THREE-TERMINAL ADJUSTABLE
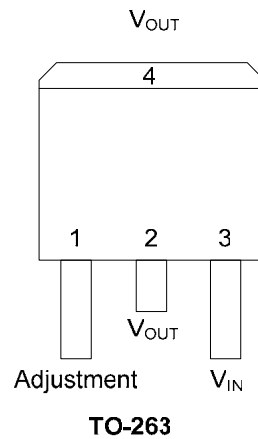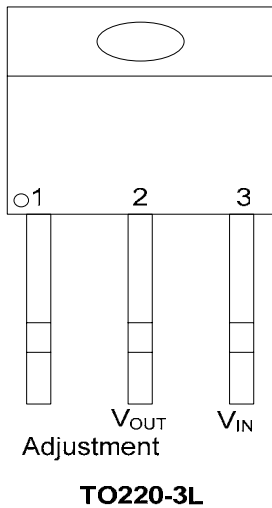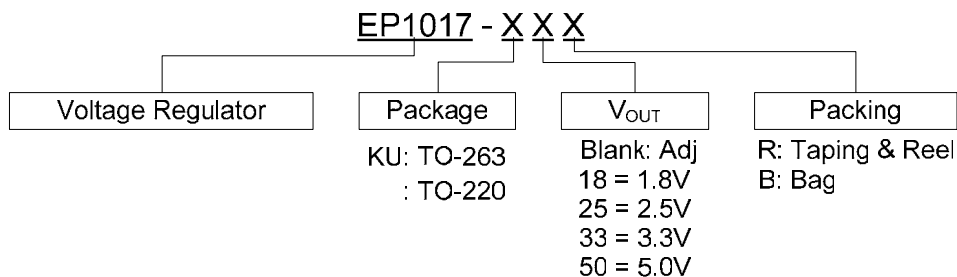# OUTPUT POSITIVE VOLTAGE REGULATORS

Description

The EP1017 are adjustable 3-terminal positive voltage regulators capable of supplying in excess of 1.5A over an output voltage range of 1.2 to 37V.   These voltage regulators are exceptionally easy to use and require only two external resistors to set the output voltage. Further, they employ internal current limiting.   Thermal shutdown and safe area compensation, making them essentially blow-out proof.

Pin Assignment

TO220-3L

TO-263

Ordering Information

EP1017 - X X X

Voltage Regulator	Package	V_OUT	Packing
	KU: TO-263 : TO-220	Blank: Adj 18 = 1.8V 25 = 2.5V 33 = 3.3V 50 = 5.0V	R: Taping & Reel B: Bag

Maximun Ratings

Rating	Symbol	Value	Unit
Input-Output Voltage Differential	V_I-V_O	40	Vdc
Power dissipation	P_D	Internally Limited	
Operating	T	-40 to +125	℃

Electrical Characteristics *(VI-VO=5.0V;IO=0.5A;TJ=25℃)*

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
Reg_{line}	Line Regulation[1]	$3.0V \leqq (V1-V0) \leqq 40V$			0.04	%/V
Reg_{load}	Line Regulation[1]	$10mA \leqq 1_{out} \leqq 1.5A$, $V_0 \leqq 5.0V, C \geqq 5.0V$			25 0.5	mV %V
T_R	Thermal Regulation	20ms Pulse			0.07	%W
I_{Adi}	Adjustment Pin Current				100	µA
V_{ref}	Reference Voltage	$^2P_D \leqq 20W$ $3.0V \leqq V_1-V_0 \leqq 40V$ $10mA \leqq Io \leqq 1.5A$			1.3	V
I_{LIMIT}	Minimum Load Current to Maintain Regulation	$V_1-V_0=40V$			10	mA
I_{Max}	Maximum Output Current	$PD \leqq 20W, V_1-V_0 \leqq 15V$ $V_1-V_0=40V$	1.5 0.15	2.2 0.4		A
θ_{th}	Thermal Resistance	junction to ambient		5.0		°C/W

NOTES:

1.Load and line regulation are specified at constant junction temperature. Changes in Vo due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

2.Selected devices with tightened tolerance reference voltage available.

