

### 4 TERMINAL LOW DROP VOLTAGE REGULATOR

The KIA78R × × series are Low Drop Voltage Regulator suitable for various electronic equipments. It provides constant voltage power source with TO-220 4 terminal lead full molded PKG. The Regulator has multi function such as over current protection, overheat protection and ON/OFF control.

### FEATURES

- 1.0A Output Low Drop Voltage Regulator.
- Built in ON/OFF Control Terminal.
- Built in Over Current Protection, Over Heat Protection Function.

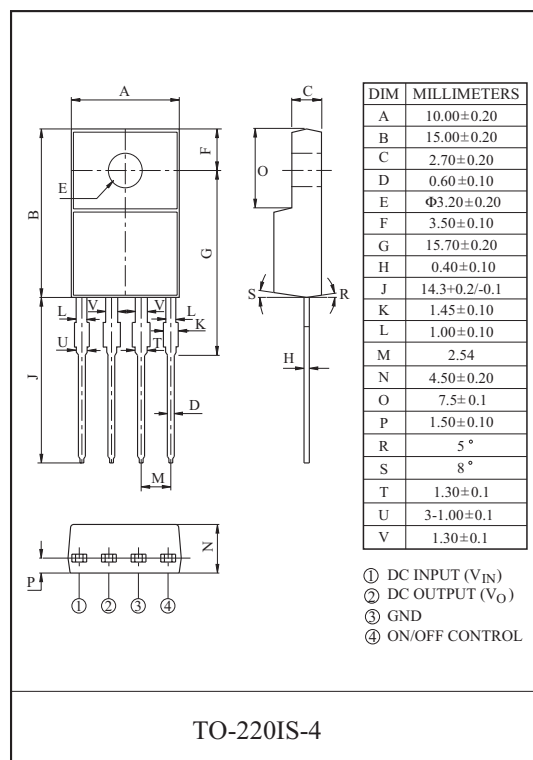
### LINE UP

| ITEM          | OUTPUT VOLTAGE (Typ.) | UNIT |
|---------------|-----------------------|------|
| * KIA78R25API | 2.5                   | V    |
| * KIA78R30API | 3.0                   |      |
| KIA78R33API   | 3.3                   |      |
| * KIA78R35API | 3.5                   |      |
| * KIA78R37API | 3.7                   |      |

Note) \* : Under development

### MAXIMUM RATING (Ta=25℃)

| CHARACTERISTIC                | SYMBOL    | RATING    | UNIT | Remark        |
|-------------------------------|-----------|-----------|------|---------------|
| Input Voltage                 | $V_{IN}$  | 15        | V    | -             |
| ON/OFF Control Voltage        | $V_C$     | 15        | V    | -             |
| Output Current                | $I_O$     | 1         | A    | -             |
| Power Dissipation 1           | $P_{d1}$  | 1.5       | W    | No heatsink   |
| Power Dissipation 2           | $P_{d2}$  | 15        | W    | with heatsink |
| Junction Temperature          | $T_j$     | 125       | ℃    | -             |
| Operating Temperature         | $T_{opr}$ | -20 ~ 80  | ℃    | -             |
| Storage Temperature           | $T_{stg}$ | -30 ~ 125 | ℃    | -             |
| Soldering Temperature (10sec) | $T_{sol}$ | 260       | ℃    | -             |



# KIA78R25API~KIA78R37API

## ELECTRICAL CHARACTERISTICS

(Unless otherwise specified,  $I_O=0.5A$ ,  $T_a=25^{\circ}C$ , Note1.)

