



概述

LM2575是一款50KHz固定频率的PWM DCDC稳压电源转换器。它具有2A输出电流驱动能力，高效率、低纹波、高线性调整率和负载调整率等特点。该芯片采用PWM调制模式，能够调节占空比线性范围0~100%。

LM2575内置固定频率振荡器和频率补偿模块，其使用十分简单，仅需要极少量的外部元器件。此外，该芯片还内置带迟滞功能的使能、过温保护、过流保护和刺激过流保护等功能。当次级过流保护发生时，芯片内置降频功能使工作频率由150KHz降到了50KHz。

特点

- ◆ 4.5V 到 40V 输入电压范围
- ◆ 稳压输出有 3.3V、5V、12V 和输出可调节版本，输出可调节版本调节范围为 1.23V 到 37
- ◆ 占空比可调节范围 0~100%
- ◆ 最小饱和压降 1.5V
- ◆ 50KHz 固定工作频率
- ◆ 2A 固定电流输出能力
- ◆ ON_OFF 迟滞开关功能
- ◆ 内置过温保护、过流保护
- ◆ 内置频率补偿功能
- ◆ 高工作效率、线性调整率和负载调整率

应用

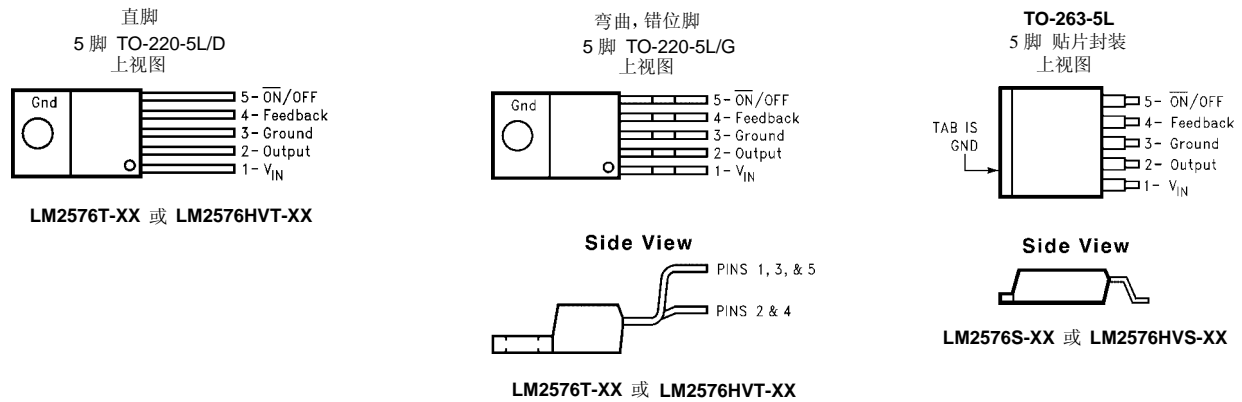
- ◆ 液晶显示器，液晶电视
- ◆ 数码相框
- ◆ 电视机顶盒
- ◆ 调制解调器
- ◆ 各种电话、网络设备

产品订购信息

产品名称	封装	打印名称	包装	包装数量
LM2575S-ADJ	TO-263-5L	LM2575-ADJ	编带	500/盘
LM2575S-3.3		LM2575-3.3	编带	500/盘
LM2575S-5.0		LM2575-5.0	编带	500/盘
LM2575S-12		LM2575-12	编带	500/盘
LM2575S-15		LM2575-15	编带	500/盘
LM2575T-ADJ	TO-220-5L	LM2575-ADJ	管装	1000/盒
LM2575T-3.3		LM2575-3.3	管装	1000/盒
LM2575T-5.0		LM2575-5.0	管装	1000/盒
LM2575T-12		LM2575-12	管装	1000/盒
LM2575T-15		LM2575-15	管装	1000/盒