Typical Performance Characteristics
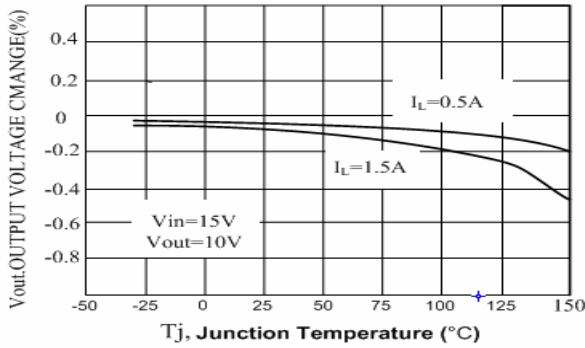

Figure 5. Load Regulation
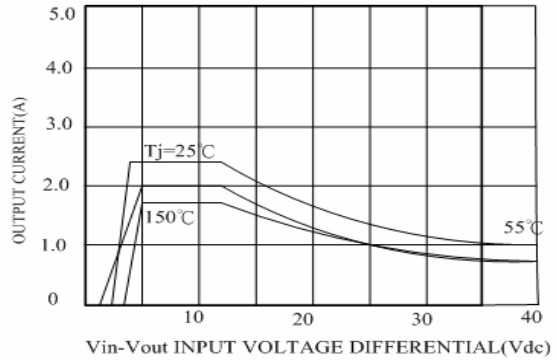

Figure 6. Current Limit
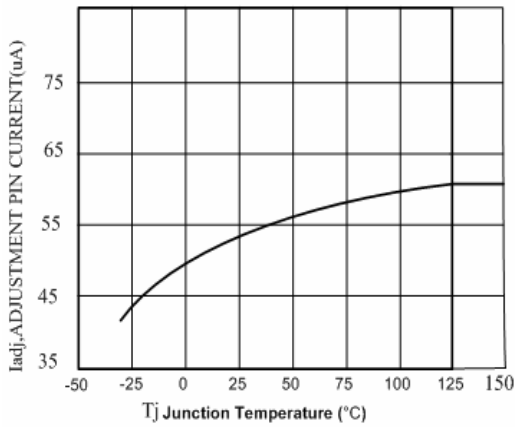

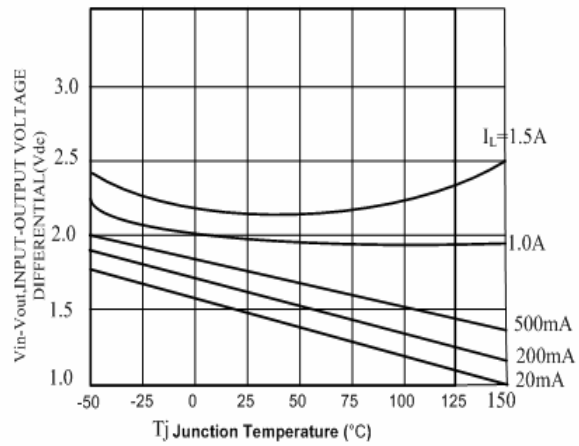Figure 7. Adjustment Pin Current

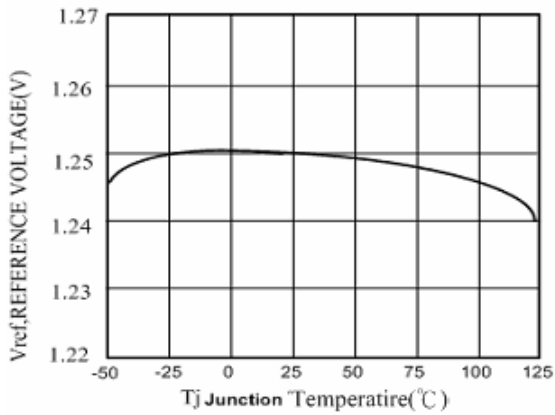Figure 8. Dropout Voltage

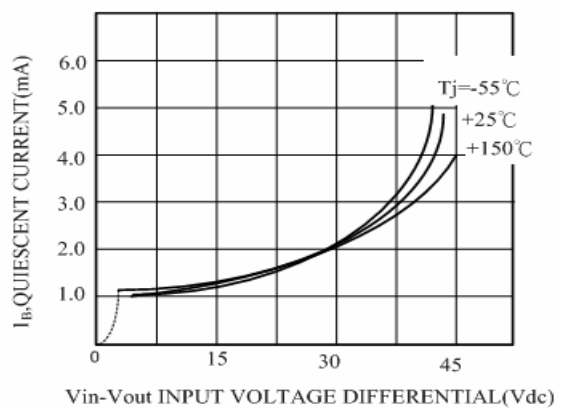Figure 9. Temperature Stability

Figure 10. Minimum Operating Current
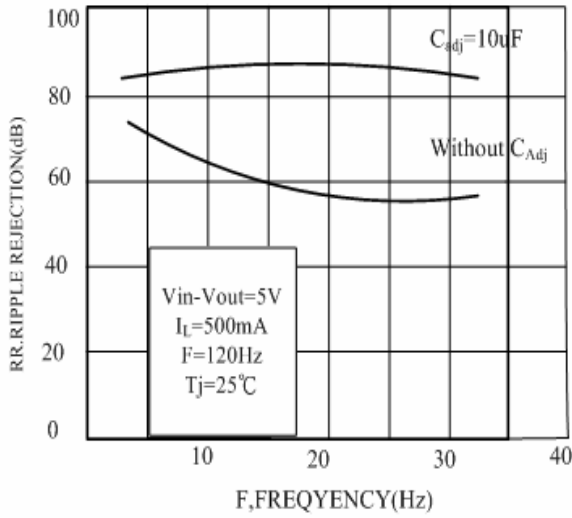
Figure 7. Ripple Rejection versus Output Voltage

$C_{adj}=10uF$

Without C_{Adj}

Vin-Vout=5V
$I_L=500mA$
F=120Hz
Tj=25℃