| CHARACTERISTIC                            |          | SYMBOL       | CONDITIONS                | MIN.  | TYP.       | MAX.       | UNIT           |
|-------------------------------------------|----------|--------------|---------------------------|-------|------------|------------|----------------|
| Output Voltage                            | KIA78R25 | $V_O$        | -                         | 2.438 | 2.50       | 2.562      | V              |
|                                           | KIA78R30 |              | -                         | 2.925 | 3.00       | 3.075      |                |
|                                           | KIA78R33 |              | -                         | 3.220 | 3.30       | 3.380      |                |
|                                           | KIA78R35 |              | -                         | 3.413 | 3.50       | 3.587      |                |
|                                           | KIA78R37 |              | -                         | 3.608 | 3.70       | 3.792      |                |
| Load Regulation                           |          | Reg Load     | $I_O=5mA \sim 1A$         | -     | 0.1        | 2.0        | %              |
| Line Regulation                           |          | Reg Line     | (Note 2)                  | -     | 0.5        | 2.5        | %              |
| Temperature Coefficient of Output Voltage |          | $T_C V_O$    | $T_j=0 \sim 125^{\circ}C$ | -     | $\pm 0.02$ | $\pm 0.05$ | %/ $^{\circ}C$ |
| Ripple Rejection                          |          | $R \cdot R$  | -                         | 45    | 55         | -          | dB             |
| Drop Out Voltage                          |          | $V_D$        | $I_O=1A$                  | -     | -          | 0.5        | V              |
| Output ON state for control Voltage       |          | $V_{C(ON)}$  | -                         | 2.0   | -          | -          | V              |
| Output ON state for control Current       |          | $I_{C(ON)}$  | $V_C=2.7V$                | -     | -          | 20         | $\mu A$        |
| Output OFF state for control Voltage      |          | $V_{C(OFF)}$ | -                         | -     | -          | 0.8        | V              |
| Output OFF state for control Current      |          | $I_{C(OFF)}$ | $V_C=0.4V$                | -     | -          | -0.4       | mA             |
| Quiescent Current                         |          | $I_Q$        | $I_O=0$                   | -     | -          | 10         | mA             |

