



# LC1458

## 500mA High PSRR, Fast Response Linear Regulator

### DESCRIPTION

LC1458 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

LC1458 can provide output value in the range of 1.2V~4.5V every 0.1V step. It also can be customized on command.

LC1458 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

LC1458 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within  $\pm 2\%$ .

LC1458 is available in SOT23-3, SOT23-5, SOT89-3, SOT89-5 and TO-92 packages which are lead free. It also can available in these packages with lead.

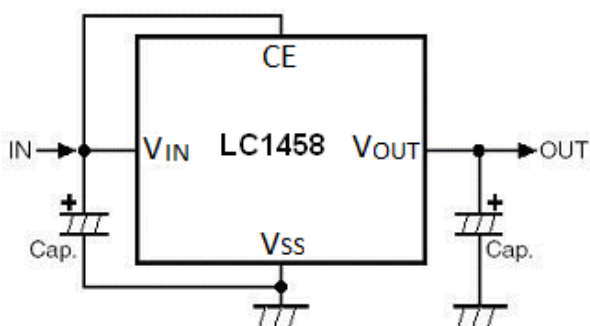
### FEATURES

- Low Power Consumption: 75uA (Typ.)
- Low Output Noise (47uVRMS)
- Standby Mode: 0.1uA
- Low Dropout Voltage: 0.7V@Iout=500mA, Vout=2.8V (Typ.)
- High Ripple Rejection: 66dB@100Hz (Typ.)
- Low Temperature Coefficient:  $\pm 100\text{ppm}/^\circ\text{C}$
- Excellent Line Regulation: 0.05%/V
- Build-in Chip Enable and Discharge Circuit
- Output Voltage Range: 1.2V~4.5V (Customized on command every 0.1V step)
- Highly Accurate:  $\pm 2\%$  ( $\pm 1\%$  customized)
- Output Current Limit

### APPLICATIONS

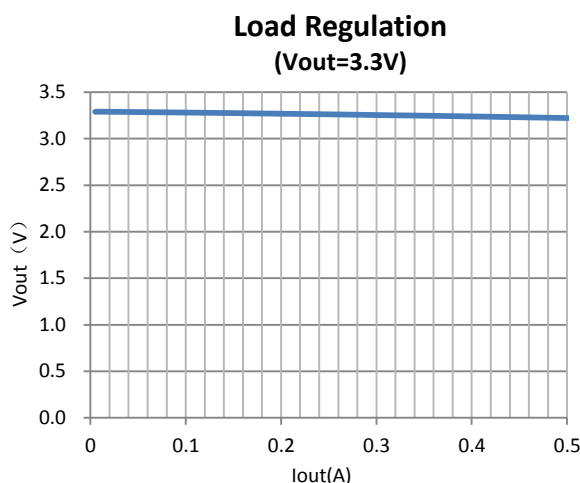
- Power Source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

### TYPICAL APPLICATION



**Note:** Input capacitor ( $C_{in}=1\mu\text{F}$ ) and Output capacitor ( $C_{out}=4.7\mu\text{F}$ ) are recommended in all application circuit.

### ELECTRICAL CHARACTERISTICS



## ORDERING INFORMATION

LC1458 [1](#) [2](#) [3](#) [4](#) [5](#)

Code	Description
<a href="#">1</a>	Temperature&RoHS: C:-40~85°C ,Pb Free RoHS Std.
<a href="#">2</a>	Package type: B3:SOT-23-3 B5:SOT-23-5 C3:SOT-89-3 C5:SOT89-5 H:TO-92
<a href="#">3</a>	Packing type: TR:Tape&Reel (Standard) BG:Bag(TO-92)
<a href="#">4</a>	Output voltage: e.g. 12=1.2V 18=1.8V 45=4.5V
<a href="#">5</a>	Voltage accuracy: Blank(default)=±2%

## MARKING DESCRIPTON

J: Product Code(SOT23-3&SOT23-5)  
X: Output Voltage(SOT23-3&SOT23-5)

