

4 TERMINAL 2A OUTPUT LOW DROP VOLTAGE REGULATOR

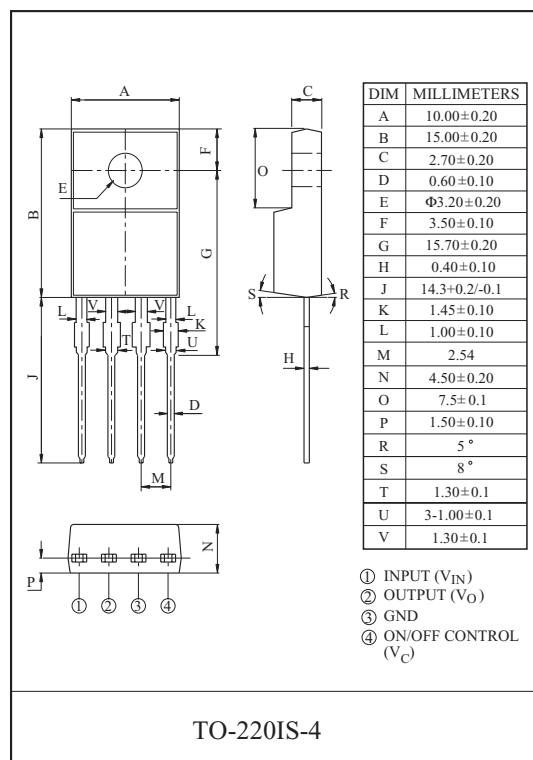
The KIA278R × × Series are Low Drop Voltage Regulator suitable for various electronic equipments. It provides constant voltage power source with TO-220-4 terminal lead full molded PKG. The Regulator has multi function such as over current protection, overheat protection and ON/OFF control.

FEATURES

- 2.0A 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 |
|-------------|-----------------------|------|
| KIA278R05PI | 5 | V |
| KIA278R06PI | 6 | |
| KIA278R08PI | 8 | |
| KIA278R09PI | 9 | |
| KIA278R10PI | 10 | |
| KIA278R12PI | 12 | |
| KIA278R15PI | 15 | |



MAXIMUM RATINGS (Ta=25 °C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT | Remark |
|--------------------------------|---------------------|---------|------|---------------|
| Input Voltage | V _{IN} | 35 | V | - |
| ON/OFF Control Voltage | V _C | 35 | V | - |
| Output Current | I _O | 2 | A | - |
| Power Dissipation 1 | P _{d1} | 1.5 | W | No heatsink |
| Power Dissipation 2 | P _{d2} | 15 | W | with heatsink |
| Operating Junction Temperature | T _{J(opr)} | -40~150 | °C | - |
| Storage Temperature | T _{stg} | -45~150 | °C | - |
| Soldering Temperature (10sec) | T _{sol} | 260 | °C | - |

KIA278R05PI~KIA278R15PI

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $I_O=1.0A$, $T_a=25^\circ C$, Note1.)

| CHARACTERISTIC | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|--------------|--------------------------|-------|------------|------------|---------------|
| Output Voltage | KIA278R05 | - | 4.88 | 5.0 | 5.12 | V |
| | KIA278R06 | - | 5.85 | 6.0 | 6.15 | |
| | KIA278R08 | - | 7.80 | 8.0 | 8.2 | |
| | KIA278R09 | - | 8.78 | 9.0 | 9.22 | |
| | KIA278R10 | - | 9.75 | 10.0 | 10.25 | |
| | KIA278R12 | - | 11.70 | 12.0 | 12.30 | |
| | KIA278R15 | - | 14.70 | 15.0 | 15.30 | |
| Load Regulation | Reg Load | $I_O=5mA \sim 2A$ | - | 0.1 | 2.0 | % |
| Line Regulation | Reg Line | (Note 2) | - | 0.5 | 2.5 | % |
| Temperature Coefficient of Output Voltage | $T_C V_O$ | $T_j=0 \sim 125^\circ C$ | - | ± 0.02 | ± 0.05 | %/ $^\circ C$ |
| Ripple Rejection | $R \cdot R$ | - | 45 | 55 | - | dB |
| Drop Out Voltage | V_D | $I_O=2A$ | - | - | 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 | μA |
| 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 KIA278R05=7V

