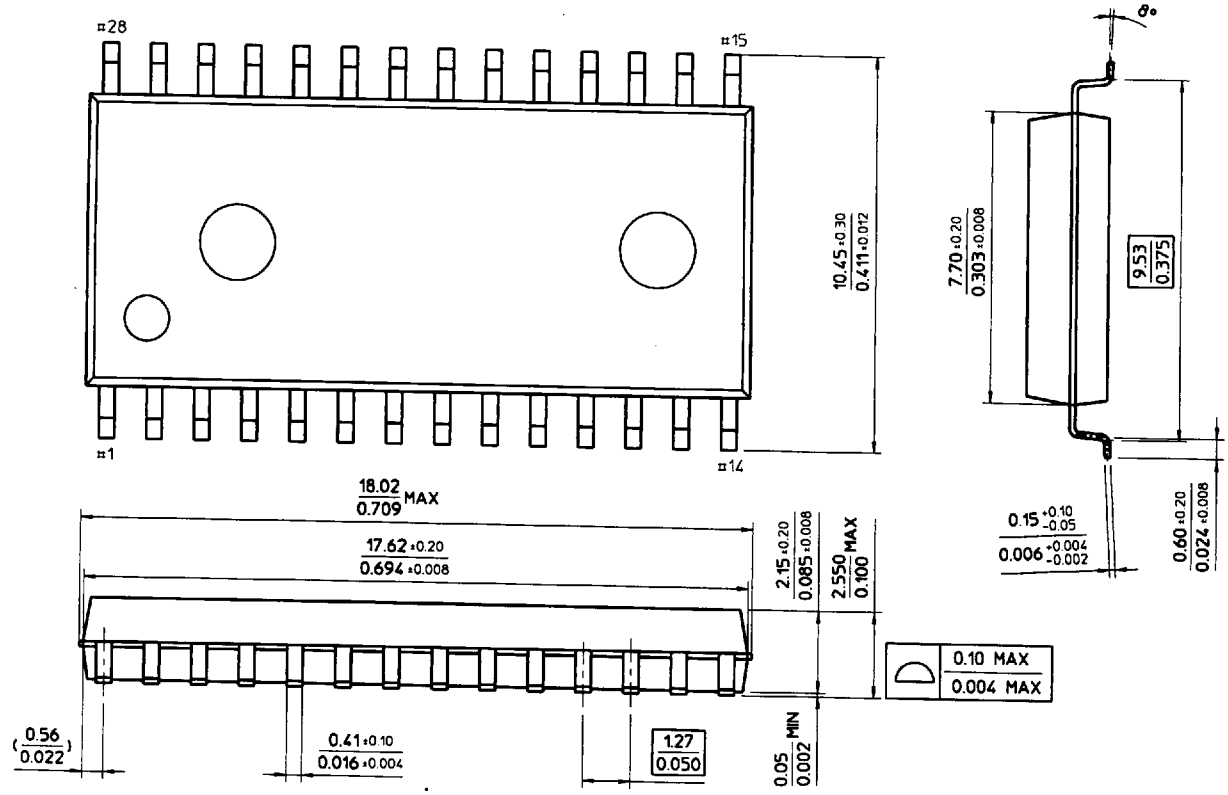



## 28-SOP-375








SAMSUNG ELECTRONICS