



# CM1084

## 5.0 AMP POSITIVE VOLTAGE REGULATOR

### GENERAL DESCRIPTION

The CM1084 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current. Additionally, the CM1084 series provides excellent regulation over variations in line, load and temperature.

Outstanding features include low dropout performance at rated current, fast transient response, internal current limiting and thermal shutdown protection of the output device. The CM1084 series are three terminal regulators with adjustable voltage options available in popular packages.

### FEATURES

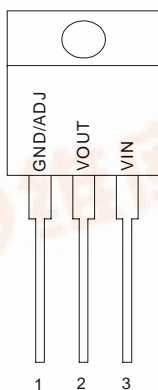
- ◆ Low dropout performance
- ◆ 1.3V max. for CM1084
- ◆ Full current rating over line and temperature
- ◆ Fast transient response
- ◆  $\pm 2\%$  total output regulation over line, load and temperature
- ◆ Adjust pin current max 90 $\mu$ A over temperature
- ◆ Adjustable output voltage
- ◆ Line regulation typically 0.015%
- ◆ Load regulation typically 0.1%
- ◆ TO-220, TO-252 and TO-263 packages

### APPLICATIONS

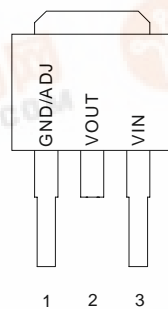
- ◆ Power Supplies
- ◆ Computer Add-On Cards
- ◆ Other Applications Requiring Low Dropout Voltage Over Rated Current