RR.RIPPLE REJECTION(dB)

F,FREQYENCY(Hz)

Figure 8. Ripple Rejection versus Output Current

$C_{adj}=10uF$

Without C_{Adj}

Vin=15V
Vout=10V
F=120Hz
Tj=25℃

RR.RIPPLE REJECTION(dB)

F,FREQYENCY(Hz)
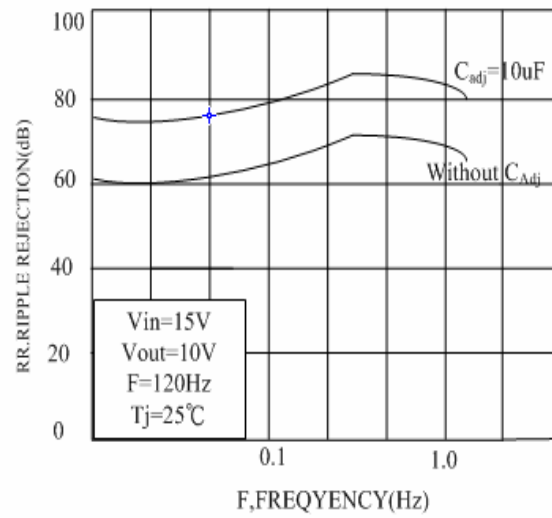
Figure9. Ripple Rejection versus Frequency

IL=500mA
Vin=15V
Vout=10V
Tj=25℃

Cadj=10uF
Without Cadj

RR.RIPPLE REJECTION(dB)

F,FREQYENCY(Hz)
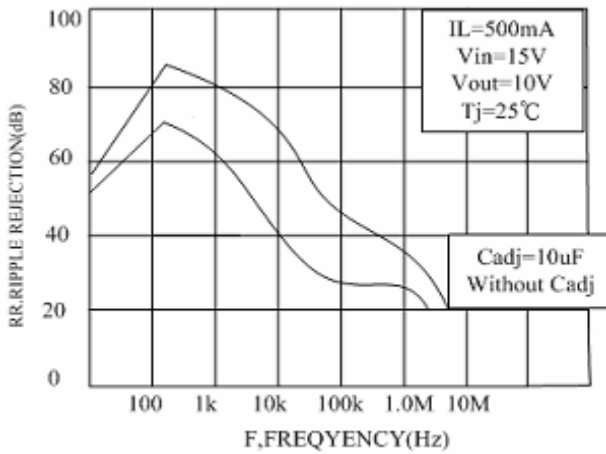
Figure10. Output Impedance

Vin=15V
Vout=10V
IL=500mA
Tj=25℃

Without Cadj

Cadj=10uF

Zo,OUTPUT IMPEDANCE(Ω)

F,FREQYENCY(Hz)
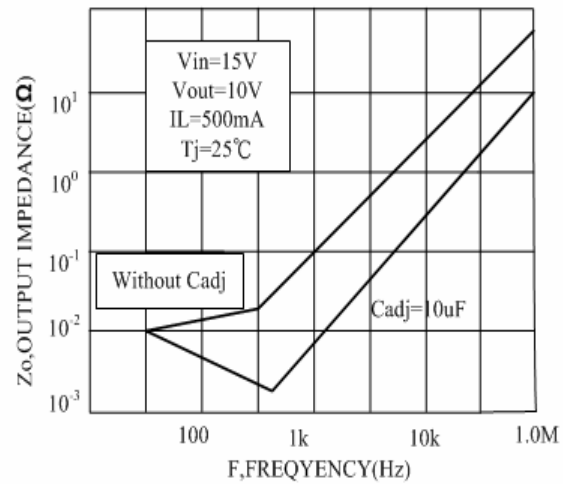
Figure11. Line Transient Response

