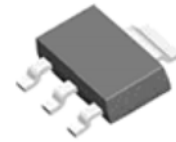


1.0A Adjustable Positive Voltage Regulator

General Description

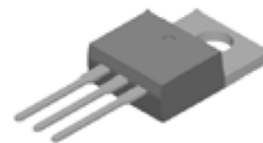
- The LA317 is an adjustable 3-terminal positive voltage regulator with a very low dropout of 1.2V at 1A output current. Using 2 external resistors, the LA317 can provide an adjustable output voltage down to 1.25V.
- The LA317 is available in standard SOT-223, D-PACK, TO-220 and D2-PACK packages.



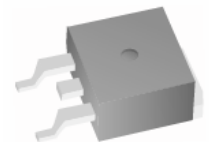
SOT-223



D-PACK (TO-252)



TO-220



D2-PACK (TO-263)



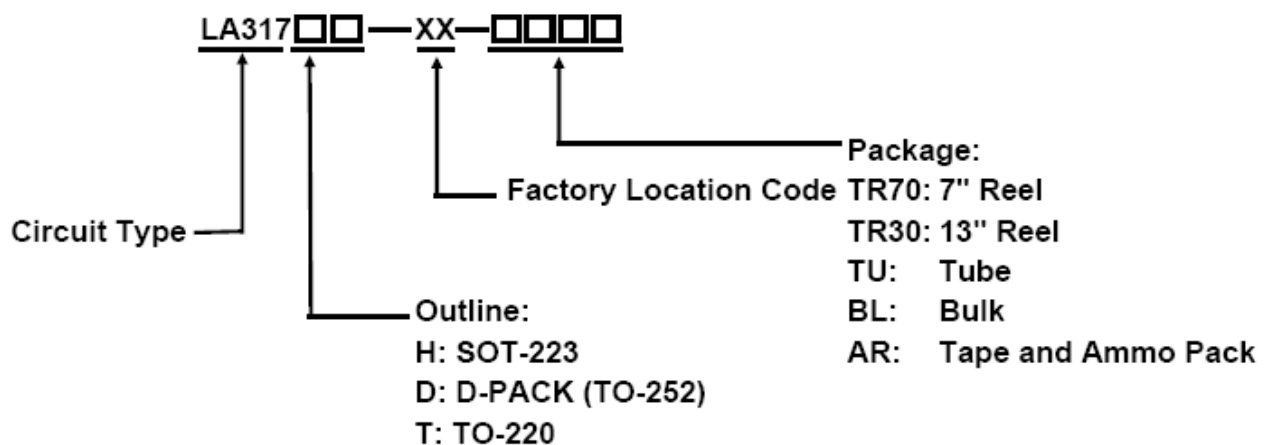
Features

- Typical 1% output voltage tolerance
- Typical 0.01%/V line regulation
- Typical 0.2% Load Regulation
- Very low dropout voltage: 1.2V at 1A output current
- Trimmed current limit
- On-chip thermal protection
- RoHS Compliance

Applications

- PC Motherboard
- LCD Monitor
- Graphic Card
- DVD Player
- Network Interface Card/Switch
- Telecom Equipment
- Printer and other Peripheral Equipment

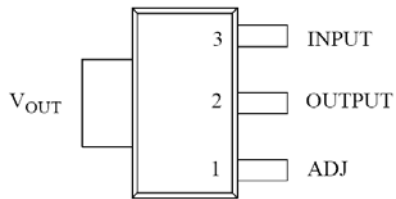
Ordering Information



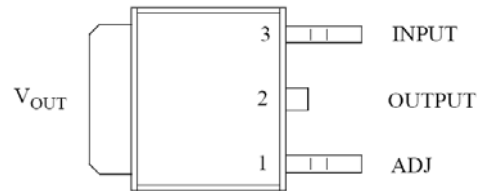
1.0A Adjustable Positive Voltage Regulator

