LC1455

REV1.0-Revised DEC 2007

150mA High PSRR Linear Regulator

DESCRIPTION

LC1455 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

LC1455 can provide output value in the range of 1.2V~5.0V every 0.1V step. It also can be customized on command.

LC1455 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

LC1455 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±2%.

LC1455 is available in SOT-23-5, SC-70-5,DFN1616-6L packages which is lead free.

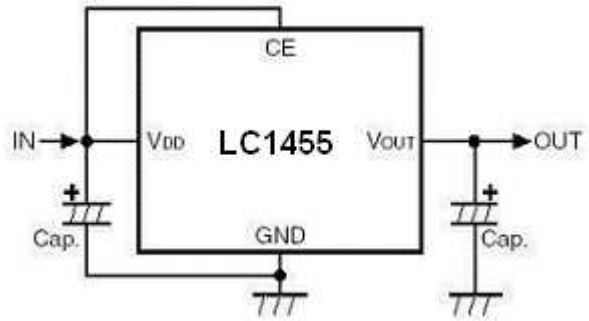
FEATURES

- Low Power Consumption: 25uA（Typ.）
- Low Output Noise (27uVRMS)
- Standby Mode: 0.1uA
- Low Dropout Voltage: 0.2V@100mA (Typ.)
- High Ripple Rejection: 65dB@1KHz (Typ.)
- Low Temperature Coefficient: ± 100ppm/°C
- Excellent Line Regulation: 0.05%/V
- Build-in Chip Enable Circuit
- Output Voltage Range: 1.2V~5.0V (Customized on command every 0.1V step)
- Highly Accurate: ±2% (±1% customized)
- Output Current Limit

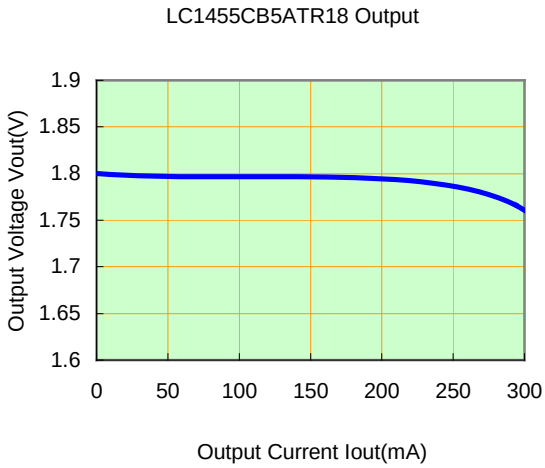
APPLICATIONS

- Power source for cellular phone ,wireless phone
- Battery Powered Equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source Regulation after Switching Power

TYPICAL APPLICATION



ELECTRICAL CHARACTERISTICS



APPLICATION HINTS

NOTE: Input capacitor (Cin=1uF) and Output capacitor (Cout=1uF/2.2uF) are recommended in all application circuit.

ORDERING INFORMATION

LC1455 [1] [2] [3] [4] [5]

Code	Description
[1]	Temperature&Rohs: C:-40~85°C ,Pb Free Rohs Std.
[2]	Package type: A5:SC-70-5 B5A:SOT-23-5(A) B5B:SOT-23-5(B) K6:DFN1616-6L
[3]	Packing type: TR:Tape&Reel (Standard)
[4]	Output voltage: e.g. 12=1.2V 15=1.5V 50=5.0V
[5]	Voltage accuracy: 1=±1% Blank(default)=±2%

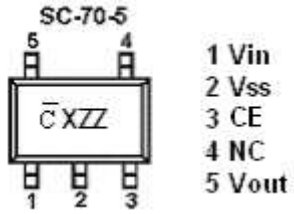
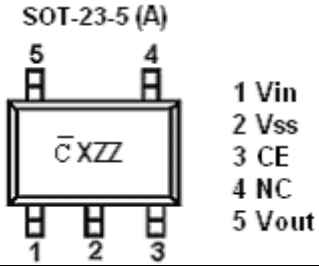
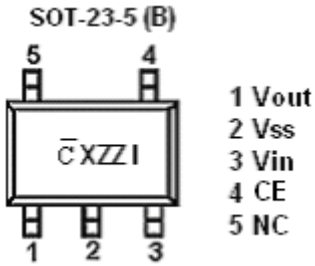
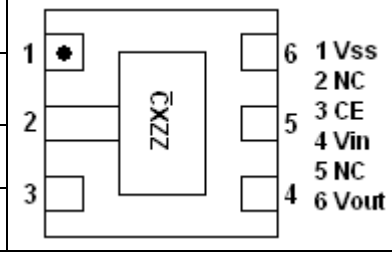
MARKING DESCRIPTON

