

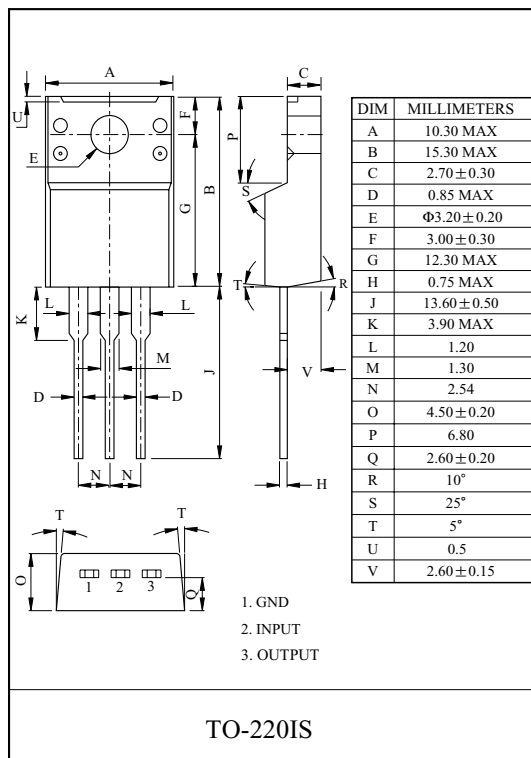
### 1A THREE TERMINAL NEGATIVE VOLTAGE REGULATORS -12V.

#### FEATURES

- Suitable for C-MOS, TTL, and the other digital IC power supply.
- Internal thermal overload protecting.
- Internal short circuit current limiting.
- Output current in excess of 1.0A.