Note1)  $V_{IN}$  of KIA78R25=4.2V

" KIA78R30=4.7V

" KIA78R33=5.0V

" KIA78R35=5.2V

" KIA78R37=5.4V

Note2)  $V_{IN}$  of KIA78R25=3.2 ~ 10V

" KIA78R30=3.7 ~ 10V

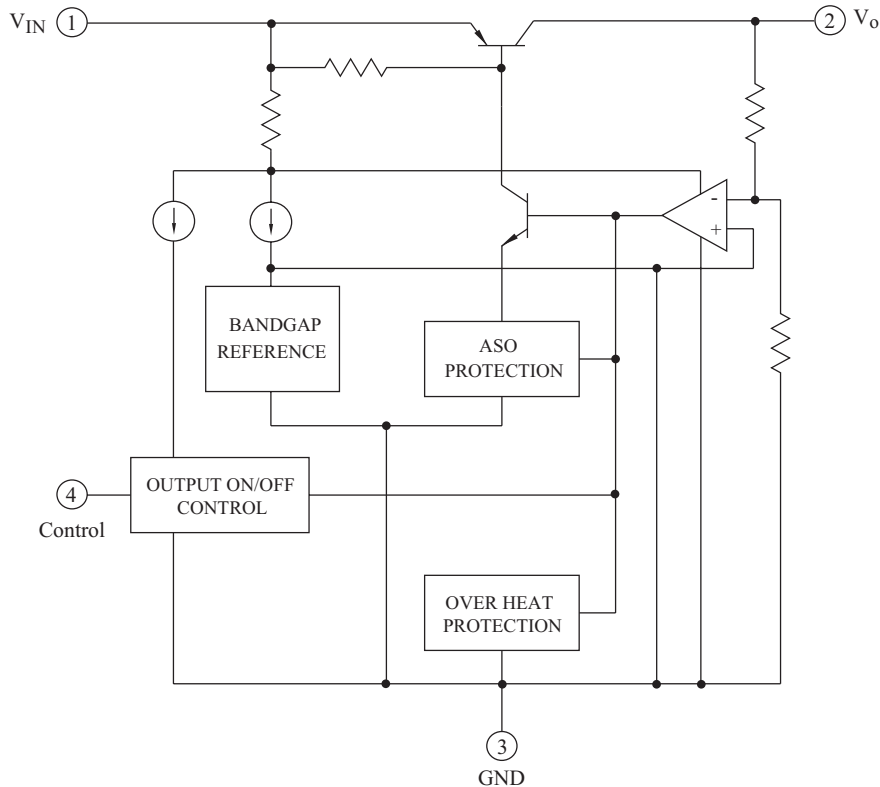
" KIA78R33=4.0 ~ 10V

" KIA78R35=4.2 ~ 10V

" KIA78R37=4.4 ~ 10V

Note3) At  $V_{IN}=0.95V_O$

## BLOCK DIAGRAM



# KIA78R25API~KIA78R37API

Fig. 1 Standard Test Circuit

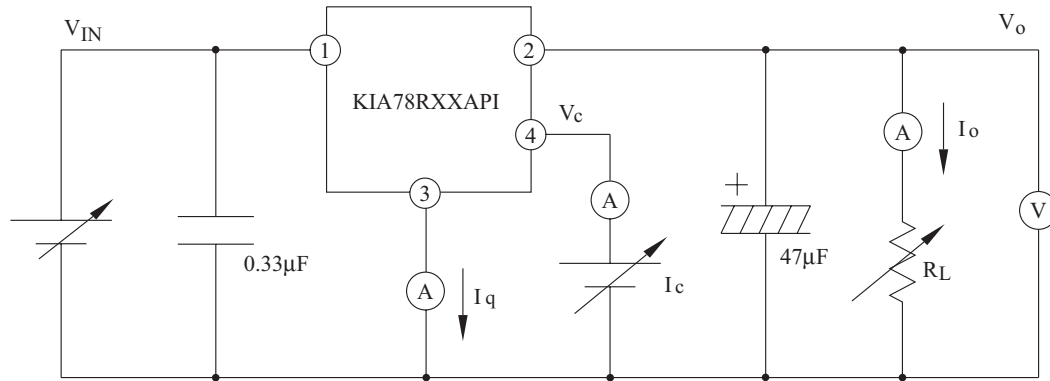


