

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。

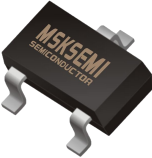
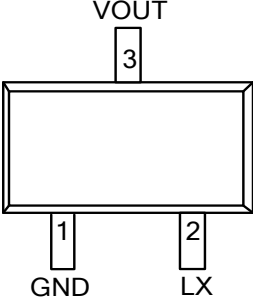
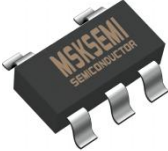
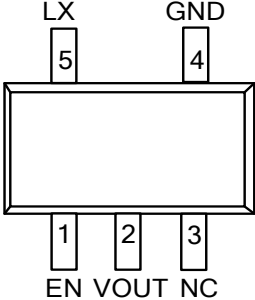
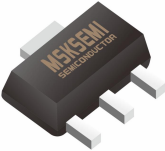
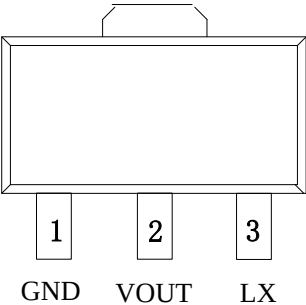
特点

- 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

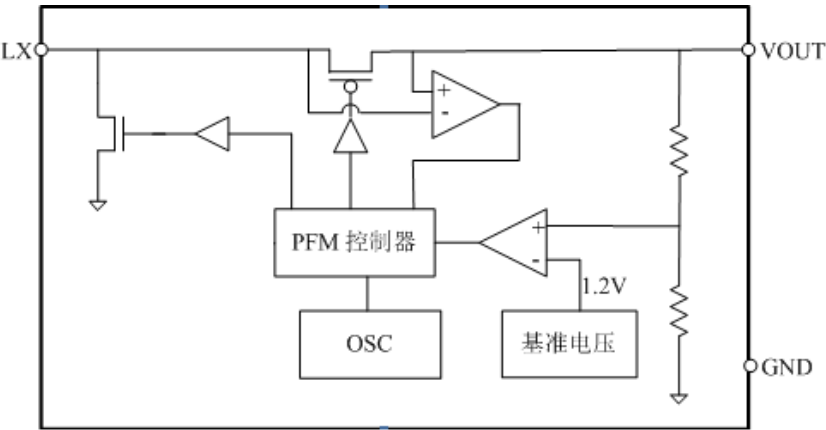
封装信息

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