Note2) V_{IN} of KIA278R05=6~12V

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

" KIA278R06=8V

" KIA278R06=7~15V

" KIA278R08=10V

" KIA278R08=9~25V

" KIA278R09=15V

" KIA278R09=10~25V

" KIA278R10=16V

" KIA278R10=11~26V

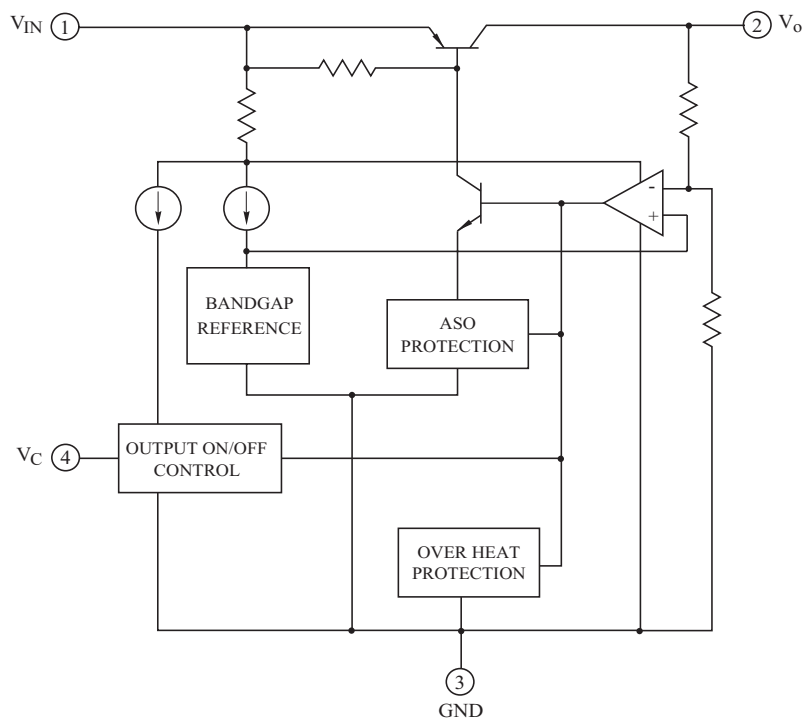
" KIA278R12=18V

" KIA278R12=13~29V

