

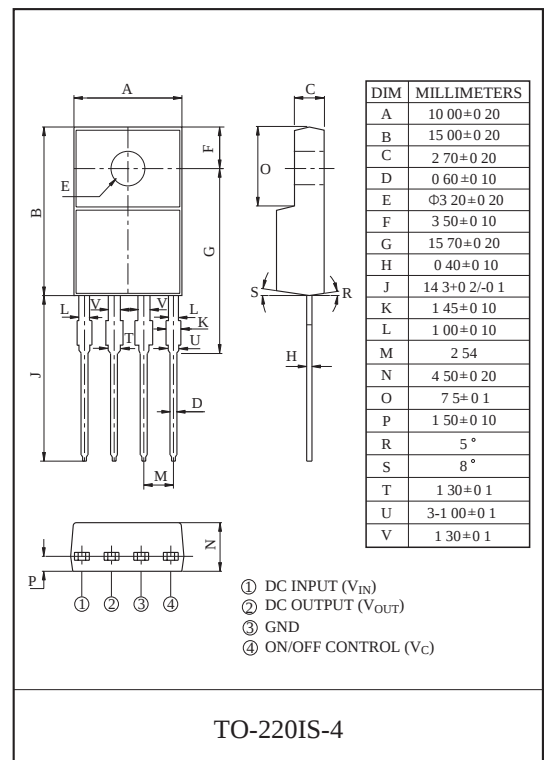
4 TERMINAL LOW DROPOUT VOLTAGE REGULATOR

The FR78RXX series are Low Dropout 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 Dropout Voltage Regulator.
- Built in ON/OFF Control Terminal.
- Built in Over Current Protection, Over Heat Protection Function.



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

CHARACTERISTIC	SYMBOL	RATING	UNIT	REMARK
Input Voltage	V_{IN}	35	V	-
ON/OFF Control Voltage	V_C	35	V	-
Output Current	I_O	1	A	-
Power Dissipation 1	P_{D1}	1.5	W	No Heatsink
Power Dissipation 2	P_{D2}	15	W	Infinite Heatsink
Operating Junction Temperature	$T_{J(opr)}$	-40 ~ 150	°C	-
Storage Temperature	T_{stg}	-45 ~ 150	°C	-
Soldering Temperature (10sec)	T_{sol}	260	°C	-



FR78R33PI~FR78R15PI

ELECTRICAL CHARACTERISTICS

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

CHARACTERISTIC		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	FR78R33PI	V_O	-	3.22	3.3	3.38	V
	FR78R05PI		-	4.88	5.0	5.12	
	FR78R08PI		-	7.80	8.0	8.2	
	FR78R09PI		-	8.78	9.0	9.22	
	FR78R12PI		-	11.70	12.0	12.30	
	FR78R15PI		-	14.70	15.0	15.30	
Load Regulation		Reg Load	$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=7V$	-	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	$I_O=1A$, $V_{IN}=0.95 V_{OUT}$	-	-	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 KIA78R33=3.3V

