

The Data Book Project

DatasheetArchive.com has launched an ambitious effort to digitize thousands of obsolete data books and technical manuals, making them searchable via the DatasheetArchive website.

Scroll down to see the scanned document.

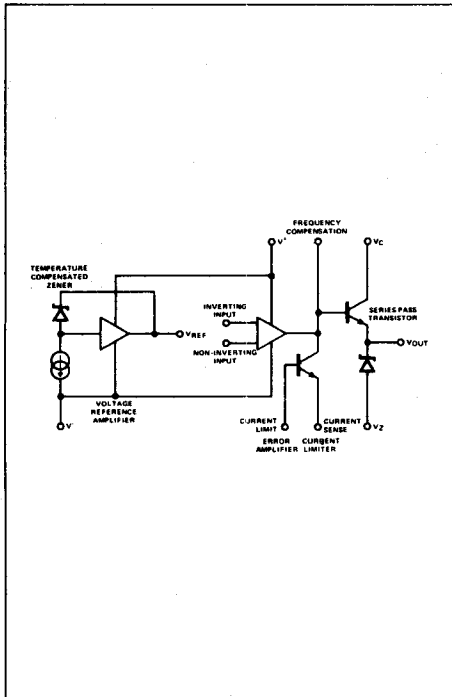
DESCRIPTION

The $\mu A723$ is a Monolithic Precision Voltage Regulator capable of operation in positive or negative supplies as a series, shunt, switching or floating regulator. The $\mu A723$ contains a temperature compensated reference amplifier, error amplifier, series pass transistor, and current limiter, with access to remote shutdown.

FEATURES

- POSITIVE OR NEGATIVE SUPPLY OPERATION
- SERIES, SHUNT, SWITCHING OR FLOATING OPERATION
- 01% LINE AND LOAD REGULATION
- OUTPUT VOLTAGE ADJUSTABLE FROM 2 TO 37 VOLTS
- OUTPUT CURRENT TO 150mA WITHOUT EXTERNAL PASS TRANSISTOR

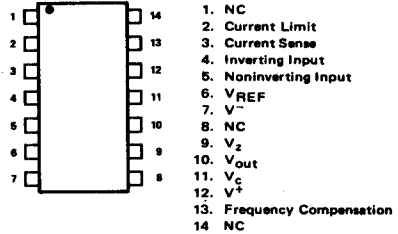
EQUIVALENT CIRCUIT



LINEAR INTEGRATED CIRCUITS

PIN CONFIGURATION

A PACKAGE (Top View)



ORDER PART NOS. $\mu A723A/\mu A723CA$

L PACKAGE



ORDER PART NOS. $\mu A723L/\mu A723CL$

ABSOLUTE MAXIMUM RATINGS

	$\mu A723$	$\mu A723C$
Pulse Voltage from V^+ to V^- (50ms)	50V	
Continuous Voltage from V^+ to V^-	40V	40V
Input-Output Voltage Differential	40V	40V
Maximum Output Current	150mA	150mA
Current from V_{REF}	15mA	
Current from V_2		25mA
Internal Power Dissipation (Note 1)	800mW	800mW
Operating Temperature Range	-55 to +125°C	0 to 70°C
Storage Temperature Range	-65°C to +150°C	-65°C to +150°C
Lead Temperature	300°C	300°C

SIGNETICS - μ A723/723C - PRECISION VOLTAGE REGULATOR

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified - Note 1)

