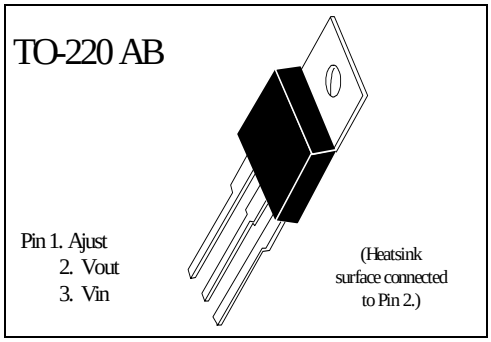
THREE-TERMINAL ADJUSTABLE OUTPUT POSITIVE VOLTAGE REGULATORS

KK317

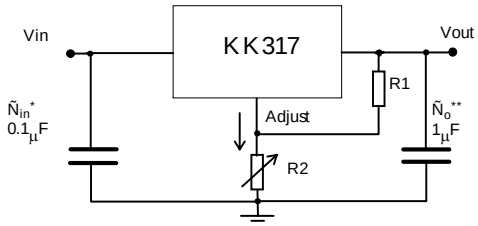
The KK317 is adjustable 3-terminal positive voltage regulator capable of supplying in excess of 1.5 A over an output voltage range of 1.2 V to 37 V. These voltage regulator is exceptionally easy to use and require only two external resistors to set the output voltage. Further, it employ internal current limiting, thermal shutdown and safe area compensation, making
them essentially blow-out proof.

The KK317 serve a wide variety of applications to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the KK 317 series can be used as a precision current requlator.



- Output Current in Excess of 1.5 Ampere
- Output Adjustable between 1.2 V and 37 V
- Internal Thermal Overload Protection
- Internal Short - Circuit Current Limiting Constant with Temperature
- Output Transistor Safe-Area Compensation
- Floating Operation for High Voltage Applications
- Standard 3-lead Transistor Packages
- Eliminates Stocking Many Fixed

Standard application



* = Cin is required if regulator is located an appreciable distance from power supply filter.
** = Co is not needed for stability ; however, is does improve transient response.

$$Vout = 1.25V(1+\frac{R2}{R1}) + I_{ADJ} * R2$$

Since I_{ADJ} is controlled to less then 100 μA, the error associated with this term is negligible in most applications.

Maximum ratings

Rating	Symbol	Value	Unit
Input - Output Voltage Differential	Vi - Vo	40	Vdc
Power Dissipation and Thermal Characteristics	PD	Internally Limited	
Operating Junction Temperature Rang	TJ	-0 to +150	°C
Storage Junction Temperature Rang	Tstg	-65 to +150	°C

