

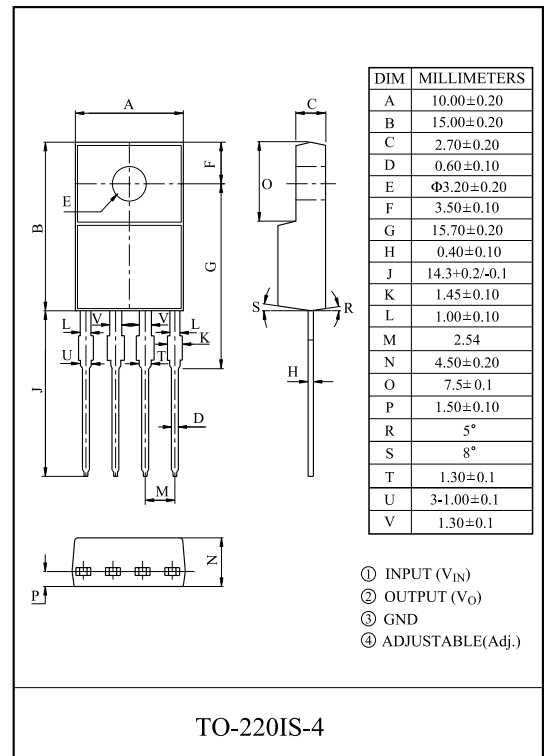
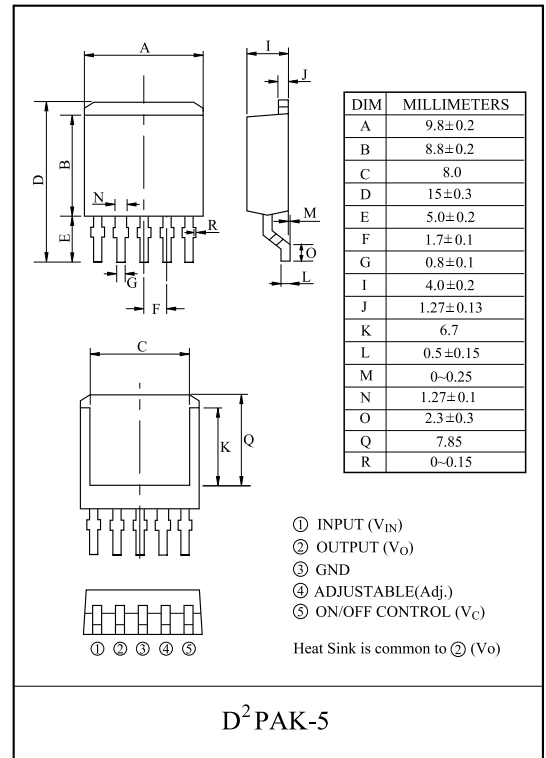
## 2A ADJUSTABLE OUTPUT LOW DROP VOLTAGE REGULATOR WITH OUTPUT ON/OFF CONTROL FUNCTION. [Low Quiescent Current Type]

### FEATURES

- 2.0A Output Low Drop Voltage Regulator.
- Very Low Dropout Voltage : 0.5V/Max. ( $I_{OUT}=2.0A$ )
- Built in ON/OFF Control Terminal. (Active High)
- Built in Over Current, Over Heat Protection Function, ASO Protection Functions.
- Low Quiescent Current (Output OFF mode) : 0.5 $\mu$ A(Typ.)
- Adjustable Output Voltage Type :  $V_{OUT}=1.5\sim 10V$
- Low Voltage Operation :  $V_{opr(min.)}=2.35V$ .

