

## 1A THREE TERMINAL NEGATIVE VOLTAGE REGULATORS -5V, -6V, -7V, -8V, -9V, -10V, -12V, -15V, -18V, -20V, -24V.

### FEATURES

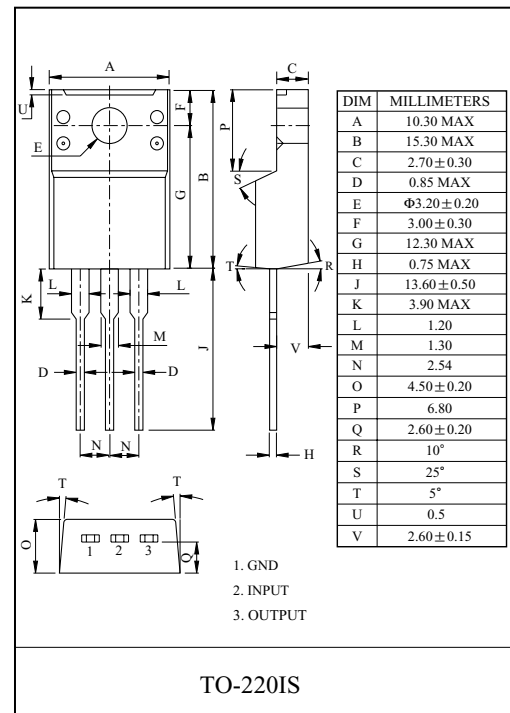
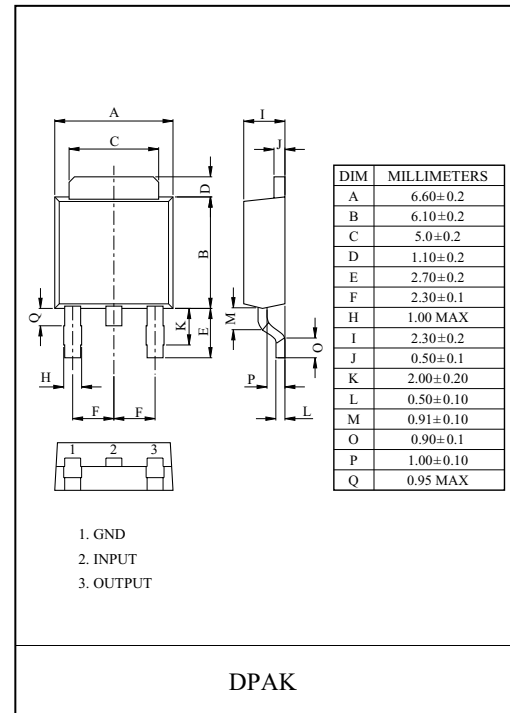
- Suitable for C-MOS, TTL, and the other digital IC power supply.
- Internal thermal overload protecting.
- Internal short circuit current limiting.
- Output current in excess of 1.0A.

### LINE-UP

ITEM	OUTPUT VOLTAGE (Typ.)	UNIT
KIA7905F/PI	-5	F : DPAK PI : TO-220IS
KIA7906F/PI	-6	
KIA7907F/PI	-7	
KIA7908F/PI	-8	
KIA7909F/PI	-9	
KIA7910F/PI	-10	
KIA7912F/PI	-12	
KIA7915F/PI	-15	
KIA7918F/PI	-18	
KIA7920F/PI	-20	
KIA7924F/PI	-24	

