

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

MS2304Lxxx

Product specification

概述

MS2304Lxxx 是一款具有低待机功耗、高效率的同步升压 DC-DC，待机电流仅 15uA。

MS2304Lxxx 采用固定导通时间的 PFM 控制方式，在轻载时自动降低开关频率保持高的转换效率。

MS2304Lxxx 外围仅需 3 个元件，即可实现将低输入的电池电压转换到所需要的工作电压。

MS2304Lxxx 采用专利的控制技术，具有低待机功耗和轻载高效的特点。MS2304Lxxx 能够在保持输出电压升压稳压条件下实现输入电流仅 15uA，尤其适合对待机时间要求高的应用。

MS2304Lxxx 采用 SOT23 和 SOT23-5 及 SOT-89-3 封装。

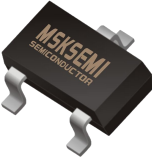
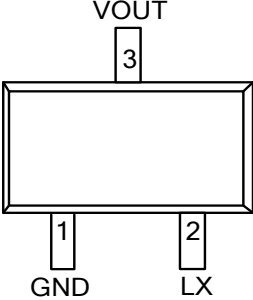
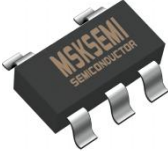
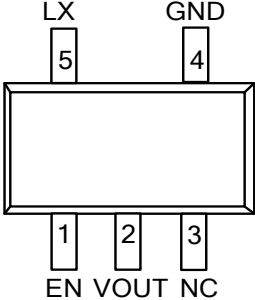
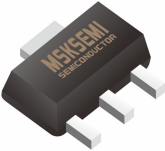
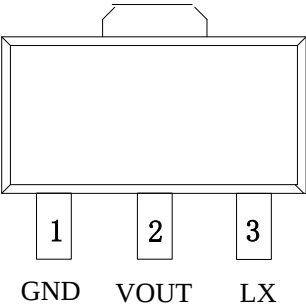
特点

- 低静态功耗：15uA
- 高效率：可高达 93%
- 最大工作频率：370KHz
- 输出电压：2.2V~5.0V（步进 0.1V）
- 启动电压：0.9V
- 低纹波、低噪声
- SOT-23、SOT-23-5、SOT-89-3 封装

应用领域

- 1~2 节干电池供电的电子设备
- 电子词典、数码相机、血压计、MP3、遥控玩具、无线耳机、无线鼠标键盘、医疗器械、防丢器、汽车防盗器、充电器、VCR、PDA 等手持电子设备