" KIA278R15=21V

" KIA278R15=16~32V

BLOCK DIAGRAM



KIA278R05PI~KIA278R15PI

Fig. 1 Standard Test Circuit

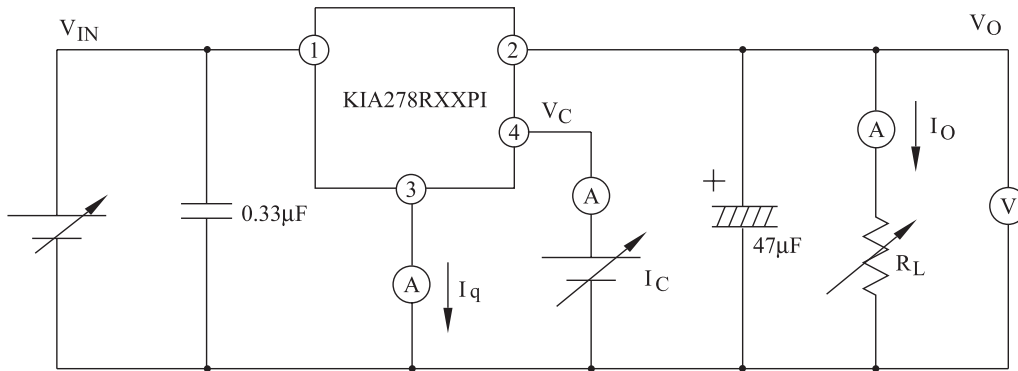


Fig. 1-2 Ripple Rejection Test Circuit

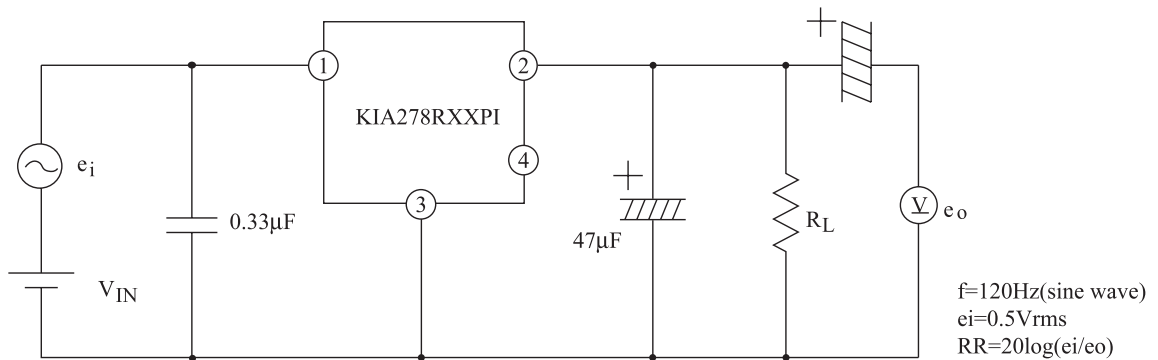
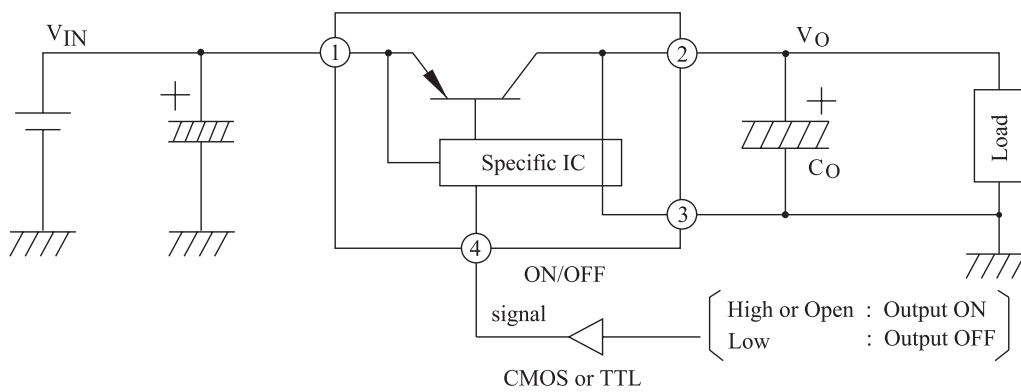
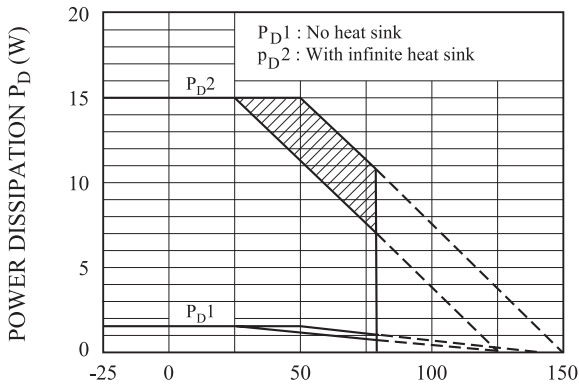