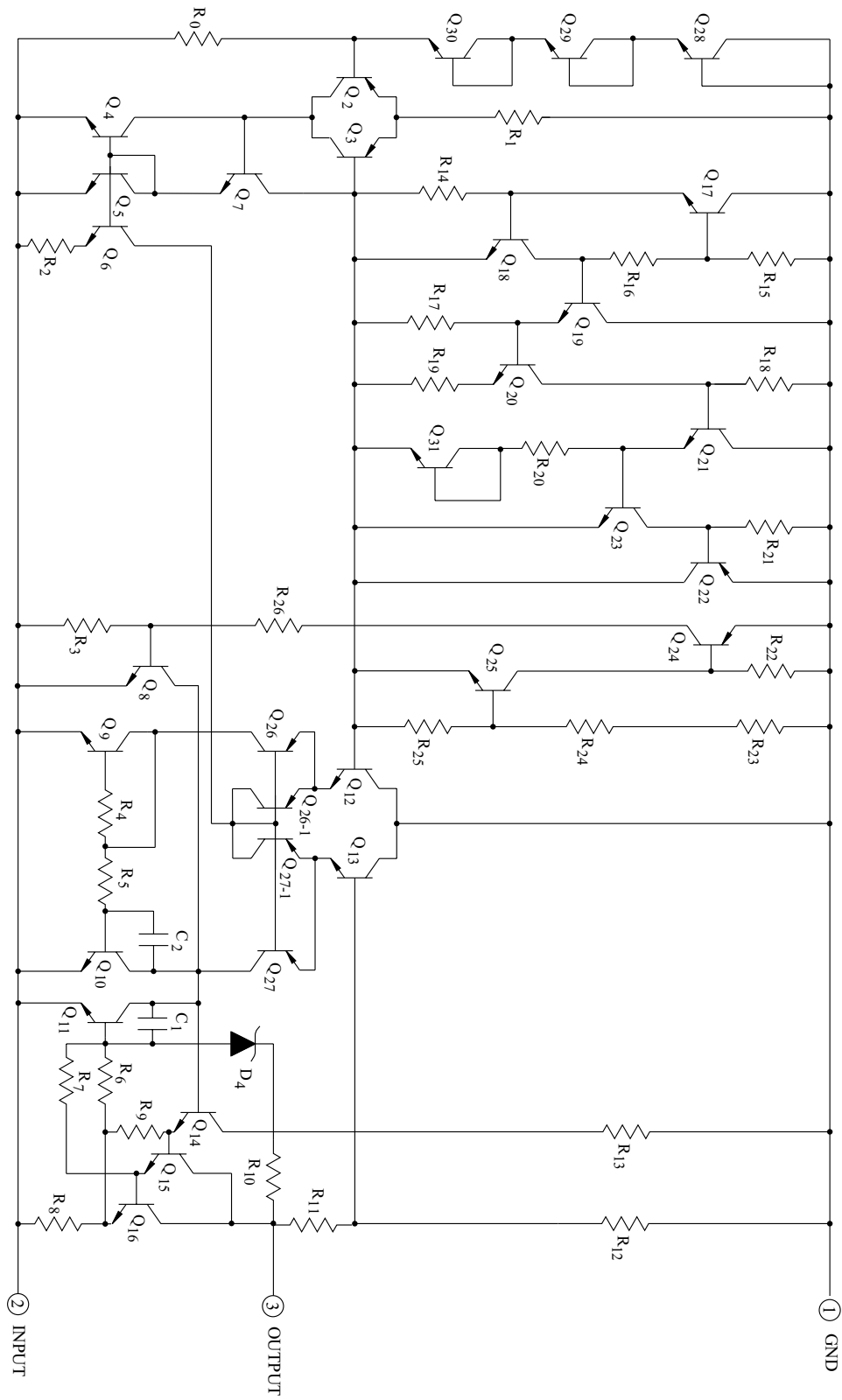
### MAXIMUM RATINGS (Ta=25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage	KIA7905~ KIA7915	V <sub>IN</sub>	-35	V
	KIA7918~ KIA7924		-40	
	Power Dissipation-1 (No Heatsink)	F PI	P <sub>D1</sub>	
Power Dissipation-2 (Infinite Heatsink)	F PI	P <sub>D2</sub>		12.0 20.8
Operating Junction Temperature			T <sub>j</sub>	-30~150
Operating Temperature		T <sub>opr</sub>	-30~75	°C
Storage Temperature		T <sub>stg</sub>	-55~150	°C



