

4 TERMINAL 3A OUTPUT LOW DROP VOLTAGE REGULATOR

The KIA378R × × Series are Low Drop Voltage Regulator suitable for various electronic equipments. It provides constant voltage power source with TO-220IS-4 terminal lead full molded Package. The Regulator has multi-function such as over current protection, overheat protection and ON/OFF control.

FEATURES

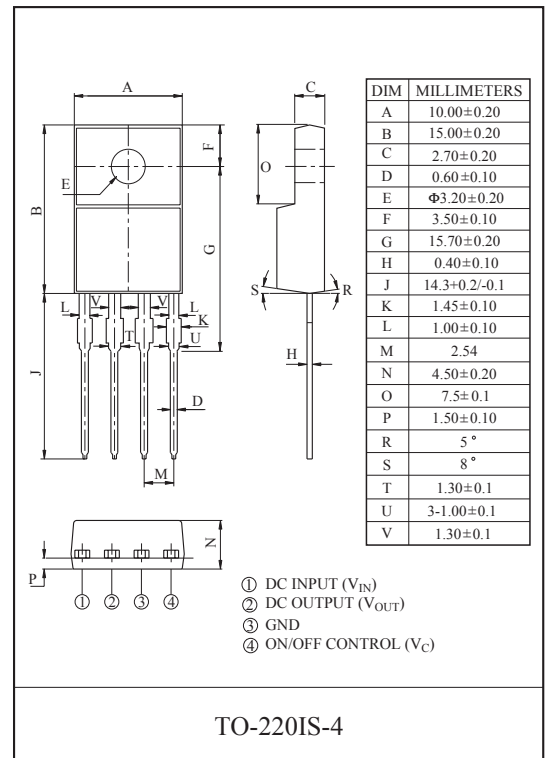
- 3.0A Output Low Drop Voltage Regulator.
- Built in ON/OFF Control Terminal.
- Built in Over Current Protection, Over Heat Protection Function.
- Suffix U : Qualified to AEC-Q100.
ex) KIA378R**PI-U/PU

LINE UP

| ITEM | OUTPUT VOLTAGE (Typ.) | UNIT |
|-------------|-----------------------|------|
| KIA378R25PI | 2.5 | V |
| KIA378R33PI | 3.3 | |
| KIA378R35PI | 3.5 | |
| KIA378R05PI | 5 | |
| KIA378R06PI | 6 | |
| KIA378R08PI | 8 | |
| KIA378R09PI | 9 | |
| KIA378R10PI | 10 | |
| KIA378R12PI | 12 | |
| KIA378R15PI | 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 | 3 | 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 | - |



KIA378R05PI~KIA378R35PI

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

| CHARACTERISTIC | | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|--------------|--------------------------|------------|------------|------------|---------------|------|
| Output Voltage | KIA378R25 | V_O | - | 2.438 | 2.50 | 2.562 | V |
| | KIA378R33 | | - | 3.22 | 3.3 | 3.38 | |
| | KIA378R35 | | - | 3.413 | 3.50 | 3.587 | |
| | KIA378R05 | | - | 4.88 | 5.0 | 5.12 | |
| | KIA378R06 | | - | 5.85 | 6.0 | 6.15 | |
| | KIA378R08 | | - | 7.80 | 8.0 | 8.2 | |
| | KIA378R09 | | - | 8.78 | 9.0 | 9.22 | |
| | KIA378R10 | | - | 9.75 | 10.0 | 10.25 | |
| | KIA378R12 | | - | 11.70 | 12.0 | 12.30 | |
| | KIA378R15 | | - | 14.70 | 15.0 | 15.30 | |
| Load Regulation | Reg Load | $I_O=5mA \sim 3A$ | - | 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 | $I_O=3A$ | - | - | 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 KIA378R25=4.2V

