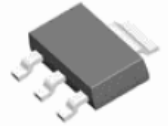


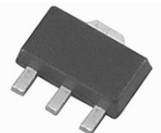
## 1A Low Dropout Positive Voltage Regulator

### General Description

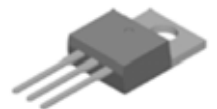
- LD1117A is a three terminal low dropout positive voltage regulator. It provides current limiting and thermal shut down and its circuit includes a trimmed Bandgap reference to assure output voltage accuracy for both fixed output voltage version and adjustable output voltage version. Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-chip thermal shutdown provides protection against any combination of overload and ambient temperature that would create excessive junction temperature
- There are 7 Fixed output voltages :1.2V, 1.5V,1.8V, 2.5V ,2.85V,3.3V an 5.0V. There are also an adjustable version provide output voltage from 1.25V to 12V with 2 external resisitors. They are suitable for applications that required supply current up to 1 A.
- LD1117A series are available in SOT-223 ,SOT-89 ,TO-220,DPAK (TO-252) and D<sup>2</sup>PAK (TO-263) Packages



SOT-223



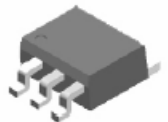
SOT-89



TO-220



DPAK



D<sup>2</sup>PAK

### Features

- Input Voltage up to 20V
- Output Current up to 1A
- Low Drop Output Voltage: Typical 1.15V at 1A output current
- Output Voltage Accuracy :  $\pm 1\%$  for fixed output Voltage 1.5V,1.8V, 2.5V ,2.85V, 3.3V,5.0V and Adjustable Output Voltage Version.  $\pm 2\%$  for fixed output Voltage 1.2V
- Trimmed Current Limit and On-Chip Thermal Shutdown
- Operation Junction Temperature: -40°C to 125°C
- RoHS Compliance and Halogen Free



HALOGEN  
**FREE**

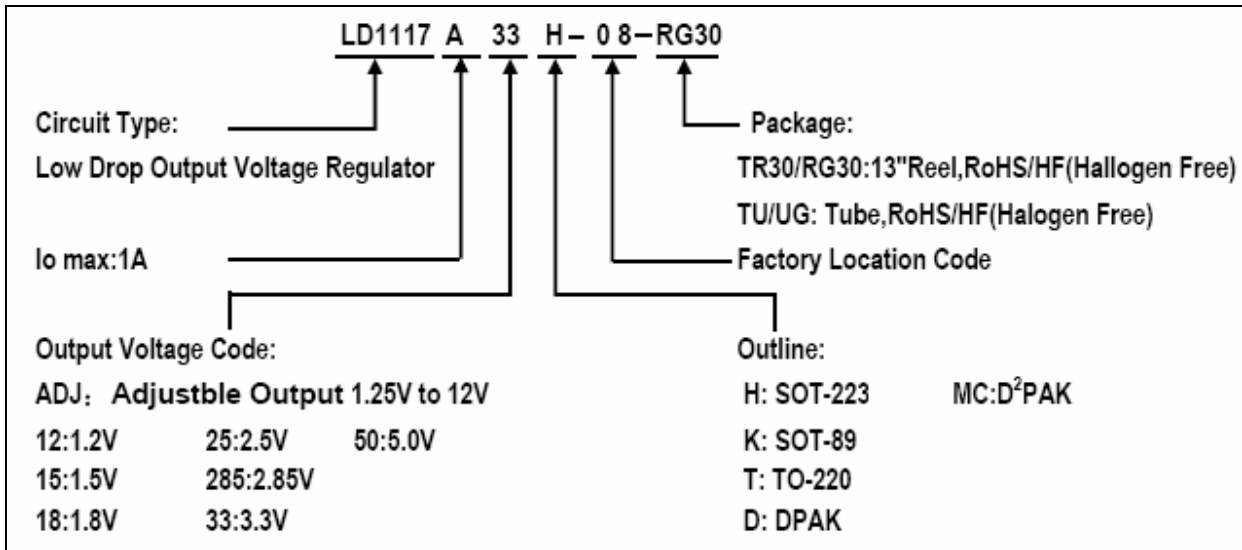
### Applications

- PC Mother Board
- Graphic Card
- NIC/Switch
- LCD Monitor , DVD Video Player and Printer
- Telecom Equipment and other Peripheral Equipment

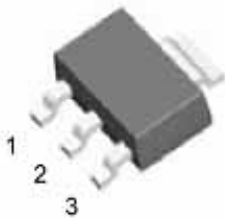
# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ - LD1117A50/ADJ

### Ordering Information



### Pin Configuration



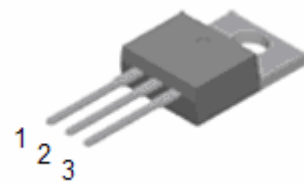
1: GND/ADJ 2: OUTPUT 3: INPUT

**SOT-223**



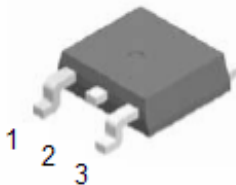
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**SOT-89**



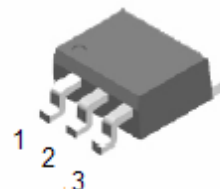
1: GND/ADJ 2: OUTPUT 3: INPUT

**TO-220**



1: GND/ADJ 2: OUTPUT 3: INPUT

**DPAK**



1: GND/ADJ 2: OUTPUT 3: INPUT

**D<sup>2</sup>PAK**

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

### Marking information:

Outline	Temperature Range	PN		Marking Code		Packing Type
		ROHS	Halogen Free	ROHS	Halogen Free	
SOT-223	-40°C to 125°C	LD1117AADJH-08-TR30	LD1117AADJH-08-RG30	EH11A	GH11A	Tape & Reel
		LD1117A12H-08-TR30	LD1117A12H-08-RG30	EH18A	GH18A	Tape & Reel
		LD1117A15H-08-TR30	LD1117A15H-08-RG30	EH12A	GH12A	Tape & Reel
		LD1117A18H-08-TR30	LD1117A18H-08-RG30	EH13A	GH13A	Tape & Reel
		LD1117A25H-08-TR30	LD1117A25H-08-RG30	EH14A	GH14A	Tape & Reel
		LD1117A285H-08-TR30	LD1117A285H-08-RG30	EH15A	GH15A	Tape & Reel
		LD1117A33H-08-TR30	LD1117A33H-08-RG30	EH16A	GH16A	Tape & Reel
		LD1117A50H-08-TR30	LD1117A50H-08-RG30	EH17A	GH17A	Tape & Reel
SOT-89	-40°C to 125°C	LD1117AADJK-08-TR30	LD1117AADJK-08-RG30	E17A	G17A	Tape & Reel
		LD1117A12K-08-TR30	LD1117A12K-08-RG30	E17G	G17G	Tape & Reel
		LD1117A15K-08-TR30	LD1117A15K-08-RG30	E17B	G17B	Tape & Reel
		LD1117A18K-08-TR30	LD1117A18K-08-RG30	E17C	G17C	Tape & Reel
		LD1117A25K-08-TR30	LD1117A25K-08-RG30	E17D	G17D	Tape & Reel
		LD1117A285K-08-TR30	LD1117A285K-08-RG30	E17H	G17H	Tape & Reel
		LD1117A33K-08-TR30	LD1117A33K-08-RG30	E17E	G17E	Tape & Reel
		LD1117A50K-08-TR30	LD1117A50K-08-RG30	E17F	G17F	Tape & Reel
TO-220	-40°C to 125°C	LD1117AADJT-08-TU	LD1117AADJT-08-UG	AZ1117T -ADJEA	AZ1117T -ADJGA	Tube
		LD1117A12T-08-TU	LD1117A12T-08-UG	AZ1117T -1.2EA	AZ1117T -1.2GA	Tube
		LD1117A15T-08-TU	LD1117A15T-08-UG	AZ1117T -1.5EA	AZ1117T -1.5GA	Tube
		LD1117A18T-08-TU	LD1117A18T-08-UG	AZ1117T -1.8EA	AZ1117T -1.8GA	Tube
		LD1117A25T-08-TU	LD1117A25T-08-UG	AZ1117T -2.5EA	AZ1117T -2.5GA	Tube
		LD1117A285T-08-TU	LD1117A285T-08-UG	AZ1117T -2.85EA	AZ1117T -2.85GA	Tube
		LD1117A33T-08-TU	LD1117A33T-08-UG	AZ1117T -3.3EA	AZ1117T -3.3GA	Tube
		LD1117A50T-08-TU	LD1117A50T-08-UG	AZ1117T -5.0EA	AZ1117T -5.0GA	Tube