### PIN CONFIGURATION

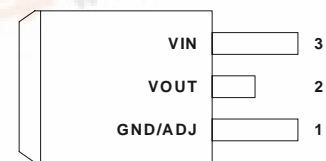
TO-220  
Top View



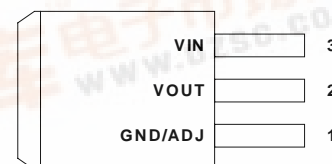
TO-252  
Top View

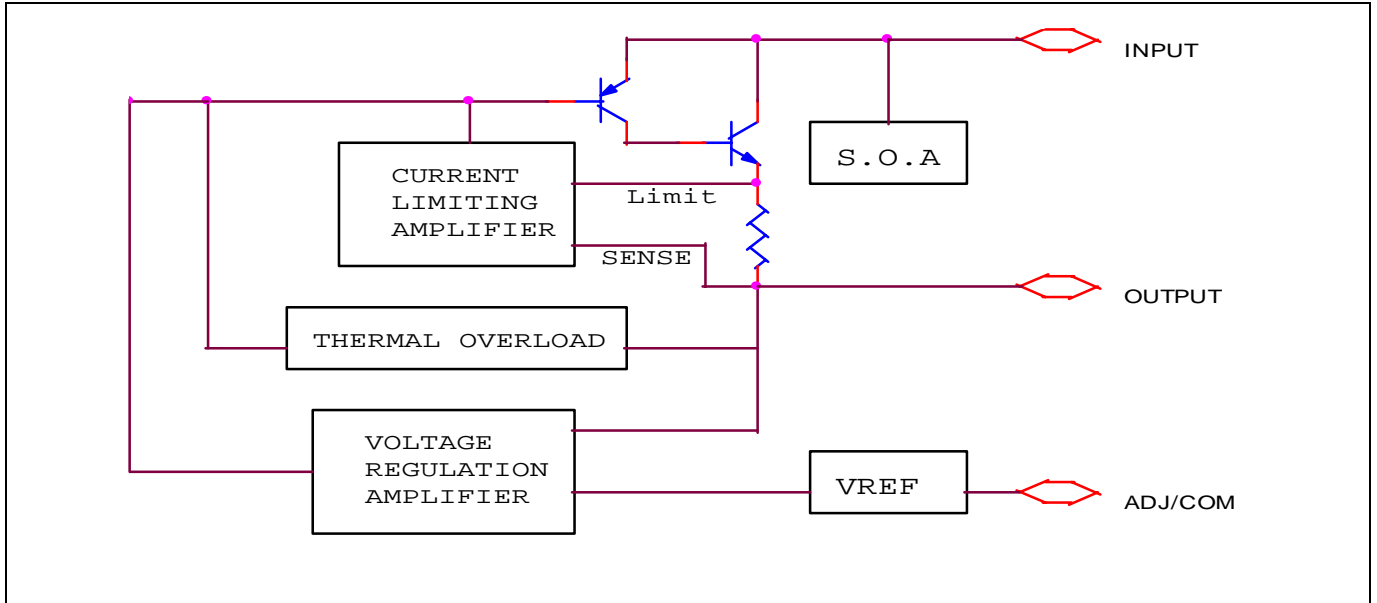


TO-263  
Top View



TO-263L  
Top View



**BLOCK DIAGRAM**

**ORDERING INFORMATION**

Package Type				Operating Temperature Range (T <sub>A</sub> )	Output Voltage
TO-220	TO-252	TO-263	TO-263L		
CM1084KCN220	CM1084KCN252	CM1084KCN263	CM1084KCN263L	0°C ~ +70°C	2.5V
CM1084SCN220	CM1084SCN252	CM1084SCN263	CM1084SCN263L	0°C ~ +70°C	3.3V
CM1084CN220	CM1084CN252	CM1084CN263	CM1084CN263L	0°C ~ +70°C	ADJ.

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Maximum	Units
Input Supply Voltage	V <sub>IN</sub>	7	V
Power Dissipation	P <sub>D</sub>	Internally Limited.	W
Thermal Resistance Junction to Case			
TO-220	θ <sub>JC</sub>	2.5	°C/W
TO-263		2.5	
TO-252		2.5	
Thermal Resistance Junction to Ambient			
TO-220	θ <sub>JA</sub>	45	°C/W
TO-263/TO-263L		45	
TO-252		80	
Operating Junction Temperature Range	T <sub>J</sub>	0 to 125	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to 150	°C
Lead Temperature (Soldering) 10 Sec	T <sub>LEAD</sub>	260	°C

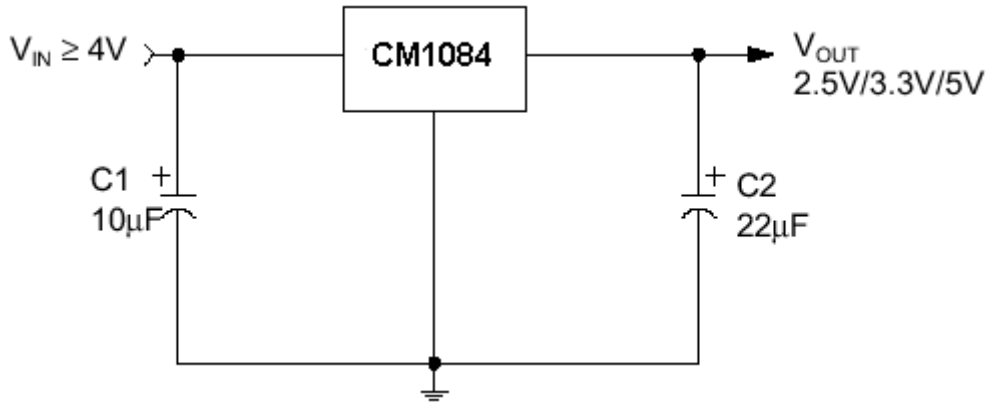
**ELECTRICAL CHARACTERISTICS**

 Unless otherwise specified, Adj  $V_{IN} = 2.75V$  to  $7.0V$  and Adj  $I_o = 10mA$  to  $5.0A$ 