Vout	Code	Vout	Code	Vout	Code
1.2V	2	2.5V	<u>5</u>	3.8V	<u>8</u>
1.3V	3	2.6V	<u>6</u>	3.9V	<u>9</u>
1.4V	4	2.7V	<u>7</u>	4.0V	<u>0</u>
1.5V	5	2.8V	<u>8</u>	4.1V	<u>1</u>
1.6V	6	2.9V	<u>9</u>	4.2V	<u>2</u>
1.7V	7	3.0V	<u>0</u>	4.3V	<u>3</u>
1.8V	8	3.1V	<u>1</u>	4.4V	<u>4</u>
1.9V	9	3.2V	<u>2</u>	4.5V	<u>5</u>
2.0V	<u>0</u>	3.3V	<u>3</u>		
2.1V	<u>1</u>	3.4V	<u>4</u>		
2.2V	<u>2</u>	3.5V	<u>5</u>		
2.3V	<u>3</u>	3.6V	<u>6</u>		
2.4V	<u>4</u>	3.7V	<u>7</u>		

Y: The Year of manufacturing, "1" stands for year 2011, "2" stands for year 2012, and "8" stands for year 2018.

W: The week of manufacturing. "A" stands for week 1, "Z" stands for week 26, "A" stands for week 27, "Z" stands for week 52.

## PIN CONFIGURATION

<b>Product Classification</b>		LC1458CB3TR□□□
<b>Marking</b>		SOT-23-3
JXYW	J:Product Code	
	X: Output Voltage	
	YW:Data Code	
<b>Product Classification</b>		LC1458CB5TR□□□
<b>Marking</b>		SOT-23-5
JXYW	J:Product Code	
	X: Output Voltage	
	YW:Data Code	
<b>Product Classification</b>		LC1458CC3TR□□□
<b>Marking</b>		SOT-89-3
JAXX LLBY W	JA:Product Code	
	XX: Output Voltage	
	LL:Lot No.	
	B:Fab code	
	YW:Data Code	
<b>Product Classification</b>		LC1458CC5TR□□□
<b>Marking</b>		SOT-89-5
JAXX B LLBY W	JA:Product Code	
	XX: Output Voltage	
	LL:Lot No.	
	B:Fab code	
	YW:Data Code	
<b>Product Classification</b>		LC1458CHBG□□□
<b>Marking</b>		TO-92
JAXX LLBY W	JA:Product Code	
	XX: Output Voltage	
	LL:Lot No.	
	B:Fab Code	
	YW:Data Code	
<b>Vss</b>	Ground Pin	
<b>Vin</b>	Supply Voltage Input	
<b>Vout</b>	Output Voltage	
<b>CE</b>	Chip Enable	
<b>NC</b>	No Connection	

## ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		12V
Operating Junction Temperature(Tj)		125°C
Output Current		500mA
Ambient Temperature(Ta)		-40°C –85°C
Power Dissipation	SOT23-3	250mW
	SOT23-5	250mW
	SOT89-3	500mW
	SOT89-5	500mW for normal application 800mW with 10mmx20mm heat dissipation coil
	TO-92	500mW
Storage Temperature(Ts)		-40°C -150°C
Lead Temperature & Time		260°C,10S

**Note:** Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

## RECOMMENDED WORK CONDITIONS

Item	Min	Recommended	Max.	Unit
Input Voltage Range			10	V
Ambient Temperature	-40		85	°C

## ELECTRICAL CHARACTERISTICS

(Test Conditions: Cin=1uF,Cout=3.3uF,TA=25°C, unless otherwise specified. )  
LC1458CB5TR12

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	1.17	1.2	1.23	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop1	Dropout Voltage	Iout=300mA		690	900	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
I <sub>ss</sub>	Supply Current	Vin=Set Vout+1V		75	90	uA
I <sub>standby</sub>	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
I <sub>lim</sub>	Short Current Limit	Vout=0V		200		mA
R <sub>pd</sub>	CE Pull down Resistance		2.0	5.0	10.0	MΩ

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Vceh	CE Input Voltage "H"	1.5	Vin	V
Vcel	CE Input Voltage "L"	0	0.25	V

**Note:**  $V_{drop} = V_{in1} - (V_{out2} * 0.98)$   $V_{out2}$  is the output voltage when  $V_{in} = V_{out1} + 1.0V$  and  $I_{out} = 500mA$ .  
 $V_{in1}$  is the input voltage at which the output voltage becomes 98% of  $V_{out1}$  after gradually decreasing the input voltage.