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

Outline	Temperature Range	PN		Marking Code		Packing Type
		RoHS	Halogen Free	RoHS	Halogen Free	
DPAK	-40°C to 125°C	LD1117AADJD-08-TR30	LD1117AADJD-08-RG30	AZ1117D -ADJEA	AZ1117D -ADJGA	Tape & Reel
		LD1117AADJD-08-TU	LD1117AADJD-08-UG	AZ1117D -ADJEA	AZ1117D -ADJGA	Tube
		LD1117A12D-08-TR30	LD1117A12D-08-RG30	AZ1117D -1.2EA	AZ1117D -1.2GA	Tape & Reel
		LD1117A12D-08-TU	LD1117A12D-08-UG	AZ1117D -1.2EA	AZ1117D -1.2GA	Tube
		LD1117A15D-08-TR30	LD1117A15D-08-RG30	AZ1117D -1.5EA	AZ1117D -1.5GA	Tape & Reel
		LD1117A15D-08-TU	LD1117A15D-08-UG	AZ1117D -1.5EA	AZ1117D -1.5GA	Tube
		LD1117A18D-08-TR30	LD1117A18D-08-RG30	AZ1117D -1.8EA	AZ1117D -1.8GA	Tape & Reel
		LD1117A18D-08-TU	LD1117A18D-08-UG	AZ1117D -1.8EA	AZ1117D -1.8GA	Tube
		LD1117A25D-08-TR30	LD1117A25D-08-RG30	AZ1117D -2.5EA	AZ1117D -2.5GA	Tape & Reel
		LD1117A25D-08-TU	LD1117A25D-08-UG	AZ1117D -2.5EA	AZ1117D -2.5GA	Tube
		LD1117A285D-08-TR30	LD1117A285D-08-RG30	AZ1117D -2.85EA	AZ1117D -2.85GA	Tape & Reel
		LD1117A285D-08-TU	LD1117A285D-08-UG	AZ1117D -2.85EA	AZ1117D -2.85GA	Tube
		LD1117A33D-08-TR30	LD1117A33D-08-RG30	AZ1117D -3.3EA	AZ1117D -3.3GA	Tape & Reel
		LD1117A33D-08-TU	LD1117A33D-08-UG	AZ1117D -3.3EA	AZ1117D -3.3GA	Tube
		LD1117A50D-08-TR30	LD1117A50D-08-RG30	AZ1117D -5.0EA	AZ1117D -5.0GA	Tape & Reel
		LD1117A50D-08-TU	LD1117A50D-08-UG	AZ1117D -5.0EA	AZ1117D -5.0GA	Tube

# 1A Low Dropout Positive Voltage Regulator

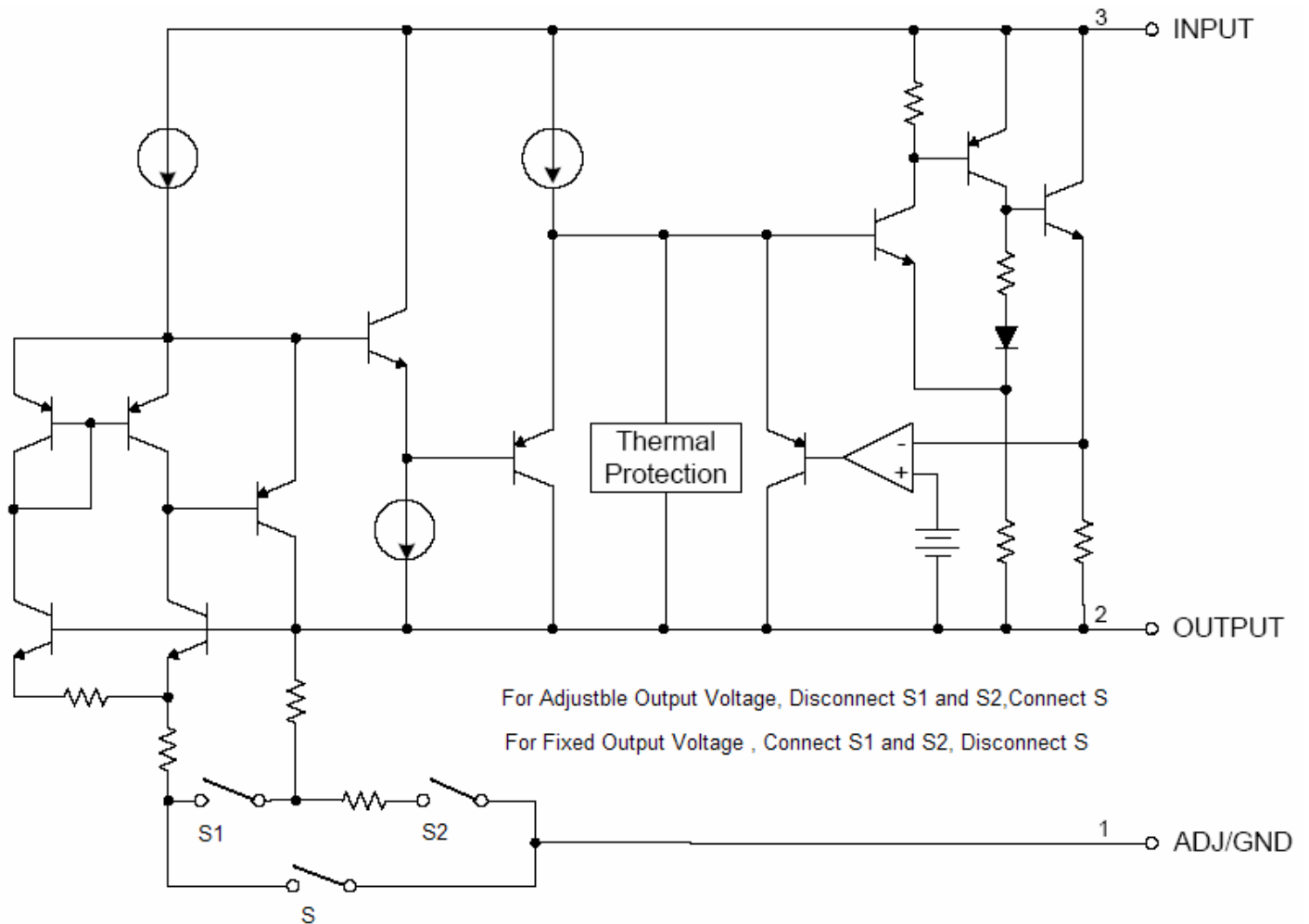
## LD1117A12/ADJ -LD1117A50/ADJ

Outline	Temperature Range	PN		Marking Code		Packing Type
		RoHS	Halogen Free	RoHS	Halogen Free	
D <sup>2</sup> PAK	-40°C to 125°C	LD1117AADJMC-08-TR30	LD1117AADJMC-08-RG30	AZ1117S-ADJEA	AZ1117S-ADJGA	Tape & Reel
		LD1117AADJMC-08-TU	LD1117AADJMC-08-UG	AZ1117S-ADJEA	AZ1117S-ADJGA	Tube
		LD1117A12MC-08-TR30	LD1117A12MC-08-RG30	AZ1117S-1.2EA	AZ1117S-1.2GA	Tape & Reel
		LD1117A12MC-08-TU	LD1117A12MC-08-UG	AZ1117S-1.2EA	AZ1117S-1.2GA	Tube
		LD1117A15MC-08-TR30	LD1117A15MC-08-RG30	AZ1117S-1.5EA	AZ1117S-1.5GA	Tape & Reel
		LD1117A15MC-08-TU	LD1117A15MC-08-UG	AZ1117S-1.5EA	AZ1117S-1.5GA	Tube
		LD1117A18MC-08-TR30	LD1117A18MC-08-RG30	AZ1117S-1.8EA	AZ1117S-1.8GA	Tape & Reel
		LD1117A18MC-08-TU	LD1117A18MC-08-UG	AZ1117S-1.8EA	AZ1117S-1.8GA	Tube
		LD1117A25MC-08-TR30	LD1117A25MC-08-RG30	AZ1117S-2.5EA	AZ1117S-2.5GA	Tape & Reel
		LD1117A25MC-08-TU	LD1117A25MC-08-UG	AZ1117S-2.5EA	AZ1117S-2.5GA	Tube
		LD1117A285MC-08-TR30	LD1117A285MC-08-RG30	AZ1117S-2.85EA	AZ1117S-2.85GA	Tape & Reel
		LD1117A285MC-08-TU	LD1117A285MC-08-UG	AZ1117S-2.85EA	AZ1117S-2.85GA	Tube
		LD1117A33MC-08-TR30	LD1117A33MC-08-RG30	AZ1117S-3.3EA	AZ1117S-3.3GA	Tape & Reel
		LD1117A33MC-08-TU	LD1117A33MC-08-UG	AZ1117S-3.3EA	AZ1117S-3.3GA	Tube
		LD1117A50MC-08-TR30	LD1117A50MC-08-RG30	AZ1117S-5.0EA	AZ1117S-5.0GA	Tape & Reel
		LD1117A50MC-08-TU	LD1117A50MC-08-UG	AZ1117S-5.0EA	AZ1117S-5.0GA	Tube

# 1A Low Dropout Positive Voltage Regulator

LD1117A12/ADJ - LD1117A50/ADJ

## Block Diagram



# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

### Absolute Maximum Ratings

Symbol	Description	Ratings	Unit	
$V_{IN}$	Input Voltage(Note1)	20	V	
$T_J$	Junction Temperature (Note2)	150	° C	
$T_{STG}$	Storage Temperature Range	-65 to 150	° C	
$T_{LEAD}(10 \text{ sec})$	Lead Soldering Temperature	260	° C	
$\theta_{JA}$	Thermal Resistance (No Heatsink, Note 3)	SOT-223	120	° C/W
		SOT-89	165	
		TO-220	60	
		DPAK	100	
		D2PAK	60	
<b>ESD</b> (Human body model)	ESD	2000	V	
<b>ESD</b> (Machine model)	ESD	250	V	

Note 1: Input Voltage is recommended operating at 15V max.

