KA723

Precision Voltage Regulator

Features

- Positive or Negative Supply Operation
- 0.01% Line and Load Regulation
- Output Voltage Adjustable from 2V to 37V
- Output Current to 150mA Without External Pass Transistor

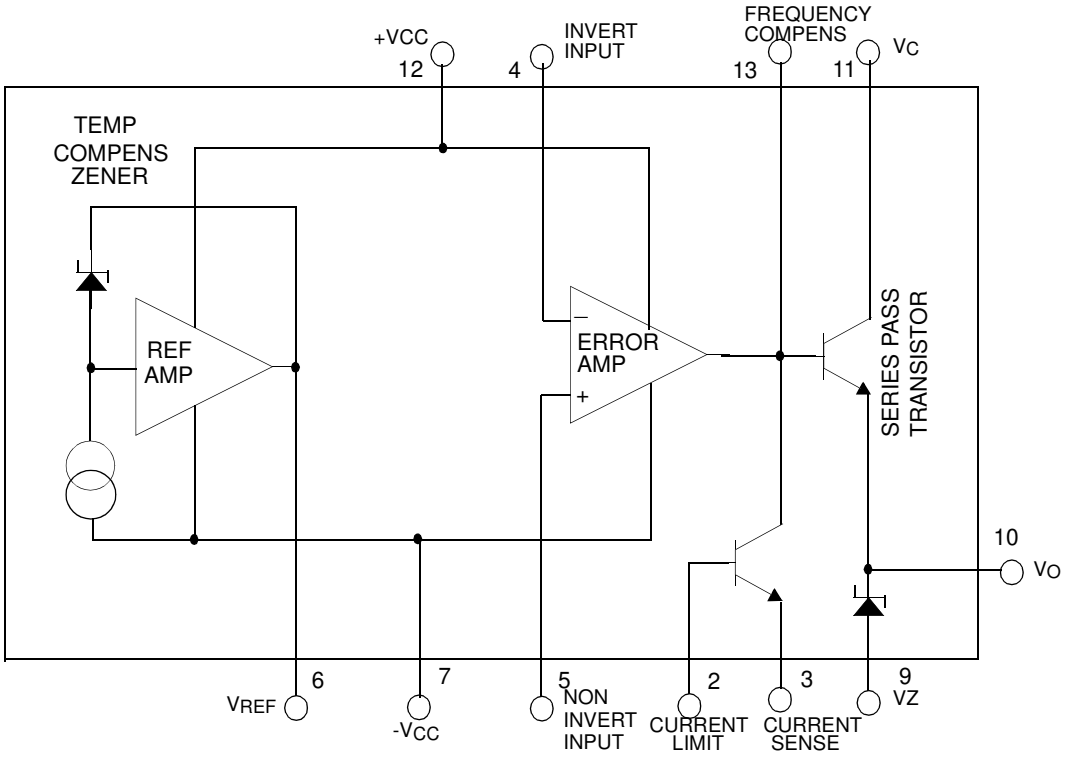
Description

The KA723 are monolithic integrated circuit voltage regulators featuring high ripple rejection, excellent output and load regulation, excellent temperature stability, and low standby current. The KA723 are also useful in a wide range of other applications such as a shunt regulator, a current regulator or a temperature controller.

14-DIP

14-SOP

Internal Block Diagram



Rev. 1.0.1

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Pulse Voltage From V+ to V- (50ms)	$V_{I(P)}$	50	V_{PEAK}
Continuous Voltage from V+ to V-	V_I	40	V
Input-Output Voltage Differential	V_I - V_O	40	V
Maximum Output Current	I_O	150	mA
Differential Input Voltage	V_{ID}	±5	V
Voltage Between Non-Inverting Input and V-	V_{IE}	8	V
Current From V_Z	I_Z	25	mA
Current From V_{REF}	I_{REF}	15	mA
Power Dissipation	P_D	1000	mV
Operating Temperature Range	T_{OPR}	0 ~ +70	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