$\overline{C}$: Product Code
X: Output Voltage

Vout	Code	Vout	Code	Vout	Code
1.2V	2	2.5V	$\overline{5}$	3.8V	$\underline{8}$
1.3V	3	2.6V	$\overline{6}$	3.9V	$\underline{9}$
1.4V	4	2.7V	$\overline{7}$	4.0V	$\underline{0}$
1.5V	5	2.8V	$\overline{8}$	4.1V	$\underline{1}$
1.6V	6	2.9V	$\overline{9}$	4.2V	$\underline{2}$
1.7V	7	3.0V	$\underline{0}$	4.3V	$\underline{3}$
1.8V	8	3.1V	$\underline{1}$	4.4V	$\underline{4}$
1.9V	9	3.2V	$\underline{2}$	4.5V	$\underline{5}$
2.0V	$\overline{0}$	3.3V	$\underline{3}$	4.6V	$\underline{6}$
2.1V	$\overline{1}$	3.4V	$\underline{4}$	4.7V	$\underline{7}$
2.2V	$\overline{2}$	3.5V	$\underline{5}$	4.8V	$\underline{8}$
2.3V	$\overline{3}$	3.6V	$\underline{6}$	4.9V	$\underline{9}$
2.4V	$\overline{4}$	3.7V	$\underline{7}$	5.0V	$\underline{0}$

Z: The Year of manufacturing,"7" stands for year 2007,"8" stands for year 2008,and "$\overline{0}$" stands for year 2010.
Z: The week of manufacturing. "A" stands for week 1,"Z" stands for week 26,"$\overline{A}$" stands for week 27,"$\overline{Z}$" stands for week 52.

PIN CONFIGURATION

Product Classification		LC1455CA5TR□□□
Marking		
$\overline{C}$XZZ	$\overline{C}$:Product Code X:Output Voltage ZZ:Data Code	
Product Classification		LC1455CB5ATR□□□
Marking		
$\overline{C}$XZZ	$\overline{C}$:Product Code X:Output Voltage ZZ:Data Code	
Product Classification		LC1455CB5BTR□□□
Marking		
$\overline{C}$XZZI	$\overline{C}$:Product Code X:Output Voltage ZZ:Data Code I:B Type	
Product Classification		LC1455CK6TR□□□
Marking		
$\overline{C}$XZZ	$\overline{C}$:Product Code X:Output Voltage ZZ:Data Code	
Vss	Ground Pin	
Vin	Supply Voltage Input	
Vout	Output Voltage	
CE	Chip Enable	
NC	No Connection	

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		10V
Operating Junction Temperature(Tj)		125°C
Ambient Temperature(Ta)		-40°C -85°C
Power Dissipation	SC70-5	250mW
	SOT23-5	250mW
	DFN1616-6L	560mW
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 Voltag Range			8	V
Ambient Temperature	-40		85	°C

ELECTRICAL CHARACTERISTICS

（Test Conditions: Cin=1uF,Cout=2.2uF,TA=25°C, unless otherwise specified.）

LC1455, For Arbitrary Output Voltage Version

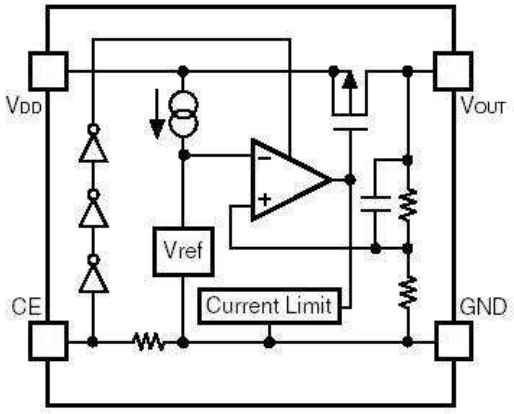
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Vin	Input Voltage		1.8		8	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≤Iout≤30mA	Vout x0.98		Vout X1.02	V
Iout (Max.)	Maximun Output Current	Vin-Vout=1V	150			mA
Dropout Voltage	Input-Output Voltage Differentia	Refer to the ELECTRICAL CHARACTERISTICS by OUTPUT VOLTAGE				
$\frac{\Delta Vout}{\Delta Vin \cdot Vout}$	Line Regulation	Iout=40mA 1.6V≤Vin≤8V		0.05	0.2	%/V
$\Delta Vout / \Delta Iout$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤80mA		12	40	mV
Iss	Supply Current	Vin=Set Vout+1V		25	50	uA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Gnd		0.1	1.0	uA
$\frac{\Delta Vout}{\Delta T \cdot Vout}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=1kHz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB

Ilim	Short Current Limit	Vout=0V		20		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
en	Output Noise	BW=10Hz~100kHz		27		uVrms

ELECTRICAL CHARACTERISTICS BY OUTPUT VOLTAGE

Output Voltage Vout (V)	Dropout Voltage, V_{DIF} (V)		
	Conditions	Typ.	Max.
Vout =1.5V	Iout = 120mA	0.38	0.70
Vout = 1.6V		0.36	0.65
Vout = 1.7V		0.34	0.60
1.8 ≤ Vout ≤ 2.0		0.32	0.55
2.1 ≤ Vout ≤ 2.7		0.28	0.50
2.8 ≤ Vout ≤ 4.0		0.22	0.35

BLOCK DIAGRAM



Explanation

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LC1455 can provide output value in the range of 1.2V~5.0V every 0.1V step. It also can be customized on command.

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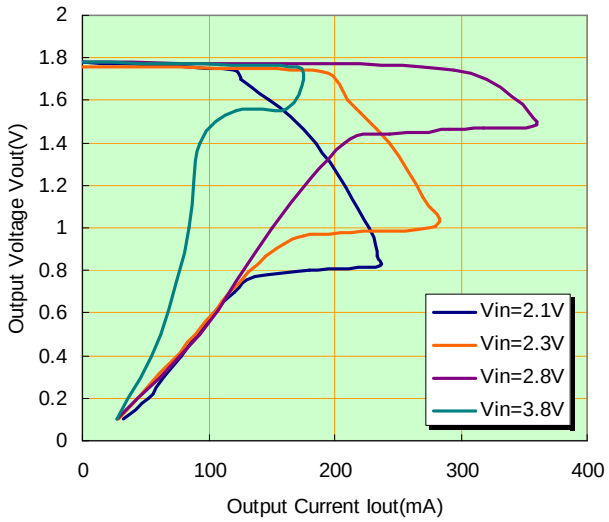
TYPICAL PERFORMANCE CHARACTERISTICS

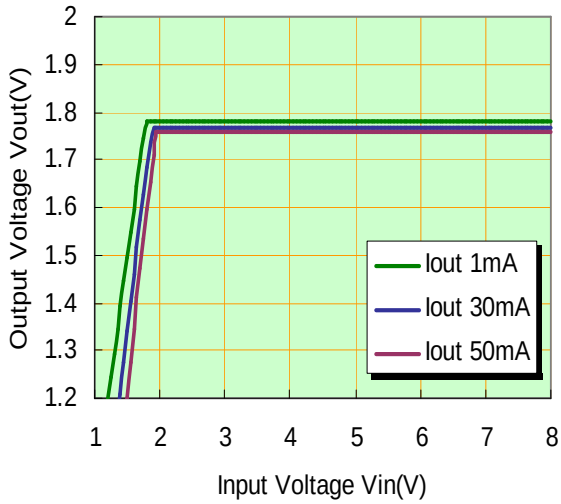
1) Output Voltage vs. Output Current (with output short protection)