" KIA78R05=5.0V

" KIA78R08=10V

" KIA78R09=15V

" KIA78R12=12V

" KIA78R15=15V

Note2) V_{IN} of KIA78R33=4 ~ 10V

" KIA78R05=6 ~ 12V

" KIA78R08=9 ~ 25V

" KIA78R09=10 ~ 25V

" KIA78R12=13 ~ 29V

" KIA78R15=16 ~ 32V

BLOCK DIAGRAM

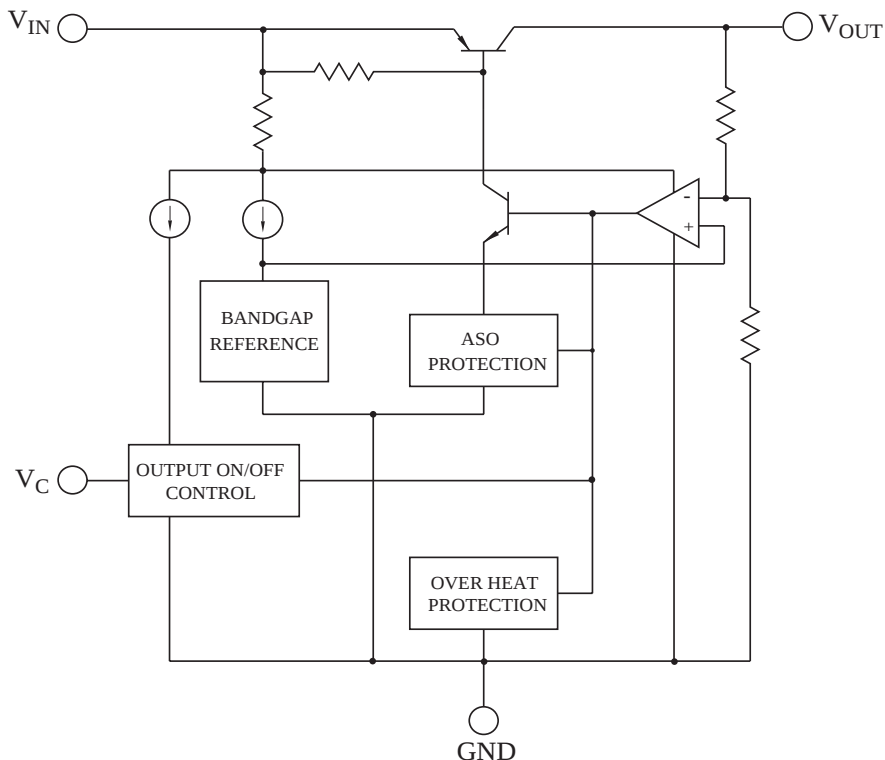