管脚排列图



管脚描述

管脚号	管脚名称	I/O	功能描述
1	VIN	I	供电电源输入管脚。LM2575工作时需要提供一个4.5V~40V 范围的直流电源。在电源管脚和地之间并联一个较大容值的电容以消除电源噪声
2	OUTPUT	O	功率管输出管脚。功率管输出管脚是一个开关节点，给输出负载供电。
3	GND	--/O	接地管脚。需要在布局时注意，该管脚应放置在肖特基二极管以外的输出电容接地路径上以防止开关电流尖峰对电路带来的噪声。
4	FEEDBACK	I/O	电压反馈管脚。电压反馈端通过一个外部的电阻分压网络监测输出电压并进行控制。反馈端的阈值电压为1.23V。
5	ON_OFF	I	使能开关管脚。开关管脚通过施加低位来使芯片工作：施加高电位使芯片关断。当其浮空时默认为低位。

功能描述

LM2575是一款压降式稳压直流电源转换器，其主要功能是将噪声、纹波较大的高压直流电压转换成纹波小、噪声小的低压直流稳压输出。

LM2575有四个不同版本，四个版本区分为输出稳压值的不同，分别为3.3V、5V、12V和输出电压可调版本。片内提供了过温保护功能、限流保护功能等。

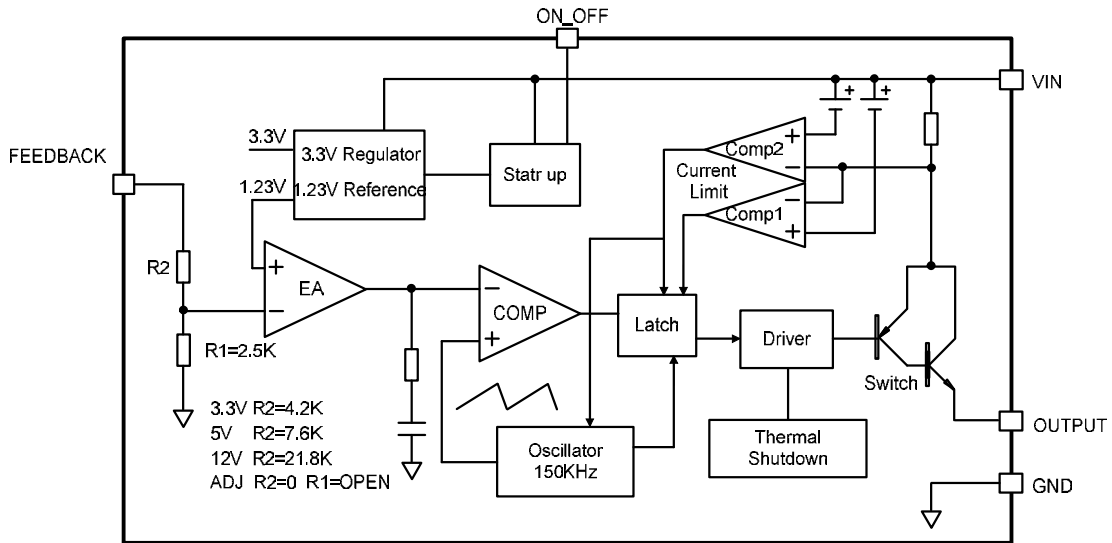
推荐工作条件

参 数	符 号	范 围	单 位
输入电压	VIN	5~40	V
工作结温范围	TJ	-40 ~ +125	°C

电气特性(除非特别指定，否则黑色字体所示的参数， $T_{amb}=25^{\circ}\text{C}$ ，正常工作结温范围 $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ 。)



内部框图



极限参数

参 数	符号	范 围	单 位
输入工作电压	V_{IN}	-0.3~45	V
电压反馈端电压	V_{FB}	-0.3~ V_{IN}	V
开关端电压	$V_{ON\ OFF}$	-0.3~ V_{IN}	V
功率管输出端电压	$V_{OUT\ PUT}$	-0.3~ V_{IN}	V
功耗	P_D	内部限制	mW
工作节温	T_J	-40~125	°C
储藏温度	T_{STG}	-65~150	°C
焊线温度	T_{LEAD}	260	°C
ESD能力 (人体放电模式)	ESD	2000	V