### MAXIMUM RATINGS ( $T_a=25^\circ C$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Input Voltage	$V_{IN}$	10	V
ON/OFF Control Voltage	$V_C$	10	V
Output Adjustment Terminal Voltage	$V_{ADJ}$	5	V
Output Current	$I_{OUT}$	2.0	A
Power Dissipation 1 (No heatsink)	PI	1.5	W
	FB	2.0	
Power Dissipation 2 (Infinite Heatsink)	PI	15	W
	FB	35	
Junction Temperature	$T_j$	150	$^\circ C$
Operating Temperature	$T_{opr}$	-20 ~ 80	$^\circ C$
Storage Temperature	$T_{stg}$	-30 ~ 125	$^\circ C$

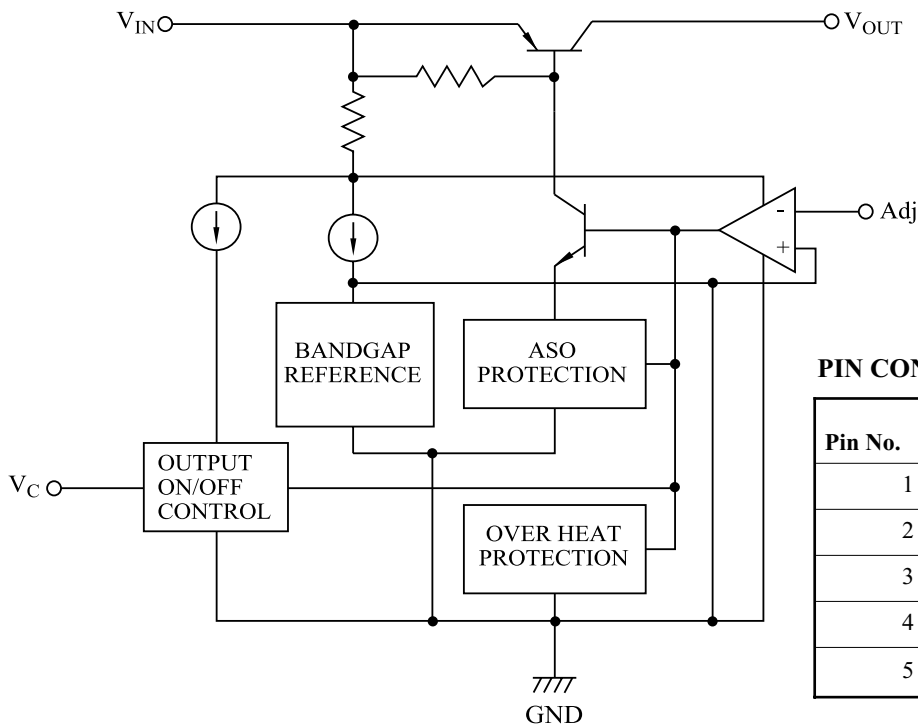


# KIA278R000FP/PI

**ELECTRICAL CHARACTERISTICS** (Unless otherwise specified,  $V_{IN}=5V$ ,  $V_O=3.3V$ ,  $I_O=1A$ ,  $R_1=1k\Omega$ ,  $T_j=25^\circ C$ )

CHARACTERISTIC	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Voltage	$V_{IN}$	-	2.35	-	10	V
Output Voltage	$V_{OUT}$	-	1.5	-	10	V
Reference Voltage	$V_{ref}$	-	1.22	1.25	1.28	V
Load Regulation	Reg Load	$I_O=5mA\sim 2A$	-	0.2	2.0	%
Line Regulation	Reg Line	$V_{IN}=V_{OUT}+1$ to 8.5V, $I_O=5mA$	-	0.2	1.0	%
Temperature Coefficient of Output Voltage	$T_C V_O$	$T_j=0\sim 125^\circ C$ , $I_O=5mA$	-	$\pm 1.0$	$\pm 20$	%
Ripple Rejection	$R \cdot R$	$I_{OUT}=0.3A$ , $f=120Hz$ , $V_{ripple}=0.5V_{rms}$ , $V_{IN}=5V$ , $V_O=3V$	45	60	-	dB
Dropout 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	$I_{C(ON)}$	$V_C=2.7V$	-	-	200	$\mu A$
Output OFF state for control Voltage	$V_{C(OFF)}$	$I_O=0$	-	-	0.8	V
Output OFF state for control Current	$I_{C(OFF)}$	$V_C=0.4V$	-	-	2.0	$\mu A$
Quiescent Current	$I_Q$	$I_O=0$	-	1	2	mA
Quiescent Current (OFF Mode)	$I_{Q(OFF)}$	$V_C=0.4V$	-	0.1	5	$\mu A$

