

### LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATOR

The KIA1117BS/BF/BPI × × Series are a Low Drop Voltage Regulator able to provide up to 1A of output current, available even in adjustable version (Vref=1.25V)

#### FEATURES

- Low Dropout Voltage : 1.1V/Typ. (Iout=1.0A)
- Very Low Quiescent Current : 5mA(Typ)
- Output Current up to 1A
- Fixed Output Voltage of 1.2V, 1.5V, 1.8V, 2.5V, 3.3V, 5.0V
- Adjustable Version Availability : Vref=1.25V
- Internal Current and Thermal Limit
- A Minimum of 10μF for stability
- Suitable for MLCC, Tantalum and Low ESR Electrolytic Capacitors
- ESR Range for stability : 1m ~200
- Available in ± 2%(at 25 )
- High Ripple Rejection : 80dB(Typ)
- Temperature Range : -40 150
- Suffix U : Qualified to AEC-Q100 (Grade 3)  
ex) KIA1117BF\*\*-RTF/PU

#### LINE UP

ITEM	OUTPUT VOLTAGE (V)	PACKAGE
KIA1117BS/BF/BPI00	Adjustable (1.25~10V)	BS : SOT-223, SOT-223(1) BF : DPAK BPI : TO-220IS
KIA1117BS/BF/BPI12	1.2	
KIA1117BS/BF/BPI15	1.5	
KIA1117BS/BF/BPI18	1.8	
KIA1117BS/BF/BPI25	2.5	
KIA1117BS/BF/BPI33	3.3	
KIA1117BS/BF/BPI50	5.0	

- Suffix H : SOT-223(1) Package.  
ex) KIA1117BS\*\*-RTK/PH

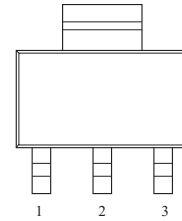
#### MAXIMUM RATINGS (Ta=25 )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Input Voltage	V <sub>IN</sub>	15	V
Output Current	I <sub>OUT</sub>	1.0	A
Power Dissipation 1 (No Heatsink)	S (Note)	1.0	W
	F	1.3	
	PI	2.0	
Power Dissipation 2 (Infinite Heatsink)	S	8.3	W
	F	13	
	PI	20.8	
Maximum Junction Temperature	T <sub>j(max)</sub>	150	
Operating Junction Temperature	T <sub>opr</sub>	-40 150	
Storage Temperature	T <sub>stg</sub>	-55 150	

Note) Package Mounted on FR-4 PCB 36mm × 18mm × 1.5mm.  
: mounting pad for the GND Lead min. 6mm

