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

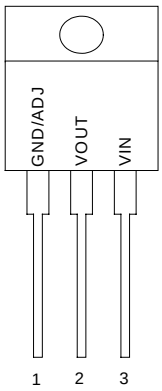
- Low dropout performance
- 1.3V Typ. for CM1084
- Full current rating over line and temperature
- Fast transient response
- ±2% total output regulation over line, load and temperature
- Adjust pin current max 120μA over temperature
- Adjustable output voltage
- Line regulation typically 0.015%
- Load regulation typically 0.1%
- TO-220, TO-252 and TO-263 packages

APPLICATIONS

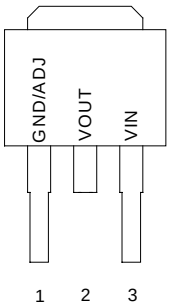
- Power Supplies
- Computer Add-On Cards
- Other Applications Requiring Low Dropout Voltage Over Rated Current

PIN CONFIGURATION

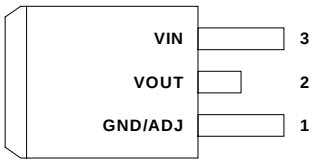
TO-220
Top View



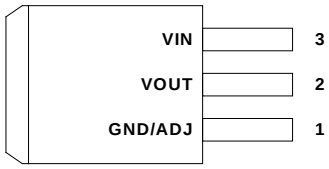
TO-252
Top View



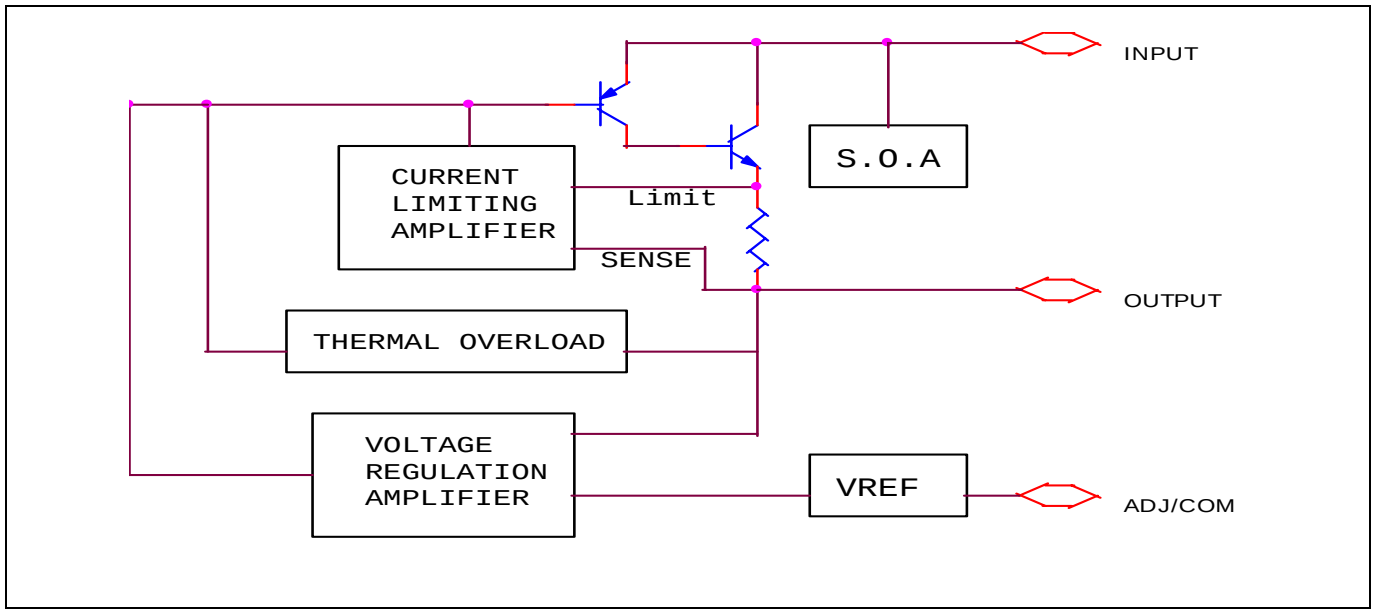
TO-263
Top View



TO-263L
Top View



BLOCK DIAGRAM



ORDERING INFORMATION

Package Type				Operating Temperature Range (T_A)	Output Voltage
TO-220	TO-252	TO-263	TO-263L		
CM1084KCN220	CM1084KCN252	CM1084KCN263	CM1084KCN263L	0℃ ~ +125℃	2.5V
CM1084SCN220	CM1084SCN252	CM1084SCN263	CM1084SCN263L	0℃ ~ +125℃	3.3V
