

### 3 TERMINAL LOW DROP OUTPUT VOLTAGE REGULATOR

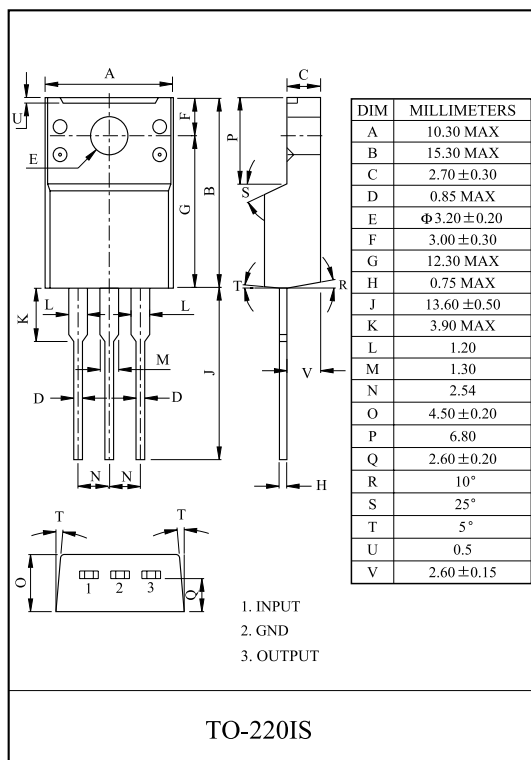
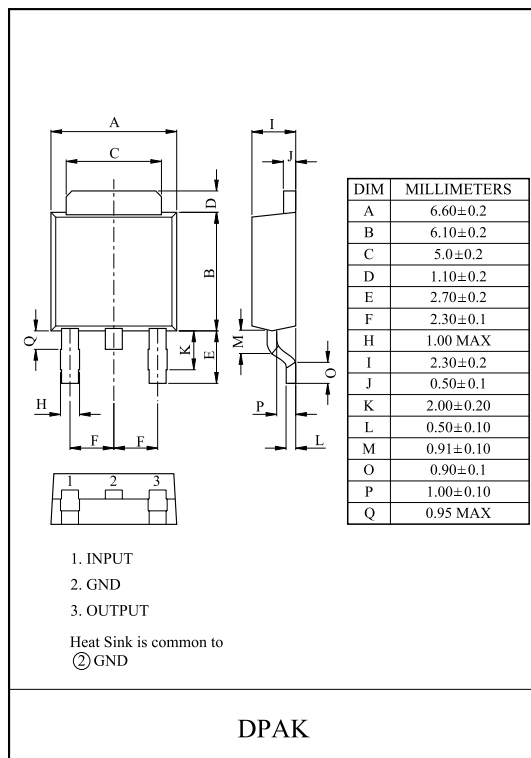
The KIA78D × × Series are fixed positive output low dropout type, 3-pin voltage regulators with positive output. These regulators are used to provide a stabilized output voltage from a fluctuating DC input voltage. These are 12 fixed output voltage, as follows ; 2.5V, 3.3V, 3.5V, 5V, 6V, 8V, 9V, 10V, 12V, and 15V. The maximum current capacity is 1A for each of the above voltage.

#### FEATURES

- Built in over voltage protection circuit, over current protection circuit and thermal shut down circuit.
- Richly diverse Lineup.
- Low minimum I/O voltage differential.
- Suffix U : Qualified to AEC-Q100(Grade 3)
  - : Automotive and standard product are electrically and thermally the same, except where specified. ex) KIA78D\*\*F-RTF/PU.