LA317

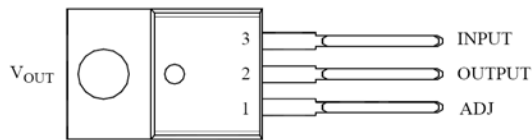
Pin Configuration



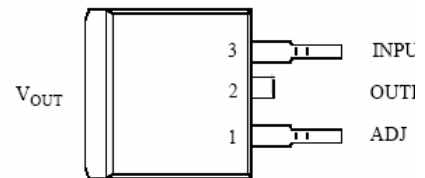
Outline: H
SOT-223



Outline: D
D-PACK (TO-252)

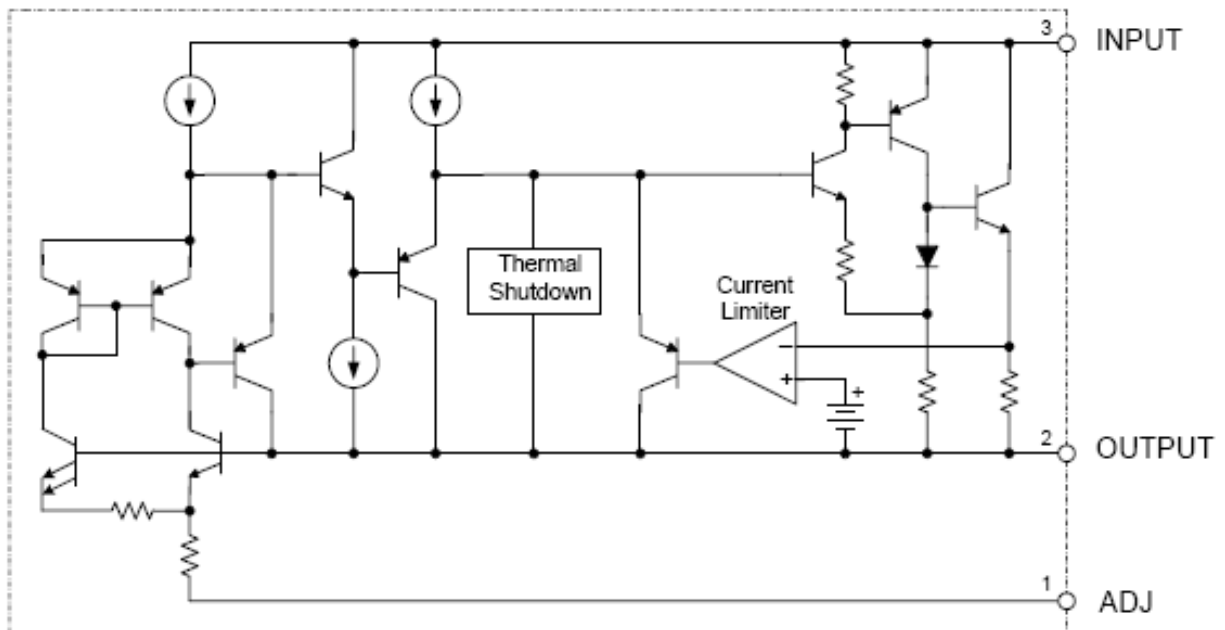


Outline: T
TO-220



Outline: MC
D2-PACK (TO-263)

Block Diagram



1.0A Adjustable Positive Voltage Regulator

LA317

Absolute Maximum Ratings (Ta=25° C, unless otherwise specified)

Symbol	Description	Ratings	Unit
V _{IN-V_{OUT}}	Input - Output Voltage Differential	15	V
I _o	Max. Output Current	1	A
T _J	Operating Junction Temperature	150	° C
T _{OPR}	Operating Temperature Range	0 ~ 125	° C
T _{STG}	Storage Temperature Range	-65 ~ 150	° C
T _{LEAD}	Lead Temperature (Soldering, 10sec.)	300	° C
ESD	ESD, Human Body Model (Max.)	4000	V

Electrical Characteristics

(Typicals and limits apply for T_J=25°C, P ≤ Maximum Power Dissipation unless otherwise specified)(Note)