Note2 : Operating Junction Temperature is recommended at -40° C to 125° C.

Note3:  $P_{D(Max)} = (T_{J(max)} - T_A) / \theta_{JA}$ ,  $P_{D(Max)}$ : Maximum Power Dissipation;  $T_A$ : Ambient Temperature,

$T_{J(max)}$ : Maximum Junction Temperature ;  $\theta_{JA}$  :The Junction-to Ambient Thermal Resistance.

Exceeding the maximum allowable power dissipation will result in die temperature and the Regulator will go into thermal shutdown

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

### Electrical Characteristics

For LD1117A-ADJ ( $V_{IN} \leq 10V$ ,  $T_J = 25^\circ C$ , unless otherwise specified)

Symbol	Description	LD1117A-ADJ			Unit	Test Conditions	
		Min.	Type.	Max.			
$V_{REF}$	Reference Voltage	1.238	1.250	1.262	V	$V_{IN} - V_O = 2V$ , $I_O = 10mA$	
		1.225	1.250	1.270	V	$1.4V \leq V_{IN} - V_O \leq 8V$ , $10mA \leq I_O \leq 1A$ $P_D \leq P_{D(max)}$ ,	
$\Delta V_{LINE}$	Line Regulation	-	0.035	0.2	%	$1.5V \leq V_{IN} - V_O \leq 10V$ , $I_O = 10mA$	
$\Delta V_{LOAD}$	Load Regulation	-	0.2	0.4	%	$V_{IN} - V_O = 2V$ , $10mA \leq I_O \leq 1A$	
$I_{LIMIT}$	Current Limit	1.25	1.35	-	A	$V_{IN} - V_O = 2V$	
$I_{ADJ}$	Adjust Pin Current	-	60	120	$\mu A$	-	
$\Delta I_{ADJ}$	Adjust Pin Current Change	-	0.2	5	$\mu A$	$1.4V \leq V_{IN} - V_O \leq 10V$ , $10mA \leq I_O \leq 1A$	
$I_{LOAD}$	Minimum Load Current	-	1.7	5	mA	$1.5V \leq V_{IN} - V_O \leq 10V$ , (ADJ only)	
$I_q$	Quiescent Current	-	5	10	mA	$V_{IN} - V_O = 1.25V$	
$V_D$	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{REF} = 1\%$ , $I_O = 100mA$	
		-	1.08	1.18	V	$\Delta V_{REF} = 1\%$ , $I_O = 500mA$	
		-	1.15	1.25	V	$\Delta V_{REF} = 1\%$ , $I_O = 1A$	
$e_N$	Output Noise Voltage	-	0.003	-	%	$10Hz \leq f \leq 10KHz$ , $T_A = 25^\circ C$	
$PSRR$	Power Supply Ripple Rejection Ratio	60	75	-	dB	$V_{IN} - V_O = 3V$ , $I_O = 1A$ , $f = 120Hz$ $C_O = 22\mu F$ Tantalum	
-	Temperature Stability	-	0.5	-	%	-	
-	Long-term Temperature Stability	-	0.3	-	%	$T_A = 125^\circ C$ , 1000hrs	
$\theta_{JC}$	Thermal Resistance	SOT-223	-	25	-	$^\circ C/W$	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DKPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

For LD1117A12 ( $V_{IN} \leq 10V$ ,  $T_J = 25^\circ C$ , unless otherwise specified)

Symbol	Description	LD1117A12			Unit	Test Conditions
		Min.	Type.	Max.		
$V_O$	Output Voltage	1.176	1.2	1.224	V	$V_{IN} = 3.2V$ , $I_O = 10mA$
		1.152	1.2	1.248	V	$3.0V \leq V_{IN} \leq 10V$ , $10mA \leq I_O \leq 1A$
$\Delta V_{LINE}$	Line Regulation	-	1	6	mV	$1.5V \leq V_{IN} - V_O \leq 10V$ , $I_O = 10mA$
$\Delta V_{LOAD}$	Load Regulation	-	1	10	mV	$V_{IN} - V_O = 2V$ , $10mA \leq I_O \leq 1A$
$I_{LIMIT}$	Current Limit	1.25	1.35	-	A	$V_{IN} - V_O = 2V$
$I_q$	Quiescent Current	-	5	10	mA	$V_{IN} - V_O = 1.25V$



# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

<b>V<sub>D</sub></b>	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 100mA$	
		-	1.08	1.18	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 500mA$	
		-	1.15	1.25	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 1A$	
<b>eN</b>	Output Noise Voltage	-	0.003	-	%	$10Hz \leq f \leq 10KHz, T_A = 25^\circ C$	
<b>PSRR</b>	Power Supply Ripple Rejection Ratio	60	75	-	dB	$V_{IN} - V_O = 3V, I_o = 1A, f = 120Hz$ Co=22uF Tantalum	
-	Temperature Stability	-	0.5	-	%	-	
-	Long-term Temperature Stability	-	0.3	-	%	$T_A = 125^\circ C, 1000hrs$	
<b><math>\theta_{JC}</math></b>	Thermal Resistance	SOT-223	-	25	-	° C/W	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

For LD1117A15 ( $V_{IN} \leq 10V, T_J = 25^\circ C$ , unless otherwise specified)

Symbol	Description	LD1117A15			Unit	Test Conditions	
		Min.	Type.	Max.			
<b>V<sub>O</sub></b>	Output Voltage	1.485	1.5	1.515	V	$V_{IN} = 3.5V, I_o = 10mA$	
		1.470	1.5	1.530	V	$3.0V \leq V_{IN} \leq 10V, 10mA \leq I_o \leq 1A$	
<b><math>\Delta V_{LINE}</math></b>	Line Regulation	-	1	6	mV	$1.5V \leq V_{IN} - V_O \leq 10V, I_o = 10mA$	
<b><math>\Delta V_{LOAD}</math></b>	Load Regulation	-	1	10	mV	$V_{IN} - V_O = 2V, 10mA \leq I_o \leq 1A$	
<b>I<sub>LIMIT</sub></b>	Current Limit	1.25	1.35	-	A	$V_{IN} - V_O = 2V$	
<b>I<sub>q</sub></b>	Quiescent Current	-	5	10	mA	$V_{IN} - V_O = 1.25V$	
<b>V<sub>D</sub></b>	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 100mA$	
		-	1.08	1.18	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 500mA$	
		-	1.15	1.25	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 1A$	
<b>eN</b>	Output Noise Voltage	-	0.003	-	%	$10Hz \leq f \leq 10KHz, T_A = 25^\circ C$	
<b>PSRR</b>	Power Supply Ripple Rejection Ratio	60	75	-	dB	$V_{IN} - V_O = 3V, I_o = 1A, f = 120Hz$ Co=22uF Tantalum	
-	Temperature Stability	-	0.5	-	%	-	
-	Long-term Temperature Stability	-	0.3	-	%	$T_A = 125^\circ C, 1000hrs$	
<b><math>\theta_{JC}</math></b>	Thermal Resistance	SOT-223	-	25	-	° C/W	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

For LD1117A18 ( $V_{IN} \leq 10V$ ,  $T_J = 25^\circ C$ , unless otherwise specified)

Symbol	Description	LD1117A18			Unit	Test Conditions	
		Min.	Type.	Max.			
$V_o$	Output Voltage	1.782	1.8	1.818	V	$V_{IN} = 3.8V$ , $I_o = 10mA$	
		1.746	1.8	1.854	V	$3.2V \leq V_{IN} \leq 10V$ , $10mA \leq I_o \leq 1A$	
$\Delta V_{LINE}$	Line Regulation	-	1	6	mV	$1.5V \leq V_{IN} - V_o \leq 10V$ , $I_o = 10mA$	
$\Delta V_{LOAD}$	Load Regulation	-	1	10	mV	$V_{IN} - V_o = 2V$ , $10mA \leq I_o \leq 1A$	
$I_{LIMIT}$	Current Limit	1.25	1.35	-	A	$V_{IN} - V_o = 2V$	
$I_q$	Quiescent Current	-	5	10	mA	$V_{IN} - V_o = 1.25V$	
$V_d$	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%$ , $I_o = 100mA$	
		-	1.08	1.18	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%$ , $I_o = 500mA$	
		-	1.15	1.25	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%$ , $I_o = 1A$	
$e_N$	Output Noise Voltage	-	0.003	-	%	$10Hz \leq f \leq 10KHz$ , $T_A = 25^\circ C$	
$PSRR$	Power Supply Ripple Rejection Ratio	60	75	-	dB	$V_{IN} - V_o = 3V$ , $I_o = 1A$ , $f = 120Hz$ $C_o = 22\mu F$ Tantalum	
-	Temperature Stability	-	0.5	-	%	-	
-	Long-term Temperature Stability	-	0.3	-	%	$T_A = 125^\circ C$ , 1000hrs	
$\theta_{JC}$	Thermal Resistance	SOT-223	-	25	-	$^\circ C/W$	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

For LD1117A25 ( $V_{IN} \leq 10V$ ,  $T_J = 25^\circ C$ , unless otherwise specified)