Fig. 1 Standard Test Circuit

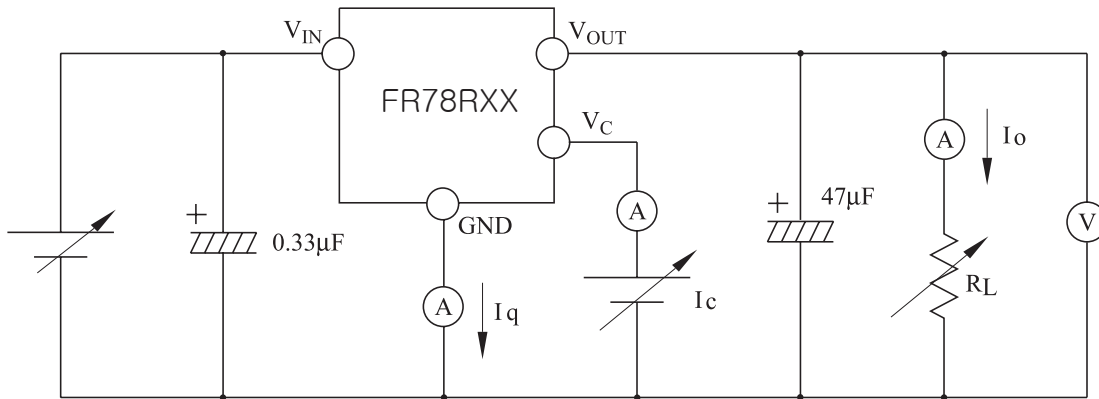


Fig. 2 Ripple Rejection Test Circuit

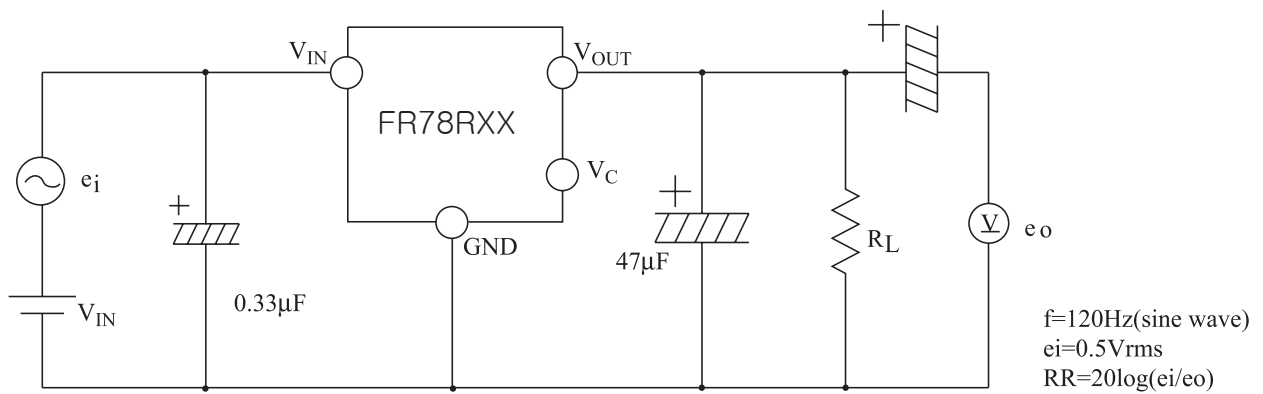


Fig. 3 Application Circuit for Standard

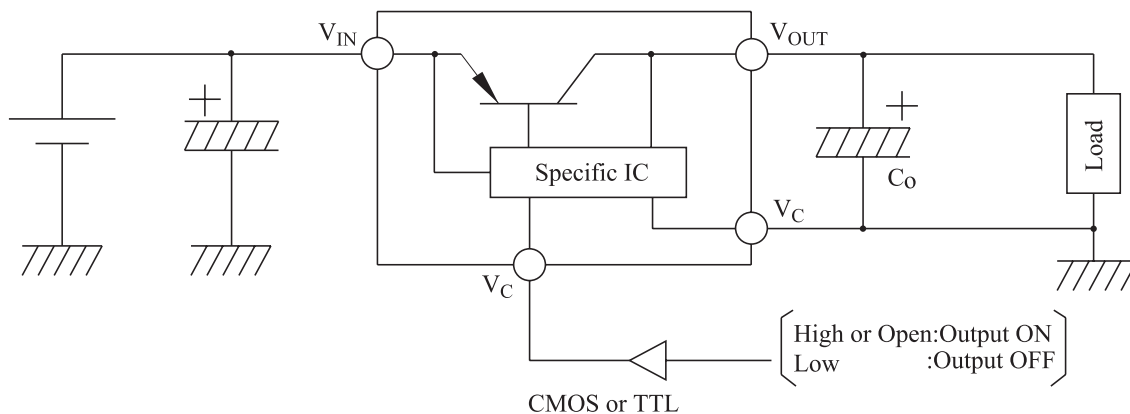


Fig.4 $P_D - T_a$ (PI-Type : TO-220IS-4)