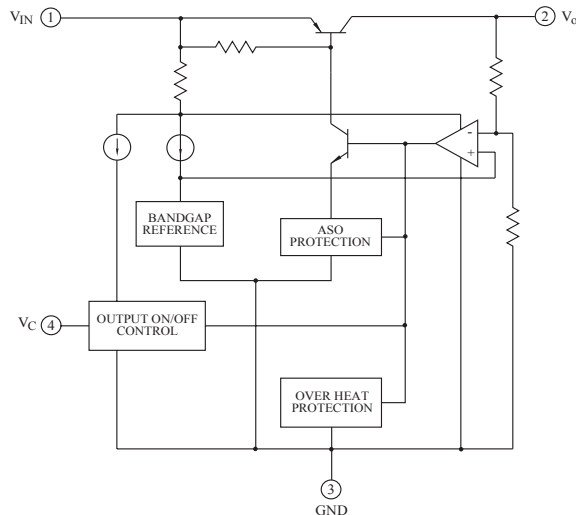
- " KIA378R33=5.0V
- " KIA378R35=5.2V
- " KIA378R05=7V
- " KIA378R06=8V
- " KIA378R08=10V
- " KIA378R09=15V
- " KIA378R10=16V
- " KIA378R12=18V
- " KIA378R15=21V

Note2) V_{IN} of KIA378R25=3.2 ~ 10V

- " KIA378R33=4.0 ~ 10V
- " KIA378R35=4.2 ~ 10V
- " KIA378R05=6 ~ 12V
- " KIA378R06=7 ~ 15V
- " KIA378R08=9 ~ 25V
- " KIA378R09=10 ~ 25V
- " KIA378R10=11 ~ 26V
- " KIA378R12=13 ~ 29V
- " KIA378R15=16 ~ 32V