Symbol	Description	LA317			Unit	Conditions
		Min.	Typ.	Max.		
V _{REF}	Reference Input Voltage	1.20	1.25	1.30	V	10mA ≤ I _{OUT} ≤ 1A 3V ≤ V _{IN-V_{OUT}} ≤ 10V,
ΔV _{OUT/V_{OUT}}	Line Regulation	-	0.01	0.04	%/V	I _{OUT} ≤ 20mA, 3V ≤ V _{IN-V_{OUT}} ≤ 10V,
ΔV _{OUT}	Load Regulation	-	0.2	0.4	%	V _{IN-V_{OUT}} = 2V, 10mA ≤ I _{OUT} ≤ 1A
	Thermal Regulation		0.04	0.07	%/W	20ms Pulse
ΔV	Dropout Voltage	-	1.2	1.3	V	I _{OUT} = 1A
I _{LIMIT}	Current Limit	1.2	1.5	1.8	A	V _{IN-V_{OUT}} = 2V
I _{ADJ}	Adjustable Pin Current	-	50	100	μA	-
ΔI _{ADJ}	Adjustable Pin Current Change	-	0.2	5	μA	1.4V ≤ V _{IN-V_{OUT}} ≤ 10V, 10mA ≤ I _{OUT} ≤ 1A
I _{L(MIN)}	Minimum Load Current	-	3.5	10	mA	3V ≤ V _{IN-V_{OUT}} ≤ 15V
PSRR	Ripple Rejection	60	75	-	dB	f = 120Hz, C _{OUT} = 1μF Tantalum, V _{IN-V_{OUT}} = 3V, I _{OUT} = 1A
-	Temperature Stability	-	1	-	%	-
-	Long Term Stability	-	0.3	-	%	T _J = 125° C, 1000 Hours
-	RMS Output Noise (% of V _{OUT})	-	0.003	-	%	T _J = 25° C, 10Hz ≤ f ≤ 10KHz

1.0A Adjustable Positive Voltage Regulator

LA317

Symbol	Description	LA317			Unit	Conditions
		Min.	Typ.	Max.		
-	Thermal Resistance Junction to Case	-	15	-	°C/W	SOT-223
		-	10	-		TO-252
		-	4.5	-		TO-220
		-	4	-		TO-263
-	Thermal Shutdown	-	150	-	°C	Junction Temperature
-	Thermal Shutdown Hysteresis				°C	-

Note: Maximum Power Dissipation is Package Type and Case Temperature dependent. Pls see Fig.8.