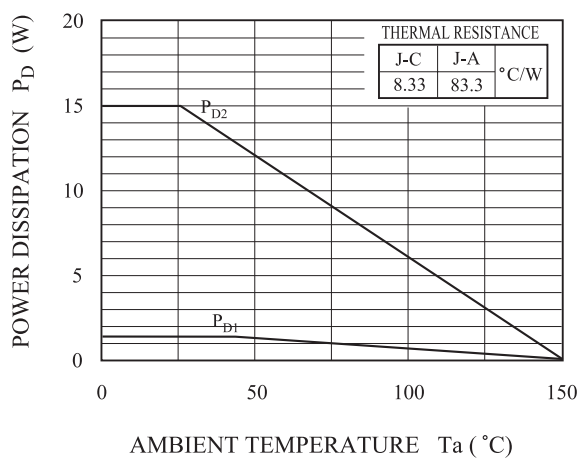


Fig. 5 $V_{OUT} - I_{OUT}$

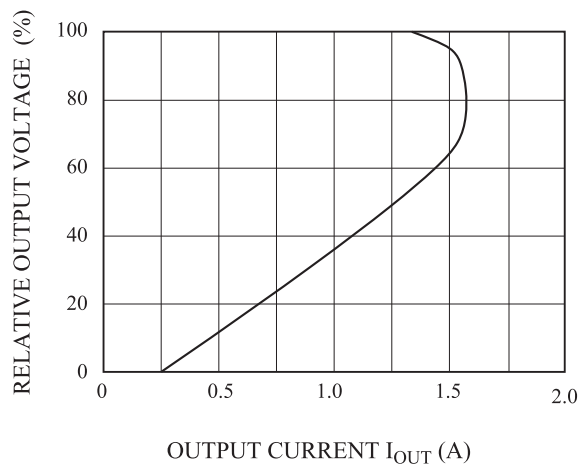


Fig. 6 $\Delta V_O - T_j$

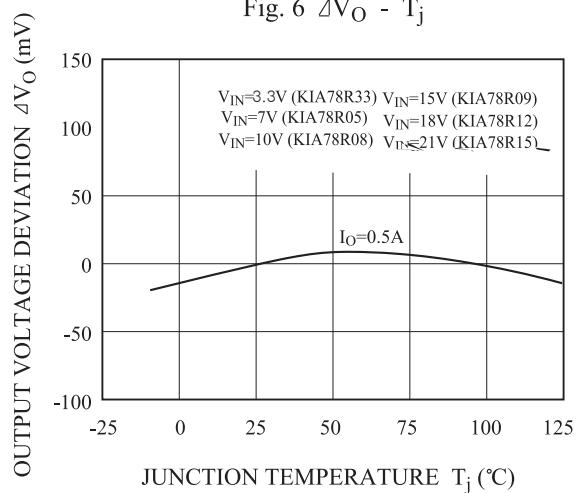


Fig. 7 $V_D - T_j$

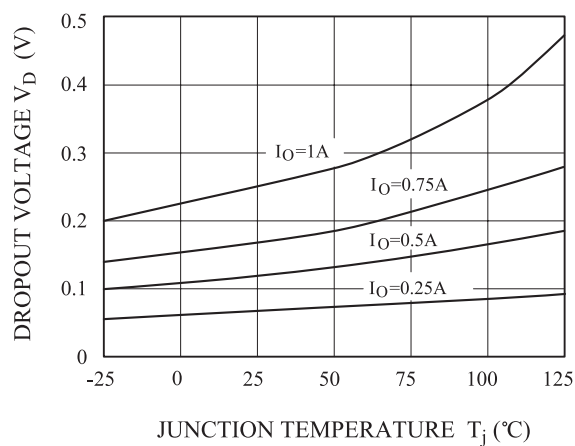


Fig. 8 $I_q - T_j$

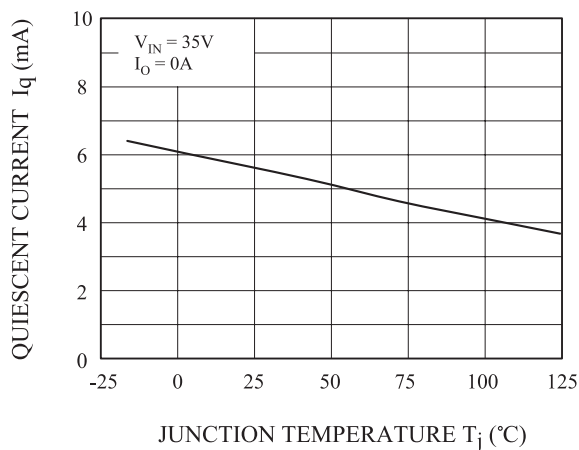


Fig. 9 R.R - f

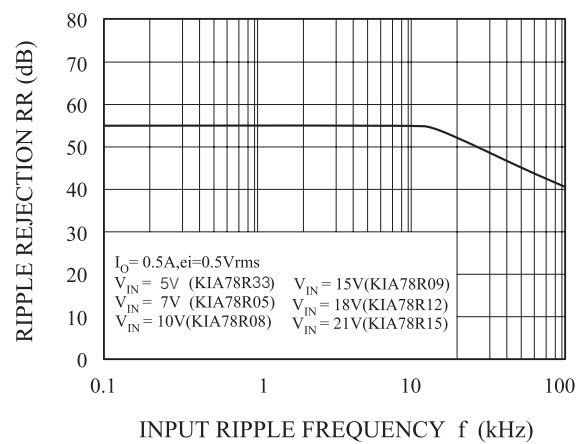


Fig. 10 R.R - I_{OUT}

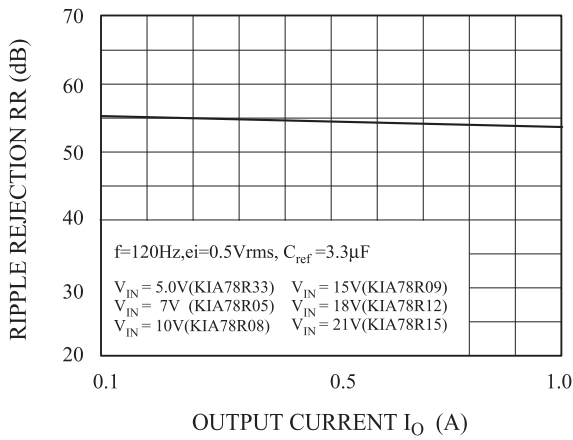


Fig. 11 V_{OUT} - V_{IN} (KIA78R05)