Symbol	Description	LD1117A25			Unit	Test Conditions
		Min.	Type.	Max.		
$V_o$	Output Voltage	2.475	2.5	2.525	V	$V_{IN} = 4.5V$ , $I_o = 10mA$
		2.450	2.5	2.550	V	$3.9V \leq V_{IN} \leq 10V$ , $10mA \leq I_o \leq 1A$
$\Delta V_{LINE}$	Line Regulation	-	1	6	mV	$1.5V \leq V_{IN} - V_o \leq 10V$ , $I_o = 10mA$
$\Delta V_{LOAD}$	Load Regulation	-	1	10	mV	$V_{IN} - V_o = 2V$ , $10mA \leq I_o \leq 1A$
$I_{LIMIT}$	Current Limit	1.25	1.35	-	A	$V_{IN} - V_o = 2V$
$I_q$	Quiescent Current	-	5	10	mA	$V_{IN} - V_o = 1.25V$
$V_d$	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%$ , $I_o = 100mA$
		-	1.08	1.18	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%$ , $I_o = 500mA$
		-	1.15	1.25	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%$ , $I_o = 1A$
$e_N$	Output Noise Voltage	-	0.003	-	%	$10Hz \leq f \leq 10KHz$ , $T_A = 25^\circ C$
$PSRR$	Power Supply Ripple Rejection Ratio	60	75	-	dB	$V_{IN} - V_o = 3V$ , $I_o = 1A$ , $f = 120Hz$ $C_o = 22\mu F$ Tantalum
-	Temperature Stability	-	0.5	-	%	-
-	Long-term Temperature Stability	-	0.3	-	%	$T_A = 125^\circ C$ , 1000hrs

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ - LD1117A50/ADJ

$\theta_{JC}$	Thermal Resistance	SOT-223	-	25	-	° C/W	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

For LD1117A285 ( $V_{IN} \leq 10V$ ,  $T_J = 25^\circ C$ , unless otherwise specified)

Symbol	Description	LD1117A285			Unit	Test Conditions	
		Min.	Type.	Max.			
$V_o$	Output Voltage	2.822	2.85	2.878	V	$V_{IN} = 4.85V$ , $I_o = 10mA$	
		2.793	2.85	2.907	V	$4.25V \leq V_{IN} \leq 10V$ , $10mA \leq I_o \leq 1A$	
$\Delta V_{LINE}$	Line Regulation	-	1	6	mV	$1.5V \leq V_{IN} - V_o \leq 10V$ , $I_o = 10mA$	
$\Delta V_{LOAD}$	Load Regulation	-	1	10	mV	$V_{IN} - V_o = 2V$ , $10mA \leq I_o \leq 1A$	
$I_{LIMIT}$	Current Limit	1.25	1.35	-	A	$V_{IN} - V_o = 2V$	
$I_q$	Quiescent Current	-	5	10	mA	$V_{IN} - V_o = 1.25V$	
$V_d$	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{LINE}$ , $\Delta V_{LOAD} = 1\%$ , $I_o = 100mA$	
		-	1.08	1.18	V	$\Delta V_{LINE}$ , $\Delta V_{LOAD} = 1\%$ , $I_o = 500mA$	
		-	1.15	1.25	V	$\Delta V_{LINE}$ , $\Delta V_{LOAD} = 1\%$ , $I_o = 1A$	
$e_N$	Output Noise Voltage	-	0.003	-	%	$10Hz \leq f \leq 10KHz$ , $T_A = 25^\circ C$	
$PSRR$	Power Supply Ripple Rejection Ratio	60	75	-	dB	$V_{IN} - V_o = 3V$ , $I_o = 1A$ , $f = 120Hz$ $C_o = 22\mu F$ Tantalum	
-	Temperature Stability	-	0.5	-	%	-	
-	Long-term Temperature Stability	-	0.3	-	%	$T_A = 125^\circ C$ , 1000hrs	
$\theta_{JC}$	Thermal Resistance	SOT-223	-	25	-	° C/W	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

For LD1117A33 ( $V_{IN} \leq 10V$ ,  $T_J = 25^\circ C$ , unless otherwise specified)

Symbol	Description	LD1117A33			Unit	Test Conditions
		Min.	Type.	Max.		
$V_o$	Output Voltage	3.267	3.3	3.333	V	$V_{IN} = 5.0V$ , $I_o = 10mA$
		3.235	3.3	3.365	V	$4.75V \leq V_{IN} \leq 10V$ , $10mA \leq I_o \leq 1A$
$\Delta V_{LINE}$	Line Regulation	-	1	6	mV	$1.5V \leq V_{IN} - V_o \leq 10V$ , $I_o = 10mA$
$\Delta V_{LOAD}$	Load Regulation	-	1	10	mV	$V_{IN} - V_o = 2V$ , $10mA \leq I_o \leq 1A$
$I_{LIMIT}$	Current Limit	1.25	1.35	-	A	$V_{IN} - V_o = 2V$
$I_q$	Quiescent Current	-	5	10	mA	$V_{IN} - V_o = 1.25V$

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

<b>V<sub>D</sub></b>	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 100mA$	
		-	1.08	1.18	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 500mA$	
		-	1.15	1.25	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 1A$	
<b>eN</b>	Output Noise Voltage	-	0.003	-	%	10Hz ≤ f ≤ 10KHz, T <sub>A</sub> = 25°C	
<b>PSRR</b>	Power Supply Ripple Rejection Ratio	60	75	-	dB	V <sub>IN</sub> -V <sub>O</sub> =3V, I <sub>O</sub> =1A, f=120Hz C <sub>O</sub> =22uF Tantalum	
-	Temperature Stability	-	0.5	-	%	-	
-	Long-term Temperature Stability	-	0.3	-	%	T <sub>A</sub> =125°C, 1000hrs	
<b>θ<sub>JC</sub></b>	Thermal Resistance	SOT-223	-	25	-	° C/W	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

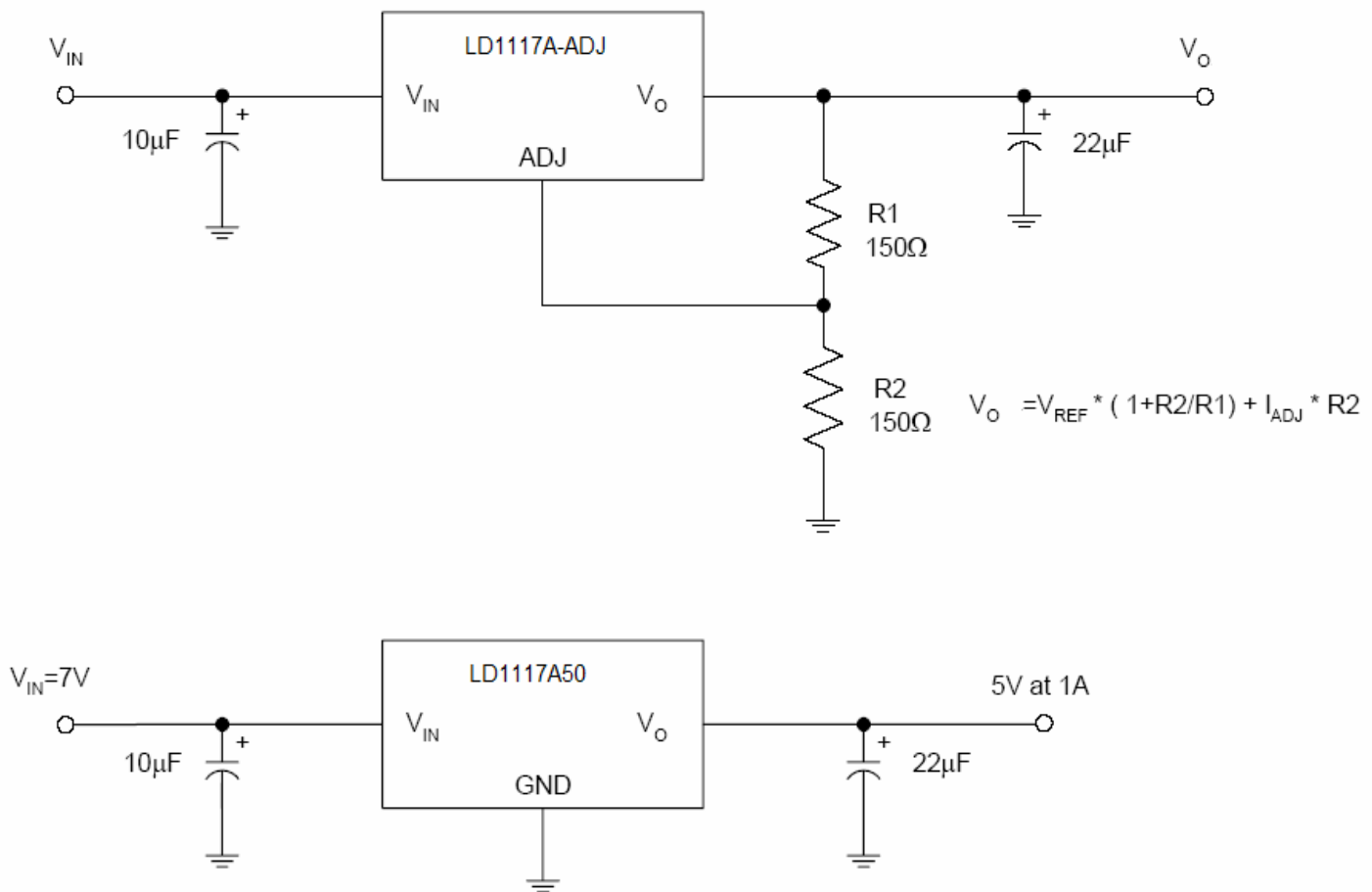
For LD1117A50 (V<sub>IN</sub> ≤ 10V, T<sub>J</sub> = 25°C, unless otherwise specified)