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

BLOCK DIAGRAM



KIA378R05PI~KIA378R35PI

Fig. 1 Standard Test Circuit

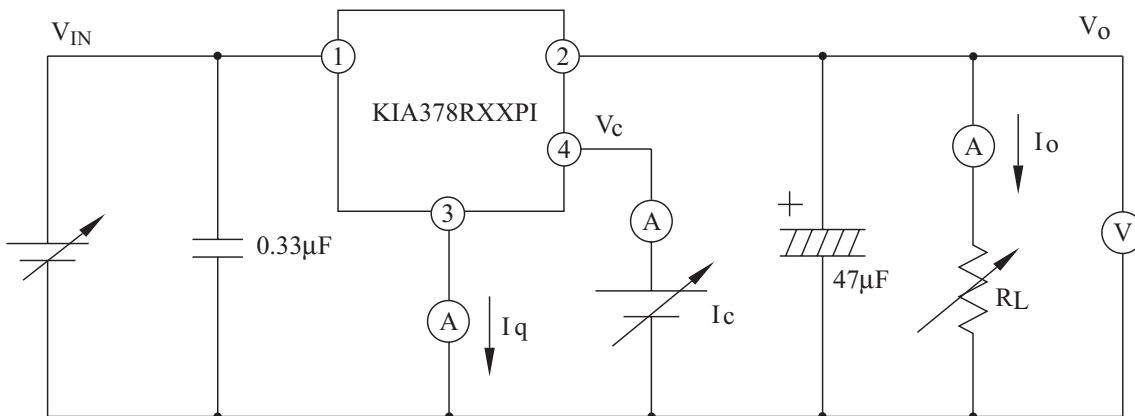


Fig. 2 Ripple Rejection Test Circuit

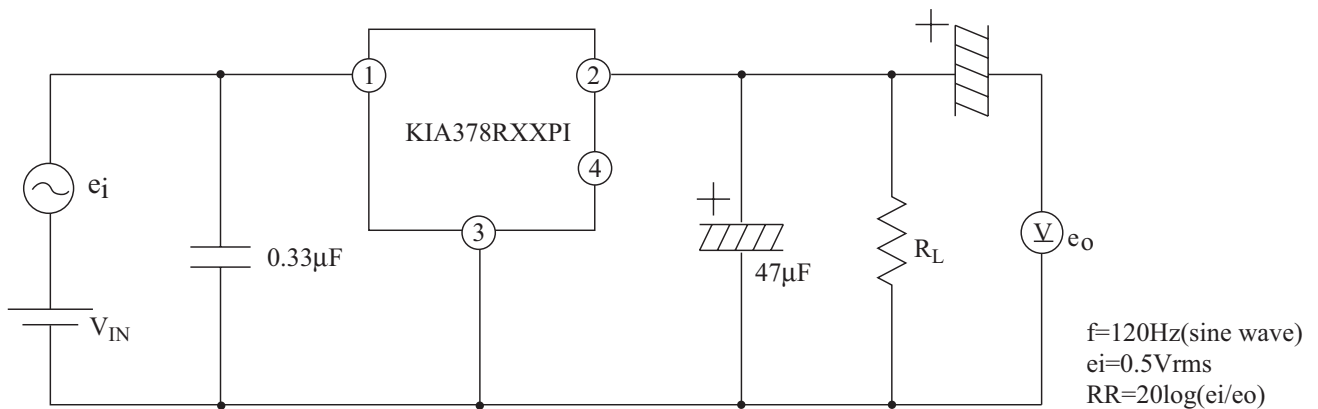
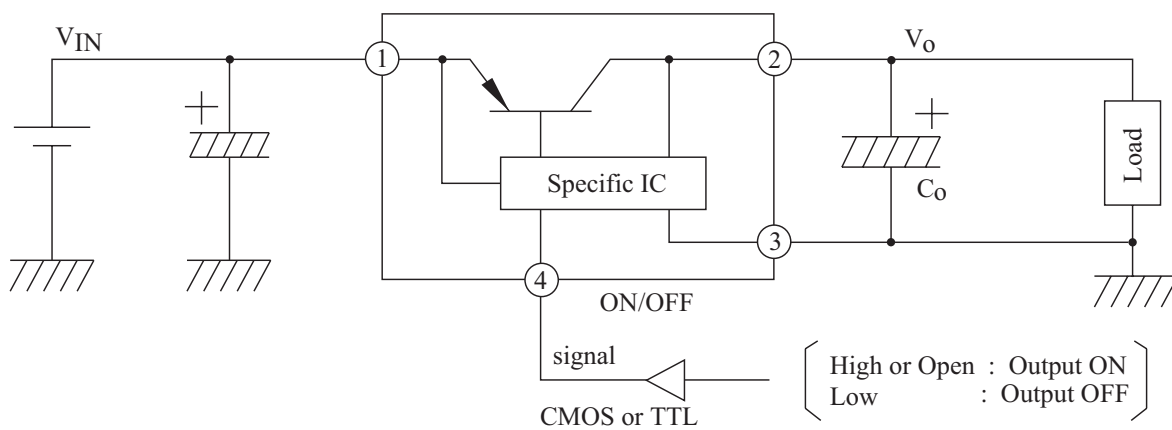