LC1455CB5ATR18

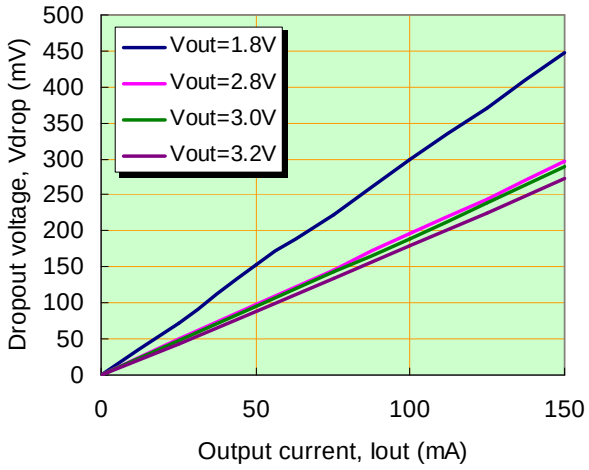


2) Output Voltage vs. Input Voltage

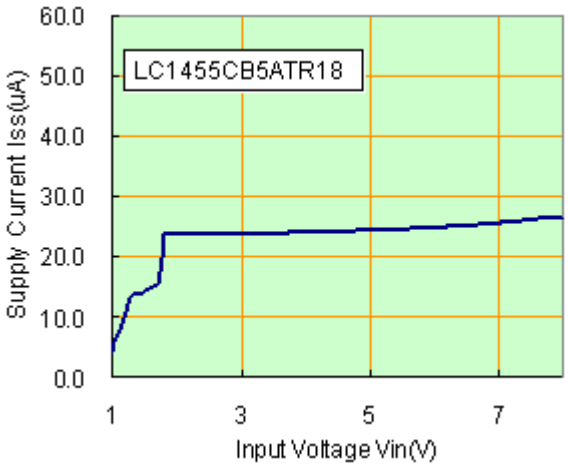
LC1455CB5ATR18



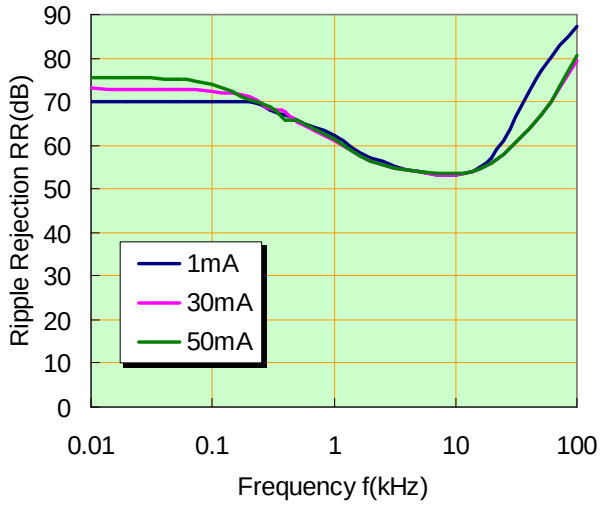
3) Dropout Voltage vs. Output Current



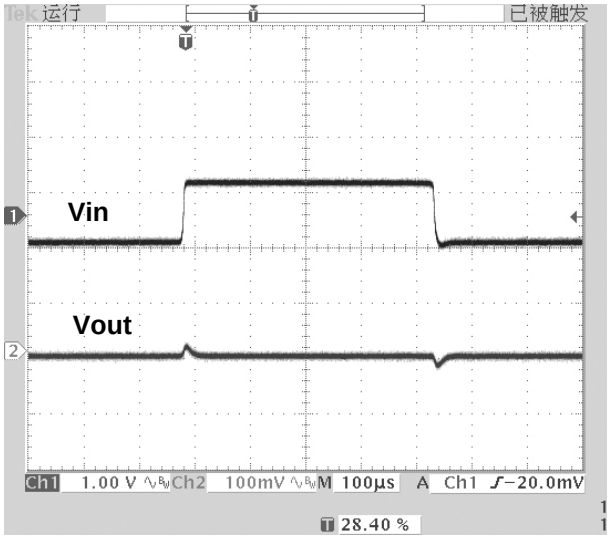
4) Supply Current vs. Input Voltage



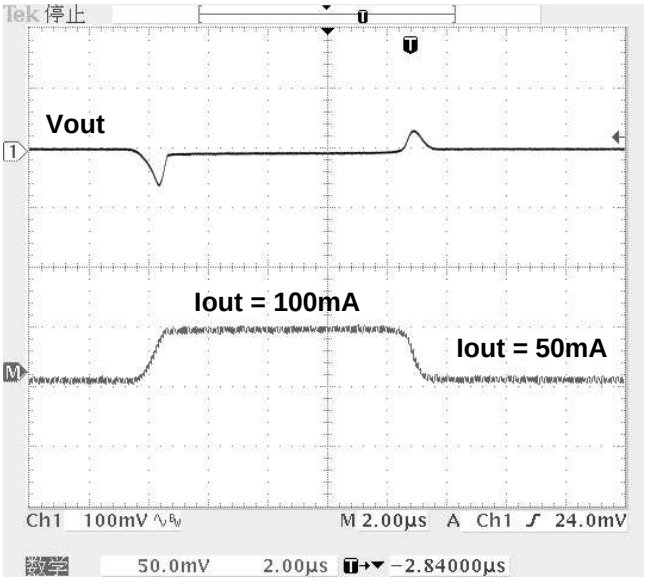
5) Ripple rejection vs. Frequency