#### LINE UP

ITEM	OUTPUT VOLTAGE (Typ.)	UNIT	PACKAGE
KIA78D25F/PI	2.5	V	F : DPAK PI : TO-220IS
KIA78D33F/PI	3.3		
KIA78D35F/PI	3.5		
KIA78D05F/PI	5		
KIA78D06F/PI	6		
KIA78D08F/PI	8		
KIA78D09F/PI	9		
KIA78D10F/PI	10		
KIA78D12F/PI	12		
KIA78D15F/PI	15		

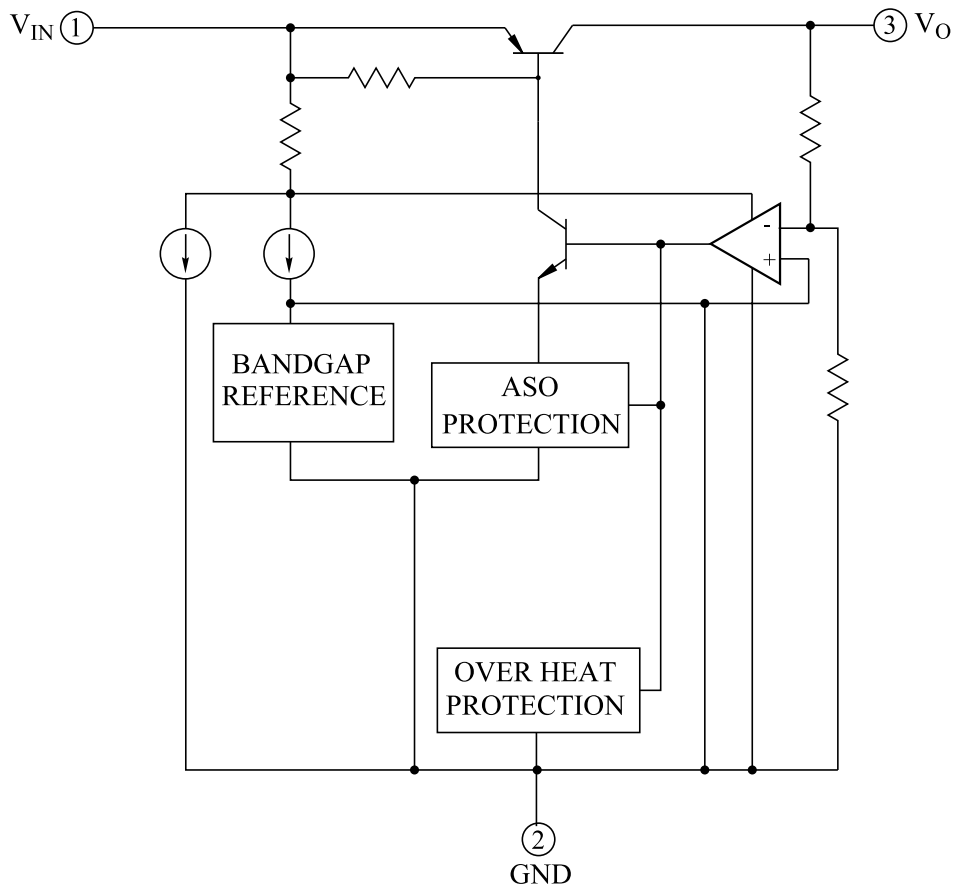


# KIA78D25F/PI~78D15F/PI

## MAXIMUM RATINGS (Ta=25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage		$V_{IN}$	35	V
Output Current		$I_O$	1	A
Power Dissipation-1 (No Heatsink)	F	$P_{D1}$	1.3	W
	PI		2.0	
Power Dissipation-2 (Infinite Heatsink)	F	$P_{D2}$	13	
	PI		20.8	
Junction Temperature		$T_j$	150	
Operating Temperature		$T_{opr}$	-40 85	
Storage Temperature		$T_{stg}$	-50 150	
Soldering Temperature (10sec)		$T_{sol}$	260	