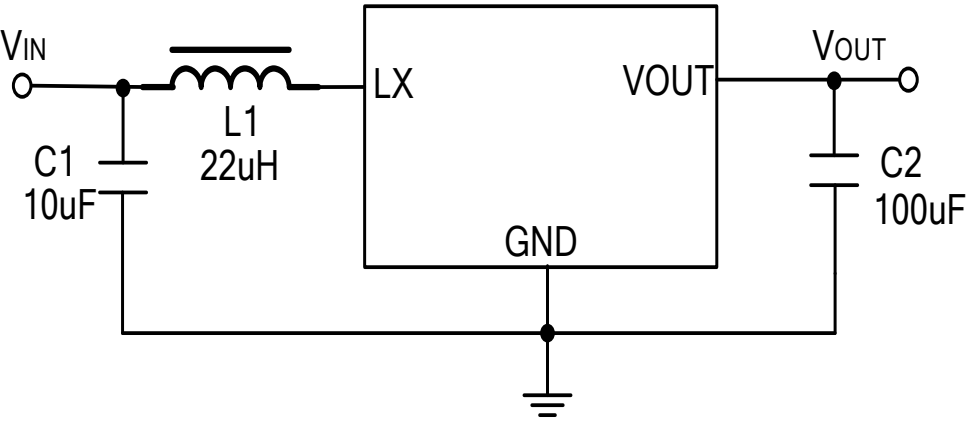
管脚描述

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。

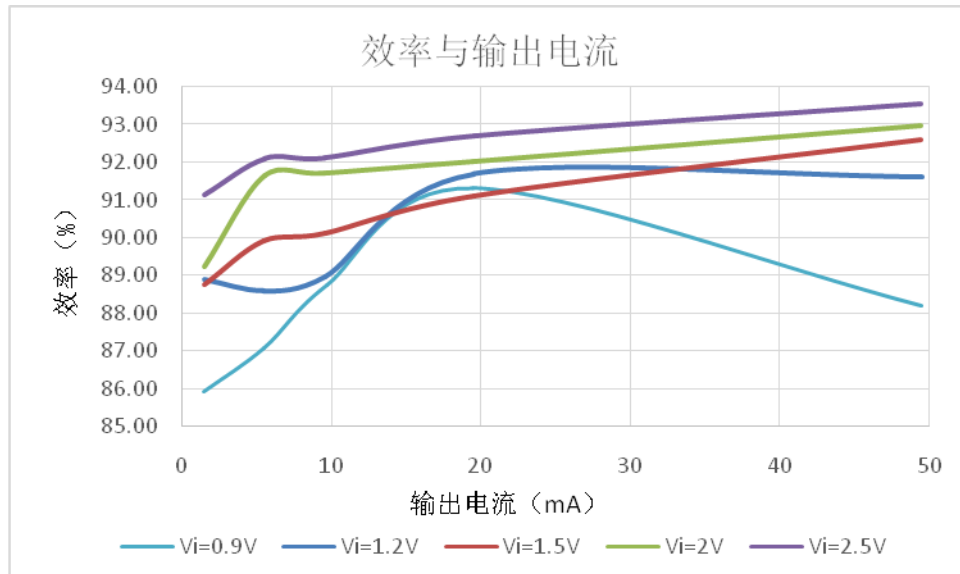
电气参数

除非特别说明, V_{OUT} =3.3V, T_A =25°C

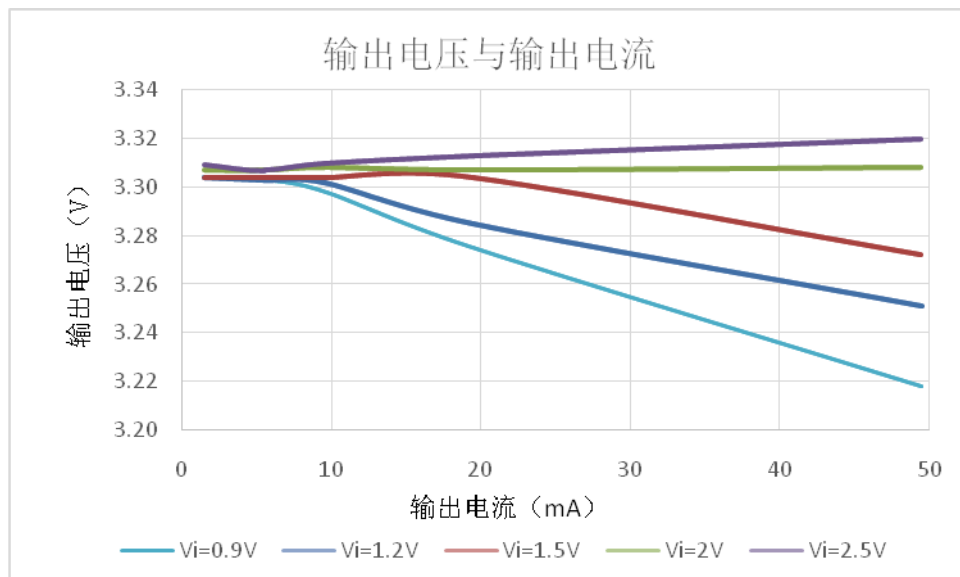
电气参数	符号	测试条件	最小值	典型值	最大值	单位
输出电压精度	△ VOUT		-2.5		2.5	%
启动电压	VSTART	ILOAD=1mA, VIN:0→2V		0.9		V
保持电压	VHOLD	ILOAD=1mA, VIN:2→0V	0.6			V
转换效率	η			93		%
无负载下输入电流	IIN	VIN=1.5V, VOUT=3.3V		15		uA
静态电流	IS	VOUT=VOUT_TAR+0.5V		6		uA
最大占空比	DUTY			80		%
最高开关频率	Fmax			370		KHz