Electrical Characteristics

(Unless otherwise specified, T_A = 25°C, V_{IN} =V^+= V_C = 12V, V^-=O,V_{OUT} = 5V, I_L =1mA, R_{SC} = 0, C_I = 100pF, C_{REF}=0 and divider impedance as seen by error amplifier ≤10KΩ connected as shown in figure 1)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Line Regulation	ΔV_O	V_I = 12V to 15V V_I = 12V to 40V	-	0.01 0.1	0.1 0.5	%
		$T_{MIN} \le T_A \le T_{MAX}$ V_I = 12V to 15V	-	-	0.3	
Load Regulation		I_O = 1mA to 50mA	-	0.03	0.2	%
	ΔV_O	$T_{MIN} \le T \le T_{MAX}$ I_O = 1 to 50mA	-	-	0.6	
Ripple Rejection	dB	f = 100kHz to 10kHz,C_{REF} =0	-	74	-	dB
		f = 100kHz to 10kHz,C_{REF} =5μF	-	86	-	
Average Temperature Coefficient of Output Voltage	$\Delta V_O/\Delta T$	$T_{MIN} \le T \le T_{MAX}$	-	0.003	0.015	%/°C
Short Circuit Current Limit	I_{SC}	R_{SC} = 10Ω, V_O = 0	-	65	-	mA
Reference Voltage	V_{REF}	-	6.80	7.15	7.50	V
Output Noise Voltage	V_N	f = 100kHz to 10kHz, C_{REF} = 0	-	20	-	μVms
		f = 100kHz to 10kHz, C_{REF}=5μF	-	2.5	-	
Long-term Stability	ST	-	-	0.1	-	%/ 1000HR
Standby Current Drain	I_D	I_L = 0, V_I = 30V	-	2.0	4.0	mA
Input Voltage Range	V_I	-	9.5	-	40	V
Output Voltage Range	V_O	-	2.0	-	37	V
Input-Output Voltage Differential	V_D	-	3.0	-	38	V

Notes:

1.Line and load regulation specifications are given for the condition of constant chip temperature.

2.Temperature drifts must be taken into account separately for hit dissipation conditions.

Typical Application

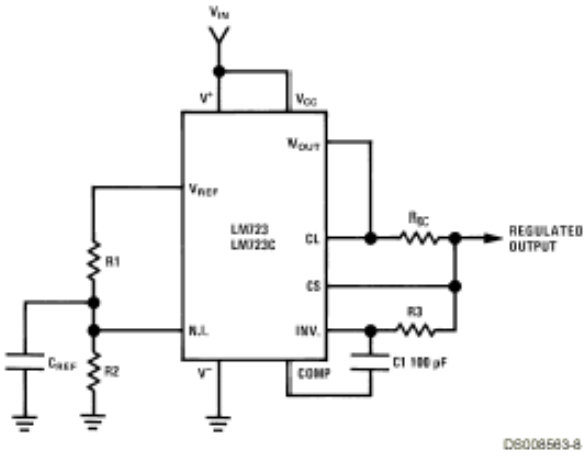


Figure 1. Basic Low Voltage Regulator
(V_{OUT} = 2 to 7Volts)