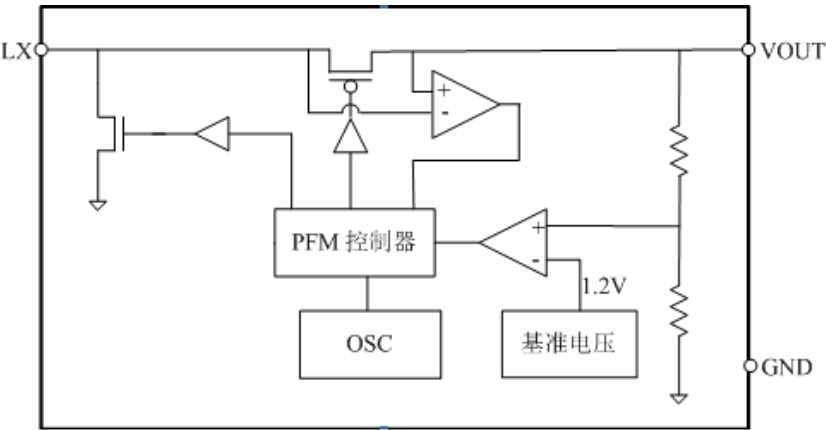
封装信息

SOT-23	PIN CONFIGURATION
	
SOT-23-5	PIN CONFIGURATION
	
SOT-89	PIN CONFIGURATION
	

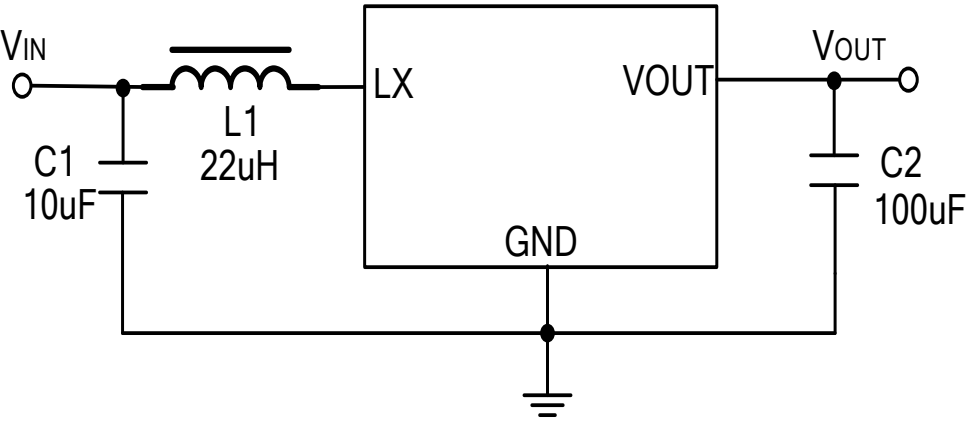
管脚描述

管脚			管脚名	描述
SOT23	SOT-23-5	SOT-89-3		
1	4	1	GND	接地
2	5	3	LX	开关脚，接电感
3	2	2	VOUT	输出端
-	1	-	EN	芯片使能控制
-	3	-	NC	悬空

结构框图



典型应用电路图



订货信息

型号	输出电压	封装形式	最小包装
MS2304L22T	2.2V	SOT-23	3000PCS
MS2304L25T	2.5V	SOT-23	3000PCS
MS2304L28T	2.8V	SOT-23	3000PCS
MS2304L30T	3.0V	SOT-23	3000PCS
MS2304L33T	3.3V	SOT-23	3000PCS
MS2304L36T	3.6V	SOT-23	3000PCS
MS2304L40T	4.0V	SOT-23	3000PCS
MS2304L50T	5.0V	SOT-23	3000PCS

型号	输出电压	封装形式	最小包装
MS2304L22F	2.2V	SOT-23-5	3000PCS
MS2304L25F	2.5V	SOT-23-5	3000PCS
MS2304L28F	2.8V	SOT-23-5	3000PCS
MS2304L30F	3.0V	SOT-23-5	3000PCS
MS2304L33F	3.3V	SOT-23-5	3000PCS
MS2304L36F	3.6V	SOT-23-5	3000PCS
MS2304L40F	4.0V	SOT-23-5	3000PCS
MS2304L50F	5.0V	SOT-23-5	3000PCS

型号	输出电压	封装形式	最小包装
MS2304L22E	2.2V	SOT-89-3	1000PCS
MS2304L25E	2.5V	SOT-89-3	1000PCS
MS2304L28E	2.8V	SOT-89-3	1000PCS
MS2304L30E	3.0V	SOT-89-3	1000PCS
MS2304L33E	3.3V	SOT-89-3	1000PCS
MS2304L36E	3.6V	SOT-89-3	1000PCS
MS2304L40E	4.0V	SOT-89-3	1000PCS
MS2304L50E	5.0V	SOT-89-3	1000PCS

MARKING

MS2304L22T	MS2304L25T	MS2304L28T	MS2304L30T
C22 *	C25 *	C28 *	C30 *
MS2304L33T	MS2304L36T	MS2304L40T	MS2304L50T
C33 *	C36 *	C40 *	C50 *

MS2304L22F	MS2304L25F	MS2304L28F	MS2304L30F
C22 *	C25 *	C28 *	C30 *
MS2304L33F	MS2304L36F	MS2304L40F	MS2304L50F
C33 *	C36 *	C40 *	C50 *