Typical Characteristics Curves

Fig.1- Dropout Voltage vs. Output Current

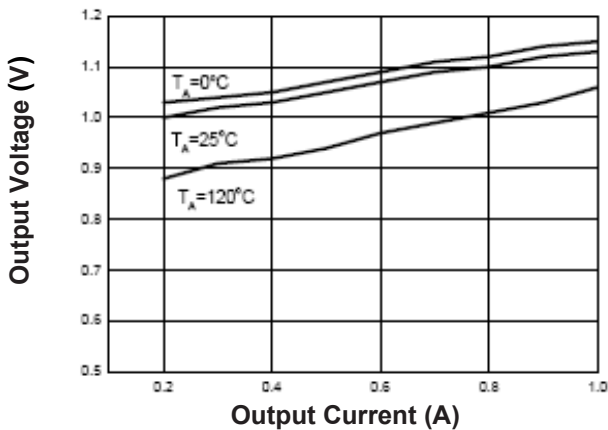


Fig.2- Load Regulation vs. Temperature

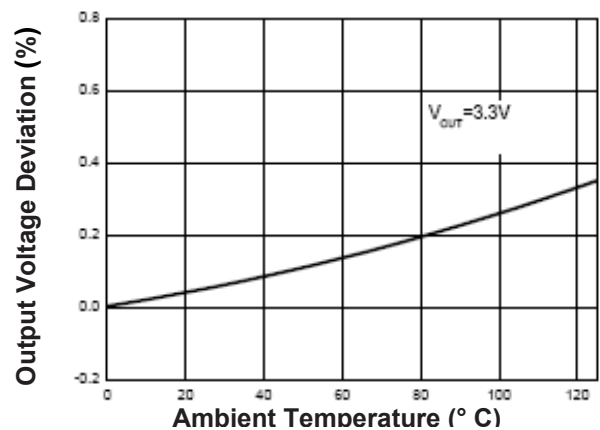


Fig.3- Reference Voltage vs. Temperature

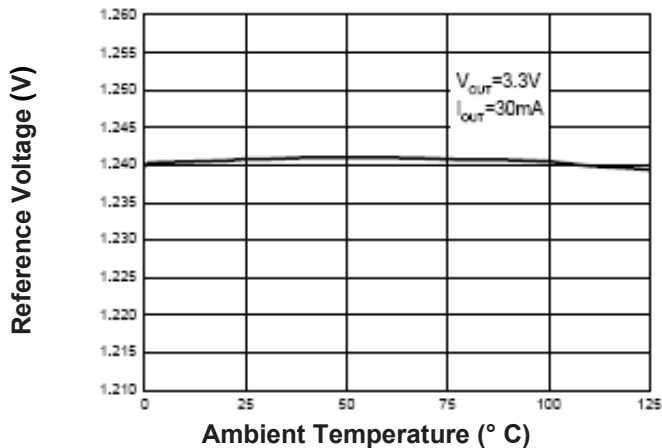
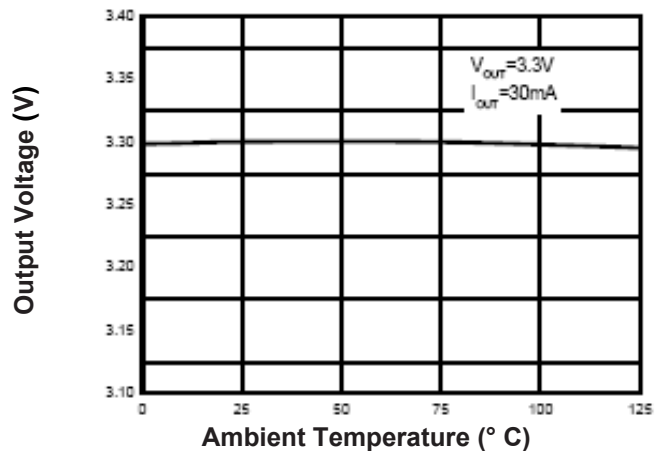


Fig.4- Output Voltage vs. Temperature



1.0A Adjustable Positive Voltage Regulator

LA317

Typical Characteristics Curves (Continued)