Symbol	Description	LD1117A50			Unit	Test Conditions	
		Min.	Type.	Max.			
<b>V<sub>O</sub></b>	Output Voltage	4.95	5.0	5.05	V	V <sub>IN</sub> = 7.0V, I <sub>O</sub> = 10mA	
		4.9	5.0	5.1	V	6.5V ≤ V <sub>IN</sub> ≤ 12V, 10mA ≤ I <sub>O</sub> ≤ 1A	
<b>ΔV<sub>LINE</sub></b>	Line Regulation	-	1	10	mV	1.5V ≤ V <sub>IN</sub> -V <sub>O</sub> ≤ 10V, I <sub>O</sub> = 10mA	
<b>ΔV<sub>LOAD</sub></b>	Load Regulation	-	1	15	mV	V <sub>IN</sub> -V <sub>O</sub> = 2V, 10mA ≤ I <sub>O</sub> ≤ 1A	
<b>I<sub>LIMIT</sub></b>	Current Limit	1.25	1.35	-	A	V <sub>IN</sub> -V <sub>O</sub> = 2V	
<b>I<sub>Q</sub></b>	Quiescent Current	-	5	10	mA	V <sub>IN</sub> -V <sub>O</sub> = 1.25V	
<b>V<sub>D</sub></b>	Dropout Voltage	-	1.0	1.1	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 100mA$	
		-	1.08	1.18	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 500mA$	
		-	1.15	1.25	V	$\Delta V_{LINE}, \Delta V_{LOAD} = 1\%, I_o = 1A$	
<b>eN</b>	Output Noise Voltage	-	0.003	-	%	10Hz ≤ f ≤ 10KHz, T <sub>A</sub> = 25°C	
<b>PSRR</b>	Power Supply Ripple Rejection Ratio	60	75	-	dB	V <sub>IN</sub> -V <sub>O</sub> =3V, I <sub>O</sub> =1A, f=120Hz C <sub>O</sub> =22uF Tantalum	
-	Temperature Stability	-	0.5	-	%	-	
-	Long-term Temperature Stability	-	0.3	-	%	T <sub>A</sub> =125°C, 1000hrs	
<b>θ<sub>JC</sub></b>	Thermal Resistance	SOT-223	-	25	-	° C/W	-
		SOT-89	-	30	-		-
		TO-220	-	10	-		-
		DPAK	-	17	-		-
		D <sup>2</sup> PAK	-	10	-		-

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ - LD1117A50/ADJ

### Typical Application



# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ - LD1117A50/ADJ

### Typical Characteristics Curves

Fig.1  $V_D$ - $I_O$

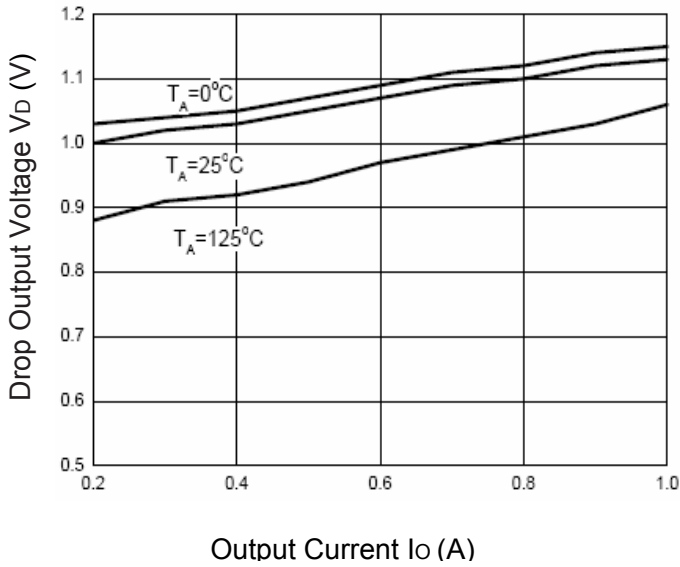


Fig.2  $V_D$ - $T_J$

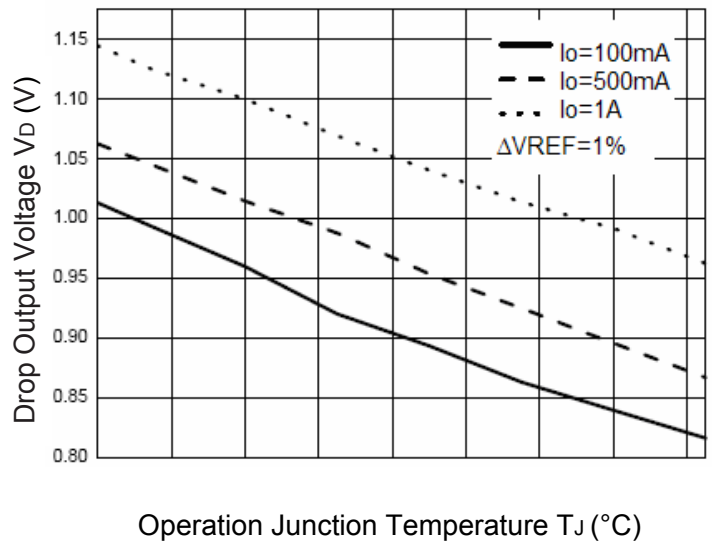


Fig.3  $\Delta V_{LOAD}$ - $T_J$

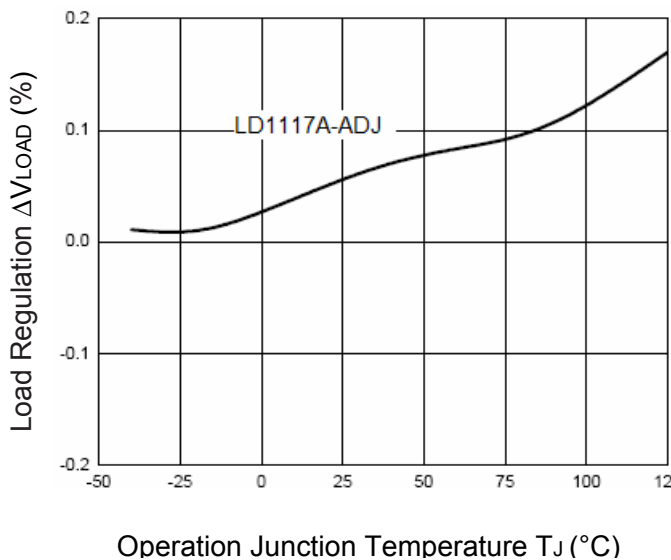
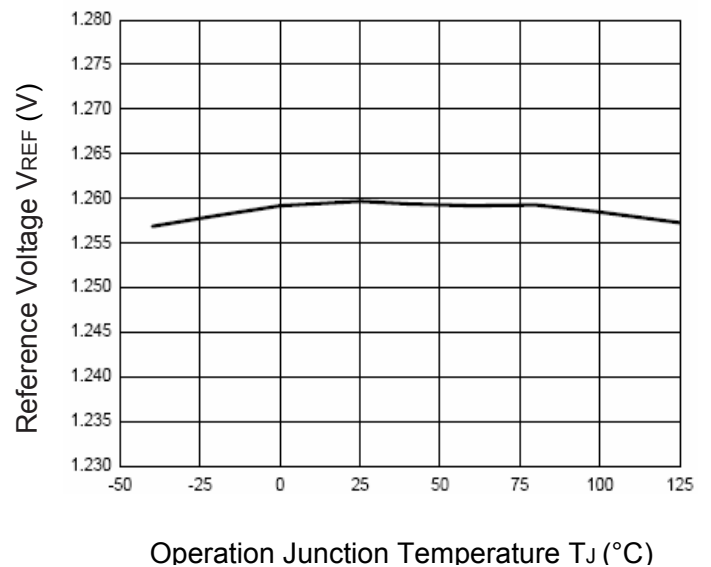