MS2304L22E	MS2304L25E	MS2304L28E	MS2304L30E
C 2 2 A	C 2 5 A	C 2 8 A	C 3 0 A
MS2304L33E	MS2304L36E	MS2304L40E	MS2304L50E
C 3 3 A	C 3 6 A	C 4 0 A	C 5 0 A

备注: *代表工厂内部订单

极限参数 (注 1)

符 号	描述	参数范围	单位
V _{MAX}	LX,VOUT 脚最大电压	5	V
P _{SOT}	最大功耗	0.2	W
T _A	工作温度范围	-20~85	°C
T _{STG}	存储温度范围	-40~120	°C
T _{SD}	焊接温度范围（时间小于30 秒	260	°C
V _{ESD}	静电耐压值（人体模型）	2000	V

注 1：极限参数是指超过上表中规定的工作范围可能会导致器件损坏。而工作在以上极限条件下可能会影响器 件的可靠性。

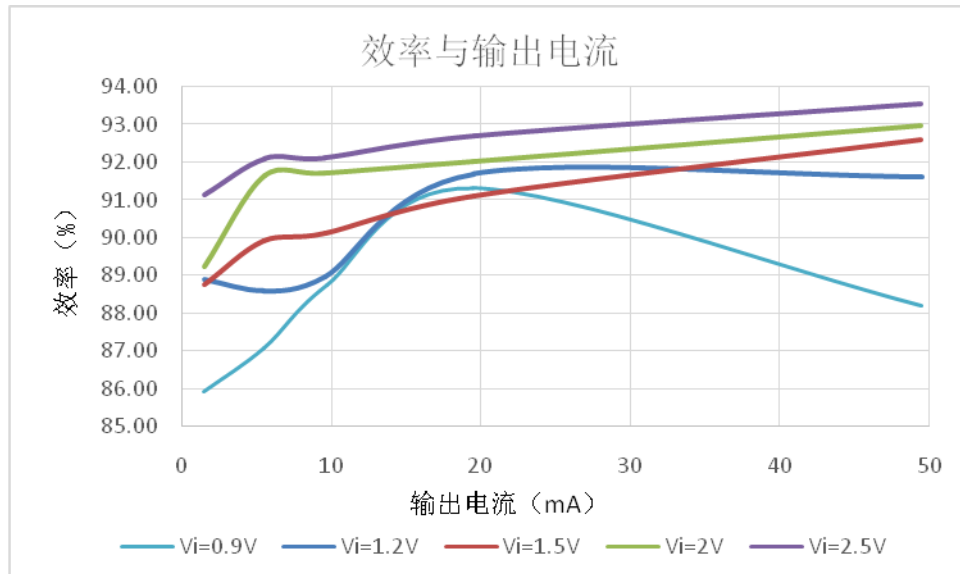
电气参数