Fig. 3 Application Circuit for Standard



KIA378R05PI~KIA378R35PI

Fig.4 $P_D - T_a$

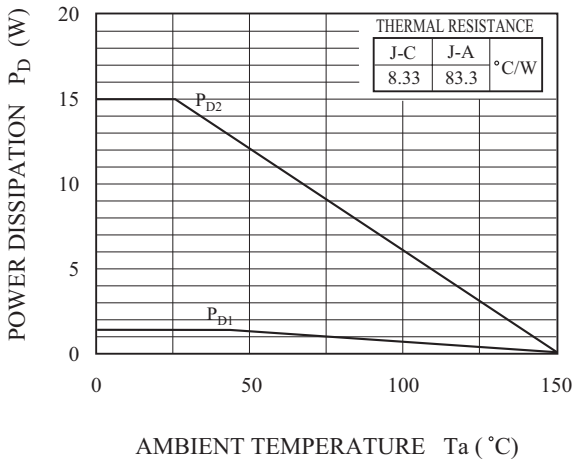


Fig.5 $I_O - V_O$

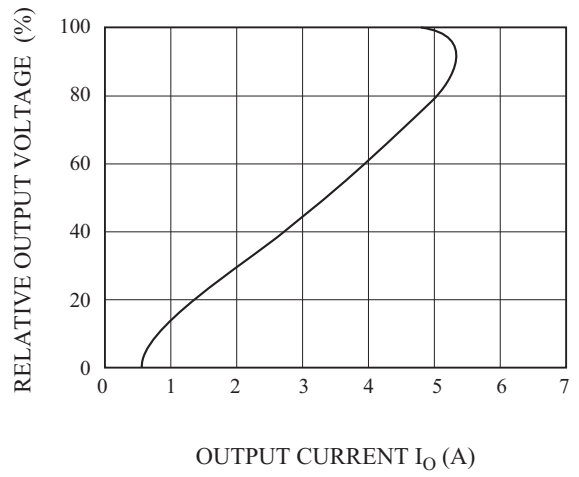


Fig.6 $\Delta V_O - T_j$

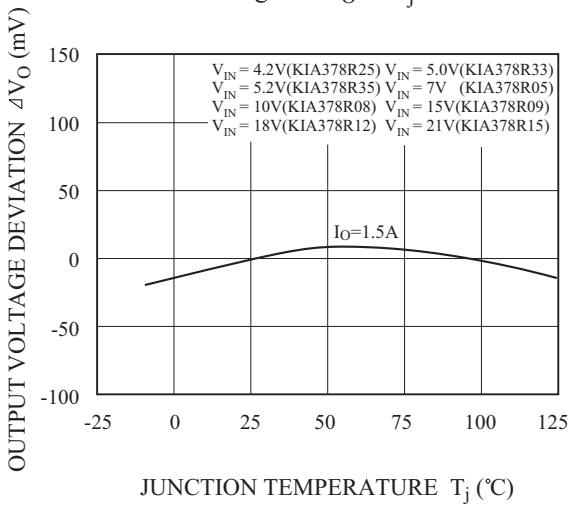


Fig.7 $V_{IN} - V_O$ (KIA378R05)

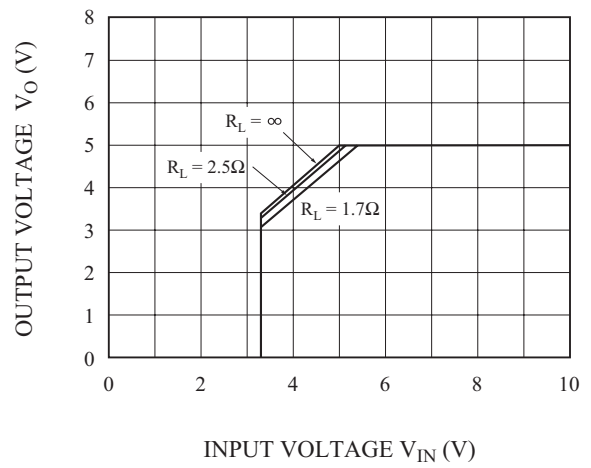


Fig.8 $V_{IN} - V_O$ (KIA378R08)