Fig.4  $V_{REF}$ - $T_J$



# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ -LD1117A50/ADJ

Fig.5 Vo-Tj

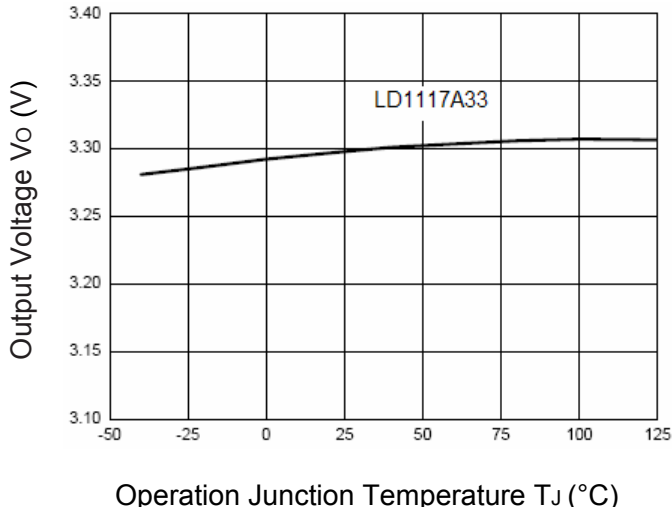


Fig.6 I<sub>LOAD</sub>-Tj

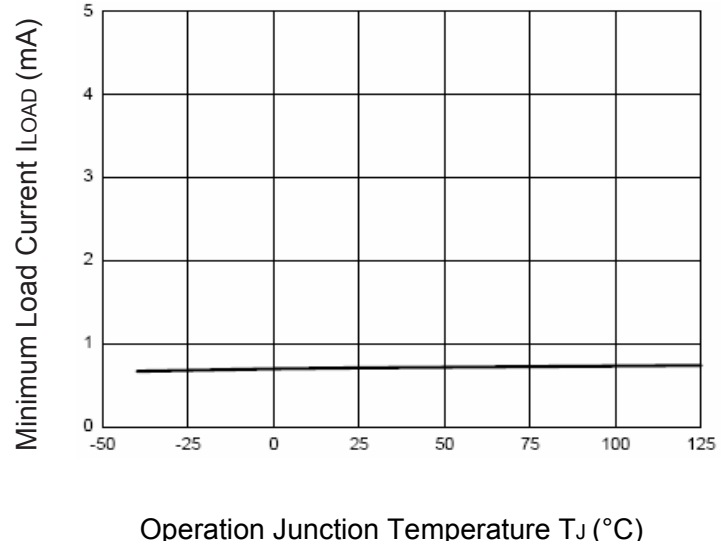


Fig.7 I<sub>ADJ</sub>-Tj

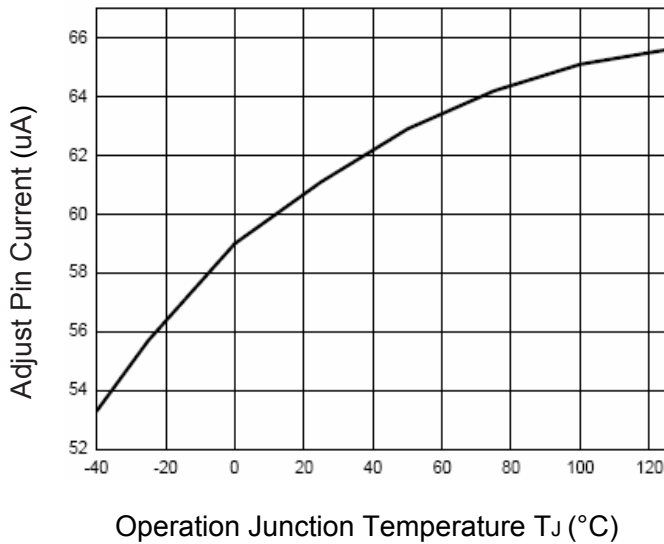
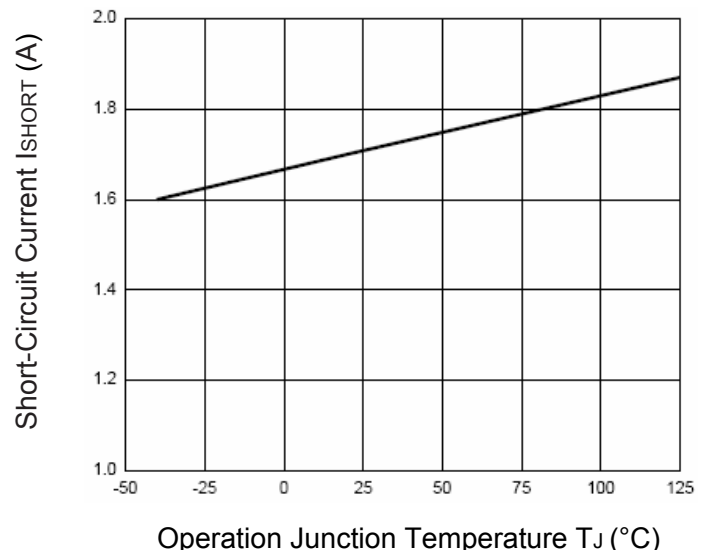


Fig.8 I<sub>SHORT</sub>-Tj



# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ - LD1117A50/ADJ

Fig.9 Pd-Tc

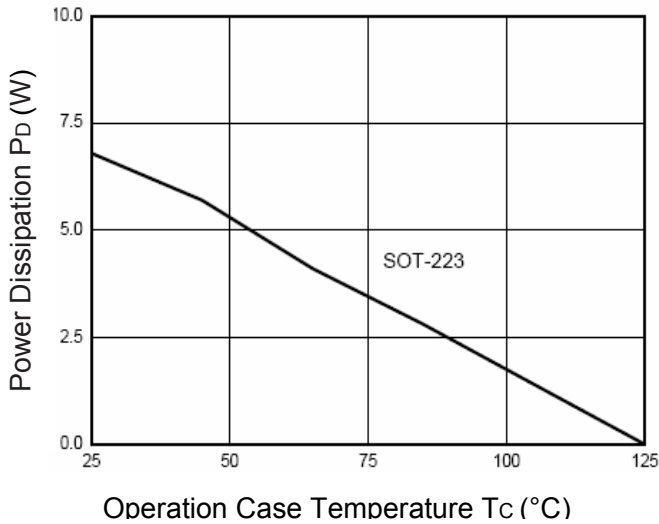


Fig.10 PSRR-f

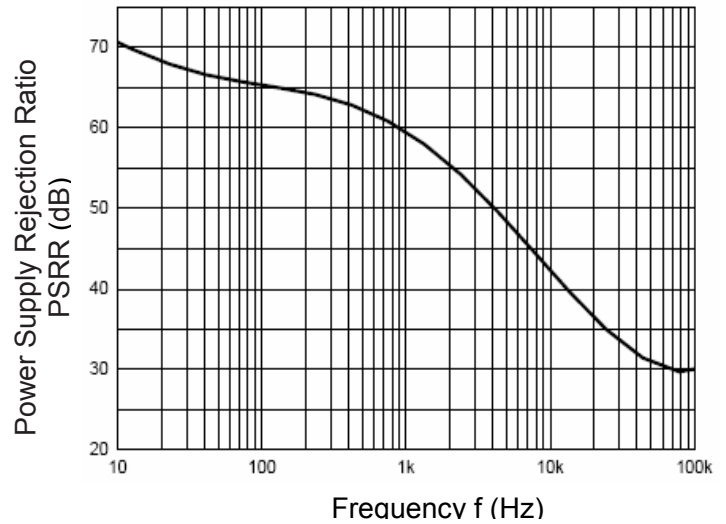


Fig.11 Line Transient Response

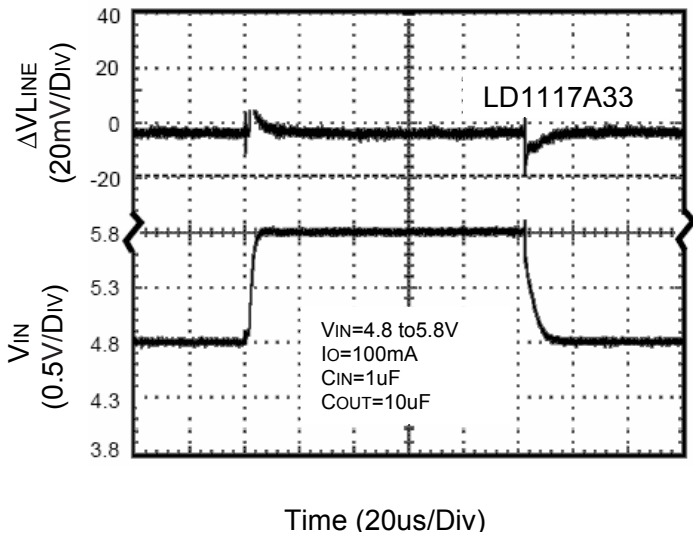
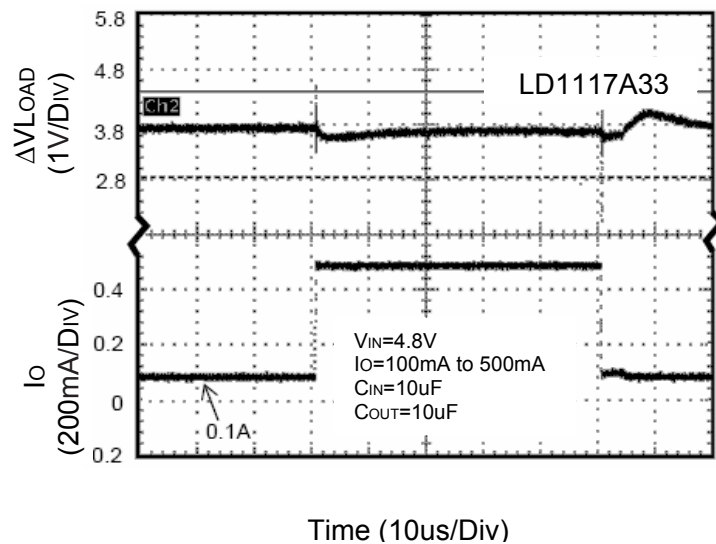