典型特性曲线

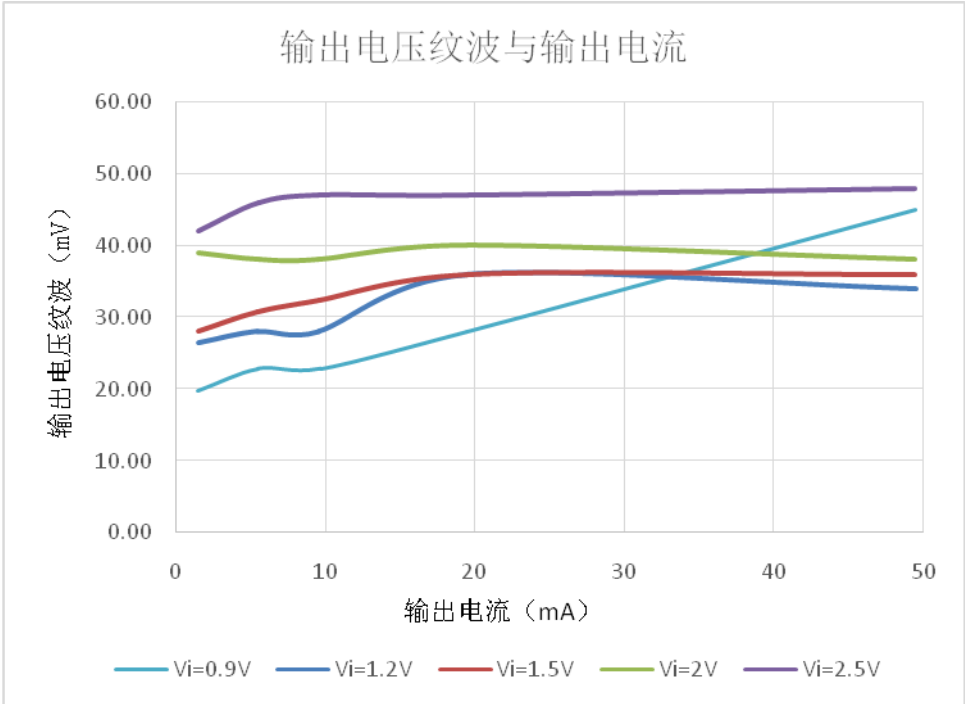
(测试条件: $V_O=3.3V$, $L=22\mu H$, $C_I=10\mu F$, $C_O=100\mu F$)