#### LINE-UP

ITEM	OUTPUT VOLTAGE (Typ.)	UNIT
KIA7912F/PI	-12	

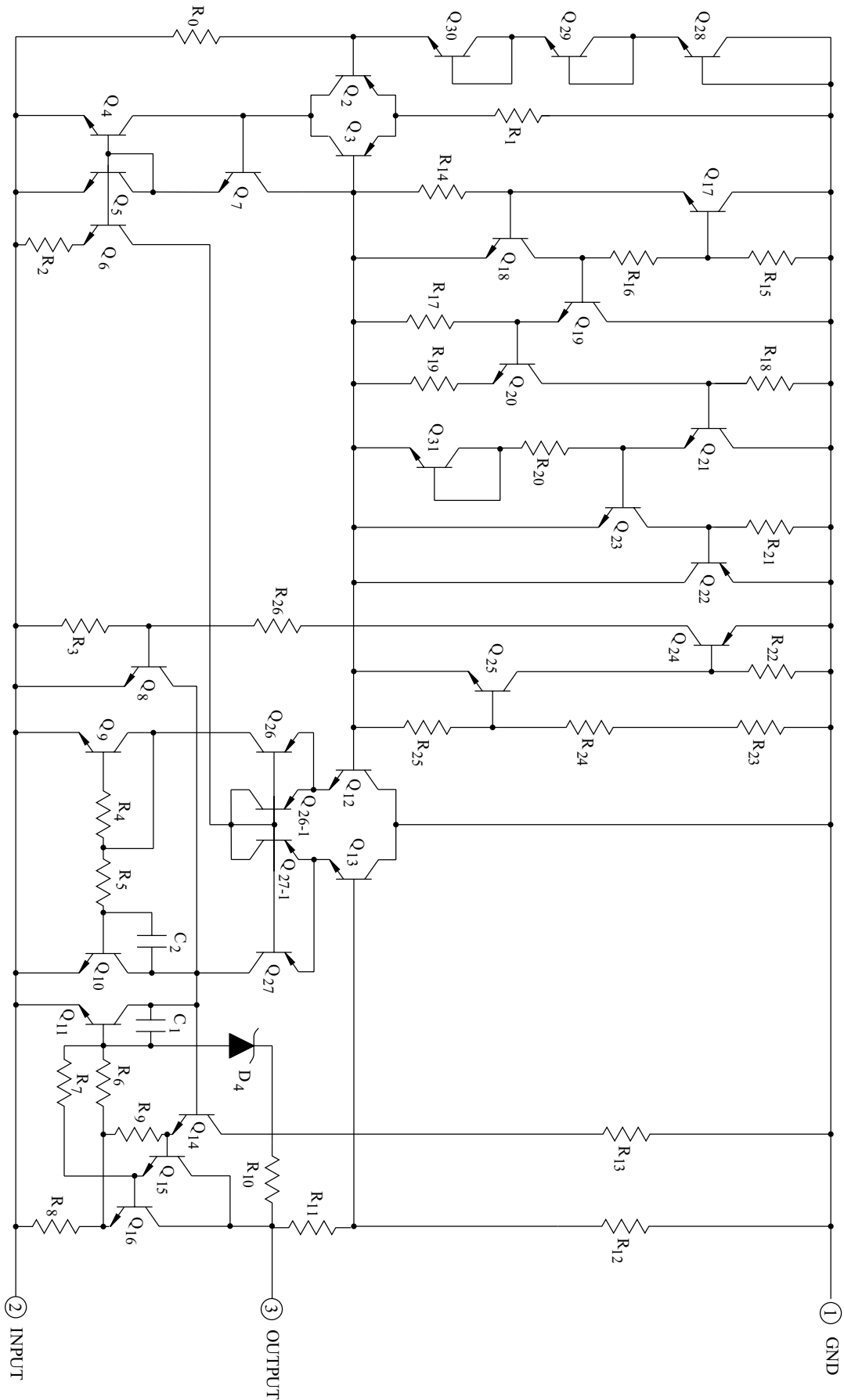


#### MAXIMUM RATINGS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Input Voltage	$V_{IN}$	-35	V
Power Dissipation-1 (No Heatsink)	PI	$P_{D1}$	2.0 W
Power Dissipation-2 (Infinite Heatsink)	PI	$P_{D2}$	20.8 W
Operating Junction Temperature	$T_j$	-30 150	
Operating Temperature	$T_{opr}$	-30 75	
Storage Temperature	$T_{stg}$	-55 150	

# KIA7912PI

## EQUIVALENT CIRCUIT



# KIA7912PI

## ELECTRICAL CHARACTERISTICS

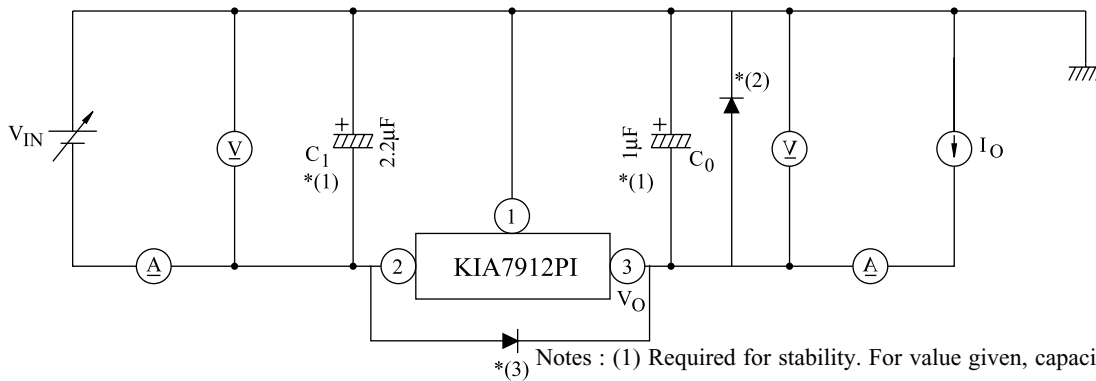
### KIA7912F/PI

(Unless otherwise specified,  $V_{IN}=-18V$ ,  $I_{OUT}=500mA$ ,  $\theta = 125$ ,  $T_j = 125$ ,  $C_{IN}=2.2 \mu F$ ,  $C_{OUT}=1 \mu F$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	$V_{OUT}$	Fig.1	$T_j=25$	-12.5	-12	-11.5	V	
Input Regulation	Reg line	Fig.1	$T_j=25$	-22V $V_{IN}$ -16V	-	6	120	mV
				-30V $V_{IN}$ -14.5V	-	12	240	
Load Regulation	Reg load	Fig.1	$T_j=25$	5mA $I_{OUT}$ 1.5A	-	12	240	mV
				250mA $I_{OUT}$ 750mA	-	4	120	
Output Voltage	$V_{OUT}$	Fig.1	-27V $V_{IN}$ -15.5V 5mA $I_{OUT}$ 1.0A	-12.6	-12	-11.4	V	
Quiescent Current	$I_B$	Fig.1	$T_j=25$	-	3	6	mA	
Quiescent Current Change	Line	Fig.1	$T_j=25$	-30V $V_{IN}$ -15V	-	0.1	1.0	mA
	Load			5mA $I_{OUT}$ 1.0A	-	0.05	0.5	
Output Noise Voltage	$V_{NO}$	Fig.2	$T_a=25$ , 10Hz $f$ 100kHz	-	200	-	$\mu V_{rms}$	
Ripple Rejection Ratio	RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit	$I_{SC}$	Fig.1	$T_j=25$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage	$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-0.8	-	mV/	
Dropout Voltage	$V_D$	Fig.1	$T_j=25$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7912PI

**Fig.1 Standard Application Circuit & Protection Circuit**



Notes : (1) Required for stability. For value given, capacitor must be solid tantalum.