Cadj=1.0uF
Cadj=10uF

Vout=10V
IL=50mA
Tj=25℃

CL=D₁
Without Cadj

ΔVout,OUTPUT VOLTAGE DEMVIATION(V)

ΔVin,INPUT VOLTAGE CHANGE(V)

T,TIME(uS)
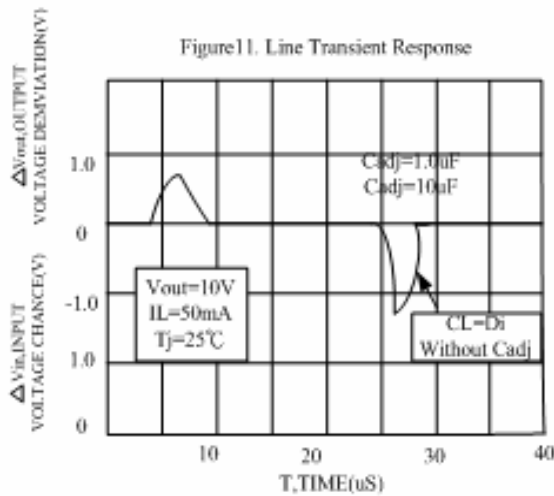
Figure12. Load Transient Response

CL=1.0uF
Cadj=10uF

CL=0
Without Cadj

Vin=15V
Vout=10V
IL=50mA

IL

Vin ΔOUTPUT VOLTAGE DEMVIATION(V)

IL,LOAD CURRENT(A)

T,TIME(uS)
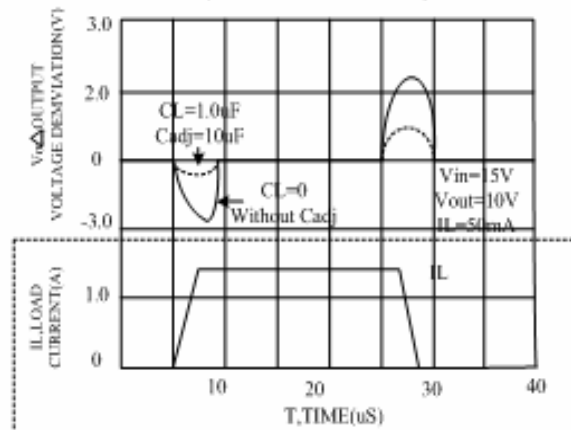
Schematic Diagram
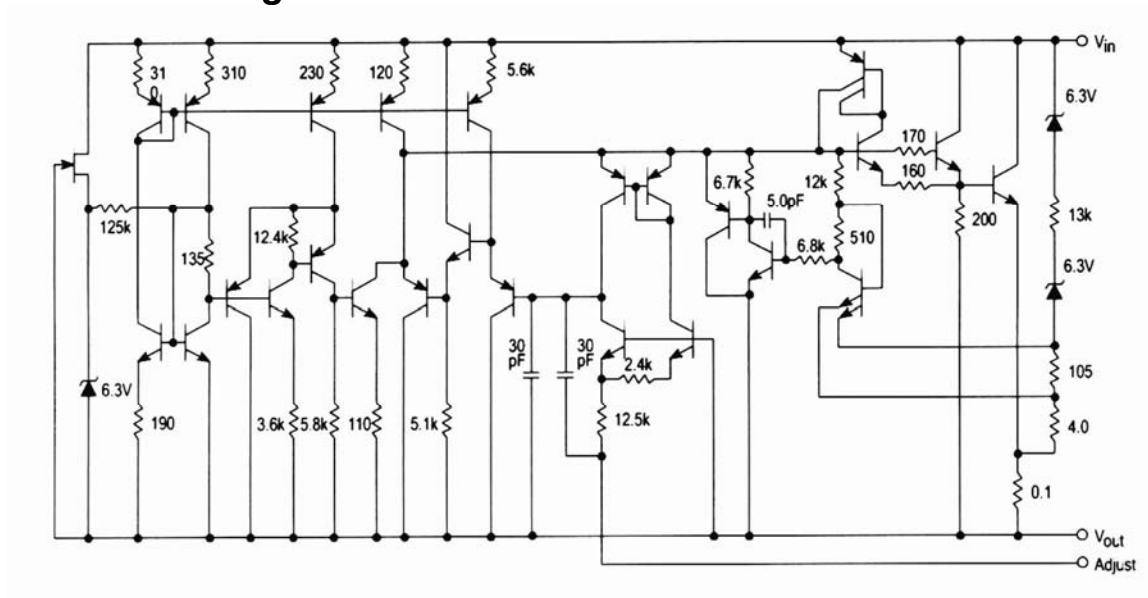
EP1017 contains 29 active transistors