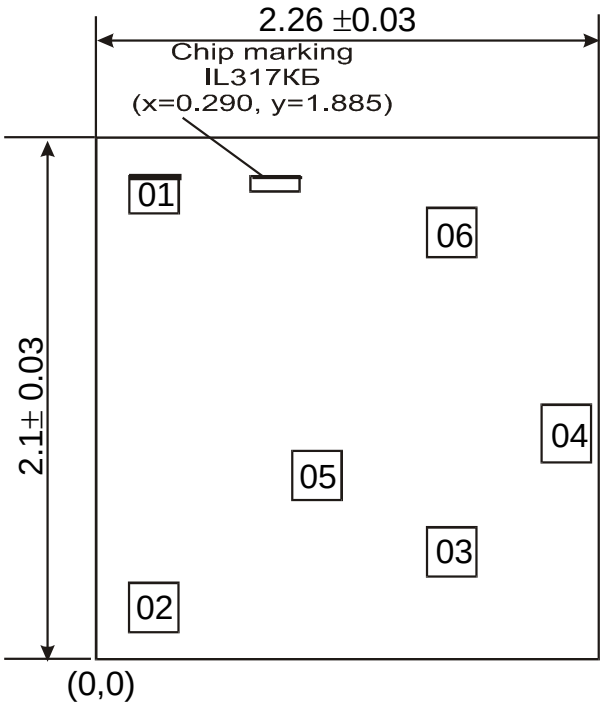
Electrical characteristics

(Vi-Vo= 5.0V, Io = 0.5 A, TJ = Tlow to Thigh (see Note 1); Imax = 1.5 A and Pmax = 20 W unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Line Regulation (TA=+25°C) 3.0V ≤ Vi - Vo ≤40 V	Regline	-	0.01	0.04	%/V
Load Regulation(TJ=+25°C) 10mA≤Io≤Imax, Vin ≤5V Vin≥5 V	Regload	 - -	 5.0 0.1	 25 0.5	 mV %/Vo
Thermal Regulation (TA=+25°C) 20 ms Pulse	-	-	0.03	0.07	%/W
Adjustment Pin Current	IAdj	-	50	100	µA
Adjustment Pin Current Change 2.5 ≤ Vi - Vo ≤ 40 V 10mA ≤IL≤ Imax, PD ≤ Pmax	ΔIAdj	-	0.2	5.0	µA
Reference Voltage (Note 4) 3.0 ≤ Vi - Vo ≤ 40 V 10mA ≤IL≤ Imax, PD ≤ Pmax	Vref	1.2	1.25	1.3	V
Line Regulation (Note 3) 3.0 V ≤ Vi - Vo ≤40 V	Regline	-	0.02	0.07	%/V
Load Regulation (Note 3) 10mA≤Io≤Imax, Vin ≤5V Vin≥5 V	Regload	 - -	 20 0.3	 70 1.5	 %/V %/V
Temperature Stability (Tlow ≤ Tj ≤ Ttigh)	Ts	-	0.7	-	
Minimum Load Current to Maintain Regulation (Vi - Vo = 40 V)	ILmin	-	3.5	10	mA
Maximum Output Current Vi - Vo≤ 15 V , P ≤ 20 W Vi - Vo = 40 V, P ≤20W, TA=+25°C	Imax	 1.5 0.15	 2.2 0.4	A - -
RMS Nose , % of Vo TA=+25°C, 10 Hz ≤ f ≤ 10 kHz	N	-	0.003	-	%/Vo
Ripple Rejection, Vo = 10 V, f = 120 Hz (Note 5) Without Cadj Cadj = 10 µF	RR	 - 66	 65 80	dB - -
Long-Term Stability, Tj = Thigh (Note 6) TA=+25°C for Endpoint Measurements	S	-	0.3	1.0	%/1.0 k Hrs.
Thermal Resistance Junction to Case	$R_{\theta JC}$	-	5.0	-	°C/W

Notes: (1) Tlow = 0 °C , Thigh = +125 °C
(2) Imax = 0.5 A , Pmax
(3) Load and line regulation are specified at constant junction tempereture. Changes in Vo due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.
(4) Selected devices with tightened tolerance reference voltage available.
(5) Cadj , when used, connected between the adjustment pin and ground.
(6) Since Long - Term Stability cannot be measured on each device before shipment, this specification is an engineering estimate of average stability from lot to lot.

CHIP PAD DIAGRAM



Thickness of chip 0,46±0,02 mm

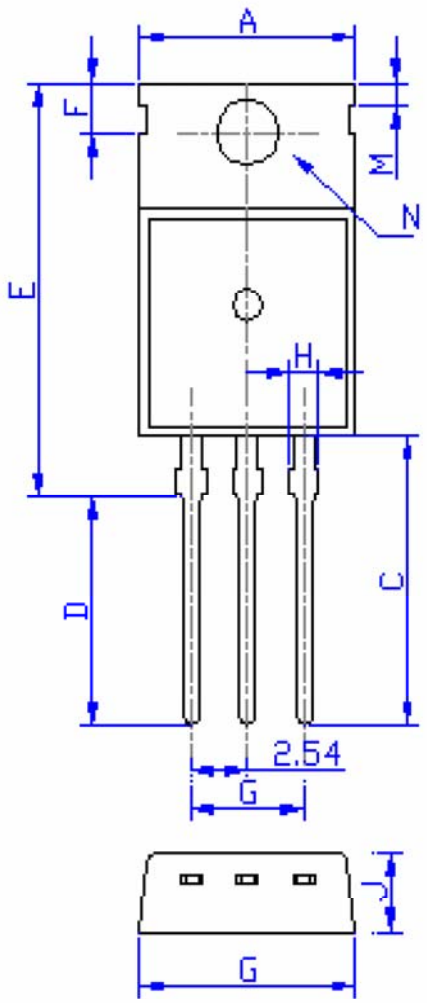
PAD LOCATION

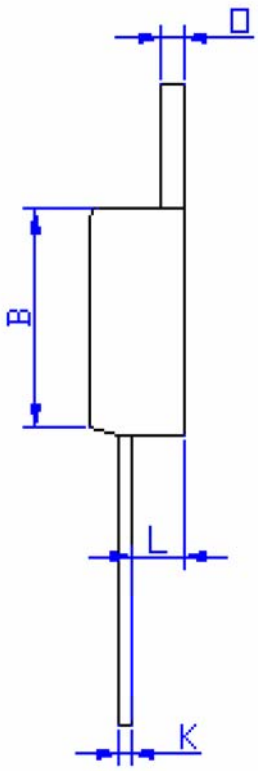
Pad No	Symbol*	X	Y	Pad size** , mm
01	output	0.070	1.800	0.160x0.195
02	adjust	0.070	0.090	0.180x0.185
03	output	1.515	0.410	0.190x0.170
04	input	2.010	0.935	0.180x0.205
05	input	0.875	0.760	0.165x0.175
06	output	1.515	1.575	0.190x0.170

* Pads 01, 03, 06 connected in the chip.
  Pads 04, 05 connected in the chip.

** Pad size is given as per metallization layer

TO-220





Package Dimension (unit:mm)			
Symbol	Min	Typ	Max
A	-	[9.90]	-
B	9.00	9.20	9.40
C	12.88	13.08	13.28
D	9.78	10.08	10.38
E	-	-	18.95
F	2.70	2.80	2.90
G	4.88	5.08	5.28
H	1.42	1.52	1.62
I	9.80	10.00	10.20
J	4.03	4.50	4.70
K	0.45	0.50	0.60
L	2.30	2.40	2.50
M	1.20	1.30	1.40
N	-	[ϕ3.60]	-
O	1.25	1.30	1.40