## LC1458CB5TR15

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	1.47	1.5	1.53	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop	Dropout Voltage	Iout=300mA		600	750	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current	Vin=Set Vout+1V		75	90	uA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"	1.5	Vin	V		
Vcel	CE Input Voltage "L"	0	0.25	V		

## LC1458CB5TR18

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	1.76	1.8	1.84	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop	Dropout Voltage	Iout=300mA		540	660	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current	Vin=Set Vout+1V		75	90	uA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB

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Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V

## LC1458CB5TR27

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	2.64	2.7	2.76	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop	Dropout Voltage	Iout=300mA		400	500	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current	Vin=Set Vout+1V		75	90	μA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	μA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V

## LC1458CB5TR28

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	2.74	2.8	2.86	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop	Dropout Voltage	Iout=300mA		380	460	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current	Vin=Set Vout+1V		75	90	μA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	μA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p		65		dB

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		Vin=Set Vout+1V				
Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V

## LC1458CB5TR30

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	2.94	3.0	3.06	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop	Dropout Voltage	Iout=300mA		350	425	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current	Vin=Set Vout+1V		75	90	uA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V

## LC1458CB5TR33

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	3.23	3.3	3.37	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop	Dropout Voltage	Iout=300mA		330	400	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current	Vin=Set Vout+1V		75	90	uA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz,		65		dB

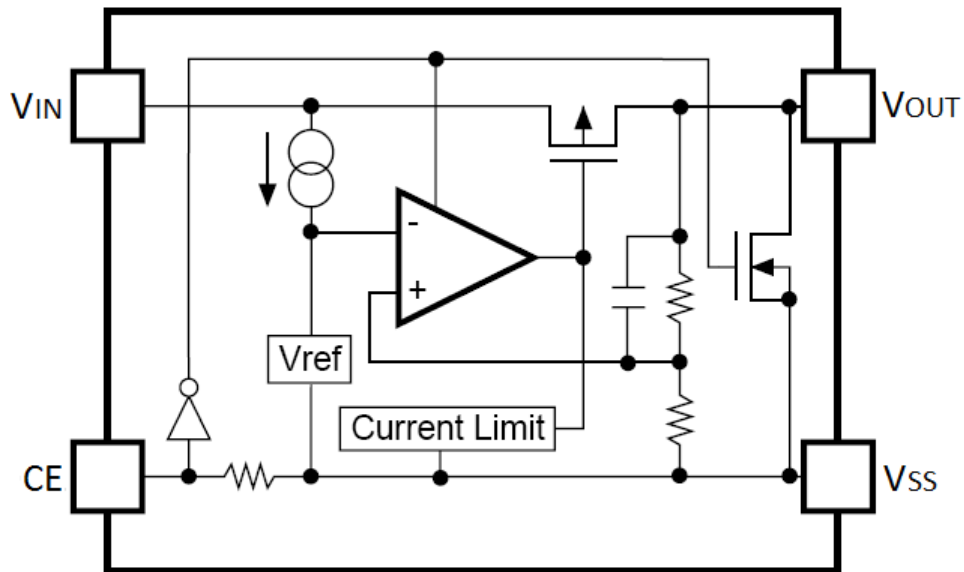
# LC1458

		Ripple=0.5Vp-p Vin=Set Vout+1V				
Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V

## LC1458CB5TR45

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage				10	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	4.41	4.5	4.59	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	500			mA
Vdrop	Dropout Voltage	Iout=300mA		280	340	mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta V_{out} / \Delta I_{out}$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current	Vin=Set Vout+1V		75	90	uA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V

## BLOCK DIAGRAM



## EXPLANATION

LC1458 series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

LC1458 can provide output value in the range of 1.2V~4.5V every 0.1V step. It also can be customized on command.