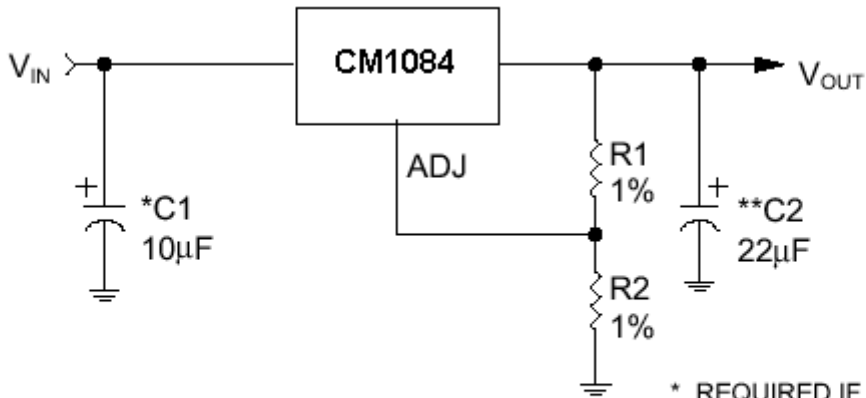
Parameter	Symbol	Test Conditions			Test Limits			Units
		$V_{IN}$	$I_o$	$T_j$	Min	Typ	Max	
Output Voltage <sup>(1)</sup>	$V_O$	5V	0mA	25°C	0.99I <sub>o</sub>	$V_O$	1.01I <sub>o</sub>	V
Fixed Voltage			5A	125°C	0.98I <sub>o</sub>	$V_O$	1.02I <sub>o</sub>	
Reference Voltage <sup>(1)</sup>	$V_{REF}$	5V	10mA	25°C	1.238	1.250	1.262	V
Adj Voltage Version				5A	125°C	1.225	1.250	
Line Regulation <sup>(1)</sup>	REG <sub>(LINE)</sub>		10mA	25°C		0.015	0.2	%
Load Regulation <sup>(1)</sup>	REG <sub>(LOAD)</sub>	5V		25°C		0.1	0.3	%
Dropout Voltage <sup>(2)</sup>	$V_D$			25°C			1.3	V
CM1084								
Current Limit	$I_{CL}$			125°C	5.0	7.5		A
Quiescent Current	$I_o$	5V						
Temperature Coefficient	$T_C$					0.005		%/°C
Adjust Pin Current	$I_{ADJ}$			25°C		55	120	μA
Adjust Pin Current Change	$\Delta I_{ADJ}$					0.2	5	μA
Temperature Stability	$T_S$	5V	0.5A			0.5		%
Minimum Load Current	$I_o$	5V				5	10	mA
Adj Voltage Version								
RMS Output Noise <sup>(3)</sup>	$V_N$			25°C		0.003		% $V_O$
Ripple Rejection Ratio <sup>(4)</sup>	$R_A$	5V	5.0A		60	72		dB

**NOTES :**

- (1) Low duty cycle pulse testing with Kelvin connections required.
- (2)  $\Delta V_{OUT}$ ,  $\Delta V_{REF} = 1\%$
- (3) Bandwidth of 10 Hz to 10 kHz.
- (4) 120 Hz input ripple ( $C_{ADJ}$  for ADJ=25 μF)

**APPLICATION CIRCUIT**


Fixed Output Voltage Regulator

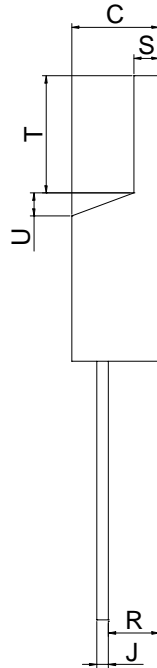
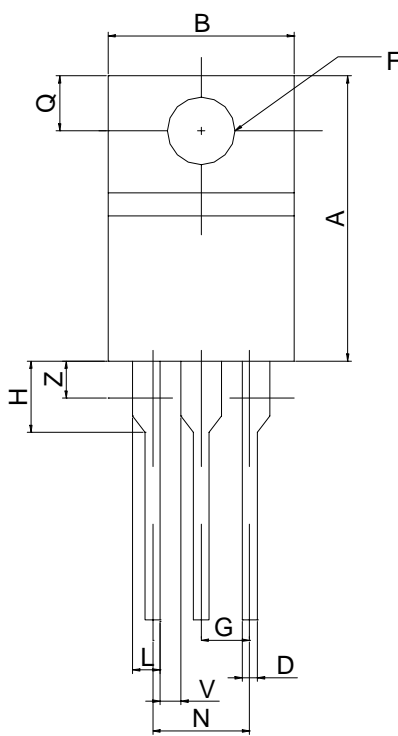