Fig. 2 Application Circuit for Standard



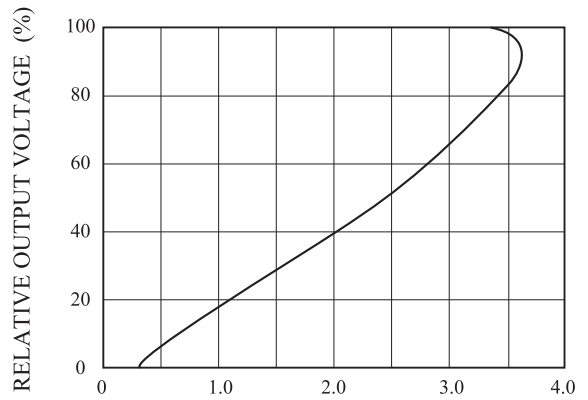
KIA278R05PI~KIA278R15PI

Fig.3 Ta - P_D



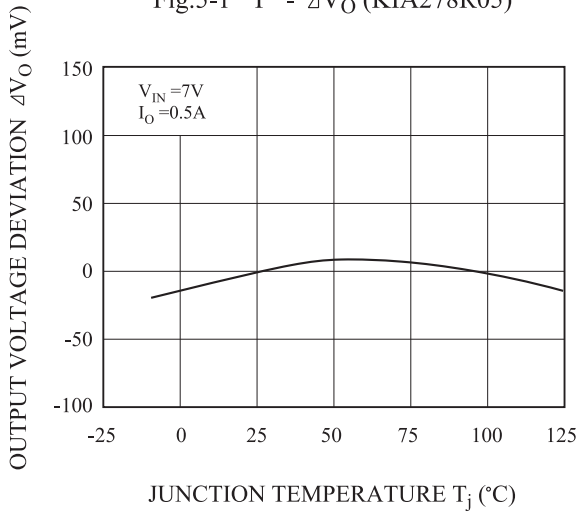
AMBIENT TEMPERATURE T_a (°C)
 Note) Oblique line portion : Overheat protection may operate in this area.

Fig.4 I_O - V_O



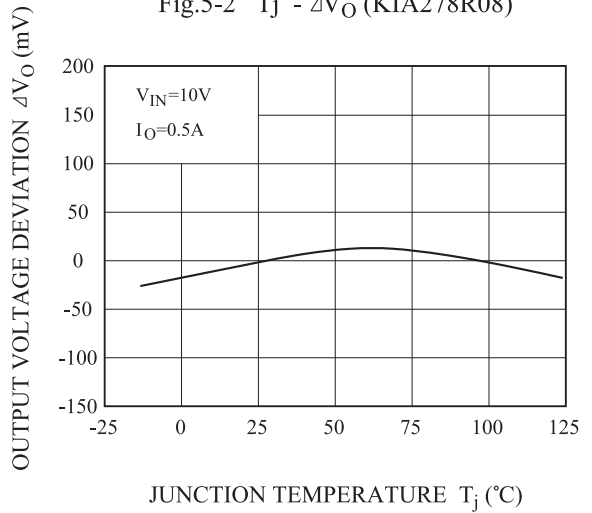
OUTPUT CURRENT I_O (A)

Fig.5-1 T_j - ΔV_O (KIA278R05)



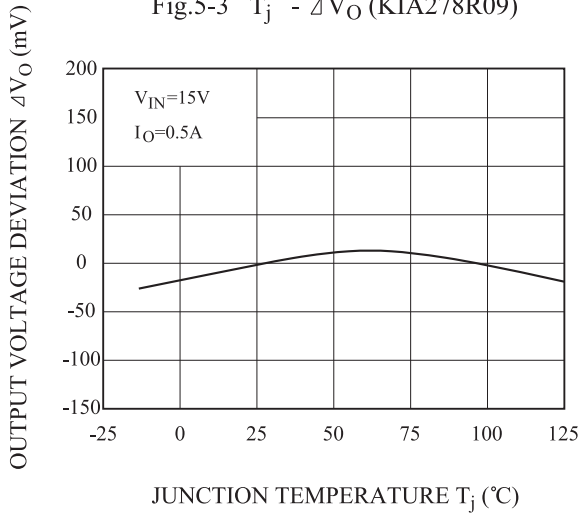
JUNCTION TEMPERATURE T_j (°C)

Fig.5-2 T_j - ΔV_O (KIA278R08)