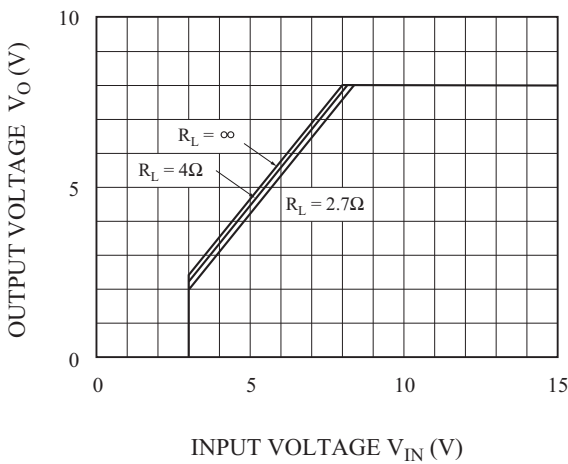
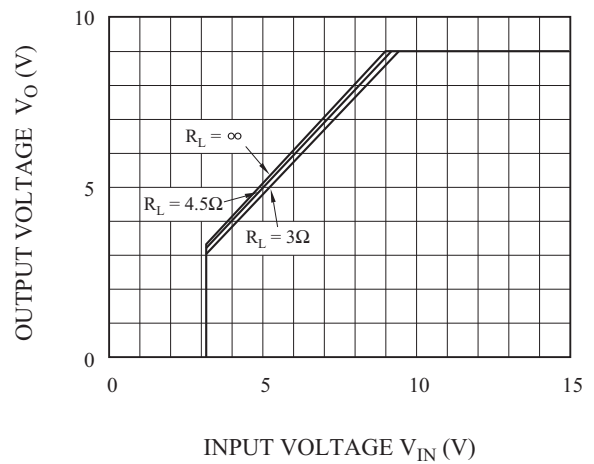


Fig.9 $V_{IN} - V_O$ (KIA378R09)



KIA378R05PI~KIA378R35PI

Fig.10 $V_{IN} - V_O$ (KIA378R12)

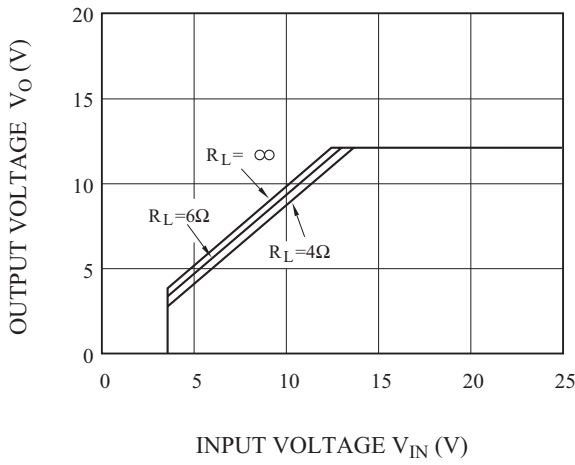


Fig.11 $V_{IN} - V_O$ (KIA378R15)

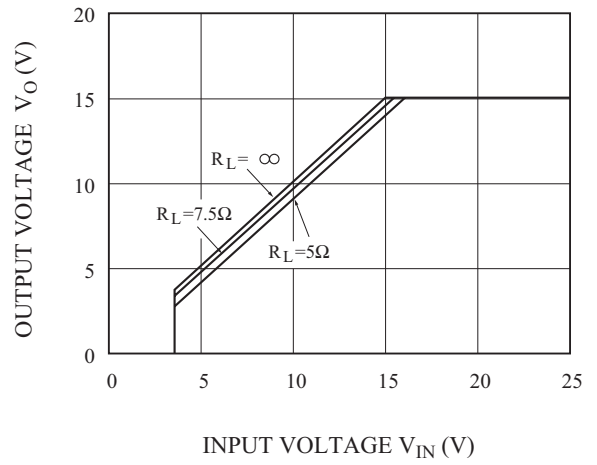


Fig.12 $V_{IN} - I_{BIAS}$ (KIA378R05)

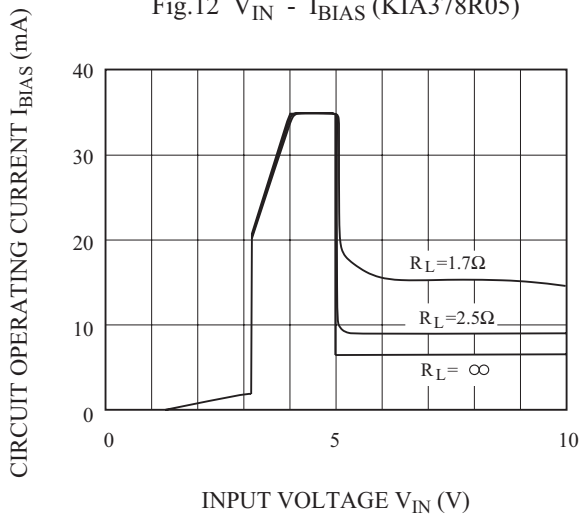


Fig.13 $V_{IN} - I_{BIAS}$ (KIA378R08)