Fig.12 Load Transient Response

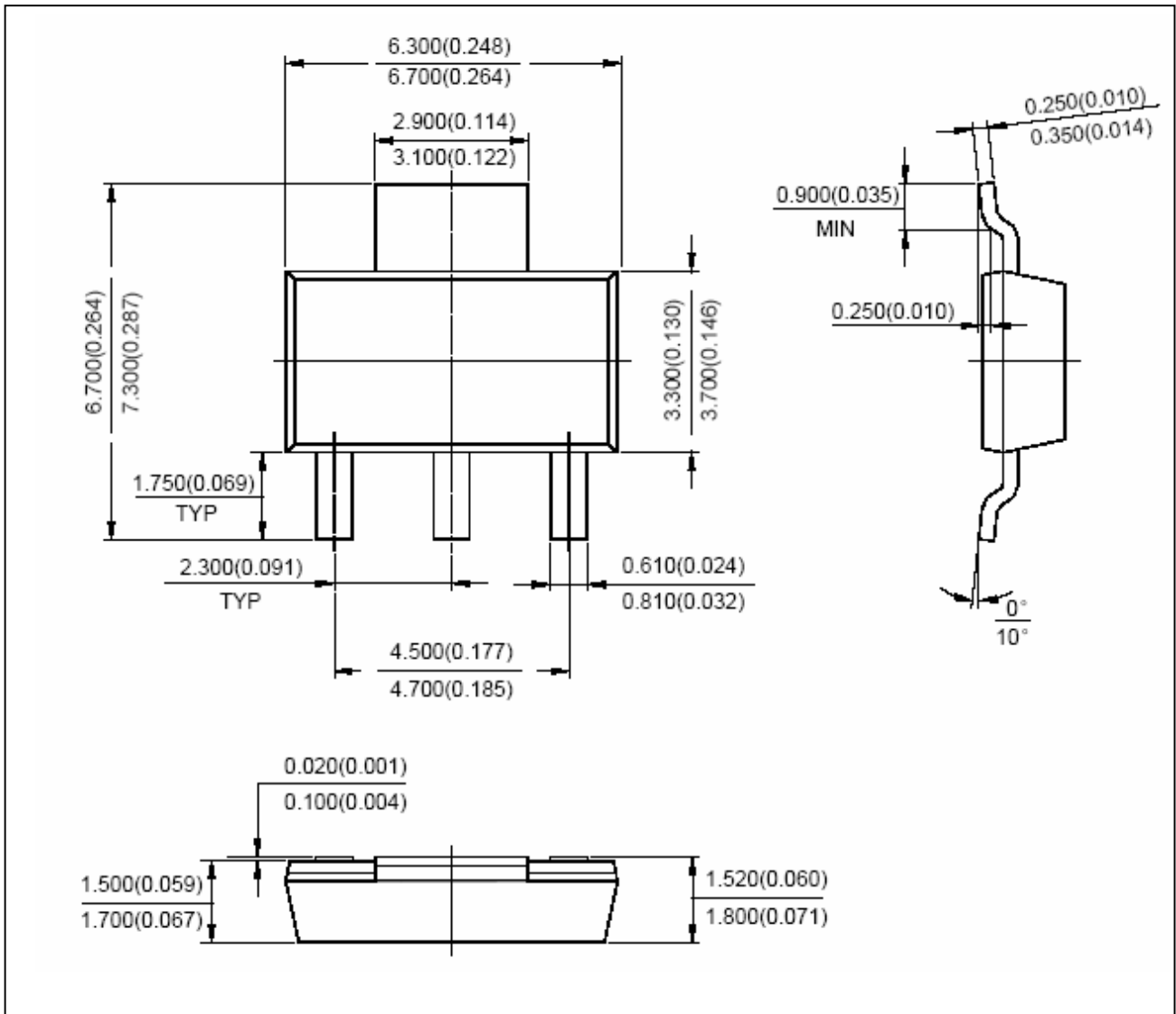




# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ - LD1117A50/ADJ

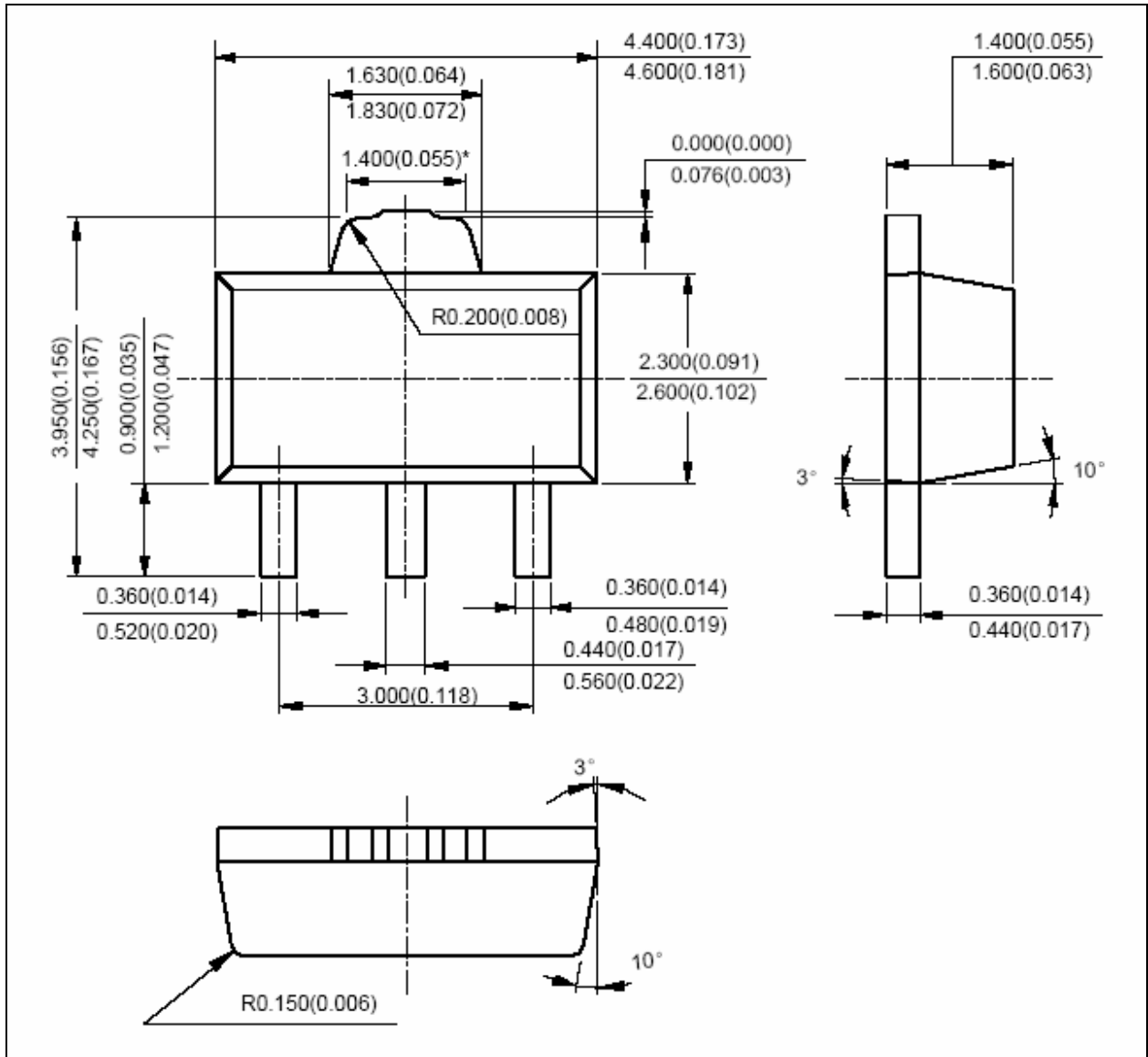
### Dimensions in mm (inch)