CM1084CN220	CM1084CN252	CM1084CN263	CM1084CN263L	0℃ ~ +125℃	ADJ.
CM1084GKCN220*	CM1084GKCN252*	CM1084GKCN263*	CM1084GKCN263L*	0℃ ~ +125℃	2.5V
CM1084GSCN220*	CM1084GSCN252*	CM1084GSCN263*	CM1084GSCN263L*	0℃ ~ +125℃	3.3V
CM1084GCN220*	CM1084GCN252*	CM1084GCN263*	CM1084GCN263L*	0℃ ~ +125℃	ADJ.

***Note:** Add suffix “G” for Pb Free Product

ABSOLUTE MAXIMUM RATINGS (Note 1)

Parameter	Symbol	Maximum	Units
Input Supply Voltage	V_{IN}	7	V
Power Dissipation (Note 2)	P_D	Internally Limited.	W
Thermal Resistance Junction to Case TO-220 TO-263 TO-252	θ_{JC}	 2.5 2.5 2.5	 ℃/W
Thermal Resistance Junction to Ambient TO-220 TO-263/TO-263L TO-252	θ_{JA}	 45 45 80	 ℃/W
Operating Junction Temperature Range (Note 3)	T_J	0 to 125	℃
Storage Temperature Range	T_{STG}	-65 to 150	℃
Lead Temperature（Soldering）6 Sec (TO-252) Lead Temperature（Soldering）10 Sec (TO-263/220)	T_{LEAD}	260	℃
ESD(Note 4)	2000V		

ELECTRICAL CHARACTERISTICS

Typicals and limits appearing in normal type apply for T_j =25℃.Limits appearing in **Boldface** type apply over the entire junction temperature range for operation.