## BLOCK DIAGRAM



# KIA78D25F/PI~78D15F/PI

**ELECTRICAL CHARACTERISTICS** (Unless otherwise specified,  $I_O=0.5A$ ,  $T_a=25$  , Note1.)

CHARACTERISTIC		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	KIA78D25	$V_O$	-	2.438	2.50	2.562	V
	KIA78D33		-	3.220	3.30	3.380	
	KIA78D35		-	3.413	3.50	3.587	
	KIA78D05		-	4.88	5.0	5.12	
	KIA78D06		-	5.85	6.0	6.15	
	KIA78D08		-	7.80	8.0	8.2	
	KIA78D09		-	8.78	9.0	9.22	
	KIA78D10		-	9.75	10.0	10.25	
	KIA78D12		-	11.70	12.0	12.30	
	KIA78D15		-	14.70	15.0	15.30	
Load Regulation		Reg Load	$5mA \leq I_{OUT} \leq 1A$	-	0.1	2.0	%
Line Regulation		Reg Line	(Note 2)	-	0.5	2.5	%
Ripple Rejection		$R \cdot R$	-	45	55	-	dB
Dropout Voltage		$V_D$	$V_{IN}=0.95V_{OUT}, I_O=1A$	-	-	0.5	V
Quiescent Current		$I_Q$	$I_{OUT}=0A$	-	-	10	mA

Note1)  $V_{IN}$  of KIA78D25=4.2V,  $V_{IN}$  of KIA78D33=5.0V,  $V_{IN}$  of KIA78D35=5.2V,  $V_{IN}$  of KIA78D05=7V,  
 $V_{IN}$  of KIA78D06=8V,  $V_{IN}$  of KIA78D08=10V,  $V_{IN}$  of KIA78D09=15V,  $V_{IN}$  of KIA78D10=16V,  
 $V_{IN}$  of KIA78D12=18V  $V_{IN}$  of KIA78D15=21V

Note2)  $V_{IN}$  of KIA78D25=3.2 10V,  $V_{IN}$  of KIA78D33=4.0 10V,  $V_{IN}$  of KIA78D35=4.2 10V,  
 $V_{IN}$  of KIA78D05=6 12V,  $V_{IN}$  of KIA78D06=7 15V,  $V_{IN}$  of KIA78D08=9 25V,  
 $V_{IN}$  of KIA78D09=10 25V  $V_{IN}$  of KIA78D10=11 26V,  $V_{IN}$  of KIA78D12=13 29V  $V_{IN}$  of KIA78D15=16 32V