除非特别说明，V_{OUT} =3.3V，T_A =25°C

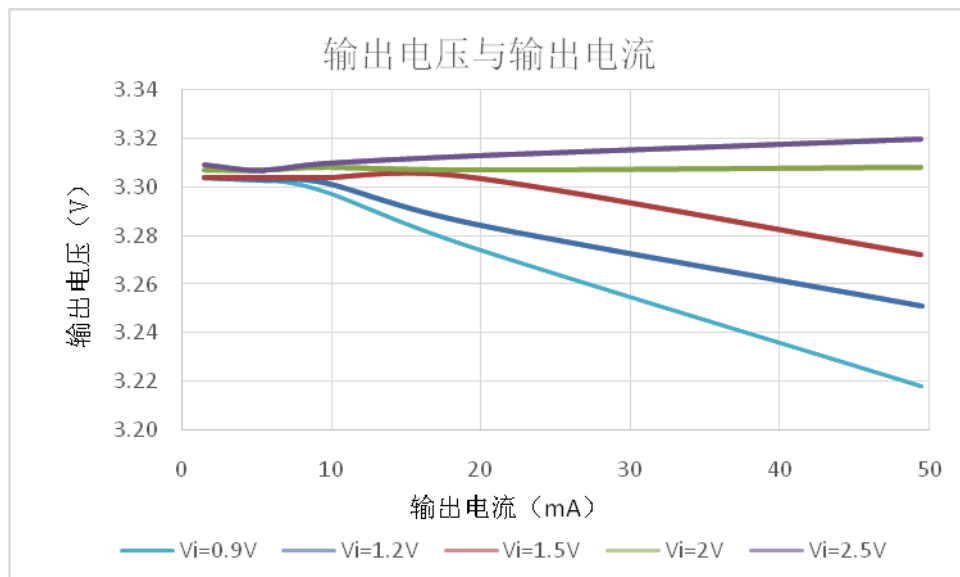
电气参数	符号	测试条件	最小值	典型值	最大值	单位
输出电压精度	△ VOUT		-2.5		2.5	%
启动电压	VSTART	ILOAD=1mA, VIN:0→2V		0.9		V
保持电压	VHOLD	ILOAD=1mA, VIN:2→0V	0.6			V
转换效率	η			93		%
无负载下输入电流	IIN	VIN=1.5V, VOUT=3.3V		15		uA
静态电流	IS	VOUT=VOUT_TAR+0.5V		6		uA
最大占空比	DUTY			80		%
最高开关频率	Fmax			370		KHz

典型特性曲线

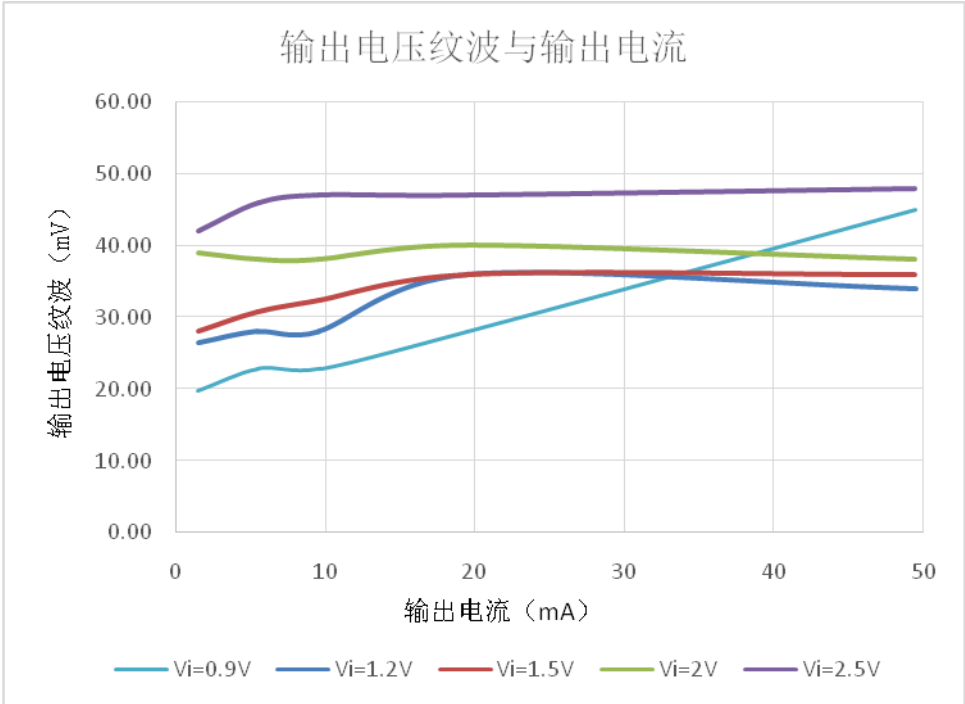
(测试条件: $V_O=3.3V$, $L=22\mu H$, $C_I=10\mu F$, $C_O=100\mu F$)