Fig.5- Minimum Load Current vs. Temperature

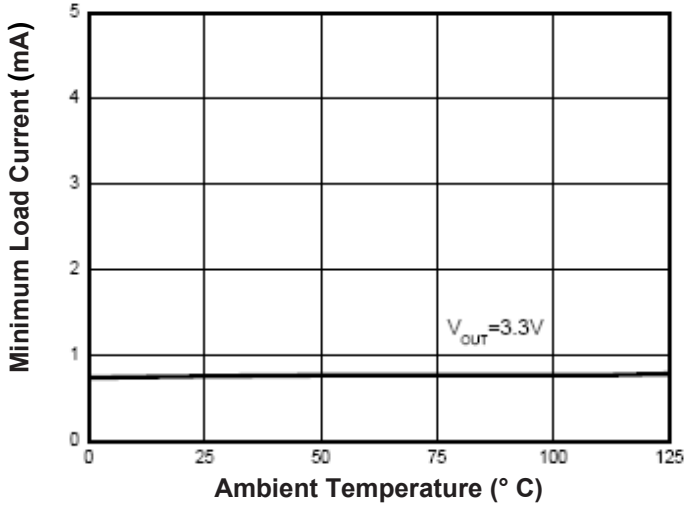


Fig.6- Adjust Pin Current vs. Temperature

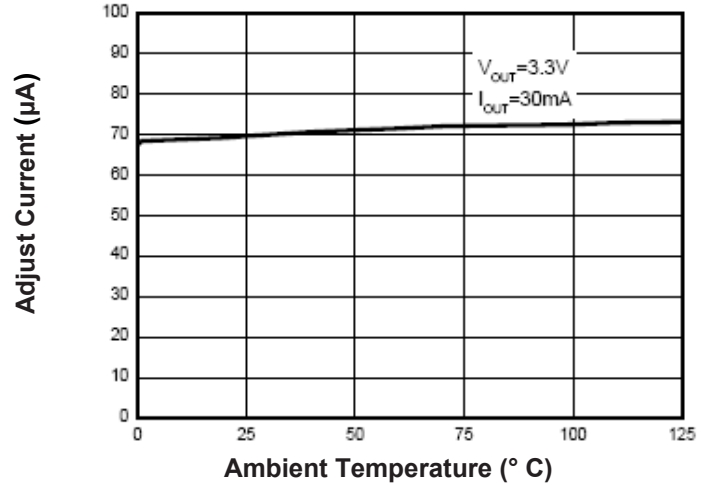


Fig.7- Short-Circuit Current vs. Temperature

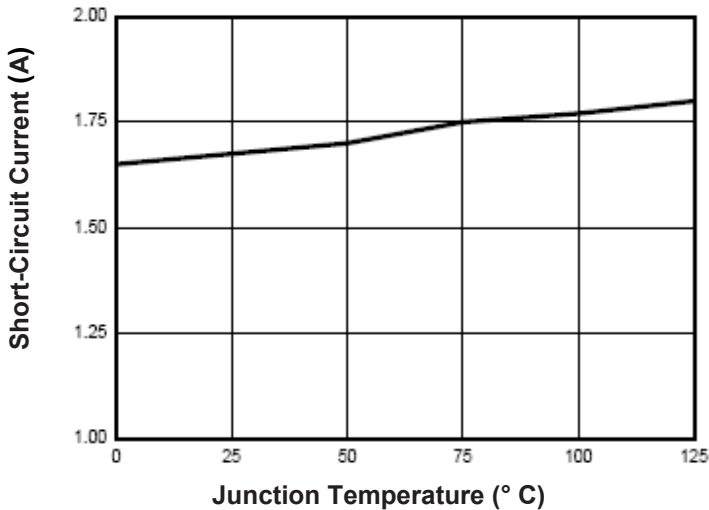
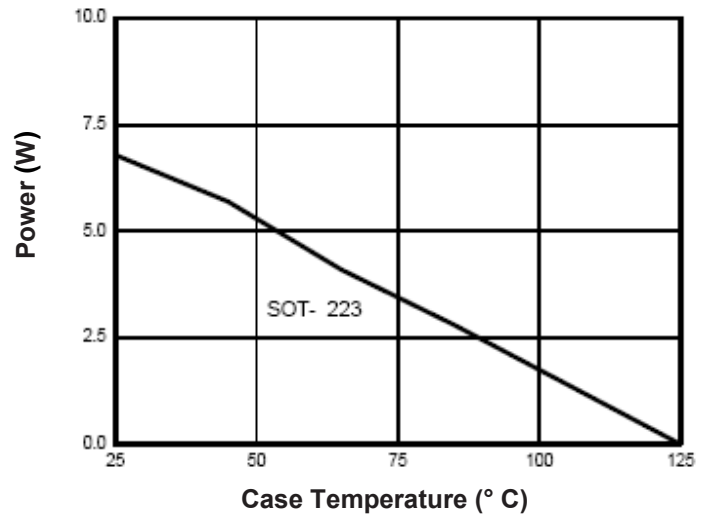


Fig.8- Maximum Power Dissipation



1.0A Adjustable Positive Voltage Regulator

LA317

Typical Characteristics Curves (Continued)