# KIA78D25F/PI~78D15F/PI

Fig. 1 Standard Test Circuit

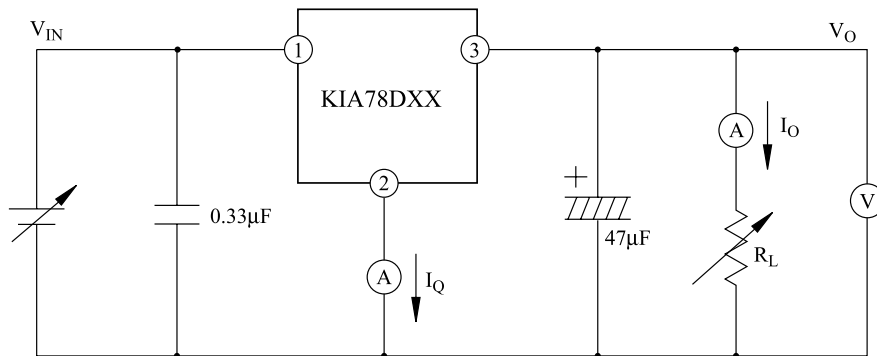


Fig. 2 Ripple Rejection Test Circuit

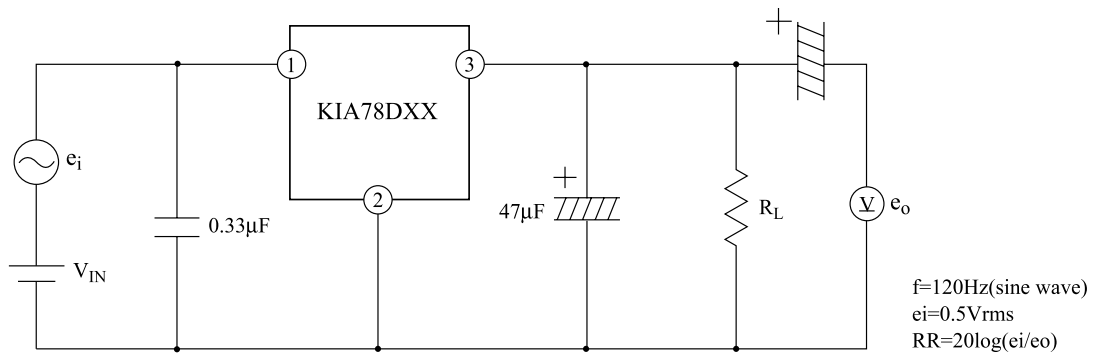
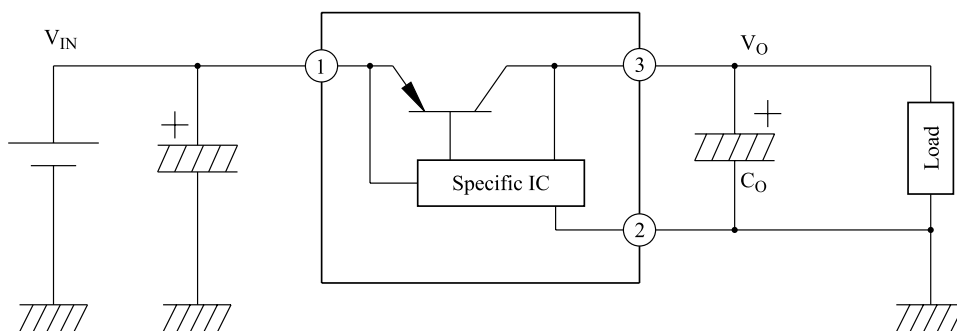


Fig. 3 Application Circuit for Standard



# KIA78D25F/PI~78D15F/PI

Fig.4  $P_D - T_a$  (F-Type : DPAK)

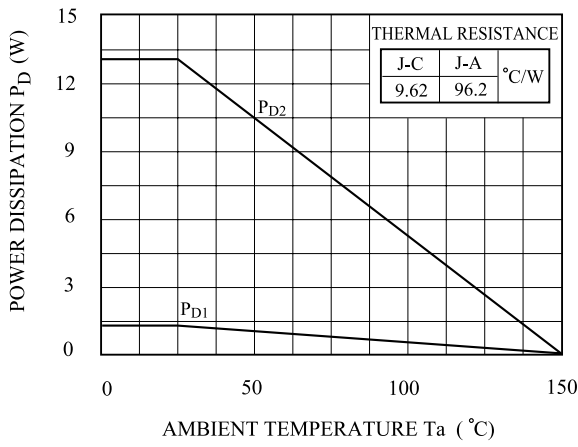


Fig.5  $P_D - T_a$  (PI-Type : TO-220IS)

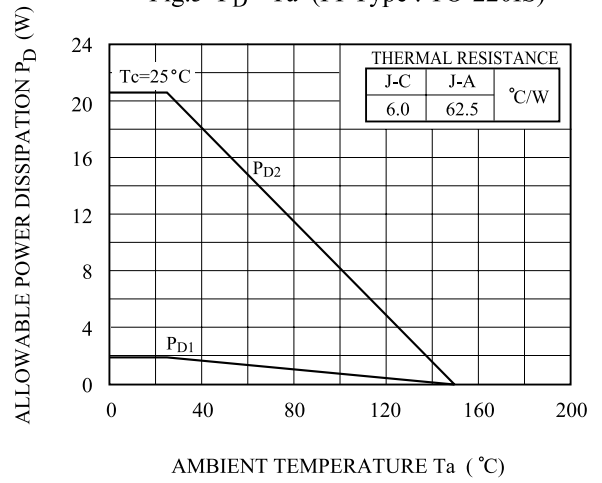


Fig.6  $T_j - \Delta V_o$  (KIA78D25~15)