LC1458 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

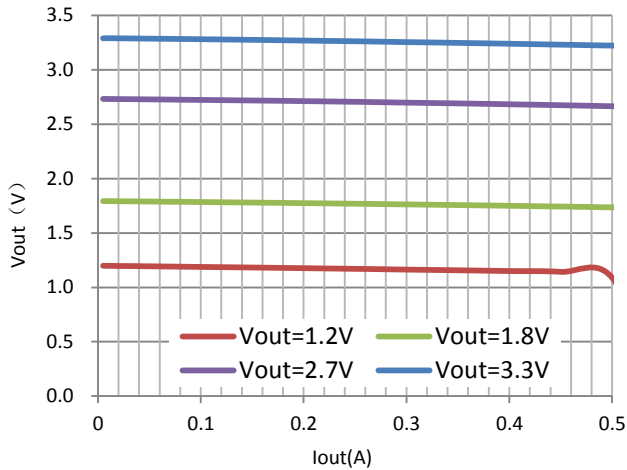
LC1458 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within  $\pm 2\%$ .



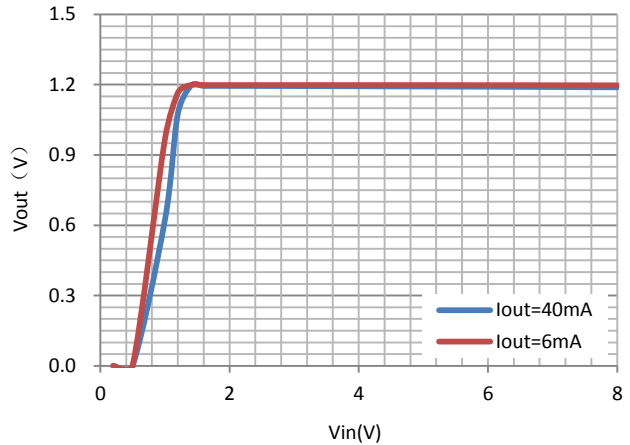
## TYPICAL PERFORMANCE CHARACTERISTICS

Tested under  $T_A=25^{\circ}\text{C}$ , unless otherwise specified.

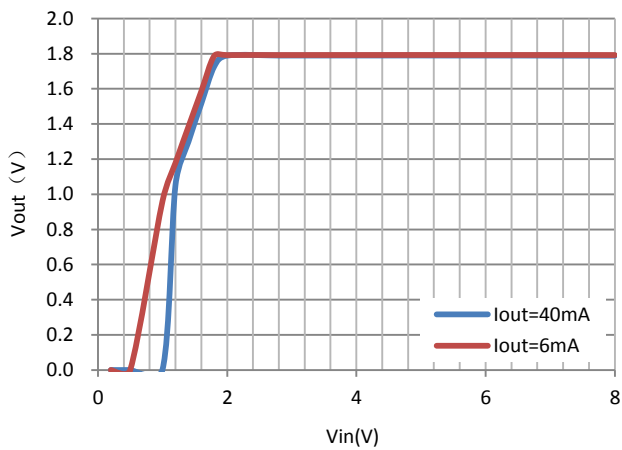
### Load Regulation



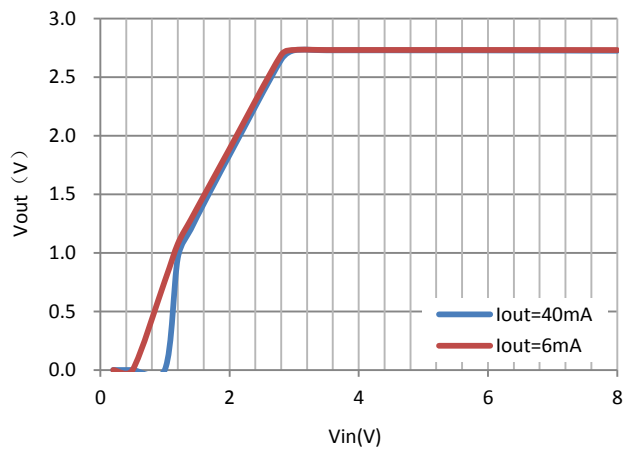
### Line Regulation (Vout=1.2V)