Symbol	Parameter	Conditions	Min (Note 6)	Typ (Note 5)	Max (Note 6)	Units
V_{REF}	Reference Voltage	CM1084-ADJ I_{OUT} = 10mA, V_{IN}-V_{OUT} = 3V 10mA<=I_{OUT}<=$I_{FULL\ LOAD}$, 1.5V<=(V_{IN}-V_{OUT})<=7V (Note 7)	1.238 **1.225**	1.250 **1.250**	1.262 **1.270**	V V
V_{OUT}	Output Voltage (Note 7)	CM1084-3.3 I_{OUT} = 0mA, V_{IN} = 7V 0mA<=I_{OUT}<=$I_{FULL\ LOAD}$, 4.8V<=V_{IN}<=7V	3.270 **3.235**	3.300 **3.300**	3.330 **3.365**	V V
		Cm1084-5.0 I_{OUT} = 0mA, V_{IN} = 7V 0mA<=I_{OUT}<=$I_{FULL\ LOAD}$, 6.5V<=V_{IN}<=7V	4.950 **4.900**	5.000 **5.000**	5.050 **5.100**	V V
ΔV_{OUT}	Line Regulation (Note 8)	CM1084-ADJ I_{OUT} = 10mA, 1.5V<=(V_{IN}-V_{OUT})<=7V		0.015 **0.035**	0.2 **0.2**	% %
		CM1084-3.3 I_{OUT} = 0mA, 4.8V<=V_{IN}<=7V		0.5 **1.0**	6 **6**	mV mV
		Cm1084-5.0 I_{OUT} = 0mA, 6.5V<=V_{IN}<=7V		0.5 **1.0**	10 **10**	mV mV
ΔV_{OUT}	Load Regulation (Note 8)	CM1084-ADJ V_{IN}-V_{OUT} = 3V, 10mA<=I_{OUT}<=$I_{FULL\ LOAD}$		0.1 **0.2**	0.3 **0.4**	% %
		CM1084-3.3 V_{IN} = 7V, 0<=I_{OUT}<=$I_{FULL\ LOAD}$		3 **7**	15 **20**	mV mV
		Cm1084-5.0 V_{IN} = 7V, 0<=I_{OUT}<=$I_{FULL\ LOAD}$		5 **10**	20 **35**	mV mV
	Dropout Voltage (Note 9)	CM1084-3.3/5/ADJ ΔV_{REF} = 1%, I_{OUT} = 5V		**1.3**	**1.5**	V
I_{LIMIT}	Current Limit	CM1084-ADJ V_{IN}-V_{OUT} = 5V	**5.5**	**8.0**		A
		CM1084-3.3 V_{IN} = 7V	**5.5**	**8.0**		A
		Cm1084-5.0 V_{IN} = 7V	**5.5**	**8.0**		A
	Minimum Load Current (Note 10)	CM1084-ADJ V_{IN}-V_{OUT} = 5V		**5.0**	**10.0**	mA
	Quiescent Current	CM1084-3.3 V_{IN} = 7V		**5.0**	**10.0**	mA
		Cm1084-5.0 V_{IN} <= 7V		**5.0**	**10.0**	mA
	Thermal Regulation	T_A = 25℃, 30ms Pulse		0.003	0.015	%/W
	Ripple Rejection	f_{RIPPLE} = 120Hz, = C_{OUT} = 25 μF, Tantalum, I_{OUT} = 5A	**60**	**75**		dB
		CM1084-ADJ, C_{ADJ} = 25 μF, (V_{IN}-V_{OUT}) = 3V				
		CM1084-3.3, V_{IN} = 6.3V	**60**	**72**		dB
		CM1084-5.0, V_{IN} = 7V	**60**	**68**		dB
	Adjust Pin Current	CM1084		55	120	μA
	Adjust Pin Current Change	10mA,= I_{OUT}<=$I_{FULL\ LOAD}$ 1.5V<= V_{IN}-V_{OUT} <=7V		**0.2**	**5**	μA
	Temperature Stability			**0.5**		%
	Long Term Stability	T_A = 125℃, 1000H_{ls}		0.3	1.0	%
	RMS Output Noise (% of V_{OUT})	10Hz <= f <=10kHz		0.003		%
	Thermal Resistance Junction-to-Case	3-Lead TO-263: Control Section/Output Section 3-Lead TO-220: Control Section/Output Section			0.65/2.7 0.65/2.7	℃/W ℃/W

ELECTRICAL CHARACTERISTICS (Continued)

Typicals and limits appearing in normal type apply for T_j =25℃.Limits appearing in **Boldface** type apply over the entire junction temperature range for operation.

NOTES：

（1） Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings Indicate conditions for which the device is intended to be functional, but specific performance is not guaranteed. For guaranteed specifications and the test conditions, see the Electrical Characteristics.

（2） Power Dissipation is kept in a safe range by current limiting circuitry, Refer to Overload Recovery in Application Notes.

（3） The maximum power dissipation is a function of $T_{J(MAX)}$, θ_{JA}, and T_A. The maximum allowable power dissipation at any ambient temperature is PD = （$T_{J(MAX}$ - T_A)/ θ_{JA}. All numbers apply for packages soldered directly into a PC board, Refer to Thermal Considerations in the Application Notes.

（4） For testing purposes, ESD was applied using human body model, 1.5kΩ in series with 100pF.

（5） Typical Values represent the most likely parametric norm.

（6） All limits are guaranteed by testing or statistical analysis.