Fig.9- Ripple Rejection vs. Frequency

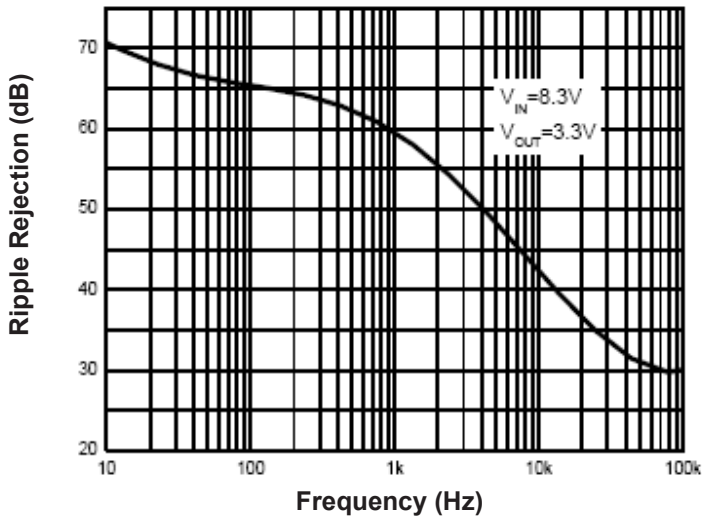


Fig.10- Line Transient Response

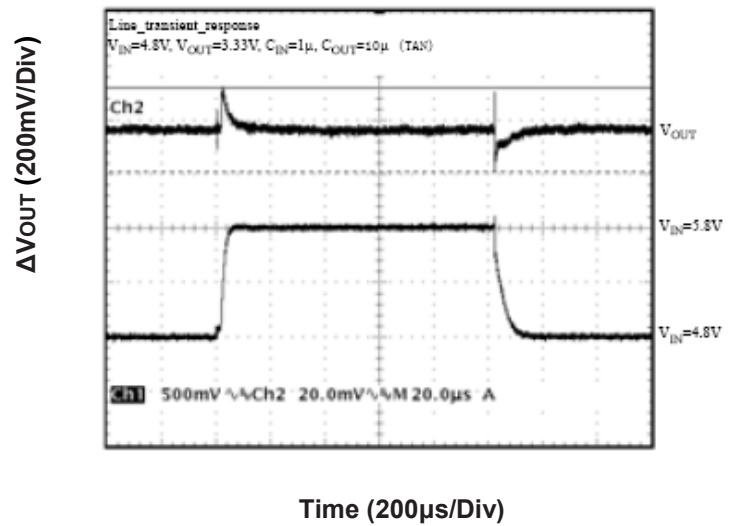
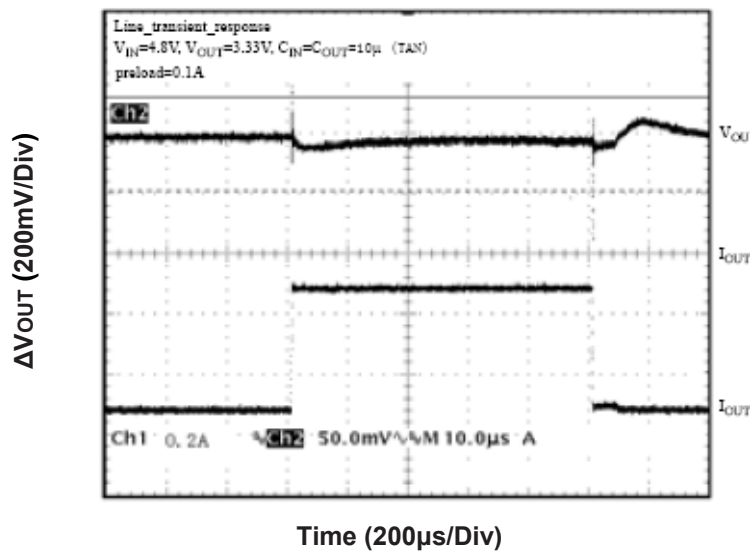