转换效率与输出电流特性曲线



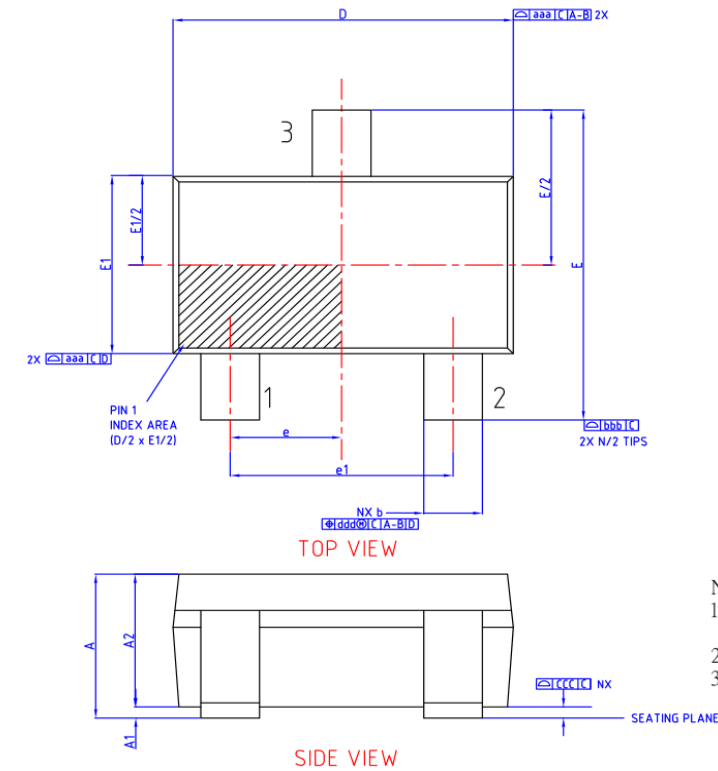
输出电压与输出电流特性曲线



输出电压纹波与输出电流特性曲线

封装信息

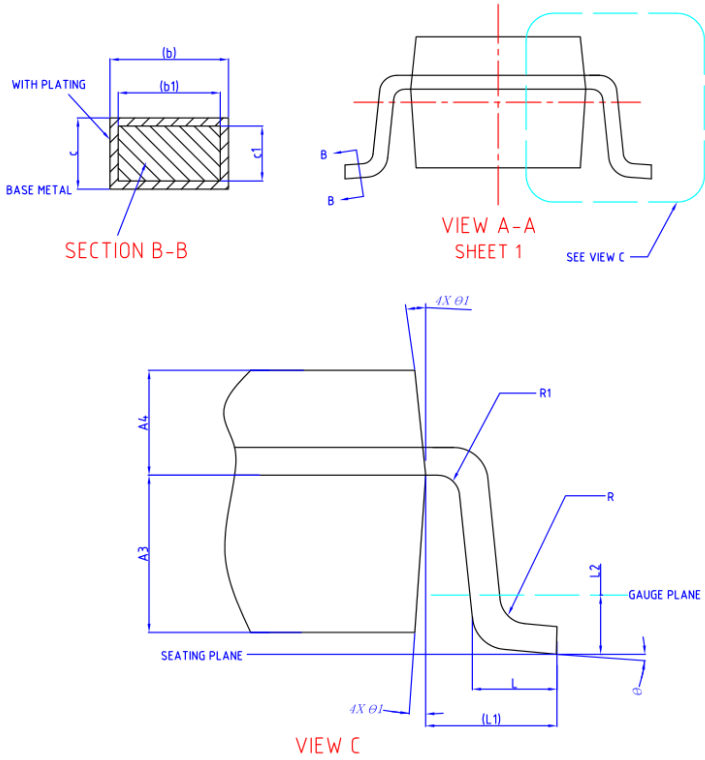
SOT23



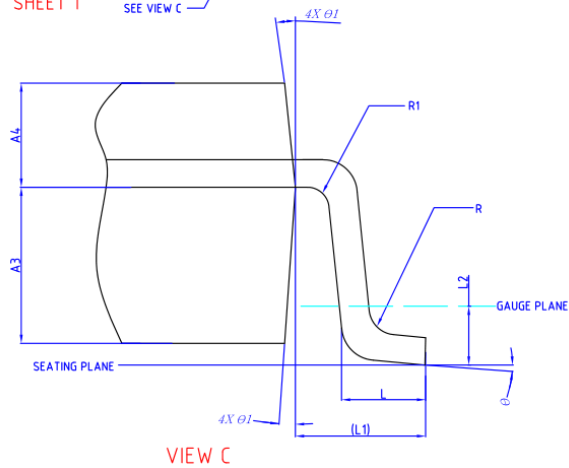
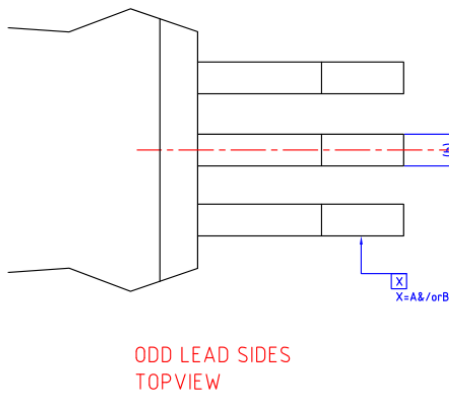
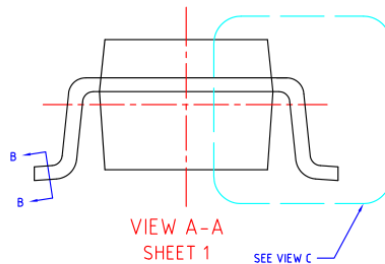
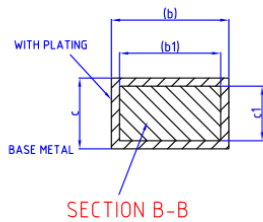
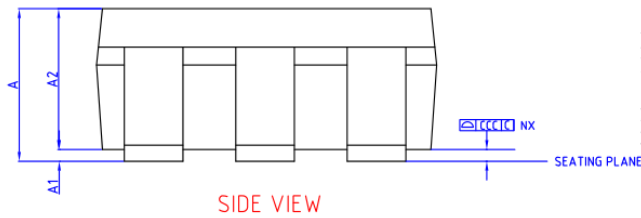
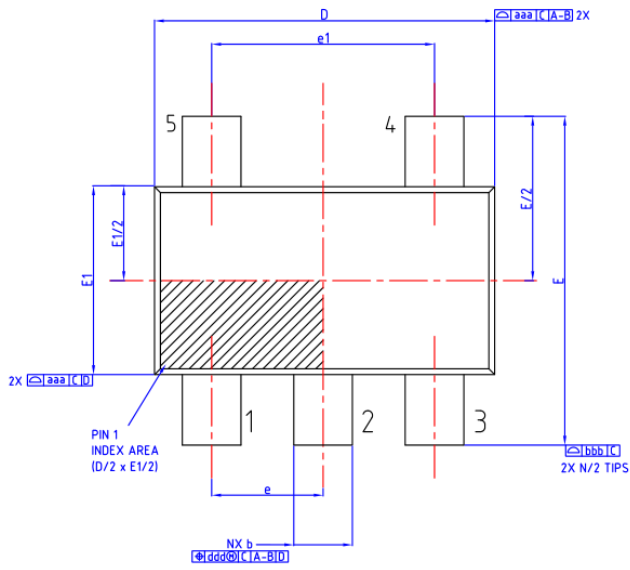
DIMENSION IN MM(SOT23,3L)			
SYMBOL	MIN	NOM	MAX
A	0.95	1.30	1.40
A1	0.050	0.100	0.150
A2	0.90	1.20	1.25
A3	0.783BSC		
A4	0.417BSC		
b	0.30	0.35	0.50
b1	0.30	0.40	0.45
c	0.08	0.152	0.220
c1	0.08	0.13	0.20
D	2.80	2.90	3.00
e	0.95BSC		
e1	1.90BSC		
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
L	0.30	0.45	0.60
L1	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-23-5