## BLOCK DIAGRAM

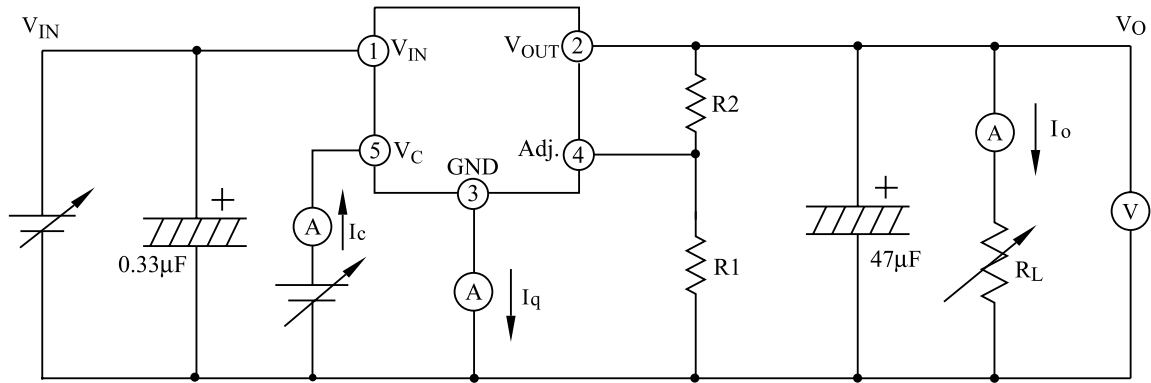


## PIN CONNECTION

Pin No.	Item	KIA278R000PI (TO-220IS-4)	KIA278R000FP (D <sup>2</sup> PAK-5)
1		$V_{IN}$	$V_{IN}$
2		$V_{OUT}$	$V_{OUT}$
3		GND	GND
4		Adj	Adj
5		-	$V_C$

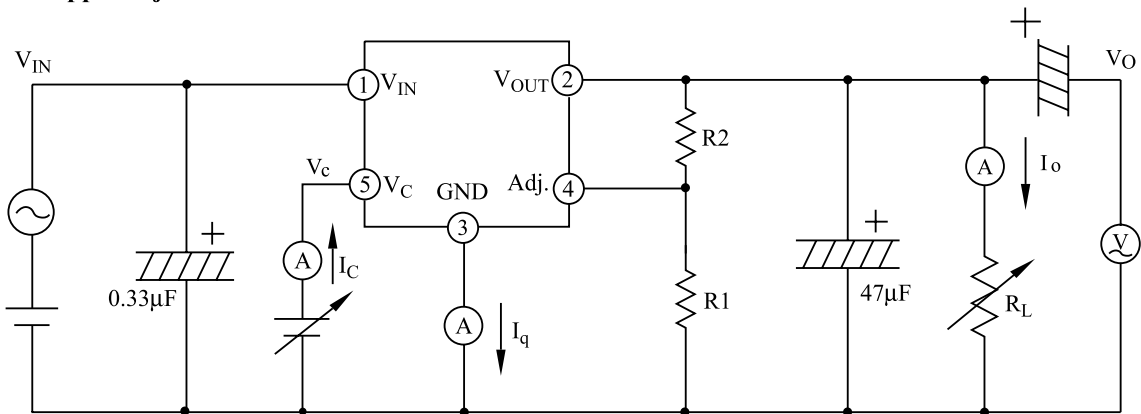
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**Fig. 1 Test Circuit**