Fig. 1-2 Ripple Rejection Test Circuit

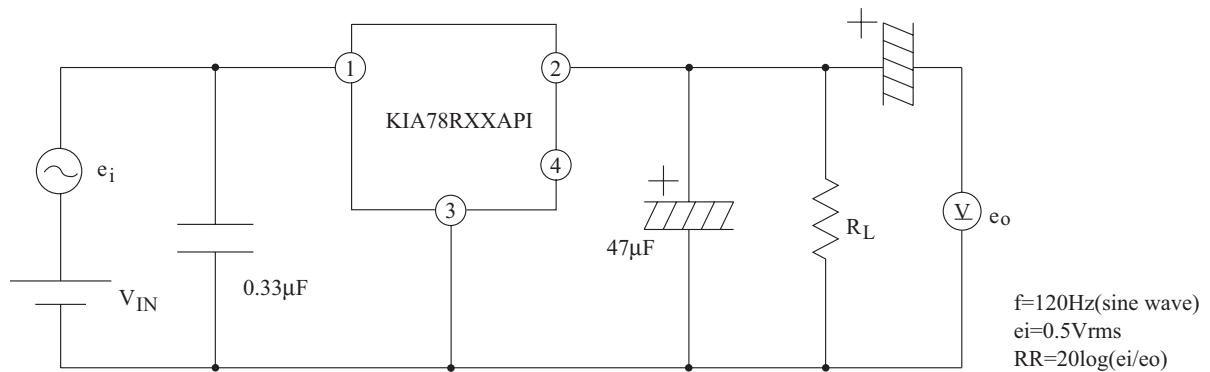
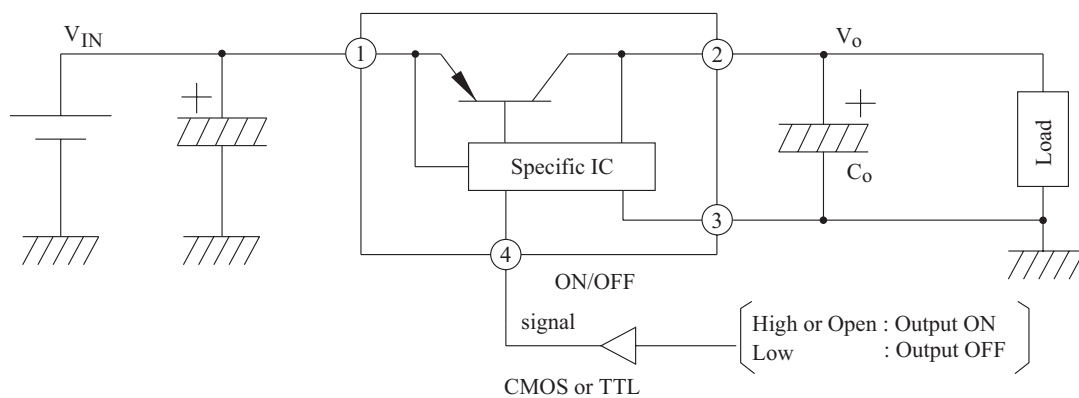
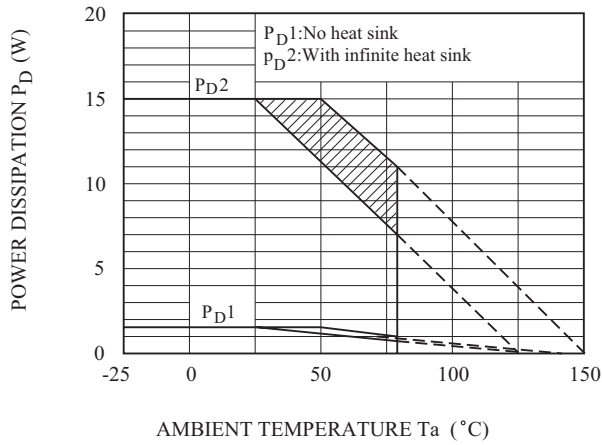


Fig. 2 Application Circuit for Standard



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Fig.3  $T_a - P_D$



Note) Oblique line portion : Overheat protection may operate in this area.

Fig.4  $I_O - V_O$

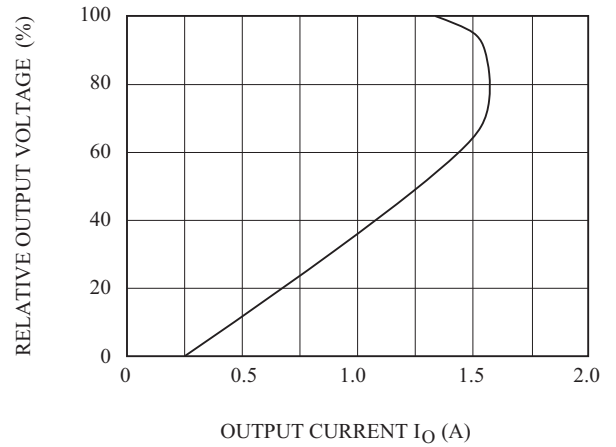


Fig.5-1  $T_j - \Delta V_O$  (KIA78R25)