# KIA7905F/PI~KIA7924F/PI

## EQUIVALENT CIRCUIT



# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7905F/PI

(Unless otherwise specified,  $V_{IN}=-10V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-5.2	-5.0	-4.8	V	
Input Regulation	Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-12V \leq V_{IN} \leq -8V$	-	5	50	mV
				$-25V \leq V_{IN} \leq -7V$	-	10	100	
Load Regulation	Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	10	100	mV
				$250mA \leq I_{OUT} \leq 750mA$	-	3	50	
Output Voltage	$V_{OUT}$	Fig.1	$-20V \leq V_{IN} \leq -7V$ $5mA \leq I_{OUT} \leq 1.0A$	-5.25	-5.0	-4.75	V	
Quiescent Current	$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change	$\Delta I_{BI}$	Fig.1	$-25V \leq V_{IN} \leq -8V$ $5mA \leq I_{OUT} \leq 1.0A$	-	0.1	1.3	mA	
	$\Delta I_{BO}$			-	0.05	0.5		
Output Noise Voltage	$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	100	-	$\mu V_{rms}$	
Ripple Rejection Ratio	RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit	$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage	$T_{CVO}$	Fig.1	$I_{OUT}=5.0mA$	-	-0.4	-	mV/ $^{\circ}C$	
Dropout Voltage	$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7906F/PI

(Unless otherwise specified,  $V_{IN}=-11V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage		$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-6.25	-6.0	-5.75	V	
Input Regulation		Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-13V \leq V_{IN} \leq -9V$	-	5	60	mV
					$-25V \leq V_{IN} \leq -8V$	-	10	120	
Load Regulation		Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	10	120	mV
					$250mA \leq I_{OUT} \leq 750mA$	-	3	60	
Output Voltage		$V_{OUT}$	Fig.1	$-21V \leq V_{IN} \leq -9V$ $5mA \leq I_{OUT} \leq 1.0A$	-6.3	-6.0	-5.7	V	
Quiescent Current		$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change		Line	Fig.1	$-25V \leq V_{IN} \leq -9V$	-	-	1.3	mA	
		Load							$5mA \leq I_{OUT} \leq 1.0A$
Output Noise Voltage		$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	130	-	$\mu V_{rms}$	
Ripple Rejection Ratio		RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit		$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage		$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-0.5	-	mV/ $^{\circ}C$	
Dropout Voltage		$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7907F/PI

(Unless otherwise specified,  $V_{IN}=-12V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage		$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-7.28	-7.0	-6.72	V	
Input Regulation		Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-15V \leq V_{IN} \leq -10V$	-	10	70	mV
					$-25V \leq V_{IN} \leq -9V$	-	45	140	
Load Regulation		Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	20	140	mV
					$250mA \leq I_{OUT} \leq 750mA$	-	7	70	
Output Voltage		$V_{OUT}$	Fig.1	$-22V \leq V_{IN} \leq -9V$ $5mA \leq I_{OUT} \leq 1.0A$	-7.35	-	-6.65	V	
Quiescent Current		$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	4.3	8.0	mA	
Quiescent Current Change		Line	Fig.1	$-25V \leq V_{IN} \leq -9V$ $5mA \leq I_{OUT} \leq 1.0A$	-	-	1.0	mA	
		Load					0.5		
Output Noise Voltage		$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	49	-	$\mu V_{rms}$	
Ripple Rejection Ratio		RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	60	67	-	dB	
Short Circuit Current Limit		$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage		$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	0.9	-	mV/ $^{\circ}C$	
Dropout Voltage		$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7908F/PI