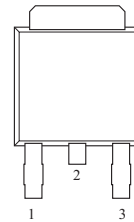
#### PIN CONFIGURATION

< SOT-223 / SOT-223(1) >



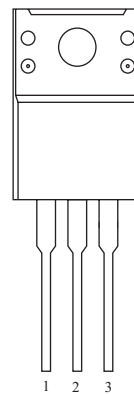
1. GND(Adj) 2. OUTPUT 3. INPUT

< DPAK >



1. GND(Adj) 2. OUTPUT 3. INPUT

< TO-220IS >



1. GND(Adj) 2. OUTPUT 3. INPUT

# KIA1117BS/BF/BPI00 ~ KIA1117BS/BF/BPI50

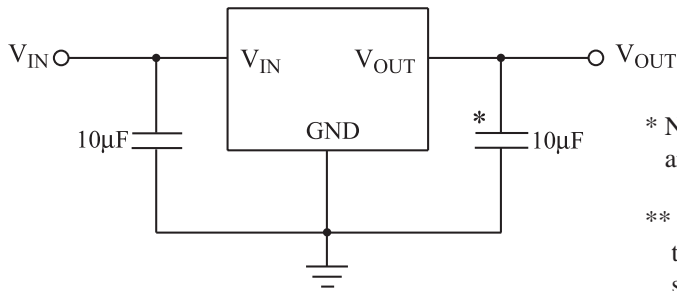
## ELECTRICAL CHARACTERISTICS

Unless otherwise specified, T<sub>j</sub>=25

CHARACTERISTIC	ITEM	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Reference Voltage	KIA1117-Adj	V <sub>REF1</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1.5V, I <sub>OUT</sub> =10mA	1.225	1.25	1.275	V	
		V <sub>REF2</sub>	10mA I <sub>OUT</sub> 1A, V <sub>OUT</sub> +1.5V V <sub>IN</sub> =10V	1.213	1.25	1.288	V	
Output Voltage	KIA1117-12	V <sub>OUT1</sub>	V <sub>IN</sub> =2.7V, I <sub>OUT</sub> =10mA	1.176	1.2	1.224	V	
		V <sub>OUT2</sub>	10mA I <sub>OUT</sub> 1A, 2.7V V <sub>IN</sub> 10V	1.164	1.2	1.236	V	
	KIA1117-15	V <sub>OUT1</sub>	V <sub>IN</sub> =3.0V, I <sub>OUT</sub> =10mA	1.470	1.5	1.530	V	
		V <sub>OUT2</sub>	10mA I <sub>OUT</sub> 1A, 3.0V V <sub>IN</sub> 10V	1.460	1.5	1.540	V	
	KIA1117-18	V <sub>OUT1</sub>	V <sub>IN</sub> =3.3V, I <sub>OUT</sub> =10mA	1.764	1.8	1.836	V	
		V <sub>OUT2</sub>	10mA I <sub>OUT</sub> 1A, 3.3V V <sub>IN</sub> 10V	1.754	1.8	1.846	V	
	KIA1117-25	V <sub>OUT1</sub>	V <sub>IN</sub> =4.0V, I <sub>OUT</sub> =10mA	2.450	2.5	2.550	V	
		V <sub>OUT2</sub>	10mA I <sub>OUT</sub> 1A, 4.0V V <sub>IN</sub> 10V	2.440	2.5	2.560	V	
	KIA1117-33	V <sub>OUT1</sub>	V <sub>IN</sub> =4.8V, I <sub>OUT</sub> =10mA	3.234	3.3	3.366	V	
		V <sub>OUT2</sub>	10mA I <sub>OUT</sub> 1A, 4.8V V <sub>IN</sub> 10V	3.201	3.3	3.399	V	
	KIA1117-50	V <sub>OUT1</sub>	V <sub>IN</sub> =6.5V, I <sub>OUT</sub> =10mA	4.900	5.0	5.100	V	
		V <sub>OUT2</sub>	10mA I <sub>OUT</sub> 1A, 6.5V V <sub>IN</sub> 10V	4.850	5.0	5.150	V	
	Line Regulation	-	Reg Line	V <sub>OUT</sub> +1.5V V <sub>IN</sub> 10V, I <sub>OUT</sub> =10mA	-	1	10	mV
	Load Regulation	-	Reg Load	10mA I <sub>OUT</sub> 1A, V <sub>IN</sub> =V <sub>OUT</sub> +2.0V	-	0.5	1	%
Adjustable Pin Current	KIA1117-Adj	I <sub>ADJ</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1.5V	-	35	-	μA	
Minimum Load Current	KIA1117-Adj	I <sub>MIN</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1.5V	10	-	-	mA	
Quiescent Current	-	I <sub>B1</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1.25V, I <sub>OUT</sub> =0A	-	5	10	mA	
		I <sub>B2</sub>	V <sub>IN</sub> =10V, I <sub>OUT</sub> =0A	-	5	10		
Output Noise Voltage	-	V <sub>NO</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1.25V, I <sub>OUT</sub> =40mA, 10Hz f 10kHz	-	100	-	μV <sub>rms</sub>	
Short Circuit Current Limit	-	I <sub>SC</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +2.0V	1.1	-	-	A	
Ripple Rejection	-	R · R	I <sub>OUT</sub> =40mA, f=120Hz, V <sub>ripple</sub> =1Vp-p V <sub>IN</sub> =V <sub>OUT</sub> +3V	60	80	-	dB	
Dropout Voltage	-	V <sub>D</sub>	I <sub>OUT</sub> =1A	-	1.1	1.4	V	
Temperature Stability	-	TCV <sub>O</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1.5V, I <sub>OUT</sub> =10mA, T <sub>j</sub> =-40~150	-	0.5	-	%	

# KIA1117BS/BF/BPI00 ~ KIA1117BS/BF/BPI50

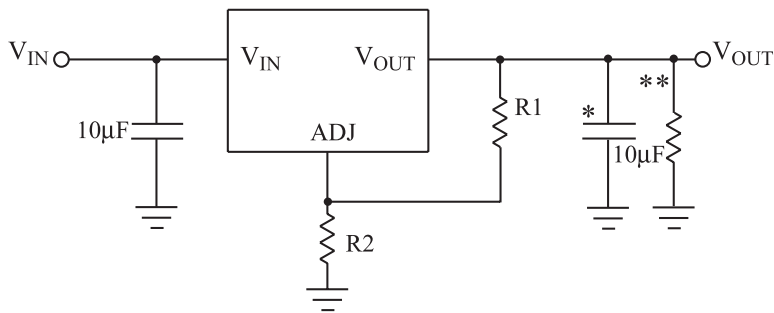
**Fig.1 Application Circuit-1 (Fixed-Type)**



\* Note 1) MLCC, Tantalum, Low ESR Electrolytic Capacitors are suitable in ESR range for stability (1m~200 )