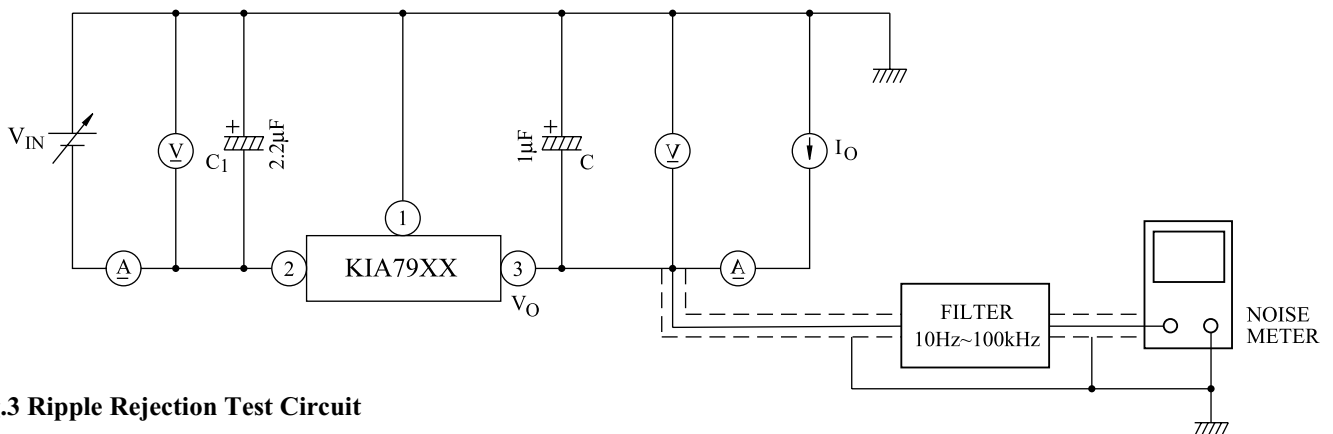
If aluminium electrolytics are used, at least

ten times value shown should be selected.  $C_1$  is required if regulator is located an appreciable distance from power supply filter.

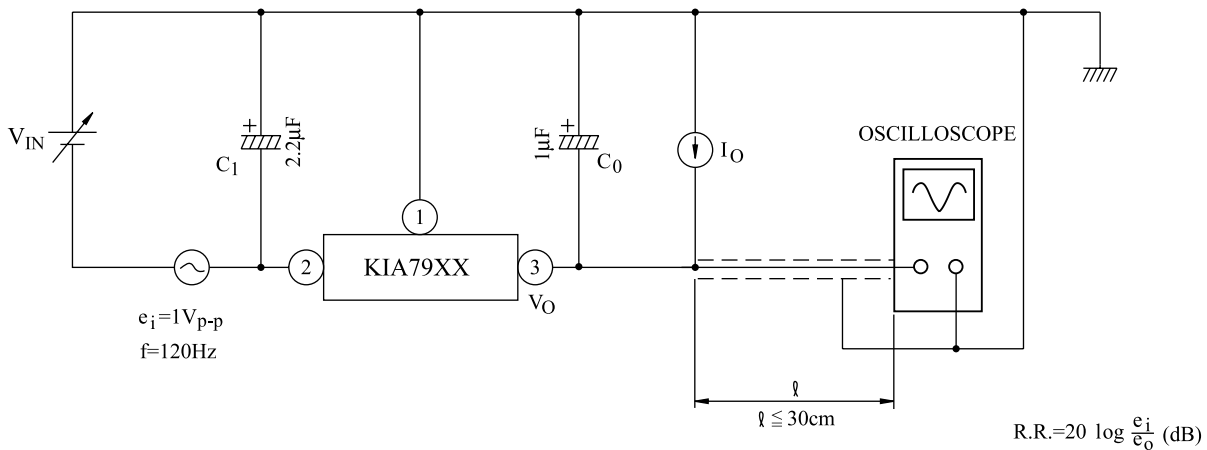
(2) This diode is used to protect the regulator from output polarity reversals before input voltage is supplied.

(3) To improve transient response. If large output capacitors are used, a high current diode from input to output