6) Line transient response



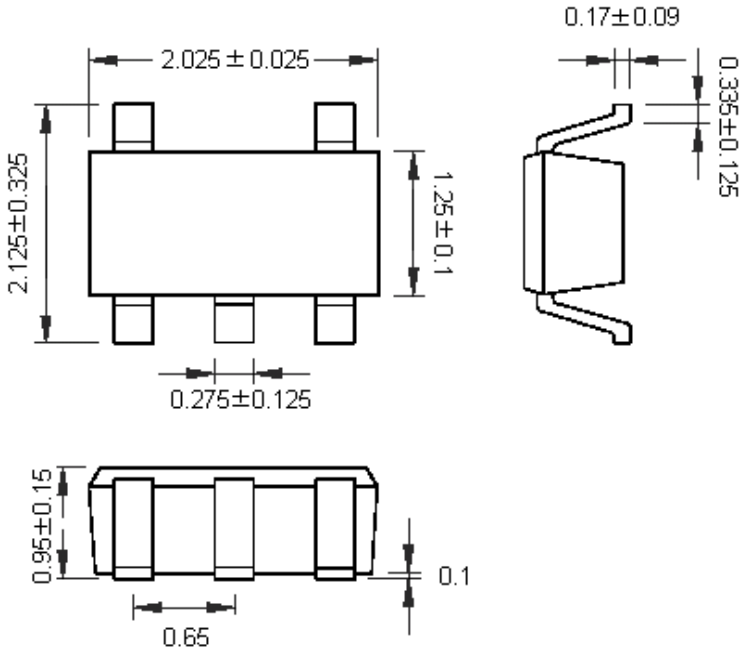
7) Load transient response



PACKAGE LINE

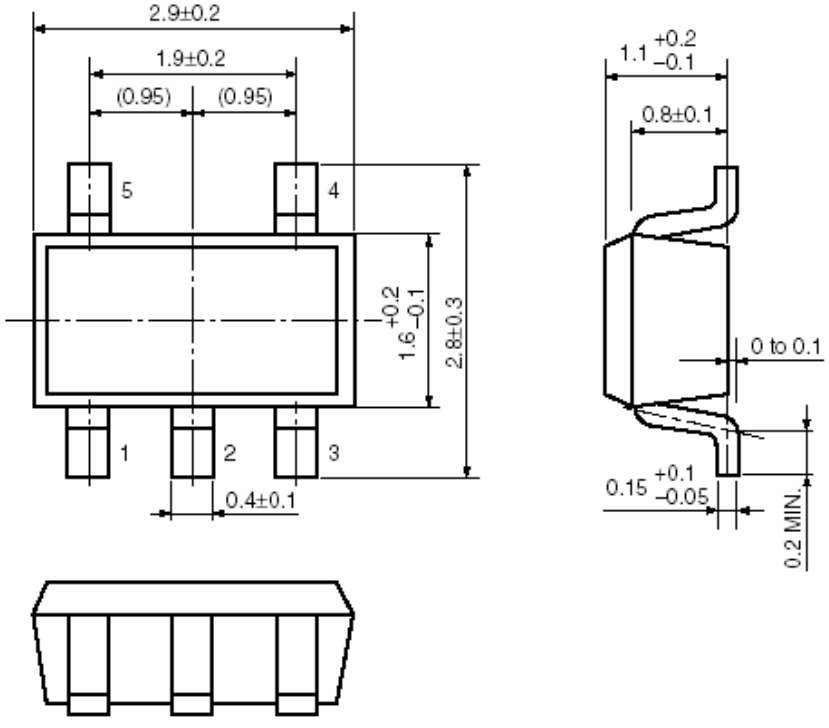
Package	SC70-5	Devices per reel	3000Pcs	Unit	mm

Package dimension：



Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm

Package Dimension:



Package	DFN1616-6L	Devices per reel	3000Pcs	Unit	mm

Package Dimension: