POSITIVE VOLTAGE REGULATORS

MC1723L
MC1723CL

MONOLITHIC VOLTAGE REGULATOR

The MC1723 is a positive or negative voltage regulator designed to deliver load current to 150 mAdc. Output current capability can be increased to several amperes through use of one or more external pass transistors. MC1723 is specified for operation over the military temperature range (-55°C to +125°C) and the MC1723C over the commercial temperature range (0 to +75°C).

- Output Voltage Adjustable from 2 Vdc to 37 Vdc
- Output Current to 150 mAdc Without External Pass Transistors
- 0.01% Line and 0.03% Load Regulation
- Adjustable Short-Circuit Protection

VOLTAGE REGULATOR

MONOLITHIC SILICON EPITAXIAL PASSIVATED INTEGRATED CIRCUIT

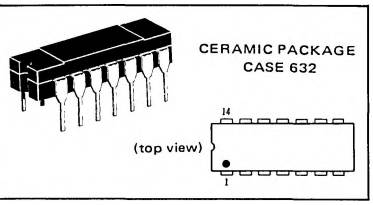


FIGURE 1 – TYPICAL CIRCUIT CONNECTION

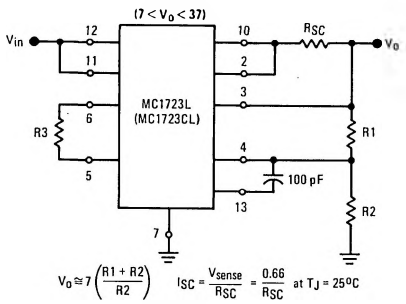


FIGURE 2 – TYPICAL NPN CURRENT BOOST CONNECTION

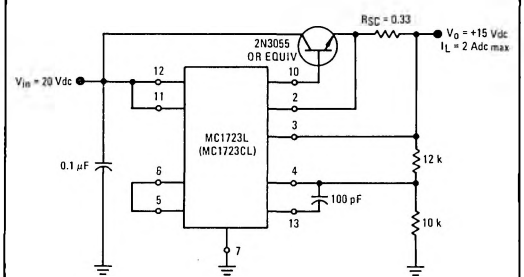
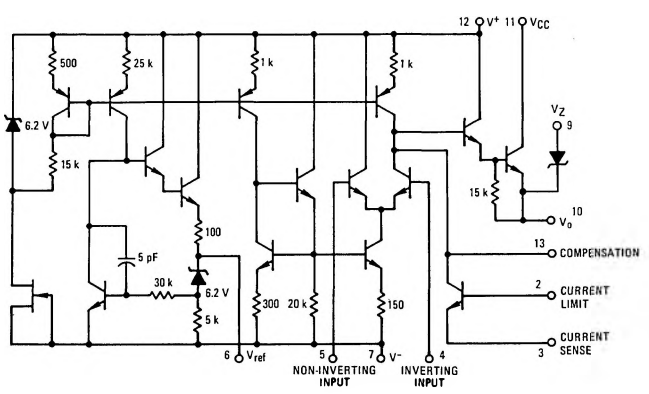
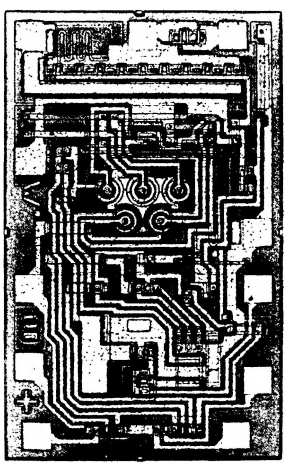


FIGURE 3 – CIRCUIT SCHEMATIC





This is advance information on a new introduction and specifications are subject to change without notice.
See Packaging Information Section for outline dimensions.

MAXIMUM RATINGS (T_A = +25°C unless otherwise noted)

Rating		Symbol	Value	Unit
Pulse Voltage from V^+ to V^- (50 ms)	MC1723L	$V_{in(p)}$	50	V_{peak}
Continuous Voltage from V^+ to V^-		V_{in}	40	Vdc
Input-Output Voltage Differential		$V_{in}-V_o$	40	Vdc
Maximum Output Current		I_L	150	mAdc
Current from V_{ref}		I_{ref}	15	mAdc
Power Dissipation and Thermal Characteristics				
Dual In-Line Ceramic Package		P_D	1.0	Watt
Derate above T_A = +25°C		$1/\theta_{JA}$	6.7	mW/°C
Thermal Resistance, Junction to Air		θ_{JA}	150	°C/W
Operating and Storage Junction Temperature Range		T_J, T_{stg}	-65 to +175	°C

OPERATING TEMPERATURE RANGE

Ambient Temperature		T_A		°C
	MC1723CL		0 to +75	
	MC1723L		-55 to +125	

ELECTRICAL CHARACTERISTICS (Unless otherwise noted: T_A = +25°C, V_{in} = 12 Vdc, V_o = 5 Vdc, I_L = 1 mAdc, R_{SC} = 0, C1 = 100 pF, C_{ref} = 0 and divider impedance as seen by the error amplifier ≤ 10 kΩ connected as shown in Figure 1)

Characteristic	Symbol	MC1723 Min	MC1723 Typ	MC1723 Max	MC1723C Min	MC1723C Typ	MC1723C Max	Unit
Input Voltage Range	V_{in}	9.5	–	40	9.5	–	40	Vdc
Output Voltage Range	V_o	2.0	–	37	2.0	–	37	Vdc
Input-Output Voltage Differential	$V_{in}-V_o$	3.0	–	38	3.0	–	38	Vdc
Reference Voltage	V_{ref}	6.95	7.15	7.35	6.80	7.15	7.50	Vdc
Standby Current Drain (I_L = 0, I_{ref} = 0, V_{in} = 30 V)	I_b	–	2.3	3.5	–	2.3	4.0	mAdc
Output Noise Voltage (f = 100 Hz to 10 kHz)	V_n							μV(rms)
C_{ref} = 0		–	20	–	–	20	–	
C_{ref} = 5.0 μF		–	2.5	–	–	2.5	–	
Average Temperature Coefficient of Output Voltage T_{low} ① < T_A < T_{high} ②	TCV_o	–	0.002	0.015	–	0.003	0.015	%/°C
Line Regulation	Reg_{in}							% V_o
(T_A = +25°C) 12 V < V_{in} < 15 V		–	0.01	0.1	–	0.01	0.1	
(T_A = +25°C) 12 V < V_{in} < 40 V		–	0.02	0.2	–	0.1	0.5	
(T_{low} ① < T_A < T_{high} ②) 12 V < V_{in} < 15 V		–	–	0.3	–	–	0.3	
Load Regulation (1.0 mA < I_L < 50 mA)	Reg_{load}							% V_o
T_A = +25°C		–	0.03	0.15	–	0.03	0.2	
T_{low} ① < T_A < T_{high} ②		–	–	0.6	–	–	0.6	
Ripple Rejection (f = 50 Hz to 10 kHz)	Rej_R							dB
C_{ref} = 0		–	74	–	–	74	–	
C_{ref} = 5.0 μF		–	86	–	–	86	–	
Short Circuit Current Limit (R_{SC} = 10 Ω, V_o = 0)	I_{SC}	–	65	–	–	65	–	mAdc
Long Term Stability	$\Delta V_o/\Delta t$	–	0.1	–	–	0.1	–	%/1000 hrs

① T_{low} = 0°C for MC1723CL
= -55°C for MC1723L

② T_{high} = +75°C for MC1723CL
= +125°C for MC1723L