$$V_{OUT} = V_{REF} (1 + (R2/R1)) + I_{ADJ}R2$$

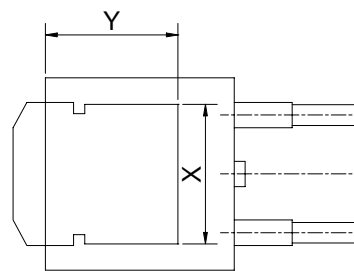
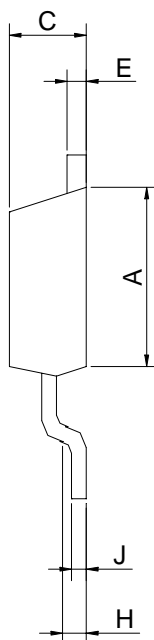
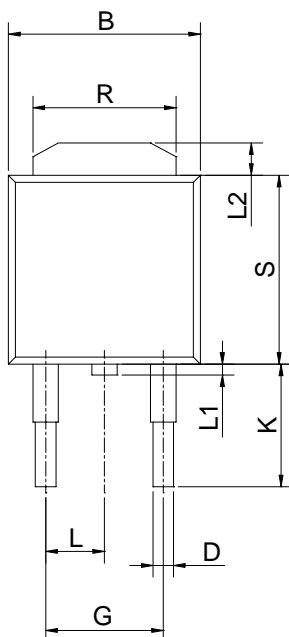
\* REQUIRED IF REGULATOR IS LOCATED FAR FROM POWER SUPPLY FILTER

\*\* DESIGN C2 AS CLOSE TO V<sub>OUT</sub> PIN AS POSSIBLE

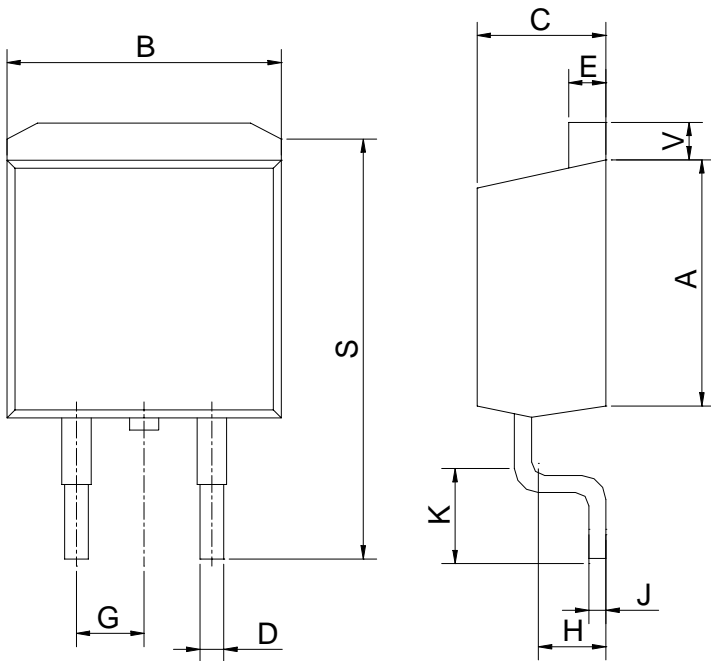
Adjustable Regulator

**PACKAGE DIMENSION**
**TO-220 (N220)**


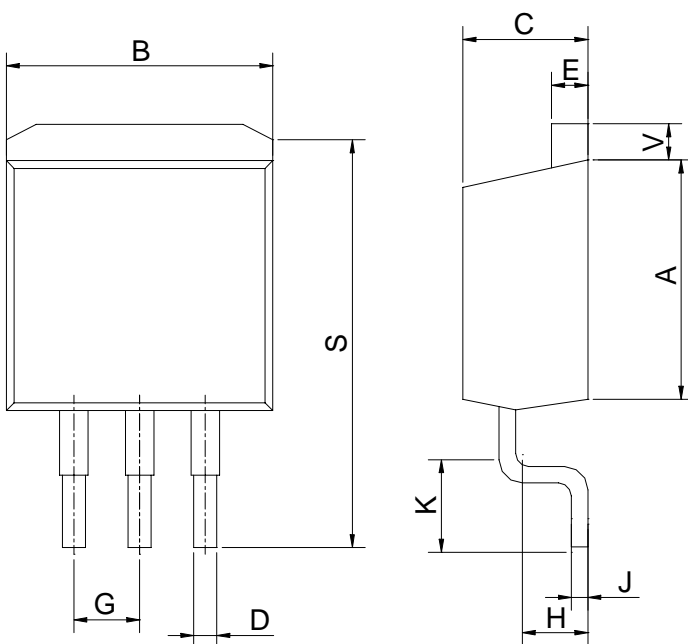
SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	14.48	---	15.75	0.570	---	0.620
B	9.66	---	10.28	0.380	---	0.405
C	4.07	---	4.82	0.160	---	0.190
D	0.64	---	0.88	0.025	---	0.035
F	3.61	---	3.73	0.142	---	0.147
G	2.42	---	2.66	0.095	---	0.105
H	2.80	---	3.93	0.110	---	0.155
J	0.46	---	0.64	0.018	---	0.025
K	12.70	---	14.27	0.500	---	0.562
L	1.15	---	1.52	0.045	---	0.060
N	4.83	---	5.33	0.190	---	0.210
Q	2.54	---	3.04	0.100	---	0.120
R	2.04	---	2.79	0.080	---	0.110
S	1.15	---	1.39	0.045	---	0.055
T	5.97	---	6.47	0.235	---	0.255
U	0.00	---	1.27	0.000	---	0.050
V	1.15	---	---	0.045	---	---
Z	---	---	2.04	---	---	0.080

**TO-252 (N252)**


SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	5.97	---	6.35	0.235	---	0.250
B	6.35	---	6.73	0.250	---	0.265
C	2.19	---	2.38	0.086	---	0.094
D	0.69	---	0.88	0.027	---	0.035
E	0.46	---	0.58	0.018	---	0.023
G	4.58BSC			0.180BSC		
H	0.87	---	1.01	0.034	---	0.040
J	0.46	---	0.58	0.018	---	0.023
K	2.60	---	2.89	0.102	---	0.114
L	2.29BSC			0.090BSC		
R	4.45	---	5.46	0.175	---	0.215
S	5.33	---	5.59	0.210	---	0.220
L1	0.64	---	1.02	0.025	---	0.040
L2	1.52	---	2.03	0.060	---	0.080
X	4.12	---	4.56	0.162	---	0.179
Y	5.11	---	5.72	0.201	---	0.225

**PACKAGE DIMENSION**
**TO-263 (N263)**


SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	8.64	---	9.65	0.340	---	0.380
B	9.65	---	10.29	0.380	---	0.405
C	4.06	---	4.83	0.160	---	0.190
D	0.51	---	0.89	0.020	---	0.035
E	1.14	---	1.40	0.045	---	0.055
G	2.54BSC			0.100BSC		
H	2.03	---	2.79	0.080	---	0.110
J	0.46	---	0.64	0.018	---	0.025
K	2.29	---	2.79	0.090	---	0.110
S	14.60	---	15.88	0.575	---	0.625
V	1.14	---	1.40	0.045	---	0.055

**TO-263 (N263)**


SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	8.64	---	9.65	0.340	---	0.380
B	9.65	---	10.29	0.380	---	0.405
C	4.06	---	4.83	0.160	---	0.190
D	0.51	---	0.89	0.020	---	0.035
E	1.14	---	1.40	0.045	---	0.055
G	2.54BSC			0.100BSC		
H	2.03	---	2.79	0.080	---	0.110
J	0.46	---	0.64	0.018	---	0.025
K	2.29	---	2.79	0.090	---	0.110
S	14.60	---	15.88	0.575	---	0.625
V	1.14	---	1.40	0.045	---	0.055

Front View

Side View

**IMPORTANT NOTICE**

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