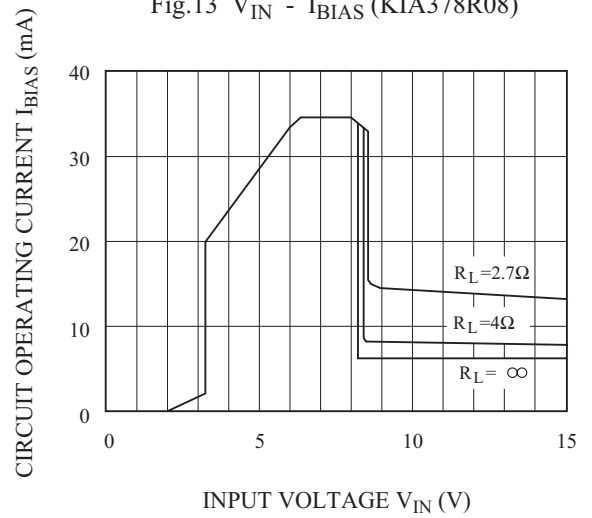


Fig.14 $V_{IN} - I_{BIAS}$ (KIA378R09)

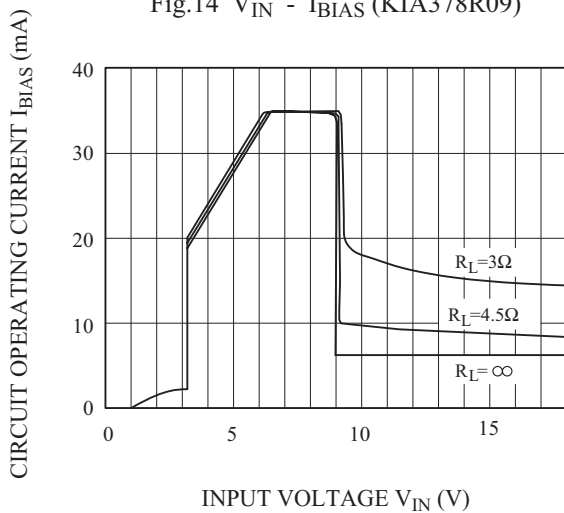
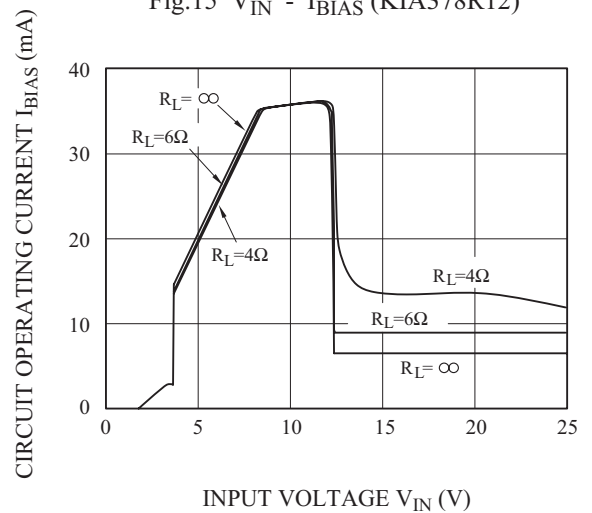


Fig.15 $V_{IN} - I_{BIAS}$ (KIA378R12)



KIA378R05PI~KIA378R35PI

Fig.16 $V_{IN} - I_{BIAS}$ (KIA378R15)