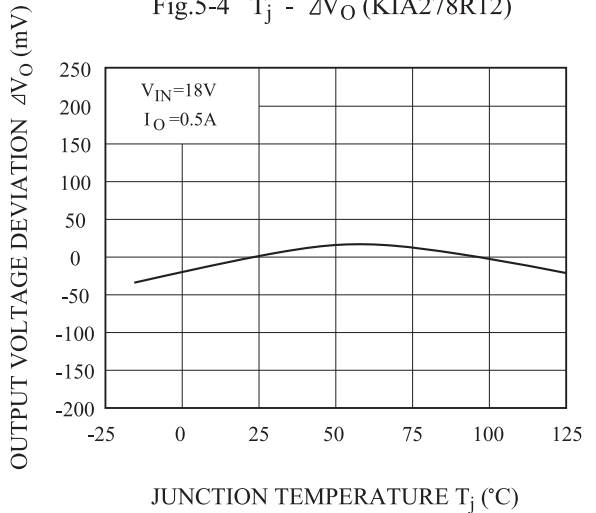
JUNCTION TEMPERATURE T_j (°C)

Fig.5-3 T_j - ΔV_O (KIA278R09)



JUNCTION TEMPERATURE T_j (°C)

Fig.5-4 T_j - ΔV_O (KIA278R12)



JUNCTION TEMPERATURE T_j (°C)

KIA278R05PI~KIA278R15PI

Fig.5-5 $T_j - \Delta V_O$ (KIA278R15)

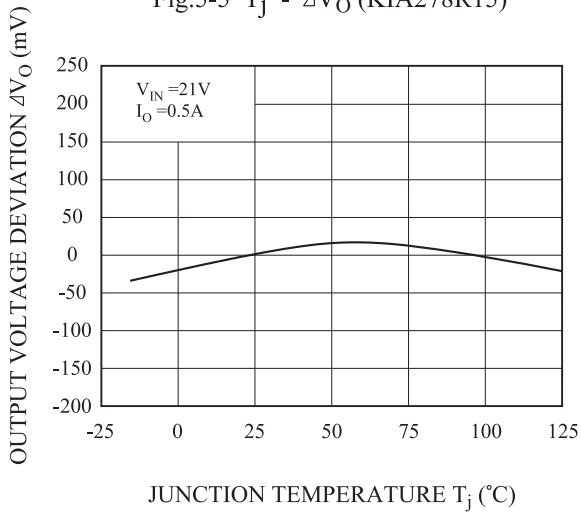


Fig.6-1 $T_j - V_O$ (KIA278R05)

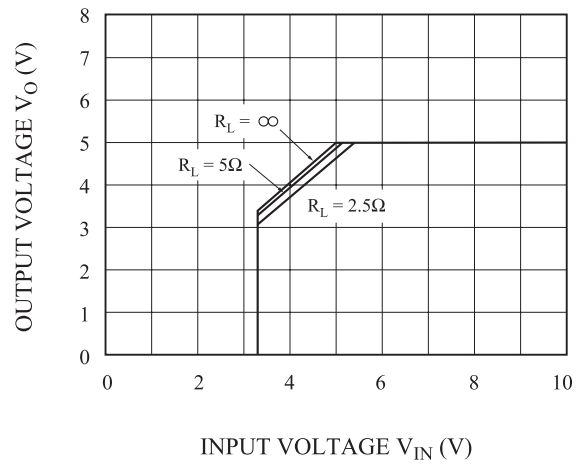


Fig.6-2 $V_{IN} - V_O$ (KIA278R08)

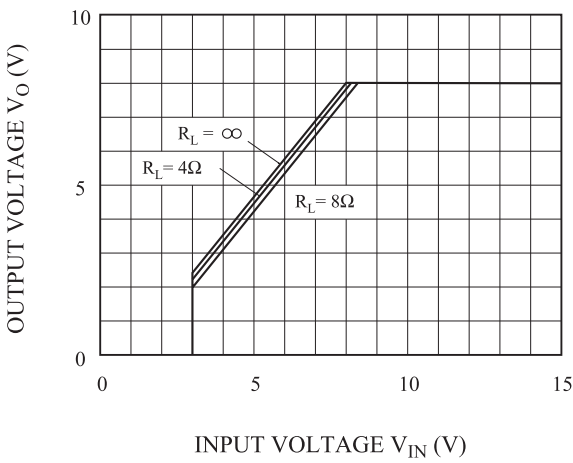


Fig.6-3 $V_{IN} - V_O$ (KIA278R09)