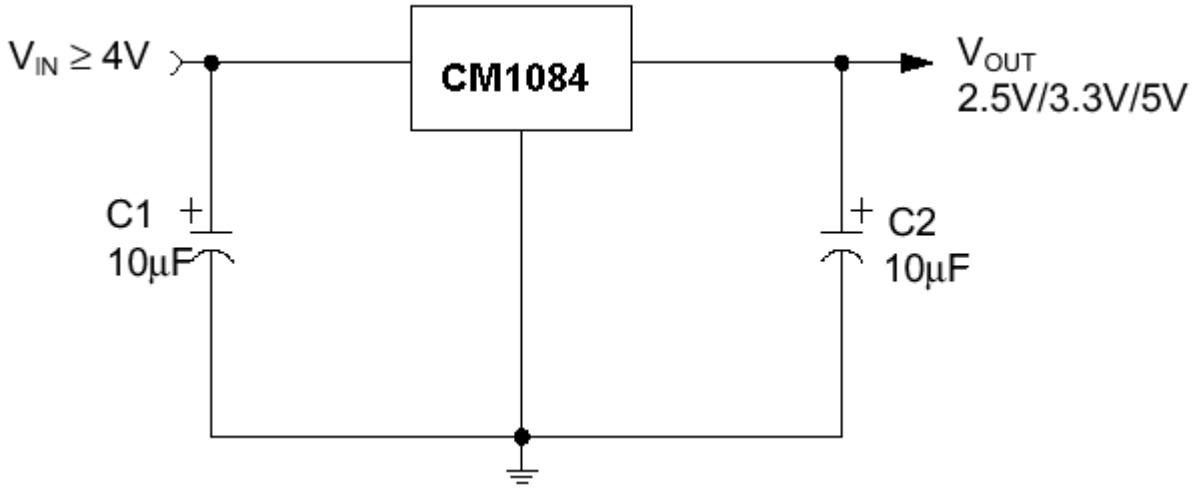
（7） $I_{FULL\ LOAD}$ is defined in the current limit curves. The $I_{FULL\ LOAD}$ Curve defines the current limit as a function of input-to-output voltage. Note that 30W power dissipation for the CM1084 is only achievable over a limited range of input-to-output voltage.

（8） Load and line regulation are measured at constant junction temperature, and are guaranteed up to the maximum power dissipation of 30W. Power dissipation is determined by the input/output differential and the output current. Guaranteed maximum power dissipation will not be available over the full input/output rage.

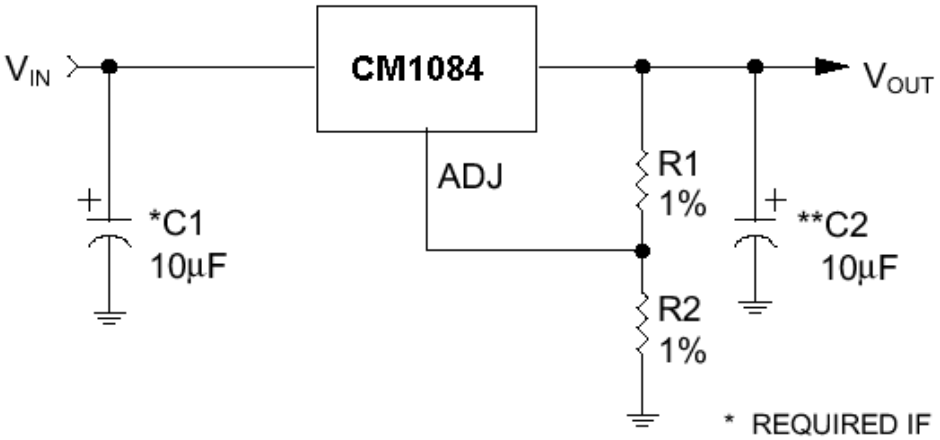
（9） Dropout voltage is specified over the full output current range of the device.

（10） The minimum output current required to maintain regulation.