转换效率与输出电流特性曲线

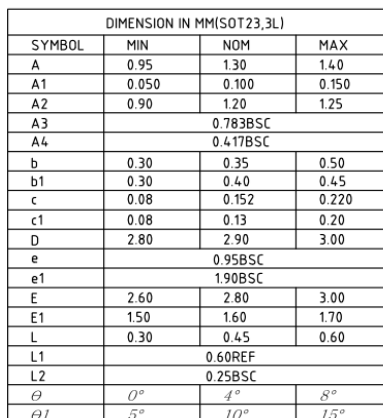


输出电压与输出电流特性曲线



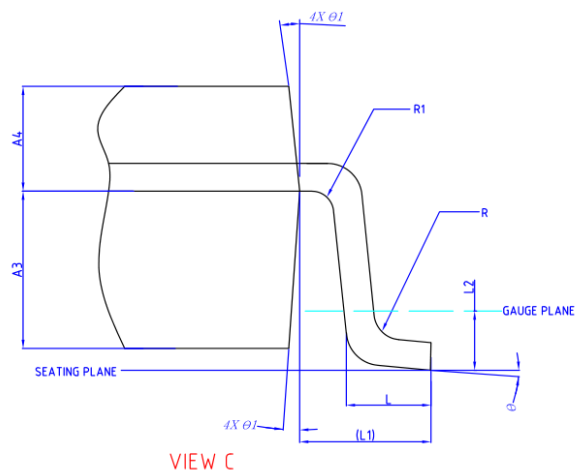
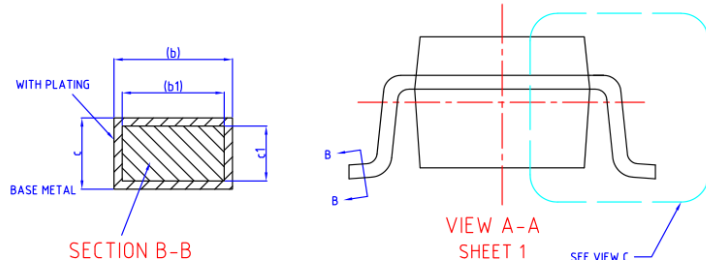
输出电压纹波与输出电流特性曲线