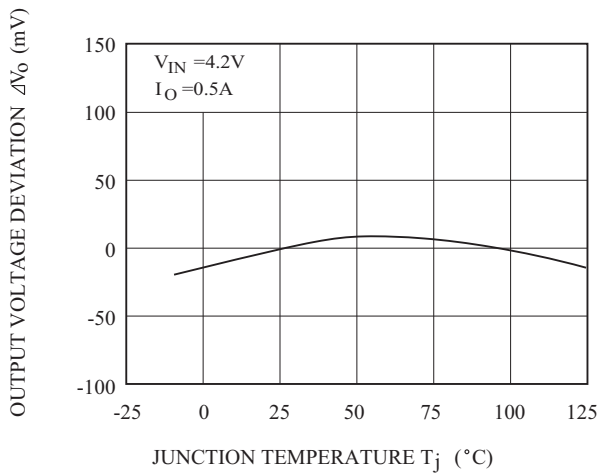


Fig.5-2  $T_j - \Delta V_O$  (KIA78R30)

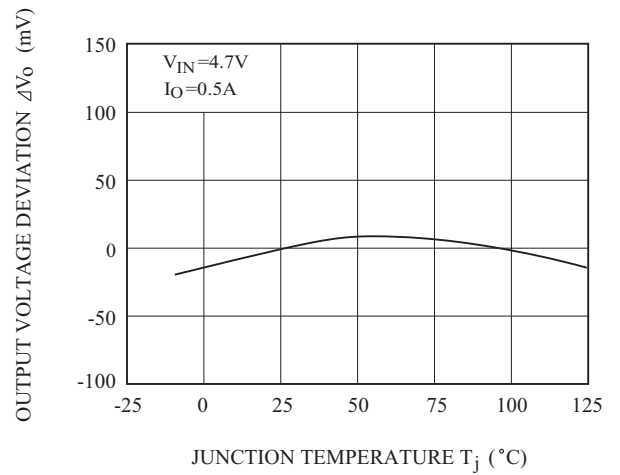


Fig.5-3  $T_j - \Delta V_O$  (KIA78R33)

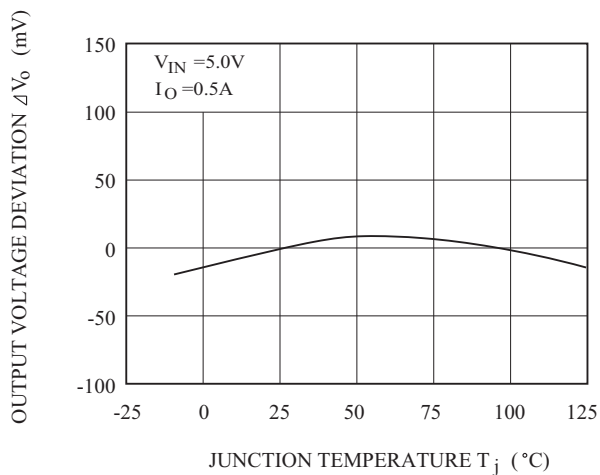
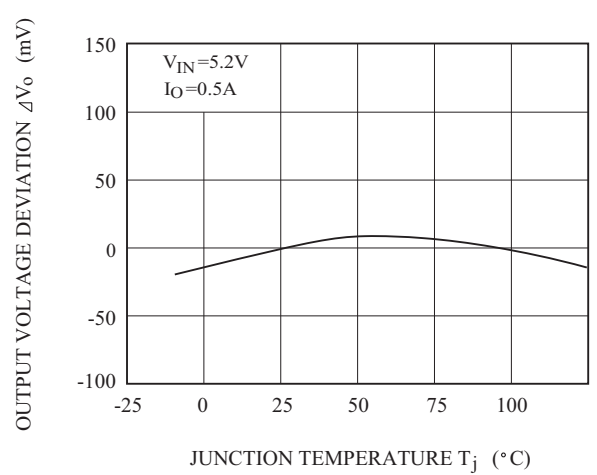


Fig.5-4  $T_j - \Delta V_O$  (KIA78R35)



# KIA78R25API~KIA78R37API

Fig.5-5  $T_j - \Delta V_o$  (KIA78R37)