APPLICATION CIRCUIT



Fixed Output Voltage Regulator



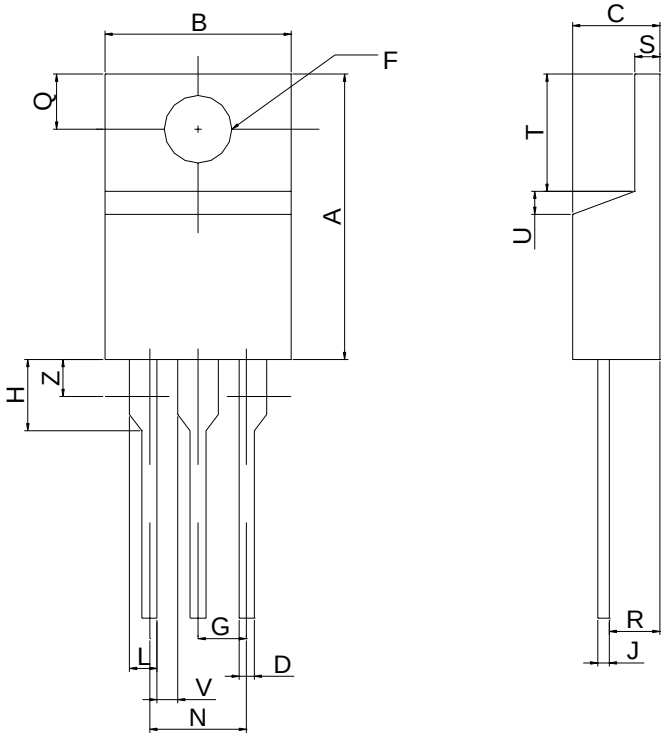
$V_{OUT} = V_{REF} (1+(R2/R1)) + I_{ADJ}R2$