SOT23

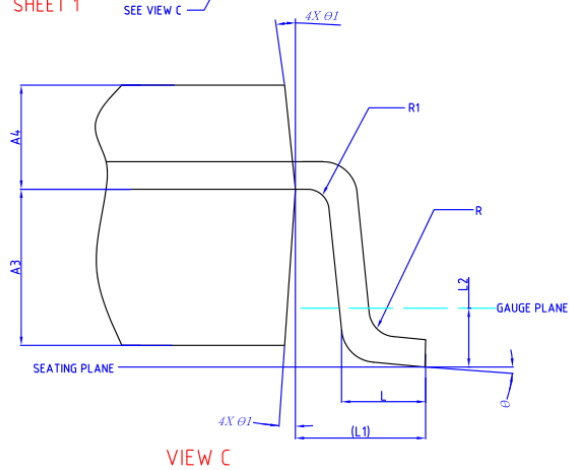
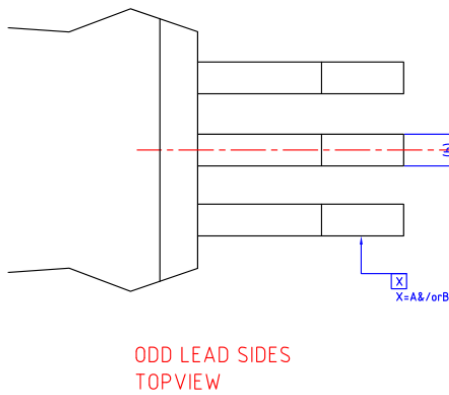
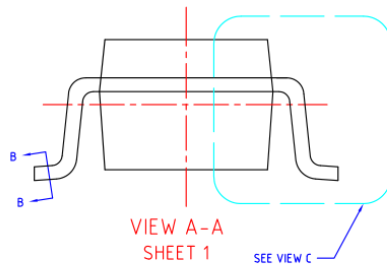
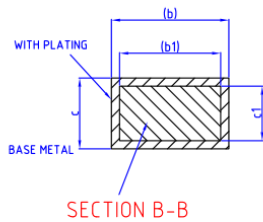
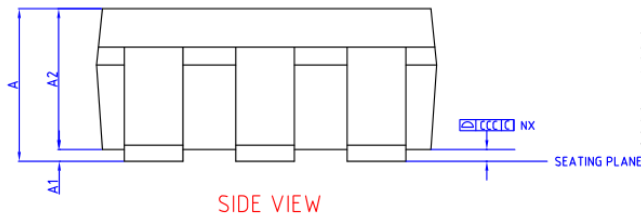
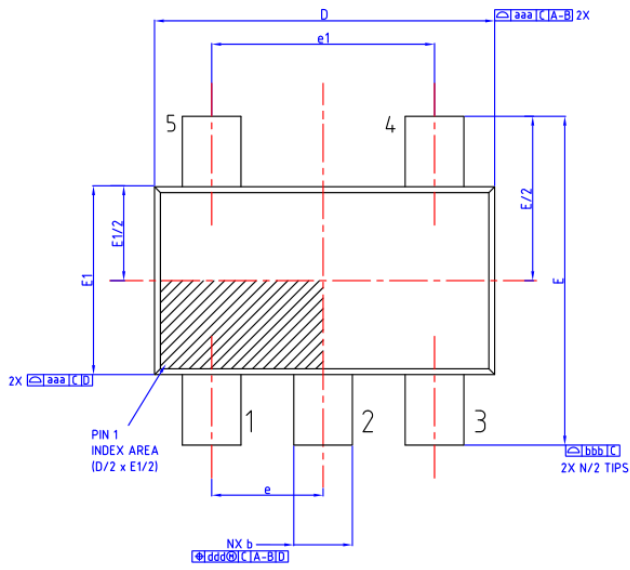


SYMBOL	TOLERANCES OF FORM AND POSITION
aaa	0.15
bbb	0.20
ccc	0.10
ddd	0.20

1. Body dimension not include mold flash or protrusion
Mold flash or protrusion shall not exceed 0.15mm per side.
2. Falls within JEDEC MO-178 variation AB
3. Basic common dimension sheet plating thickness for pre-plating
For Tin plating product, Tin plating thickness is 0.01mm - 0.018mm