注1: 如果施加在电路的值大于上表中参数值的最大限度, 可能会对芯片造成永久的损伤。将芯片在上表极限条件下连续工作几个周期可能会影响芯片的可靠性。

LM2575-3.3 电气特性

$T_a=25^{\circ}C$; 另有说明除外

参 数	符号	测试条件	最小值	典型值	最大值	单 位
系统参数如图5						
输出稳压值	V_{OUT}	$V_{IN}=4.75V\sim 40V, I_{LOAD}=0.2A\sim 2A$	3.168	3.3	3.432	V
效率	η	$V_{IN}=12V, V_{OUT}=3.3V, I_{LOAD}=2A$		75		%



LM2575-5.0 电气特性

Ta=25°C; 另有说明除外

参 数	符号	测试条件	最小值	典型值	最大值	单位
系统参数如图5						
输出稳压值	V _{OUT}	V _{IN} =7V~40V, I _{LOAD} =0.2A~2A	4.8	5	5.2	V
效率	η	V _{IN} =12V, V _{OUT} =5V, I _{LOAD} =2A		78		%

LM2575-12 电气特性

Ta=25°C; 另有说明除外

参 数	符号	测试条件	最小值	典型值	最大值	单位
系统参数如图5						
输出稳压值	V _{OUT}	V _{IN} =15V~40V, I _{LOAD} =0.2A~2A	11.52	12	12.48	V
效率	η	V _{IN} =25V, V _{OUT} =12V, I _{LOAD} =2A		92		%

LM2575-ADJ 电气特性

Ta=25°C; 另有说明除外

参 数	符号	测试条件	最小值	典型值	最大值	单位
系统参数如图5						
输出稳压值	V _{OUT}	V _{IN} =4.5V~40V, I _{LOAD} =0.2A~2A	1.193	1.23	1.267	V
效率	η	V _{IN} =12V, V _{OUT} =3V, I _{LOAD} =2A		73		%

直流参数

3.3V、5V、ADJ 版本, V_{IN}=12V; 12V 版本, V_{IN}=24V。GND=0, V_{IN} 和 GND 之间并联一个 220uF/50V 电容。

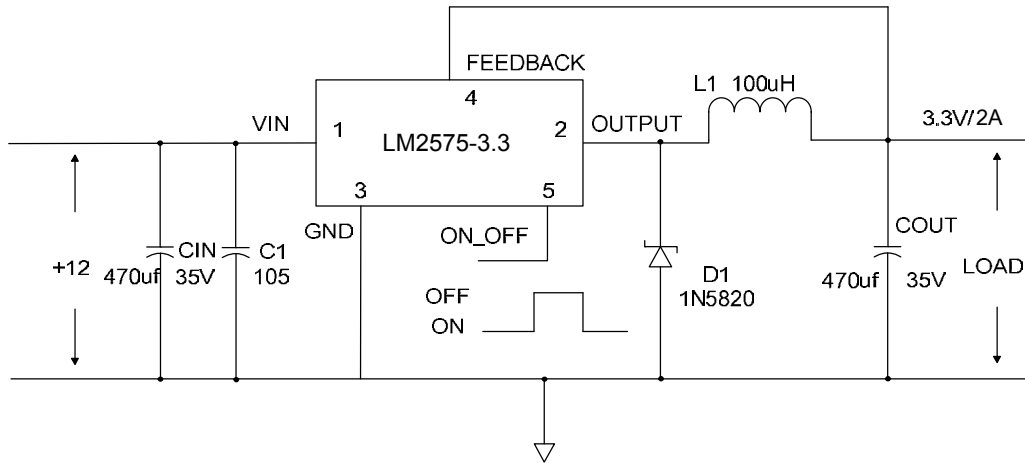
I_{OUT}=500mA, T_a=25°C。另有说明除外。

参 数	符号	测试条件	最小值	典型值	最大值	单位
输入工作电压	V _{IN}		4.5		40	V
待机电流	I _{STBY}	V _{ON_OFF} =5V		80	200	uA
静态工作电流	I _Q	V _{ON_OFF} =0V, V _{FB} =V _{IN}		2	10	mA
工作频率	F _{OSC}		42	50	58	KHz
极限电流	I _L	V _{FB} =0	4.2	5.5	6.9	A
开关管脚阈值电压	V _{ON_OFF}	高 (控制关)		1.4		V
		低 (控制开)		0.8		
开关管脚漏电	I _H	V _{ON_OFF} =2.5V (OFF)		5	15	μA
	I _L	V _{ON_OFF} =2.5V (ON)		0.2	5	μA
饱和电压	V _{CE}	V _{FB} =0V I _{OUT} =2A		1.3	1.5	V
最大占空比	D _{MAX}	V _{FB} =0V		100		%
热阻系数 (无散热片, TO-220-5L、 TO-263-5L封装)	R _{JA}			50		°C/W