Typical Application

5.0V Electronic Shutdown Regulator

Minimum V_{out} = 1.25 V
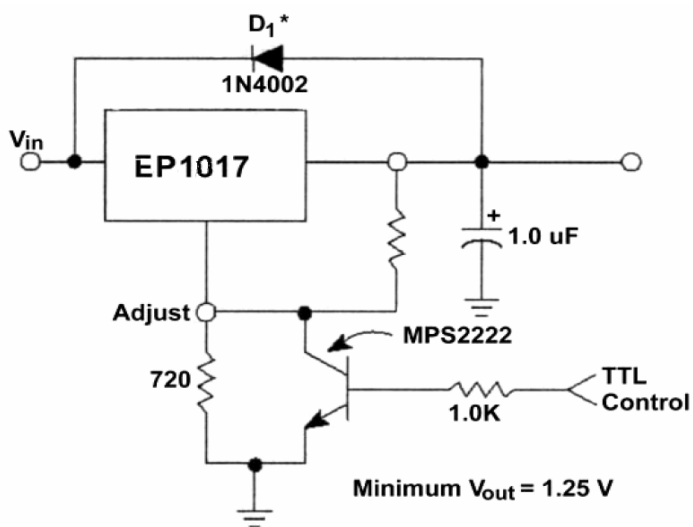
Standard Application
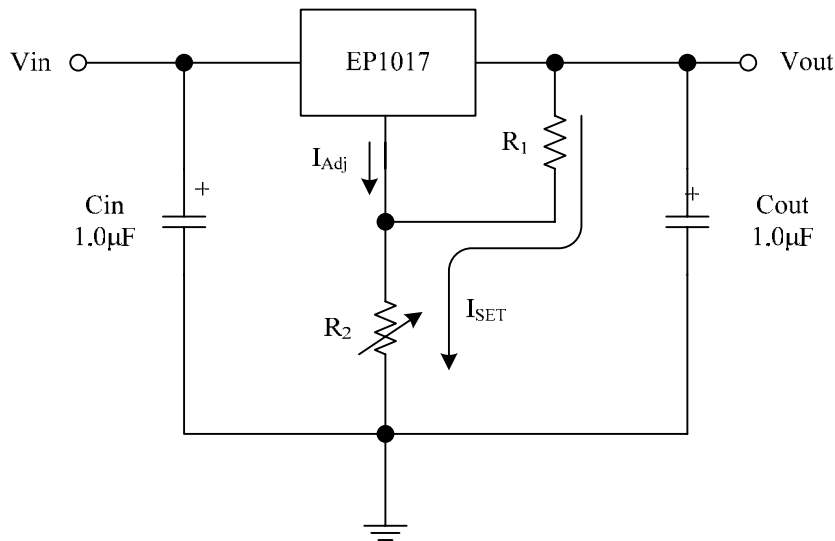
∗ *Cin is required if regulator is located an appreciate distance from power supply filter.*