SOT-223

# 1A Low Dropout Positive Voltage Regulator

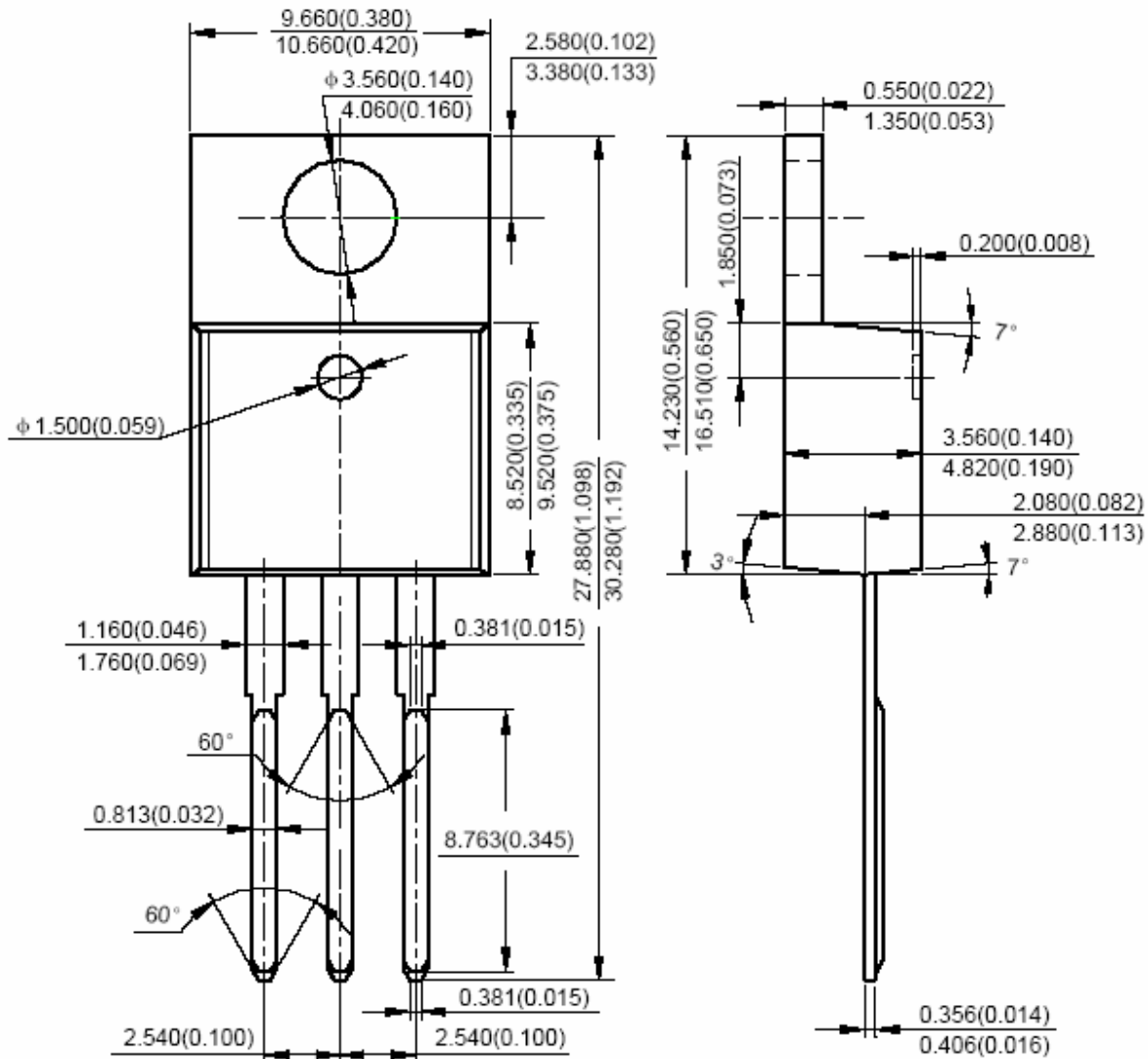
## LD1117A12/ADJ - LD1117A50/ADJ



SOT-89

# 1A Low Dropout Positive Voltage Regulator

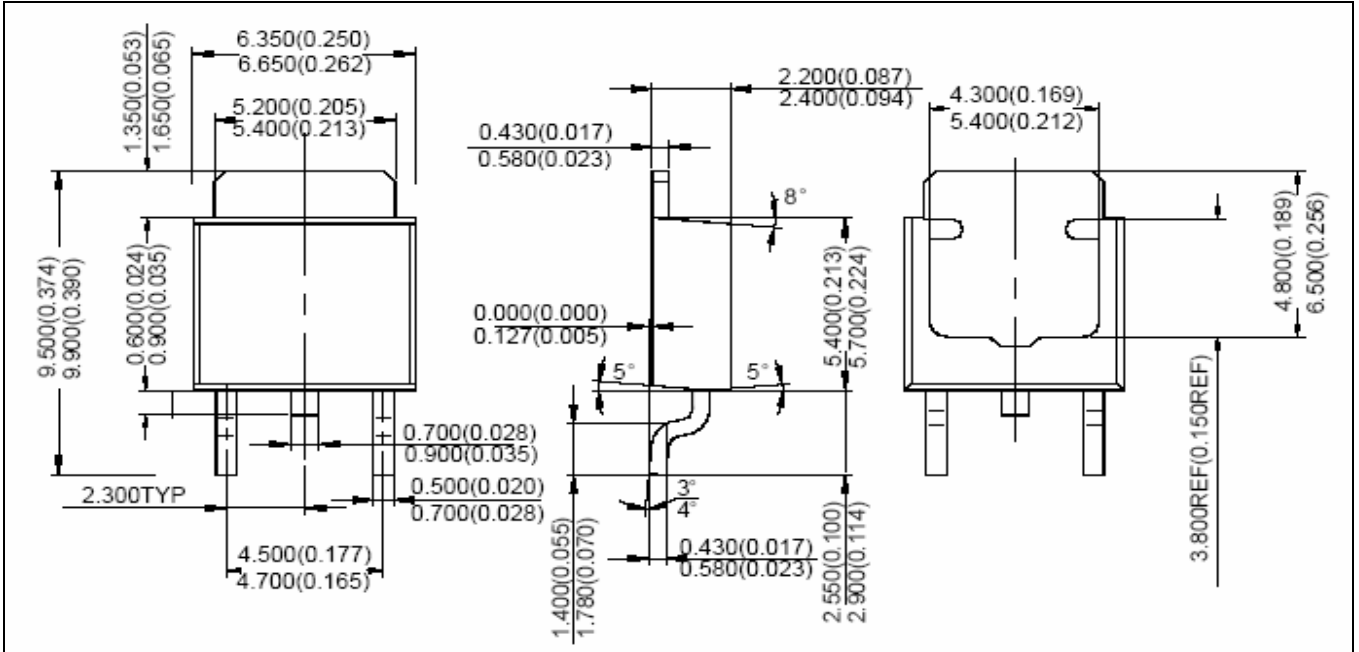
## LD1117A12/ADJ - LD1117A50/ADJ



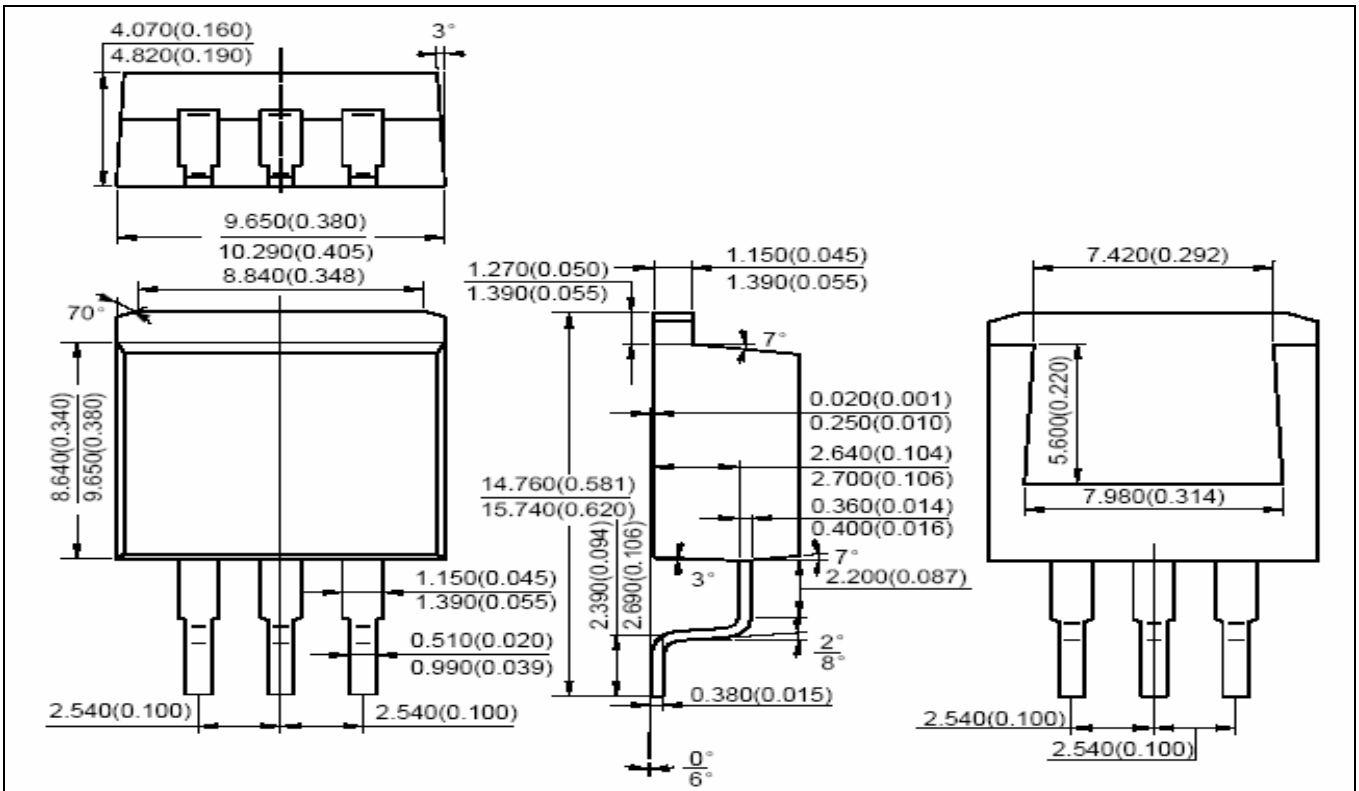
TO-220

# 1A Low Dropout Positive Voltage Regulator

## LD1117A12/ADJ - LD1117A50/ADJ



**DPAK (TO-252)**



**D<sup>2</sup>PAK (TO-263)**

# 1A Low Dropout Positive Voltage Regulator

LD1117A12/ADJ -LD1117A50/ADJ

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