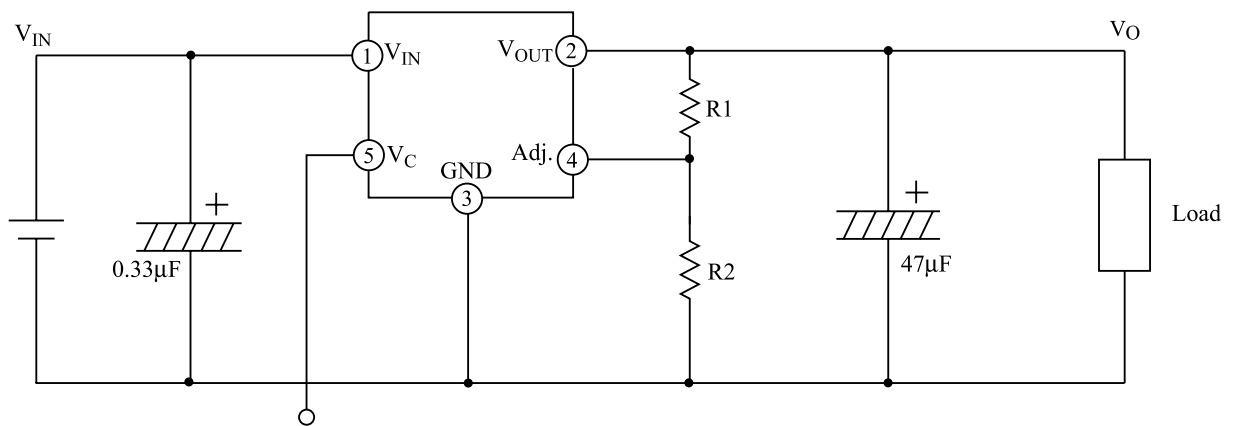


- (1)  $V_{OUT} = V_{ref} \times (1 + R_2/R_1)$ , ( $R_1 = 1k\ \Omega$ ,  $V_{ref} = 1.25V$ )
- (2) ⑤ Pin ( $V_c$ ) Terminal is only for KIA278R000FP (D<sup>2</sup>PAK-5)

**Fig. 2 Ripple Rejection Circuit**



**Fig. 3 Application Circuit for Standard**



- (1) ON/OFF Signal [ High : Output ON]  
[ Low/Open : Output OFF]
- (2)  $V_{OUT} = V_{ref} \times (1 + R_1/R_2)$ , ( $R_1 = 1k\ \Omega$ ,  $V_{ref} = 1.25V$ )
- (3) ⑤ Pin ( $V_c$ ) Terminal is only for KIA278R000FP (D<sup>2</sup>PAK-5)