PARAMETER (See definitions)	MIN	TYP	MAX	UNITS	CONDITIONS
μA723C					
Line Regulation (Note 2)		0.01 0.1	0.1 0.5	% V_{out} % V_{out}	$V_{in} = 12\text{V}$ to $V_{in} = 15\text{V}$ $V_{in} = 12\text{V}$ to $V_{in} = 40\text{V}$
Load Regulation (Note 2)		0.03	0.2	% V_{out}	$I_L = 1\text{mA}$ to $I_L = 50\text{mA}$
Ripple Rejection		74 86		dB dB	$f = 50\text{ Hz}$ to 10 kHz , $C_{REF} = 0$ $f = 50\text{ Hz}$ to 10 kHz , $C_{REF} = 5\mu\text{F}$
Short Circuit Current Limit		65		mA	$R_{SC} = 10\Omega$, $V_{out} = 0$
Reference Voltage	6.80	7.15	7.50	V	
Output Noise Voltage		20 2.5		$\mu\text{V rms}$ $\mu\text{V rms}$	$BW = 100\text{ Hz}$ to 10 kHz , $C_{REF} = 0$ $BW = 100\text{ Hz}$ to 10 kHz , $C_{REF} = 5\mu\text{F}$
Long Term Stability			0.1	%/1000 hrs.	
Standby Current Drain		2.3	4.0	mA	$I_L = 0$, $V_{in} = 30\text{V}$
Input Voltage Range	9.5		40	V	
Output Voltage Range	2.0		37	V	
Input-Output Voltage Differential	3.0		38	V	
The Following Specifications Apply Over the Operating Temperature Ranges					
Line Regulation			0.3	% V_{out}	
Load Regulation			0.6	% V_{out}	
Average Temperature Coefficient of Output Voltage		0.003	0.015	%/ $^\circ\text{C}$	$V_{in} = 12\text{V}$ to $V_{in} = 15\text{V}$ $I_L = 1\text{mA}$ to $I_L = 50\text{mA}$
μA723					
Line Regulation (Note 2)		0.01 0.02	0.1 0.2	% V_{out} % V_{out}	$V_{in} = 12\text{V}$ to $V_{in} = 15\text{V}$ $V_{in} = 12\text{V}$ to $V_{in} = 40\text{V}$
Load Regulation (Note 2)		0.03	0.15	% V_{out}	$I_L = 1\text{mA}$ to $I_L = 50\text{mA}$
Ripple Rejection		74 86		dB dB	$f = 50\text{ Hz}$ to 10 kHz , $C_{REF} = 0$ $f = 50\text{ Hz}$ to 10 kHz , $C_{REF} = 5\mu\text{F}$
Short Circuit Current Limit		65		mA	$R_{SC} = 10\Omega$, $V_{out} = 0$
Reference Voltage	6.95	7.15	7.35	V	
Output Noise Voltage		20 2.5		$\mu\text{V rms}$ $\mu\text{V rms}$	$BW = 100\text{ Hz}$ to 10 kHz , $C_{REF} = 0$ $BW = 100\text{ Hz}$ to 10 kHz , $C_{REF} = 5\mu\text{F}$
Long Term Stability		0.1		%/1000 hrs.	
Standby Current Drain		2.3	3.5	mA	$I_L = 0$, $V_{in} = 30\text{V}$
Input Voltage Range	9.5		40	V	
Output Voltage Range	2.0		37	V	
Input-Output Voltage Differential	3.0		38	V	
The Following Specifications Apply Over the Operating Temperature Ranges					
Line Regulation			0.3	% V_{out}	
Load Regulation			0.6	% V_{out}	
Average Temperature Coefficient of Output Voltage		0.002	0.015	%/ $^\circ\text{C}$	$V_{in} = 12\text{V}$ to $V_{in} = 15\text{V}$ $I_L = 1\text{mA}$ to $I_L = 50\text{mA}$