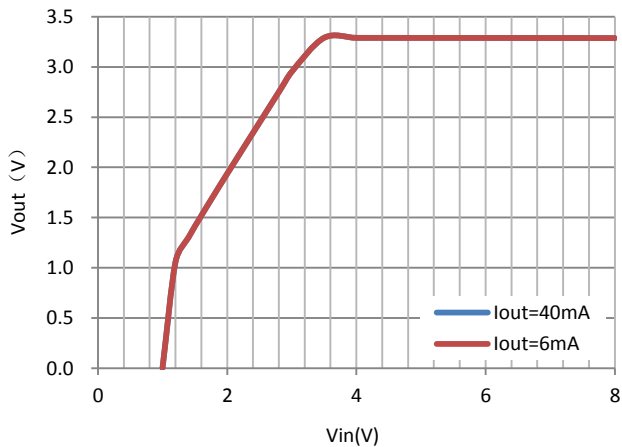
### Line Regulation (Vout=1.8V)



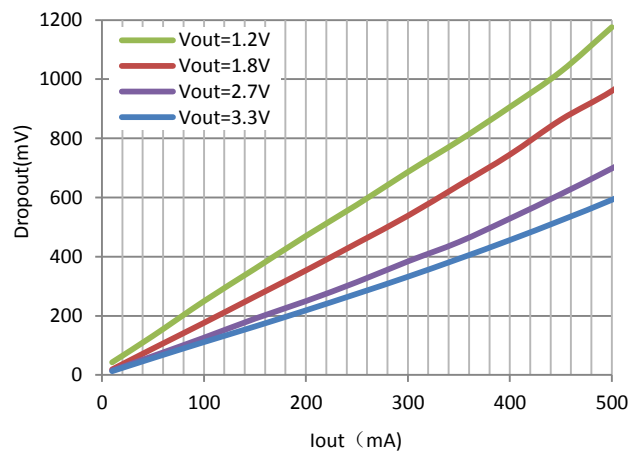
### Line Regulation (Vout=2.7V)



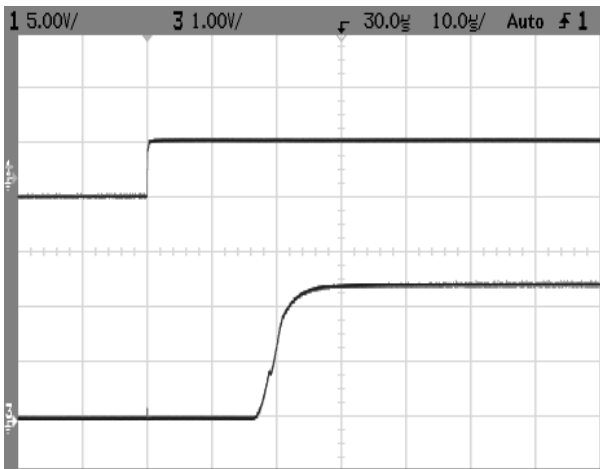
### Line Regulation (Vout=3.3V)