SOT-23-5



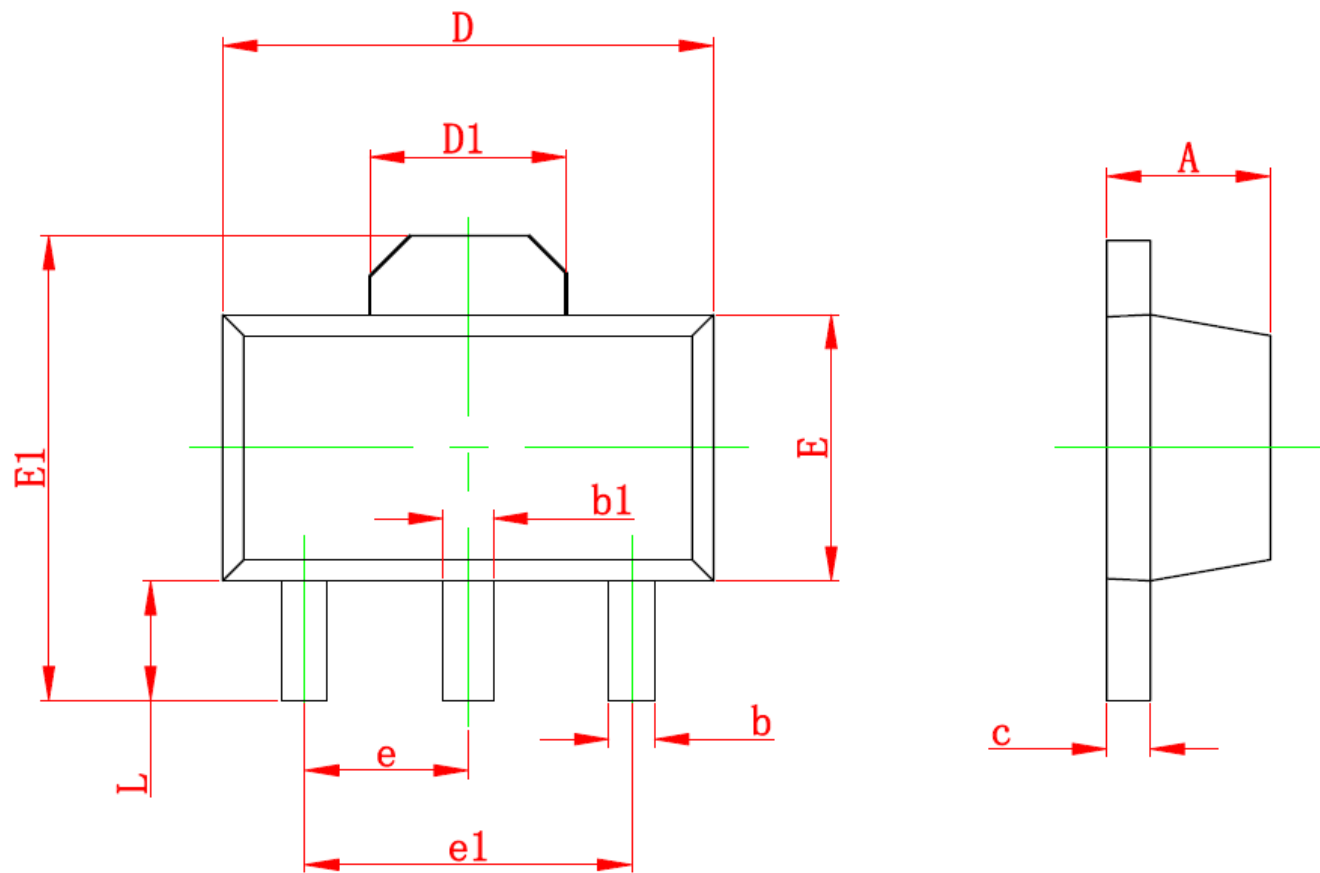
DIMENSION IN MM(SOT23.5L)			
SYMBOL	MIN	NOM	MAX
A	0.95	1.30	1.40
A1	0.050	0.100	0.150
A2	0.90	1.20	1.25
A3	0.783BSC		
A4	0.417BSC		
b	0.30	0.35	0.50
b1	0.30	0.40	0.45
c	0.08	0.152	0.220
c1	0.08	0.13	0.20
D	2.80	2.90	3.00
e	0.95BSC		
e1	1.90BSC		
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
L	0.30	0.45	0.60
L1	0.60REF		
L2	0.25BSC		
θ	0°	4°	8°
θ1	5°	10°	15°

SYMBOL	TOLERANCES OF FORM AND POSITION
aaa	0.15
bbb	0.20
ccc	0.10
ddd	0.20

NOTE:

1. Body dimension not include mold flash or protrusion
Mold flash or protrusion shall not exceed 0.15mm per side.
2. Falls within JEDEC MO-178 variation AB
3. Basic common dimension sheet plating thickness for pre-plating
For Tin plating product ,Tin plating thickness is 0.01mm - 0.018mm

SOT-89-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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