Note: $R3 = \frac{R1R2}{R1 + R2}$ for minimum temperature drift

Typical Performance

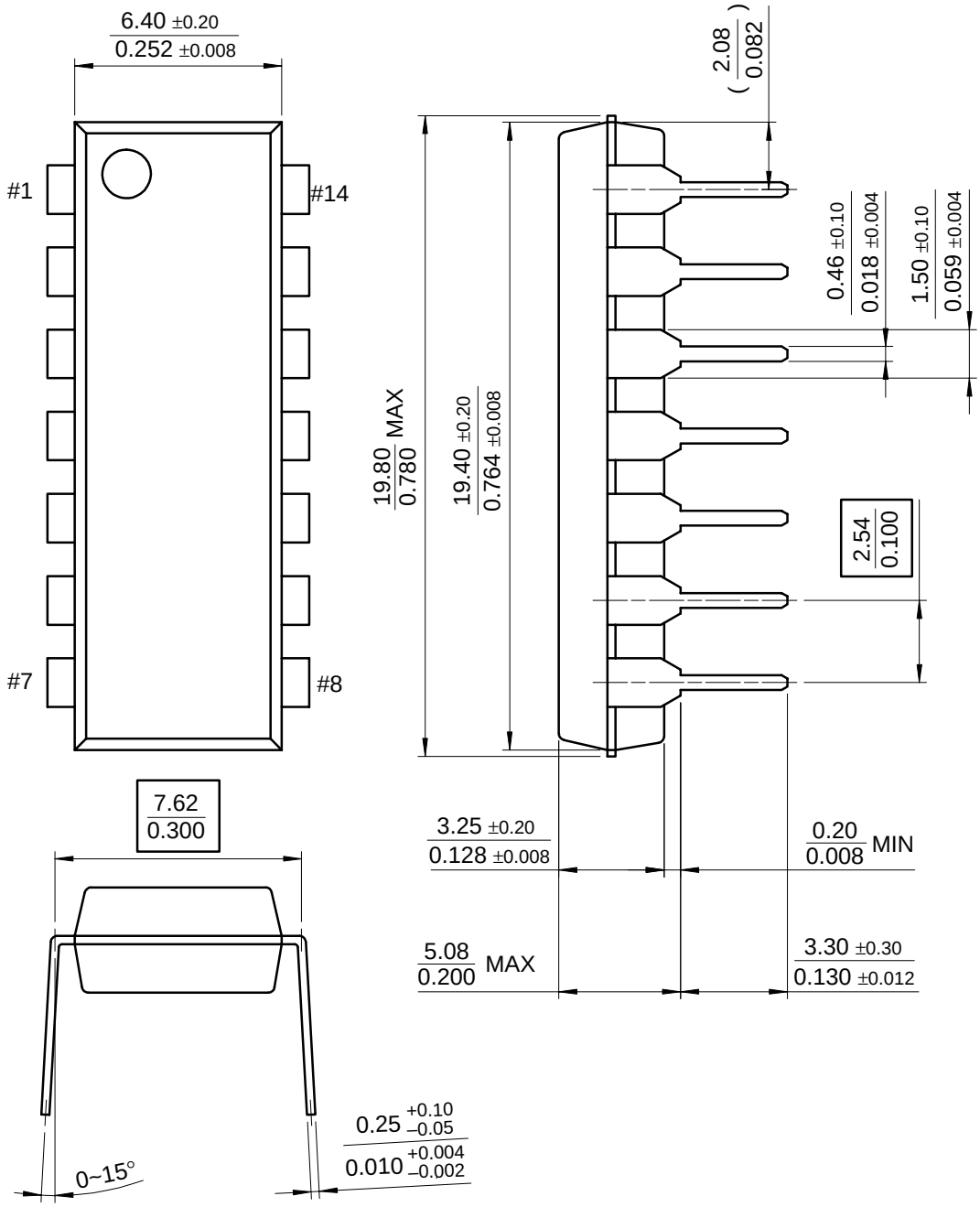
Regulated Output Voltage 5V
Line regulation (ΔV_{IN} = 3V) 0.5mV
Load Regulation (ΔV_L = 50V) 1.5mV