* REQUIRED IF REGULATOR IS LOCATED FAR FROM POWER SUPPLY FILTER
** DESIGN C2 AS CLOSE TO V_{OUT} PIN AS POSSIBLE

Adjustable Regulator

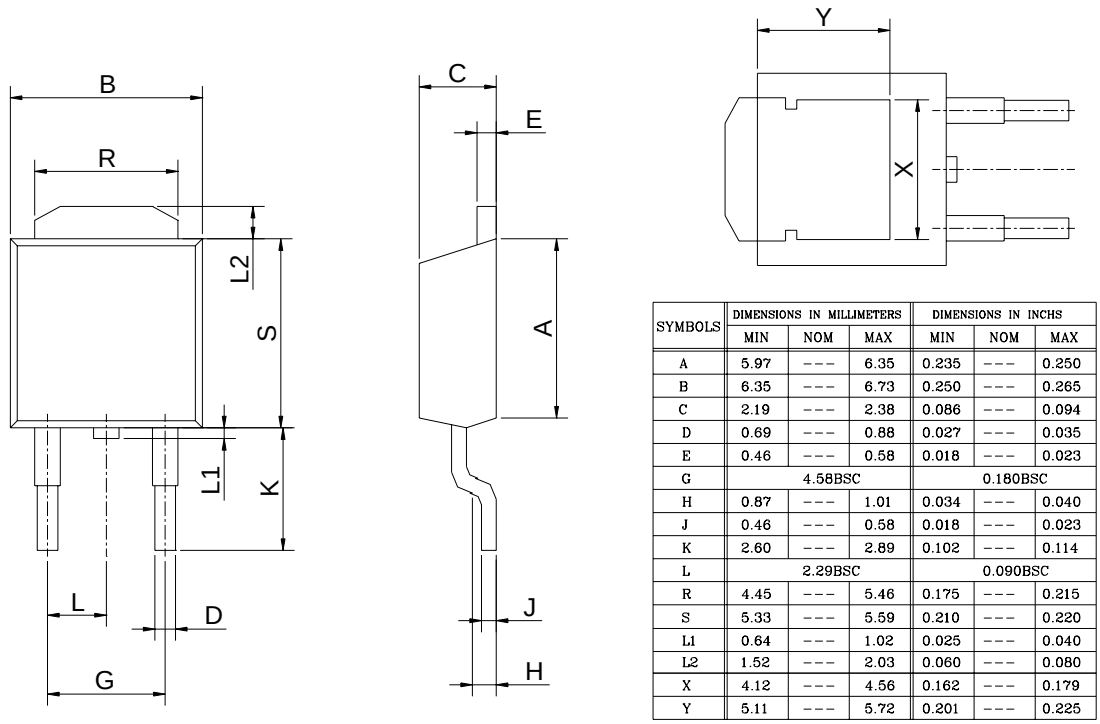
PACKAGE DIMENSION

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

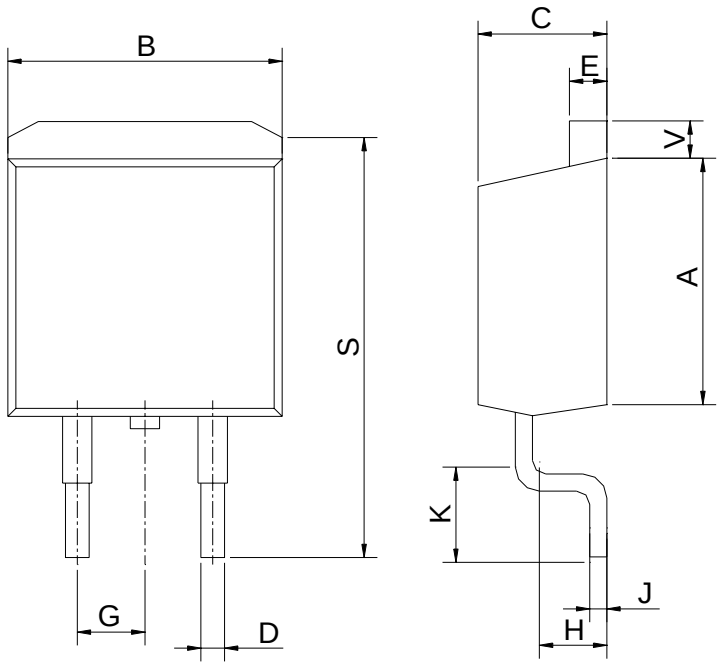
TO-252 (N252)



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

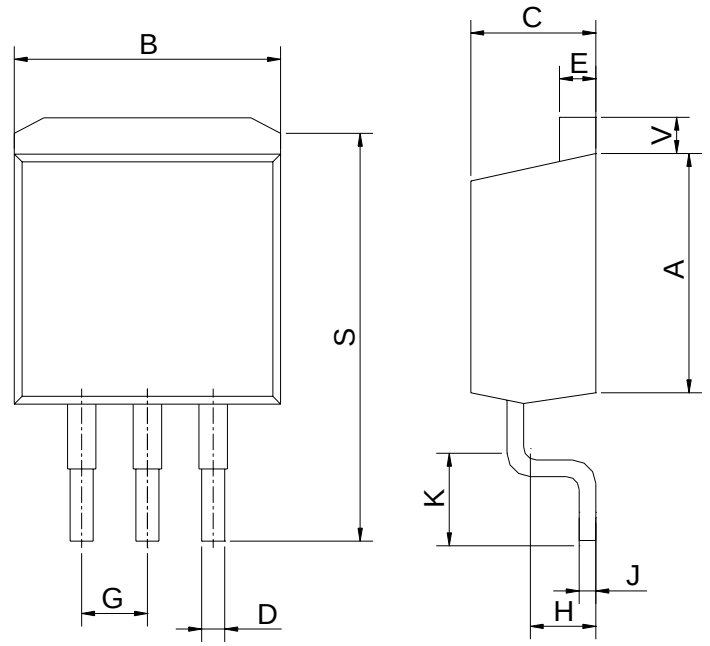
PACKAGE DIMENSION

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)



Front View Side View

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

IMPORTANT NOTICE

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