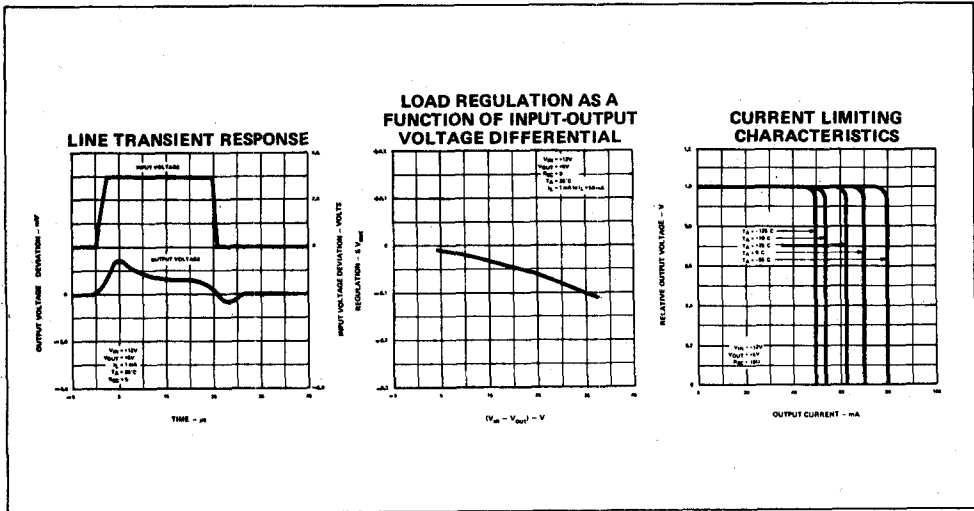
NOTES

1. Unless otherwise specified, $T_A = 25^\circ\text{C}$, $V_{in} = V_+ = V_- = 12\text{V}$, $V_- = 0\text{V}$, $V_{out} = 5\text{V}$, $I_L = 1\text{mA}$, $R_{SC} = 0$, $C_1 = 100\text{pF}$, $C_{REF} = 0$ and divider impedance as seen by error amplifier $< 10\text{k}\Omega$ when connected as shown in Figure 3.

2. The load and line regulation specifications are for constant junction temperature. Temperature drift effects must be taken into account separately when the unit is operating under conditions of high dissipation.

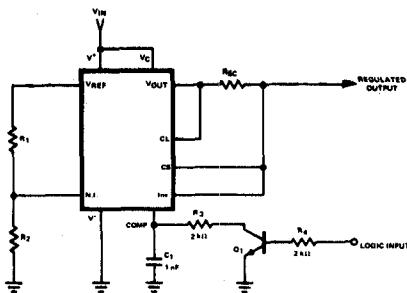
SIGNETICS • μ A723/723C – PRECISION VOLTAGE REGULATOR

TYPICAL CHARACTERISTIC CURVES (Cont'd.)



BASIC μ A723 REGULATOR APPLICATIONS

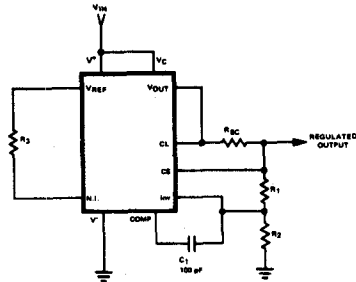
REMOTE SHUTDOWN REGULATOR WITH CURRENT LIMITING ($V_{out} = 2$ to 7 Volts)



$$V_{out} = \left[V_{REF} \times \frac{R_2}{R_1 + R_2} \right]$$

FIGURE 1

HIGH VOLTAGE REGULATOR ($V_{out} = 7$ to 37 Volts)



$$V_{out} = \left[V_{REF} \times \frac{R_1 + R_2}{R_2} \right]$$

$$R_3 = \frac{R_1 R_2}{R_1 + R_2} \text{ for minimum temperature drift}$$

R_3 may be eliminated for minimum component count

FIGURE 2

BASIC $\mu A723$ REGULATOR APPLICATIONS (Cont'd.)