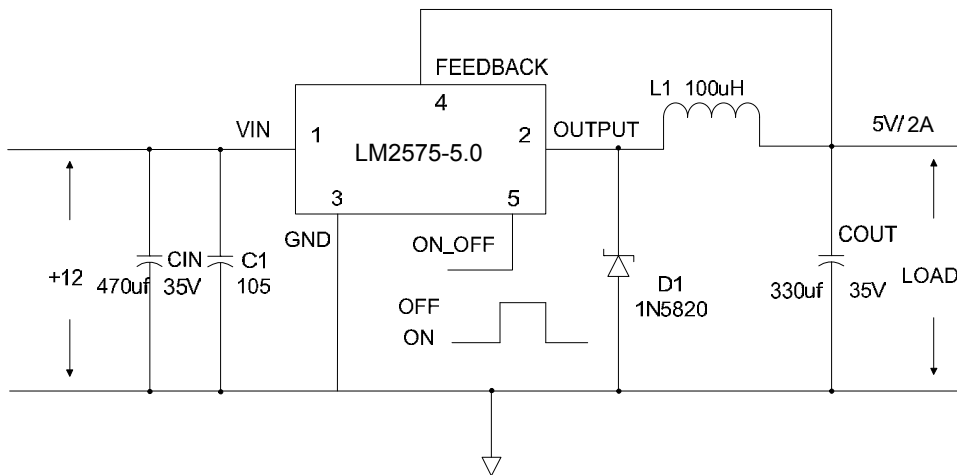


典型应用电路图

3.3V 稳压输出版本

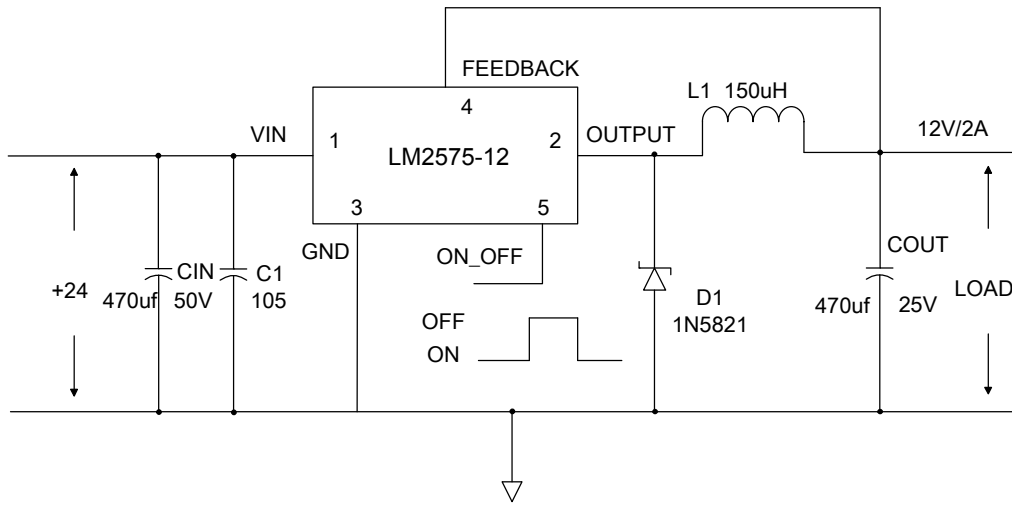


5.0V 稳压输出版本

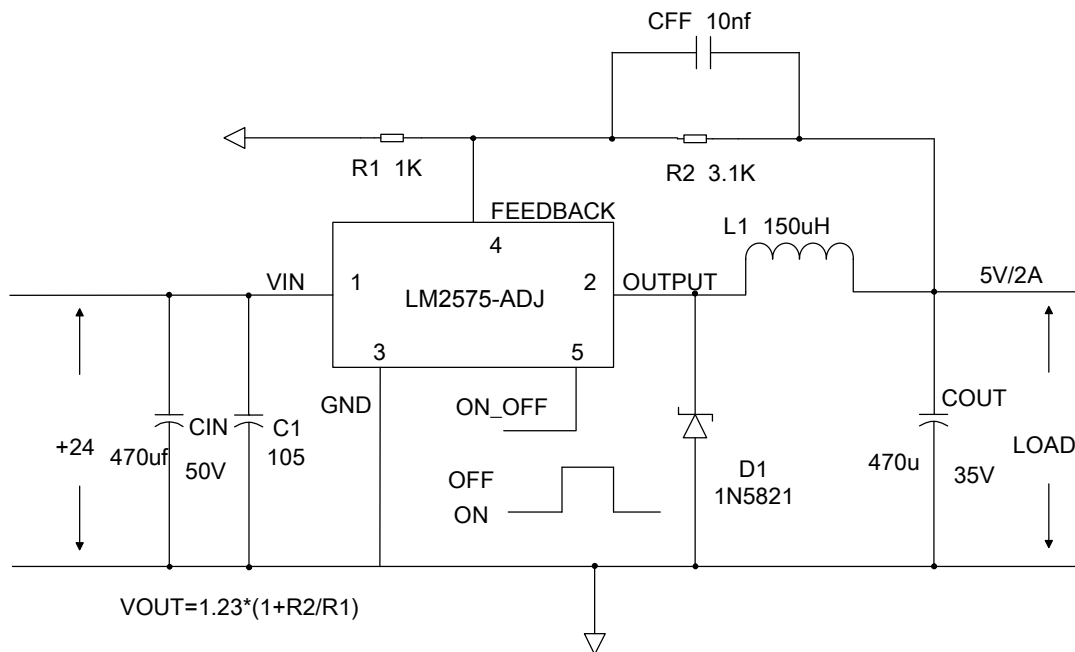




12V 稳压输出版本



输出可调节版本

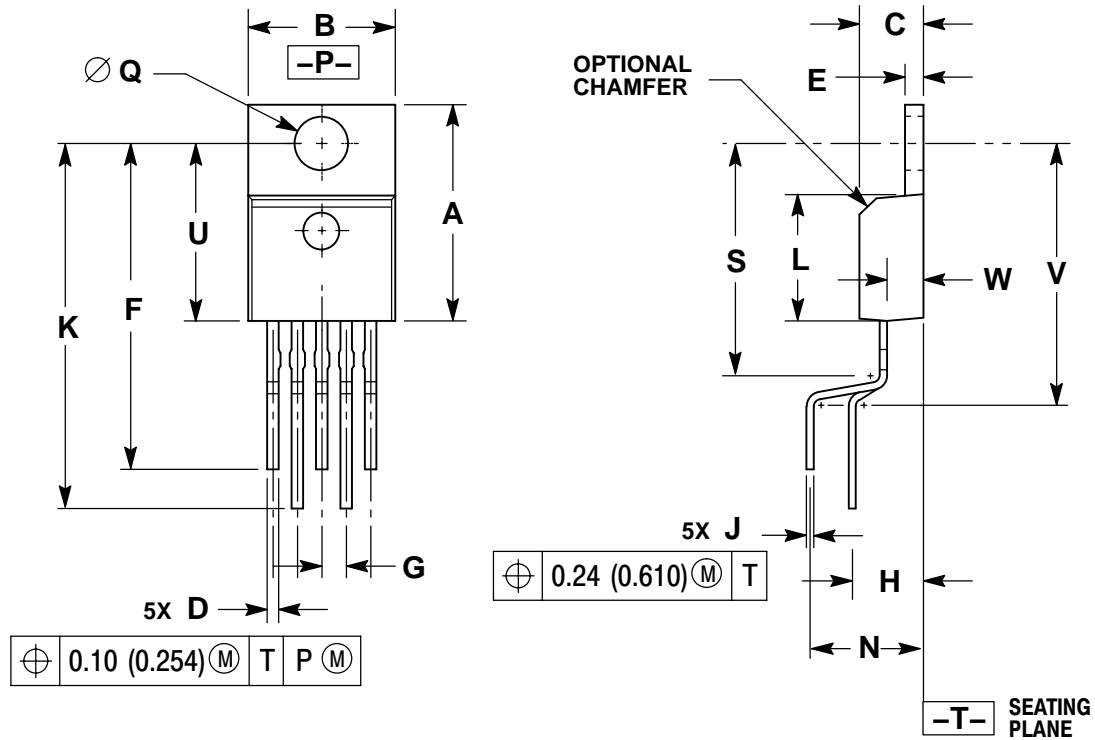


注：以上线路及参数仅供参考，实际的应用电路请在充分的实测基础上设定参数。



封装信息

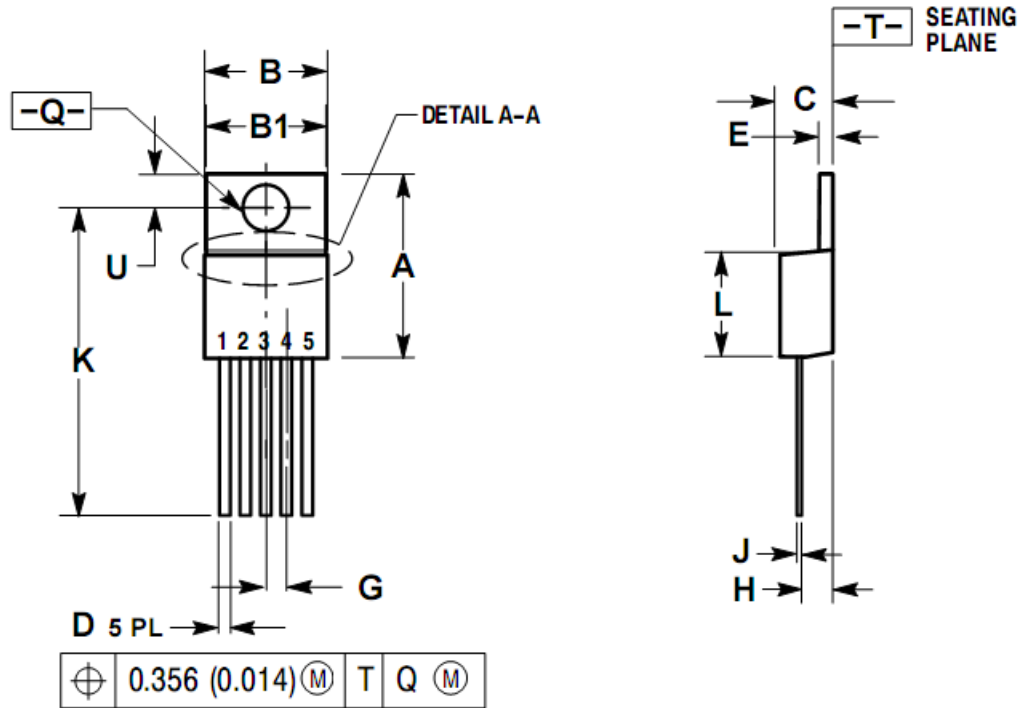
TO-220-5L/G



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.572	0.613	14.529	15.570
B	0.390	0.415	9.906	10.541
C	0.170	0.180	4.318	4.572
D	0.025	0.038	0.635	0.965
E	0.048	0.055	1.219	1.397
F	0.850	0.935	21.590	23.749
G	0.067 BSC		1.702 BSC	
H	0.166 BSC		4.216 BSC	
J	0.015	0.025	0.381	0.635
K	0.900	1.100	22.860	27.940
L	0.320	0.365	8.128	9.271
N	0.320 BSC		8.128 BSC	
Q	0.140	0.153	3.556	3.886
S	---	0.620	---	15.748
U	0.468	0.505	11.888	12.827
V	---	0.735	---	18.669
W	0.090	0.110	2.286	2.794