(Unless otherwise specified,  $V_{IN}=-14V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-8.3	-8.0	-7.7	V	
Input Regulation	Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-17V \leq V_{IN} \leq -11V$	-	5	80	mV
				$-25V \leq V_{IN} \leq -10.5V$	-	10	100	
Load Regulation	Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	12	160	mV
				$250mA \leq I_{OUT} \leq 750mA$	-	4	80	
Output Voltage	$V_{OUT}$	Fig.1	$-23V \leq V_{IN} \leq -11.5V$ $5mA \leq I_{OUT} \leq 1.0A$	-8.4	-8.0	-7.6	V	
Quiescent Current	$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change	Line	Fig.1	$-25V \leq V_{IN} \leq -11.5V$ $5mA \leq I_{OUT} \leq 1.0A$	-	0.1	1.0	mA	
	Load			-	0.05	0.5		
Output Noise Voltage	$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	175	-	$\mu V_{rms}$	
Ripple Rejection Ratio	RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit	$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage	$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-0.6	-	mV/ $^{\circ}C$	
Dropout Voltage	$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7909F/PI

(Unless otherwise specified,  $V_{IN}=-15V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-9.3	-9.0	-8.7	V	
Input Regulation	Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-19V \leq V_{IN} \leq -13V$	-	5	90	mV
				$-26V \leq V_{IN} \leq -11.5V$	-	10	100	
Load Regulation	Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	10	150	mV
				$250mA \leq I_{OUT} \leq 750mA$	-	5	120	
Output Voltage	$V_{OUT}$	Fig.1	$-24V \leq V_{IN} \leq -11.5V$ $5mA \leq I_{OUT} \leq 1.0A$	-9.4	-9.0	-8.6	V	
Quiescent Current	$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change	Line	Fig.1	$-26.5V \leq V_{IN} \leq -13V$ $5mA \leq I_{OUT} \leq 1.0A$	-	0.1	1.0	mA	
	Load			-	0.05	0.5		
Output Noise Voltage	$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	180	-	$\mu V_{rms}$	
Ripple Rejection Ratio	RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit	$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage	$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-0.7	-	mV/ $^{\circ}C$	
Dropout Voltage	$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7910F/PI

(Unless otherwise specified,  $V_{IN}=-16V$ ,  $I_{OUT}=500mA$ ,  $0^{\circ}C \leq T_j \leq 125^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	$V_{OUT}$	Fig.1	$T_j=25^{\circ}C$	-10.4	-10	-9.6	V	
Input Regulation	Reg line	Fig.1	$T_j=25^{\circ}C$	$-20V \leq V_{IN} \leq -14V$	-	5	100	mV
				$-27V \leq V_{IN} \leq -12.5V$	-	10	110	
Load Regulation	Reg load	Fig.1	$T_j=25^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	10	180	mV
				$250mA \leq I_{OUT} \leq 750mA$	-	6	120	
Output Voltage	$V_{OUT}$	Fig.1	$-25V \leq V_{IN} \leq -12.5V$ $5mA \leq I_{OUT} \leq 1.0A$	-10.5	-10	-9.5	V	
Quiescent Current	$I_B$	Fig.1	$T_j=25^{\circ}C$	-	3	6	mA	
Quiescent Current Change	Line	Fig.1	$-27.5V \leq V_{IN} \leq -14V$	-	0.1	1.0	mA	
	Load							$5mA \leq I_{OUT} \leq 1.0A$
Output Noise Voltage	$V_{NO}$	Fig.2	$T_a=25^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	190	-	$\mu V_{rms}$	
Ripple Rejection Ratio	RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$	54	60	-	dB	
Short Circuit Current Limit	$I_{SC}$	Fig.1	$T_j=25^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage	$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-0.7	-	mV/ $^{\circ}C$	
Dropout Voltage	$V_D$	Fig.1	$T_j=25^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	



# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7912F/PI

(Unless otherwise specified,  $V_{IN}=-18V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage		$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-12.5	-12	-11.5	V	
Input Regulation		Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-22V \leq V_{IN} \leq -16V$	-	6	120	mV
					$-30V \leq V_{IN} \leq -14.5V$	-	12	240	
Load Regulation		Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	12	240	mV
					$250mA \leq I_{OUT} \leq 750mA$	-	4	120	
Output Voltage		$V_{OUT}$	Fig.1	$-27V \leq V_{IN} \leq -15.5V$ $5mA \leq I_{OUT} \leq 1.0A$	-12.6	-12	-11.4	V	
Quiescent Current		$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change		Line	Fig.1	$-30V \leq V_{IN} \leq -15V$	-	0.1	1.0	mA	
		Load							$5mA \leq I_{OUT} \leq 1.0A$
Output Noise Voltage		$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	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	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage		$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-0.8	-	mV/ $^{\circ}C$	
Dropout Voltage		$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7915F/PI

(Unless otherwise specified,  $V_{IN}=-23V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage		$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-15.6	-15	-14.4	V	
Input Regulation		Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-26V \leq V_{IN} \leq -20V$	-	6	150	mV
					$-30V \leq V_{IN} \leq -17.5V$	-	12	300	
Load Regulation		Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	12	300	mV
					$250mA \leq I_{OUT} \leq 750mA$	-	4	150	
Output Voltage		$V_{OUT}$	Fig.1	$-30V \leq V_{IN} \leq -18V$ $5mA \leq I_{OUT} \leq 1.0A$	-15.75	-15	-14.25	V	
Quiescent Current		$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change		Line	Fig.1	$-30V \leq V_{IN} \leq -17.5V$	-	0.1	1.0	mA	
		Load							$5mA \leq I_{OUT} \leq 1.0A$
Output Noise Voltage		$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	250	-	$\mu V_{rms}$	
Ripple Rejection Ratio		RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit		$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage		$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-0.9	-	mV/ $^{\circ}C$	
Dropout Voltage		$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7918F/PI

(Unless otherwise specified,  $V_{IN}=-27V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage		$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-18.7	-18	-17.3	V	
Input Regulation		Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-30V \leq V_{IN} \leq -24V$	-	8	180	mV
					$-33V \leq V_{IN} \leq -21V$	-	15	360	
Load Regulation		Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	15	360	mV
					$250mA \leq I_{OUT} \leq 750mA$	-	5	180	
Output Voltage		$V_{OUT}$	Fig.1	$-33V \leq V_{IN} \leq -22.5V$ $5mA \leq I_{OUT} \leq 1.0A$	-18.85	-18	-17.15	V	
Quiescent Current		$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change		Line	Fig.1	$-33V \leq V_{IN} \leq -22V$ $5mA \leq I_{OUT} \leq 1.0A$	-	-	1.0	mA	
		Load							$\Delta I_{BO}$
Output Noise Voltage		$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	300	-	$\mu V_{rms}$	
Ripple Rejection Ratio		RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit		$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage		$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-1.0	-	mV/ $^{\circ}C$	
Dropout Voltage		$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

# KIA7905F/PI~KIA7924F/PI

## ELECTRICAL CHARACTERISTICS

### KIA7920F/PI

(Unless otherwise specified,  $V_{IN}=-30V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=1\mu F$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-20.8	-20	-19.2	V	
Input Regulation	Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-32V \leq V_{IN} \leq -26V$	-	10	180	mV
				$-35V \leq V_{IN} \leq -24V$	-	18	360	
Load Regulation	Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	18	360	mV
				$250mA \leq I_{OUT} \leq 750mA$	-	10	180	
Output Voltage	$V_{OUT}$	Fig.1	$-35V \leq V_{IN} \leq -24$ $5mA \leq I_{OUT} \leq 1.0A$	-21.0	-20	-19.0	V	
Quiescent Current	$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change	Line	Fig.1	$-36.5V \leq V_{IN} \leq -25V$ $5mA \leq I_{OUT} \leq 1.0A$	-	-	1.0	mA	
	Load			-	-	0.5		
Output Noise Voltage	$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	350	-	$\mu V_{rms}$	
Ripple Rejection Ratio	RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$	54	60	-	dB	
Short Circuit Current Limit	$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage	$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-1.0	-	mV/ $^{\circ}C$	
Dropout Voltage	$V_D$	Fig.1	$T_j=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