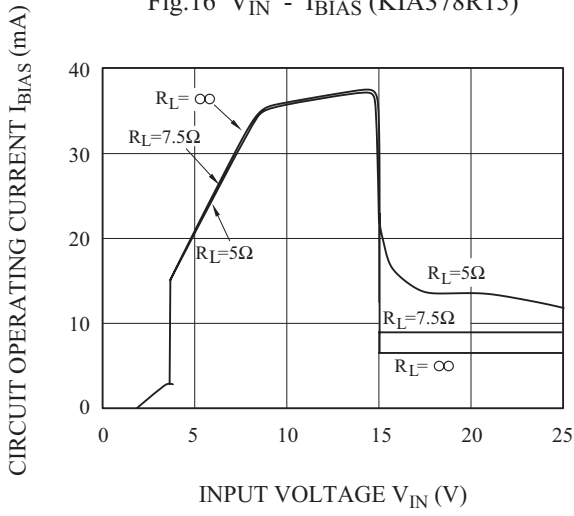


Fig.17 $T_j - V_D$

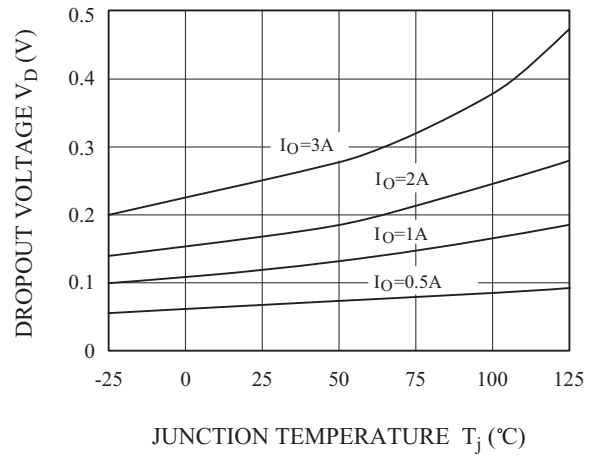


Fig.18 $T_j - I_q$

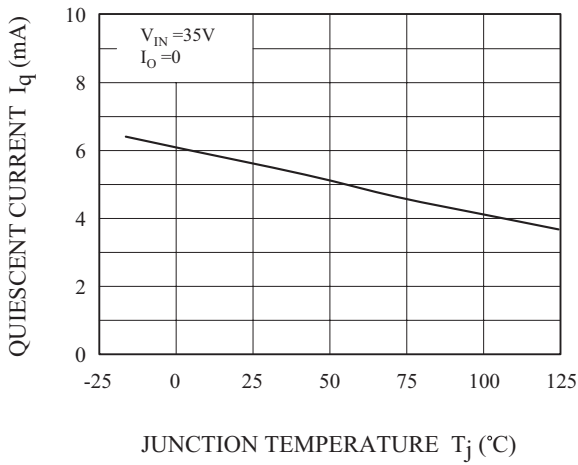


Fig.19 $f - RR$

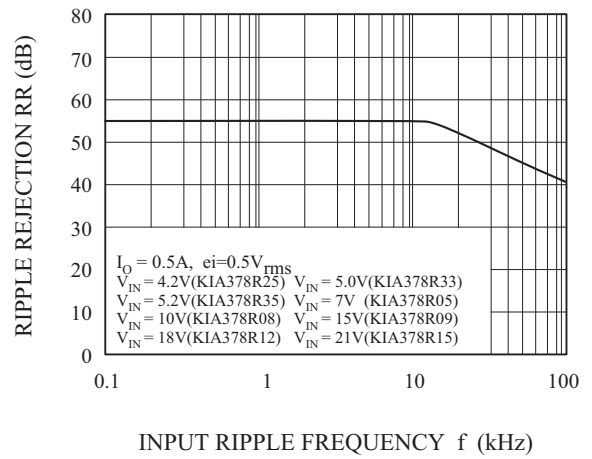


Fig.20 $I_O - RR$