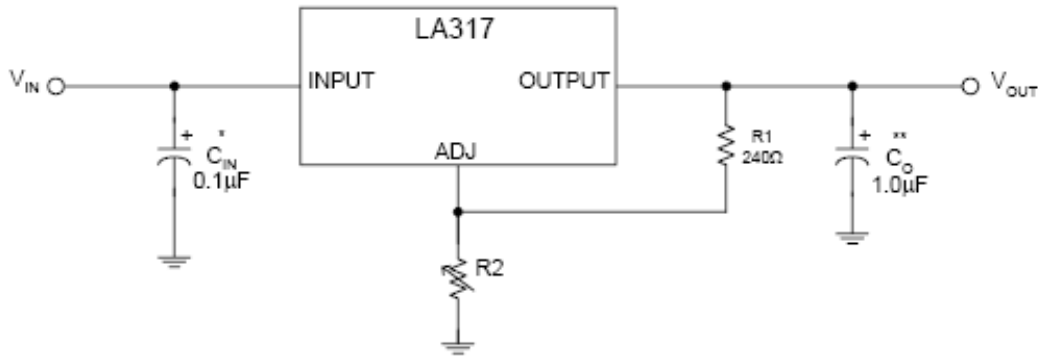
Fig.11- Load Transient Response



1.0A Adjustable Positive Voltage Regulator

LA317

Typical Application



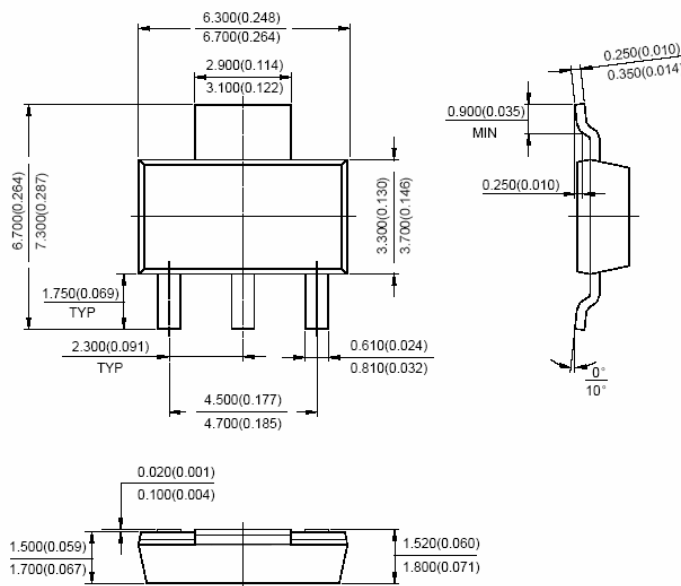
* = C_{IN} is required if the regulator is located near power supply filter.

** = C_O is needed for stability and it improves transient response.

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

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

Dimensions in inches (mm)