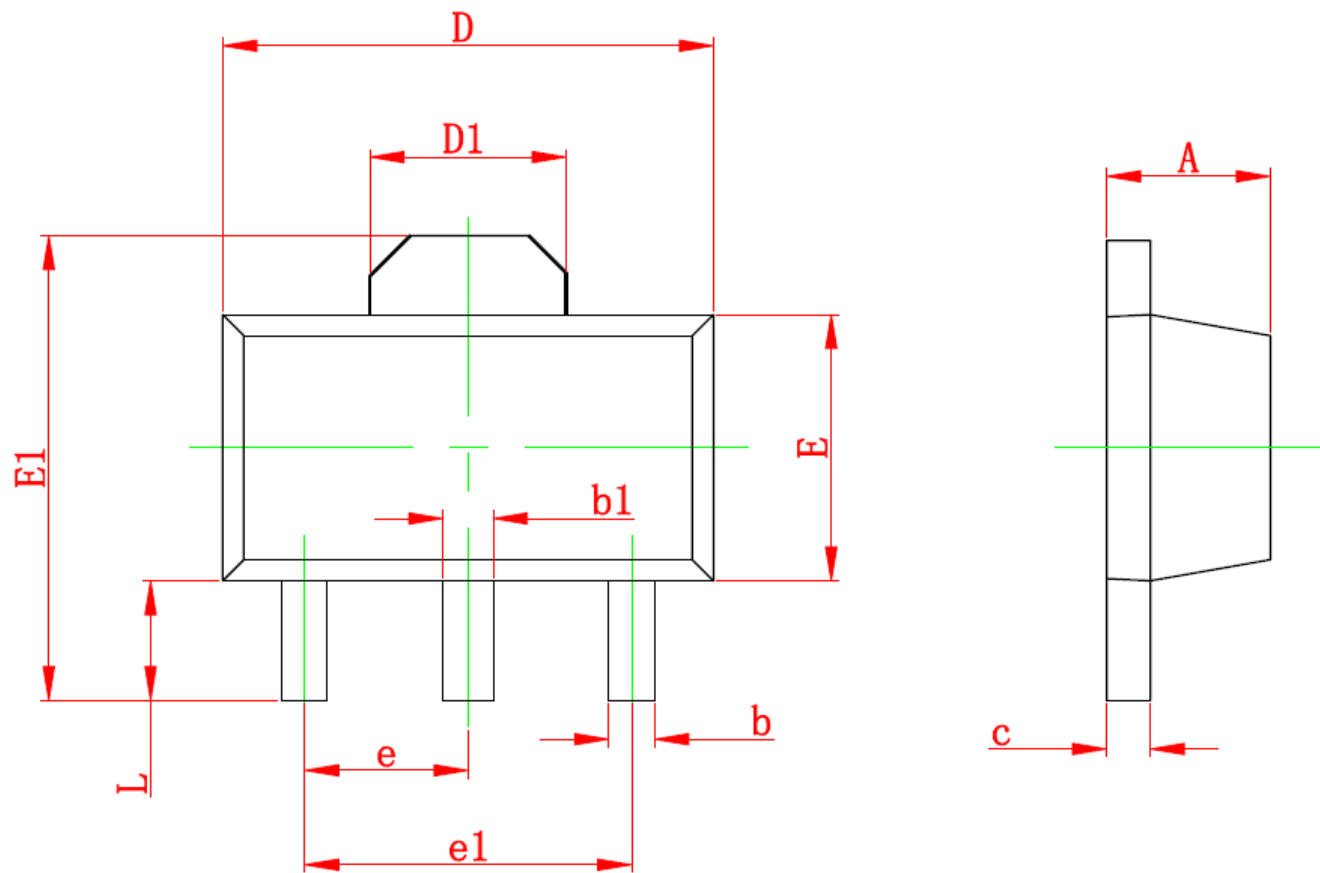
DIMENSION IN MM(SOT23.5L)			
SYMBOL	MIN	NOM	MAX
A	0.95	1.30	1.40
A1	0.050	0.100	0.150
A2	0.90	1.20	1.25
A3	0.783BSC		
A4	0.417BSC		
b	0.30	0.35	0.50
b1	0.30	0.40	0.45
c	0.08	0.152	0.220
c1	0.08	0.13	0.20
D	2.80	2.90	3.00
e	0.95BSC		
e1	1.90BSC		
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
L	0.30	0.45	0.60
L1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