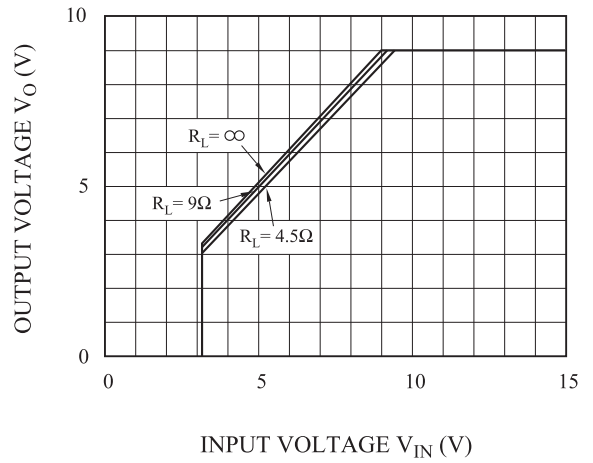


Fig.6-4 $V_{IN} - V_O$ (KIA278R12)

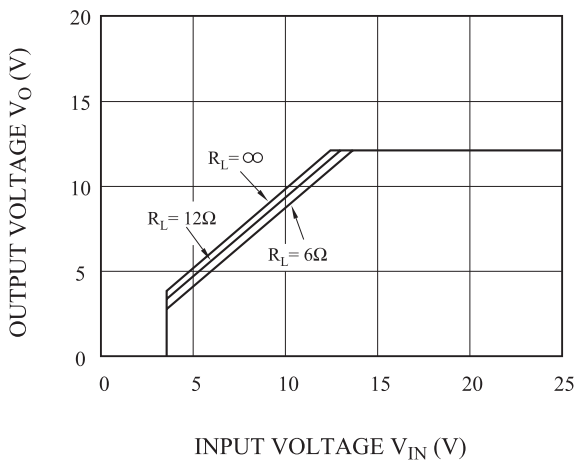
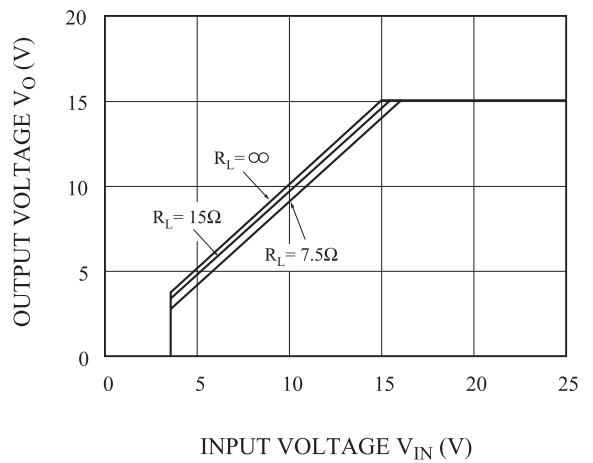
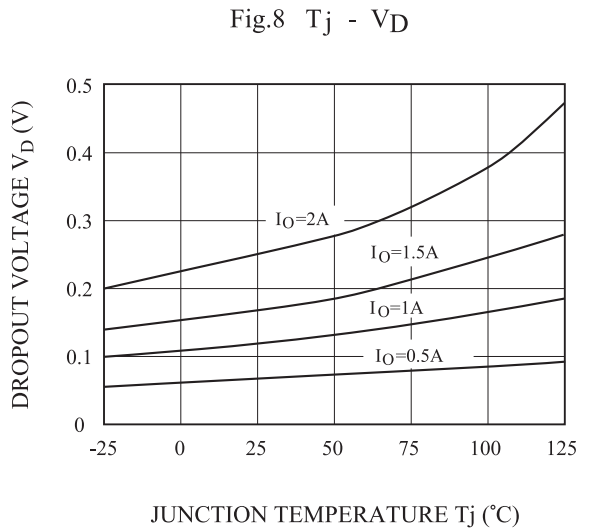