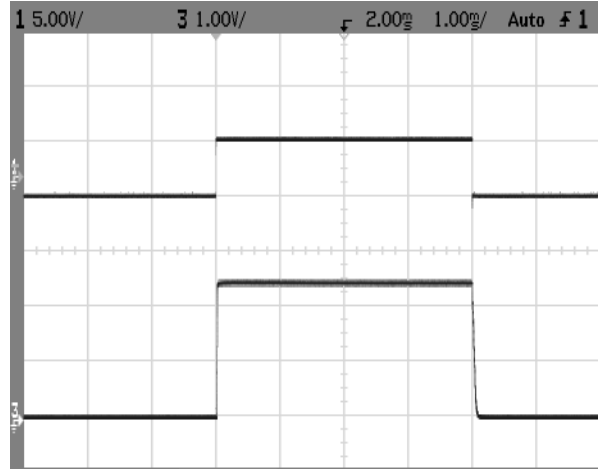
### Dropout Voltage



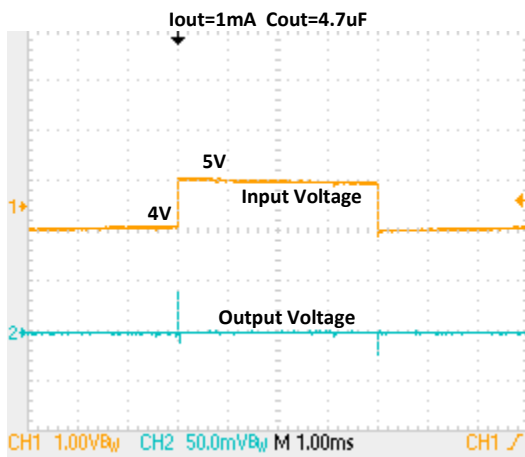
### Startup Response



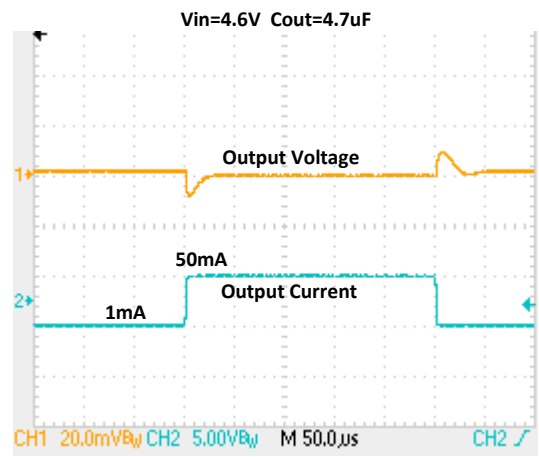
### Shutdown Response



### Line transient response



### Load transient response



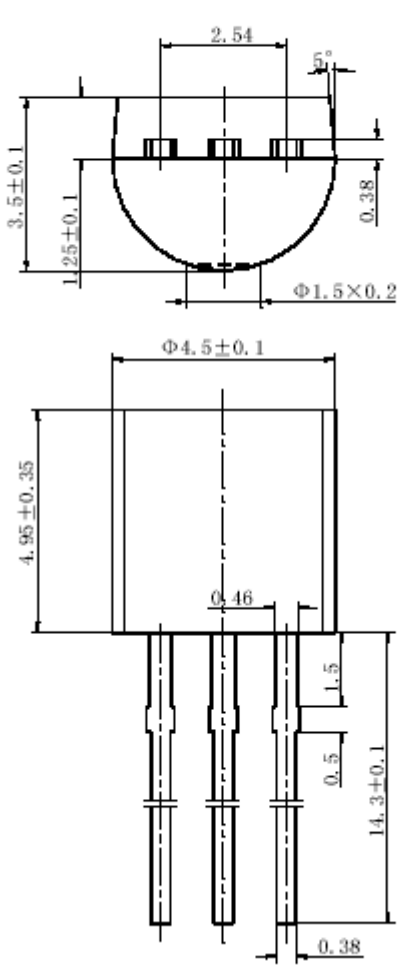
## PACKAGE LINE

Package	SOT-23-3	Devices per reel	3000Pcs	Unit	mm
Package dimension:					
<p>Technical drawing of the SOT-23-3 package. The top view shows a rectangular body with a width of <math>2.9 \pm 0.2</math> mm and a length of <math>1.9 \pm 0.2</math> mm. The distance between the two leads (1 and 2) is <math>1.9 \pm 0.2</math> mm, with each lead being <math>0.95</math> mm wide. The lead width is <math>0.4 \pm 0.1</math> mm. The body height is <math>1.6 \pm 0.2</math> mm, and the total height including the lead is <math>2.8 \pm 0.3</math> mm. The lead height is <math>0.8</math> mm. The side view shows a maximum lead height of <math>1.4</math> mm, a lead width of <math>1.1^{+0.2}_{-0.1}</math> mm, and a lead thickness of <math>0.16^{+0.1}_{-0.06}</math> mm. The lead angle is <math>0.2</math> mm minimum. The lead is bent at an angle of <math>0</math> to <math>0.1</math> mm. The perspective view shows the package from a three-quarter angle.</p>					

Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm
Package Dimension:					
<p>Technical drawing of the SOT-23-5 package. The top view shows a rectangular body with a width of <math>2.9 \pm 0.2</math> mm and a length of <math>1.9 \pm 0.2</math> mm. The distance between the two leads (1 and 2) is <math>1.9 \pm 0.2</math> mm, with each lead being <math>0.95</math> mm wide. The lead width is <math>0.4 \pm 0.1</math> mm. The body height is <math>1.6^{+0.2}_{-0.1}</math> mm, and the total height including the lead is <math>2.8 \pm 0.3</math> mm. The lead height is <math>0.8 \pm 0.1</math> mm. The side view shows a maximum lead height of <math>1.4</math> mm, a lead width of <math>1.1^{+0.2}_{-0.1}</math> mm, and a lead thickness of <math>0.15^{+0.1}_{-0.05}</math> mm. The lead angle is <math>0.2</math> mm minimum. The lead is bent at an angle of <math>0</math> to <math>0.1</math> mm. The perspective view shows the package from a three-quarter angle.</p>					

Package	SOT-89-3	Devices per reel	1000Pcs	Unit	mm
Package Dimension:					
<p>Technical drawing of the SOT-89-3 package. The top view shows a rectangular body with a diameter of <math>\varnothing 1.0</math> mm. The overall width is <math>4.5 \pm 0.1</math> mm, and the width of the top flange is <math>1.6 \pm 0.2</math> mm. The height of the top flange is <math>0.4</math> mm. The distance from the center of the body to the center of the first lead is <math>0.8</math> mm (MIN). The total height of the package is <math>4.25</math> mm (MAX). The side view shows a lead width of <math>1.5 \pm 0.1</math> mm and a lead thickness of <math>0.4 \pm 0.1</math> mm. The bottom view shows a lead pitch of <math>1.5 \pm 0.1</math> mm and a lead width of <math>0.42 \pm 0.2</math> mm. The distance between the center of the body and the center of the leads is <math>0.47 \pm 0.1</math> mm.</p>					

Package	SOT89-5	Devices per reel	1000Pcs	Unit	mm
Package Dimension:					
<p>Technical drawing of the SOT89-5 package. The top view shows a rectangular body with a diameter of <math>\varnothing 1.0</math> mm. The overall width is <math>4.5 \pm 0.1</math> mm, and the width of the top flange is <math>1.6 \pm 0.2</math> mm. The height of the top flange is <math>0.4</math> mm. The distance from the center of the body to the center of the first lead is <math>0.42 \pm 0.1</math> mm. The total height of the package is <math>4.5 \pm 0.5</math> mm (MAX) and <math>-0.3</math> mm (MIN). The side view shows a lead width of <math>1.5 \pm 0.1</math> mm and a lead thickness of <math>0.4 \pm 0.1</math> mm. The bottom view shows a lead pitch of <math>1.5 \pm 0.1</math> mm and a lead width of <math>0.42 \pm 0.2</math> mm. The distance between the center of the body and the center of the leads is <math>0.47 \pm 0.1</math> mm.</p>					

Package	TO-92	Devices per Bag	1000Pcs	Unit	mm
Package Dimension:					
<b>TO-92</b>					
 <p>The technical drawing shows two views of a TO-92 package. The top view is a semi-circular shape with a diameter of <math>\Phi 1.5 \times 0.2</math>. It features three leads extending from the top edge, with a total width of <math>2.54</math> mm. The distance from the center to the outer edge is <math>1.25 \pm 0.1</math> mm, and the total height of the package is <math>3.5 \pm 0.1</math> mm. A lead angle of <math>5^\circ</math> is indicated. The side view shows a cylindrical body with a diameter of <math>\Phi 4.5 \pm 0.1</math> mm and a height of <math>4.95 \pm 0.35</math> mm. The leads are spaced <math>0.46</math> mm apart. The distance from the base of the package to the top of the leads is <math>14.3 \pm 0.1</math> mm. The lead thickness is <math>0.38</math> mm, and the lead width is <math>1.5</math> mm. The distance from the base to the top of the lead body is <math>0.5</math> mm.</p>					