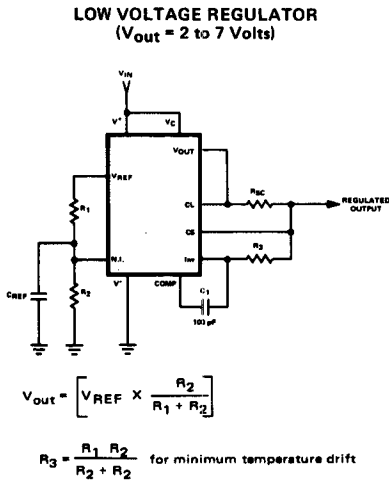


FIGURE 3

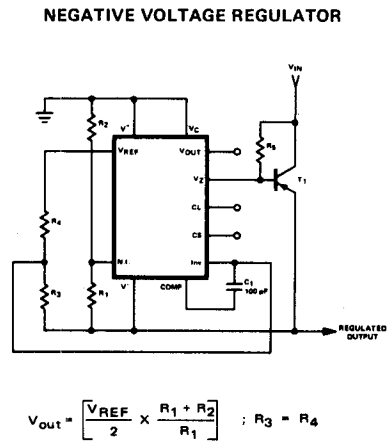
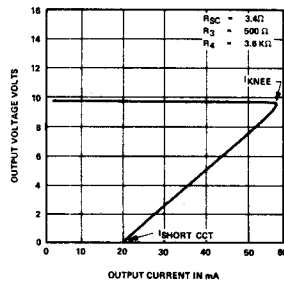
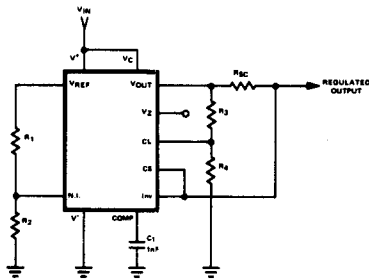


FIGURE 4

FOLDBACK CURRENT LIMITING REGULATOR
($V_{out} = 2$ to 7 Volts)



$$I_{KNEE} = \left[\frac{V_{out} R_3}{R_{sc} R_4} + \frac{V_{SENSE} (R_3 + R_4)}{R_{sc} R_4} \right]$$

$$V_{out} = \left[V_{REF} \times \frac{R_1 + R_2}{R_2} \right]$$

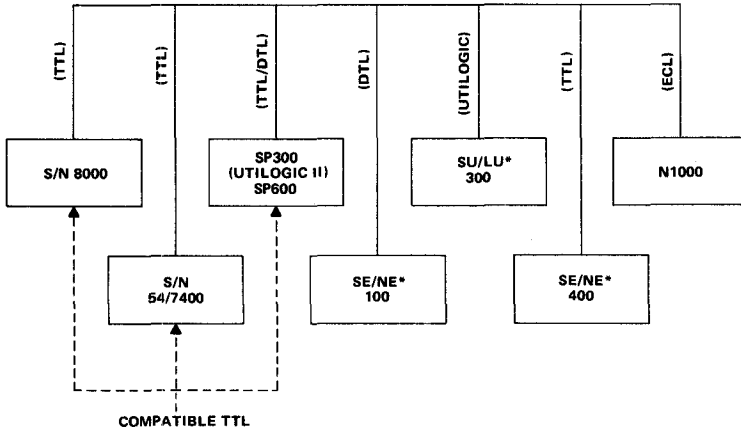
$$I_{SHORT CTT} = \left[\frac{V_{SENSE}}{R_{sc}} \times \frac{R_3 + R_4}{R_4} \right]$$

$$\frac{R_4}{R_3} = \frac{V_{OUT} I_{SC}}{V_{SENSE} (I_{KNEE} - I_{SHORT CTT})} - 1$$

$$R_{SC} = \frac{V_{SENSE}}{I_{SC}} \left[1 + \frac{R_3}{R_4} \right]$$

FIGURE 5

BIPOLAR DIGITAL



*NOTE: Information pertaining to these Signetics series product lines may be obtained by contacting your local sales representative.

8000 SERIES

The concept of cross-family compatibility in integrated circuits was born in 1966 when Signetics introduced Designer's Choice Logic (DCL). This family consists of the following compatible sub-families:

8100	Special purpose sub-systems.
8200	Integrated monolithic sub-systems (MSI).
8400	Offers DTL logic flexibility at lower power consumption and higher fan-out than any other DTL family.
8800	The classical high level TTL circuit design is utilized to provide low propagation delays and high noise immunity.
8H00	A higher speed version of the 8800.
8T00	A group of interface elements which includes voltage level translators, line drivers and receivers, and Display (Nixie [®] and Seven Segment) Drivers.

8000 series devices are available in military and commercial temperature ranges and a wide variety of package types.