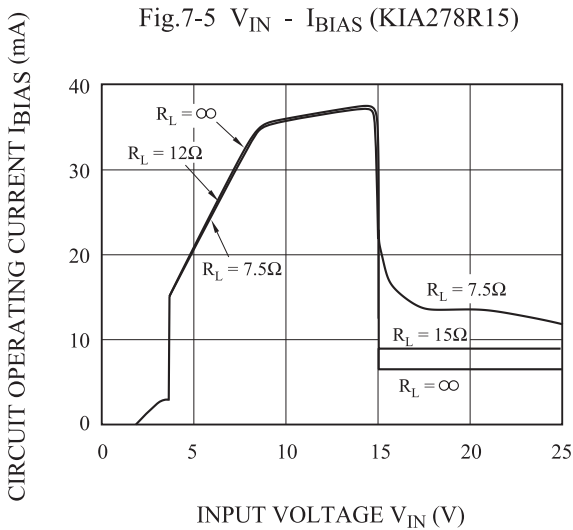
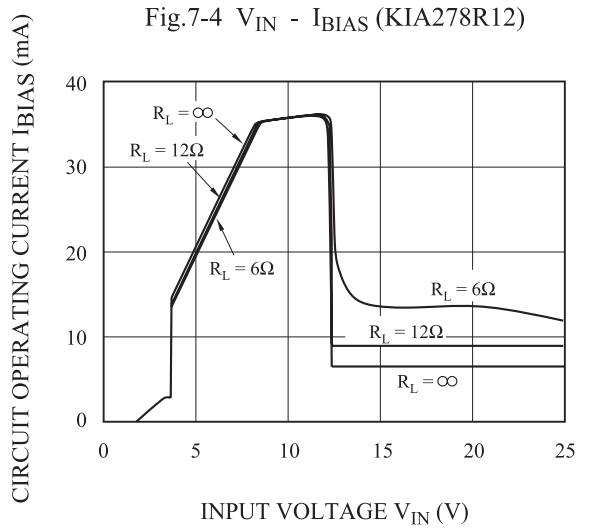
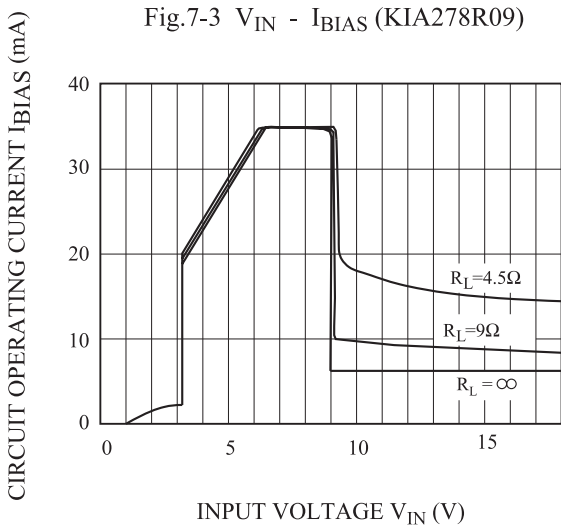
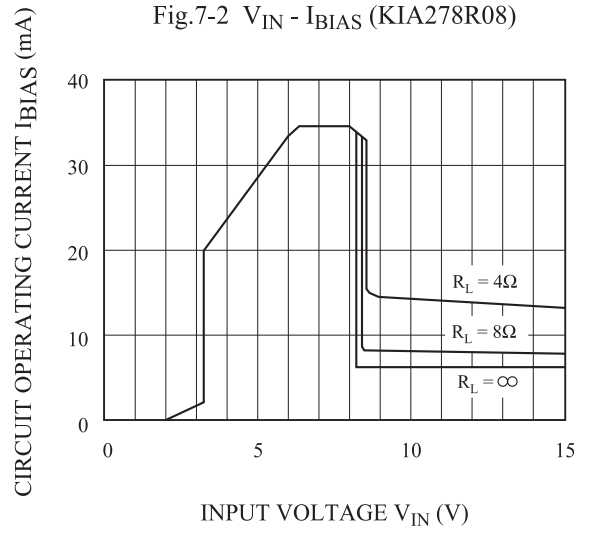
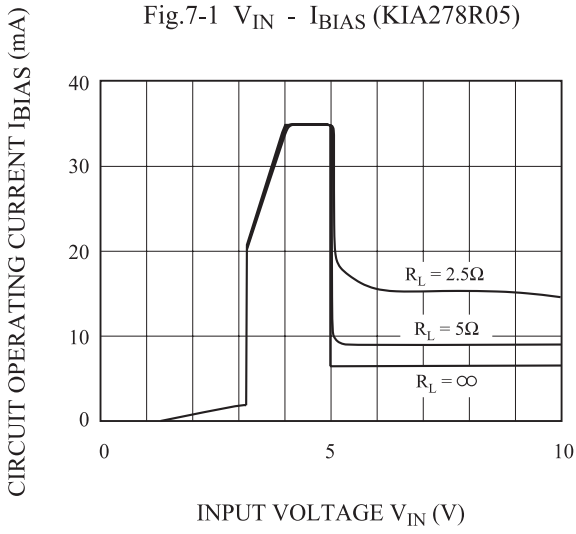