Fig. 4  $I_O - V_O$

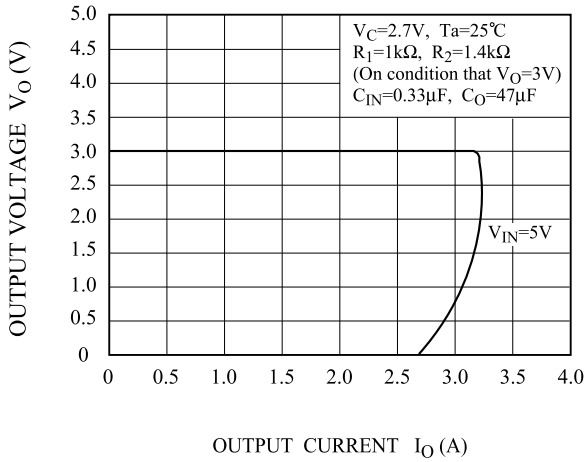


Fig. 5  $T_a - \Delta V_{REF}$

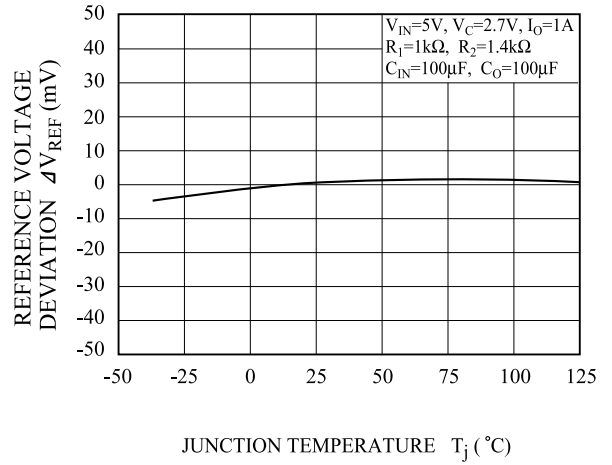


Fig. 6  $V_{IN} - V_O$

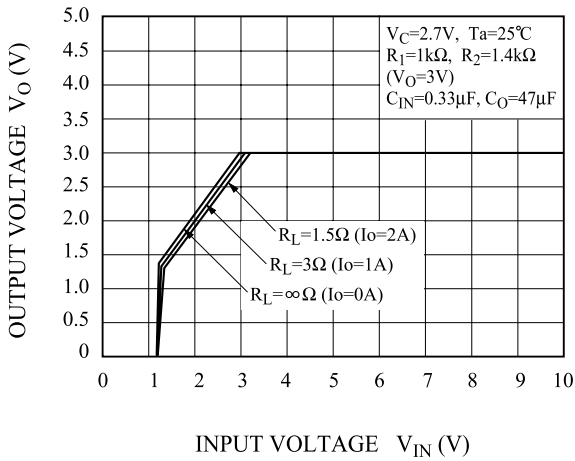


Fig. 7  $V_{IN} - I_{BIAS}$

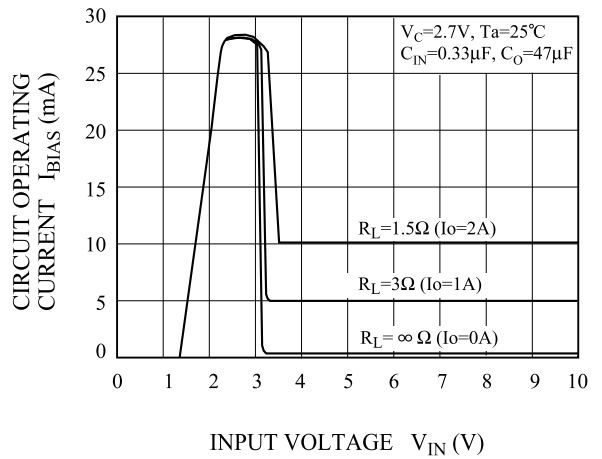


Fig. 8  $T_j - V_D$

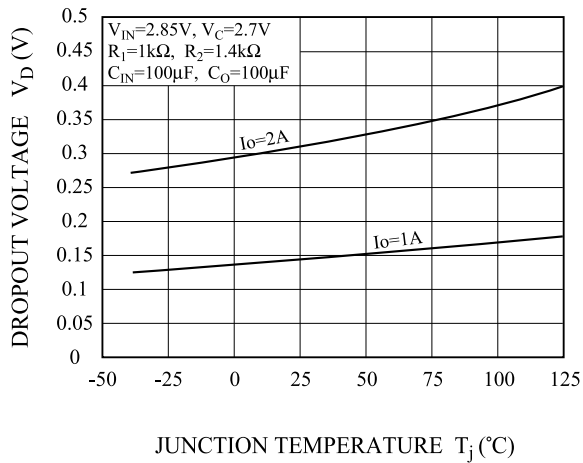
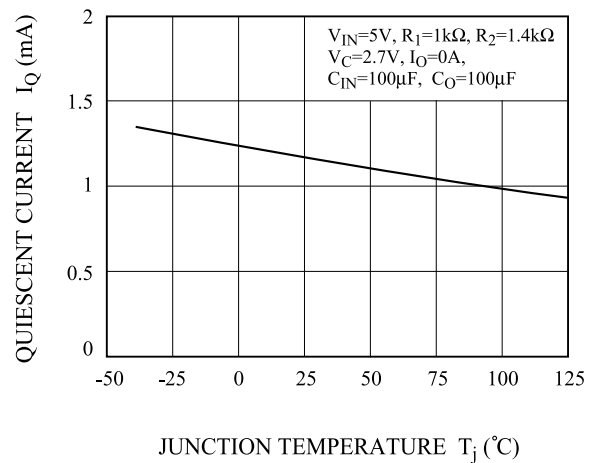