Mechanical Dimensions

Package

Dimensions in millimeters

14-DIP

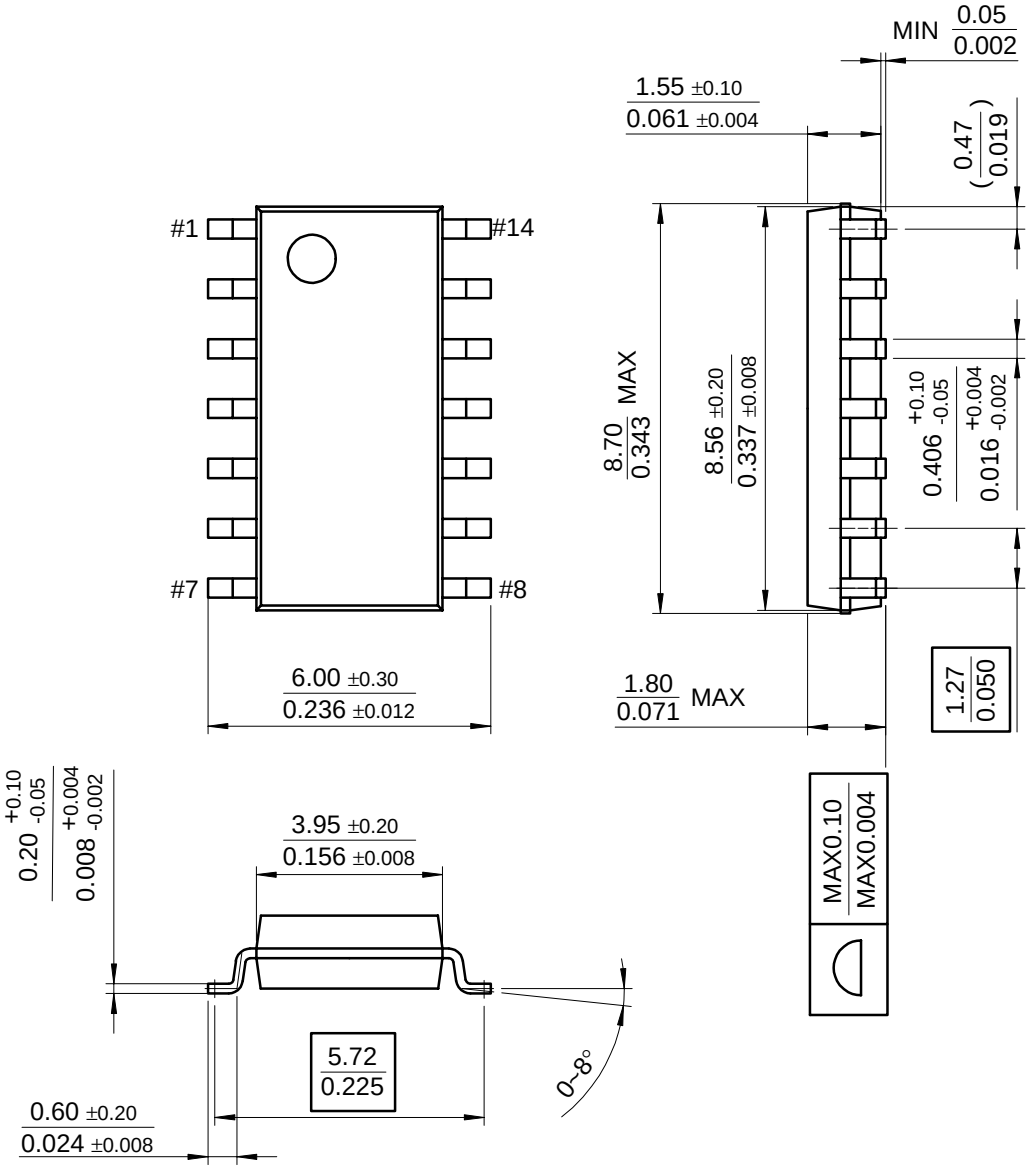


Mechanical Dimensions (Continued)

Package

Dimensions in millimeters

14-SOP



Ordering Information

Product Number	Package	Operating Temperature
KA723	14-DIP	0 ~ +70°C
KA723D	14-SOP	

11/22/02 0.0m 001
Stock#DSxxxxxxxx