\*\* Note 2) When R1 is much larger than 124 , apply 8~10mA to Vout-GND by setting an additional dummy resistor for stability of Vout under no load condition

**Fig.2 Application Circuit-2 (Adjustable-Type)**



$$V_{OUT} = V_{REF} \times (1 + R2/R1) + I_{ADJ} \times R2$$

# KIA1117BS/BF/BPI00 ~ KIA1117BS/BF/BPI50

Fig. 3  $V_D - I_{OUT}$

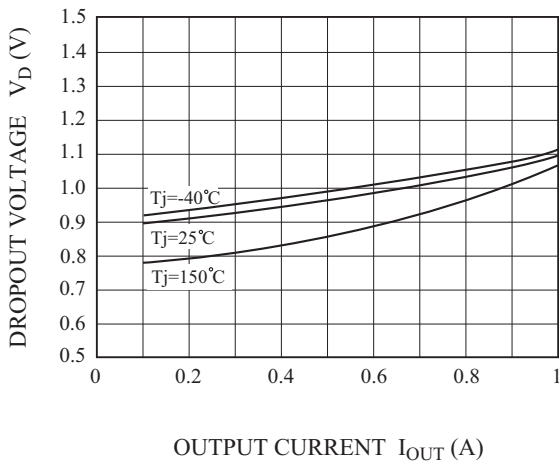


Fig. 4  $V_{OUT}(\text{CHANGE}) - T_j$

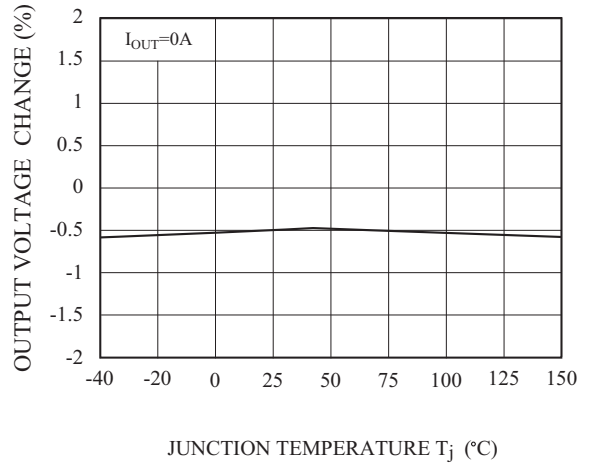


Fig. 5 LINE REGULATION

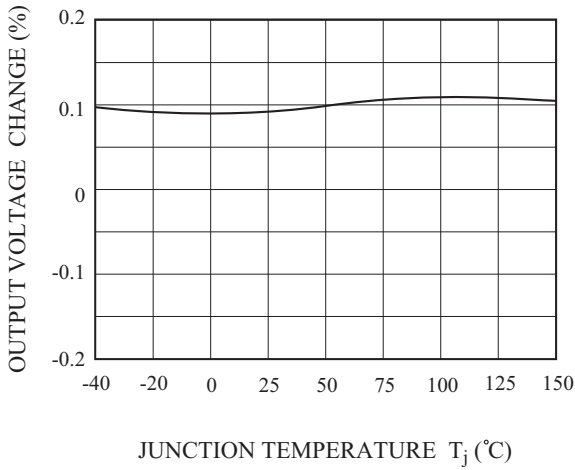