Fig.6-5 $V_{IN} - V_O$ (KIA278R15)



KIA278R05PI~KIA278R15PI



KIA278R05PI~KIA278R15PI

Fig.9 T_j - I_q

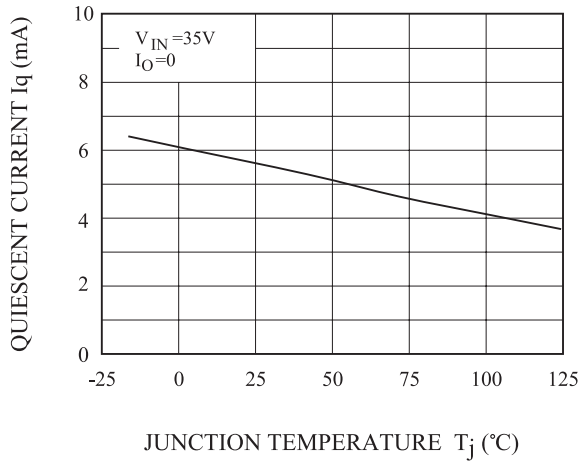


Fig. 10-1 f - RR

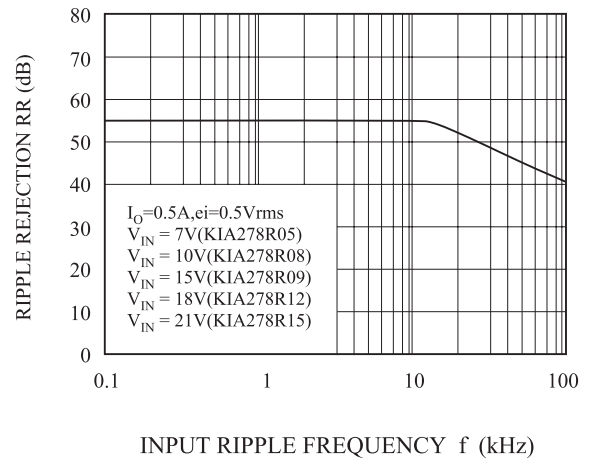
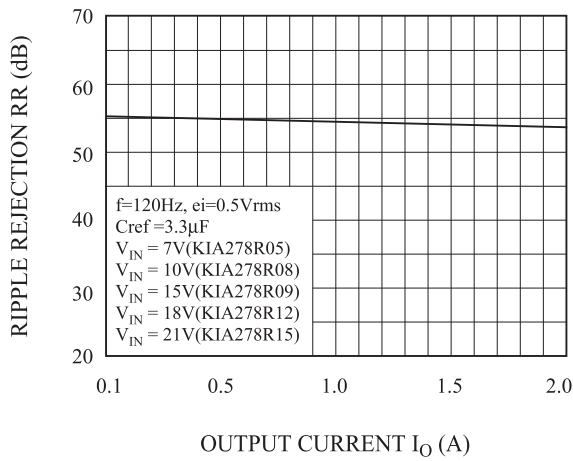


Fig.10-2 I_O - RR



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