**Fig.2  $V_{NO}$  Test Circuit**



**Fig.3 Ripple Rejection Test Circuit**



# KIA7912PI

Fig. 4

$I_B - T_j$

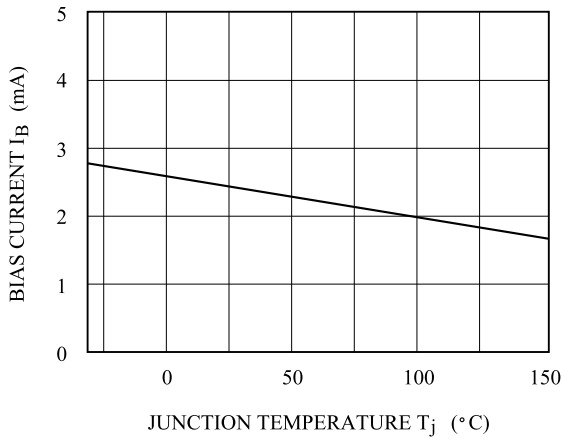


Fig. 5

$V_{OUT} - T_j$

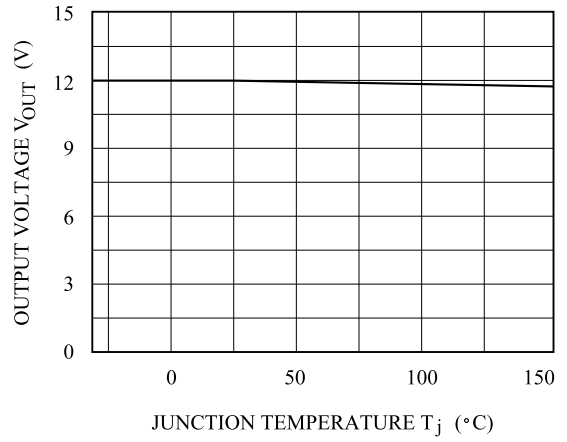


Fig. 6

RR -  $I_{OUT}$

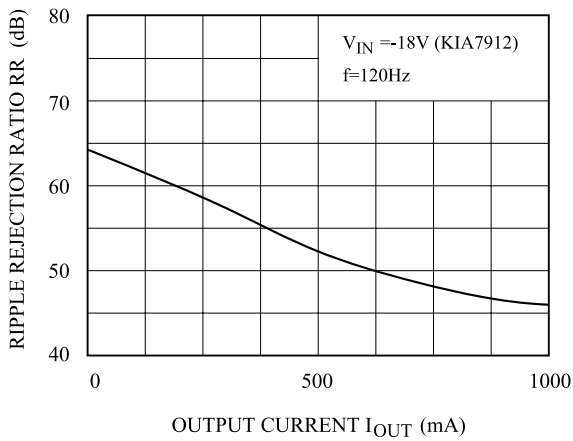


Fig. 7

$I_{SC} - V_{IN}$

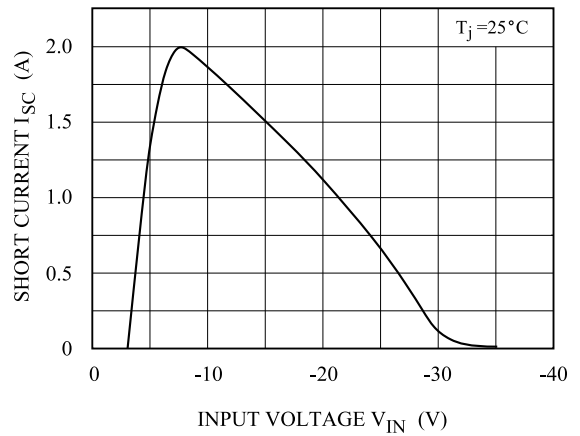


Fig. 8

$V_D - T_j$

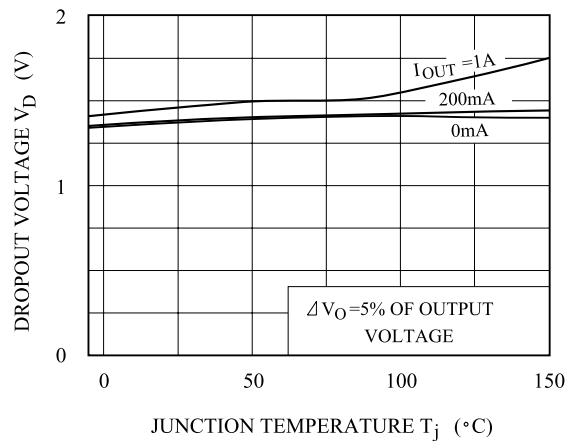
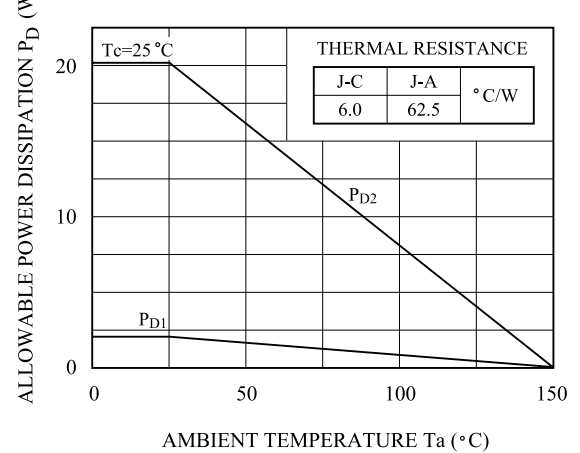


Fig. 9

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



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