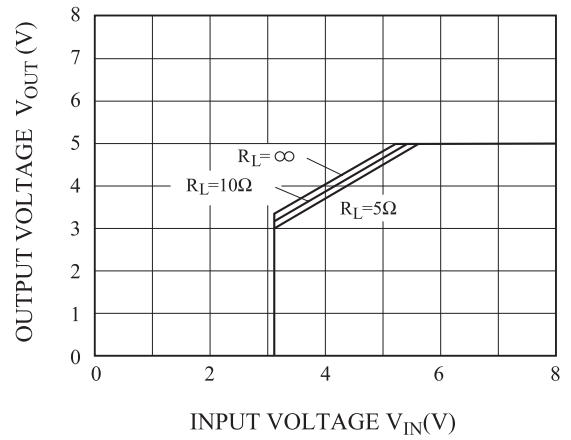


Fig. 13 V_{OUT} - V_{IN} (KIA78R08)

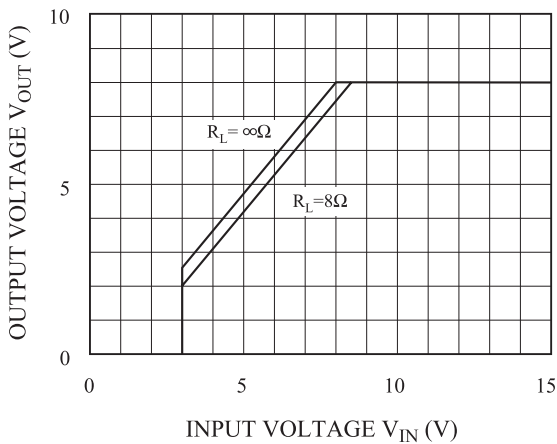


Fig. 14 V_{OUT} - V_{IN} (KIA78R09)

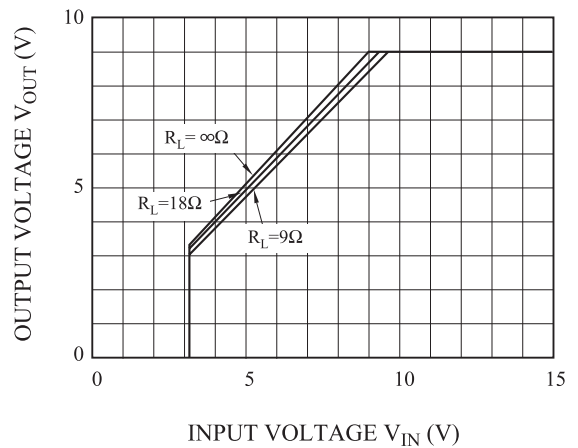


Fig. 16 V_{OUT} - V_{IN} (KIA78R12)

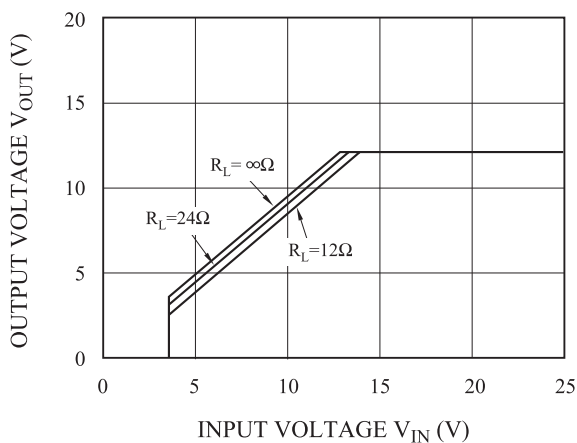


Fig. 17 V_{OUT} - V_{IN} (KIA78R15)