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## ELECTRICAL CHARACTERISTICS

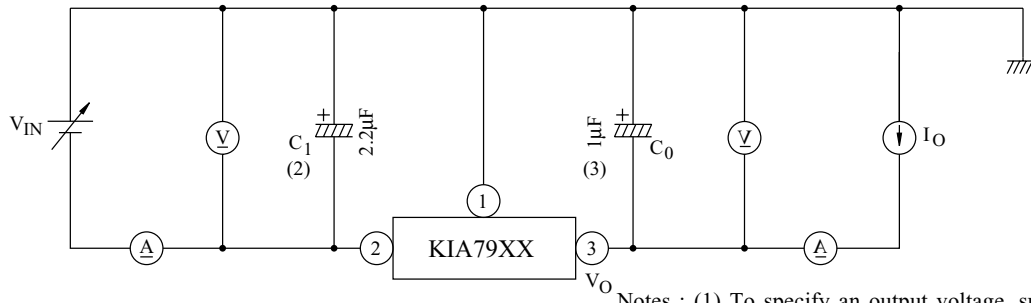
### KIA7924F/PI

(Unless otherwise specified,  $V_{IN}=-33V$ ,  $I_{OUT}=500mA$ ,  $0\text{ }^{\circ}C \leq T_j \leq 125\text{ }^{\circ}C$ ,  $C_{IN}=0.33\mu F$ ,  $C_{OUT}=0.1\mu F$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	$V_{OUT}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-25	-24	-23	V	
Input Regulation	Reg line	Fig.1	$T_j=25\text{ }^{\circ}C$	$-36V \leq V_{IN} \leq -30V$	-	8	240	mV
				$-38V \leq V_{IN} \leq -27V$	-	15	480	
Load Regulation	Reg load	Fig.1	$T_j=25\text{ }^{\circ}C$	$5mA \leq I_{OUT} \leq 1.5A$	-	15	480	mV
				$250mA \leq I_{OUT} \leq 750mA$	-	5	240	
Output Voltage	$V_{OUT}$	Fig.1	$-38V \leq V_{IN} \leq -27V$ $5mA \leq I_{OUT} \leq 1.0A$	-25.2	-24	-22.5	V	
Quiescent Current	$I_B$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	3	6	mA	
Quiescent Current Change	Line	Fig.1	$-38V \leq V_{IN} \leq -27V$ $5mA \leq I_{OUT} \leq 1.0A$	-	-	1.0	mA	
	Load			-	-	0.5		
Output Noise Voltage	$V_{NO}$	Fig.2	$T_a=25\text{ }^{\circ}C$ , $10Hz \leq f \leq 100kHz$	-	400	-	$\mu V_{rms}$	
Ripple Rejection Ratio	RR	Fig.3	$f=120Hz$ , $I_{OUT}=20mA$ ,	54	60	-	dB	
Short Circuit Current Limit	$I_{SC}$	Fig.1	$T_j=25\text{ }^{\circ}C$	-	1.9	-	A	
Average Temperature Coefficient of Output Voltage	$T_{CVO}$	Fig.1	$I_{OUT}=5mA$	-	-1.0	-	mV/ $^{\circ}C$	
Dropout Voltage	$V_D$	Fig.1	$T_a=25\text{ }^{\circ}C$ , $I_{OUT}=1A$	-	2.0	-	V	