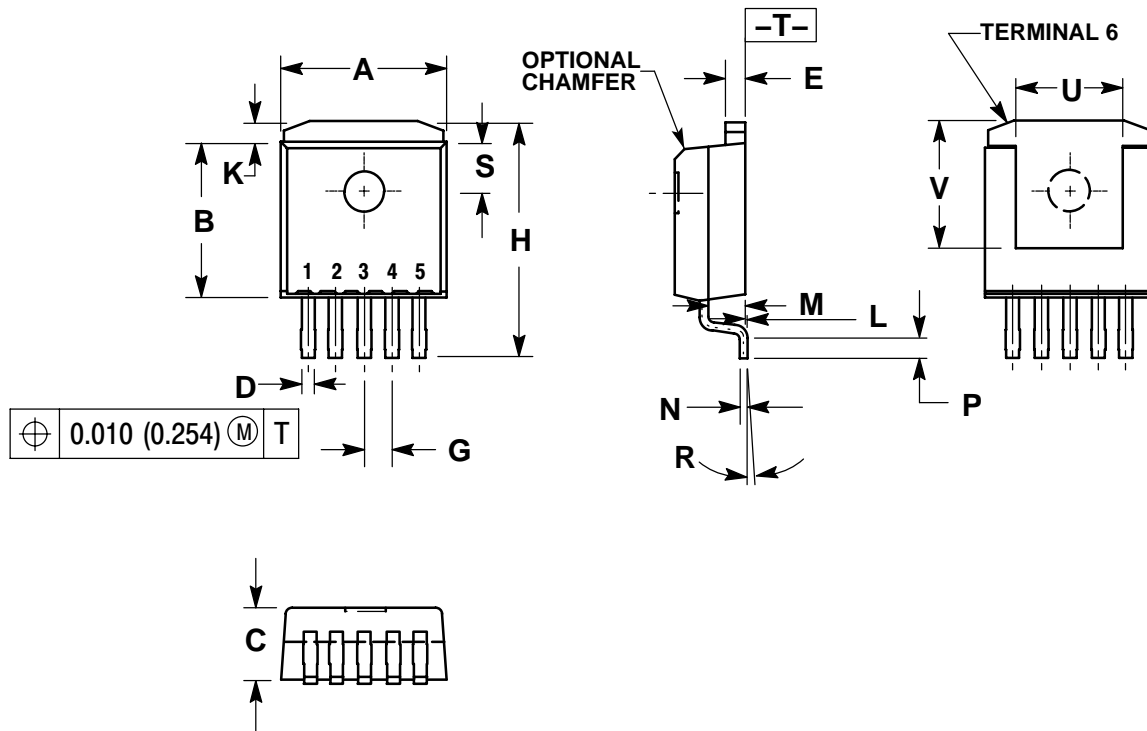
TO-220-5L/D



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.572	0.613	14.529	15.570
B	0.390	0.415	9.906	10.541
B1	0.375	0.415	9.525	10.541
C	0.170	0.180	4.318	4.572
D	0.025	0.038	0.635	0.965
E	0.048	0.055	1.219	1.397
G	0.067 BSC		1.702 BSC	
H	0.087	0.112	2.210	2.845
J	0.015	0.025	0.381	0.635
K	0.977	1.045	24.810	26.543
L	0.320	0.365	8.128	9.271
Q	0.140	0.153	3.556	3.886
U	0.105	0.117	2.667	2.972



TO-263-5L



⊕ 0.010 (0.254) Ⓜ T

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.386	0.403	9.804	10.236
B	0.356	0.368	9.042	9.347
C	0.170	0.180	4.318	4.572
D	0.026	0.036	0.660	0.914
E	0.045	0.055	1.143	1.397
G	0.067 BSC		1.702 BSC	
H	0.539	0.579	13.691	14.707
K	0.050 REF		1.270 REF	
L	0.000	0.010	0.000	0.254
M	0.088	0.102	2.235	2.591
N	0.018	0.026	0.457	0.660
P	0.058	0.078	1.473	1.981
R	5° REF		5° REF	
S	0.116 REF		2.946 REF	
U	0.200 MIN		5.080 MIN	
V	0.250 MIN		6.350 MIN	



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