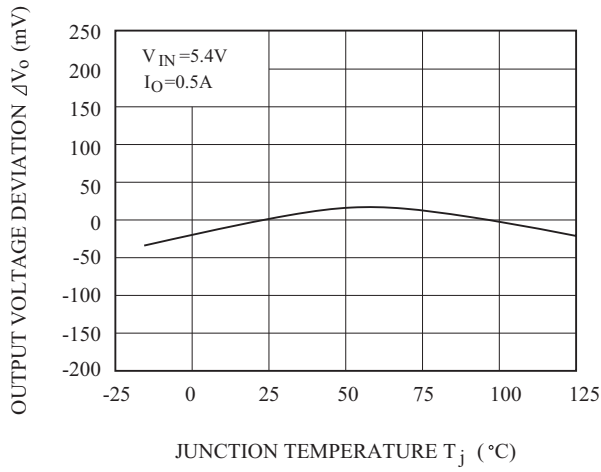


Fig.6  $T_j - V_D$

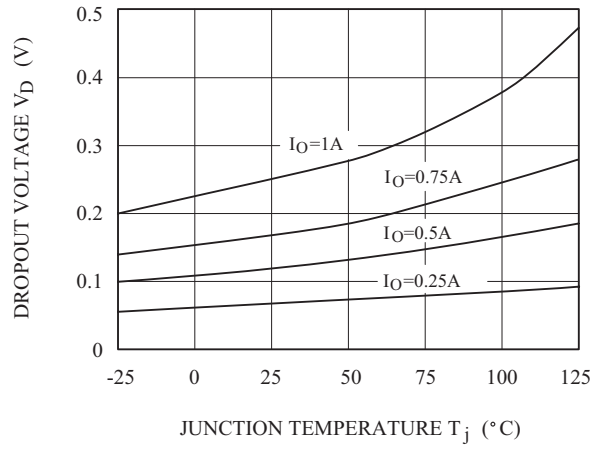


Fig.7  $T_j - I_q$

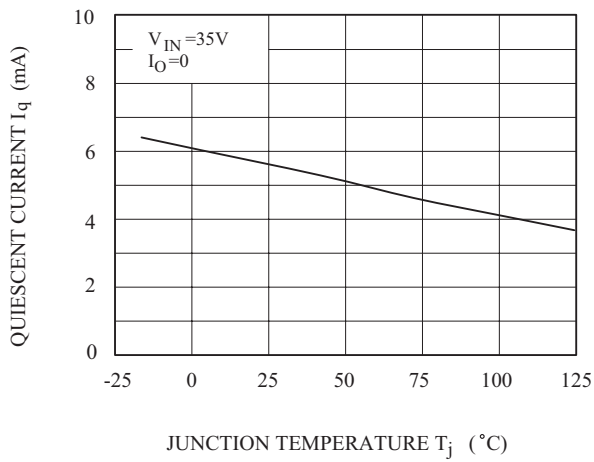


Fig.8-1  $f - RR$

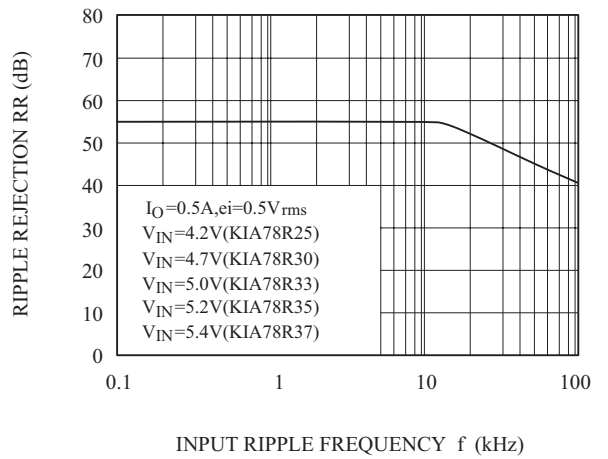


Fig.10-2  $I_O - RR$