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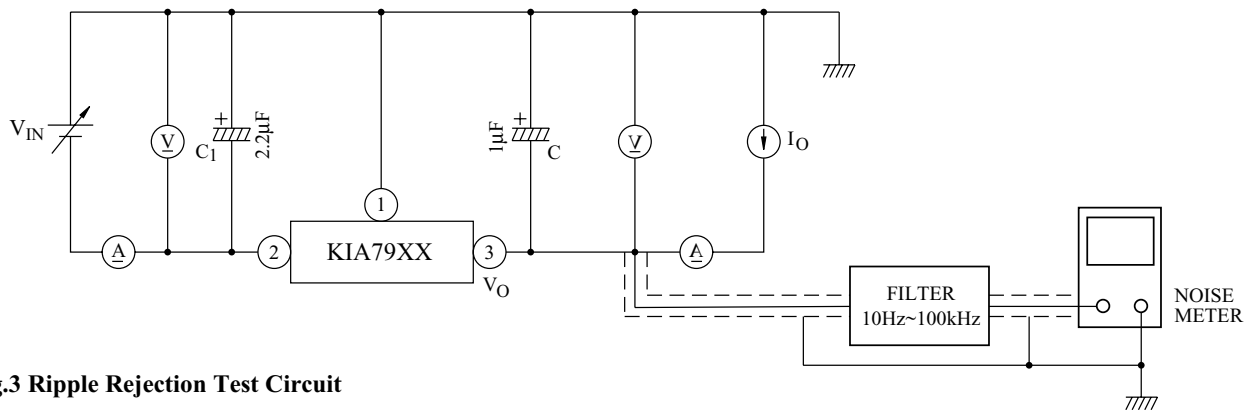
**Fig.1 Standard Test Circuit**



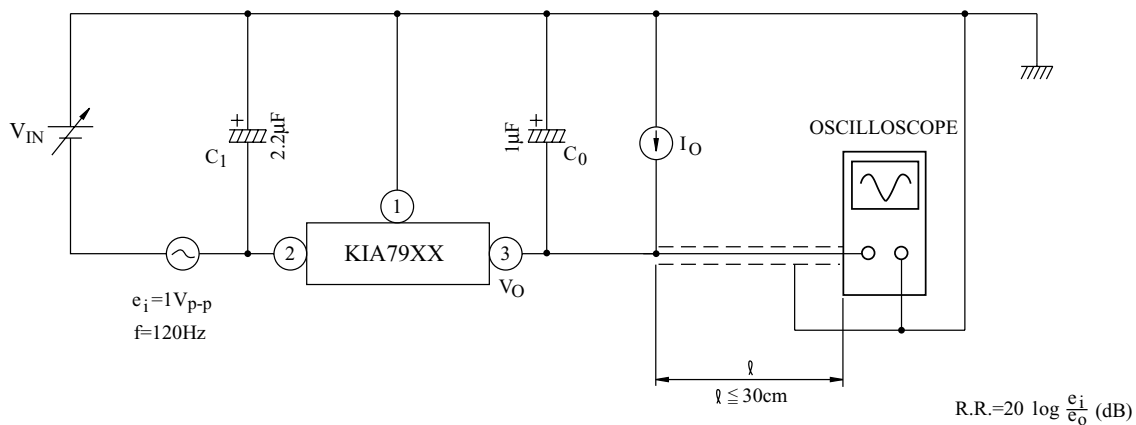
Notes : (1) To specify an output voltage, substitute voltage value for "XX"

- (2) 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.
- (3) To improve transient response. If large capacitors are used, a high current diode from input to output