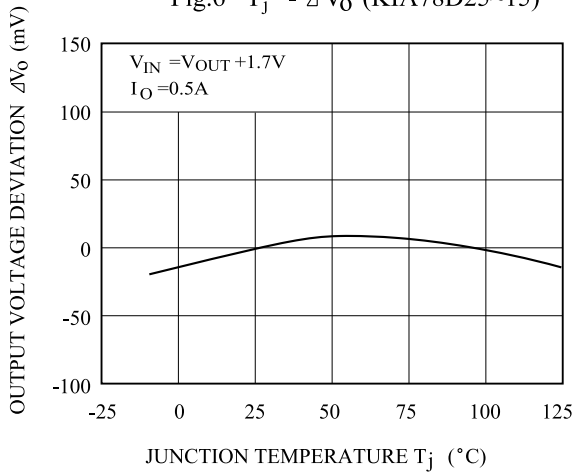


Fig.7  $T_j - V_D$

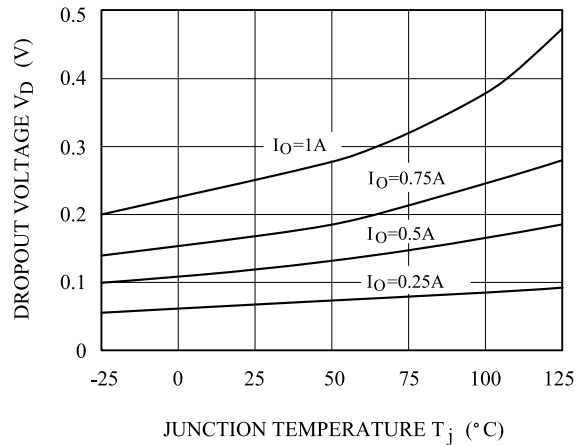


Fig.8  $T_j - I_q$

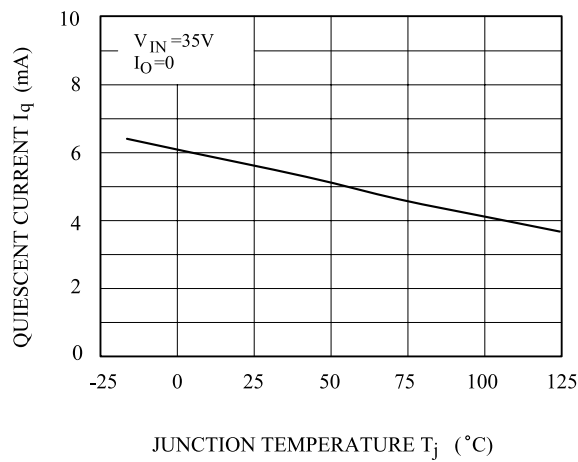
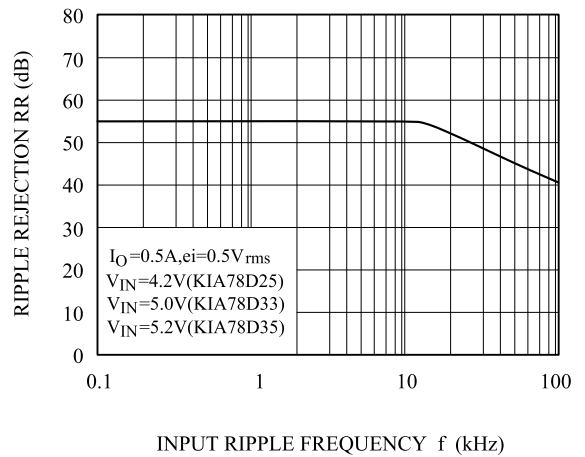


Fig.9  $f - R_R$



# KIA78D25F/PI~78D15F/PI

Fig.10  $I_O$  - R·R

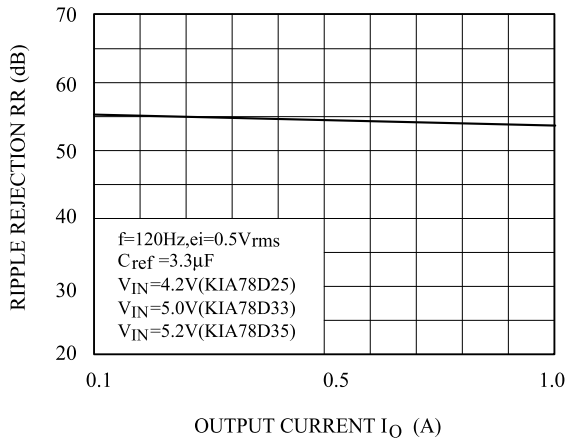


Fig. 11  $I_O$  -  $V_O$