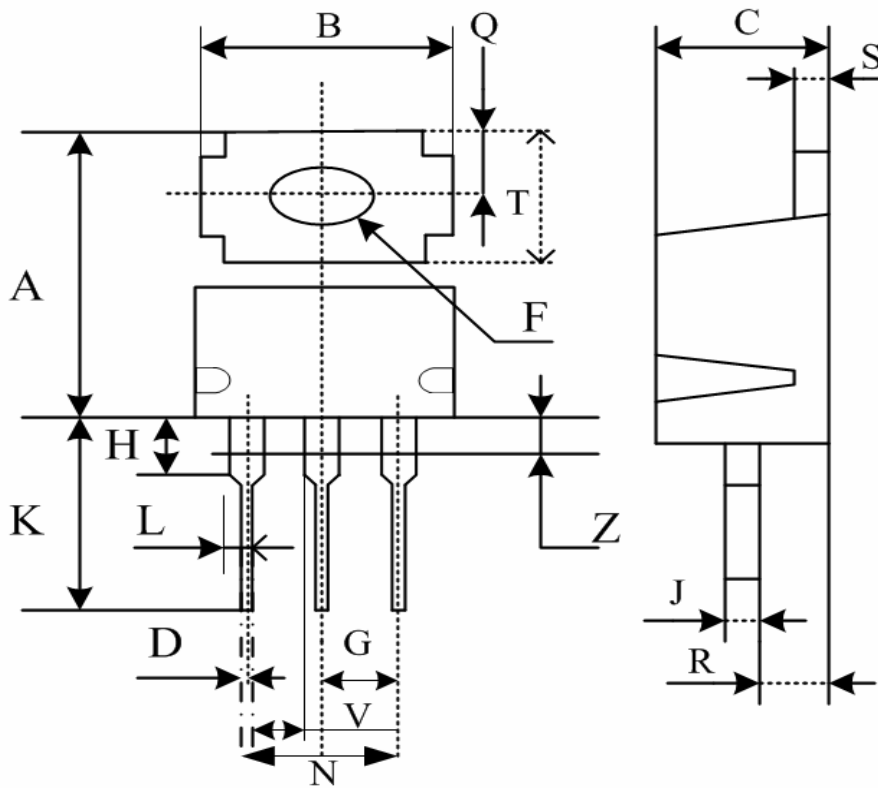∗ *Cout is not needed for stability, however, it does improve transient response.*

Vout=1.25(1+R2/R1)+I_{Adj}R2

Since IAdj is controlled to less than 100 μA, the error associated with this term is negligible in most applications.
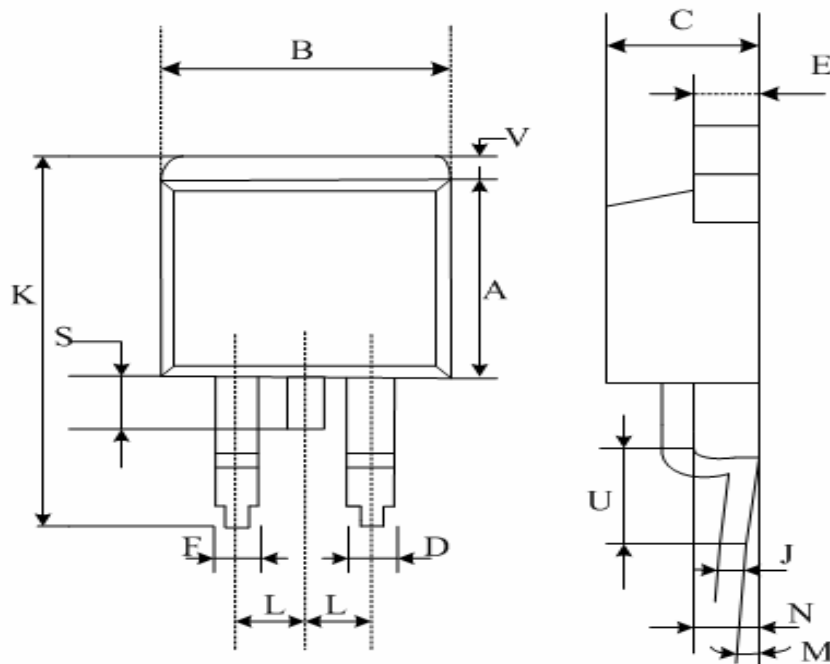
∗ *Pulse testing required. 1% Duty Cycle is suggested.*

To calculate R2: Vout=I_{SET}R2+1.250V ; Assume I_{SET}=5.25mA

Package Description

DIM	MILLIMETERS	
	MIN	MAX
A	14.97	16.24
B	9.66	10.28
C	4.07	4.82
D	0.64	0.88
F	3.61	3.73
G	2.42	2.66
H	2.80	3.93
J	0.48	0.67
K	12.70	14.27
L	1.20	1.63
N	4.83	5.33
Q	2.54	3.04
R	2.04	2.78
S	1.05	1.39
T	6.36	6.86
V	1.00	-
Z	-	2.04

Package Description (Continued)

DIM	MILLIMETERS	
	MIN	MAX
A	8.64	9.65
B	9.65	10.29
C	4.06	4.83
D	0.51	0.99
E	1.14	1.40
F	1.14	1.40
J	0.46	0.74
K	14.61	15.88
L	2.54	
M	0^0	8^0
N	2.03	2.79
S	1.27	1.78
U	2.29	2.79
V	1.02	1.40