Fig. 6 LOAD REGULATION

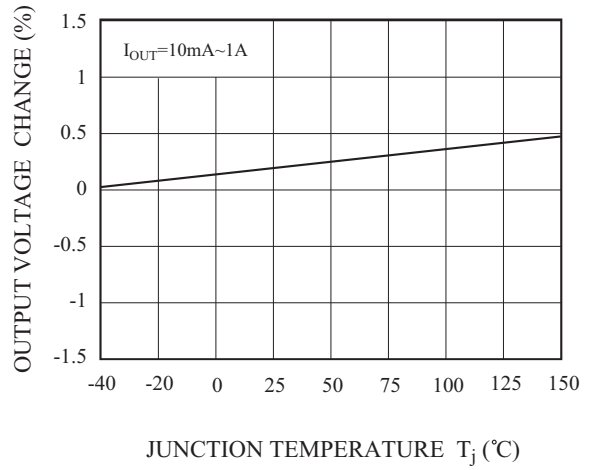


Fig.7  $I_Q - T_j$

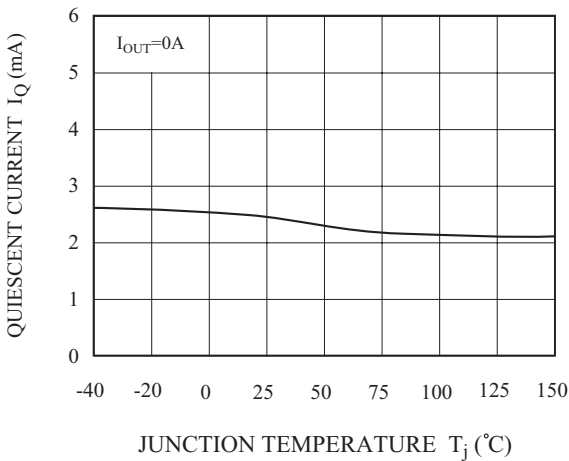
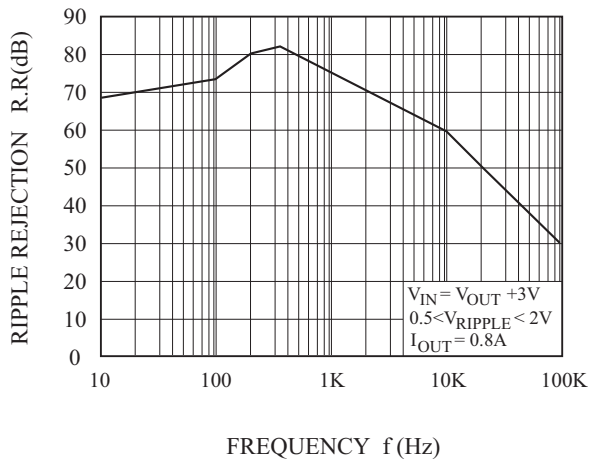


Fig.8 R.R - f



# KIA1117BS/BF/BPI00 ~ KIA1117BS/BF/BPI50

Fig.9  $P_D - T_a$  (S-Type : SOT-223)

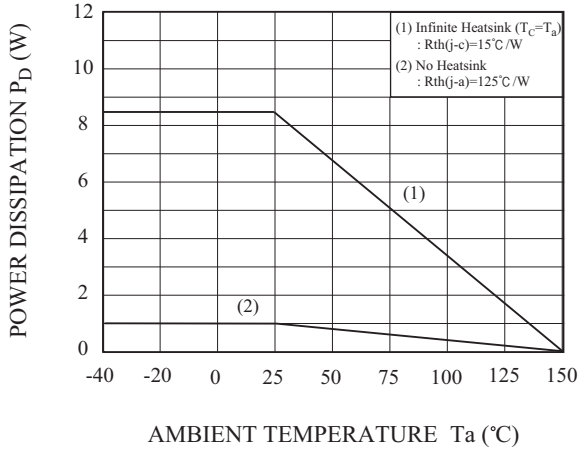


Fig.10  $P_D - T_a$  (F-Type : DPAK)

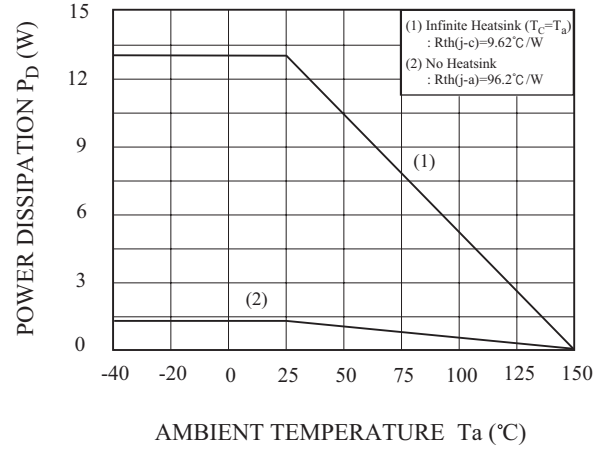
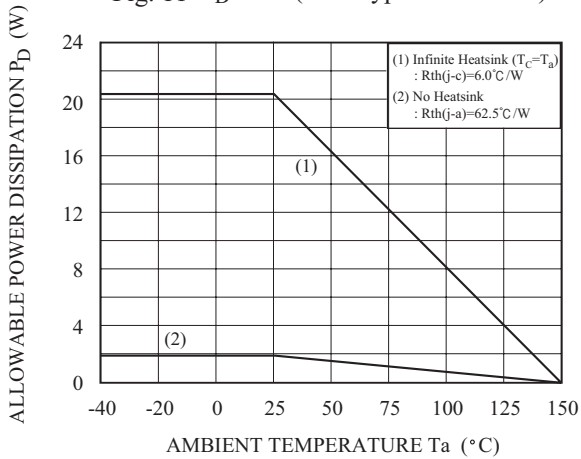


Fig. 11  $P_D - T_a$  (API-Type : TO-220IS)



# KIA1117BS/BF/BIP00 ~ KIA1117BS/BF/BIP50