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



**Fig.3 Ripple Rejection Test Circuit**



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Fig. 4  $I_B - T_j$

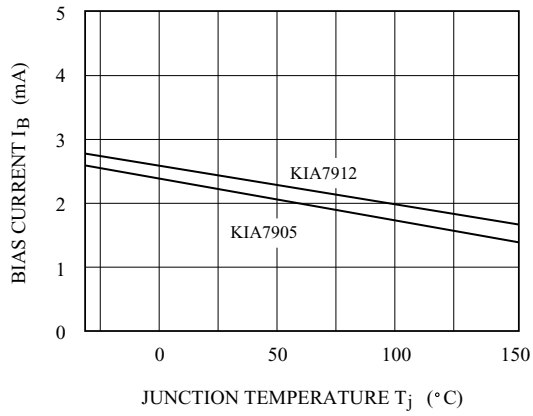


Fig. 5  $V_{OUT} - T_j$

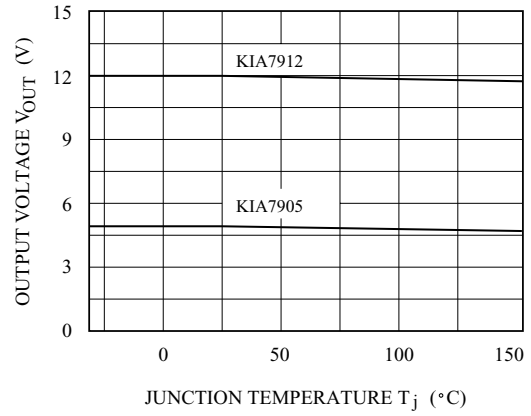


Fig. 6  $RR - I_{OUT}$

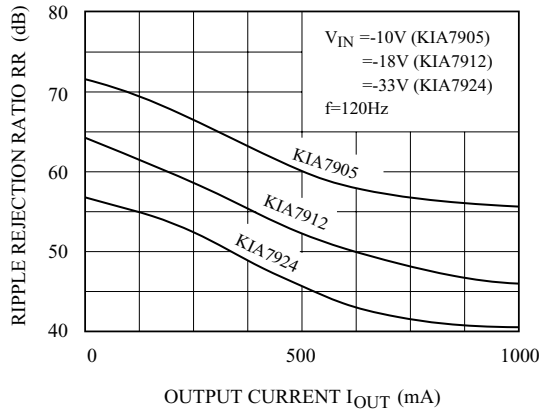


Fig. 7  $I_{SC} - V_{IN}$

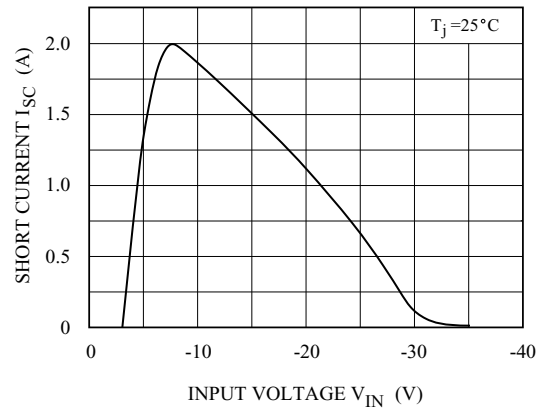


Fig. 8  $V_D - T_j$

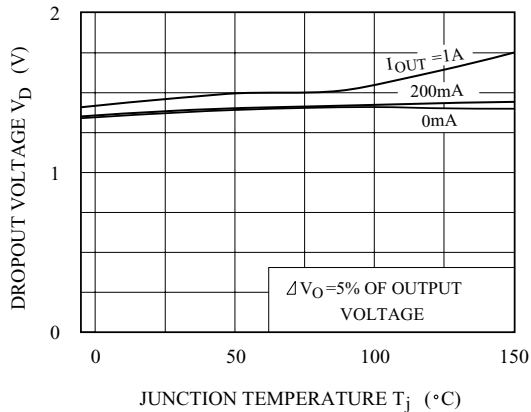
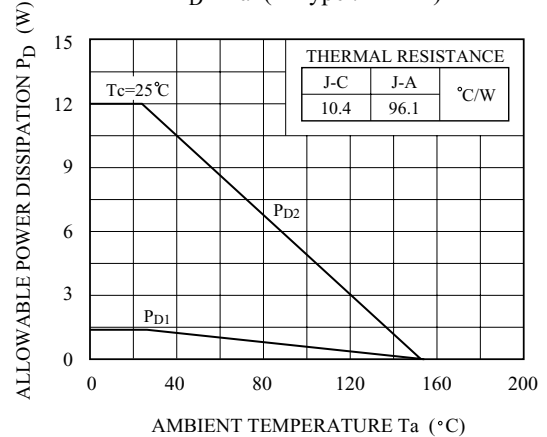


Fig. 9  $P_D - T_a$  (F-Type : DPAK)



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