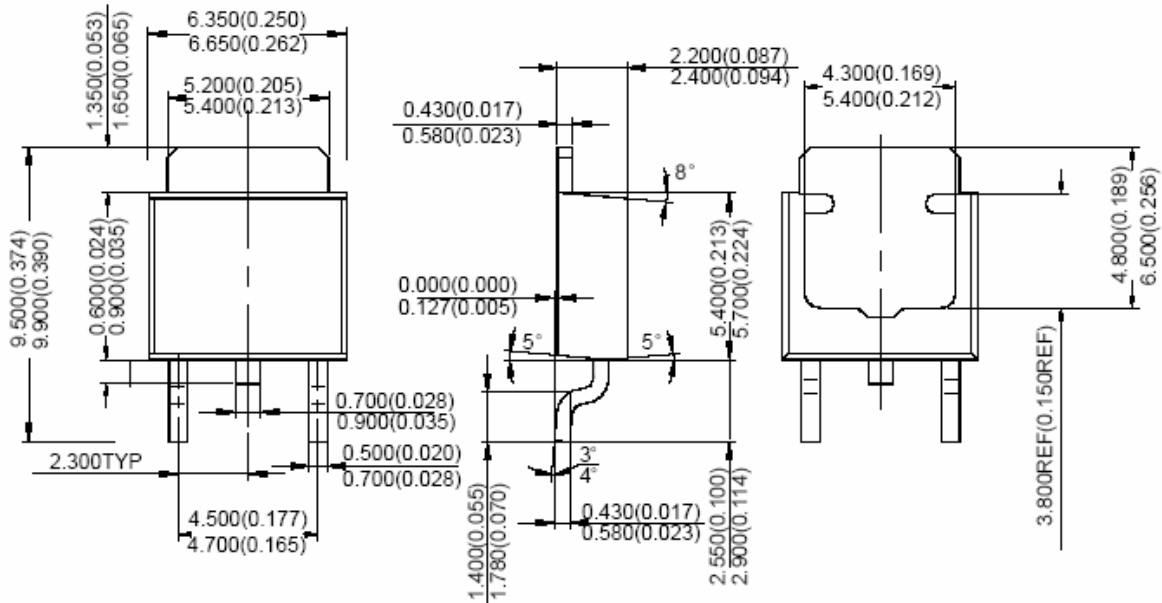


SOT-223

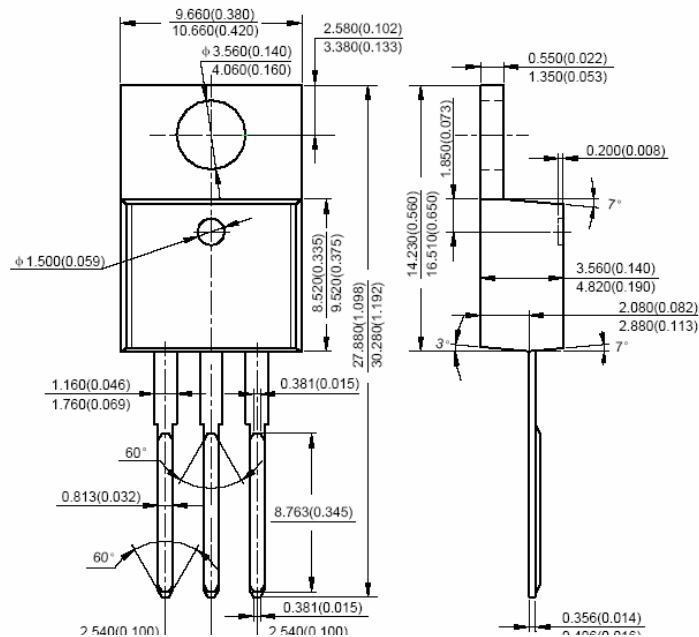
1.0A Adjustable Positive Voltage Regulator

LA317

Dimensions in inches (mm) (Continued)



D-PACK (TO-252)



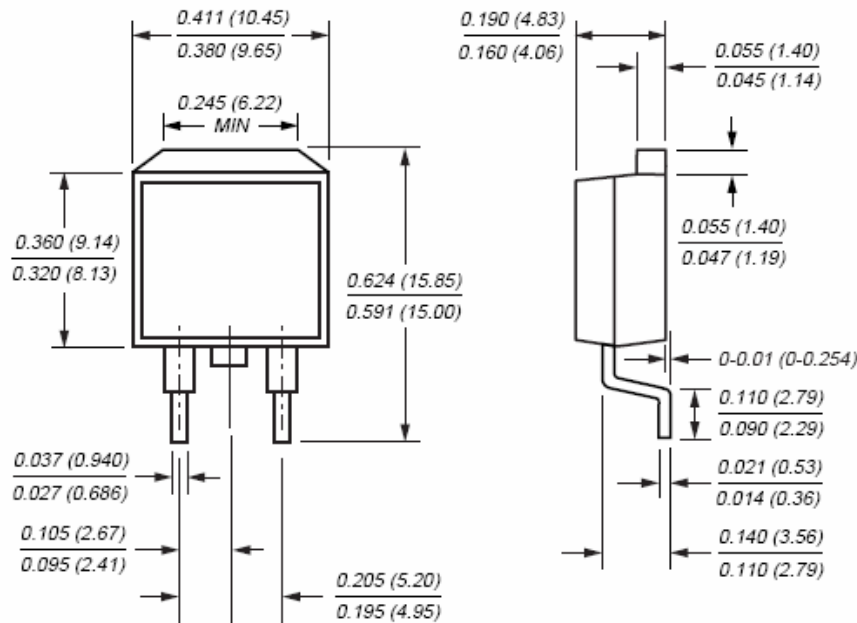
TO-220



Rev. A/DX 2007-06-04

1.0A Adjustable Positive Voltage Regulator

LA317



**D2-PACK
(TO-263)**

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