Fig. 9  $T_j - V_Q$



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Fig.10  $f_{IN}$  - R.R

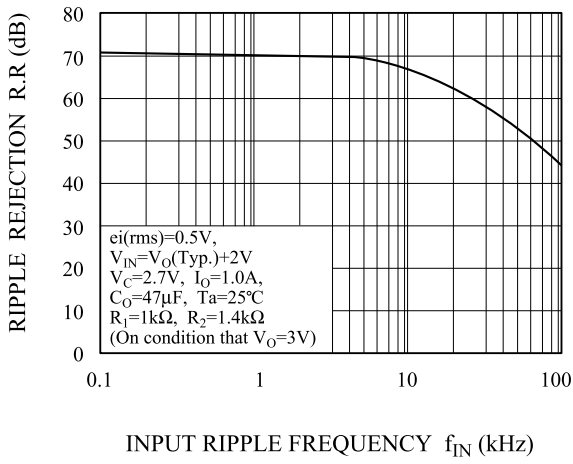


Fig. 11  $V_{IN}$  - R.R

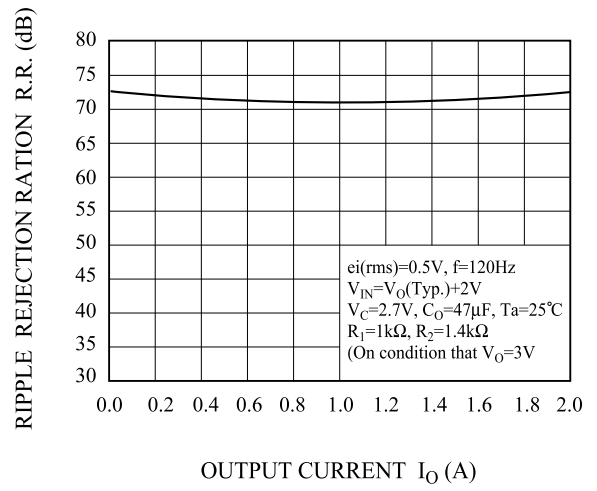


Fig. 12  $P_D$  -  $T_a$  (FP-Type : D<sup>2</sup>PAK-5)

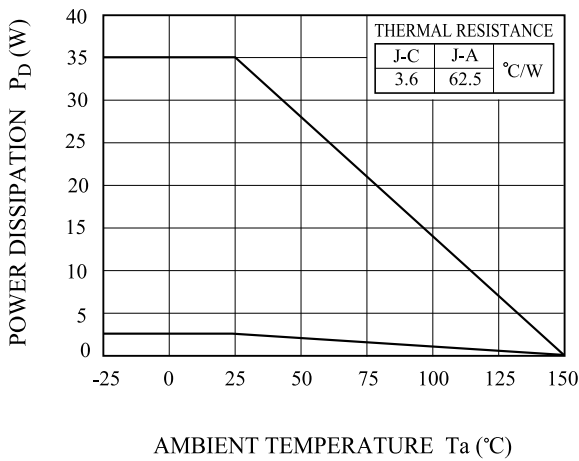


Fig.13  $P_D$  -  $T_a$  (PI-Type : TO-220IS-4)

